

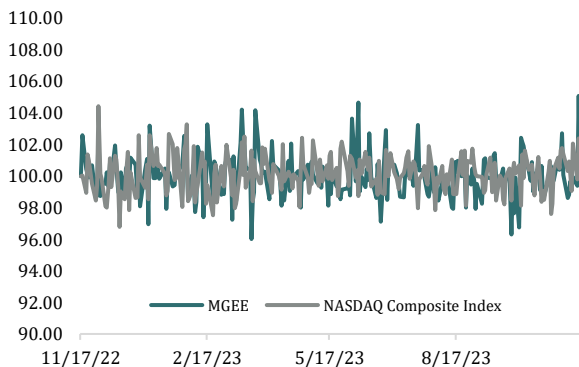
Analysts

Tan Qing Heng tanqingheng@u.nus.edu
Lim Fong Kai fongkai.lim@u.nus.edu
Chong Li An Marcus chonglianmarcus@u.nus.edu

Basic Issuer Information

Issuer Madison Gas and Electric Energy Inc.
Equity Ticker NASDAQ:MGEE
Corporate Ticker MGE Energy Inc.
Credit Rating (M/S/F) Unrated
Country of Risk United States
Sector Electric and Gas Utilities

1Y Price (rebase to 100)



Company Description

Madison Gas and Electric Inc. operates through its main subsidiary, Madison Gas and Electric Company (MGE). The company engages in the generation, purchase and distribution of electricity as well as natural gas in Midwestern United States (Wisconsin and Iowa). Currently, fossil fuels serve as MGE’s primary source of energy generation. However, the company will be focused on transitioning into a renewables-reliant energy mix in the coming years.

Key Financials

(US\$)	FY20A	FY21A	FY22A	FY23E
Revenue(m)	524.5	593.1	699.8	708.1
Gr Rate (%)	(5.5)	13.1	18.0	1.2
EBITDA (m)	209.5	211.0	249.3	209.5
Margin (%)	17.6	17.8	15.9	14.5
Debt/Op. Profit	4.3	4.7x	4.3x	4.3x
Op. Profit/Int	5.8x	5.6x	6.2x	5.8x
D/E Ratio	0.6x	0.6x	0.7x	0.7x

Key Executives

Jeffrey M. Keebler Chairman
 Jeffrey M. Keebler Chief Executive Officer
 Jared J. Bushek’ Chief Financial Officer

Visible Credit Strength Ahead

Recommendations

We are initiating coverage on Madison Gas and Electric Energy Inc. (NASDAQ:MGEE). We have given an issuer profile rating of “Underweight” to MGEE’s credit outlook. We will be analysing the outstanding issuances of MGEE’s primary subsidiary, Madison Gas and Electric Company (MGE) – MGE 0228, MGE 0928, MGE 0432 and MGE0937.

Recent Developments

- MGE added more solar power generation capacity through the partial acquisition of Koshkonong Solar Energy Centre as part of its Net Zero Plan
- MGE decommissioned two existing units of their coal-firing power plant
- MGE has benefited from grid resilience programs and used the funding received to fortify their existing powerlines

Key Credit Considerations

MGEE’s liquidity position is forecasted to weaken significantly in the coming years due to its increasing reliance on revolver borrowings to service heavy capital expenditures as the company executes its “green” transition. Furthermore, with a looming recession and high interest rates expected to stay, credit conditions will remain bleak or deteriorate even further. Therefore, we expect MGE’s financial stability to remain shaky in the near-term.

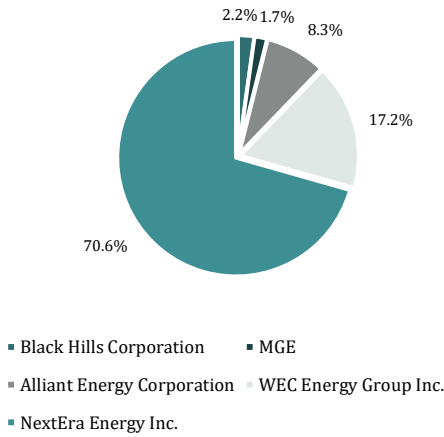
Credit Positives

- MGE’s shift towards renewables is expected to increase the company’s power generation efficiency and reduce power generation cost
- MGE is well positioned to capitalise on the growing Wisconsin industrial sector
- MGE has a large surplus of gas distribution capacity and favourable contracts with gas suppliers, reducing variability in their costs in times of economic uncertainty

Credit Negatives

- Small market share within the Wisconsin state resulting in restricted access to financing, weaker bargaining power and reduced investment ability
- MGE’s debt portfolio is weighted heavily with long-term maturity bonds, limiting its financial flexibility and renewable energy expansion
- Current US hawkish interest rate environment leads to high variable interest rate risk needed to fund high capital expenditures

Figure 1: MGE's Position in Wisconsin Utilities (By Market Capitalisation)



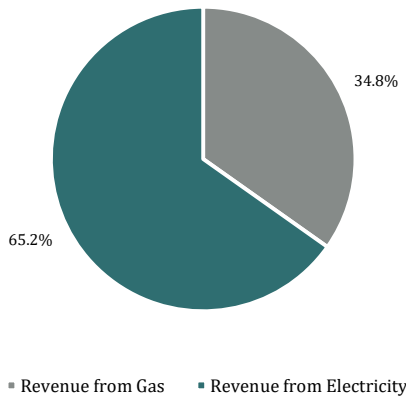
Source: Capital IQ

Figure 2: MGE's Competitors

Top Competitors of MGE
Alliant Energy Corporation
WEC Energy Group Inc.
NextEra Energy Inc.
BlackHills Corporation

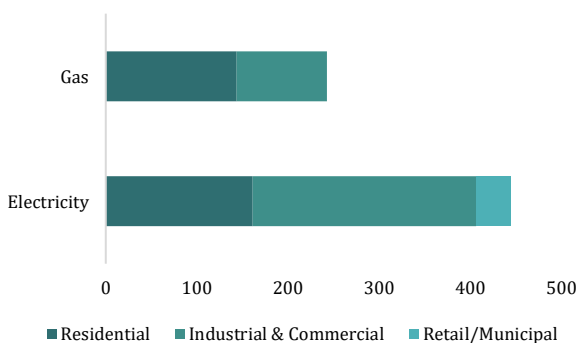
Source: Capital IQ

Figure 3: MGE's Revenue Sources (FY2022)



Source: Capital IQ

Figure 4: MGE's Retail Gas and Electricity Revenue by Customer Segments



Source: MGE Annual Report

Company Overview

MGE, the primary subsidiary of Madison Gas and Electric Energy Inc., was established in 1896 through the merger of Four Lakes Light and Power Company as well as the Madison City Gas Light and Coke Company. Throughout the years, MGE has leveraged the growth of Madison City to become one of the leading gas and electric energy providers in the Wisconsin state.

MGE is publicly listed on the NASDAQ. It is a constituent stock of the NASDAQ Composite Index and was added to the Russell 3000 Growth Index last year. As of 9 November 2023, MGE has a market capitalization of US\$2.61b.

The main competitors of MGE include Alliant Energy Corporation, WEC Energy Group Inc., NextEra Energy Inc. and BlackHills Corporation. Given its size, MGE is relatively well-positioned in Wisconsin utilities as it commands 1.7% of the total market cap among its competitors (Fig 1) and has consistently ranked as a top 3 utilities provider for the least number of outages. To date, MGE boasts approximately 701 employees.

Business Model

Accounting for 94.6% of its revenue, MGE's core business lies in power production through traditional (coal, gas) and renewable (solar, wind) sources before distribution to both residential and commercial clients within the Midwestern region of the United States.

MGE offers its clients 2 payment plans – a monthly payment option or a single bullet payment at the end of a specified period which is applicable only for commercial clients.

Revenue Sources

Gas and electricity are MGE's main sources of revenue (Fig 3). Gas is purchased before being redistributed while electricity is generated from its own facilities before being distributed.

Historically, MGE has been able to generate more gas revenue from residential than commercial clients. This is due greater revenue per therm sold to residential than industrial and commercial clients as gas rates for the former tends to be higher than the latter. Furthermore, MGE has also been able to deliver more residential than industrial and commercial gas throughout the years. As of FY2022, 59.1% of MGE's total retail gas revenue was from residential clients while the remaining 40.9% was from industrial and commercial clients (Fig 4). However, in FY2022, total therms delivered to industrial and commercial clients grew by 15.5% while total therms delivered to residential clients only locked in a 14.0% growth. If this trend continues, MGE's retail as revenue may become more heavily driven by industrial and commercial than residential clients in years to come.

In terms of retail electricity revenue, US\$161.3m was generated from residential clients, US\$245.4m was generated from industrial and commercial clients and US\$37.3m was generated from other-retail/municipal clients in FY2022 (Fig 4). Evidently, unlike its gas revenues, MGE's electricity revenue is more heavily driven by industrial and commercial than residential distribution.

ESG Commitments and Efforts

MGE has reinforced its ESG commitments and efforts by adopting several strategies which has shaped the management's decisions and consequently, the overall business direction.

Environmental:

Figure 5: MGE's Board of Directors

Members of the Board	
Director Chairman President Chief Executive Officer	Jeffrey M. Keebler
Director	Marcia M. Anderson
Director	James G. Berbee
Director	Mark D. Bugher
Director	Londa J. Dewey
Director	James L. Possin
Director	Thomas R. Stopler
Director	Gary J. Wolter
Director	Noble L. Wray

Source: MGE Annual Report

Figure 6: MGE's Management Team

Management Team Members	
Chairman President Chief Executive Officer	Jeffrey M. Keebler
Executive Vice President – Marketing and Communications	Lynn K. Hobbie
Vice President General Counsel and Secretary	Carl Anne Renlund'
Vice President Chief Financial Officer and Treasurer	Jared J. Bushek'
Vice President Chief Accounting Officer and Controller	Tamara J. Johnson'
Vice President – Energy Operations	James J. Lorenz
Vice President – Business and Regulatory Strategy	Scott R. Smith
Assistant Vice President – Human Resources	Melissa T. Garner
Assistant Vice President – Energy Supply	John A. Jicha
Assistant Vice President – Gas Operations, Measurement and Operations Support	Ted L. Wadzinski

Source: MGE Annual Report

Figure 7: MGE's Main Shareholders

Main Shareholders of MGE	
Public and Others	45.84%
The Vanguard Group Inc.	11.54%
BlackRock Inc.	7.90%
Rowe Price Group Inc.	7.12%
Victory Capital Management Inc.	3.23%
State Street Global Advisors Inc.	2.67%

Source: Capital IQ

MGE seeks to reduce its carbon emissions by at least 80% by 2030 which is a step towards its bigger goal of achieving net-zero carbon electricity by 2050. This has fuelled several strategic moves within the renewable space including an acquisition of a 10% stake in Red Barn Wind Farm which is expected to expand the company's wind capacity to more than 160MW and reduce CO2 emissions by up to 200,000 tons.

MGE has also adopted the Energy 2030 Framework which aims to achieve 6 core objectives – transitioning to a more environmentally sustainable energy supply, giving customers more control around energy, reducing costs by managing collective energy use, building a dynamic, integrated electric grid for new technology, ensuring that all customers benefit from changing technology and deepening community engagement.

Social:

Significant headway was made in the past year as the MGE Board approved the Statement on Human Rights which governs diversity and inclusion, safe and healthy working conditions as well as fair labour and worker rights for all employees.

Governance:

MGE has implemented several measures to ensure strong corporate governance. Key highlights include 77.8% independent Board of Directors, 10 regular full-board meetings annually and a “clawback policy” pegging cash/stock-based awards to performance.

Ownership & Management

Management of MGE

The current Chairman, President and Chief Executive Officer (CEO) of MGE Energy Inc. is Jeffery M. Keebler. He has held these positions since October 2018. Additionally, he is the President and CEO of MGE; positions he has held since March 2017. Joining MGE in 1995, Jeffrey's experience in the company is long and extensive as he has held management positions across various departments including Energy Supply, Rates, Generation Planning, Information Technology, Customer Service and Human Resources. Aside from MGE, Jeffery also holds board positions in 5 other companies – ATC Management Inc., ATC Development Manager Inc., American Transmission Company LLC, United Way of Dane County Inc. and University Research Park; most of which are utility companies.

Shareholders of MGE

Institutions and the public form the bulk of MGE's shareholders. Notable institutional shareholders include investment management behemoths: The Vanguard Group Inc., BlackRock Inc., T. Rowe Price Group Inc., Victory Capital Management Inc. and State Street Global Advisors Inc (**Fig 7**).

Subsidiaries of MGE

Aside from MGE, MGE Energy Inc. owns 11 other subsidiaries. Out of which, 7 are directly-related to MGE while the remaining are other utility companies that operate within the Midwestern region.

