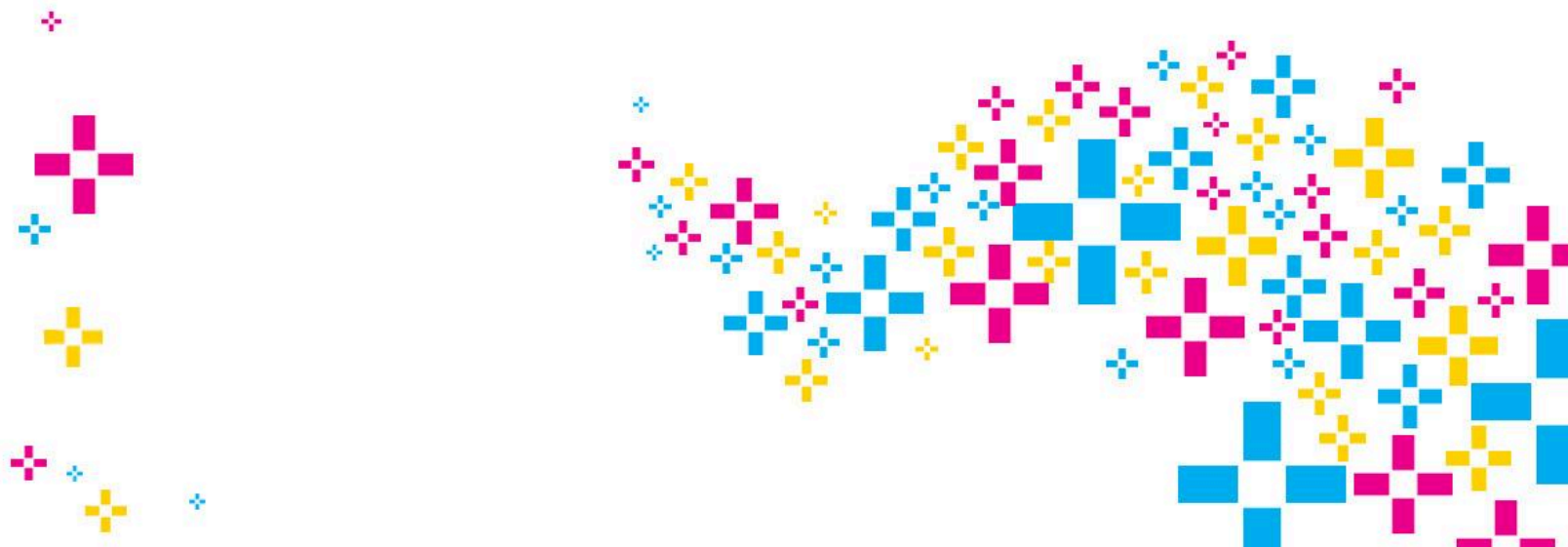


NRG Energy Valuation Report

12/12/2016

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Introduction

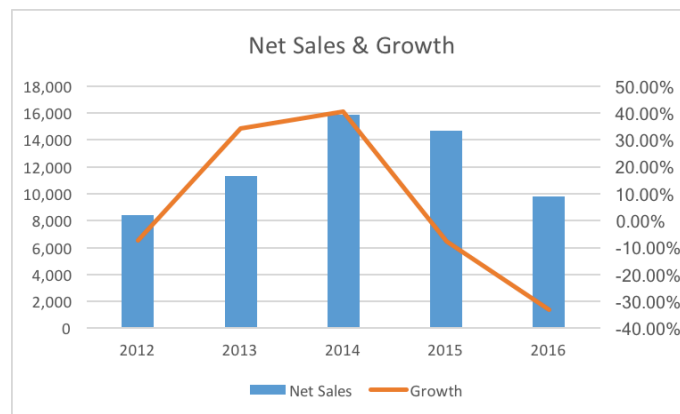
The purpose of this section is to give an overview analysis of the firm NRG Energy, Inc. The overview will discuss the firm itself, the industry it is part of, and main competitors of NRG. This draft will also discuss key success factors for the industry and identify which factors give the chosen firm a competitive advantage. These analyses are important for investors and competitors to navigate the industry and make appropriate decisions for themselves. From this paper, it can be inferred that NRG is part of a competitive industry that is focused on cost leadership. It can also be inferred that NRG is currently not as competitive as other companies, but is making improvements.

Business and Industry Analysis

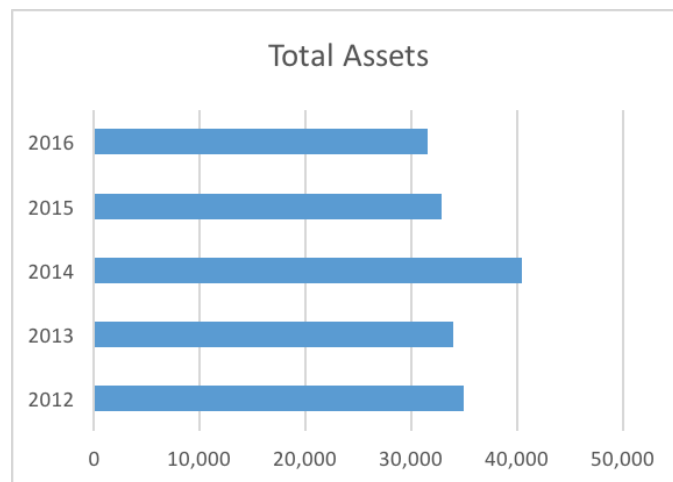
Overview of NRG Energy, Inc.

NRG Energy, Inc. is a Fortune 200 company that generates electricity and serves as a retail electricity platform. NRG is one of the largest generation capacity companies in the United States. Founded in 1992, the firm has grown to employ over ten thousand full-time employees throughout its 140 power-generating plants. It is currently headquartered in Princeton, New Jersey and Houston, Texas, with one hundred and forty generating plants in the United States, where it does business with all fifty states. NRG provides electricity through various methods including gas, coal, oil, nuclear, and renewable sources such as wind and hydropower. Significant competitors include Florida Power & Light Co., Duke Energy Corporation, and First Energy Corporation.

