MOODY'S
INVESTORS SERVICE

CREDIT OPINION
27 August 2018

Update

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RATINGS

Empresas Publicas de Medellin E.S.P

Domicile	Medellin, Antioquia, Colombia
Long Term Rating	Baa3
Type	LT Issuer Rating - Dom Curr
Outlook	Negative

Please see the ratings section at the end of this report for more information. The ratings and outlook shown reflect information as of the publication date.

Contacts

Bernardo Costa +55.11.3043.7353
VP-Senior Analyst
bernardo.costa@moodys.com

Camila Yochikawa +1.212.553.6085
Associate Analyst
camila.yochikawa@moodys.com

Alejandro Olivo +1.212.553.3837
Associate Managing Director
alejandro.olivo@moodys.com

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Empresas Publicas de Medellin E.S.P

Update to credit analysis

Summary

Empresas Publicas de Medellin, E.S.P.'s (EPM, Baa3 negative) credit profile reflects its ownership structure and links with the City of Medellin (Baa2 negative), on top of its intrinsic creditworthiness (Baseline Credit Assessment [BCA] of ba1). The BCA incorporates limited structural subordination considerations because EPM, as an operating holding company, has incurred the bulk of the indebtedness (75%, as of June 2018) but also generates the majority of the group's cash flow (63% of EBITDA).

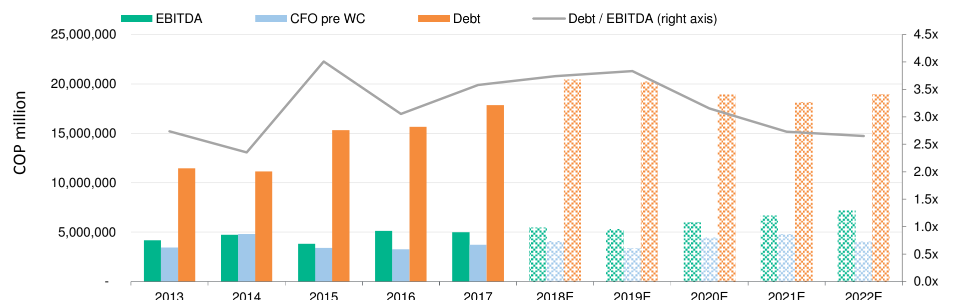
The credit view recognizes EPM's large scale and diversified consolidated revenue base. As of June 2018, the company's regulated electricity distribution segment is the most important, contributing 41% of consolidated EBITDA. The credit view also further recognizes the contribution from the company's international operations, representing 20% of consolidated EBITDA.

The asset divestment program announced in August 2018 of around COP3,750,000 million, if successful, will assist in avoiding debt/EBITDA increases above 4.0x following the force majeure events of April and May 2018 that have led to the suspension of completion works and delayed commercial operations on the company's landmark Ituango hydro project (2,400 MW). Uncertainties remain around overall damage assessment, timing to complete the project and potential cost overruns, but leverage should remain moderate should the company be able to execute its announced strategy and reach commercial operations on Ituango by 2021.

Exhibit 1

Divestitures by 2019 and beginning Ituango commercial operations by 2021 are key to EPM's credit profile

EPM - Consolidated



Sources: Moody's Financial Metrics™, Moody's Investors Service estimates

Credit strengths

» Strong likelihood of receiving support from the City of Medellin

» Diversified asset operations in the utility and generation sectors

» Operating holding company that limits its structural subordination considerations

Credit challenges

» Suspension of completion works and the delayed commercial operations of its landmark Ituango hydro project

» Increasing leverage as a result of its capital investment program

» Moderate liquidity profile.

Rating outlook

The negative outlook reflects the several still uncertain elements related to the overall damage assessment at the Ituango hydro project following force majeure events, the time required to complete the project and potential cost overruns. The negative outlook also reflects the uncertain amount and timing of the company's insurance reimbursements and announced asset divestment program.