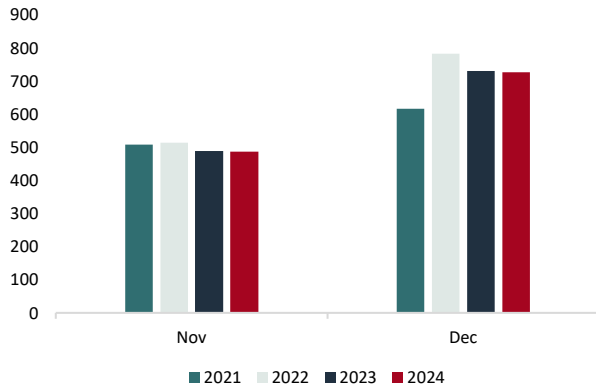
Industry Outlook

US

Changes in Electricity consumption

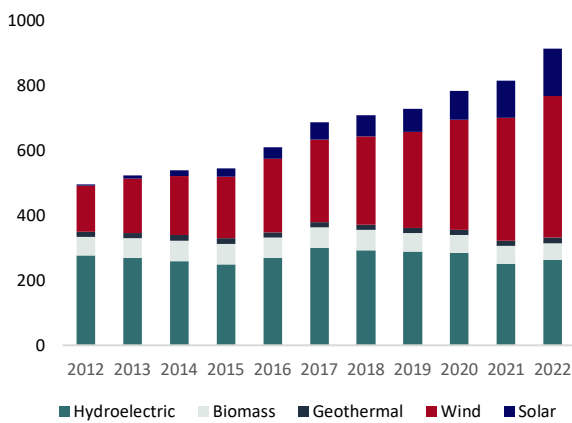
The EIA forecasts that U.S. electricity sales will decline by 1% in 2023 but rebound by 2% in 2024. This fluctuation is primarily attributed to the residential sector, where electricity consumption is heavily influenced by weather patterns. The anticipated drop in demand for 2023 stems from warmer-than-average winters predicted by the National Oceanic and Atmospheric Administration (NOAA). With a 62% probability, the NOAA anticipates El Niño, a climate pattern marked by unusually warm sea surface

Figure 8: Heating Degree Days during Winter



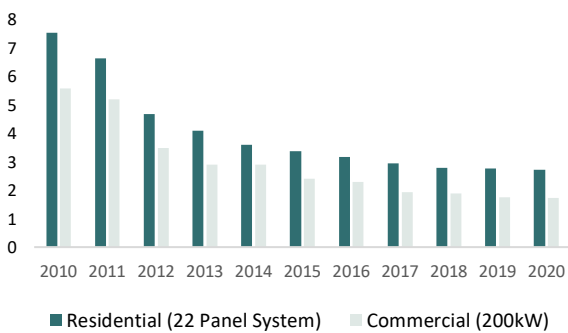
Source: Energy Information Administration (EIA)

Figure 9: US Renewable Energy Generation (GWh)



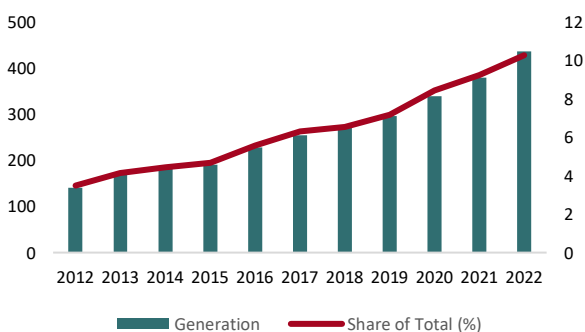
Source: EIA

Figure 10: Cost of Electricity for PV (per W)



Source: National Renewable Energy Laboratory (NREL)

Figure 11: Generation of Wind Energy (in GW)



Source: EIA

temperatures in the Pacific Ocean, leading to milder winters in the Midwestern region. The declining trend in Heating Degree Days (HDD) over the past four winters further corroborates the impact of warmer winters on electricity demand (Fig. 8).

Macroeconomic factors also influence electricity consumption in the commercial and industrial sectors. The EIA anticipates growth in these sectors in 2024, following a decline in 2023. Over 40% of this growth is expected to originate from the West South-Central Census Division, where the GDP is projected to expand by 1.9% in 2024, outpacing the overall U.S. GDP growth of 1.5%.

A Gradual Shift towards Renewables

The United States has embarked on an ambitious journey to transform its electricity generation system, aiming to achieve a 100% decarbonized electric grid by 2030 and achieving net-zero emissions by 2050. To achieve this target, the current trend in renewable energy generation has ramped up with a CAGR of 6.3% in the last 10 years (Fig. 9).

A key lever to achieve this level of decarbonization is to transition from burning fossil fuels to renewable energy. This means a simultaneous decarbonization of the electricity sector while meeting electricity demands. The Federal Sustainability Plan highlights key steps to take to achieve the decarbonization goals. The plan calls for the installation of an average of 30 GW of solar capacity per year between now and 2025. This represents a significant increase from the current annual installation rate of around 15 GW. From 2025 to 2030, the plan envisions an even more ambitious target of installing an average of 60 GW of solar capacity per year. The plan also includes ambitious targets for wind energy deployment. By 2030, the plan aims to expand the nation's wind energy capacity to 300 GW, representing a significant increase from the current installed capacity of around 134 GW.

To achieve the energy mix as modelled by The National Renewable Energy Laboratory (NREL), which states that wind and solar energy would provide 60-80% of generation, an additional 40-90 GW per year of solar and 70-150 GW of wind per year is needed. This is four times the current deployment levels of each technology.

Solar:

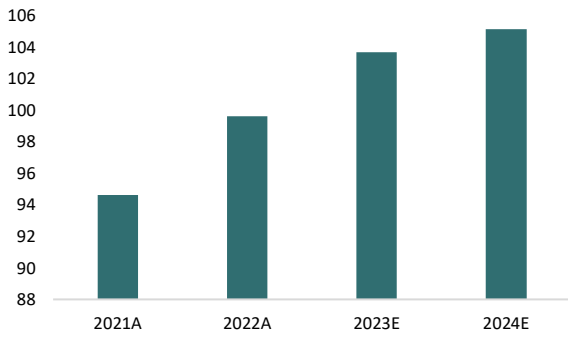
As the cost of photovoltaic (PV) systems falls, it becomes more cost-efficient for utility companies to replace their existing carbon-generating sources. A steady fall in the price of both residential and commercial PV (Fig. 10) will allow solar energy to remain cost competitive against fossil fuels and creates more opportunities for companies to invest into solar farms.

Wind:

Wind energy is making significant strides in the United States, accounting for 22% of new electricity capacity installed in 2022 and generating 10% of the nation's total electricity. This growth is fuelled by a growing trend of non-utility buyers, such as corporations, purchasing more wind power than traditional utility companies. Direct retail purchasers of wind now account for at least 44% of new wind capacity installed in 2022.

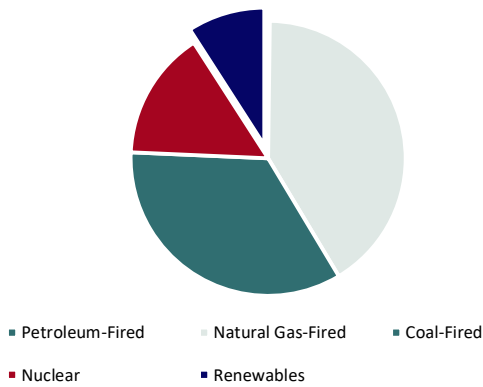
President Biden's climate agenda, including the Inflation Reduction Act, is further accelerating this trend by providing \$10 billion in tax credits for clean energy manufacturing. As a result, onshore wind energy forecasts have increased by nearly 60%, from 11.5GW to 18GW, enough to power 2 million homes. Additionally, at least 11 new manufacturing facilities are planned to enter the onshore wind energy market, further solidifying the industry's growth trajectory.

Figure 12: U.S. Dry Natural Gas Production (bcfd)



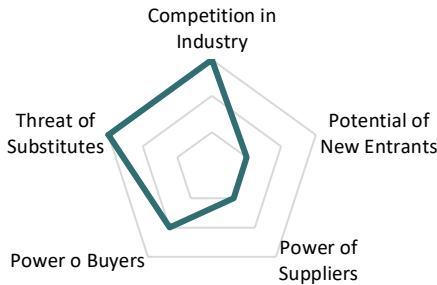
Source: EIA

Figure 13: Wisconsin Energy Mix



Source: EIA

Figure 14: Porter's Five Forces



Source: NUS Investment Society

Competition	High: Wisconsin market saturated with incumbents
New Entrants	Low: Requires high CAPEX to enter this industry
Power of Suppliers	Low: Production to sales is vertically integrated
Power of Buyers	Mid: Only some buyers can choose their supplier
Substitutes	High: Electricity is highly commoditized

Headwinds in Natural Gas Due to Supply Chain Disruptions

The Energy Information Administration's (EIA) latest Short Term Energy Outlook (STEO), projects that natural gas production and demand will reach record highs in the coming years. Production is expected to hit 103.72 billion cubic feet per day (bcfd) in 2023, a 4.1% increase from 2022, and continue to rise to 105.13 bcfd in 2024 (Fig. 12). Domestic gas consumption is also forecast to increase to 89.17 bcfd, a 0.8% increase from its previous record set in 2022. Natural gas storage reached 3,835 bcfd at the end of October which is 5% more than the 5-year average (2018-2022).

The growth in natural gas production is being driven by the rise of shale drilling. However, the development of shale projects has faced regulatory pushback, with some high-profile pipeline projects being cancelled due to legal challenges and environmental concerns. The PennEast pipeline, which was proposed to run from Pennsylvania to New Jersey and would have transported gas from the Marcellus Shale formation. The project faced opposition from environmental groups and landowners, and it was eventually cancelled in 2020. The Atlantic Coast Pipeline, which was designed to transport gas from West Virginia to Virginia and North Carolina. The project was plagued by legal challenges and cost overruns, and it was ultimately cancelled in 2020.

Furthermore, with the El Niño conditions likely to bring along more rainfall, which might result in damage in the gas pipelines, increasing maintenance costs. These setbacks highlight the challenges faced by the natural gas industry in expanding its infrastructure. The high cost of construction and the increasing regulatory hurdles make it difficult to move forward with new pipeline projects.

Wisconsin

Renewable Energy Infrastructure

Wisconsin may not have fossil fuel reserves, but it boasts a robust renewable resource infrastructure. Renewable sources accounted for nearly 9.1% of Wisconsin's in-state electricity generation (Fig. 13), with hydro, solar, and wind power taking the lead. Hydroelectric facilities contributed two-fifths of this renewable energy, with dozens of dams regulated by the Wisconsin Department of Natural Resources (DNR). Wisconsin also has one of the highest numbers of Federal Energy Regulatory Commission (FERC)-regulated dams in the United States.

Despite limited solar potential, solar energy's contribution to Wisconsin is steadily increasing. In 2022, solar resources provided nearly one-sixth of the state's renewable-sourced electricity generation. Wind energy accounted for nearly three-tenths of Wisconsin's renewable energy generation. Wisconsin's commitment to renewable energy was further demonstrated in April 2023 when the state's latest wind farm, a 92-megawatt facility, began generating electricity. This new facility is expected to provide enough electricity to power over 25,000 homes.

Competitive Wisconsinite Market

Typical of a utilities company, the Wisconsin utilities market also has high barriers to entry, due to the high capital expenditures of powerlines, and generation facilities. The Wisconsin market is also saturated, with 4 major players serving 90% of the states' population. Incumbents like WEC Energy Group, Alliant Energy, People's Gas and MGE have been serving the state for a long time, making entering the market even more difficult.

Wisconsin's Renewable Production is Lacking

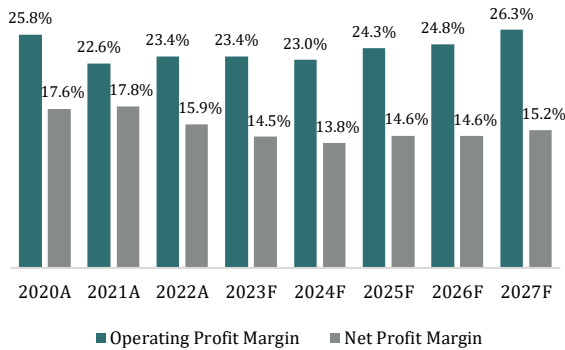
Wisconsin's energy landscape is dominated by natural gas at 41.2%, with only a 9.1% reliance on renewable energy sources (Fig. 13).

Figure 15: MGE Financial Ratios

	2020A	2021A	2022A	2023F	2024F	2025F	2026F	2027F
Profitability								
Operating Profit Margin	25.8%	22.6%	23.4%	23.4%	23.0%	24.3%	24.8%	26.3%
Net Profit Margin	17.6%	17.8%	15.9%	14.5%	13.8%	14.6%	14.6%	15.2%
ROA	4.1%	4.5%	4.4%	3.9%	3.6%	3.7%	3.6%	3.5%
ROE	9.5%	10.3%	10.3%	9.1%	8.5%	9.0%	8.8%	8.8%
Liquidity								
Current Ratio	1.10x	1.69x	1.08x	0.70x	0.58x	0.54x	0.51x	0.50x
Quick Ratio	0.77x	1.08x	0.67x	0.47x	0.40x	0.39x	0.38x	0.39x
Cash Ratio	0.23x	0.15x	0.05x	0.03x	0.02x	0.02x	0.02x	0.01x
Solvency								
Debt/Assets	0.26x	0.26x	0.28x	0.28x	0.31x	0.32x	0.34x	0.36x
Debt/Equity	0.59x	0.61x	0.66x	0.66x	0.72x	0.78x	0.84x	0.90x
Debt/EBITDA	2.75x	2.96x	2.85x	2.73x	3.04x	3.24x	3.54x	3.93x
Interest Coverage	5.76x	5.56x	6.16x	4.45x	4.00x	4.03x	3.81x	3.61x
Efficiency								
Total Asset Turnover	0.26x	0.29x	0.28x	0.27x	0.26x	0.25x	0.24x	0.24x
Accounts Receivable Turnover	7.91x	7.80x	7.48x	7.82x	7.93x	7.84x	7.74x	7.74x
Accounts Payable Turnover	3.08x	4.01x	3.78x	4.00x	4.05x	4.01x	3.96x	3.96x

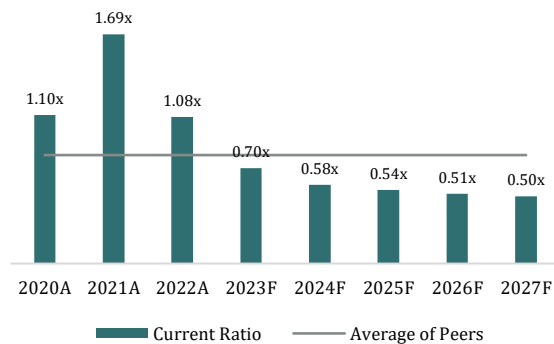
Source: MGE's Financial Statements, Team Estimates

Figure 16: MGE's Operating Profit and Net Profit Margins



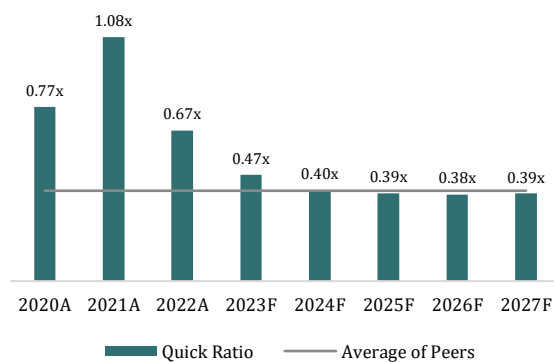
Source: Capital IQ, Team's Estimates

Figure 17: MGE's Current Ratio vs. Peer Average



Source: Capital IQ, Team's Estimates

Figure 18: MGE's Quick Ratio vs. Peer Average



Source: Capital IQ, Team's Estimates

This dependence on fossil fuels places the state far behind its peers in terms of clean energy adoption. As of 2022, Wisconsin ranks 33rd in the United States for renewable energy production, with a total capacity of just 1.8 GWh.

