

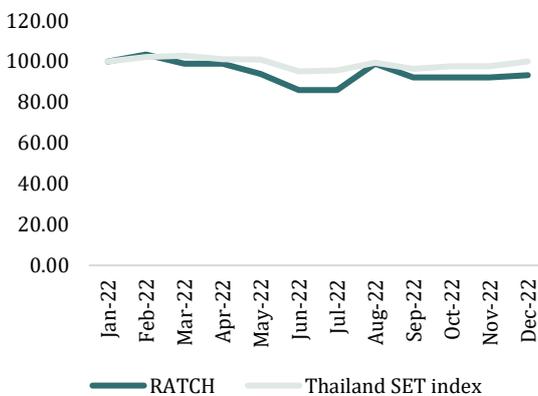
Analysts

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Basic Issuer Information

Issuer RATCH Group
 Equity Ticker SET:RATCH
 Corporate Ticker RATCH-R
 Rating (M/S/F) Baa1/BBB-/-
 Country of Risk Thailand
 Sector Power Producer

1Y Price (rebase to 100)



Company Description

RATCH engages in generation and sale of electricity in Thailand, Australia and internationally. The company operates through four segments: Domestic Electricity Generation, Renewable Energy, International Power Projects and Related Businesses and Infrastructure. It generates electricity through natural gas, coal, and oil as well as solar power, wind power, and biomass. RATCH also offers power plant operation and maintenance services and invests in the power energy business.

Key Financials

(THBm)	FY19A	FY20A	FY21F	FY22F
Revenue (b)	35.4	31.6	35.2	40.2
Gr Rate (%)	(2.1)	(10.7)	11.3	14.3
EBITDA (b)	0.90	0.09	0.68	(2.41)
Margin (%)	6.2	4.5	6.0	(2.0)
Debt/Op. Profit	45x	52x	112x	-27x
Op. Profit/Int	0.63x	0.06x	0.37x	(0.92x)
D/E Ratio	0.69x	0.85x	0.99x	0.85x

Key Executives

Mr. Boonyanit Wongrukmit Chairman
 Ms. Chosri Kietkajornkul CEO
 Mrs. Wadeerat Charoencoop CFO

Credit Shocks and Price Jolts

Recommendations

We are initiating coverage of Ratch Group Public Company Limited (SET:RATCH). We have given an issuer profile rating of “underweight” to RATCH’s credit outlook. We will be focusing on underweighting RATCH 4033, RATCH 4036 and RATCH 2292.

Recent Developments

- **Acquisition of Nexif and Denham’s asset portfolio** allows RATCH to expand their global base and increase their energy generation capacity significantly.
- **Investments into PRINC hospital** was a way for RATCH to diversify its investment portfolio but has yet to prove significant to boost RATCH’s portfolio.

Key Credit Considerations

Short-term deteriorating credit conditions due to adverse economic conditions and an incoming mountain of debt payments in the next few years pose a problem to RATCH’s financial stability, short term, especially because the company is unable to generate sufficient cash payments and will need to rely on revolver borrowings to service its debt.

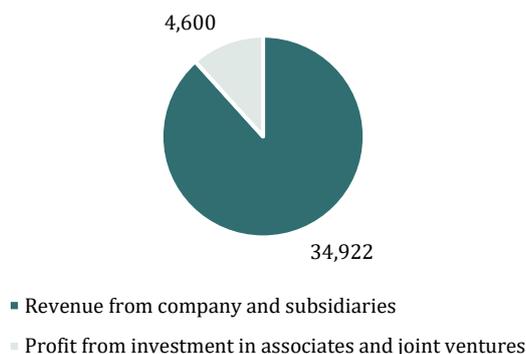
Credit Positives

- **Shifting focus into renewables** helps RATCH to prepare itself for Thai national carbon goals.
- **Increased issuance of green bonds** allows RATCH to reap the benefits of cheaper green bonds compared to its term loans. Although Thailand does not yet have green bond subsidies, it is expected that this will become policy in the medium-term, and green bonds are already cheaper than conventional ones in Australia.
- **Growth of EV Adoption in Thailand and Australia** provides a whole new stream of revenue generation.

Credit Negatives

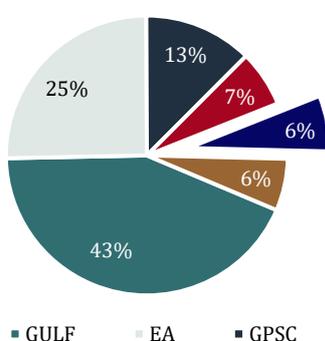
- **Heavy reliance on fossil fuels to generate energy** puts RATCH at a disadvantage because its peers have a much higher share of renewables in their energy mix than RATCH.
- **Uneven debt maturity schedule** makes RATCH’s cash position very volatile over the next 7-10 years, therefore hampering its ability to inject constant capital into an investment which would impede its growth and market position.
- **Rising energy and input cost** is a credit negative that RATCH does not have full control to mitigate, as it is driven by macroeconomic trends. However, this is also due to the nature of the contracts that RATCH has signed to supply power, which fixes its revenue earned per megawatt, but this is a disconnect from fluctuating input prices in the commodity market.

Figure 1. Revenue from RATCH's 2 main revenue streams (in THBm)



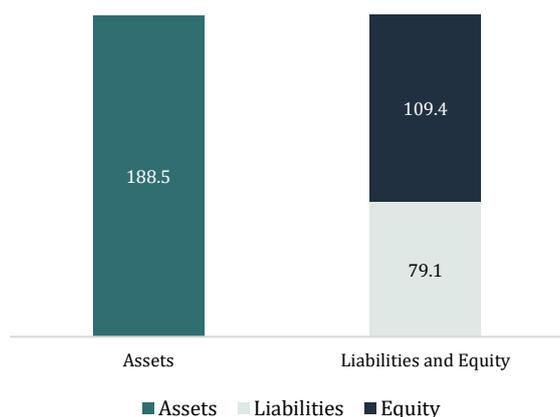
Source: Ratch Group Annual Report 2021

Figure 2. Market Capitalisation of Top 6 Thailand Utilities Companies (in THBb)



Source: Bloomberg

Figure 3: RATCH Balance sheet 2022 Q2 (in THBb)



Source: Ratch Group

Company Overview

RATCH Group was established 7 Mar 2000 and listed on 13 Oct 2000 on the Stock Exchange of Thailand as "RATCH". As of October 2022, RATCH has a market capitalisation of THB 84.8b with share price of THB 40.5. It has been rated BBB- with a stable outlook, down from BBB on 16 Sept 2022.

RATCH's core business is power generation for the Thai energy grid, mainly supported by their Thailand based fossil fuel plants consisting of 2 Independent Power Producers (IPPs) and 6 Small Power Producers (SPPs). Their secondary business involves an investment portfolio of projects in the Infrastructure, Energy-related and Healthcare sector (**Fig 1**).

The top 6 competitors in RATCH's competitive set are Gulf Energy Developments, Energy Absolute, Global Power Synergy, Electricity Generating, B.Grimm Power. RATCH has the 5th largest market cap in Thai utilities sector (**Fig 2**), producing 10.5% of Thai electricity at 5,491MW.

Revenue Streams

RATCH relies on two main revenue sources, revenue from energy production for the Thai energy grid from their power plants and subsidiaries (88% of revenue) and profits from joint ventures and their investment in associates (12% of revenue). However, as an electricity production company, it is unable to significantly vary the electricity cost charged to the consumer; these prices are usually pre-determined with Purchase Power Agreements between RATCH and the Thai government, to which a large proportion of the electricity cost is fixed. The implication is that in times of high electricity cost, RATCH will have to absorb the costs instead of being able to fully pass it onto the consumer, thus hurting their margins.

RATCH's has established an expansive global base of production plants to support a total equity capacity of 9,939.73 megawatts (MW), where a capacity of 7,842.76 MW is currently in operation and the remaining 2,096.97 MW under development. Their energy generation capacity is supported mainly through their IPPs and SPPs located in Thailand (5,491.10 MW). This is further supported by smaller energy projects, in order of capacity, based in Australia (1,590.89 MW), Lao PDR (1,420.20 MW), Indonesia (1,162.14 MW), Vietnam (251.49 MW), Philippines (21.90 MW) and Japan (2.02 MW).

Operating as a holding company, RATCH seeks to invest in core companies or joint ventures, subject to their shareholding proportion. Its investment is mainly focused on fossil fuel energy generation projects, renewable projects, with efforts to diversify their investment portfolio in non-energy related projects as well.

Recent Earnings Review

As of Q2 2022, RATCH has a reported THB 188.5b in assets, and a capital structure of THB 109.4b in equity and THB 79.1b in debt (**Fig 3**).

RATCH has managed to achieve a positive operating performance for the first half of 2022, with a 91% increase in revenue from its global power plants with an increased global capacity. Despite a 35% decrease in year-on-year profits due to increased fuel costs, RATCH has still been able to achieve a net income margin of 14%, above the 11% median amongst competitor companies. We expect this to impact RATCH's earnings outlook positively, but it still remains a question if they can sustain this performance, especially because it is largely dependent on macroeconomic factors outside of their control.

Figure 4: RATCH's Board of Directors

Members of the Board	
Chairman of the Investment Committee	Boonyanit Wongrukmit
Independent Director, Chairman of the Audit Committee	Chartchal Rojanaratanangkule
Independent Director, Chairman of the Human Resources and Remuneration Committee	Apichart Chinwanno
Chairman of the Corporate Governance and Social Responsibility Committee	
Independent Director	Kriengkrai Rukkulchon
Independent Director	Somboon Nhookeaw
Independent Director	Ratanachai Namwong
Independent Director	Boonsong Kerdklang
Director, Chairman of the Risk Management Committee	Nantika Thangsuphanich
Director	Suthon Boonprasong
Director	Prasertsak Cherngchawano
Director	Niramarn Laisathit
Director, CEO	Choosri Kietkajornkul

Source: Ratch Group Annual Report 2021

Figure 5: Key Members of RATCH's Management Team

Management Team Members	
Chief Executive Officer	Choosri Kietkajornkul
Chief Business Development Officer	Sakarin Tangka-vachiranon
Chief Project Development Officer	Boonchai Jarunwaraphan
Chief Asset Management Officer	Thana Boonyasirikul
Chief Financial Officer	Wadeerat Charoencoop

Source: Ratch Group Annual Report 2021

Figure 6: RATCH's Main Shareholders

Main Shareholders of RATCH	
Energy Generating Authority of Thailand (EGAT)	45.00
Thai NVDR Company Limited	6.85
EGAT Saving and Credit Cooperative Limited	4.99
Social Security Office	4.68
Southeast Asia UK (Type C) Nominees Limited	1.23

Source: Ratch Group Annual Report 2021

Ownership & Management

Board of Directors of RATCH

Headed by Chairman Mr Boonyanit Wongrukmit, the Board consists of 12 directors to represent shareholders' interests. 6 representatives from Energy Generating Authority of Thailand sit in the Company's 12-member Board of Directors.

Looking at the SASB materiality reports on the utilities sector, it highlights 2 key issues under the corporate governance pillar, critical incident risk management and systematic risk management. This has been addressed by the formation of a Risk Management Committee headed by Nantika Thangsuphanich who has been on the Board of Directors since 2019. The committee seeks to review, monitor and formulate risk mitigation strategies in order to ensure good corporate governance. Nantika Thangsuphanich has held positions in the Ministry of Energy and EGAT before joining RATCH and undergone a recognised course on corporate governance which points to RATCH's good corporate governance.

Management Team of RATCH

Headed by Choosri Kietkajornkul, the Chief Executive Officer of RATCH, the key management team consists of 5 executive committee members. From 2016 to 2021, Choosri Kietkajornkul held several management leadership positions within EGAT before assuming her role at RATCH since 2021. Despite her short tenure at RATCH, she has undergone recognised leadership, financial management and CEO certification programmes which are positive signs that she is equipped to manage the team at RATCH. She is supported by a team of experienced executives with an average tenure of 5.4 years in RATCH.

Shareholders of RATCH

Some of the major shareholders of RATCH are EGAT, Thai NVDR Company Limited, EGAT Saving and Credit Cooperative Limited, Social Security Office and Southeast Asia UK (Type C) Nominees Limited. These 5 shareholders make up 62.75% of the 2,174,999,985 shares issued by RATCH. It is important to note that the major shareholder, EGAT, is a state enterprise, operating in electricity business and related business including working with others to operate such business.

Industry Outlook

Thailand

A Historically Stable Industry

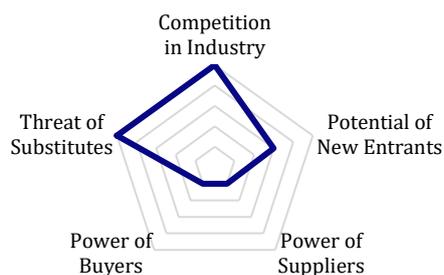
The utilities sector in Thailand has been a relatively stable industry with a CAGR of 2.68%, as noted through the porters five forces analysis. This is due to the high barriers of entry because of the capital intensity required to operate in the energy sector and the increasing demand for energy considering that Thailand is a developing nation. RATCH's and existing energy companies' position are further solidified by the fact that the Thailand government looks to limit the number of new entrants into the energy sector in Thailand to companies that contribute to the Thai energy grid, to achieve an energy mix that is reliable and diversified as a matter of policy.

Relatively attractive sector given Thailand's growth

Despite slowing growth in the energy sector due the macroeconomic impacts of COVID-19, the sector remains attractive due to Thailand's export-orientated economy with a rapidly growing energy-intensive manufacturing sector. As such, one can expect Thailand's electricity industry to continue growing to keep up with the growing demand of electricity from its growing economy.