Factors that could lead to an upgrade

The outlook can be revised to stable should the company be successful in its asset divestment program and upon conclusion of the overall damage assessment of Ituango, with a clear path to the resumption of completion works and a more definitive project commercial operations date (COD). Quantitatively, the outlook can be revised to stable if the company's

» Debt/EBITDA remains below 3.5x on a sustained basis

» Cash flow from operations before changes in working capital [CFO pre WC) /debt remains above 20% on a sustained basis

» [CFO pre WC + Interest Expense]/Interest Expense remains above 4.0x on a sustained basis

Factors that could lead to a downgrade

The rating could be downgraded should overall third-party liability or environmental expenses cause significant pressure on credit metrics and/or if further incidents at Ituango cause additional environmental damage, third-party liability expense or permanent/ irreversible damage to the project's infrastructure. Negative rating pressure will arise should the company be unsuccessful in raising the expected amounts under its asset divestment program, or if cost overruns, further delays or potential project cancellation lead to a perception that its:

» Debt/EBITDA will remain above 3.5x on a sustained basis

» CFO pre WC /debt will be kept below 20% on a sustained basis

» [CFO pre WC + Interest Expense]/Interest Expense will be kept below 4.0x on a sustained basis.

Slow progress in refinancing short-term debt maturities could result in downgrades. A perception of lower support from the City of Medellin would also exert negative pressure on the rating.

This publication does not announce a credit rating action. For any credit ratings referenced in this publication, please see the ratings tab on the issuer/entity page on www.moodys.com for the most updated credit rating action information and rating history.

Key indicators

Exhibit 2
Key credit metrics

KEY INDICATORS [1]

Empresas Publicas de Medellin E.S.P. (Consolidated)

	12/31/2014	12/31/2015	12/31/2016	12/31/2017	6/30/2018(L)	12/31/2018 E	12/31/2019 E	12/31/2020 E
(CFO Pre-W/C + Interest) / Interest	9.7x	5.7x	4.8x	5.2x	5.2x	4.1x	3.7x	4.7x
(CFO Pre-W/C) / Net Debt	46.8%	24.0%	22.2%	22.1%	21.7%	20.7%	16.9%	23.8%
RCF / Net Debt	26.5%	17.1%	16.1%	13.8%	13.8%	13.0%	11.3%	19.9%
(CFO Pre-W/C) / Debt	43.2%	22.3%	20.8%	20.8%	20.1%	19.9%	16.7%	23.4%
RCF / Debt	24.5%	15.8%	15.1%	13.0%	12.8%	12.6%	11.2%	19.6%

Sources: Moody's Financial Metrics™, Moody's Investors Service estimates

Profile

Headquartered in Medellin, Colombia (foreign-currency long-term government bond rating Baa2 negative), Empresas Publicas de Medellin, E.S.P. is a multi-utility vertically integrated public service group operating in energy generation, distribution and transmission; natural gas distribution; water and sanitation; solid waste management; and telecommunications. As of June 2018, 76% of the company's EBITDA was derived from the electricity distribution (41%) and energy generation (35%) segments. The company benefits from a combined installed generation capacity of 3,680 MW and serves 6.2 million consumers in the distribution segment in Colombia and Central America. EPM renders its own services while also holding ownership stakes in controlled and non-controlled subsidiaries located in Colombia and abroad (mainly Chile, Panama, El Salvador, Guatemala and Mexico).

Detailed credit considerations

Potential for extraordinary support from shareholder

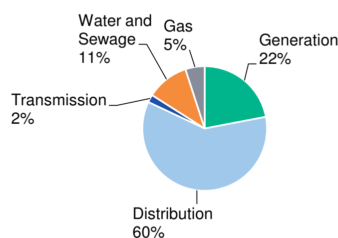
EPM's Baa3 ratings reflects the application of our Joint Default Analysis (JDA) framework for government related issuers (GRI). The City of Medellin is EPM's only shareholder. Our Government-Related Issuers rating methodology considers the following four input factors: (1) a strong-level probability of extraordinary support from the Municipality should EPM face financial distress, (2) our estimates of a high level of dependence between the company and the Municipality, (3) our rating of the City of Medellin, and (4) EPM's intrinsic credit profile as captured its BCA of ba1. EPM is viewed as strategically important to the local economy and its dividends have historically represented roughly 25% of the Municipality's total revenue.