This lacklustre performance is further underscored by Wisconsin's Renewable Portfolio Standard (RPS) target of 10% by 2030. This target pales in comparison to the ambitious goals set by other states, such as California, which has committed to achieving 50% renewable energy penetration by 2030.

Financial Analysis

Overview

Figure X illustrates MGE's historical and forecasted financial ratios from FY2020 to FY2027. Overall, we observe that MGE's financials exhibit a downward trend. Although profitability remains sound, there are signs of weaknesses in the company's liquidity and solvency positions.

Stable Profitability Metrics

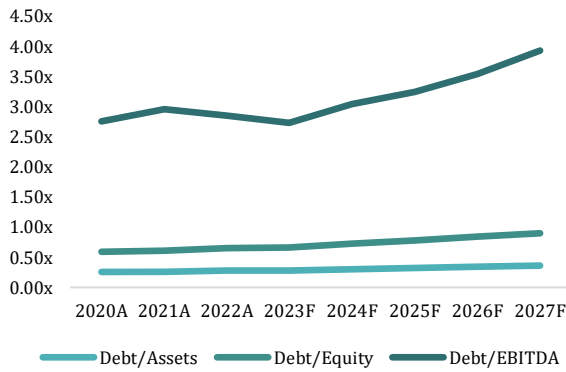
Ranging between 22.6% to 26.3%, MGE's operating profit margin has remained relatively unchanged for the past 3 years and is expected to achieve minimal increases throughout FY2023 to FY2027 (Fig 16). Net profit margin declined slightly from 17.6% in FY2020 to 15.9% in FY2022 and is forecasted to decline further, hitting a low of 13.8% in FY2024 before recovering to the 15% range at the end of FY2027 (Fig 16). The dip in profitability in FY2022 is off the back of higher cost of goods sold due to inflated crude oil prices in the same year while stagnant profitability in forecasted years can be attributed to muted near-term revenue growth. This is a result of MGE ramping up renewable electric generation which will introduce short-term volatility into its top-line due to the unreliability of using renewables to generate electricity as compared to fossil fuels. Revenue growth will also remain controlled due to gas pipeline and residential population growth limitations. However, despite these top-line downward pressures, we expect MGE's profitability to hold as the transition towards renewables minimises its exposure to rising fuel costs which prevents spikes in cost of goods sold. Additionally, according to BP's forecasts, fossil fuel reserves are expected to deplete in approximately the next 139 years, underscoring its limitation as a source of energy. Given the unlimited supply of renewables, MGE's green transition therefore ensures stability and "perpetual" continuity for the company's revenue.

Deteriorating Liquidity Position

MGE's current ratio worsened from 1.10x to 1.08x while quick ratio worsened from 0.77x to 0.67x in FY2020 and FY2022 respectively. Despite the worsening trend, MGE's liquidity ratios continued to remain above its peers (Fig 17 & 18). Moving forward, both key liquidity ratios are expected to continue their descent, with current ratio hitting 0.50x and quick ratio hitting 0.39x in FY2027. The weakening liquidity position is mainly driven by 2 items within MGE's current liabilities. Firstly, an increase in current portion of long-term debt due to several loans maturing throughout FY2022 to FY2027. Secondly, an increase in short-term borrowings (revolver credit). MGE has and will continue to experience a gradual increase in CAPEX due to the overhaul of current facilities to better accommodate its march towards renewables. This has in turn led to MGE depending more on short-term borrowings due to the lack of cashflows to support the increase in working capital needs. Overall, MGE's liquidity position is expected to remain weak in the near-term and should only improve when its transition to renewables stabilises.

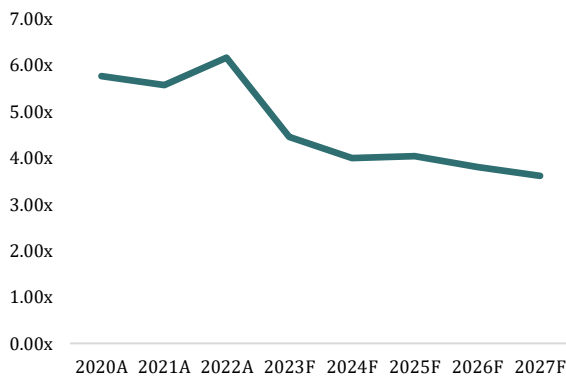
Greater Reliance on Leverage

Figure 19: MGE's Leverage Ratios



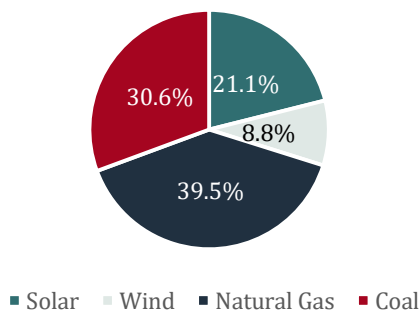
Source: Capital IQ, Team's Estimates

Figure 20: MGE's Interest Coverage Ratio



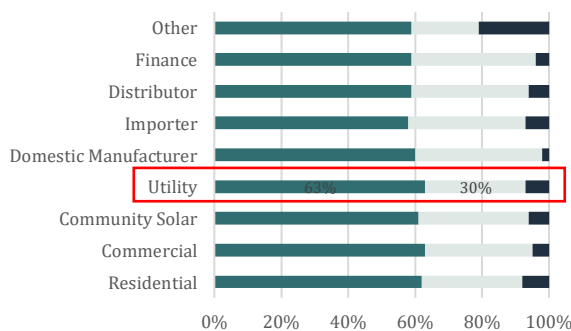
Source: Capital IQ, Team's Estimates

Figure 21: MGE Power Generation Mix By mW



Source: Capital IQ

Figure 22: Estimated Impact To Stakeholder After Implementation Of Solar Tariffs



Source: Department of Commerce

Historically, debt to asset ratio remained relatively unchanged at a range of 0.26x and 0.28x but is expected to increase minimally to 0.36x within the next 5 years (Fig 19). Similarly, debt to equity ratio made small increments throughout the past 3 years and is forecasted to reach 0.90x by the end of FY2027 (Fig 19). The increases can again be attributed to MGE's increased dependence on short-term borrowings. However, there is little cause for concern given that these financial leverage ratios remain within healthy levels as they fall well below the industry average. On the other hand, debt to EBITDA ratio is expected to experience wider movements, increasing from 2.85x in FY2022 to 3.93x in FY2027 (Fig 19). This is largely due to revenue growing at much slower pace than short-term borrowings. Without sufficient earnings for repayment, MGE would have to dip into its cash reserves to meet its debt obligations. Over time, without proper management, cash reserves would deplete leading to an increased default risk for MGE. Therefore, although debt to EBITDA ratio is currently healthy relative to the industry, investors should monitor it closely in the coming years.

Robust Interest Coverage Ratios

Interest coverage ratio improved from 5.76x in FY2020 to 6.16x in FY2022 as growth in earnings outpaced the increase in MGE's interest payments (Fig 20). However, this trend is expected to reverse from FY2023 to FY2027 as earnings growth remains muted while interest obligations balloon from greater short-term borrowings. Consequently, interest coverage ratio is forecasted to worsen in the next 5 years. Despite the worsening trend, interest coverage should remain robust with MGE well-positioned to meet its interest obligations.

Significant Refinancing Risk

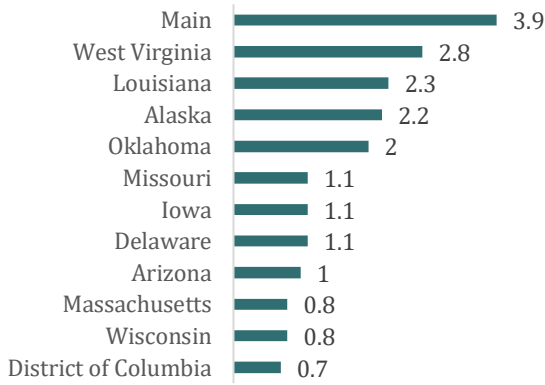
Total capital resources were not explicitly disclosed by MGE. Therefore, we used current assets (excluding prepaid expenses) and available credit facilities as a proxy of MGE's total capital resources which amounted to approximately US\$324.4m in FY2022. Out of which, US\$12.5m were cash and equivalents (including restricted cash) while US\$28.8m were undrawn credit facilities. Given that there was no mention that refinancing has been taken care of, the US\$49.3m debt due in FY2023 serves as the main source of refinancing risk for MGE (Fig 29). Despite undrawn credit facilities amounting to US\$58.8m (available credit was increased by US\$30m as of January 2023), interest on these credit facilities are pegged to either the prime or SOFR rates. While it may be easy for MGE to secure fresh loans, the interest rates on these loans are likely to be unfavourable given the current high interest rate environment; leading us to believe that MGE faces significant refinancing risk.

Recent developments

MGE's Move Towards Net Zero: Solar Acquisition

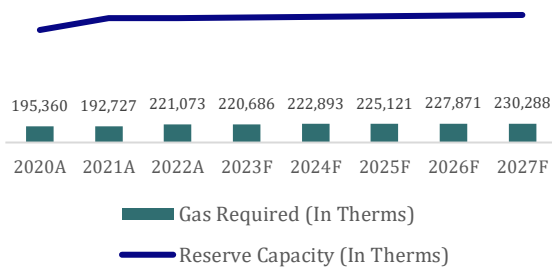
In a progressive move aimed at reducing carbon emissions by 80% by 2030, MGE has recently approved the acquisition of a partial stake in the Koshkonong Solar Energy Center. This strategic acquisition aims to bolster the company's solar energy capacity by 30 Megawatts (MW). This initiative isn't the first of its kind for MGE; it follows the 2022 purchase of Darien Solar, which had previously enhanced MGE's solar capacity by 25 MWs. The acquisition of the Koshkonong Solar Energy Centre is important as it enables MGE to supply clean energy to the rapidly growing populations of Rock and Walworth County. These counties have witnessed a steady increase in their populations, with Compound Annual Growth Rates (CAGR) of 0.6% and 2.5% respectively over the past three years. Additionally, the rate of new home construction in these areas has been on the rise, with a yearly growth of 1.5%, which shows the importance and timeliness of MGE's investment in sustainable energy solutions.

Figure 23: Number of Power Outages A Year



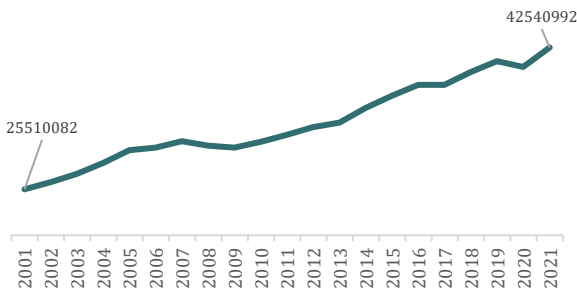
Source: Capital IQ, US Department of Energy

Figure 24: MGE Gas Distribution Capacity



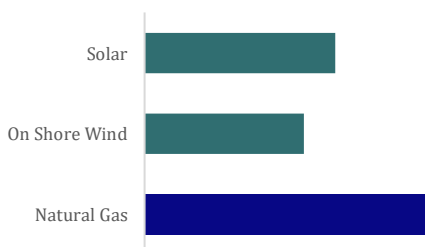
Source: Capital IQ, MGE Annual Report

Figure 25: Dane County GDP (2001 to 2021)



Source: US GOV Census

Figure 26: Cost Of Power Generated



Source: Statista

MGE’s Move Towards Net Zero: Decommissioning of Existing Coal Generation Power Plants

Besides acquiring more solar power generation capacity, MGE is also committed to decommissioning its existing coal-generation power plants. In 2021, MGE made a significant announcement about their environmental commitments. They plan to shut down a two-unit coal-fired generation plant by 2027. This decision aligns with MGE’s broader goal to retire all coal-fired power plants by 2035. The closure of this particular plant will reduce MGE’s current coal-fired generation capacity by two-thirds. Currently, coal purchases make up 20.45% of MGE’s total spending on fuel. However, projections indicate that this figure will decrease substantially, expected to fall to just 7.52% by the financial year 2026. This shift highlights MGE’s move towards more sustainable and environmentally friendly energy sources.