Figure 7: RATCH's Competitive Outlook

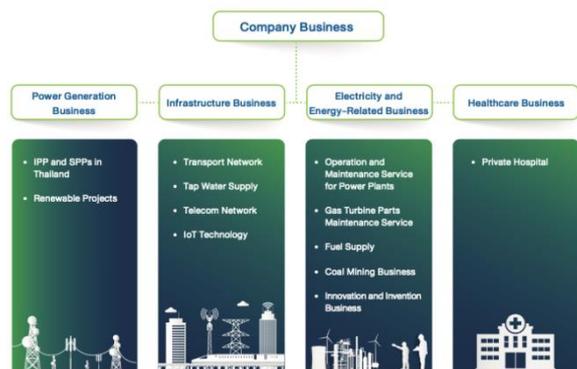
Porter's 5 Forces Analysis



Competition	High: Thai market saturated with many firms
New entrants	Mid: Requires high CAPEX to enter this industry
Power of suppliers	Low: Production to sales is vertically integrated
Power of buyers	Low: Buyers have virtually no choice of supplier
Substitutes	High: Electricity is highly commoditized

Source: NUS Investment Society

Figure 8: RATCH's Business Structure



Source: RATCH Annual Report 2021

Figure 9: RATCH Key Financials

	2019A	2020A	2021A	2022F	2023F	2024F	2025F
Profitability Ratios							
Underlying profit margin	6%	4%	6%	-2%	6%	6%	6%
ROA (Underlying profit)	6%	6%	5%	2%	4%	5%	5%
ROE (Underlying profit)	10%	10%	10%	4%	7%	8%	7%
Liquidity ratios							
Quick ratio	246%	243%	116%	86%	70%	104%	183%
Current ratio	270%	269%	125%	98%	80%	126%	206%
OCF ratio	18%	43%	2%	6%	-118%	-2%	
Solvency ratios							
Debt / Assets	41%	46%	50%	46%	39%	32%	31%
Debt / Equity	69%	85%	99%	85%	64%	48%	44%
Long-term debt / Equity	56%	74%	73%	60%	41%	38%	35%
Debt service coverage	63%	6%	37%	-92%	37%	76%	106%
Altman Z-score							
Working Capital / Assets	0.1	0.1	0.0	0.0	(0.0)	0.0	0.1
Retained Earnings / Assets	0.5	0.5	0.4	0.4	0.5	0.6	0.6
EBIT / Assets	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Equity / Liabilities	1.5	1.2	1.0	1.2	1.6	2.1	2.3
Revenue / Assets	0.4	0.3	0.2	0.3	0.3	0.3	0.3
Altman Z-score	2.1	1.8	1.4	1.7	1.9	2.4	2.5

Source: Bloomberg, Capital IQ, Ratch Group

Shift toward renewable energy and greater decarbonisation

As laid out in Thailand's Power Development Plan 2018, the renewables generating capacity will be increased, while the share of electricity coming from fossil fuels will be expected to fall over the 10 years between 2021 and 2030. These commitments were further reiterated in COP27 where Thailand raised their commitment to decarbonise at an accelerated rate by 2030 from 30% to 40% reduction in carbon emissions.

As part of this, the Thailand government is prepared to support power plants running on biomass or biogas and for waste-to-energy schemes to encourage the shift toward clean sources of energy. There will be greater efforts from the government to shift toward supplies of power from roof-top solar installations. In order to help balance supply of alternative energy, the Thailand government will seek to invest in the technology needed to store energy.

In summary, one can expect the overall investment in electricity generating companies to therefore accelerate from 2022 onwards. This would serve to greatly benefit energy companies with the operational capacity to handle the shift to renewables either through their investment and acquisition strategy or rescrutinising their energy generation methods.

Australia

Continued growth in the energy sector driven by green energy

Australia's electricity market CAGR stands at 2.5%. It also has a much larger 88.4 GW electricity market. The Australian power market is likely to grow in the future as well due to the growing power demand in the manufacturing and mining industries and the high availability of various fuel resources.

The tremendous growth of the IT sector in Australia also creates ample opportunities for the energy market; data centres operating in Australia are an exclusive feature of the sector which requires a reliable electricity supply. The establishment of such data centres are expected to increase in the future as well due to the increased uptake of internet of things infrastructure and technology integration. All these developments provide RATCH with increased opportunities for revenue growth that it can tap on.

Similar to Thailand, the renewables segment in Australia is projected to also have significant growth of 12% CAGR between 2022 and 2027. Renewable energy now accounts for up to 68.7% of the energy in the main grid, driven by industry incumbents like Origin Energy, AGL Energy and EnergyAustralia which have pushed forward the termination of their coal fired plants ahead of schedule. Comparing Thailand to Australia, Australia adopts a more aggressive shift toward green energy, driven by investors and government policies. Therefore, RATCH needs to focus on renewable energy projects in Australia to maintain their 1.8% share in the Australia energy market.

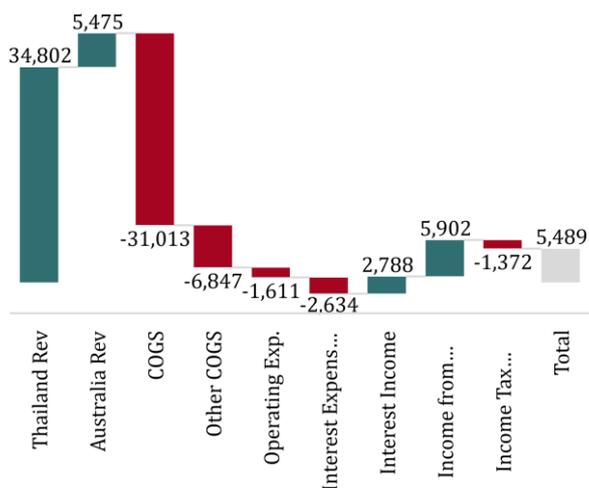
Financial Analysis

Overview:

The table on the left (Fig 9) highlights RATCH's key profitability, liquidity and solvency ratios for the past 3 years and forecasts expected performance through 2025 based on our model. Revenue for the past 3 years has stagnated with no growth, but this was largely due to the impact of the pandemic in 2020. Despite a 10.6% decline in revenue during this time period, RATCH made a speedy recovery in 2021. We expect RATCH to face turbulence profitability in 2022 due to exceptionally high fuel prices but return to its baseline from 2023 onwards.

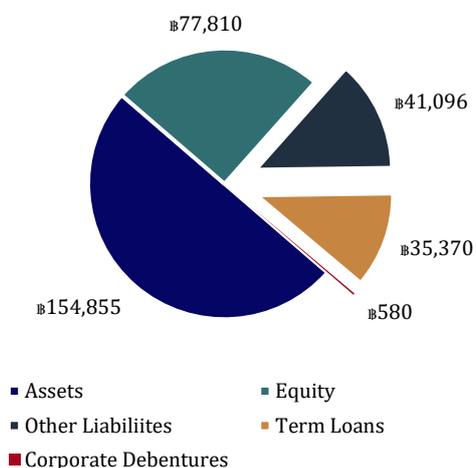
RATCH has increased its usage of debt to deploy it for capital expenditure during the pandemic which has significantly increased

Figure 10: 2022F Income Waterfall (in THBm)



Source: Bloomberg, Capital IQ, Ratch Group

Figure 11: RATCH 2021 Balance Sheet (THBm)



Source: Ratch Group

the company's leverage compared to its pre-pandemic levels. RATCH also faces 3 large debt repayments in 2022, 2023 and 2024 (Fig 14), which will negatively impact its solvency and liquidity ratios. However, due to the company's stable business model, the team is of the opinion that RATCH will emerge in a better financial position post-2028 assuming there are no major disruptions to their business. They will be able to tide through this season of financial difficulties by drawing on their revolver borrowings.

Flat Profitability Metrics

RATCH's profitability has remained constant for the past few years generating a profit margin of 4 to 6% annually. This is because most of RATCH's revenue is based on a long-term contract with EGAT, which pays a fixed amount plus a small variable amount that fluctuates based on inflation, fuel and labour costs. With limited upside on its revenue, in 2022, RATCH's profit margin is expected to drop to 2% due to rising fuel and variable maintenance costs which will result in a negative EBIT. While the team expects RATCH's profit margin to recover in 2023 as fuel costs slowly taper downwards, in the long run, the teams expect RATCH's revenue to stagnate due to the lack of development of additional power-generation capacity. RATCH's installed capacity is only expected to increase by 3% of their current equity-adjusted domestic installed capacity in the next 3-5 years. While there is a possibility of future acquisitions to boost RATCH's total installed capacity both domestically and internationally, it is unlikely that we will see a significant acquisition in the next few years considering the capital expenditures used in their recent acquisition of Nexif's THB 21,470m energy portfolio.

Increasing Financial Leverage Ratios

Over the past 3 years, RATCH has increasingly taken on more debt to finance capital expenditure. Total liabilities have increased from THB 40,816m in 2019 to THB 7,047m in 2021. This increase in debt is not proportionate to the growth in the company's equity or assets which has caused their debt ratios to increase substantially. RATCH's debt-to-asset ratio increased from 41% to 50% whilst their debt-to-equity (D/E) ratio increased from 69% to 99% over this period. This increase in debt is concerning for the company given the rising interest rate environment, which will make it more expensive to operate if RATCH is required to take on additional debt/refinance. A large portion of its current debt financing are also variable term loans, increasing RATCH's susceptibility to the interest rate hikes.

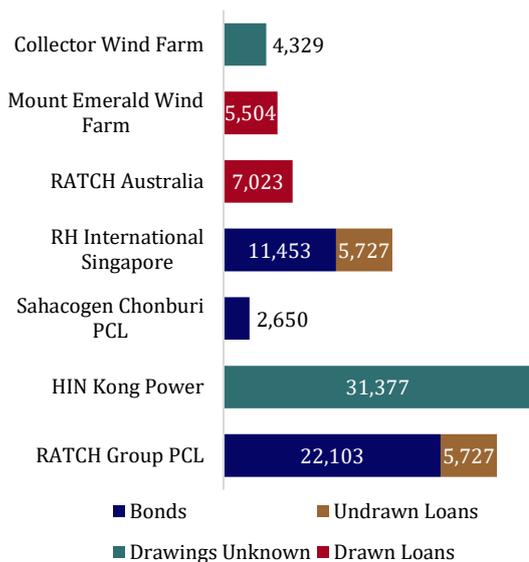
However, with a cumulative THB 31,265m of debt maturing in the next 3 years, we expect their debt ratios to recover to healthier levels if the company is successful in meeting these obligations. The company will be able to meet these obligations via its revolver borrowings, of which the amount borrowed still falls within what it has historically drawn from it.

Deteriorating Liquidity Ratios

RATCH has historically maintained a healthy quick and current ratio of 243% and 269% respectively through the pandemic in 2020, and still currently has relatively healthier D/E ratios compared to its peers (Fig 13).

However, RATCH is expected to face liquidity issues in 2022 and 2023 due to large debt repayments which will decrease its cash reserves. As a result, RATCH's current ratio is expected to drop to 98% and 80% in 2022 and 2023 respectively, signalling potential liquidity issues for the business. In addition, RATCH has also not announced plans to improve working capital or days turnover, which may exacerbate their liquidity problems.

Figure 12: Debt Position of RATCH and its Subsidiaries (THBm)



Source: Bloomberg, Capital IQ, Ratch Group

Figure 13: RATCH Debt-to-Equity Relative to Peers

Company	D/E (%)
BGRIM	263.6
GULF	202.9
GPSC	100.3
EGCO	94.7
RATCH	56.7
BPP	48.3

Source: Bloomberg, Capital IQ, Ratch Group

Past 2025, RATCH’s liquidity is expected to slowly recover as its debt payments taper downwards to more manageable levels, allowing the company’s bottom lines recovers. Thus, the expectation of the team is that these liquidity issues will only persist in the short term.

Uncertainty in Interest Coverage Ratio

Over the past 3 years, RATCH’s interest expense has grown from THB 1430.6m to THB 1868.1m, as the company takes on more debt. Historically, RATCH is generally unable to meet its interest payments on its operating income alone with a debt service coverage ratio of 63%, 6% and 37% from 2019 to 2021 respectively and relies on gains from its affiliates to generate sufficient cash flow to pay its interest expenses.

A larger potential concern is that the company is expected to generate a EBIT of –THB 2416.6m in 2022 due to a projected sharp rise in fuel prices, causing their interest coverage ratio to become negative amidst rising costs, which signals potential liquidity and solvency issues.

Moderate Risk of Bankruptcy

As shown in Fig 9, RATCH’s Altman Z-Score drops from 2.1 in 2019 to 1.4 in 2021 and is expected to remain at a depressed 1.7 in 2022. Generally, an Altman Z-Score of under 1.8 signals that a company is at significant risk of bankruptcy. There are a few key reasons why the company’s Z-Score has fallen so drastically. The first and largest contributing factor is the company’s increasing reliance on debt, as shown in its growing D/E ratio. Secondly, decreasing liquidity regarding its working capital due to large loan repayments. Lastly, a slowdown in its profitability driven by the pandemic and economic slowdown in 2022.

However, if RATCH can tide through this medium-term period of debt payoff and poor revenue, which will be done mainly by relying on revolver borrowings, it will be able to recover and emerge in an even better financial position than it did pre-2019.

Capital Structure and Debt Maturity

Overview

RATCH has healthy leverage as compared to its peers. However, RATCH may face issues in meeting the cash flow required to pay their debt obligations due to their volatile debt maturity schedule and must rely on their revolver to meet their obligations.

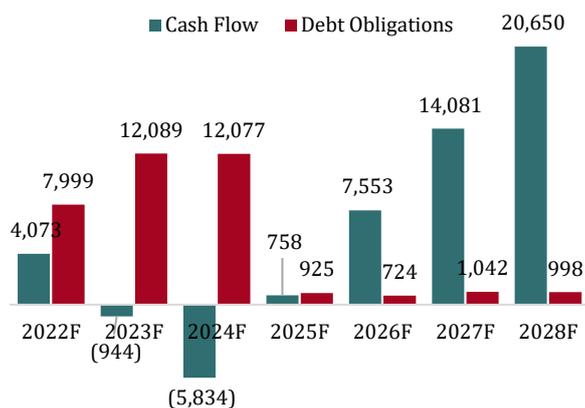
Capital Structure of RATCH & its Subsidiaries

RATCH and its subsidiaries’ debt mix include bonds, term loans, corporate debentures and revolver facilities. Across its subsidiaries, the amount and type of debt vary. The largest contributor to the group’s debt are HIN Kong Power and RATCH Group PCL, which account for THB 31,377m and THB 27,830m of debt respectively. (Fig 11 & 12).

Healthy Leverage Compared to Peers

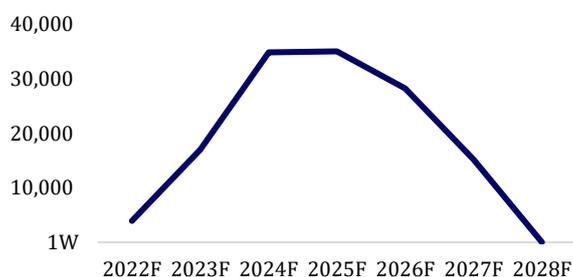
Companies within the utilities sector often rely heavily on debt to fund operations and purchase equipment to generate electricity. Compared to its peers, RATCH has a healthy amount leverage. As per Fig 13, RATCH has a better D/E ratio compared to its peers. This is because most of RATCH’s competitors have taken on more leverage in recent years to fund their transition into renewable energy generation, which RATCH has not done so aggressively. This therefore places RATCH in a favourable position to weather the uncertain macroeconomic and inflation environment of 2022.

Figure 14: Cash Flow and Debt Obligations (THBm)



Source: Ratch Group

Figure 15: Forecast Accumulated Amount Drawn on Revolver (in THBm)



Source: Ratch Group

Volatile Debt Maturity Schedule

RATCH has both term loans and corporate debentures that mature at wildly different times, making its yearly cash requirements to repay these loans very volatile as highlighted in **Fig 14**.

In 2022 through to 2024, RATCH will have to pay off THB 7,999m, 12,089m and 12,077m worth of debt obligations which is far greater than their operating cash flows for the period. As such, RATCH is expected not to have enough cash to service these loans and will have to rely on revolver borrowings to pay off these loans in the short to medium term. At the end of 2025, RATCH is expected to accumulate THB 35,000m on its revolver to pay for its cash flow shortfalls (**Fig 15**).

Long Term Stability on RATCH's Capital Structure

However, as the debts mature and the wave of principle payoffs start to wane, RATCH can handle the debt in the long-term, making enough cash in 2028F to successfully pay off all its debt, including past accumulated revolver debts. Past 2028, RATCH will also be able to refinance existing loans with a more stable maturity schedule which puts the company in a better financial position to meet their future obligations.