Diversified operations and scale in the generation and distribution segments

EPM currently participates in the energy generation, transmission and distribution sectors. The company also participates in the distribution of natural gas, and the provision of water, sewage and waste management services. The company's key market is still the Antioquia region (including its capital, Medellin), with an increasing investment base within other countries in Latin America. As of the first half of 2018, 67% of EPM's consolidated revenue and 80% of its consolidated EBITDA are derived from operations within Colombia.

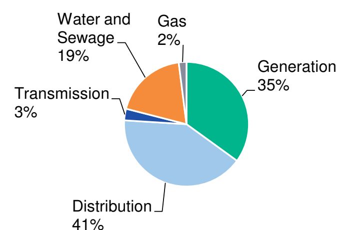
For H1 2018, the energy distribution segment represented around 60% of the company's total consolidated revenue and 41% of EBITDA, as a consequence of lower margins than the energy generation segment (22% of revenue), which was responsible for around 35% of EBITDA. The water segment continues to grow in importance, increasing its share of the company's overall revenue by around 50% since 2014. The increased diversification is credit positive, although the generation segment is expected to surpass the distribution segment upon completion of the Ituango hydro project.

Exhibit 3
Revenue profile is currently largely derived from regulated utilities
Consolidated Revenue, H1 2018



Source: EPM

Exhibit 4
The higher margins of the generation business increase its share of the company's EBITDA
Consolidated EBITDA, H1 2018



Source: EPM

Generation

EPM's generation fleet, as of June 2018, consisted of 38 generation plants with total installed capacity of 3,680 MW, of which 34 are hydro (83% of its installed capacity), two are thermal (13.5% of installed capacity) and two are wind farms (3.5% of installed capacity). Around 96% of the company's installed capacity is located in Colombia. The diversification of the company's fleet alleviates its exposures to individual project outages such as the ones observed in Guatape and Playas. Nonetheless, the high representation of hydro in the overall portfolio exposes the company's cash flow to droughts such as the ones observed throughout 2016.

Contrary to the outage experienced by the Guatape plant in 2016, the outage of the 207 MW Playas plant in June 2017 has not affected the company's ability to deliver on its commercial obligations. The company had excess generation capacity over its power purchase agreement (PPA) obligations. The actual fire that hit the transformers caused an insurance claim for an estimated value of $4 million. The turbines themselves were not affected. As of March 22, 2018, all three generation units had resumed operations.

Quick response in commercial policy following Ituango emergency

With regard to the company's commercial policy, the company had signed additional PPAs for a volume of around 4,500 GWh in 2020 and 2,000 GWh in 2021, counting on Ituango's generation. In light of the expected project completion delay, and to make up for the overall generation deficit considering the renewal of expired PPAs with unregulated customers, the company purchased energy volumes of around 4,800 GWh for 2020 and 2,900 GWh for 2021. The company also secured a three-year natural gas supply contract to feed its La Sierra combined cycle thermal plant, which will be dispatched continuously during that period, generating around 1,600 GWh. While the contract provides for only a slight operating margin for this transaction, it provides predictability on the company's operating expense profile and mitigates the company's exposure to spot price purchases.

Distribution

Within Colombia, EPM operates five distribution companies, serving a total 4.2 million customers. The company's three international subsidiaries operating in Guatemala, El Salvador and Panama serve another 2.2 million customers.

Coverage of the overall concession area is relatively high, with more space to be gained in El Salvador's Delsur. The focus is on the improvement of the overall quality of service and a reduction in energy losses in particular areas. The majority of the distribution companies have shown improvements in operating indicators, including the duration of service disruptions (SAIDI), although the frequency of service disruptions (SAIFI) has experienced slight upticks, particularly within the Colombian operations.