Macro: Solar Tariffs Disrupt Net Zero Expansion Plans

In 2022, the Department of Commerce (DEC) initiated a significant investigation into solar tariffs on panels imported from four Southeast Asian countries. This move has led to higher costs or delays in construction timelines for solar projects within the USA. As a result of this development, MGE, like many others in the industry, is facing the risk of delays and additional expenses that could push their solar project budgets beyond the initially approved levels.

The impact of this tariff investigation is widespread in the utility sector. According to a report done on industry players, 93% of utility providers anticipate that this tariff will have a devastating or severely negative effect on their business operations. This situation underscores the significant challenges that utility companies, including MGE, are facing in managing costs and timelines amidst changing regulatory landscapes.

Macro: Implementation of Grid Resilience Programs

The US Department of Energy has recently granted the Public Service Commission of Wisconsin (PSC) a substantial sum of over \$10 million. This funding is allocated for enhancing the resilience of power grids in the region. The investment will be used towards strengthening power lines and substations, as well as updating old microgrid and battery storage sites.

This financial boost is not just beneficial for the infrastructure but also opens doors for power grid operators and utility providers like MGE. They may be eligible for additional grants from the PSC. These grants would be instrumental in improving the design and efficiency of their power grids. Such support would enable companies like MGE to not only enhance their current operations but also to expand their services across the wider Wisconsin area, further solidifying the state’s energy infrastructure.

Other notables:

- On 3rd Nov 23, MGE reported Q3 2023 earnings of \$37.9 million, or \$1.05 per share, compared to \$33.7 million, or \$0.93 per share, for the same period in the prior year.
- This quarter’s results were driven by warmer than expected weather which led to increased retail sales.

Issuer Credit Analysis

Positives

1.MGE’s Shift Towards Renewables Reduces Their Long-Term Costs

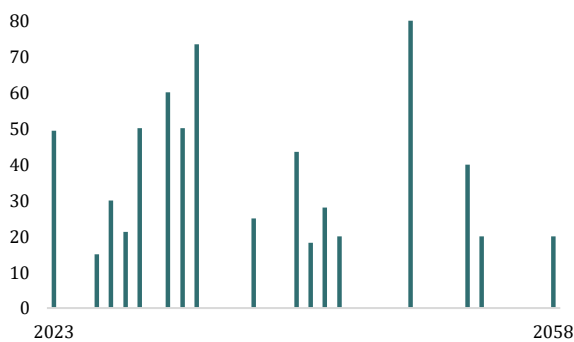
Figure 27: Number of Customer and Capacity

Source: Company Annual Reports

Company	Number of customers	Production Capacity (MW)
MGE	333,000	1,230
LNT	1,420,000	7,252
WEC	2,300,000	7,700
WPS	801,000	2,000

MGE has started the process of decommissioning its traditional fossil fuel plants. This move has been heavily influenced by both the obsolescence of existing power plants and the progress in renewable energy technologies, which make it more economically viable as a sustainable source of power production. These advancements have made power generation through renewable sources more economically viable than traditional methods. For example, solar power is approximately 33% less expensive than electricity generated from oil and gas, highlighting its reduced cost and efficiency.

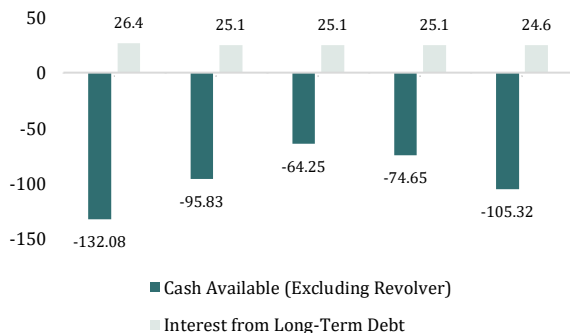
Figure 28: Maturity Schedule (2023-2058) (in mm)



Source: MGE Annual Report

This transition is anticipated to significantly reduce MGE's fuel expenses. Furthermore, MGE benefits from state and federal incentives, amounting to over \$200 million, for the development of new renewable energy projects. These incentives are instrumental in further reducing costs as MGE strives to achieve a net-zero carbon footprint by 2030. While initial capital expenditures may be high, MGE stands to benefit in the long run due to the large cost savings on power generated, which will improve their margins. Therefore, their shift towards renewables can be seen as a large credit positive for the company.

Figure 29: Cash Available and Interest Payments (in mm)

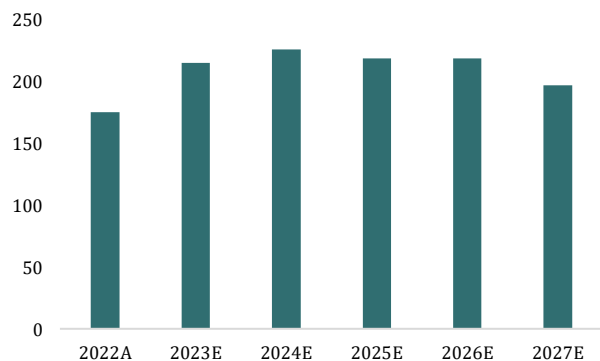


Source: NUS Invest Estimates

2. Anticipated Industrial Growth In Dane County, MGE's Largest Operating Geography

MGE stands to benefit from Wisconsin's growing industrial sector, especially in their main operating geography, Dane County. Wisconsin's industrial sector, which primarily encompasses agriculture and the manufacturing of food and beverages, represents the largest consumer of electricity in the state. This sector accounts for 31% of the total electricity usage, which is significantly higher than the consumption in 2011, which only accounted for 23.9% of the state's power consumption. Furthermore, the industrial sector in Wisconsin is expanding at a faster pace compared to other states. According to the National State of Manufacturers (2023), manufacturing employment in Wisconsin has grown by 1.6%, surpassing the national average growth rate of 0.9%. Furthermore, Wisconsin holds a significant position as the primary provider of power to Dane County. This is largely due to its well-established power distribution infrastructure, which is more advanced than that of its competitors. This advantageous position is likely to be further bolstered by the continued growth and development within Dane County

Figure 30: MGE's Forecasted Capex (in mm)



Source: MGE Annual Report

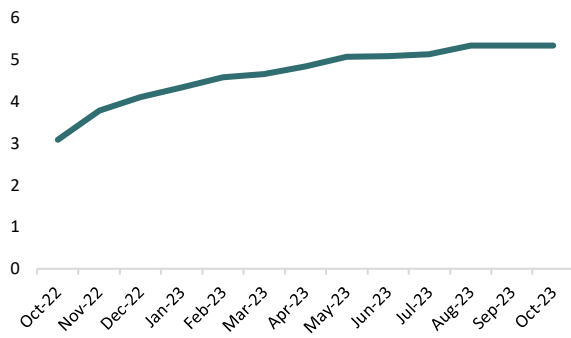
3. MGE's Ability to Provide For Consumer In Periods Of High Demand Due To High Reserves

MGE holds a significant reserve of natural gas, which positions it well to satisfy consumer demand, especially during peak periods such as winter. Historically, winter accounts for 56% of the annual gas consumption. Based on analyst estimates, climate change will increase Wisconsin's demand for additional electricity and gas for home heating. Therefore, MGE is well-placed to provide for its consumers and expand its market share.

MGE's competitive edge over other gas distribution companies in Wisconsin is underscored by its substantial gas reserves and favourable contract terms with its suppliers, ANR and Northern Natural Gas. These factors give MGE a distinct advantage in the market, setting it apart from its competitors.

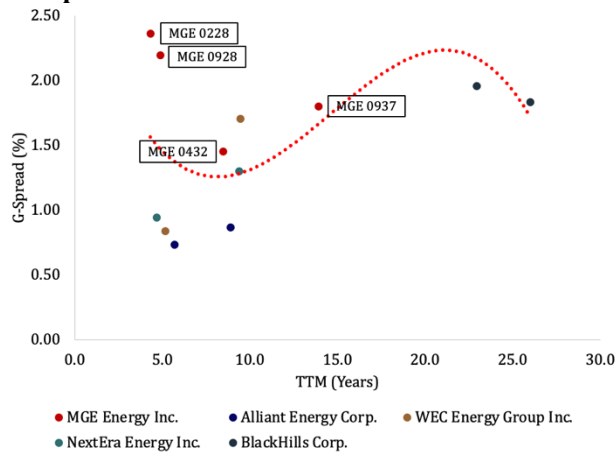
Having favourable contract terms also shields MGE from large cost shocks in the event of rising gas costs, which could be caused by geopolitical events, such as the Russia-Ukraine War, or by high inflation due to the current macroeconomic conditions.

Figure 31: Federal Funds Effective Rate (%)



Source: Capital IQ

Figure 32: Mean G-Spread Curve and Relative Valuation for Bond Issuances from MGE and Competitors



Source: Factset, NUS Investment Society

Negatives

1. Relatively Smaller Market Share Within Wisconsin

MGE's relatively small market share within Wisconsin, particularly in Dane County, compared to other major players in the region, presents several challenges that could negatively impact its creditworthiness. It serves a small customer base with at only 333,000 customers in both natural gas and electricity compared to other major players (Fig. 27).

Investors often perceive companies with smaller market shares as riskier investments compared to their larger counterparts. This perception can lead to higher borrowing costs for MGE, as lenders demand higher interest rates to compensate for the perceived increased risk.

MGE's smaller market share weakens its bargaining power with suppliers, potentially leading to higher input costs. Larger utilities with a more significant presence in the region can negotiate more favourable terms with suppliers, driving down their overall costs.

The revenue generated from a smaller customer base limit MGE's ability to invest in renewable energy infrastructure. Renewable energy projects often require substantial upfront capital expenditures, which can strain the finances of smaller utilities. MGE's limited market share may restrict its ability to allocate sufficient resources for these investments.

2. Large Proportion of Long Maturity Bonds

MGE's debt portfolio is heavily weighted towards long-maturity bonds (Fig. 28), a strategy that exposes the company to significant credit risks. These long-term obligations can hinder financial flexibility, restrict growth opportunities, and potentially jeopardize MGE's ability to achieve its sustainability goals.

Long-maturity bonds lock in interest rates for an extended period, making MGE vulnerable to interest rate fluctuations. If interest rates rise, refinancing these long-term bonds at higher rates will increase MGE's borrowing costs, straining its financial resources, and reducing profitability. The company may face difficulties in raising additional capital for growth opportunities or acquisitions in the renewables sector due to its already heavy debt burden. MGE's ambitious goal of achieving 80% carbon reductions by 2030 may be jeopardized by its reliance on long-maturity bonds. The high interest payments associated with these bonds can divert resources away from investments in renewable energy infrastructure and other sustainability initiatives.

The fixed interest payments associated with long-maturity bonds might also limit MGE's ability to absorb economic shocks. During periods of economic downturn, when revenue growth may slow or even decline, the company's debt servicing burden could become increasingly difficult to manage. With cash available before revolver borrowings being negative (Fig. 29), MGE will have to rely on revolver borrowings for repayment of their fixed interest payments. MGE may need to seek additional financing to meet its debt obligations, potentially at higher interest rates, further increasing its debt burden.

3. High Variable Interest Rate Risk

MGE's aggressive push into the renewables sector will demand substantial capital expenditures (Fig. 30). As projected by our financial models, their free cash flow will turn negative after accounting for working capital and capital expenditures, necessitating reliance on revolver borrowings to finance their expansion plans.

The Federal Reserve's stance on interest rates remains hawkish, with a 75.1% probability, according to the CME group, of interest rates remaining at their current elevated level of 5.33% (**Fig. 31**) and a 24.6% probability of a further hike at the January meeting. Since MGEE's short-term interest rates are pegged to the SOFR rate, which is linked to the FFR, this increase in short-term borrowing costs will directly impact MGEE's finances.

These short-term risks could potentially lead to the cancellation of some of MGEE's long-term projects. Additionally, these long-term projects might face significant cost overruns, causing MGE's net-zero goals to be jeopardized.

Issuance Analysis

Overview

Using the 4 outstanding issuances of MGE as well as competitors' issuances of similar maturities, we derived a G-spread curve with the following analysis and recommendations:

Underweight MGE 0228 & MGE 0928 vs MGE 0432

MGE 0228 7.54% YTW, MGE 0928 7.36% YTW and MGE 0432 6.56% YTW are currently trading at G-Spreads of 236bps, 220bps and 146bps respectively. The relatively similar G-Spreads of MGE 0228 7.54% YTW and MGE 0928 7.46% YTW is due to the 2 bonds maturing between months of each other. However, a 74-90bps spread underscores the significant premium that the 2028 bonds have over the 2032 bond. With a recession on the horizon and the unlikelihood of a V-shape economic recovery, we expect the premium to remain in the mid-term. Diving deeper into MGE's financials, we find that the premium could be largely driven by several loans that are due for repayment in the 5 years leading up to 2028 including the 2 bonds that are set to mature in that year. With MGE's weak projected cash flows, it may not be able to service all its loan repayments which suggests significant risk for holders of MGE 0228 7.54% YTW and MGE 0928 7.36% YTW. The default potential is aptly reflected in the actions of investors as they are approaching MGE 0228 7.54% YTW with great caution; although MGE 0228 7.54% is a senior secured loan while MGE 0928 is senior unsecured, the former is trading at a greater premium compared to the latter. Overall, the premiums that MGE 0228 7.54% YTW and MGE 0928 7.36% have over MGE 0432 6.56% is well-justified as they accurately reflect the increased risk of undertaking the 2028 bonds.