Recent developments

RATCH's investment strategy into energy businesses

Acquisitions of Nexif Energy and Denham's asset portfolio

On 5 May 2021, RATCH signed the contract to buy a 50% stake in Nexif Energy BT Pte. Ltd for USD 8.68m (approximately THB 272.58m). This investment decision was to allow RATCH to join the development of Nexif Energy Ben Tre wind power project in Vietnam, in efforts to fulfil their 6:4 renewable to non-renewable energy investment strategy.

This near-shore wind power project is operated by Nexif Energy Ben Tre One Member Co., Ltd., a subsidiary of Nexif Energy Pte. Ltd which is part of a 20-year purchase agreement with Vietnam Electricity (EVN). The project's construction is expected to take 18 months before the commercial operations can start in December 2022.

Subsequently in 2022, RATCH acquired Nexif energy and Denham's asset portfolio which would significantly allow RATCH to reach its 10,00MW target as well as increase RATCH's renewable capacity close to 25% target in 2025.

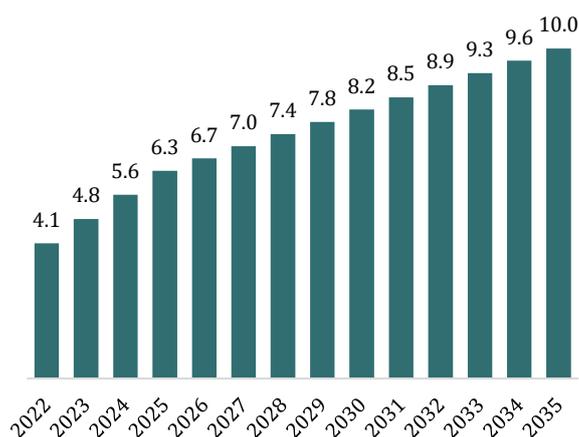
As the two acquired companies hold a stake in renewable power plants across Thailand, Australia, Vietnam and Philippines, this investment allows RATCH to cement its already expansive business base globally. At the same time, this presents growth opportunities to RATCH as RATCH and Nexif have agreed to form a joint company to pursue future projects.

RATCH's investment strategy into non-energy businesses

Investments into PRINC Hospital Sakon Nakhon

As part of RATCH's strategy to allocate 20% of investable capital into non-energy related businesses, RATCH has invested THB 463m into PRINC Hospital Sakon Nakhon. This is RATCH's first hospital joint venture as part of their aim to own a 20-hospital portfolio by 2023. However, revenue generated from this segment is almost insignificant in the short term, especially with a continually growing electricity market in Thailand, thus making their diversification efforts largely ineffective.

Figure 16: RATCH Greenhouse emission saving goals till 2035, in tCO₂e'mm



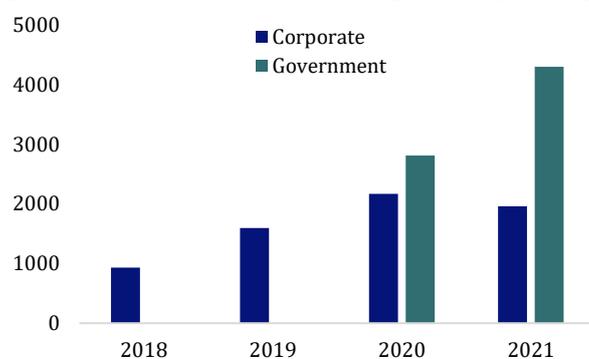
Source: Ratch Group

Figure 17: Growth of Thai carbon market

Fiscal Year	Trading Volume (tCO ₂ e)	Trading Value	Average price per tonne (THB)
2016	5,641	846,000	149.97
2017	33,468	1,006,000	30.06
2018	144,697	3,090,520	21.37
2019	131,028	3,246,980	24.78
2020	169,806	4,375,686	25.77
2021	286,580	9,714,193	33.90

Source: Thailand Greenhouse Gas Management Organisation

Figure 18: Growth and composition of the Thai green bond market, outstanding bonds (USD'm)



Source: Asian Development Bank

Issuer Credit Analysis

Positives

1. Shifting company focus onto renewables

RATCH has been shifting the company's focus into renewables with the global push for greener energy by traditional non-renewable energy companies. RATCH aims for an investment ratio of 3:2 of non-renewable to renewable energy by 2035, which will be done by adding 4,000 MW of renewables and increasing efficiency in its renewable plants, thereby cutting greenhouse emissions by 10m tCO₂e (Fig 16).

This is in-line with the plans by the Thai government to push the nation towards a greener future. At COP27, Thailand raised the target to reduce 40% of GHG emissions by 2030, 30% from internal local efforts and 10% from international efforts. Moreover, the Thailand Green Plan 2037 aims to have a 7:3 non-renewable to renewable energy ratio in the national grid.

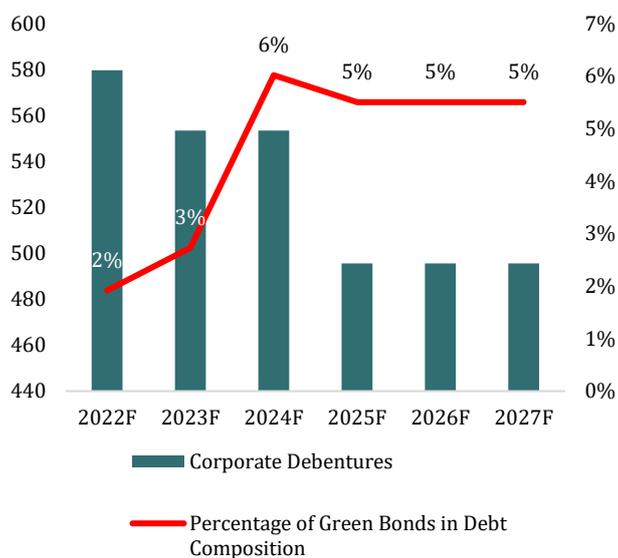
Therefore, RATCH's move into the green energy space will be beneficial for the company as firstly it can reap on financial benefits such as an 8-year uncapped tax and machinery tariff exemption, which is especially important for companies like RATCH operating in the utilities space which heavily relies on capital goods for the operation of its business – as of FY21, the amount of net PPE constituted 25% of its total assets and annual CAPEX hovers between THB 1.9b to THB 5.4b. Moreover, besides savings from the tax and machinery tariff exemption, this will also future-proof RATCH from potential future regulatory changes by the Thai government to implement schemes like a carbon tax or tradable carbon credits, which could very well be possible given that the Thai government just launched its first carbon credit exchange in September 2022 and desires to make Thailand the regional hub of carbon trading as it sees continued growth in the national carbon market (Fig 17).

2. Increased issuance of green bonds

RATCH has been increasingly relying on green bonds to finance its infrastructure spending, which, being a utilities companies, is a big part of the company's spending. This is objectively beneficial to RATCH as green bonds are cheaper than normal debt, as conventional term loans have an interest rate of 8 to 9% but green bonds have a rate of 1.5 to 6% for a company with a credit rating like RATCH. As of 30 September 2022, RATCH has allocated 99.78% of the THB 8,000m green debentures in financing and refinancing the green projects in Australia (Yandin and Collector wind turbine power plant), Vietnam (ECOWIN and Nexif wind turbine power plant) and Thailand (Pink and Yellow line monorail projects). This has allowed RATCH to obtain a stake no less than 50% in all 4 wind power plant projects. Out of the 4 wind turbine power plants, only 2 plants in Australia, Collector and Yandin, have started its commercial operation, which have reduced carbon emissions by 423,332 tCO₂e and 556,399 tCO₂e per annum respectively. As for the Pink and Yellow line projects that RATCH has a 10% stake in each, the construction of these transport lines have passed the Environmental and social impact assessments (ESIAs) and seeks to reduce Thailand's reliance on private vehicles which reduces overall carbon footprint.

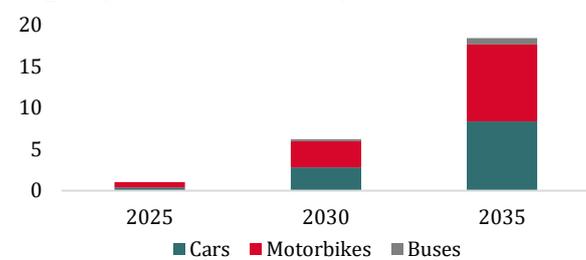
Moreover, the Thai government is keen to develop the domestic green bonds market. The government has already kick-started this by issuing its own green bonds, and it is also pushing local firms to issue green bonds. Since the first green bond issuance by a local Thai company for USD 60m in 2018, the Thai green bond market has grown at a CAGR of 88% between 2018 and 2021 (Fig 18), largely supported in growth by government issuances which in 2021 made up 68.7% of the total green bond market. This goes to show the

Figure 19: Composition of green bonds among total RATCH debt, in THBm



Source: Ratch Group

Figure 20: Breakdown of Thai EV production targets (in millions of units)



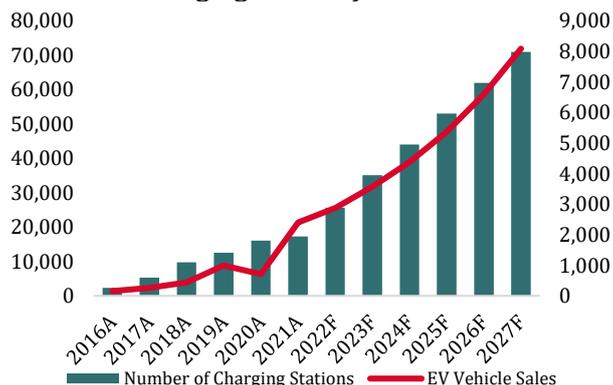
Source: KPMG

Figure 21: Examples of EV TukTuks available in Thailand



Sources: Coconuts, The Nation Thailand

Figure 22: Growth in Australian EV market (left axis refers to EV Vehicle sales, right axis refers to number of charging stations)



Source: Clean Energy Finance Group

commitment of the Thai government to develop the green bond market, which RATCH is in a good position to ride given its already extensive participation in the green bond market. In 2021, Thailand has also confirmed their developments on green taxonomy which seeks to prevent instances of green washing of corporate green bonds through stringent regulations. Therefore, to ensure the long term feasibility of RATCH's green bonds, it is likely that RATCH would not adopt greenwashing.

This also works synergistically with the plan to shift the company focus onto renewables, as this will open more projects to the possibility of green funding. Since 2020, RATCH has used green bonds to finance projects like wind farms and electric train lines, which sees high demand in Southeast Asia, with YoY growth of 50% in 2020 and 76.5% in 2021. As RATCH takes on an increasing amount of green debentures out of its total debt (Fig 19), it will be able to benefit from cheaper debt, increasing its interest coverage ratio and lowering its D/E ratio which makes it more financially secure.

3. Growth of electric vehicle adoption in Thailand and Australia

Electric vehicles (EVs) are taking the world by storm, and Thailand and Australia are also participating in the wave of EV adoption. Thailand has targeted close to 20m EVs in its cumulative production targets by 2035 (Fig 20), which roughly translates to an additional 12m kwh worth of electricity in Thailand alone, which means additional revenue streams for the traditionally stable electricity industry. Moreover, especially in Thailand, EVs have not been only used by the rich; even TukTuks are getting an electric overhaul (Fig 21), going to show the widespread popularity of EVs and the revenue-generating potential it creates for an electric company like RATCH.

In 2022, EV adoption in Thailand has also accelerated, as the Thai government has aggressively promoted the use of EVs, rolling out tax-related measures to encourage the buying of EVs, such as a reduction of import tax for EVs, and even offering subsidies for specific EV models. For example, battery EVs have dropped in tax rates from 8% to 2%, taxes for fuel cell EVs have fallen from 8% to 1%, and plug-in hybrid EVs have decreased from 8-26% to 5-10%. All these will only catalyse the adoption of EVs by the Thai consumer market – which currently looks positive as the industry grows at a CAGR of 22.52% between 2022-2027 – which bodes well for electricity companies like RATCH which stand to gain from increased electricity use.

This EV phenomenon is not limited to Thailand. Australia is also promoting EVs, setting the national target for new car purchases to be EV at 50% by 2030. The government has also provided various subsidies and grants for consumers wanting to buy EVs costing below AUD 50,000, with the most generous grants being offered by Canberra at AUD 6,708.

The increased adoption for EVs in Australia is helped by an increase in the number of charging stations available nationwide. This increase will certainly help to smooth the transition from traditional oil-powered cars to EVs. In 2021F, the number of charging stations stood at 1,939, which is projected to increase more than 4-fold to 7,981 in 2027F (Fig 22). With strong commitment from both the Australian government and EV companies in Australia to push for the rapid and widespread adoption of EVs, it will not be a surprise that electricity use from EVs will grow to be another revenue stream that RATCH can tap on.

Figure 23: Share of renewables in power generation among RATCH and its competitors

Player	Energy Sources	Share of Renewables
RATCH	Fossil fuels, solar, wind power & biomass	2.08%
GULF	Gas, biomass, solar & wind power	9.5%
GPSC	Thermal, hydro & solar power	37.6%
EA	Solar & wind power	100%

Sources: EA Annual Report, GULF, GPSC Annual Report, Ratch Group

Figure 24: Breakdown of RATCH cost drivers

SGA Items	2021 Amt (THB'000)	% of total
Fuel Cost	26,892,610	77%
Depreciation Exp	2,104,479	6%
Maintenance Fees	1,675,259	5%
Repair Expense	1,354,976	4%
Employee Benefit	707,117	2%
GA Expense	407,769	1%
Insurance Premium	440,098	1%
Consultant Fees	297,706	1%
Others	938,235	3%
Total	34,820,360	100%

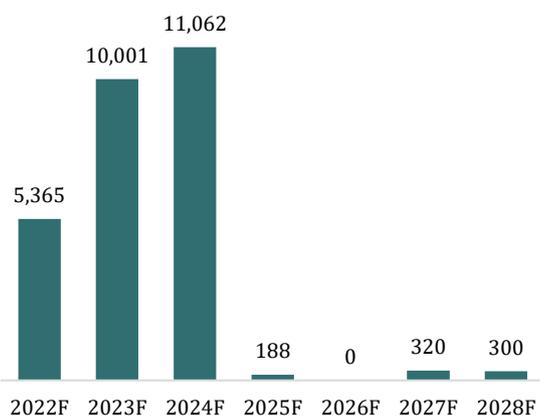
Source: Ratch Group

Figure 25: Global natural gas prices (USD)



Source: Trading Economics

Figure 26: RATCH's net debt repayment schedule (inclusive of both interest and principal, in THBm)



Source: Capital IQ

Negatives

1. Continued heavy reliance on fossil fuels to generate electricity

Despite existing efforts to push for the adoption of renewable energy generation, RATCH is still losing out to its competitors in terms of the share of electric generation that is produced by renewables. Among its key competitors, its share of renewables out of its total energy mix is one of the lowest (**Fig 23**). This could put RATCH at a disadvantage as the company might lose out on revenues if the government chooses to contract other players for their renewables mix over RATCH. This can very much be a possibility as the Thai government has already demonstrated great interest and ambitious goals in bringing the country carbon neutral by 2050, as announced in COP26. As these are typically long-term, decade-long contracts, RATCH cannot to lose out on any of these huge revenue-generating opportunities from the government.