Sales Volume and Growth



The bar graph above showcases the change in net sales for NRG in the past five years; from 2012 to the most recent 10-Q on September 30, 2016. NRG nearly doubled its net sales from 2012 to 2014, moving from \$8,422 million in 2012 to \$15,868 million in 2014. In 2015 they experienced a slight decline, and in 2016 they had a fairly substantial decline in net sales from \$14,674 million in 2015 to \$9,819 million. This is likely a slight distortion since NRG has only reported three quarters of the year for 2016. NRG experienced healthy sales growth until 2014, where they reached a peak. Between 2014 and 2015, NRG saw a sharp decrease in growth that declined at a more gradual rate into 2016. Overall, the company reached a high point in sales and growth in 2014, but began to decrease in 2015 and 2016.



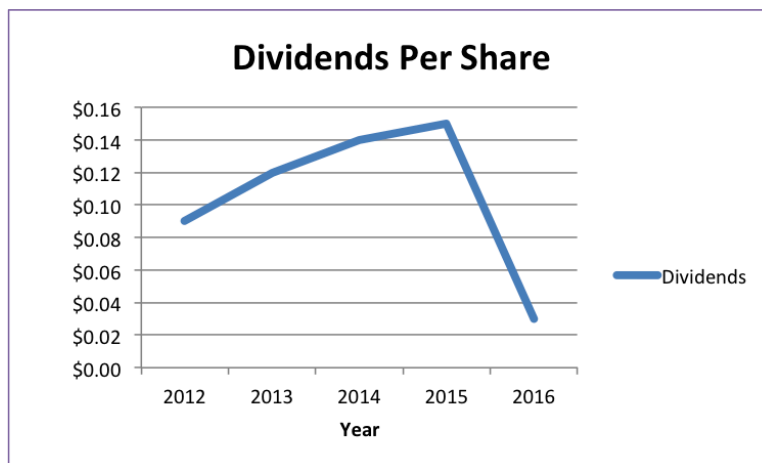
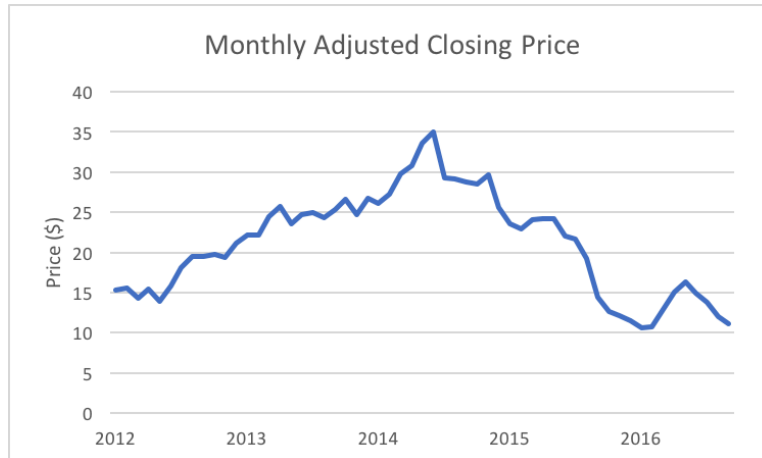
NRG kept their total asset value around \$34,000 million in 2012 and 2013, as seen in the bar graph above. They acquired some property, plant and equipment in 2014 that can account for the increase in total assets to \$40.46 billion. In 2015 the firm's total assets returned back down to about \$32 billion, where it remained for 2016. This decrease in total assets is likely due, in part, to the decrease in cash kept on hand by NRG. Over the past five years, NRG has maintained a fairly steady total asset value - except in 2014 when the firm purchased new fixed assets.

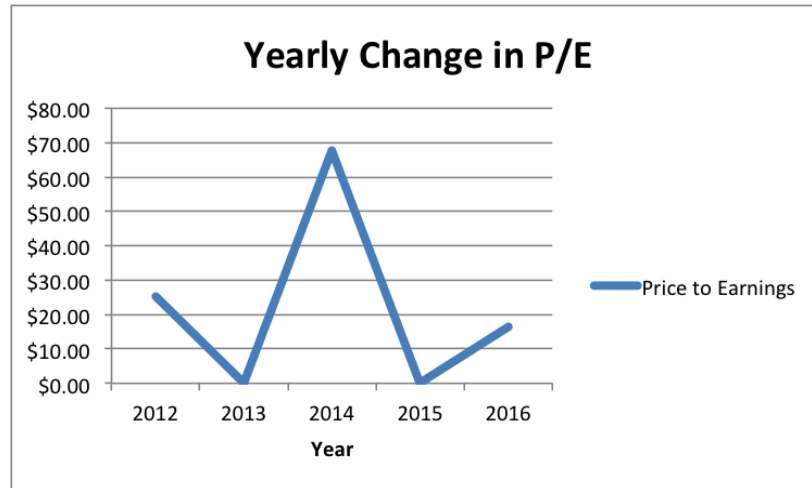
Market Capitalization (2012-2016)

2012	2013	2014	2015	2016
7,416,732,585	9,298,940,117	9,073,057,717	3,698,016,794	3,536,113,541

Market Capitalization is the total market value of all the company's outstanding shares and is commonly used to determine the size of a company. NRG has a "medium cap" company

over the past five years. A “large cap” company has a market capitalization over \$10 billion, and a “medium cap” company usually falls between \$2 billion and \$10 billion. A “medium cap” company is usually experiencing growth and is not as established as a “large cap” company. It can be inferred that NRG has anticipated growth and improvement in its competitiveness.