MGE's Outsized Risk Premium

Comparatively, MGE bonds are trading at significantly higher risk premiums than its competitors' bonds with similar TTM. This is observed in Figure X where all 4 of MGE bonds have "higher-than-average" G-Spreads; signalling greater risk of default and indicating that risk-averse investors should avoid holdings in MGE's bonds. We believe that the abnormal G-Spread of MGE bonds can be attributed to 2 main reasons.

Firstly, MGE's worsening liquidity position. Based on our financial analysis, it is expected to have poor liquidity throughout FY2023 to FY2027. This stems from the lack of cash flows which threatens MGE's ability to meet its debt obligations. With significant potential default risk, investors are naturally demanding for higher risk premiums.

Secondly, the untimely foray into a relatively new market. Despite experiencing rapid growth in recent years, various aspects of the renewables market are still in their early-developmental stage. The lack of proven reliability in using renewables for energy generation, unclear inherent opportunities of transitioning towards renewables and the downward pressure on gas revenues suggest significant

uncertainty surrounding MGE's future. Consequently, investors would naturally demand greater risk premiums.

Neutral MGE 0937 with Future Overweight Potential

MGE 0937 6.85% YTW is currently trading at a G-Spread of 180bps. Although this is above the projected mean G-Spread of issuances with similar maturity, MGE 0937 6.85% YTW holds an overweight potential as the relatively high risk premium may not be fully justified. Currently, 12% of MGE's energy supply mix is sourced renewably and according to its 2030 Energy Framework, this figure is expected to increase to 30% by 2030. This highlights a 18% growth in renewables usage within a 7-year window. Assuming that MGE continues its green efforts and is able to achieve another 15% growth (conservatively estimated) in renewables usage in the following 7 years, nearly half (45%) of its energy supply mix would be sourced renewably by 2037. MGE's transition to renewables would therefore have stabilised considerably. This would not only reduce the aforementioned uncertainties surrounding MGE's future but the company could also see greater cash flows as it achieves higher cost-savings from the use of renewables. Additionally, aside from another maturity wall of US\$73.4m in FY2033, does not have other debts due for repayment till FY2037. If MGE is able to clear that maturity wall either through refinancing or utilising its capital reserves, it would be primed to repay MGE 0937 6.85% YTW. Although there is significant potential for MGE 0937 6.85% YTW to become an attractive investment, several conditions have to be first fulfilled. Therefore, we recommend investors to monitor MGE 0937 6.85% YTW closely for now. If its G-Spread continues to remain at these levels even in the next few years, the risk premium may no longer be justified and we would then overweight MGE 0937 6.85% YTW.

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Appendix:

Pro Forma Financial Statements (3FS)

Income Statement

Financial Statements USD in millions, fiscal year ending December 31st	2020A	2021A	2022A	2023F	2024F	2025F	2026F	2027F
Income Statement								
Revenue	524.5	593.1	699.8	708.1	712.6	736.8	744.3	733.9
Other Revenue	-	-	-	-	-	-	-	-
Total Revenue	524.5	593.1	699.8	708.1	712.6	736.8	744.3	733.9
Less: COGS								
Fuel & Purchased Power	(84.6)	(94.0)	(106.2)	(106.2)	(104.8)	(106.1)	(104.3)	(101.3)
Other COGS	(95.3)	(89.3)	(103.1)	(106.2)	(106.3)	(110.5)	(111.6)	(110.1)
Total COGS	(180.3)	(182.9)	(214.3)	(212.4)	(211.1)	(216.6)	(216.6)	(211.4)
Gross Profit	383.6	410.2	452.5	495.7	501.0	520.1	527.7	522.5
Less: Operating Expenses								
Ops. & Maintenance	(186.4)	(198.8)	(209.3)	(233.7)	(235.2)	(243.1)	(245.6)	(242.2)
Selling General & Admin Exp.	-	(0.5)	(0.5)	(0.4)	(0.4)	(0.4)	(0.4)	(0.4)
Depreciation & Amort.	(74.2)	(77.0)	(85.5)	(106.7)	(112.2)	(108.5)	(108.6)	(97.7)
Total Operating Expenses	(260.6)	(276.3)	(295.3)	(340.7)	(347.7)	(352.0)	(354.6)	(340.2)
Operating Income	123.0	133.9	157.2	155.0	153.3	168.2	173.1	182.3
Interest Expense, Total	(23.5)	(24.1)	(26.6)	(37.2)	(41.0)	(44.4)	(48.4)	(53.5)
Interest and Invest. Income	-	-	-	-	-	-	-	-
Net Interest Exp.	(23.5)	(24.1)	(26.6)	(37.2)	(41.0)	(44.4)	(48.4)	(53.5)
Income/(Loss) from Affiliates	10.2	9.3	9.1	10.6	10.7	11.1	11.2	11.0
Allow. For Equity Funds Used During Const.	5.9	5.0	3.0	-	-	-	-	-
Other Non-Operating Inc. (Exp.)	(3.9)	(14.2)	(5.5)	-	-	-	-	-
Gain from Affiliates	12.2	0.1	6.6	10.6	10.7	11.1	11.2	11.0
Impairment of Goodwill	-	-	-	-	-	-	-	-
Other Unusual Items	-	-	-	-	-	-	-	-
Unusual Items	-	-	-	-	-	-	-	-
Profit from Cost. Ops before Tax	111.7	109.9	137.2	128.4	123.0	134.8	135.9	139.8
Income Tax Expense	(19.4)	(4.1)	(26.2)	(25.7)	(24.6)	(27.0)	(27.2)	(28.0)
Earnings from Cost. Ops	92.4	105.8	111.0	102.7	98.4	107.8	108.7	111.8
Earnings of Discontinued Ops.	-	-	-	-	-	-	-	-
Extraord. Item & Account. Change	-	-	-	-	-	-	-	-
Net Income to Company	92.4	105.8	111.0	102.7	98.4	107.8	108.7	111.8
Minority Int. in Earnings	-	-	-	-	-	-	-	-
Net Income	92.4	105.8	111.0	102.7	98.4	107.8	108.7	111.8

Balance Sheet

Balance Sheet	2020A	2021A	2022A	2023F	2024F	2025F	2026F	2027F
ASSETS								
Current Assets								
Cash And Equivalents	44.7	17.4	11.6	10.0	10.0	10.0	10.0	10.0
Accounts Receivable	68.3	81.0	98.5	80.8	91.4	94.5	92.4	94.1
Other Receivables	7.3	15.1	11.4	13.5	13.6	14.1	14.2	14.0
Inventory	47.3	52.0	74.3	54.2	54.0	55.3	55.3	54.0
Prepaid Exp.	15.2	20.2	19.1	21.3	21.5	22.2	22.4	22.1
Restricted Cash	0.6	0.8	0.9	0.9	0.9	0.9	0.9	0.9
Other Current Assets	25.5	11.8	27.7	38.3	54.7	76.8	108.0	151.7
Total Current Assets	209.5	199.3	243.5	229.7	246.1	279.8	306.3	346.8
Non-Current Assets								
Gross Property, Plant & Equipment	2,570.9	2,598.4	2,732.0	2,947.2	3,173.5	3,392.4	3,611.5	3,808.6
Accumulated Depreciation	(795.5)	(711.6)	(753.1)	(853.8)	(971.3)	(1,080.4)	(1,189.0)	(1,286.7)
Net Property, Plant & Equipment	1,775.4	1,886.8	1,978.9	2,093.4	2,202.2	2,312.0	2,422.5	2,521.9
Regulatory Assets	142.5	107.5	103.9	103.9	103.9	103.9	103.9	103.9
Other Intangibles	14.8	15.6	12.9	12.9	12.9	12.9	12.9	12.9
Long-term Investments	34.7	38.8	105.3	105.3	105.3	105.3	105.3	105.3
Deferred Charges, LT	1.3	3.6	3.1	3.1	3.1	3.1	3.1	3.1
Other Long-Term Assets	15.5	60.3	63.4	63.4	63.4	63.4	63.4	63.4
Total Non-Current Assets	2,044.2	2,172.6	2,274.1	2,382.6	2,496.8	2,607.2	2,711.7	2,811.1
Total Assets	2,253.7	2,371.9	2,517.6	2,612.4	2,742.9	2,881.0	3,024.0	3,164.0
LIABILITIES & EQUITY								
Current Liabilities								
Accounts Payable	54.6	64.1	53.3	53.0	52.8	54.1	54.1	52.8
Accrued Exp.	21.2	23.3	20.9	25.3	26.0	26.9	27.2	26.8
Revolver/Short-term borrowings	52.5	5.5	70.5	202.6	298.4	362.7	437.3	542.6
Curr. Port. of LT Debt	4.8	4.9	54.3	5.0	5.0	20.0	35.0	35.0
Curr. Port. of Leases	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Other Current Liabilities	55.6	19.8	19.8	33.3	39.5	40.9	41.3	40.7
Total Current Liabilities	190.9	117.8	225.0	327.0	423.0	505.7	536.1	639.1
Non-Current Liabilities								
Long-Term Debt	519.3	614.2	585.2	535.9	535.9	550.9	565.9	565.9
Long-Term Leases	23.4	25.3	25.0	25.0	25.0	25.0	25.0	25.0
Pension & Other Post-Retire. Benefits	18.2	73.1	53.6	53.6	53.6	53.6	53.6	53.6
Def. Tax Liability, Non-Curr.	253.3	276.0	300.9	300.9	300.9	300.9	300.9	300.9
Other Non-Current Liab., Total	212.6	238.0	246.1	246.1	246.1	246.1	246.1	246.1
Total Non-Current Liabilities	1,086.8	1,226.6	1,210.8	1,161.5	1,161.5	1,176.5	1,191.5	1,191.5
Total Liabilities	1,277.7	1,344.4	1,435.8	1,488.5	1,584.5	1,682.2	1,727.6	1,830.6
EQUITY								
Common Stock	36.2	36.2	36.2	36.2	36.2	36.2	36.2	36.2
Additional Paid In Capital	394.4	394.9	395.7	395.7	395.7	395.7	395.7	395.7
Retained Earnings	545.4	596.4	643.3	692.0	726.5	766.3	804.5	841.4
Treasury Stock	-	-	-	-	-	-	-	-
Comprehensive Inc. and Other	-	-	-	-	-	-	-	-
Total Equity	976.0	1,027.5	1,081.8	1,123.9	1,158.4	1,198.8	1,296.4	1,333.4
Total Liabilities & Equity	2,253.7	2,371.9	2,517.6	2,612.4	2,742.9	2,881.0	3,024.0	3,164.0

Cash Flow Statement

Cash Flow Statement							
Operating Cash Flows							
Changes in Accounts Receivable	(12.1)	(17.5)	7.7	(0.6)	(3.1)	(1.0)	1.3
Changes in Other Receivables	(8.8)	4.7	(2.1)	(0.1)	(0.5)	(0.1)	0.2
Changes in Investors	(4.7)	(22.3)	20.1	0.2	(1.3)	0.0	1.3
Changes in Prepaid Exp.	(5.0)	1.1	(2.2)	(0.1)	(0.7)	(0.2)	0.3
Changes in Restricted Cash	(0.2)	(0.1)	0.0	(0.0)	(0.0)	(0.0)	0.0
Changes in Other Current Assets	15.7	(15.9)	(11.2)	(15.8)	(22.2)	(31.1)	(43.7)
Changes in Accounts Payable	9.5	(4.8)	(6.3)	(0.2)	1.2	(0.0)	(1.3)
Changes in Accrued Exp.	2.1	(2.4)	5.0	0.2	0.9	0.3	(0.4)
Changes in Curr. Port. of LT Debt	0.1	43.4	(43.3)	-	15.0	15.0	-
Changes in Curr. Port. of Leases	-	-	-	-	-	-	-
Changes in Other Current Liabilities	(37.8)	-	20.5	0.2	1.3	0.4	(0.6)
Total Cash Flows from Operations	(43.2)	(7.8)	(17.9)	(16.2)	(9.3)	(16.8)	(42.8)
Investing Cash Flows							
Changes in Net Property, Plant & Equipment	(111.4)	(92.1)	(108.5)	(114.1)	(110.4)	(110.5)	(99.4)
Changes in Reclamation Assets	35.0	3.6	-	-	-	-	-
Changes in Other Intangibles	(0.8)	2.7	-	-	-	-	-
Changes in Long-term Investments	(4.1)	(7.1)	-	-	-	-	-
Changes in Deferred Charges, LT	(2.3)	0.5	-	-	-	-	-
Changes in Other Long-Term Assets	(44.8)	(9.1)	-	-	-	-	-
Total Cash Flows from Investing Activities	(128.4)	(101.5)	(108.5)	(114.1)	(110.4)	(110.5)	(99.4)
Financing Cash Flows							
Changes in Long-Term Debt	34.9	(29.0)	(43.3)	-	15.0	15.0	-
Changes in Long-Term Leases	1.9	(0.3)	-	-	-	-	-
Changes in Pensions & Other Post-Retire. Benefits	(5.1)	(19.5)	-	-	-	-	-
Changes in Def. Tax Liability, Non-Curr.	22.7	24.9	-	-	-	-	-
Changes in Other Non-Current Liab., Total	25.4	8.1	-	-	-	-	-
Changes in Common Stock	-	-	-	-	-	-	-
Changes in Additional Paid in Capital	0.5	0.8	-	-	-	-	-
Changes in Retained Earnings	51.0	53.5	42.1	34.5	40.4	37.6	36.9
Changes in Treasury Stock	-	-	-	-	-	-	-
Changes in Comprehensive Inc. and Other	-	-	-	-	-	-	-
Short-term borrowings/Revolver	(47.0)	65.0	132.1	35.8	64.3	74.6	105.3
Total Cash Flows from Financing Activities	144.3	103.5	124.9	130.3	119.7	127.3	142.2
Beginning Cash Balance	44.7	17.4	11.6	10.0	10.0	10.0	10.0
Net Cash Inflow/Outflow	(27.3)	(5.8)	(1.6)	-	-	-	-
Ending Cash Balance	17.4	11.6	10.0	10.0	10.0	10.0	10.0