Moreover, from a cost perspective, RATCH's largest cost driver is fuel costs (**Fig 24**), so heavy reliance on fossil fuels with wildly fluctuating prices hurts its margins, especially since as an electricity production company it cannot simply raise prices anytime as electricity prices to consumers are heavily managed by the government.

2. Rising energy and input costs

As mentioned, RATCH's largest cost driver is fuel cost, and for both FY20 and FY21, that constituted 77% of its SG&A expense (**Fig 24**), and already for 1Q22 & 2Q22, RATCH reported higher expenses due to increasingly volatile energy prices. Moreover, this cost is variable, being dependent on global macroeconomic and geopolitical forces that determine the fuel costs. This poses a problem for RATCH because it will be forced to absorb the heightened costs instead of being able to pass it to the consumers, as electricity pricing is largely government-controlled and does not operate in the typical free-market fashion where prices are determined by market forces of demand and supply. This is compared to their revenue which is determined by the availability of hours each year and is fixed through a Power Purchase Agreement. As such, heightened input costs especially rising fuel prices continues to pose a threat to the bottom-line of RATCH as fuel prices are increasingly on the rise (**Fig 25**), with the most recent factor driving the rise in natural gas prices being the Russian-Ukraine War, which increased European imports of natural gas from global sources away from Russia, therefore raising prices for buyers in other geographies.

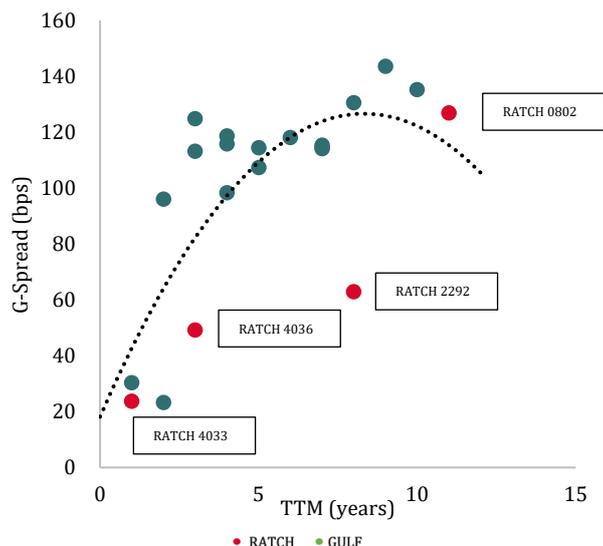
The impact of heightened energy prices is exacerbated by the fact that most of their power plants are combined cycle power plants which generate electricity using natural gas. This lack of diversification, which was once beneficial to RATCH in times of cheap natural gas, now serves as a bane that ties the company's net profits largely to the movements of global natural gas prices.

This also has long-term implications because RATCH has a 25-year agreement to buy natural gas from PTT Public Company at an agreed quality and fixed price, however this arrangement is set to end in 2025. If natural gas prices stay at elevated levels, RATCH may be forced to renew its gas contract at a higher price, which will cut RATCH's net profit margins for the next 25 years.

3. Uneven debt maturity schedule

RATCH has accumulated debt that matures at very different times, creating volatility in its cash flows in those years with principal repayment obligations (**Fig 26**). The peak of these repayment obligations culminative in 2024F, where RATCH has to repay THB 11.1b of long-term loans. This puts a strain on RATCH's ability to service/refinance its debt. Financial projections also reveal that

Figure 27: Mean yield curve and relative valuation for issuances from RATCH, its subsidiaries and comparable companies (GULF)



Source: Capital IQ, NUS Investment Society

Figure 28: Bond Issuances of RATCH and its subsidiaries

Issuer	Principal	Coupon (%)	Maturity Date
RATCH	26.3	1.32	Nov-04-2023
SCG	18.4	3	Sep-22-2025
RATCH	39.4	1.76	Nov-04-2025
RH Intl	300.0	4.5	Mar-27-2028
SCG	14.4	3.98	Sep-22-2029
RATCH	39.4	2.61	Nov-04-2030
SCG	36.7	4.26	Sep-22-2032
RATCH	105.0	2.94	Nov-04-2035

Source: Capital IQ

RATCH will not generate sufficient cash flow to repay these debt obligations in 2022F, 2023F, 2024F and 2025F, and will have to rely on revolver borrowings to pay off these debt.

This is compounded by rising interest rates worldwide, due to the US Federal Reserve hiking interest rates aggressively to combat domestic inflation. This has a greater impact on RATCH's term loans as they are usually pegged to a benchmark rate plus a premium.

Issuance Analysis

Thai Outstanding Bonds of RATCH and its Subsidiaries

From outstanding Thai issuances of RATCH, its subsidiaries and its competitor GULF, we derive a fair G-spread curve with the following recommendations:

Overweight RATCH 0802 vs RATCH 2292

RATCH 0802 4.558% YTW is trading at a G-Spread of 126.90 bps while RATCH 2292 3.658% YTW is trading at a G-spread of 62.93 bps. This reveals a 63.97 bps spread between the two bonds, with RATCH 0802 4.558% YTW displaying a comparative premium relative to RATCH 2292 3.658% YTW despite the similarities between the fundamentals of the two bonds as both are issued by RATCH.

Underweight RATCH bonds vs GULF bonds

Compared to GULF, generally RATCH bonds are of a lower risk because most of their bonds have a smaller G-spread. This hints that RATCH has a lower risk of defaulting, being a better option for risk-averse investors. This can be attributed to the fact GULF's traditional energy generation only uses natural gas – which is experiencing a price hike because of the Russo-Ukraine War – whilst RATCH has a range of sources from coal to oil to natural gas. Therefore, this makes GULF's revenue more volatile compared to RATCH, which could explain the premium. RATCH has also yet to announce plans to build/acquire power plants to accommodate the growth of EV usage and are still heavily reliant on conventional energy generation methods. The risks that RATCH takes on by venturing into the renewable energy space are little compared to GULF, and thus RATCH bonds have a smaller risk premium.

Given this, we would still underweight RATCH bonds over GULF bonds because GULF has a greater mix of renewable energy in their energy production of 9.5% compared to RATCH with only 2.08%. Natural gas is also comparatively a cleaner form of energy compared to fossil fuels which RATCH heavily relies on to contribute to their energy production. This hints at the fact that RATCH is much less equipped to be a key player in the growing renewable energy space in Thailand compared to GULF.

Underweight RATCH bonds with a TTM of less than 8 years vs RATCH bonds with TTM of more than 8 years

According to the mean yield spread chart of RATCH issuances, RATCH bonds with a TTM of less than 8 years are all below the mean yield curve, while only one bond, that is RATCH 0802 with a TTM of more than 8 years, lies above the mean yield curve. This may be due to uncertainty in RATCH's performance in the near-term, which will face significant headwinds such as volatile and rising fuel costs which will hurt the company's net income, as well as an uneven debt maturity schedule that RATCH is forecasted to not be able to generate sufficient cash to pay off without the help of its revolver borrowings. However, we are confident that RATCH will eventually tide through these short-term uncertainties.

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Appendix:

Thailand Revenue Model

Domestic Grid Electricity Cost		2019A	2020A	2021A	2022F	2023F	2024F	2025F	2026F	2027F	2028F
Assumptions											
Base Grid Electricity Price of household /Kwh	3.73										
Base Grid Electricity Price of businesses /Kwh	3.64										
Average annual variable fuel tariff		(0.116)	(0.119)	(0.153)	0.399	0.348	0.356	0.372	0.391	0.409	0.428
Grid Electricity Price of household /Kwh	3.610	3.607	3.573	4.125	4.075	4.083	4.099	4.117	4.135	4.154	4.174
Weightage of household (%)	29%	29%	29%	29%	30%	30%	31%	31%	31%	32%	32%
Grid Electricity Price of businesses /Kwh	3.170	3.173	3.682	4.237	4.185	4.192	4.206	4.229	4.243	4.258	4.283
Weightage of business and industrial and others consumption (%)	71%	71%	71%	71%	70%	70%	69%	69%	69%	68%	68%
Implied Average Grid Electricity Price/Kwh	3.6915	3.6856	3.6099	4.2023	4.1517	4.1594	4.1749	4.1929	4.2109	4.2289	4.2469
Contract to grid electricity discount	38.68%										
Contact Electricity Price /Kwh	1.4278	1.4255	1.4121	1.6254	1.6058	1.6088	1.6148	1.6217	1.6287	1.6357	1.6427
Total domestic electricity production per year (M)	21,411,271.804	21,411,271.804	21,411,271.804	21,411,271.804	21,411,271.804	21,411,271.804	21,411,271.804	21,411,271.804	21,411,271.804	21,411,271.804	21,411,271.804
Revenue (in million THB)	38,571.76	38,522.83	38,335.31	34,801.84	34,382.74	34,445.92	34,574.84	34,723.44	34,872.51	35,022.04	35,171.57
Consolidated											
Combined Cycle Power Plants											
Revenue Drivers											
Number of Operational Power Plants	10										
Total Installed Capacity (MW)	7614.01										
Total Installed Capacity Usable to Firm (MW)	4433.2748										
Combined Cycle Capacity Factor	54.40%										
Number of hours in a year	8,760.0										
Conversion from MWh to KWh	1,000.0										
Total combined cycle electricity production (KWh)	21,126,595,582.9										
Renewable Power Plants											
Revenue Drivers											
Number of Operational Power Plants	16										
Total Installed Capacity (MW)	288.74										
Total Installed Capacity Usable to Firm (MW)	90.679761										
Renewable Capacity Factor	35.85%										
Number of hours in a year	8,760.0										
Conversion from MWh to KWh	1,000.0										
Total renewable electricity production (KWh)	284,766,740.9										
Total domestic electricity production per year (KWh)	21,411,271,803.762										
Contractual to Grid electricity discount											
Total Domestic Revenue for 2020 (in million THB)	28925.683										
Conversion from million THB to THB	1,000,000,000										
Contractual 2020 selling price / Watt	1.388										
2020 Average Grid Electricity Price/Kwh	3.886										
2020 contractual electricity discount	37.1%										
Total Domestic Revenue for 2021 (in million THB)	31451.164										
Conversion from million THB to THB	1,000,000,000										
Contractual 2021 selling price / Watt	1.469										
2021 Average Grid Electricity Price/Kwh	3.851										
2021 contractual to grid electricity discount	48.2%										
Contract to grid electricity discount	38.68%										
Average Annual Variable Fuel Tariff											
THB/KWh		2019A	2020A	2021A	2022F	2023F	2024F	2025F	2026F	2027F	2028F
Jan		(0.116)	(0.116)	(0.153)	0.014	0.395	0.349	0.357	0.374	0.392	0.411
Feb		(0.116)	(0.116)	(0.153)	0.014	0.387	0.350	0.360	0.377	0.395	0.414
Mar		(0.116)	(0.116)	(0.153)	0.014	0.378	0.352	0.363	0.380	0.398	0.417
Apr		(0.116)	(0.116)	(0.153)	0.014	0.370	0.353	0.366	0.383	0.401	0.420
May		(0.116)	(0.116)	(0.153)	0.248	0.361	0.354	0.368	0.386	0.405	0.423
Jun		(0.116)	(0.116)	(0.153)	0.248	0.353	0.356	0.371	0.389	0.408	0.426
Jul		(0.116)	(0.116)	(0.153)	0.248	0.344	0.357	0.374	0.392	0.411	0.429
Aug		(0.116)	(0.116)	(0.153)	0.248	0.336	0.359	0.377	0.396	0.414	0.432
Sep		(0.116)	(0.124)	(0.153)	0.934	0.327	0.360	0.379	0.399	0.417	0.436
Oct		(0.116)	(0.124)	(0.153)	0.934	0.319	0.381	0.382	0.402	0.420	0.439
Nov		(0.116)	(0.124)	(0.153)	0.934	0.310	0.383	0.385	0.405	0.423	0.442
Dec		(0.116)	(0.124)	(0.153)	0.934	0.302	0.384	0.387	0.408	0.426	0.445
Average annual variable fuel tariff	(0.116)	(0.119)	(0.153)	0.399	0.348	0.356	0.372	0.391	0.409	0.428	0.448
YoY change %		-2%	-29%	360%	-13%	2%	4%	5%	5%	5%	5%
Growth (decline) % attributed to natural gas prices	0%	3%	14%	14%	-3%	-1%	0%	0%	0%	0%	0%
Weightage of natural gas in energy production (%)	27.1%	27.1%	27.1%	27.1%	27.1%	27.1%	27.1%	27.1%	27.1%	27.1%	27.1%
Growth (decline) % attributed to oil prices	0%	-14%	28%	12%	-5%	2%	2%	2%	2%	2%	2%
Weightage of oil in energy production	40.7%	40.7%	40.7%	40.7%	40.7%	40.7%	40.7%	40.7%	40.7%	40.7%	40.7%
Growth (decline) % attributed to coal prices (%)	0%	-4%	5%	2%	-1%	0%	0%	1%	1%	1%	1%
Weightage of coal in energy production	12.1%	12.1%	12.1%	12.1%	12.1%	12.1%	12.1%	12.1%	12.1%	12.1%	12.1%
Growth (decline) % attributed to biomass (%)	0%	3%	13%	6%	-1%	0%	0%	0%	0%	0%	0%
Weightage of biomass in energy production	20.2%	20.2%	20.2%	20.2%	20.2%	20.2%	20.2%	20.2%	20.2%	20.2%	20.2%
Growth in variable fuel tariff	-	(12.2%)	60.2%	34.2%	(16.2%)	1.7%	3.3%	3.6%	3.8%	3.8%	3.8%
Global Fuel Prices (All Sources)											
(\$/mmbtu)		2019A	2020A	2021A	2022F	2023F	2024F	2025F	2026F	2027F	2028F
Global Natural Gas Price (per mmbtu)	91.652	102.301	154.782	232.173	208.956	198.508	200.493	202.498	204.523	206.568	
% Growth		11.62%	51.30%	50.0%	(10.9%)	(5.0%)	1.0%	1.0%	1.0%	1.0%	
Global Oil Price	2,445.329	1,995.739	2,687.960	3,034.349	3,040.063	3,222.488	3,415.837	3,620.783	3,838.335	4,068.317	
% Growth		-34.74%	68.45%	13.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	
Global Coal Price	3,539.794	2,450.615	3,459.285	4,151.142	3,736.028	3,848.108	3,963.552	4,239.019	4,533.830	4,849.718	
% Growth		-30.77%	41.16%	23.0%	(10.0%)	3.0%	3.0%	7.0%	7.0%	7.0%	
Global Biomethane Price	30.424	34.227	57.045	74.159	70.451	71.155	71.867	73.311	74.044	74.044	
% Growth		12.50%	66.67%	30.0%	(5.0%)	1.0%	1.0%	1.0%	1.0%	1.0%	
Growth Rates	20 Year CAGR	2001	2021								
Global Oil Price	5.45%	929.8	2,888.0								
Global Coal Price	6.59%	964.4	3,459.3								
Global Biomethane/Waste Price	-	-	-								
Domestic Energy Consumption Trend											
Residential Consumption	49,201.9	52,860.4	54,280.5	56,938.9	59,716.6	62,629.8	65,885.0	68,889.4	72,250.0	75,774.6	
% Growth		7.44%	2.71%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	
Weightage of total consumption	28%	29%	29%	29%	30%	30%	31%	31%	32%	32%	
Business Consumption	49,128.3	49,849.8	41,038.9	43,241.8	45,025.4	46,862.6	48,818.4	50,929.9	52,926.5	55,108.6	
% Growth		-10.54%	-5.51%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	4.1%	
Weightage of total consumption	29%	24%	22%	22%	22%	23%	23%	23%	23%	23%	
Industrial Consumption	86,104.0	82,158.0	86,927.1	88,663.5	90,998.8	93,374.5	95,812.3	98,313.7	100,880.4	103,514.1	
% Growth		-4.58%	5.20%	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%	
Weightage of total consumption	49%	45%	49%	46%	45%	45%	45%	44%	44%	43%	
Others	5,117.0	4,469.0	4,428.0	4,428.0	4,428.0	4,428.0	4,428.0	4,428.0	4,428.0	4,428.0	
% Growth		-12.19%	-1.45%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Weightage of total consumption	3%	2%	2%	2%	2%	2%	2%	2%	2%	2%	
Total Consumption	189,551.2	183,461.2	186,874.5	193,292.3	200,168.8	207,214.9	214,741.7	222,461.8	230,444.9	238,826.3	
% Growth		-3.21%	1.75%	3.55%	3.5%	3.6%	3.6%	3.6%	3.6%	3.6%	
Growth Rates	19 Year CAGR	2002	2021								
Residential Consumption	4.88%	21,963.2	54,290.5								
Business Consumption	4.12%	19,267.6	41,038.9								
Industrial Consumption	2.81%	52,964.8	86,927.1								
Others	-0.57%	4,936.0	4,428.0								
Market Share % of Thai Electric Market											
Effective Capacity Usable to the Firm	4,524.0	4,524.0	4,524.0	4,524.0	4,524.0	4,524.0	4,524.0	4,524.0	4,524.0	4,524.0	4,524.0
Thailand Overall Installed Capacity	52,200.0	52,200.0	52,200.0	52,831.6	53,470.9	54,117.9	54,772.7	55,435.5	56,106.2	56,785.1	
% Growth		0.00%	0.00%	1.2%	1.2%	1.2%	1.2%	1.2%	1.2%	1.2%	
RATCH Total Market Share	8.67%	8.67%	8.67%	8.56%	8.46%	8.36%	8.26%	8.16%	8.06%	7.96%	
% Growth		0.00%	0.00%	-1.20%	-1.20%	-1.20%	-1.20%	-1.20%	-1.20%	-1.20%	
Revenue	-	28,905.68	31,451.16	-	-	-	-	-	-	-	-
RATCH Forecast Revenue	-	28,905.68	31,451.16	31,075.15	30,703.64	30,336.57	29,973.88	29,620.08	29,270.07	28,922.07	
Growth Rates	11 Year CAGR	2010	2021								
Thailand Installed Capacity	0.58%	49,000.0	52,200.0								
Forecast	16 Year CAGR	2021	2037								
NEP Installed Capacity Development Plan Expectation	2.48%	52,200.0									