As seen in the graph depicting the monthly adjusted closing prices, from 2012 to 2014, NRG maintained a steady growing stock price. However, as mentioned above, in the 2015 income statements NRG experienced a negative net income due to large unusual expenses, as well as to a decrease in the price of natural gas. These expenses affected the stock price of the respective years significantly as they experienced a sharp decline in 2015. In 2014, the closing price was \$26.95 and in 2015 the closing price was \$11.77. From 2015 to 2016, they did begin to stabilize. Additionally, the chart demonstrating dividends per share is highly representative of the significant decline in the company's income in the 2015 income statements. From 2012 to 2015, the dividends paid per share increased steadily from \$0.09 to \$0.15, respectively, but dropped down to \$0.03 per share in 2016. The dividends per share experienced such a sharp decline due to the large amount of debt the company experience in 2015 and 2016. This required a substantial amount of their operating income to be directed toward repayment of interest of principal on the debt, which in turn reduced their ability to pay dividends. The yearly change in NRG's price-earnings ratio reached a peak in 2014, reaching \$67.71. In both 2013 and 2015, however, NRG experienced null years. In 2016, NRG had a price-earnings of \$16.60.

Industry Overview Using the Five Forces Model

Industry Overview

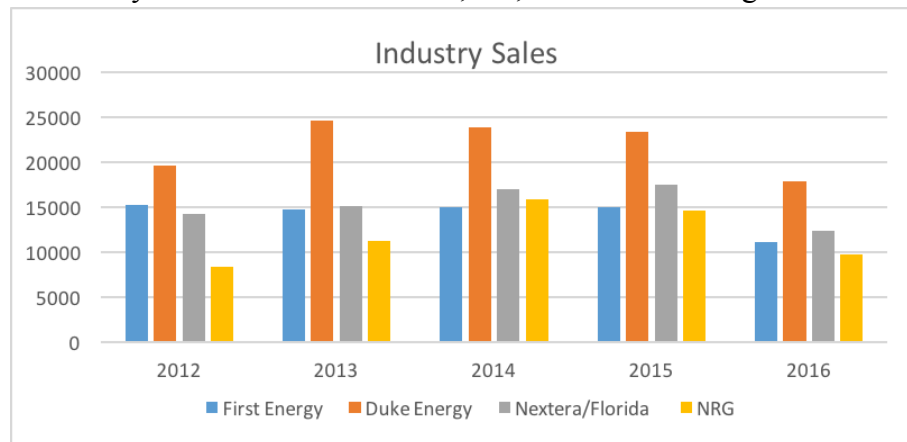
Companies within the electricity generating industry use natural gas, coal, nuclear power, and renewable energy sources such as wind and hydropower in order to generate electricity. Most electricity is generated using natural gas, so electricity prices can be heavily influenced by changing gas prices. These firms are quite "territorial", and will work diligently to take over competitors customer base. Firms in this industry are offering the same product to customers, so pricing is key when recommending themselves to potential buyers.

Rivalry Between Firms

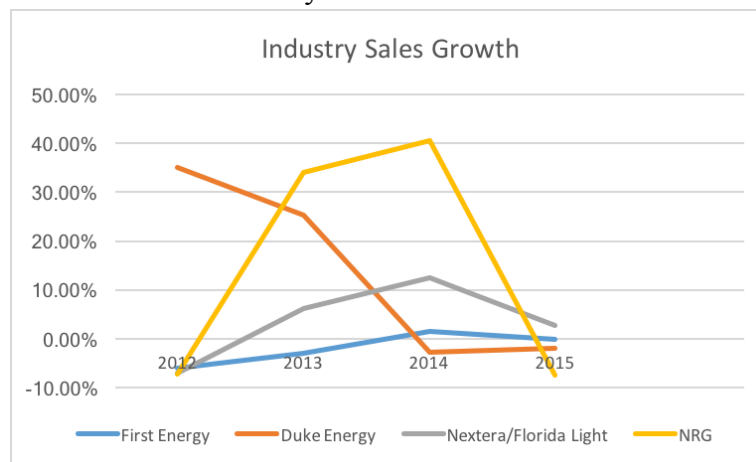
In this section, we will discuss the actual competition for the electrical industry. We will be going over industry growth rate, concentration and balance of competitors, degree of

differentiation and switching cost, scale/learning economies, the ratio of fixed to cost variables, and excess capacity and exit barriers that face this industry.

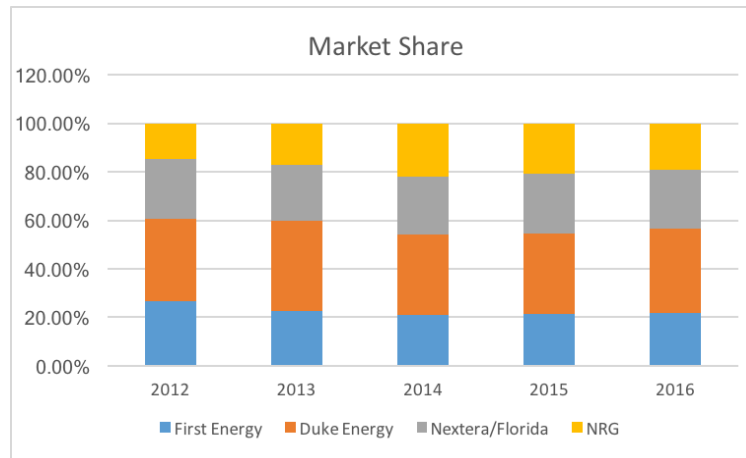
It is important to analyze the industry growth because it can tell us if firms have the capacity to meet the increasing demand for electricity. Since 1949, there has been a rise in generation of energy with a peak in 2008. Since then that generation has since remained relatively steady, generation of electricity has remained at about 2,000,000 thousand megawatt-hours.



In the graph above, it can be seen that sales in electricity generation has risen at a steady rate from 2012 to 2015. In 2016 sales seem to dip for the entire industry, but the fourth quarter financial statements will not be available until December 2016. Sales for 2016 should be expected to rise to a level similar to other years once this information becomes available.