Schedules

MGE Model USD in millions, fiscal year ending December 31st	2020A	2021A	2022A	2023F	2024F	2025F	2026F	2027F
Scenario	Base							
Revenue Assumptions								
Revenue	524.5	593.1	699.8	708.1	712.6	736.8	744.3	733.9
% growth	-	13.08%	17.99%	1.19%	0.63%	3.38%	1.02%	-1.40%
Other Revenue	-	-	-	-	-	-	-	-
% growth	-	-	-	-	-	-	-	-
Total Revenue	524.5	593.1	699.8	708.1	712.6	736.8	744.3	733.9
Fuel & Purchased Power Cost	(84.6)	(94.0)	(108.2)	(106.2)	(104.8)	(106.1)	(104.9)	(101.3)
% of revenue	16.13%	15.85%	15.46%	15.00%	14.70%	14.40%	14.10%	13.80%
Upside				14.00%	13.70%	13.40%	13.10%	12.80%
Base				15.00%	14.70%	14.40%	14.10%	13.80%
Downside				16.00%	15.70%	15.40%	15.10%	14.80%
Other COGS	(56.3)	(88.9)	(139.1)	(106.2)	(106.9)	(110.5)	(111.6)	(110.1)
% of revenue	10.73%	14.99%	19.88%	15.00%	15.00%	15.00%	15.00%	15.00%
Upside				15.00%	15.00%	15.00%	15.00%	15.00%
Base				15.00%	15.00%	15.00%	15.00%	15.00%
Downside				20.00%	20.00%	20.00%	20.00%	20.00%
Total COGS	(140.9)	(182.9)	(247.3)	(212.4)	(211.7)	(216.6)	(216.6)	(211.4)
Gross Profit	383.6	410.2	452.5	495.7	501.0	520.1	527.7	522.5
Ops. & Maintenance	(186.4)	(198.8)	(209.3)	(233.7)	(235.2)	(243.1)	(245.6)	(242.2)
% of revenue	35.54%	33.52%	29.91%	33.00%	33.00%	33.00%	33.00%	33.00%
Upside				30.00%	30.00%	30.00%	30.00%	30.00%
Base				33.00%	33.00%	33.00%	33.00%	33.00%
Downside				36.00%	36.00%	36.00%	36.00%	36.00%
Selling General & Admin Exp.	-	(0.5)	(0.5)	(0.4)	(0.4)	(0.4)	(0.4)	(0.4)
% of revenue	0.00%	0.08%	0.07%	0.05%	0.05%	0.05%	0.05%	0.05%
Upside				0.00%	0.00%	0.00%	0.00%	0.00%
Base				0.05%	0.05%	0.05%	0.05%	0.05%
Downside				0.10%	0.10%	0.10%	0.10%	0.10%
Depreciation & Amort.	(74.2)	(77.0)	(85.5)	(106.7)	(112.2)	(108.5)	(108.6)	(97.7)
% of CAPEX	-	50.27%	48.85%	49.56%	49.56%	49.56%	49.56%	49.56%
Total Operating Exp.	(401.5)	(459.2)	(542.6)	(553.1)	(559.3)	(568.6)	(571.2)	(551.6)
% growth	-	14.37%	18.16%	1.94%	1.12%	1.66%	0.43%	-3.43%
Operating Income	123.0	133.9	157.2	155.0	153.3	168.2	173.1	182.3
Interest Expense, Total	(23.5)	(24.1)	(26.6)	(37.2)	(41.0)	(44.4)	(48.4)	(53.5)
Interest and Invest. Income	-	-	-	-	-	-	-	-
Net Interest Exp.	(23.5)	(24.1)	(26.6)	(37.2)	(41.0)	(44.4)	(48.4)	(53.5)
Income/(Loss) from Affiliates	10.2	9.3	9.1	10.6	10.7	11.1	11.2	11.0
% of revenue	1.94%	1.57%	1.30%	1.50%	1.50%	1.50%	1.50%	1.50%
Upside				2.00%	2.00%	2.00%	2.00%	2.00%
Base				1.50%	1.50%	1.50%	1.50%	1.50%
Downside				1.00%	1.00%	1.00%	1.00%	1.00%
Allow. For Equity Funds Used During Const.	5.9	5.0	3.0	-	-	-	-	-
Other Non-Operating Inc. (Exp.)	(3.9)	(14.2)	(5.5)	-	-	-	-	-
Gain from Affiliates	12.2	0.1	6.6	10.6	10.7	11.1	11.2	11.0
Impairment of Goodwill	-	-	-	-	-	-	-	-
Other Unusual Items	-	-	-	-	-	-	-	-
Unusual Items	-	-	-	-	-	-	-	-
Profit from Cont. Ops before Tax	111.7	109.9	137.2	128.4	123.0	134.8	135.9	139.8
Income Tax Expense	(19.4)	(4.1)	(26.2)	(25.7)	(24.6)	(27.0)	(27.2)	(28.0)
Implied Tax Rate	-	-	-	20.00%	20.00%	20.00%	20.00%	20.00%
Earnings from Cont. Ops	92.4	105.8	111.0	102.7	98.4	107.8	108.7	111.8
Earnings of Discontinued Ops.	-	-	-	-	-	-	-	-
Extraord. Item & Account. Change	-	-	-	-	-	-	-	-
Net Income to Company	92.4	105.8	111.0	102.7	98.4	107.8	108.7	111.8
Minority Int. in Earnings	-	-	-	-	-	-	-	-
Net Income	92.4	105.8	111.0	102.7	98.4	107.8	108.7	111.8
Key Ratios								
Avg. Days Inventory Out.	-	99.1	93.2	93.2	93.2	92.2	93.2	92.2
Avg. Days Sales Out.	-	46.1	46.8	46.8	46.8	46.8	46.8	46.8
Avg. Days Payables Out.	-	118.4	91.1	91.1	91.1	91.1	91.1	91.1
Current Assets & Liabilities								
Inventory	47.3	52.0	74.3	54.2	54.0	55.3	55.3	54.0
Accounts Receivable	68.9	81.0	98.5	90.8	91.4	94.5	95.4	94.1
Other Receivables	7.3	16.1	11.4	13.5	13.6	14.1	14.2	14.0
% of revenue	1.39%	2.71%	1.63%	1.91%	1.91%	1.91%	1.91%	1.91%
Prepaid Exp.	15.2	20.2	19.1	21.3	21.5	22.2	22.4	22.1
% of revenue	2.90%	3.41%	2.73%	3.01%	3.01%	3.01%	3.01%	3.01%
Restricted Cash	0.6	0.8	0.9	0.9	0.9	0.9	0.9	0.9
% of revenue	0.11%	0.13%	0.13%	0.13%	0.13%	0.13%	0.13%	0.13%
Accounts Payable	54.6	64.1	59.3	53.0	52.8	54.1	54.1	52.8
Other Current Assets	25.5	11.8	27.7	38.9	54.7	76.8	108.0	151.7
% of growth	-	-53.73%	134.75%	40.51%	40.51%	40.51%	40.51%	40.51%
Other Current Liabilities								
Accrued Exp.	21.2	23.3	20.9	25.9	26.0	26.9	27.2	26.8
% of revenue	4.04%	3.93%	2.99%	3.65%	3.65%	3.65%	3.65%	3.65%
Short-term Borrowings	52.5	6.5	70.5	49.6	49.9	51.6	52.1	51.4
% of revenue	10.01%	0.93%	10.07%	7.00%	7.00%	7.00%	7.00%	7.00%
Curr. Port. of LT Debt	4.8	4.9	54.3	5.0	5.0	20.0	35.0	35.0
Change	-	-	-	(49.3)	-	15.0	15.0	-
Curr. Port. of Leases	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Other Current Liabilities	56.6	18.8	18.8	39.3	39.5	40.9	41.3	40.7
% of revenue	10.79%	3.17%	2.69%	5.55%	5.55%	5.55%	5.55%	5.55%
Non-Current Assets & Liabilities								
Gross Property, Plant & Equipment	2,570.9	2,598.4	2,732.0	2,947.2	3,173.5	3,392.4	3,611.5	3,808.6
Actual/Forecasted CAPEX	-	153.2	175.0	215.2	226.3	218.9	219.1	197.1
Accumulated Depreciation	(795.5)	(721.6)	(753.1)	(859.8)	(971.9)	(1,080.4)	(1,189.0)	(1,286.7)
Net Property, Plant & Equipment	1,775.4	1,886.8	1,978.9	2,087.4	2,201.6	2,312.0	2,422.5	2,521.9
Other Non-Current Assets								
Regulatory Assets	142.5	107.5	103.9	103.9	103.9	103.9	103.9	103.9
% of growth	-	-24.56%	-3.35%	0.00%	0.00%	0.00%	0.00%	0.00%
Other Intangibles	14.8	15.6	12.9	12.9	12.9	12.9	12.9	12.9
% of revenue	2.82%	2.63%	1.84%	1.82%	1.82%	1.75%	1.73%	1.75%
Long-term Investments	94.7	98.8	105.9	105.9	105.9	105.9	105.9	105.9
% of growth	-	4.33%	7.19%	0.00%	0.00%	0.00%	0.00%	0.00%
Deferred Charges, LT	1.3	3.6	3.1	3.1	3.1	3.1	3.1	3.1
% of growth	-	176.92%	-13.89%	0.00%	0.00%	0.00%	0.00%	0.00%
Other Long-Term Assets	15.5	60.3	69.4	69.4	69.4	69.4	69.4	69.4
% of growth	-	289.03%	15.09%	0.00%	0.00%	0.00%	0.00%	0.00%
Other Non-Current Liabilities								
Long-Term Debt	519.3	614.2	585.2	535.9	535.9	550.9	565.9	565.9
Change	-	-	-	(49.3)	-	15.0	15.0	-
Long-Term Leases	23.4	25.3	25.0	25.0	25.0	25.0	25.0	25.0
% of growth	-	8.12%	-1.32%	0.00%	0.00%	0.00%	0.00%	0.00%
Pension & Other Post-Retire. Benefits	78.2	73.1	53.6	53.6	53.6	53.6	53.6	53.6
% of growth	-	-6.52%	-26.68%	0.00%	0.00%	0.00%	0.00%	0.00%
Def. Tax Liability, Non-Curr.	253.3	276.0	300.9	300.9	300.9	300.9	300.9	300.9
% of growth	-	8.96%	8.02%	0.00%	0.00%	0.00%	0.00%	0.00%
Other Non-Current Liab., Total	212.6	238.0	246.1	246.1	246.1	246.1	246.1	246.1
% of growth	-	13.36%	3.40%	0.00%	0.00%	0.00%	0.00%	0.00%
Equity								
Retained Earnings	545.4	596.4	649.9	692.0	726.5	766.9	804.5	841.4
Net Income	92.4	105.8	111.0	102.7	98.4	107.8	108.7	111.8
Dividends	51.7	54.8	57.5	60.6	63.9	67.4	71.0	74.9
Dividends Growth	-	5.91%	4.95%	5.43%	5.43%	5.43%	5.43%	5.43%