Australia Revenue Model

USDAUD Conversion

1.56

Australia Grid Electricity Cost TbH / KWh	2019A	2020A	2021A	2022F	2023F	2024F	2025F	2026F	2027F	2028F
Assumptions										
Base Grid Electricity Price of household /Kwh	7.78									
Base Grid Electricity Price of businesses /Kwh	6.45									
Grid Electricity Price of household /Kwh	7.780	6.359	11.708	10.126	6.980	7.911	8.037	8.125	8.125	8.125
Weightage of households (%)	29.0%	29.0%	29.0%	29.0%	29.0%	29.0%	29.0%	29.0%	29.0%	29.0%
Grid Electricity Price of businesses /Kwh	6.450	5.273	9.768	8.947	5.786	6.582	6.661	6.732	6.792	6.792
Weightage of business and industrial and others consumption (%)	71.0%	71.0%	71.0%	71.0%	71.0%	71.0%	71.0%	71.0%	71.0%	71.0%
Implied Average Grid Electricity Price/Kwh	6.837	5.875	10.282	8.867	6.1326	6.9504	7.0616	7.1390	7.1390	7.1390
Contract to grid electricity discount	0.6600	0.5395	0.9933	0.8590	0.5921	0.6711	0.6818	0.6893	0.6893	0.6893
Total Australia electricity production per year (W)	6,373,847,009	6,373,847,009	6,373,847,009	6,373,847,009	6,373,847,009	6,373,847,009	6,373,847,009	6,373,847,009	6,373,847,009	6,373,847,009
Revenue (in million TbH)	4,206.85	3,436.71	6,331.92	5,475.22	3,774.14	4,277.44	4,345.85	4,393.54	4,393.54	4,393.54
Consolidated										
Combined Cycle Power Plants										
Revenue Drivers										
Number of Operational Power Plants	4									
Total Installed Capacity (MW)	821.2									
Total Installed Capacity Usable to Firm (MW)	738.6									
Combined Cycle Capacity Factor	54.40%									
Number of hours in a year	8,760.0									
Conversion from MWh to KWh	1,000.0									
Total combined cycle electricity production (KWh)	3,519,753,884.0									
Renewable Power Plants										
Revenue Drivers										
Number of Operational Power Plants	8									
Total Installed Capacity (MW)	941.75									
Total Installed Capacity Usable to Firm (MW)	908.75									
Renewable Capacity Factor	38.85%									
Number of hours in a year	8,760.0									
Conversion from MWh to kWh	1,000.0									
Total renewable electricity production (KWh)	2,853,893,025.0									
Total Australia electricity production per year (KWh)	6,373,847,009.000									
Contractual to Grid electricity discount										
Total Australia Revenue for 2020 (in million TbH)	2,684.8									
Conversion from million TbH to TbH	1,000,000,000									
Contractual 2020 selling price / Watt	0.763									
2020 Average Grid Electricity Price/Kwh	5.588									
2020 contractual electricity discount	13.7%									
Total Australia Revenue for 2021 (in million TbH)	3,711.1									
Conversion from million TbH to TbH	1,000,000,000									
Contractual 2021 selling price / Watt	0.582									
2021 Average Grid Electricity Price/Kwh	10.287									
2021 contractual to grid electricity discount	5.7%									
Contract to grid electricity discount	8.66%									
Growth/Decline in Energy Prices (in TbH)										
Growth (decline) % attributed to natural gas prices	-	3%	14%	14%	-2%	-1%	0%	0%	0%	0%
Weightage of natural gas in energy production (%)	27.1%	27.1%	27.1%	27.1%	27.1%	27.1%	27.1%	27.1%	27.1%	27.1%
Growth (decline) % attributed to oil prices	-	-3%	2%	1%	-5%	2%	2%	2%	2%	2%
Weightage of oil in energy production	36.2%	36.2%	36.2%	36.2%	36.2%	36.2%	36.2%	36.2%	36.2%	36.2%
Growth (decline) % attributed to coal prices (%)	-	-9%	12%	6%	-3%	1%	1%	2%	2%	2%
Weightage of coal in energy production	28.7%	28.7%	28.7%	28.7%	28.7%	28.7%	28.7%	28.7%	28.7%	28.7%
Growth (decline) % attributed to renewables (%)	-	0%	0%	0%	0%	0%	0%	0%	0%	0%
Weightage of renewables in energy production	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%
Growth/Decline in Energy Prices	-	(18.3%)	50.5%	30.2%	(10.3%)	1.7%	3.3%	4.4%	4.4%	4.4%
Global Fuel Prices (All Sources) (in TbH)										
Global Natural Gas Price (per mmbtu)	3.760	4.196	6.349	9.524	8.571	8.143	8.224	8.307	8.390	8.473
% Growth	-	11.62%	51.30%	50.0%	(10.0%)	(8.0%)	1.0%	1.0%	1.0%	1.0%
Global Oil Price	100.308	65.458	110.201	143.339	124.705	132.187	140.118	148.526	157.437	166.983
% Growth	-	-34.74%	68.45%	30.0%	(13.0%)	6.0%	6.0%	6.0%	6.0%	6.0%
Global Coal Price	145.203	100.525	141.801	170.281	153.253	197.890	162.588	173.886	185.971	198.896
% Growth	-	-30.77%	41.16%	20.0%	(10.0%)	3.0%	3.0%	7.0%	7.0%	7.0%
Growth Rates										
Global Natural Gas Price	20 Year CAGR	2001	2021							
		152.5	6.3							
Global Oil Price		5.45%	38.1							
Global Coal Price		6.59%	38.6							
Market Share of Total Electric Market in %										
Effective Capacity Usable to the Firm	1,647.4	1,647.4	1,647.4	1,647.4	1,647.4	1,647.4	1,647.4	1,724.4	1,724.4	1,724.4
% Growth	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.67%	0.00%	0.00%
Australia Overall Installed Capacity	58,478.0	58,478.0	58,478.0	60,056.9	61,678.4	63,343.8	65,054.0	66,810.5	68,614.4	70,467.0
% Growth	-	0.00%	0.00%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%
RATCH Total Market Share	2.82%	2.82%	2.82%	2.74%	2.67%	2.60%	2.53%	2.54%	2.51%	2.45%
% Growth	-	0.00%	0.00%	-2.63%	-2.63%	-2.63%	-2.63%	1.92%	-2.63%	-2.63%
Revenue	-	2,684.83	3,711.08	3,613.49	3,518.49	3,425.99	3,335.92	3,400.05	3,310.66	3,223.62
RATCH Forecast Revenue	-	2,684.83	3,711.08	3,613.49	3,518.49	3,425.99	3,335.92	3,400.05	3,310.66	3,223.62
Growth Rates										
Australia Installed Capacity	21 Year CAGR	2000	2021							
		35246	58,478.0							
Consolidated Australia Revenue Forecast (in mil TbH)										
Forecasted Domestic Revenue From Bottom Up Approach	-	-	-	5,475.22	3,774.14	4,277.44	4,345.85	4,393.54	4,393.54	4,393.54
Forecasted Australia Revenue From Top Down Approach	-	-	-	3,613.49	3,518.49	3,425.99	3,335.92	3,400.05	3,310.66	3,223.62
Consolidated Australia Revenue Forecast	-	-	-	4,544.36	3,644.31	3,851.72	3,640.88	3,858.79	3,852.19	3,898.58

Revenue Model Supporting

Breakdown of RATCH Revenue by Region	2020		2021	
	In million THB	% of total revenue	In million THB	% of total revenue
Domestic	28,905.7	91%	31,451.2	89%
Australia	2,684.8	8%	3,711.1	11%
Others (Laos, Vietnam, Singapore, Etc)	62.0	0%	29.3	0%
Total	31,652.5	100%	35,191.6	100%

Domestic Energy Generation

Combined Cycle Power Plants

Name	Total Installed Capacity (mW)	Additional Capacity (Under Construction)	Fuel Source	Equity Holding	Effective Capacity Usable to the Firm	PPA (In Years)	PPA End Date	Operational
Ratchaburi Region								
Ratchaburi Power Plant	3645	0	Natural Gas	100%	3645	25	2025	Yes
Ratchaburi Power Company Power Plant	1490	0	Natural Gas	25%	372.5	25	2025	Yes
Hin Kong Power Plant	1540	0	Natural Gas	51%	0	25	2050	No
Rachaburi World Cogeneration Power Plant	235	0	Natural Gas	40%	94	25	2025	Yes
Berkprai Cogeneration Power Plant	99.46	0	Natural Gas	35%	34.811	25	2025	Yes
Patumthani Region								
Nava Nakorn Cogeneration Power Plant	141.6	89.97	Natural Gas	40%	56.64	25	2038	Yes
RATCH Cogen Power Plant	119.75	31.2	Natural Gas	100%	119.75	25	2038	Yes
Nakornratchasima Region								
Ren Cogen Power Plant	31.2	0	Natural Gas	40%	0	25	ibid	No
Rayong Region								
Nexif RATCH Energy Rayong Power Plant	98	0	Natural Gas	100%	0	25	ibid	No
Chonburi Region								
Sahacogen Chonburi Power Plant	214	0	Natural Gas	51.67%	110.5738	30	2024	Yes
Subtotal	7614.01	121.17	-	-	4433.2748	-	-	-

Renewable Projects

Name	Total Installed Capacity (mW)	Additional Capacity	Fuel Source	Equity Holding	Effective Capacity Usable to the Firm	PPA (In Years)	PPA End Date	Operational
Suphan Buri Region								
Sai Saphan 1 Solar Power Projects	5.61	0	Solar	49%	2.7489	5	2027	Yes
Sai Saphan 2 Solar Power Projects	2.21	0	Solar	49%	1.0829	5	2027	Yes
Sai Tetong Solar Power Projects	1.14	0	Solar	49%	0.5566	5	2027	Yes
Ayudhya Region								
Sai Sena Solar Power Project	3.01	0	Solar	49%	7	5	2027	Yes
Nakornpatom Region								
Sai Prapa Solar Power Project	6.67	0	Solar	49%	4.2483	5	2027	Yes
Sai Yai Solar Power Project	11.24	0	Solar	49%	5.5076	5	2027	Yes
Sai Thong Solar Power Project	6.86	0	Solar	49%	3.3614	5	2027	Yes
Sai Yoi Solar Power Project	3.57	0	Solar	49%	1.7493	5	2027	Yes
Nakhon Ratchasima Region								
Solar Power Korat 3 Project	7.2	0	Solar	40%	2.88	5	2027	Yes
Solar Power Korat 4 Project	7.2	0	Solar	40%	2.88	5	2027	Yes
Solar Power Korat 7 Project	7.2	0	Solar	40%	2.88	5	2027	Yes
Huay Bong 2 Wind-Turbine Power Plant	103.5	0	Wind	20%	20.7	5	2027	Yes
Huay Bong 3 Wind-Turbine Power Plant	103.5	0	Wind	20%	20.7	5	2027	Yes
Chonburi Region								
Chonburi Solar Rooftop Project	12.6	0	Solar	52%	6.51042	5	2027	Yes
Kamphaengphet Region								
Biomass Power Plant in Kamphaengphet	5.63	0	Biomass	52%	2.909021	20	ibid	Yes
Lampoon Region								
Biomass Power Plant in Lampoon	9.6	0	Biomass	52%	4.96032	20	ibid	Yes
Subtotal	298.74	0	-	-	90.676761	-	-	-

Grand Total Domestic Energy Production

In MW	2019A	2020A	2021A	2022F	2023F	2024F	2025F	2026F	2027F	2028F
Total Installed Capacity	7912.75	7912.75	7912.75	7912.75	7912.75	7912.75	7912.75	8016.75	8016.75	8041.95
Effective Capacity Usable to the Firm	4523.95	4523.95	4523.95	4523.95	4523.95	4523.95	4523.95	4621.95	4634.4356	4755.60156