Exhibit 5
Coverage of distribution business

	EPM	ESSA	CENS	CHEC	EDEQ	EEGSA	DELSUR	ENSA	Total /Avg.
Country			Colombia			Guatemala	El Salvador	Panama	
Municipalities	124	94	47	40	12	50	79	15	461
Customers	2,292,051	765,309	485,582	470,509	181,609	1,206,081	379,458	444,925	6,225,524
Cost/kWh	447	469	479	498	477	450	528	483	465
% Coverage	99.0%	98.2%	97.8%	99.8%	99.3%	99.3%	87.0%	94.7%	97.9%
Energy Loss Index	7.8%	12.2%	13.8%	8.4%	8.0%	6.4%	8.9%	10.4%	8.8%

Source: EPM

Update to regulatory review processes

On January 29, 2018, regulatory authorities published the revised methodology for the Colombian distribution sector, aiming to provide incentives for continued investment with the ultimate purpose of improving the overall efficiency of operations within the country. The key change relates to a shift to asset base valuation at the net depreciated value versus the asset replacement value. The methodology mitigates volume risks and establishes quality metrics for the operations. The expectation is that overall, the application of the new methodology will be credit neutral to EPM, although shorter-term effects will be positive, with important tariff increases expected. Overall, we continue to view the regulatory framework and environment in Colombia as creditor friendly and credit positive.

Downside risks regarding the Ituango emergency remain

On April 28, 2018 EPM announced that unexpected geological events at the Ituango hydro project site led to the obstruction of one of the tunnels that diverts water from the Cauca river downstream from the project. Since then, the company, together with project suppliers and technical advisors, worked on further tunneling and on solutions to allow water to flow downstream. Following landslides and heavy water flow, the company had to relocate several communities that lived downstream from the project.

On May 10, 2018, the company said commercial operations for the project's first phase, slated to begin operations in November 2018, encompassing an initial 300 MW and reaching a total 1,200 MW by August 2019, will be delayed. Phase 2 was initially programmed to reach COD in 2021. As of April 2018, the project stood at 85% completion, according to the company. In June, the company announced the project's first phase is not likely to be completed with a delay of less than a 36 months.

As of August 13, 2018, the water flow was controlled, with water inflow of 537.75 m3/s and water outflow of 658.85 m3/s, with water in the reservoir achieving the height of 376.31 meters above sea level, slightly above the expected 375 meter threshold and substantially below the safety threshold of 415 meters. Since the suspension of regular completion activities at the project site by the Colombian National Authority for Environmental Licenses (ANLA), works have been concentrated on overcoming the emergency situation. Next steps include reinforcing the dam with concrete, tunneling works and diverting the water flow away from the power house.

Insurance protection included total damage insurance for an amount of $2.5 billion, business interruption of $628 million and third-party liability of $17 million. An overall damage assessment is yet to be concluded. Several uncertain elements related to overall damage assessment, timing to complete the project and potential cost overruns remain.

Located in the department of Antioquia, and benefiting from the water flow of the Cauca River, Ituango is a landmark hydro project, expected to represent around 16% of the country's overall installed capacity. The phasing of COD in two phases was designed not to oversupply the market with energy at once.

Construction on the project began in 2011. The project was conceived under a company named Hidroelectrica Ituango S.A. E.S.P., which is majority-owned by the Department of Antioquia through the Instituto para el Desarrollo de Antioquia (50.74%), with EPM (46.33%), and minority shareholders (2.93%) holding the remaining shares. Shareholders are responsible for the pro rata share of necessary equity contributions. Concomitantly, EPM signed a Build, Own, Operate, Maintain, and Transfer agreement with Hidroelectrica Ituango S.A. E.S.P. for a period of 50 years. Under the agreement, EPM is responsible for the project completion (hence all the debt) and will

benefit from the rights of all revenue for a 50-year period, upon which the rights will be transferred back to Hidroelectrica Ituango S.A. E.S.P.

Asset divestment program will avoid a significant deterioration in credit metrics