Debt Schedule

Description	Term	Principal	Coupon/Interest Rate	Maturity Date	01/01/2023	01/01/2024	01/01/2025	01/01/2026	01/01/2027
					2023	2024	2025	2026	2027
Debt Schedule Overview									
Debt Balance by Maturity Year					152.4	55.8	64.8	74.4	482.3
Reserve Provisions					43.6	43.3	51.6	52.1	51.4
Capitalization of long-term borrowings					510.3	551.3	538.3	551.3	551.3
Long-term borrowings					741.6	641.6	641.6	641.6	722.6
Total Borrowings									
Debt Balance by Maturity					49.9	-	-	95.8	38.8
Less than 5 Years					45.8	-	-	-	-
Between 5-9 Years					421.3	641.6	641.6	627.7	532.4
Over 9 Years					747.6	641.6	641.6	627.7	722.6
Total Borrowings									
Debt					741.6	741.6	741.6	741.6	741.6
Total Interest Payments					24.4	25.1	25.1	25.1	24.6
Average Funding Cost					3.3	3.3	3.3	3.3	3.3
Coupon/Interest Payment Schedule									
Final Mortgage Pkgs	Mortgage Ind2	4.2	2.75	2028	8.4	8.4	8.4	8.4	8.4
Industrial/Development/Reserve Pkgs	Trn Exempt Btl	19.9	2.42	2023	8.4	-	-	-	-
HQE Excess MTR	Medium Term H	25.8	1.51	2028	1.2	1.2	1.2	1.2	1.2
HQE Excess MTR	Medium Term H	25.8	7.15	2032	1.8	1.8	1.8	1.8	1.8
HQE Excess MTR	Medium Term H	25.8	6.25	2037	1.6	1.6	1.6	1.6	1.6
HQE Excess Indstr Mkt-Parasites/Spgr	Long Term Mkt	38.8	3.35	2023	8.5	-	-	-	-
HQE Excess Indstr Mkt-Parasites/Spgr	Long Term Mkt	38.8	3.35	2025	8.5	8.5	8.5	8.5	8.5
HQE Excess Indstr Mkt-Parasites/Spgr	Long Term Mkt	38.8	2.92	2027	8.5	8.5	8.5	8.5	8.5
HQE Excess Indstr Mkt-Parasites/Spgr	Long Term Mkt	38.8	2.33	2023	1.5	1.5	1.5	1.5	1.5
HQE Excess Indstr Mkt-Parasites/Spgr	Long Term Mkt	38.8	2.33	2031	1.5	1.5	1.5	1.5	1.5
HQE Excess Indstr Mkt-Parasites/Spgr	Long Term Mkt	38.8	2.33	2032	1.4	1.4	1.4	1.4	1.4
HQE Excess Indstr Mkt-Parasites/Spgr	Long Term Mkt	38.8	5.75	2033	1.4	1.4	1.4	1.4	1.4
HQE Excess Indstr Mkt-Parasites/Spgr	Long Term Mkt	38.8	5.75	2035	8.7	8.7	8.7	8.7	8.7
HQE Excess Indstr Mkt-Parasites/Spgr	Long Term Mkt	38.8	2.82	2033	1.4	1.4	1.4	1.4	1.4
HQE Excess Indstr Mkt-Parasites/Spgr	Long Term Mkt	38.8	2.82	2040	1.8	1.8	1.8	1.8	1.8
HQE Excess Indstr Mkt-Parasites/Spgr	Long Term Mkt	38.8	5.85	2040	1.4	1.4	1.4	1.4	1.4
HQE Excess Indstr Mkt-Parasites/Spgr	Long Term Mkt	38.8	4.75	2041	8.3	8.3	8.3	8.3	8.3
HQE Excess Indstr Mkt-Parasites/Spgr	Long Term Mkt	38.8	2.82	2042	1.2	1.2	1.2	1.2	1.2
HQE Excess Indstr Mkt-Parasites/Spgr	Long Term Mkt	38.8	4.42	2043	8.3	8.3	8.3	8.3	8.3
HQE Excess Indstr Mkt-Parasites/Spgr	Long Term Mkt	38.8	4.42	2048	8.3	8.3	8.3	8.3	8.3
HQE Excess Indstr Mkt-Parasites/Spgr	Long Term Mkt	38.8	5.85	2052	1.5	1.5	1.5	1.5	1.5
HQE Excess Indstr Mkt-Parasites/Spgr	Long Term Mkt	38.8	4.25	2048	2.5	2.5	2.5	2.5	2.5
HQE Excess Indstr Mkt-Parasites/Spgr	Long Term Mkt	38.8	4.25	2053	8.8	8.8	8.8	8.8	8.8
HQE Excess Indstr Mkt-Parasites/Spgr	Long Term Mkt	38.8	4.35	2058	8.3	8.3	8.3	8.3	8.3
Total Interest Payments					26.4	25.8	25.8	25.8	24.6
Principal Payment Schedule									
Final Mortgage Pkgs	Mortgage Ind2	4.2	2028	-	-	-	-	-	-
Industrial/Development/Reserve Pkgs	Trn Exempt Btl	19.9	2023	19.9	-	-	-	-	-
HQE Excess MTR	Medium Term H	25.8	2028	-	-	-	-	-	-
HQE Excess MTR	Medium Term H	25.8	2032	-	-	-	-	-	-
HQE Excess MTR	Medium Term H	25.8	2037	-	-	-	-	-	-
HQE Excess Indstr Mkt-Parasites/Spgr	Long Term Mkt	38.8	2023	38.8	-	-	-	-	-
HQE Excess Indstr Mkt-Parasites/Spgr	Long Term Mkt	38.8	2025	-	-	-	38.8	-	-
HQE Excess Indstr Mkt-Parasites/Spgr	Long Term Mkt	38.8	2027	-	-	-	-	38.8	-
HQE Excess Indstr Mkt-Parasites/Spgr	Long Term Mkt	38.8	2031	-	-	-	-	-	38.8
HQE Excess Indstr Mkt-Parasites/Spgr	Long Term Mkt	38.8	2032	-	-	-	-	-	-
HQE Excess Indstr Mkt-Parasites/Spgr	Long Term Mkt	38.8	2033	-	-	-	-	-	-
HQE Excess Indstr Mkt-Parasites/Spgr	Long Term Mkt	38.8	2035	-	-	-	-	-	-
HQE Excess Indstr Mkt-Parasites/Spgr	Long Term Mkt	38.8	2033	-	-	-	-	-	-
HQE Excess Indstr Mkt-Parasites/Spgr	Long Term Mkt	38.8	2040	-	-	-	-	-	-
HQE Excess Indstr Mkt-Parasites/Spgr	Long Term Mkt	38.8	2041	-	-	-	-	-	-
HQE Excess Indstr Mkt-Parasites/Spgr	Long Term Mkt	38.8	2042	-	-	-	-	-	-
HQE Excess Indstr Mkt-Parasites/Spgr	Long Term Mkt	38.8	2043	-	-	-	-	-	-
HQE Excess Indstr Mkt-Parasites/Spgr	Long Term Mkt	38.8	2048	-	-	-	-	-	-
HQE Excess Indstr Mkt-Parasites/Spgr	Long Term Mkt	38.8	2052	-	-	-	-	-	-
HQE Excess Indstr Mkt-Parasites/Spgr	Long Term Mkt	38.8	2048	-	-	-	-	-	-
HQE Excess Indstr Mkt-Parasites/Spgr	Long Term Mkt	38.8	2053	-	-	-	-	-	-
HQE Excess Indstr Mkt-Parasites/Spgr	Long Term Mkt	38.8	2058	-	-	-	-	-	-
Total Payments					49.9	-	-	95.8	38.8
Change in Current Position of LY Debt					-49.9	0.0	95.8	95.8	0.0
Change in Long Term Debt					0.0	0.0	-95.8	-95.8	0.0
Resolving Capital									
Resolving Debt Schedule									
Call Acquisition of period (PPI)					11.28	12.88	12.88	12.88	12.88
Less: Maturity Cash Release					11.8	12.8	12.8	12.8	12.8
Net Proceeds from Issuance of Financing					-0.52	0.08	0.08	0.08	0.08
Resolving Cash Available (Resolving) in per from (from from from from)					107.88	135.91	134.23	134.23	135.23
Commercial Paper / Reserve									
Resolving of period					78.5	282.6	288.4	312.7	497.9
Draw / Payment					192.1	32.8	41.3	74.6	495.1
Operating Expenses (Resolving)									
End of period					288.6	299.4	312.7	497.9	542.6
Interest Income and Expense									
Total Interest Expense					12.5	12.4	12.5	12.5	12.5
Commercial Paper / Reserve									
Weighted average interest rate					5.33%	5.33%	5.33%	5.33%	5.33%
End of period (Resolving)					78.5	282.6	288.4	312.7	497.9
Interest expense					12.5	12.4	12.5	12.5	12.5
Long Term Debt					26.4	25.1	25.1	25.1	24.6
Interest expense									
					51,708	21,217	21,217	21,217	21,217
8.8%					(142.7)	(144.3)	(144.3)	(144.3)	(144.3)
2.3%					(158.7)	(188.5)	(155.3)	(158.8)	(151.3)
3.8%					(194.1)	(182.1)	(153.7)	(183.1)	(188.2)
5.9%					(193.1)	(191.8)	(184.2)	(174.2)	(186.2)
6.8%					(195.2)	(193.2)	(183.8)	(188.1)	(192.8)
5.80%					21,217	21,217	21,217	21,217	21,217
4.25%					(143.8)	(143.7)	(143.5)	(144.8)	(143.2)
4.88%					(145.8)	(145.4)	(145.5)	(145.8)	(146.4)
4.75%					(146.2)	(147.2)	(145.7)	(144.3)	(143.1)
2.38%					(147.4)	(148.3)	(145.3)	(144.2)	(142.8)
3.35%					(148.1)	(148.7)	(148.1)	(147.2)	(146.1)
4.88%					(149.3)	(152.1)	(148.3)	(145.8)	(143.1)
4.75%					(149.1)	(154.4)	(151.2)	(142.2)	(142.2)
5.88%					(149.2)	(153.8)	(144.3)	(144.8)	(148.5)
5.6%					(149.4)	(154.1)	(144.8)	(145.1)	(148.1)

Revenue Model

Total Revenue Model									
Electricity + Gas Model	2020A	2021A	2022A	2023F	2024F	2025F	2026F	2027F	
Electricity Revenue	387.3	415.9	443.5	437.7	424.0	436.9	434.7	416.1	
Gas Revenue	138.4	179.3	242.7	270.5	288.7	299.9	309.6	317.8	
Total Revenue	525.8	595.2	686.2	708.1	712.6	736.8	744.3	733.9	

Electricity Model									
Top Down Revenue Model	2020A	2021A	2022A	2023F	2024F	2025F	2026F	2027F	
Annual Energy Consumption (In MWh)									
Wisconsin	61,188,505.0	59,830,035.0	61,188,505.0	68,600,000.0	65,856,000.0	66,514,560.0	64,851,696.0	65,175,954.5	
% growth	0.00%	-2.22%	2.27%	12.11%	-4.00%	1.00%	-2.50%	0.50%	
Total Power Supplied	3,344,086.0	3,510,179.0	3,447,779.0	3,607,584.7	3,386,254.8	3,500,443.6	3,413,538.7	3,242,860.7	
Implied Market Share	5.47%	5.87%	5.63%	5.26%	5.14%	5.26%	5.26%	4.98%	
% growth	0.00%	7.35%	-3.96%	-6.67%	-2.22%	2.35%	0.02%	-5.47%	
Top Down Revenue Forecast	394.4	420.3	465.2	434.1	424.5	434.5	434.5	410.8	

Electricity Model									
Bottom-Up Revenue Model	2020A	2021A	2022A	2023F	2024F	2025F	2026F	2027F	
Breakdown of Consumers by number									
Total Consumers	177000	177000	177000	177000	177000	177000	177000	177000	177000
Retail Consumers	95.00%	95.00%	95.00%	95.00%	95.00%	95.00%	95.00%	95.00%	95.00%
Industrials & Commercial	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%

Bottom-Up Revenue Model									
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Residential Electricity Price	
Grid connection and customer service charge	0.493
	0.000
Distribution services	0.051
Electricity Service:	0.000
Flat	0.111
Retail Electric Price (USD/KWh)	0.162

Industrial and Commercial Electricity Price	
Grid connection and customer service charge	16.47
Distribution services:	0.01
Electricity Service:	0.00
On peak period 1 surcharge (10 a.m. to 1 p.m.)	0.02
On peak period 2 surcharge (1 p.m. to 6 p.m.)	0.03
On peak period 3 surcharge (6 p.m. to 9 p.m.)	0.02
Flat	0.07

Breakdown of Revenue	
Retail Consumers	0.41
Industrial and Commercial Consumers	0.59

Bottom-Up Revenue Model									
Revenue From Retail Consumers									
Grid connection and customer service charge for retail consumers	30.27	30.27	30.27	30.27	30.27	30.27	30.27	30.27	30.27
Grid Electricity Price For Retail Consumers	0.1368	0.1482	0.1597	0.162	0.1643	0.1665	0.1688	0.1710	
Revenue From Industrial and Commercial Consumers									
Grid connection and customer service charge for industrial & commer	53.19	53.19	53.19	53.19	53.19	53.19	53.19	53.19	53.19
Grid Electricity Price For Industrials & Commercial	0.0554	0.0554	0.0554	0.055	0.0560	0.0566	0.0572	0.0578	
Cost of Electricity Growth Rate									
Retail Consumers	1.34%	1.34%	1.34%	1.34%	1.34%	1.34%	1.34%	1.34%	1.34%
Industrials & Commercial	1.08%	1.08%	1.08%	1.08%	1.08%	1.08%	1.08%	1.08%	1.08%
Total Power Supplied (In MWh)	3,344,086.0	3,510,179.0	3,447,779.0	3,607,584.7	3,386,254.8	3,500,443.6	3,413,538.7	3,242,860.7	
Total Revenue From Selling Power	296.81	328.02	338.39	357.75	340.00	355.86	351.37	337.97	
Total Revenue From Distribution of Power	83.46	83.46	83.46	83.46	83.46	83.46	83.46	83.46	
Total Revenue To Firm	380.27	411.48	421.85	441.21	423.46	439.32	434.83	421.43	

Assumptions	
Number of days in a year	365
Thousand to millions conversion	1000
Dollars to millions conversion	1000000

Electricity Model									
Combined Model	2020A	2021A	2022A	2023F	2024F	2025F	2026F	2027F	
Top Down Model	394.4	420.3	465.2	434.1	424.5	434.5	434.5	410.8	
Bottom Up Model	380.27	411.48	421.85	441.21	423.46	439.32	434.83	421.43	
Weighted Average Model	387.3	415.9	443.5	437.7	424.0	436.9	434.7	416.1	

Gas Model									
Bottom Up Model	2020A	2021A	2022A	2023F	2024F	2025F	2026F	2027F	
Residential	88765	110442	143544	157621.8496	165566.0193	170565.8807	176102.4364	181529.3185	
Industrial and Commercial clients	49682	68895	99165	112850.1025	123096.9129	129300.8212	133497.9161	136262.7349	
Total revenue (In million USD)	138.4	179.3	242.7	270.5	288.7	299.9	309.6	317.8	

Assumptions	
dth to therms conversion	10
Therm to btu conversion	99976.1
Coverion from thousand to millions	1000