International Energy Generation

Australia

Combined Cycle Power Plants

Name	Total Installed Capacity (mW)	Additional Capacity (Under Construction)	Fuel Source	Equity Holding	Effective Capacity Usable to the Firm	PPA (In Years)	PPA End Date	Operational
Western Australia								
SIP Karama Power Plant	118	0	Natural Gas	30%	35.4	25	ibid	Yes
Kemerton Power Plant	315.2	0	Natural Gas	100%	315.2	25	ibid	Yes
Queensland								
Townsville Power Plant	234	0	Natural Gas	100%	234	20	ibid	Yes
South Australia								
Snapper Point Power Plant	154	0	Natural Gas	100%	154	ibc	ibid	Yes
Subtotal	821.2	0	-	-	738.6	-	-	-

Renewable Projects

Name	Total Installed Capacity (mW)	Additional Capacity	Fuel Source	Equity Holding	Effective Capacity Usable to the Firm	PPA (In Years)	PPA End Date	Operational
Western Australia								
Yandoo Wind Power Project	214	0	Wind	100%	214	15	ibid	Yes
Queensland								
Windy Hill Wind Power Project	12	0	Wind	100%	12	8	2031	Yes
Mount Emerald Wind Farm Project	180.45	0	Wind	100%	180.45	8	2031	Yes
Collingville Solar Power Project	42.5	0	Solar	100%	8	8	2031	Yes
South Australia								
Lincoln Gas 1&2 Wind Farm Project	212	44	Wind	100%	212	ibc	ibid	Yes
Staffish Hill Wind Power Project	33	0	Wind	100%	0	17	2020	No
New South Wales								
Collector Wind Farm	228.8	0	Wind	100%	228.8	15	ibid	Yes
Victoria								
Tooms Wind Power Project	21	0	Wind	100%	21	15	ibid	Yes
Subtotal	941.73	44	-	-	908.75	-	-	-

Grand Total Australia Energy Production

In MW	2019A	2020A	2021A	2022F	2023F	2024F	2025F	2026F	2027F	2028F
Total Installed Capacity	1762.95	1762.95	1762.95	1762.95	1762.95	1762.95	1762.95	1839.95	1839.95	1839.95
Effective Capacity Usable to the Firm	1647.35	1647.35	1647.35	1647.35	1647.35	1647.35	1647.35	1724.35	1724.35	1724.35

Supporting Schedules

RATCH Model (THB in millions, Financial Year Ended Dec 31st)		2019A	2020A	2021A	2022F	2023F	2024F	2025F	2026F	2027F	2028F
Scenario	Base										
Revenue Assumptions (THB in millions, Financial Year Ended Dec 31st)											
Revenue		35,441.1	31,652.5	35,231.5	40,277.1	38,156.9	38,723.4	38,920.7	39,117.0	39,266.0	39,415.6
% Growth		0.00%	-10.69%	11.31%	14.32%	-5.26%	1.48%	0.51%	0.50%	0.38%	0.38%
Other Revenue		-	-	-	-	-	-	-	-	-	-
% Growth		-	-	-	-	-	-	-	-	-	-
Total Revenue		35,441.1	31,652.5	35,231.5	40,277.1	38,156.9	38,723.4	38,920.7	39,117.0	39,266.0	39,415.6
Fuel & Purchased Power Cost											
		27,647.8	24,475.4	26,892.6	34,235.5	29,380.8	29,817.0	29,968.9	30,120.1	30,234.9	30,350.0
% of revenue		78.01%	77.33%	76.33%	85.00%	77.00%	77.00%	77.00%	77.00%	77.00%	77.00%
Upside					88.0%	76.0%	76.0%	76.0%	76.0%	76.0%	76.0%
Base					85.0%	77.0%	77.0%	77.0%	77.0%	77.0%	77.0%
Downside					82.0%	78.0%	78.0%	78.0%	78.0%	78.0%	78.0%
Other COGS											
		5,580.2	5,753.3	6,223.9	6,847.1	6,486.7	6,583.0	6,618.5	6,649.9	6,675.2	6,700.6
% of revenue		15.74%	18.18%	17.67%	17.00%	17.00%	17.00%	17.00%	17.00%	17.00%	17.00%
Upside					16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%
Base					17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%
Downside					18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%
Total COGS		33,228.0	30,228.7	33,116.5	41,082.6	35,867.5	36,400.0	36,585.4	36,770.0	36,910.1	37,050.6
Gross Profit		2,213.1	1,423.8	2,115.0	(805.5)	2,289.4	2,323.4	2,335.2	2,347.0	2,356.0	2,364.9
Operating Expense											
		1,309.4	1,324.8	1,428.3	1,611.1	1,526.3	1,548.9	1,558.8	1,564.7	1,570.6	1,576.6
% of revenue		3.69%	4.19%	4.05%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%
Upside					3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%
Base					4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Downside					4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%
Total Operating Expense		1,309.4	1,324.8	1,428.3	1,611.1	1,526.3	1,548.9	1,558.8	1,564.7	1,570.6	1,576.6
% Growth		-	1.17%	7.82%	12.79%	-5.26%	1.48%	0.51%	0.50%	0.38%	0.38%
Operating Income (EBIT)		903.6	99.1	686.6	(2,416.6)	763.1	774.5	778.4	782.3	785.3	788.3
Interest Expense, Total											
		(1,430.6)	(1,551.4)	(1,868.1)	(2,633.7)	(2,088.2)	(1,014.6)	(737.6)	(724.4)	(722.3)	(698.3)
Interest and Invest. Income		3,229.6	2,773.8	2,359.5	2,787.6	2,787.6	2,787.6	2,787.6	2,787.6	2,787.6	2,787.6
Net Interest Income (Expense)		1,799.0	1,222.4	491.4	153.9	699.4	1,773.0	2,050.0	2,063.2	2,065.3	2,089.4
Income/(Loss) from Affiliates											
		3,968.4	4,600.3	5,902.4	5,902.4	5,902.4	5,902.4	5,902.4	5,902.4	5,902.4	5,902.4
% Growth		0.00%	27.84%	33.17%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Upside					30.0%	25.0%	10.0%	6.0%	5.0%	5.0%	5.0%
Base					25.0%	20.0%	8.5%	3.5%	3.5%	3.5%	3.5%
Downside					20.0%	15.0%	7.0%	1.5%	1.5%	1.5%	1.5%
Currency Exchange Gains (Loss)											
		(132.5)	304.5	208.3	-	-	-	-	-	-	-
Other Non-Operating Inc. (Exp.)											
		67.1	88.8	541.5	-	-	-	-	-	-	-
Gain From Affiliates		3,903.0	4,993.6	6,650.1	5,902.4	5,902.4	5,902.4	5,902.4	5,902.4	5,902.4	5,902.4
Total Merger & Rel. Restruct. Charges											
		-	-	(29.6)	-	-	-	-	-	-	-
Impairment of Goodwill		(42.3)	-	(19.6)	-	-	-	-	-	-	-
Gain(Loss) on the Sale of Investment		-	-	-	-	-	-	-	-	-	-
Asset Writedown		-	-	-	-	-	-	-	-	-	-
Total Insurance Settlement		269.9	-	177.7	-	-	-	-	-	-	-
Other Unusual Items		227.6	-	128.5	-	-	-	-	-	-	-
Profit from Cont. Ops Before Tax		6,833.3	6,315.0	7,956.6	3,639.7	7,365.0	8,449.9	8,730.8	8,748.0	8,753.0	8,780.1
(-) Income Tax Expense											
		870.1	28.4	178.1	727.9	1,473.0	1,690.0	1,746.2	1,749.6	1,750.6	1,756.0
Implied Tax Rate (%)		12.7%	0.4%	2.2%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
Earnings from Cont. Ops.		5,963.2	6,286.7	7,778.6	2,911.7	5,892.0	6,759.9	6,984.6	6,998.4	7,002.4	7,024.1
Minority Int. in Earnings											
		-	-	(6.6)	-	-	-	-	-	-	-
Net Income		5,963.2	6,286.7	7,778.6	2,911.7	5,892.0	6,759.9	6,984.6	6,998.4	7,002.4	7,024.1
Net Working Capital											
(+) Current assets		20,479.8	18,484.7	25,315.8	-	-	-	-	-	-	-
(-) Current liabilities		7,674.1	6,877.2	20,269.9	-	-	-	-	-	-	-
Net Working Capital		12,905.7	11,607.5	5,045.9	-100.00%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Change in NWC (%)		-	-10.06%	-58.53%	-	-	-	-	-	-	-
Avg. Days Sales Out.		80.7	95.7	108.6	106.60	106.60	106.60	106.60	106.60	106.60	106.60
Avg. Days Inventory Out.		20.9	22.2	20.3	20.30	20.30	20.30	20.30	20.30	20.30	20.30
Avg. Days Payable Out.		48.3	48.4	62.8	62.80	62.80	62.80	62.80	62.80	62.80	62.80
Avg. Cash Conversion Cycle		55.3	71.5	64.1	64.1	64.1	64.1	64.1	64.1	64.1	64.1
Current Assets and Liabilities											
Total Inventory											
		1,880.4	1,782.6	1,901.8	2,284.9	1,994.8	2,024.4	2,034.8	2,045.0	2,052.8	2,060.6
Accounts Receivable											
		8,782.2	7,765.5	12,820.8	11,763.1	11,143.9	11,309.3	11,367.0	11,424.3	11,467.8	11,511.5
Other Receivables		300.0	165.2	598.1	604.2	572.4	580.9	583.8	586.9	589.0	591.2
% revenue		0.85%	0.52%	1.69%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%
Accounts Payable											
		3,959.3	3,683.4	7,755.1	7,088.5	6,171.2	6,262.8	6,294.7	6,326.4	6,350.6	6,374.7
Other Current Assets											
Short-Term Investments											
		4,148.8	2,014.9	2,042.0	2,042.0	2,042.0	2,042.0	2,042.0	2,042.0	2,042.0	2,042.0
% growth		-	-29.71%	-29.95%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Trading Asset Securities		305.1	842.6	857.2	857.2	857.2	857.2	857.2	857.2	857.2	857.2
% growth		-	176.19%	1.74%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other Current Assets		148.1	157.3	138.5	138.5	138.5	138.5	138.5	138.5	138.5	138.5
% growth		-	6.19%	-13.21%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other Current Liabilities											
Accrued Exp.											
		-	1.4	2.0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
% of revenue		0.00%	0.00%	0.01%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Short-term Borrowings		803.1	80.1	5,364.9	805.5	763.1	774.5	778.4	782.3	785.3	788.3
% of revenue		1.70%	0.19%	15.23%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Curr. Port. of LT Debt		1,091.2	1,488.2	4,670.5	9,306.7	10,367.5	(506.8)	(694.5)	(374.5)	(394.5)	4,570.9
Change		-	-	-	4,638.3	1,060.8	(10,874.3)	(187.7)	320.0	(20.0)	4,985.4
Curr. Port. of Leases		0.7	118.1	161.5	805.5	763.1	774.5	778.4	782.3	785.3	788.3
% of revenue		0.00%	0.37%	0.46%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Curr. Income Taxes Payable		3.7	0.2	11.1	-	-	-	-	-	-	-
% of revenue		0.01%	0.00%	0.03%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other Current Liabilities		1,916.0	1,527.8	2,304.9	2,013.9	1,907.8	1,936.2	1,946.0	1,955.8	1,963.3	1,970.8
% of revenue		5.41%	4.83%	6.54%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%

Non Current Assets and Liabilities										
Gross Property, Plant & Equipment	38,795.4	48,885.3	63,064.7	60,415.8	57,235.3	58,085.0	58,381.0	58,575.5	58,899.1	59,123.4
% of revenue	109.47%	153.81%	179.00%	150.0%	150.0%	150.0%	150.0%	150.0%	150.0%	150.0%
Accumulated Depreciation	(14,888.5)	(17,176.4)	(24,862.7)	(22,957.9)	(21,749.4)	(22,072.3)	(22,184.8)	(22,286.7)	(22,381.6)	(22,466.9)
% of Gross PPE	-37.88%	-35.28%	-39.11%	-38.0%	-38.0%	-38.0%	-38.0%	-38.0%	-38.0%	-38.0%
Net Property, Plant & Equipment	24,107.9	31,508.9	38,402.0	37,457.7	35,485.9	36,012.7	36,196.2	36,378.8	36,517.4	36,656.5
Other Non Current Assets										
Goodwill	170.3	189.7	1,599.7	1,599.7	1,599.7	1,599.7	1,599.7	1,599.7	1,599.7	1,599.7
% growth	-	-0.39%	842.92%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other Intangibles	3,628.8	3,283.9	3,108.3	3,108.3	3,108.3	3,108.3	3,108.3	3,108.3	3,108.3	3,108.3
% growth	-	-9.45%	-0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Long-term Investments	35,541.0	42,863.9	55,081.2	55,081.2	55,081.2	55,081.2	55,081.2	55,081.2	55,081.2	55,081.2
% growth	-	20.80%	28.50%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Accounts Receivable Long-Term	13,139.3	10,661.9	25,202.5	25,202.5	25,202.5	25,202.5	25,202.5	25,202.5	25,202.5	25,202.5
% growth	-	-19.62%	138.62%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Loans Receivable Long-Term	540.9	2,907.4	3,308.6	3,308.6	3,308.6	3,308.6	3,308.6	3,308.6	3,308.6	3,308.6
% growth	-	437.52%	13.80%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Deferred Tax Assets, LT	38.9	42.1	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5
% growth	-	8.13%	-3.72%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Deferred Charges, LT	1,877.8	1,362.4	1,878.0	1,878.0	1,878.0	1,878.0	1,878.0	1,878.0	1,878.0	1,878.0
% growth	-	-26.89%	20.51%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other Long-Term Assets	707.0	917.5	1,118.8	1,118.8	1,118.8	1,118.8	1,118.8	1,118.8	1,118.8	1,118.8
% growth	-	29.78%	21.94%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other Non Current Liabilities										
Long-Term Debt	30,440.8	40,916.5	49,416.9	39,415.7	28,353.7	28,165.9	28,165.9	27,845.9	27,545.9	22,280.5
Change	-	-	-	(10,001.3)	(11,082.0)	(187.7)	-	(320.0)	(300.0)	(5,285.4)
Long-Term Leases	0.4	1,362.6	1,505.4	1,505.4	1,505.4	1,505.4	1,505.4	1,505.4	1,505.4	1,505.4
% growth	-	328316.94%	10.49%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Pension & Other Post-Retire. Benefits	203.8	225.5	266.7	266.7	266.7	266.7	266.7	266.7	266.7	266.7
% growth	-	10.64%	18.27%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Def. Tax Liability, Non-Curr.	1,710.2	1,831.4	4,139.4	4,139.4	4,139.4	4,139.4	4,139.4	4,139.4	4,139.4	4,139.4
% growth	-	7.09%	126.02%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other Non-Current Liab., Total	886.1	397.5	1,447.4	1,447.4	1,447.4	1,447.4	1,447.4	1,447.4	1,447.4	1,447.4
% growth	-	-55.14%	264.09%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Vasicek Interest Rate Model

Switch

Historical data extraction (in year) **7**
 Start date **30/9/2022**
 End date **30/9/2026**
 Max Projection Date **31/3/2028**
 Number of days to projection end **284**
 Average month length **30.4**
 Number of months to projection **75.1**