The graph above demonstrates the sales growth of the electric generation industry over the past five years. Most of the industry experienced growth from 2012 to 2014, where the industry reached a peak. Since 2014, the industry showed a decline in growth. According to the U.S. Energy Information Administration, growth in this industry is expected to decline 24% between 2015 to 2040 due to Clean Power Plans, which will aim to switch power generation over to renewable resources such as hydropower and solar power.



The graph shows that the competing firms have maintained constant market share within the industry. This may indicate that it is more difficult for potential entrants. In the electrical industry, there are 4,585 firms that employ 370,286 people throughout the country. Some of these firms work in areas where they are the only electric provider and so they are able to control the prices better than areas where there are multiple competing firms. The products that they offer is the same across the industry, and that is to supply electricity. So competition then stems from the number of companies in an area and not the product they offer. In some cases, there is only one company and they can rule the prices within that area. Compared to the areas with many companies, the prices are a little bit more controlled.

Fixed costs in this industry are used to maintain the plants that generate electricity. The variable costs mostly arise from purchasing materials to generate electricity. The amount of fixed costs seems to be lower compared to the variable costs in this industry. This means that companies can lower the average price of electricity. It becomes imperative for firms to maintain tight control of their costs, as it controls the prices they can set for their product. In an industry that is extremely price competitive, lowering costs of production become extremely important.

Finally, capacity has been keeping up with demand and has grown steadily from 550,000 megawatts to 616,000 megawatts from 2004-2014. Since plants do not run at full capacity, it can be assumed that there is a high demand for their product. Since electricity cannot be stored, and is purchased as it is produced, the electricity industry does not exceed capacity.

Due to high firm concentration, high competitive growth and market share, low differentiation in product, price control, and tight cost control, we believe that there is high competition between firms.

Threat of Substitute Products

This section will discuss the impact and threat of substitute products to the customer for power supply and generation. The impact of substitution is generally not an issue within the industry. Products such as personal home solar panels and wind energy generation exist, but are not generally used by the public as a primary source of power. Due to the limited availability and cost of purchase for the equipment in order for the customer to supply and generate power independent of the industry, it is an uncommon choice.

Threat of Potential Entrants

The energy industry is a highly capital intensive business, which is an initial limiting factor for the entrance of new, potential entrants. In order to compete with larger scale companies such as NRG, First Energy, Duke Energy, or Florida Power, a potential entrant must possess the finances to first acquire the capital required to produce the energy, then must purchase enough resources from suppliers to provide the amount of energy demanded by larger markets. New entrants will find themselves at a significant cost disadvantage, especially if they want to compete with more sizable firms. As the energy business begins to shift from traditional fuel sources, such as natural gas and oil, to more environmentally conscious sources, such as solar and wind power, newer entrants must dedicate more funding toward researching and developing more cost efficient, yet socially responsible methods of gathering such power and producing more energy from it, and must also have the proper plants and equipment necessary to achieve it. Not only must they have the quantity of assets required, their machinery must be kept up-to-date and maintained, and obsolete machinery must be replaced.

Additionally, potential entrants must also face and attempt to utilize the first mover advantage, especially when dealing with supplier. Firms that are early entrants in an industry are usually able to secure better deals and arrangements with their suppliers, allowing them to develop a better relationship and further purchase these supplies at a much lower cost than their competitors. Because of the high switching costs customers face with energy companies, the first mover advantage gives older, existing companies a leg up on their competitors. Customers will be most likely to stay with the company they first began dealing with, rather than face the costs associated with shifting their business to another company.

The energy industry is subject to a number of regulations, making it difficult for potential entrants to secure a strong foothold in the industry. As more existing firms attempt to make the change toward energy efficiency with social responsibility, entering firms face the challenge of keeping up with their equipment as well as abiding by government regulations that monitor carbon emissions and other potential hazardous pollutants within the US.

Bargaining Power of Buyers

The bargaining power of buyers depends on consumer position and price sensitivity. Price sensitivity is dependent on the differentiation of the product and switching costs. In the electricity generation industry, there is little differentiation in product - it is all electricity. There is a large switching cost, especially for residential consumers. The average cost per hour of kilowatt power is about ten cents for the industry, but some firms charge up to sixteen cents per kilowatt hour. Therefore, consumers are more price sensitive. Industrial and commercial buyers have more buying power than residential buyers, who make up the largest buying group, because they make up a larger volume of purchases and hold larger contracts. Residential consumers also have lower buying power due to competition saturation per region. Electric generation firms serve specific areas, spanning regions of high concentration of competitors and regions with low levels of competition. For example, in a rural area there may be only one electric company. Residents of the community do not have any other choice for provider, creating a monopoly for the firm and lowering the residents bargaining power. In contrast, residents living in an area of high competition, such as a large city, have many choices for

electric generation. Suppose a city has four electricity generating firms, customers may have higher bargaining power since they have the option of switching provider. We believe that differentiation, switching costs, and region saturation create mixed competition in the industry.

Bargaining Power of the Suppliers

This section will discuss the bargaining power that suppliers have over NRG and its competitors when discussing terms and prices. We will consider the importance of the product, number of suppliers, companies available to the supplier, and differentiation between suppliers. In order to generate electricity, companies like NRG use a variety of power sources. These sources include natural gas, coal, nuclear power, hydropower, wind, and solar power. This gives these firms many options when choosing a way to produce electricity, and where to obtain it. Competition between companies that supply their products is increased due to this. For instance, not only will a coal company have to compete with other coal companies for a relationship with an electricity generating firm, they must also compete with the natural gas companies and the hydropower companies. The supplying companies lose their bargaining power because of the number of companies and the number of substitutions available. However, most of the industry firms use natural gas to produce over half of their electricity, which may give natural gas companies greater power than other fuel source companies. Because there are so many electric generation companies that utilize natural gas, the natural gas companies have many buyers to choose from, increasing their bargaining power in the industry. Some firms require suppliers to apply to work with the firm, which allows the firm to hand pick their suppliers, and may give them a better handle on prices and terms. This may give those firms a slight competitive edge. Due to the increase bargaining power of natural gas companies, we believe this causes a rise in competition in the electricity generation industry.