Electric Revenue Model Supporting

MGE Electricity Model							
MGE Top Down Revenue Supporting							
MGE Installed Capacity							
	Fuel Source	Alternative Fuel Source	Total Installed Capacity (MW)	Ownership Interest	Total Installed Capacity Available to Firm (MW)	Operational	Estimated In-Service Date
Plants							
Steam Plants:							
Blount	Natural Gas	-	100	100%	100	Yes	1961
Columbia	Coal	-	211	100%	211	Yes	1978
WCCF	Natural Gas	Oil	157	83%	130	Yes	2005
Edinboro Units	Coal	-	106	100%	106	Yes	2011
Sub Total	-	-	574	-	547	-	-
Combustion Turbines:							
Nine Springs	Natural Gas	-	16	100%	16	Yes	1964
Sycamore	Natural Gas	-	38	100%	38	Yes	1971
Fitchburg	Natural Gas	-	53	100%	53	Yes	1973
West Marinette	Natural Gas	Oil	90	100%	90	Yes	2000
Sub Total	-	-	197	-	197	-	-
Distributed Generators:							
Multiple Locations	Oil	-	60	87%	53	Yes	1998
Sub Total	-	-	60	-	52	-	-
Wind Facilities:							
Lincoln Red River	Wind	-	11	100%	11	Yes	1999
Top of Iowa	Wind	-	30	100%	30	Yes	2008
Forward	Wind	-	18	100%	18	Yes	2008
Surriage	Wind	-	66	100%	66	Yes	2009
Red Barn Wind Farm	Wind	-	9.2	10%	0.92	No	2024
Sub Total	-	-	125	-	125.92	-	-
Solar Facilities:							
Morrey Fields	Solar	-	6	87%	4	Yes	2020
Ther Creek	Solar	-	50	74%	37	Yes	2020
Dane County	Solar	-	10	70%	7	Yes	2020
O'Brien	Solar	-	22	64%	14	Yes	2021
Badger Hollow I	Solar	-	50	72%	36	Yes	2021
Hermesford	Solar	-	8	75%	6	Yes	2022
Badger Hollow II	Solar	-	76	33%	25.08	No	2024
Paris Solar	Solar	-	51	33%	16.83	No	2024
Garvin Solar	Solar	-	45	33%	14.85	No	2024
Koshkonong Solar	Solar	-	65	33%	21.45	No	2025
Sub Total	-	-	383	-	182.21	-	-
Grand Total	-	-	1,339.00	-	1,054.13	-	-

Total Installed Capacity Available to Firm (MW)	2020A	2021A	2022A	2023F	2024F	2025F	2026F	2027F	2028F	2029F
Steam Plants	547.0	547.0	547.0	547.0	547.0	547.0	547.0	547.0	547.0	547.0
Combustion Turbines	197.0	197.0	197.0	197.0	197.0	197.0	197.0	197.0	197.0	197.0
Distributed Generators	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0
Wind Facilities	125.92	125.92	125.92	125.92	125.92	125.92	125.92	125.92	125.92	125.92
Solar Facilities	0.0	48.0	98.0	104.0	104.0	104.0	104.0	104.0	104.0	104.0
Total Installed Capacity to Firm	821.9	869.9	1,019.9	1,029.9	1,029.9	1,029.9	1,029.9	1,029.9	1,029.9	1,029.9

Total MWh Contributed by Fuel Source	2020A	2021A	2022A	2023F	2024F	2025F	2026F	2027F	2028F	2029F
Coal	1,566,204.0	1,797,017.0	1,219,793.0	1,419,262.8	1,312,853.7	1,244,250.5	1,129,008.5	968,608.6		
% total non-renewable power produced	76%	82%	69%	53%	52%	47%	44%	41%		
Natural Gas	502,887.0	405,690.0	549,265.0	455,637.2	421,475.9	399,451.6	362,511.3	320,246.8		
% total power produced	24%	24%	23%	17%	17%	15%	14%	14%		
Renewable Sources	485,965.0	581,374.0	759,194.0	813,157.7	813,157.7	1,017,974.0	1,073,384.5	1,080,964.6		
% total non-renewable power produced	19%	21%	26%	26%	26%	28%	28%	28%		
Oil	472.0	84.0	475.0	475.0	475.0	475.0	475.0	475.0		
% total non-renewable power produced	0%	0%	0%	0%	0%	0%	0%	0%		
Purchased Power	789,058.0	726,008.0	919,052.0	919,052.0	838,292.5	838,292.5	848,139.4	872,565.7		
% total power produced	38%	37%	35%	35%	35%	35%	35%	35%		
Total Power Produced	2,555,028.0	2,784,171.0	2,526,717.0	2,588,527.7	2,547,862.3	2,662,151.1	2,565,399.3	2,370,295.0		
Total Power Supplied	3,144,086.0	3,610,179.0	3,447,779.0	3,607,584.7	3,386,254.8	3,900,443.6	3,413,138.7	3,242,860.7		

Combined Cycle Capacity Factor Calculation									
Number of hours in a year									
8,760									
Steam Plants, Combustion Turbines and Distributed Generators									
Renewable Sources:	44%	38%	39%	41%	41%	41%	40%	40%	40%

MGE Bottom Up Revenue Supporting									
Grid Pricing Model - Retail									
Grid connection and customer service charge	0.49315								
Distribution services	0.051								
Electricity Service	0.11118								
Retail Electric Price (USD/kWh)	0.65218								
Winter Pricing Modem Pricing Model									
Small Industrial - For demand between 200W and 200 kW	6.3109	6.3109							
Grid connection and customer service charge	0.01608	0.01608							
Distribution services:	0.01849	0.01826							
Electricity Service:	0.02775	0.01552							
On peak period 1 surcharge (10 a.m. to 1 p.m.)	0.02239	0.02966							
On peak period 2 surcharge (1 p.m. to 6 p.m.)	0.02798	0.02798							
On peak period 3 surcharge (6 p.m. to 9 p.m.)									
Flat									
Mid Industrial - For demand between 200W and 1000 kW	14.5	14.5							
Grid connection and customer service charge	0.0147	0.0147							
Distribution services:	0.02177	0.02154							
Electricity Service:	0.03103	0.0188							
On peak period 1 surcharge (10 a.m. to 1 p.m.)	0.02587	0.02294							
On peak period 2 surcharge (1 p.m. to 6 p.m.)	0.02894	0.02894							
On peak period 3 surcharge (6 p.m. to 9 p.m.)									
Flat									
Large Industrial - For demand greater than 1000W	23.5	23.5							
Grid connection and customer service charge	0.0264	0.0264							
Distribution services:	0.02022	0.01999							
Electricity Service:	0.02946	0.01725							
On peak period 1 surcharge (10 a.m. to 1 p.m.)	0.02432	0.02139							
On peak period 2 surcharge (1 p.m. to 6 p.m.)	0.02838	0.02838							
On peak period 3 surcharge (6 p.m. to 9 p.m.)									
Flat									
Breakdown of MGE industrial customers by energy usage	enue per segment	as a % of total							
Small Industrial - For demand between 200W and 200 kW	110,745,833.0	41%							
Mid Industrial - For demand between 200W and 1000 kW	0.0	0%							
Large Industrial - For demand greater than 1000W	119,047,459.0	59%							
Total	279,021,672.0	100%							
Grid Pricing Model - Weighted Average Based On Segment									
Grid connection and customer service charge	16.47	16.47							
Distribution services:	0.0117	0.0117							
Electricity Service:	0.0195	0.0193							
On peak period 1 surcharge (10 a.m. to 1 p.m.)	0.0288	0.0165							
On peak period 2 surcharge (1 p.m. to 6 p.m.)	0.0236	0.0207							
On peak period 3 surcharge (6 p.m. to 9 p.m.)									
Flat									
Typical Industrial Usage based on national average data									
Time	Demand (in MW)	% of total consumption							
0:00	459476.0	4%							
1:00	432853.0	4%							
2:00	411544.0	4%							
3:00	393229.0	3%							
4:00	384792.0	3%							
5:00	380719.0	3%							
6:00	386394.0	3%							
7:00	405805.0	4%							
8:00	424758.0	4%							
9:00	434712.0	4%							
10:00	464644.0	4%							
11:00	464964.0	4%							
12:00	482371.0	4%							
13:00	500536.0	4%							
14:00	515526.0	5%							
15:00	528611.0	5%							
16:00	538124.0	5%							
17:00	547175.0	5%							
18:00	551919.0	5%							
19:00	549341.0	5%							
20:00	549312.0	5%							
21:00	533777.0	5%							
22:00	515054.0	5%							
23:00	489202.0	4%							
Total	11338322.0	100%							
Average usage during peak period 1 (10 a.m. to 1 p.m.)	17%								
Average usage during peak period 2 (1 p.m. to 6 p.m.)	24%								
Average usage during peak period 3 (6 p.m. to 9 p.m.)	14%								
Average usage during non-peak periods	45%								
Weighted Average Cost Price of Electricity (in USD/Wh)									
Retail Consumers	0.162	0.162							
Industrials & Commercial	0.057	0.054							
Historical Madison Grid Pricing									
Year	Residential	Industrial & Commercial							
2020	14.3	7.3							
2019	14.4	7.4							
2018	14.4	7.6							
2017	15.1	7.9							
2016	15.2	8.0							
2015	15.3	8.2							
2014	15.0	8.2							
2013	15.1	8.3							
2012	15.0	8.3							
2011	15.1	8.5							
2010	15.0	8.1							
2009	14.3	8.1							
2008	13.9	7.8							
2007	13.3	7.6							
2006	13.2	7.4							
2005	12.6	7.0							
2004	12.1	6.6							

Gas Revenue Model Supporting

MGE Gas Model

Revenue Driver Assumptions

Yearly average household consumption (btu)	103000000
Yearly average household consumption (Therms)	1030
Yearly average industrial consumption (btu/sqft)	536500
Average sqft of an industrial facility	16000
Yearly average industrial consumption (btu)	8584000000
Yearly average household consumption (Therms)	85861

Gas Supply Calculation	2020A	2021A	2022A	2023F	2024F	2025F	2026F	2027F
Daily Max Gas Supply (in dth)								
ANR Pipeline Company	69,572.0	69,572.0	69,572.0	69,572.0	69,572.0	69,572.0	69,572.0	69,572.0
% growth	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ANR Storage	106,078.0	106,078.0	116,078.0	116,078.0	116,078.0	116,078.0	116,078.0	116,078.0
% growth	-	0.00%	9.43%	0.00%	0.00%	0.00%	0.00%	0.00%
Northern Natural Gas Company	66,378.0	80,410.0	80,410.0	81,214.1	82,026.2	82,846.5	83,675.0	84,511.7
% growth	-	21.14%	0.00%	1.00%	1.00%	1.00%	1.00%	1.00%
Total gas available for the year (in dth)	242,028.0	256,060.0	266,060.0	266,864.1	267,676.2	268,496.5	269,325.0	270,161.7
Total gas available for the year minus stock pile (in dth)	135,950.0	149,982.0	149,982.0	150,786.1	151,598.2	152,418.5	153,247.0	154,083.7
Total gas available for the year minus stock pile (in therms)	1,359,500.0	1,499,820.0	1,499,820.0	1,507,861.0	1,515,982.4	1,524,185.0	1,532,469.7	1,540,837.2

Distribution Network

Number of customers served	166,000.0	169,000.0	173,000.0	172,697.0	174,424.0	176,168.0	178,320.0	180,211.0
% growth	0.00%	1.81%	2.37%	-0.18%	1.00%	1.00%	1.22%	1.06%
Total number of retail clients	165,888.8	168,886.8	172,884.1	172,581.3	174,307.1	176,049.9	178,200.5	180,090.2
% of total	99.93%	99.93%	99.93%	99.93%	99.93%	99.93%	99.93%	99.93%
Total number of industrial and commercial clients	111.2	113.2	115.9	115.7	116.9	118.1	119.5	120.8
% of total	0.07%	0.07%	0.07%	0.07%	0.07%	0.07%	0.07%	0.07%
Underground pipes (in miles)	2,990.0	3,013.0	3,046.0	3,076.5	3,107.2	3,138.3	3,169.7	3,201.4
% growth	0%	1%	1%	1.00%	1.00%	1.00%	1.00%	1.00%
Customer per mile of pipes	55.5	56.1	56.8	56.1	56.1	56.1	56.3	56.3

Unit Economics	2020A	2021A	2022A	2023F	2024F	2025F	2026F	2027F
Total therms delivered								
Residential clients	102,477.0	100,173.0	114,162.0	113,962.1	115,101.7	116,252.6	117,672.6	118,920.5
% growth	0%	-2%	14%	0%	1%	1%	1%	1%
Industrial and Commercial clients	92,883.0	92,554.0	106,911.0	106,723.8	107,791.0	108,868.8	110,198.7	111,367.3
% growth	0%	0%	16%	0%	1%	1%	1%	1%
Total therms delivered to all clients	195,360.0	192,727.0	221,073.0	220,685.8	222,892.7	225,121.3	227,871.3	230,287.8

Check if gas demand is lower than supply Oversupply Oversupply Oversupply Oversupply Oversupply Oversupply Oversupply Oversupply

Revenue per therm sold

Residential	0.9	1.1	1.3	1.4	1.4	1.5	1.5	1.5
% growth	0%	27%	14%	10.00%	4.00%	2.00%	2.00%	2.00%
Industrial and Commercial clients	0.5	0.7	0.9	1.1	1.1	1.2	1.2	1.2
% growth	0%	39%	25%	14.00%	8.00%	4.00%	2.00%	1.00%