Interest Rate Selector
 Vasicek with Spread

Data extracted from Bloomberg

Date	Tha MLR	Delta	Log
31/03/2002	7	0	7
29/12/2002	7	0	7
31/12/2002	7	0	7
31/12/2003	7	0	7
29/2/2003	7	0	7
31/3/2003	6.75	-0.25	7
30/4/2003	6.75	0	6.75
30/5/2003	6.75	0	6.75
30/6/2003	6.5	-0.25	6.75
31/7/2003	6	-0.5	6.5
29/9/2003	6	0	6
30/9/2003	6	0	6
31/10/2003	6	0	6
29/11/2003	6	0	6
31/12/2003	6	0	6
30/1/2004	6	0	6
27/2/2004	6	0	6
31/3/2004	6	0	6
30/4/2004	6	0	6
31/5/2004	6	0	6
30/6/2004	6	0	6
30/7/2004	6	0	6
31/8/2004	6	0	6
30/9/2004	6	0	6
29/10/2004	6	0	6
30/11/2004	6	0	6
31/12/2004	6	0	6
31/1/2005	6	0	6
29/2/2005	6	0	6
31/3/2005	6	0	6

	-a	a*b
Coefficient	-0.014088	0.0620229
Standard error	0.017338	0.180396
	0.007829	0.054045
	0.0170829	83
	0.0018023	0.2424183
t-stat	-0.789546	0.6948763
p-value	43%	49%
a (convergence)	0.0140879	Rate of convergence everyd
b (equilibrium)	5.6222383	Long term equilibrium rate
Interest rate (latest)	6.125	

Months from latest rate	Date	Year	Forecast
1	30/10/2022	2022	6.1207646
2	30/11/2022	2022	6.165995
3	30/12/2022	2022	6.194708
4	30/1/2023	2023	6.1084107
5	29/2/2023	2023	6.1044074
6	30/3/2023	2023	6.104601
7	30/4/2023	2023	6.0955681
8	30/5/2023	2023	6.0927304
9	30/6/2023	2023	6.0889465
10	30/7/2023	2023	6.0852155
11	30/8/2023	2023	6.0815367
12	30/9/2023	2023	6.0779093
13	30/10/2023	2023	6.0743327
14	30/11/2023	2023	6.0708062
15	30/12/2023	2023	6.0673289
16	30/1/2024	2024	6.0639003
17	29/2/2024	2024	6.0605197
18	30/3/2024	2024	6.0571863
19	30/4/2024	2024	6.0538996
20	30/5/2024	2024	6.0506589
21	30/6/2024	2024	6.0474635
22	30/7/2024	2024	6.0443138
23	30/8/2024	2024	6.0412062
24	30/9/2024	2024	6.038143
25	30/10/2024	2024	6.0351227
26	30/11/2024	2024	6.0321446
27	30/12/2024	2024	6.0292082
28	30/1/2025	2025	6.0263129
29	29/2/2025	2025	6.0234581
30	30/3/2025	2025	6.0206432

Average Interest Rate	2022	2023	2024	2025	2026	2027	2028
	6.122902	6.0873677	6.0461472	6.011321	5.969117	5.9570765	5.9367042

Debt Schedule

Description <i>(in THB'mm, for the period ending 31 Dec)</i>	Type	Principal	Coupon/Interest Rate (%)	Maturity Date	31/12/22 2022F	31/12/23 2023F	31/12/24 2024F	31/12/25 2025F	31/12/26 2026F	31/12/27 2027F	31/12/28 2028F	31/12/29 2029F
Debt Schedule Overview												
Debt Balance by Borrowing Type												
Revolver Borrowings					6,128.6	21,739.7	42,227.8	44,972.6	40,721.7	30,260.9	13,187.2	
Current portion of long-term borrowings					805.5	763.1	774.5	778.4	782.3	785.3	788.3	
Long-term borrowings					39,415.7	28,353.7	28,165.9	28,165.9	27,845.9	27,545.9	22,280.5	
Total borrowings					46,349.8	50,856.5	71,168.3	73,917.0	69,350.0	58,592.2	36,256.0	
Debt balance by maturity												
Less than 1 Year					5,365.0	10,001.3	11,062.0	187.7	-	320.0	300.0	
Between 2-5 Years					21,251.0	11,589.7	807.7	620.0	620.0	320.0	-	
Over 5 Years					19,733.8	29,285.5	59,298.5	73,109.2	68,730.0	57,972.2	35,956.0	
Total borrowings					46,349.8	50,856.5	71,168.3	73,917.0	69,350.0	58,592.2	36,256.0	
Audit					TRUE							
Total Interest Payments					2,633.7	2,088.2	1,014.6	737.6	724.4	722.3	698.3	
Average Funding Cost					0.056823055	0.041060775	0.014256391	0.009979354	0.010446001	0.012327829	0.019258973	
Interest Rate												
Credit Spread (from Damodaran)		2.15%										
Varsicek					6.12%	6.09%	6.05%	6.01%	5.98%	5.96%	5.94%	
Constant					6.13%	6.13%	6.13%	6.13%	6.13%	6.13%	6.13%	
Average					6.12%	6.11%	6.09%	6.07%	6.05%	6.04%	6.03%	
Varsicek with Spread					8.27%	8.24%	8.20%	8.16%	8.13%	8.11%	8.09%	
Constant with Spread					8.28%	8.28%	8.28%	8.28%	8.28%	8.28%	8.28%	
Historical					5.22%	5.22%	5.22%	5.22%	5.22%	5.22%	5.22%	
Average					7.26%	7.24%	7.23%	7.22%	7.21%	7.20%	7.19%	
Interest Rate Selector	Varsicek with Spread				8.27%	8.24%	8.20%	8.16%	8.13%	8.11%	8.09%	
Coupon/Interest Repayment Schedule												
Ratch Group Public Company Limited (SET:RATCH)	Corporate Debenture	26.3	1.32	Nov-04-2023	0.3	0.3	-	-	-	-	-	-
Sahaogon (Chonburi) Public Company Limited (SET:SCJ)	Corporate Debenture	18.4	3	Sep-22-2025	0.6	0.6	0.6	0.4	-	-	-	-
Ratch Group Public Company Limited (SET:RATCH)	Corporate Debenture	39.4	1.76	Nov-04-2025	0.7	0.7	0.7	0.6	-	-	-	-
RH International (Singapore) Corporation Pte. Ltd.	Corporate Debenture	-	2.72	Aug-24-2026	-	-	-	-	-	-	-	-
RH International (Singapore) Corporation Pte. Ltd.	Corporate Debenture	300.0	4.5	Mar-27-2028	13.5	13.5	13.5	13.5	13.5	13.5	13.5	3.2
Sahaogon (Chonburi) Public Company Limited (SET:SCJ)	Corporate Debenture	14.4	3.98	Sep-22-2029	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Ratch Group Public Company Limited (SET:RATCH)	Corporate Debenture	39.4	2.61	Nov-04-2030	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Sahaogon (Chonburi) Public Company Limited (SET:SCJ)	Corporate Debenture	36.7	4.26	Sep-22-2032	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
Ratch Group Public Company Limited (SET:RATCH)	Corporate Debenture	105.0	2.94	Nov-04-2035	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
Long Term Loans from Collector Wind Farm Pty. Ltd.	Term Loans	4,091.0		May-01-2024	338.4	337.0	118.8	-	-	-	-	-
Long Term Loans from Mount Emerald Wind Farm Pty. Lt	Term Loans	4,587.0		Oct-01-2023	379.5	283.4	-	-	-	-	-	-
Long Term Loans from PT Bajadaja Sentranusa	Term Loans	5,251.0		Sep-01-2029	434.4	432.5	430.4	428.6	427.0	425.7	424.6	
Long Term Loans from RATCH Cogeneration Company I	Term Loans	3,267.0		Nov-01-2032	270.3	269.1	267.8	266.6	265.7	264.9	264.2	
Long Term Loans from RATCH Group Public Company L	Term Loans	5,000.0		Mar-01-2024	413.6	411.9	68.3	-	-	-	-	-
Long Term Loans from RATCH-Australia Collinsville Sol	Term Loans	1,013.0		Apr-01-2024	63.8	63.4	20.8	-	-	-	-	-
Long Term Loans from RATCH-Australia Corporation Ltd	Term Loans	5,388.0		May-01-2023	445.7	147.9	-	-	-	-	-	-
Long Term Loans from Saha Green Forest Company Limi	Term Loans	130.0		Dec-01-2025	10.8	10.7	10.7	9.7	-	-	-	-
Long Term Loans from Sahaogon Public Company Limit	Term Loans	958.0		Dec-01-2024	79.3	78.9	72.0	-	-	-	-	-
Long Term Loans from Sahaogon Public Company Limit	Term Loans	320.0	3.75%	2027	12.0	12.0	12.0	12.0	12.0	12.0	-	-
Short Term Loans from RATCH Group	Term Loans	2,536.0		Mar-01-2022	35.0	-	-	-	-	-	-	-
Short Term Loans from RH International	Term Loans	1,504.0		Jan-01-2022	-	-	-	-	-	-	-	-
Short Term Loans from Sahaogon	Term Loans	1,325.0		Dec-31-2022	109.6	-	-	-	-	-	-	-
Total Interest Payments					2,633.7	2,088.2	1,014.6	737.6	724.4	722.3	698.3	
Principle Repayment Reschedule												
Ratch Group Public Company Limited (SET:RATCH)	Corporate Debenture	26.3		Nov-04-2023	-	26.3	-	-	-	-	-	-
Sahaogon (Chonburi) Public Company Limited (SET:SCJ)	Corporate Debenture	18.4		Sep-22-2025	-	-	18.4	-	-	-	-	-
Ratch Group Public Company Limited (SET:RATCH)	Corporate Debenture	39.4		Nov-04-2025	-	-	39.4	-	-	-	-	-
RH International (Singapore) Corporation Pte. Ltd.	Corporate Debenture	-		Aug-24-2026	-	-	-	-	-	-	-	-
RH International (Singapore) Corporation Pte. Ltd.	Corporate Debenture	300.0		Mar-27-2028	-	-	-	-	-	-	300.0	-
Sahaogon (Chonburi) Public Company Limited (SET:SCJ)	Corporate Debenture	14.4		Sep-22-2029	-	-	-	-	-	-	-	14.4
Ratch Group Public Company Limited (SET:RATCH)	Corporate Debenture	39.4		Nov-04-2030	-	-	-	-	-	-	-	-
Sahaogon (Chonburi) Public Company Limited (SET:SCJ)	Corporate Debenture	36.7		Sep-22-2032	-	-	-	-	-	-	-	-
Ratch Group Public Company Limited (SET:RATCH)	Corporate Debenture	105.0		Nov-04-2035	-	-	-	-	-	-	-	-
Long Term Loans from Collector Wind Farm Pty. Ltd.	Term Loans	4,091.0		May-01-2024	-	-	4,091.0	-	-	-	-	-
Long Term Loans from Mount Emerald Wind Farm Pty. Lt	Term Loans	4,587.0		Oct-01-2023	-	4,587.0	-	-	-	-	-	-
Long Term Loans from PT Bajadaja Sentranusa	Term Loans	5,251.0		Sep-01-2029	-	-	-	-	-	-	-	5,251.0
Long Term Loans from RATCH Cogeneration Company I	Term Loans	3,267.0		Nov-01-2032	-	-	-	-	-	-	-	-
Long Term Loans from RATCH Group Public Company L	Term Loans	5,000.0		Mar-01-2024	-	-	5,000.0	-	-	-	-	-
Long Term Loans from RATCH-Australia Collinsville Sol	Term Loans	1,013.0		Apr-01-2024	-	-	1,013.0	-	-	-	-	-
Long Term Loans from RATCH-Australia Corporation Ltd	Term Loans	5,388.0		May-01-2023	-	-	-	-	-	-	-	-
Long Term Loans from Saha Green Forest Company Limi	Term Loans	130.0		Dec-01-2025	-	-	-	130.0	-	-	-	-
Long Term Loans from Sahaogon Public Company Limit	Term Loans	958.0		Dec-01-2024	-	-	-	958.0	-	-	-	-
Long Term Loans from Sahaogon Public Company Limit	Term Loans	320.0		2027	-	-	-	-	-	320.0	-	-
Short Term Loans from RATCH Group	Term Loans	2,536.0		Mar-01-2022	2,536.0	-	-	-	-	-	-	-
Short Term Loans from RH International	Term Loans	1,504.0		Jan-01-2022	1,504.0	-	-	-	-	-	-	-
Short Term Loans from Sahaogon	Term Loans	1,325.0		Dec-31-2022	1,325.0	-	-	-	-	-	-	-
Total Repagments					5,365.0	10,001.3	11,062.0	187.7	-	320.0	300.0	
Change to Current Portion of LT Debt					4,636.3	1,060.8	#####	(187.7)	320.0	(20.0)	4,965.4	
Change to Long Term Debt					#####	(11,062.0)	(187.7)	-	(320.0)	(300.0)	#####	
Revolving Capital												
Revolver Borrowing from Previous Year						6,128.6	21,739.7	42,227.8	44,972.6	40,721.7	30,260.9	
Total Interest and Principal Paydown Amount					7,998.7	12,089.5	12,076.6	925.4	724.4	1,042.3	998.3	
Cash					1,870.1	(3,521.7)	(8,411.5)	(1,818.4)	4,975.3	11,503.1	18,072.0	
Minimum Cash Balance												
Revolver Borrowing					6,128.6	21,739.7	42,227.8	#####	#####	#####	#####	Assume zero for