Summary

Below we have summarized the level of competition in each level of the five forces model. We believe the greatest driver in this industry is the rivalry between firms. This is because a large amount of money is required in order to enter the industry, so threat of entrants is low. Most people use electricity regularly and do not have other options for power, so threat of substitution is low as well. Buyers have moderate power of these firms, however they do not directly decide prices. Suppliers have very little power because firms often have suppliers apply for the opportunity. In this way suppliers are chosen based on what the firm wants and needs. Rivalry between firms is high because firms offer the same product to customers, so product pricing is key to maintaining a good customer base.

Rivalry Between Firms	Threat of Entrants	Threat of Substitution	Bargaining Power of Buyers	Bargaining Power of Suppliers
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High	Low	Low	Moderate	Low
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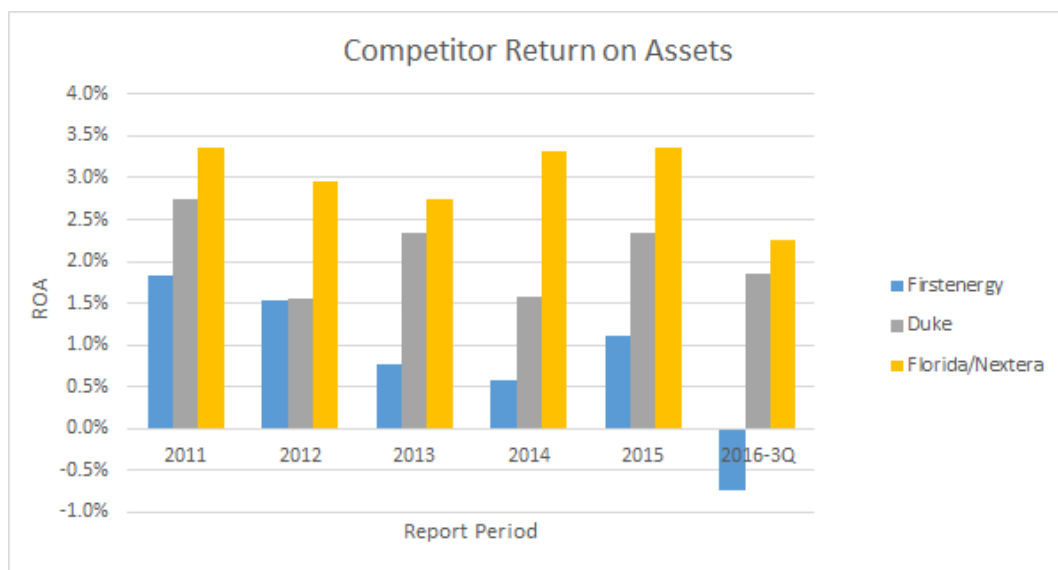
Analysis of Key Success Factors

Firms utilize two types of strategies to create advantages for themselves in the market: differentiation and cost leadership. A firm uses a differentiation strategy when they offer unique products from their competitors. A costs leadership strategy is used when products have little differentiation in the industry and the firm uses price variation and various production methods to create an advantage. Cost leadership strategy would be best for the electricity generation industry.

Cost Leadership

Economy of Scale

Economy of scale refers to the idea that as a firm increases in size and assets it will be able to decrease production costs per unit. If a firm can utilize their assets better than another firm, they will gain an advantage within the industry. The energy industry relies heavily on a firm's ability to utilize their assets to efficiently produce and supply large quantities of electricity to its customers while providing it at a reasonable price. A factor to take into consideration is the technology used in the plants. Even a new firm entering the market may possibly be able to get a leg up on the competition by utilizing equipment with newer technology that is better able to efficiently convert various fuel sources into electricity. Figure 9 below examines the return on assets of several of the leading energy companies in the US.



Efficient Production

Production efficiency is an important part in the electric industry, because it shows that a plant can streamline production and still produce the same quality of goods. In the electricity generating industry, efficiency of production is measured through heat rate. The heat rate is the amount of energy the plant uses to produce one kilowatt-hour of electricity. The numbers in the table below represent the average heat rate for the industry in British Thermal Units (Btu) per kilowatt-hour. The percentage at the bottom of the table represents the percent efficiency, found by using the heat rate.

2010	2011	2012	2013	2014
8,185	8,152	8,039	7,948	7,907
41.69%	41.85%	42.44%	42.93%	43.15%

It can be seen that in the five years between 2010 and 2014, the heat rate of the electricity generation industry has decreased, which means plants are using less energy to produce electricity. This increase in efficiency is shown by the increasing efficiency percentages.

Lower Input Cost and Tight Cost Control

An industry with high rivalry between firms places high value on product cost. If a firm can lower the costs associated with production then they can be more competitive with their price. Plants that can find way to lower fixed costs and variable costs will have a competitive edge. Firms achieve lower fixed costs through tight cost control, and lower variable costs by negotiating lower materials costs with suppliers. Overall in this industry, the fixed costs are lower than the variable costs. The biggest variable costs include: production, cost of fuel, distribution, and operation costs. The biggest fixed costs are: selling, general, and administrative costs, rent, depreciation. Lowering the ratio between fixed and variable costs can allow a firm to lower the rate they charge to customers.