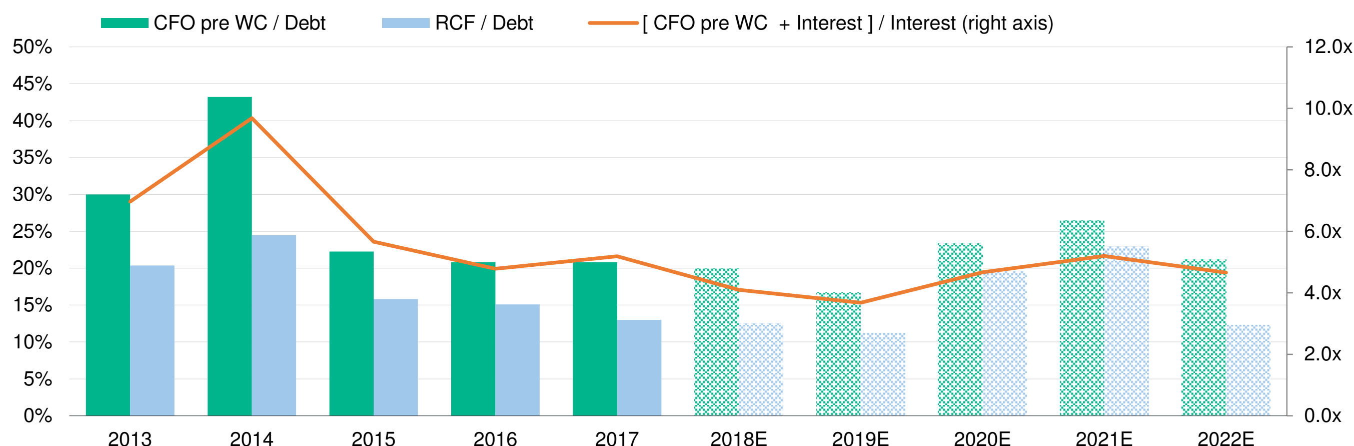
EPM's consolidated credit metrics have declined over the past five years, with CFO Pre WC/ debt declining to a low 20.8% in 2017 from 43.2% in 2013. Retained Cash Flow/debt has decreased to a low 13% from a peak of 24.5% in 2014. The decrease in the company's credit metrics is a function of severe hydrological conditions during 2015 and 2016, combined with the outage at its Guatape (560 MW installed capacity) power plant in 2016, which led to the purchase of energy at the spot market at very high spot prices and the addition of debt in order to fund Ituango.

Recognizing that the delay on Ituango's commercial operations could impact its credit metrics, on July 31, 2018, the company received board approval for an asset divestment program. The proceeds will be used on the capital investment program, decreasing additional debt needs.

The program aims to raise between COP3.5 trillion — COP4.0 trillion (between $1.150 and $1.35 billion) and initially focuses on the sale of the company's 10.17% in Interconexion Electrica S.A. (Baa2 negative), its participation in the Chilean water company Aguas de Antogasta S.A. and its participation in the Chilean wind project Los Cururos Ltda. The processes to organize the sale of these assets have begun, with proceeds expected no earlier than late 2019.

Following the Ituango emergency situation in Q2 2018, the company made several adjustments to its business model, including a decrease in planned capital spending (basically reducing nonessential capital spending to zero) and the asset divestment announcement, which is expected to be completed in late 2019. These factors will assist in keeping the company's debt/EBITDA below 4.0x in 2018 and 2019. Absent significant third-party or environmental liability, the reduction in capital spending and completion of the asset sales program within the envisioned amounts should enable the company to reach debt/EBITDA below 3.5x by 2020, once distribution revenue picks up following important tariff reviews and the Aguas Claras water project is fully ramped-up. A reduction in the dividend payout policy to the City of Medellin to 40% as of 2020 from an average 60% between 2014-219 will further support the deleveraging process.

Exhibit 6
Leverage to improve as of 2020



Sources: Moody's Financial Metrics™, Moody's Investors Service estimates

Several uncertainties remain as to overall third-party and environmental liability, damages to equipment and machinery, timing and amounts of insurance reimbursements, cost overruns and the overall ability of the company to complete the project. These issues will only be defined in the medium to long-term term, and can potentially exert negative pressure on the company's long-term credit metrics.

Liquidity analysis

Liquidity risks are moderate. As of June 2018, the company reported COP4,974,848 million ($1.7 billion) due in the following twelve months on a consolidated basis, with a cash balance of COP1,441,327 ($492 million). Considering only holding company obligations, the company's short-term debt amounted to COP2,611,469 million ($891 million), with COP790,233 ($270 million) available in cash. Nonetheless, the company has around $1.2 billion in credit facilities yet to be disbursed with multilaterals and development banks, and is negotiating another US$1.6 billion in credit facilities to support its capital spending program.