Income Statement

Financial Statements (THB in millions, Financial Year Ended Dec 31st)	2019A	2020A	2021A	2022F	2023F	2024F	2025F	2026F	2027F	2028F
Income Statement (THB in millions, Financial Year Ended Dec 31st)										
Revenue	35,441.1	31,652.5	35,231.5	40,277.1	38,156.9	38,723.4	38,920.7	39,117.0	39,266.0	39,415.6
Other Revenue	-	-	-	-	-	-	-	-	-	-
Total Revenue	35,441.1	31,652.5	35,231.5	40,277.1	38,156.9	38,723.4	38,920.7	39,117.0	39,266.0	39,415.6
Fuel & Purchased Power	27,647.8	24,475.4	26,892.6	34,235.5	29,380.8	29,817.0	29,968.9	30,120.1	30,234.9	30,350.0
Other COGS	5,580.2	5,753.3	6,223.9	6,847.1	6,486.7	6,583.0	6,616.5	6,649.9	6,675.2	6,700.6
Total COGS	33,228.0	30,228.7	33,116.5	41,082.6	35,867.5	36,400.0	36,585.4	36,770.0	36,910.1	37,050.6
Gross Profit	2,213.1	1,423.8	2,115.0	(805.5)	2,289.4	2,323.4	2,335.2	2,347.0	2,356.0	2,364.9
Operating Exp.	(1,309.4)	(1,324.8)	(1,428.3)	(1,611.1)	(1,526.3)	(1,548.9)	(1,556.8)	(1,564.7)	(1,570.6)	(1,576.6)
Operating Income	903.6	99.1	686.6	(2,416.6)	763.1	774.5	778.4	782.3	783.3	788.3
Interest Expense, Total	(1,430.6)	(1,551.4)	(1,868.1)	(2,633.7)	(2,088.2)	(1,014.6)	(737.6)	(724.4)	(722.3)	(698.3)
Interest and Invest. Income	3,229.6	2,773.8	2,359.5	2,787.6	2,787.6	2,787.6	2,787.6	2,787.6	2,787.6	2,787.6
Net Interest Income (Expense)	1,799.0	1,222.4	491.4	153.9	699.4	1,773.0	2,050.0	2,063.2	2,065.3	2,089.4
Income/(Loss) from Affiliates	3,968.4	4,600.3	5,902.4	5,902.4	5,902.4	5,902.4	5,902.4	5,902.4	5,902.4	5,902.4
Currency Exchange Gains (Loss)	(132.5)	304.5	206.3	-	-	-	-	-	-	-
Other Non-Operating Inc. (Exp.)	67.1	88.8	541.5	-	-	-	-	-	-	-
Gain From Affiliates	3,903.0	4,993.6	6,650.1	5,902.4	5,902.4	5,902.4	5,902.4	5,902.4	5,902.4	5,902.4
Total Merger & Rel. Restruct. Charges	-	-	(29.6)	-	-	-	-	-	-	-
Impairment of Goodwill	(42.3)	-	(19.6)	-	-	-	-	-	-	-
Gain/(Loss) on the Sale of Investment	-	-	-	-	-	-	-	-	-	-
Asset Writedown	-	-	-	-	-	-	-	-	-	-
Total Insurance Settlement	-	-	-	-	-	-	-	-	-	-
Other Unusual Items	269.9	-	177.7	-	-	-	-	-	-	-
Unusual Items	227.6	-	128.5	-	-	-	-	-	-	-
Profit from Cont. Ops Before Tax	6,833.3	6,315.0	7,956.6	3,639.7	7,365.0	8,449.9	8,730.8	8,748.0	8,753.0	8,780.1
Income Tax Expense	(870.1)	(28.4)	(178.1)	(727.9)	(1,473.0)	(1,690.0)	(1,746.2)	(1,749.6)	(1,750.6)	(1,756.0)
Earnings from Cont. Ops.	5,963.2	6,286.7	7,778.6	2,911.7	5,892.0	6,759.9	6,984.6	6,998.4	7,002.4	7,024.1
Earnings of Discontinued Ops.	-	-	-	-	-	-	-	-	-	-
Extraord. Item & Account. Change	-	-	-	-	-	-	-	-	-	-
Net Income to Company	5,963.2	6,286.7	7,778.6	2,911.7	5,892.0	6,759.9	6,984.6	6,998.4	7,002.4	7,024.1
Minority Int. in Earnings	-	-	(6.6)	-	-	-	-	-	-	-
Net Income	5,963.2	6,286.7	7,772.0	2,911.7	5,892.0	6,759.9	6,984.6	6,998.4	7,002.4	7,024.1

Balance Sheet

Balance Sheet (THB in millions, Financial Year Ended Dec 31st)	2019A	2020A	2021A	2022F	2023F	2024F	2025F	2026F	2027F	2028F
ASSETS										
Current Assets										
Cash And Equivalents	4,917.2	4,856.6	6,961.5	1,870.1	(3,521.7)	(8,411.5)	(1,819.4)	4,975.3	11,503.1	18,072.0
Short Term Investments	4,146.8	2,914.9	2,042.0	2,042.0	2,042.0	2,042.0	2,042.0	2,042.0	2,042.0	2,042.0
Trading Asset Securities	305.1	842.5	857.2	857.2	857.2	857.2	857.2	857.2	857.2	857.2
Accounts Receivable	8,782.2	7,765.5	12,820.6	11,763.1	11,143.9	11,309.3	11,367.0	11,424.3	11,467.8	11,511.5
Other Receivables	300.0	165.2	596.1	604.2	572.4	580.9	583.8	586.8	589.0	591.2
Inventory	1,880.4	1,782.6	1,901.8	2,284.9	1,994.8	2,024.4	2,034.8	2,045.0	2,052.8	2,060.6
Other Current Assets	148.1	157.3	136.5	136.5	136.5	136.5	136.5	136.5	136.5	136.5
Total Current Assets	20,479.8	18,484.7	25,315.8	19,558.0	13,225.1	8,538.8	15,201.9	22,067.1	28,648.4	35,271.1
Non Current Assets										
Gross Property, Plant & Equipment	38,796.4	48,685.3	63,064.7	60,415.6	57,235.3	58,085.0	58,381.0	58,675.5	58,899.1	59,123.4
Accumulated Depreciation	(14,688.5)	(17,176.4)	(24,662.7)	(22,957.9)	(21,749.4)	(22,072.3)	(22,184.8)	(22,296.7)	(22,381.6)	(22,466.9)
Net Property, Plant & Equipment	24,107.9	31,508.9	38,402.0	37,457.7	35,485.9	36,012.7	36,196.2	36,378.8	36,517.4	36,656.5
Goodwill	170.3	169.7	1,599.7	1,599.7	1,599.7	1,599.7	1,599.7	1,599.7	1,599.7	1,599.7
Other Intangibles	3,626.6	3,283.9	3,108.3	3,108.3	3,108.3	3,108.3	3,108.3	3,108.3	3,108.3	3,108.3
Long-term Investments	35,541.0	42,863.9	55,081.2	55,081.2	55,081.2	55,081.2	55,081.2	55,081.2	55,081.2	55,081.2
Accounts Receivable Long-Term	13,139.3	10,561.9	25,202.5	25,202.5	25,202.5	25,202.5	25,202.5	25,202.5	25,202.5	25,202.5
Loans Receivable Long-Term	540.9	2,907.4	3,308.6	3,308.6	3,308.6	3,308.6	3,308.6	3,308.6	3,308.6	3,308.6
Deferred Tax Assets, LT	38.9	42.1	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5
Deferred Charges, LT	1,677.8	1,392.4	1,678.0	1,678.0	1,678.0	1,678.0	1,678.0	1,678.0	1,678.0	1,678.0
Other Long-Term Assets	707.0	1,118.8	1,118.8	1,118.8	1,118.8	1,118.8	1,118.8	1,118.8	1,118.8	1,118.8
Total Non Current Assets	79,749.7	93,647.6	129,539.5	125,487.9	126,623.4	127,150.2	127,333.8	127,516.3	127,654.9	127,794.0
Total Assets	100,229.4	112,132.3	154,855.3	145,045.9	139,848.5	135,689.1	142,535.6	149,583.4	156,303.4	163,065.1
LIABILITIES										
Current Liabilities										
Accounts Payable	3,959.3	3,683.4	7,755.1	7,068.5	6,171.2	6,262.8	6,294.7	6,326.4	6,350.6	6,374.7
Accrued Exp.	-	1.4	2.0	-	-	-	-	-	-	-
Short-term Borrowings	603.1	60.1	5,364.9	805.5	763.1	774.5	778.4	782.3	785.3	788.3
Curr. Port. of LT Debt	1,091.2	1,486.2	4,670.5	9,306.7	10,367.5	(506.8)	(694.5)	(374.5)	(394.5)	4,570.9
Curr. Port. of Leases	0.7	118.1	161.5	805.5	763.1	774.5	778.4	782.3	785.3	788.3
Curr. Income Taxes Payable	3.7	0.2	11.1	-	-	-	-	-	-	-
Other Current Liabilities	1,916.0	1,527.8	2,304.9	2,013.9	1,907.8	1,936.2	1,946.0	1,955.8	1,963.3	1,970.8
Total Current Liabilities	7,574.1	6,877.2	20,269.9	20,000.1	19,972.8	9,241.1	9,103.0	9,472.5	9,490.0	14,493.1
Non-Current Liabilities										
Long-Term Debt	30,440.8	40,916.5	49,416.9	39,415.7	28,353.7	28,165.9	28,165.9	27,845.9	27,545.9	22,280.5
Long-Term Leases	0.4	1,362.6	1,505.4	1,505.4	1,505.4	1,505.4	1,505.4	1,505.4	1,505.4	1,505.4
Pension & Other Post-Retire. Benefits	203.8	225.5	266.7	266.7	266.7	266.7	266.7	266.7	266.7	266.7
Def. Tax Liability, Non-Curr.	1,710.2	1,831.4	4,139.4	4,139.4	4,139.4	4,139.4	4,139.4	4,139.4	4,139.4	4,139.4
Other Non-Current Liab., Total	886.1	397.5	1,447.4	1,447.4	1,447.4	1,447.4	1,447.4	1,447.4	1,447.4	1,447.4
Total Non-Current Liabilities	33,241.4	44,733.5	56,775.9	46,774.6	35,712.6	35,524.9	35,524.9	35,204.9	34,904.9	29,639.4
Total Liabilities	40,815.5	51,610.7	77,045.8	66,774.7	55,685.4	44,766.0	44,627.9	44,677.3	44,394.9	44,132.5
EQUITY										
Common Stock	14,500.0	14,500.0	14,500.0	14,500.0	14,500.0	14,500.0	14,500.0	14,500.0	14,500.0	14,500.0
Additional Paid In Capital	1,531.8	1,531.8	1,531.8	1,531.8	1,531.8	1,531.8	1,531.8	1,531.8	1,531.8	1,531.8
Retained Earnings	52,252.3	55,035.6	59,327.7	62,238.4	68,131.4	74,891.3	81,876.0	88,874.3	95,876.8	102,900.8
Treasury Stock	-	-	-	-	-	-	-	-	-	-
Comprehensive Inc. and Other	(8,870.8)	(10,546.5)	(5,069.7)	-	-	-	-	-	-	-
Total Common Equity	59,413.2	60,520.9	70,289.7	78,271.2	84,163.2	90,923.1	97,907.7	104,906.1	111,908.5	118,932.6
Minority Interest	0.7	0.7	7,519.8	-	-	-	-	-	-	-
Total Equity	59,413.9	60,521.6	77,809.6	78,271.2	84,163.2	90,923.1	97,907.7	104,906.1	111,908.5	118,932.6
Total Liabilities And Equity	100,229.4	112,132.3	154,855.3	145,045.9	139,848.6	135,689.1	142,535.7	149,583.4	156,303.4	163,065.1

Cash Flow Statement

Cash Flow Statement
(THB in millions, Financial Year Ended Dec 31st)

Cash from Operations									
Changes to Short Term Investments	1,231.9	872.9	-	-	-	-	-	-	-
Changes to Trading Asset Securities	(537.5)	(14.7)	-	-	-	-	-	-	-
Changes to Accounts Receivable	1,016.7	(5,055.1)	1,057.5	619.2	(165.4)	(57.6)	(57.3)	(43.5)	(43.7)
Changes to Other Receivables	134.8	(430.9)	(8.0)	31.8	(8.5)	(3.0)	(2.9)	(2.2)	(2.2)
Changes to Inventory	97.8	(119.2)	(383.0)	290.0	(29.6)	(10.3)	(10.3)	(7.8)	(7.8)
Changes to Other Current Assets	(9.2)	20.8	-	-	-	-	-	-	-
Changes to Accounts Payable	(276.0)	4,071.7	(686.6)	(897.3)	91.6	31.9	31.7	24.1	24.2
Changes to Accrued Exp.	1.4	0.6	(2.0)	-	-	-	-	-	-
Changes to Short-term Borrowings	(543.0)	5,304.8	(4,559.4)	(42.4)	11.3	3.9	3.9	3.0	3.0
Changes to Curr. Port. of LT Debt	395.0	3,184.3	4,636.3	1,060.8	(10,874.3)	(187.7)	320.0	(20.0)	4,965.4
Changes to Curr. Port. of Leases	117.4	43.4	644.0	(42.4)	11.3	3.9	3.9	3.0	3.0
Changes to Curr. Income Taxes Payable	(3.5)	10.9	(11.1)	-	-	-	-	-	-
Changes to Other Current Liabilities	(388.2)	777.0	(291.0)	(106.0)	28.3	9.9	9.8	7.5	7.5
Total Cash Flows from Operations	1,237.6	8,666.5	396.7	913.7	(10,935.2)	(209.0)	298.9	(36.0)	4,943.3
Cash from Investing Activities									
Changes to Net Property, Plant & Equipment	(7,401.0)	(6,893.1)	944.4	1,971.8	(526.8)	(183.5)	(182.6)	(138.6)	(138.1)
Changes to Goodwill	0.7	(1,430.1)	-	-	-	-	-	-	-
Changes to Other Intangibles	342.7	175.6	3,107.3	(3,107.3)	-	-	-	-	-
Changes to Long-term Investments	(7,322.9)	(12,217.3)	-	-	-	-	-	-	-
Changes to Accounts Receivable Long-Term	2,577.4	(14,640.6)	-	-	-	-	-	-	-
Changes to Loans Receivable Long-Term	(2,366.5)	(401.2)	-	-	-	-	-	-	-
Changes to Deferred Tax Assets, LT	(3.2)	1.6	-	-	-	-	-	-	-
Changes to Deferred Charges, LT	485.4	(285.6)	-	-	-	-	-	-	-
Changes to Other Long-Term Assets	(210.5)	(201.3)	-	-	-	-	-	-	-
Total Cash Flows from Investing Activities	(13,897.9)	(35,892.0)	4,051.6	(1,135.5)	(526.8)	(183.5)	(182.6)	(138.6)	(138.1)
Cash from Financing Activities									
Changes to Long-Term Debt	10,475.6	8,500.4	(10,001.3)	(11,062.0)	(187.7)	-	(320.0)	(300.0)	(5,265.4)
Changes to Long-Term Leases	1,362.1	142.9	-	-	-	-	-	-	-
Changes to Pension & Other Post-Retire. Benefits	21.7	41.2	-	-	-	-	-	-	-
Changes to Def. Tax Liability, Non-Curr.	121.2	2,308.0	-	-	-	-	-	-	-
Changes to Other Non-Current Liab., Total	(488.6)	1,049.9	-	-	-	-	-	-	-
Changes to Common Stock	-	-	-	-	-	-	-	-	-
Changes to Additional Paid In Capital	-	-	-	-	-	-	-	-	-
Changes to Retained Earnings	2,783.4	4,292.0	2,911.7	5,892.0	6,759.9	6,994.6	6,998.4	7,002.4	7,024.1
Changes to Treasury Stock	-	-	-	-	-	-	-	-	-
Changes to Comprehensive Inc. and Other	(1,675.7)	5,476.8	5,069.7	-	-	-	-	-	-
Changes to Minority Interest	0.0	7,519.1	(7,519.8)	-	-	-	-	-	-
Total Cash Flows from Financing Activities	12,599.8	29,330.4	(9,538.6)	(5,170.0)	6,572.2	6,994.6	6,678.4	6,702.4	1,758.6
Beginning Cash Position	4,917.2	4,856.6	6,961.5	1,870.1	(3,521.7)	(8,411.5)	(1,819.4)	4,975.3	11,503.1
Cash Changes	(60.5)	2,104.9	(5,091.3)	(5,391.8)	(4,889.9)	6,592.2	6,794.7	6,527.8	6,568.9
Ending Cash Position	4,856.6	6,961.5	1,870.1	(3,521.7)	(8,411.5)	(1,819.4)	4,975.3	11,503.1	18,072.0