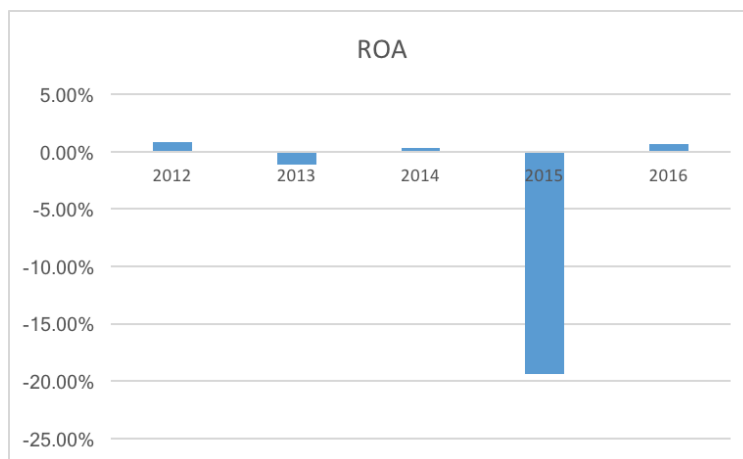
Differentiation

Firms within the electricity generation industry can differentiate themselves from competitors by identifying and meeting desires of customers. Currently, many people find value in environmentally friendly methods of production for their goods, such as wind power generation and hydropower generation. A company that is able to successfully produce electricity that has less negative impact on the environment could set themselves apart from others, and increase their customer base. Firms may also offer a variety of products, other than electricity, in order to increase their buyers, such as home security systems and home solar panels. These products may even be offered in bundle packages with electricity generation. In meeting these customer wants and ideals, an electricity generation company can boost themselves to be more competitive.

Firm Competitive Analysis

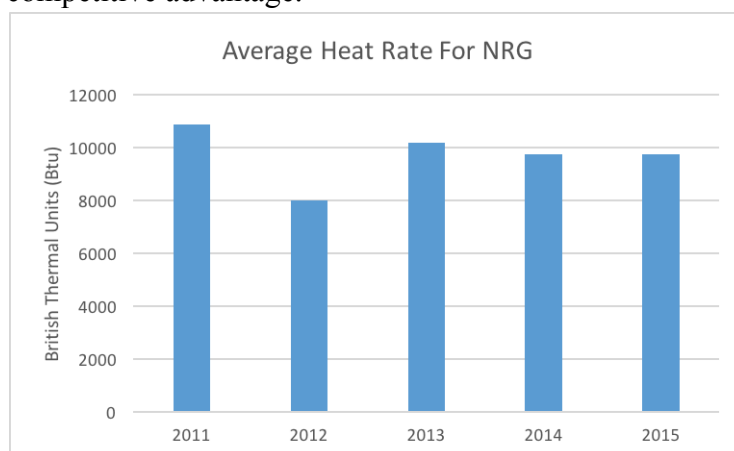
Economies of Scale

The graph below shows the annual ROA for NRG. Compared to the electricity generation industry, NRG is not utilizing its assets well. Their assets are making a return of less than 1% every year. They are not receiving large enough profits for the level of assets that they own. In their annual report, NRG stated that they had a tremendous amount of old and outdated assets. These assets are less efficient and cost more to operate. If NRG were to sell these outdated assets, they may be able to raise their ROA.



Efficient Production

In order to be able to improve ROA and growth rate, the efficiency of production is paramount. NRG, in order to keep up with its competitors, must be able to utilize machinery with efficiency. However, they have stated in their 10K that their equipment is outdated and therefore not as efficient as firms with advanced assets. Should NRG replace their outdated machines, they would have a more competitive advantage.



The first line of this table lists the heat average heat rate per year of NRG. Compared to the industry, NRG has a much higher heat rate, which means they are using more energy in

production than their competitors. In the past 3 years their heat rate has slowly decreased, so they may be improving their efficiency. This recent increase in efficiency is shown by the heat efficiency rate, which has increased fairly constantly. Though NRG is not as efficient as the industry average, their efficiency is improving.

Lower Input Cost and Tight Cost Control

In compared to the industry, NRG's operating costs and expenses are higher than the industry. The average for NRG from 2012-2014 was 95% while the industry average is 87%. The average net operating income for NRG is 5% while the industry average is 13% for the years 2012-2014. In order to improve profits, NRG needs to lower their operating expenses. In doing so, they can increase their net operating income, which can help increase their profit margin, which can help them have more control in how much they can charge to customers.

Differentiation

NRG has separated themselves from other electricity generating firms through excellent customer service and expanding their product portfolio. NRG has received numerous customer service awards from the Harvard Business Review and the Customer Experience Professionals Association. The firm has also expanded their residential product line. The company offers energy management, security services, protection plans, personal power generation, and electric car chargers (called eVgo) in addition to generating electricity.

Conclusion

We believe that NRG is not as competitive with the industry key success factors as other firms. They are not efficient with production, maintaining equipment, and keeping costs down. The firm is not receiving an adequate return on their assets, they are using more energy to produce electricity, and they have not kept costs within a reasonable range. The only key success factor that NRG is taking advantage of is differentiation. NRG offers various home retail items and customer service that competitors do not offer.

Accounting Analysis

The purpose of this section is to take an in depth look into the accounting policies of NRG. This is necessary because companies often put together their own financial documents, and managers are able to manipulate information in an effort to make their firm look better. In this section we will identify accounting policies, assess degree of financial flexibility, evaluate actual accounting strategy, evaluate the quality of disclosure, identify potential "red flags", and undo accounting distortions.

Key Accounting Policies

In this first step, we will divide the accounting policies into two groups: type one policies and type two policies. Type one accounting policies include the key success factors that were identified by the five forces model. These are activities that add value. In previous sections, we identified economies of scale, lower input cost, and differentiation as key success factors for

energy companies. Type two accounting policies can more easily be distorted because they have more flexibility when being reported. These policies require more thorough examination. We have identified important type two accounting policies for energy companies as impairment losses, hedging, and goodwill. Analyzing these accounting policies will give us a clearer view of the firm's financials.

Type One Accounting Policies

Economies of Scale

The energy producing industry is extremely price competitive. Companies must be able to maintain relatively low production costs while selling as much of their product as possible. Doing this would increase profits and make the firm much more competitive. The table below demonstrates the revenue, cost of goods sold, gross profit, cost of operations, and income from operations.