Exhibit 7

Large share of consolidated short-term debt concentrated with commercial banks and multilaterals

Consolidated

	Jun-18		Short Term			Long Term	
	COP	USD		COP	%		COP
Short term debt	4,974,848	1,697	Commercial Banks	3,123,259	63%	Commercial Banks	2,404,293
Long term debt	13,609,773	4,644	Multilaterals	576,318	12%	Multilaterals	1,328,429
Total debt	**18,584,621**	6,341	Bonds	1,123,835	23%	Bonds	8,235,625
			Development Banks	151,436	3%	Development Banks	1,641,426
Cash	**1,441,327**	**492**	**Total short term debt**	**4,974,848**		**Total long term debt**	**13,609,773**

HoldCo

	Jun-18	USD	Short Term			Long Term	
				COP	%		COP
Short term debt	2,611,469	891					
Long term debt	11,396,772	3,889	Commercial Banks	738,111	28%	Commercial Banks	770,927
Total debt	**14,008,241**	4,780	Multilaterals	576,318	22%	Multilaterals	1,328,429
			Bonds	1,109,288	42%	Bonds	7,655,990
			Development Banks	151,436	6%	Development Banks	1,641,426
			Intracompany	36,316	1%		
Cash	**790.233**	**270**	**Total short term debt**	**2,611,469**		**Total long term debt**	**11,396,772**

Source: EPM

Rating methodology and scorecard factors

We evaluate EPM's BCA using our Unregulated Utilities and Unregulated Power Companies methodology, published in May 2017, given the importance of the company's power generation activities. As depicted in the grid below, the issuer's indicated rating based on projected (12 to 18 months) credit metrics is equivalent to ba1, consistent with its assigned BCA. The Baa3 assigned rating considers the potential for extraordinary support from the Municipality of Medellin, as the sole shareholder, according to the methodology for Government Related Issuers, published in June 2018.

Exhibit 8

Key factors table

Rating Factors				
EPM E.S.P.				
Unregulated Utilities and Unregulated Power Companies Industry Grid [1][2]	Current LTM 6/30/2018		Moody's 12-18 Month Forward View As of 8/22/2018 [3]	
Factor 1 : Scale (10%)	**Measure**	**Score**	**Measure**	**Score**
a) Scale (USD Billion)	Baa	Baa	Baa	Baa
Factor 2 : Business Profile (40%)				
a) Market Diversification	Ba	Ba	Ba	Ba
b) Hedging and Integration Impact on Cash Flow Predictability	Baa	Baa	Baa	Baa
c) Market Framework & Positioning	Baa	Baa	Baa	Baa
d) Capital Requirements and Operational Performance	Caa	Caa	Caa	Caa
e) Business Mix Impact on Cash Flow Predictability	Ba	Ba	Ba	Ba
Factor 3 : Financial Policy (10%)				
a) Financial Policy	Baa	Baa	Baa	Baa
Factor 4 : Leverage and Coverage (40%)				
a) (CFO Pre-W/C + Interest) / Interest (3 Year Avg)	4.8x	Baa	3.9x	Ba
b) (CFO Pre-W/C) / Net Debt (3 Year Avg)	22.5%	Baa	18.8%	Ba
c) RCF / Net Debt (3 Year Avg)	15.3%	Baa	12.2%	Ba
Rating:				
a) Indicated Rating from Grid		Baa3		Ba1

Government-Related Issuer	Factor
a) Baseline Credit Assessment	ba1
b) Government Local Currency Rating	Baa2
c) Default Dependence	Very High
d) Support	Strong
e) Final Rating Outcome	Baa3

[1] All ratios are based on 'Adjusted' financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations.
[2] As of 6/30/2018(L).
[3] This represents Moody's forward view; not the view of the issuer; and unless noted in the text, does not incorporate significant acquisitions and divestitures.
Source: Moody's Financial Metrics™

Ratings

Exhibit 9

Category	Moody's Rating
EMPRESAS PUBLICAS DE MEDELLIN E.S.P	
Outlook	Negative
Issuer Rating -Dom Curr	Baa3
Senior Unsecured	Baa3

Source: Moody's Investors Service

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