NRG (in thousands)	2016	2015	2014	2013	2012
Revenue	\$9,819,000	\$14,674,000	\$15,868,000	\$11,295,000	\$8,422,000
Cost of Goods Sold	\$6,738,000	\$10,755,000	\$11,794,000	\$8,130,000	\$6,087,000
Gross Profit	\$3,081,000	\$3,919,000	\$4,074,000	\$3,165,000	\$2,335,000
Operating Expenses	\$1,978,000	\$7,959,000	\$2,803,000	\$2,822,000	\$1,985,000
Income from Operations	\$1,318,000	\$-4,040,000	\$1,271,000	\$343,000	\$350,000

It can be seen that NRG does not possess economies of scale. Economies of scale refers to the idea that a firm can increase in size and assets and be able to decrease production costs per unit. The cost of goods sold and operating expenses generally increase from 2012 to 2014. Expenses increased by more than usual for 2014, which the company attributes to the purchase of another company. In 2015, the company spent uncharacteristically large amounts of money on operating expenses. They attribute this to added environmental regulations that required them to update equipment and the replacement of old equipment. The large operating expense from this year left a deficit in operations income. Revenues do not appear to increase sufficiently enough to justify these increases in costs. In 2015 revenue was not enough to cover expenses at all, and resulted in the firm having a negative income.

As mentioned in previous sections, NRG does not have sufficient ROA (Return on Assets). In fact, NRG makes a return of less than 1% on their assets every year. This further proves that NRG does not have economies of scale.

The information below displays the economies of scale that Duke Energy possesses. They have kept their expenses within a reasonable range. This shows just how abnormal the expenses for NRG in 2015 were.

Duke Energy (in thousands)	2016	2015	2014	2013	2012
Revenue	\$17,927,000	\$23,459,000	\$23,925,000	\$22,756,000	\$19,624,000
Cost of Goods Sold	\$9,882,000	\$13,728,000	\$14,323,000	\$13,545,000	\$12,574,000
Gross Profit	\$8,045,000	\$9,731,000	\$9,602,000	\$9,211,000	\$7,050,000
Operating Expenses	\$3,565,000	\$4,399,000	\$4,360,000	\$4,341,000	\$3,940,000
Income from Operations	\$4,500,000	\$5,367,000	\$5,258,000	\$4,854,000	\$3,126,000

Lower Input Cost

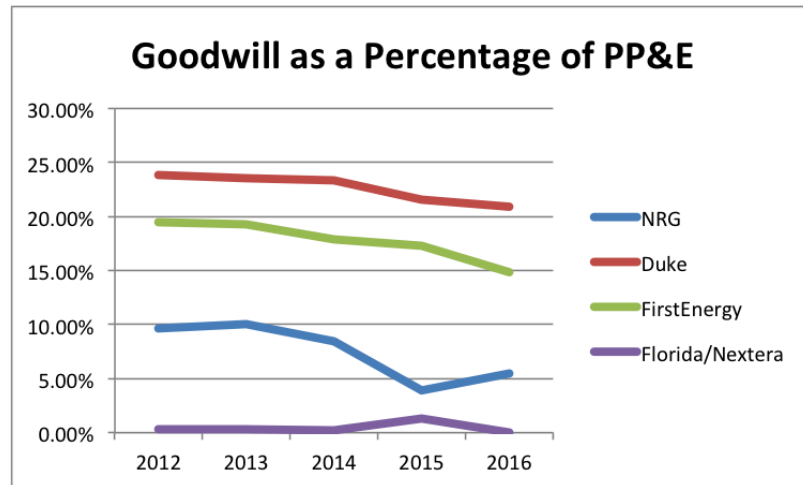
Input costs for the energy industry include purchasing fuel (such as natural gas and coal), and purchasing and maintaining equipment and plants. Firms use a variety of methods to keep these costs fairly low. In order to maintain low purchasing costs, NRG forms contracts with suppliers to lock in a low cost in case prices should rise. NRG is also looking to expand their renewable energy sources. This would increase their maintenance costs for equipment such as wind turbines, but could cut down on their materials costs. NRG struggles with maintaining equipment and plant costs. They continue to purchase new plants, which increases their operating costs. NRG also discloses their aging equipment, which is not energy efficient and raises operation costs. It is also mentioned that with recent implemented environmental regulations NRG has had to upgrade or completely replace some of their equipment. They expect regulations to increase, which will further increase their operating expenses.

Type Two Accounting Policies

Goodwill

In their 10-Ks, NRG states as per GAAP requirements, they assess their goodwill for impairments at least once a year or “more frequently whenever an event or change in circumstances occurs that would more likely than not reduce the fair value of a reporting unit below its carrying amount,” and utilize a two-step process if there is an absence of sufficient qualitative factors (10-K). Because the energy industry relies heavily on natural gas as a fuel

source, the prices of natural gas affect the value of the goodwill which consequently will affect the impairment values. As the price of natural gas decreases, the impairment of the company's "long-lived assets" and goodwill increases. In turn, this affects NRG's reported results of operations as well as their financial position in future periods. The following graph demonstrates the percentage of net PP&E their goodwill represents compared to their top competitors.



If a company reports over 30% of goodwill in proportion to net fixed assets, red flags will arise indicating an overstatement of assets and an understatement of expenses, making the books look better than they actually are. Despite the mandatory GAAP requirements in place to assess goodwill impairment, some companies still possess flexibility in the amounts they report. The over or understatement of goodwill affects the amount of net income the company reports in their income statements. In 2015, NRG recognized several impairment losses in their NRG Home Solar unit and in their Goal Zero unit. Duke Energy's financial statements reflect a stable increase and decrease of goodwill value. However, their goodwill is above 20% of their net fixed assets, suggesting they may be slightly overstating their assets. Florida/Nextera reported similar goodwill values from 2012 to 2015, in which they experienced a large increase in goodwill due to an acquisition.

Hedging

Energy companies, such as NRG, utilize hedging strategies in order to stabilize their cash flow and reduce their level of risk. NRG is dependant upon the volatile price changes of natural gas, which is their largest source of fuel. In order to stabilize this cost, NRG uses a hedging strategy called fuel supply contracts, which allows the company to lock in a set price for the fuel they purchase. In order to stabilize sales, NRG uses capacity auctions and forward sales. These strategies allow NRG to sell power to customers in bulk at a set price (much in the same way that NRG purchases fuel). This stabilizes their cash inflow, but may back-fire since they are obligated to generate the power no matter the circumstances. Lastly, NRG uses interest rate swaps to stabilize the interest rate risk they must pay for their sizeable debt.

Research and Development

Energy companies are currently faced with increasingly stringent environmental regulations and increased pressure by customers to leave a smaller carbon footprint. Companies

are also pushed to create more efficient methods of production in order to remain competitive. Firms will invest in research and development costs in order to build more efficient plants and create more environmentally friendly and efficient technology.

Operating and Capital Leases

Firms are able to purchase capital in two ways: operating and capital leases. The method of purchase determines how the lease payments are recorded. The firm may choose to simply rent the asset, which is an operational lease, or they may “rent to own” the asset, which is a capital lease. Capital leases are recorded as the present value of all future lease payments in the liability section of the balance sheet. The lease asset is recorded in the same way. Once the lease has been paid, ownership of the capital is transferred to the firm. Operating leases do not transfer ownership, firms are strictly renting an asset for temporary use. Operating leases are accounted for as operating expenses. Since they are not accounted for as a liability, firms find them more attractive and tend to prefer them over capitalized leases.

Accounting Flexibility

This section refers to the degree of flexibility managers have when determining their accounting policies and practices. This degree of flexibility allows managers to report the financial state of their firm in the most accurate way possible. However, this flexibility can be used to distort finances in order to appear more profitable. In this section the accounting flexibility will be discussed for goodwill, hedging, and research and development.

Goodwill

Amount of Goodwill Reported (in millions)

	2012	2013	2014	2015	2016
NRG	\$1,956	\$1,985	\$2,574	\$999	\$999
Duke	\$16,365	\$16,340	\$16,321	\$16,343	\$16,354
FirstEnergy	\$6,447	\$6,418	\$6,418	\$6,418	\$5,618
Florida/Nextera	\$151	\$149	\$147	\$778	N/A

Goodwill as a Percentage of Net Property, Plant and Equipment

	2012	2013	2014	2015	2016
NRG	9.66%	10.00%	8.51%	3.91%	5.49%
Duke	23.87%	23.51%	23.30%	21.59%	20.91%
FirstEnergy	19.52%	19.30%	17.94%	17.25%	14.85%
Florida/Nextera	0.31%	0.28%	0.26%	1.27%	N/A

Despite GAAP regulations and mandates, there is still a high degree of flexibility when reporting goodwill in the financial statements. Companies will often defer goodwill impairment if they experience a decline in their ROA for three consecutive years. NRG's reported goodwill remained fairly constant between 2013 and 2014 and rose nearly 30% in 2014 with the acquisition of NRG Wind LLC, Dominion, and Goal Zero during the year. However, from 2014 to 2015, NRG's goodwill dropped from \$2,574 to \$999 million, resulting in a 61% decrease. Despite making such a large write-off, their ROA alternated in the previous years. Additionally, from 2013 to 2015, FirstEnergy reported a consecutive \$6,148 million in goodwill - an occurrence indicative of the large degree of flexibility these companies have in reporting or manipulating the impairment of goodwill on their assets. Accompanying this discrepancy is the large percentage their goodwill reflects in proportion to their total assets; they are nearly at 20% each year with the exception of 2016. Duke Energy reported relatively constant amounts of goodwill in their financial statements over the past five years. However, their goodwill is over 20% of their net fixed assets, raising some suspicion over financial manipulation and further reinforcing the evidence of flexibility when reporting goodwill in financial statements. Florida/Nextera has a low ratio of goodwill to PP&E, however, no goodwill has been reported in 2016 as of yet.

Hedging

There is very little flexibility when reporting hedging in financial statements. According to Financial Accounting Standards Board (FASB), managers must measure these derivative contracts at fair value on the balance sheet, as assets and liabilities, every reporting period. Derivatives that are used for cash flows do not have to have their fair value remeasured every reporting period, and may instead wait to be valued when the transaction has occurred and the revenue is realized. According to their 10-K, NRG is bound to these policies and follows them appropriately. Derivatives are listed under assets and liabilities on the balance sheet, and the company offers market-to-market values for their cash flow derivatives. The Hedging Policies for accounting are made very clear; NRG does not have much room to manipulate their reported hedging.

Research and Development

There is a fairly high amount of flexibility when reporting research and development costs. The GAAP requires that these costs be recorded as expenses as they occur, but there are many exceptions. For instance, if the cost results in an asset that has future use and value, it may be recorded as an asset. If a third party sponsors the research then it may be billed differently. Development and Research costs may also be inflated if overhead costs and wages for researchers are documented as expenses incurred. There is plenty of room for NRG to manipulate these expenses.

Operating and Capital Leases

There are quite a few rules governing the accounting of capital and operating leases. Leases must be treated as capital leases if they: transfer ownership at the end of the lease, contain a bargaining option, if the lease life exceeds 75% of the economic life of the asset, and if the

present value of the lease payments exceeds 90% of the fair market value of the asset. If none of these conditions are met, the lease is considered an operating lease. In February 2016, the FASB changed the accounting principles for operating leases. Unless it is a short term lease (less than one year), firms must document all leases as capital leases. This will greatly change the liability section of the balance sheet for many firms.

Accounting Strategy

Goodwill

NRG demonstrates a high degree of transparency when utilizing accounting principles in their financial reports. They clearly outline and state from which acquisitions their goodwill reflects as well as the processes they use to evaluate said goodwill for any impairment. They have their impairment values listed on their 10-Ks, which reporting unit the impairment affected, and during which quarter the impairment was reported. NRG's competitor, FirstEnergy, was not quite as transparent and utilized the same values for goodwill for three consecutive years before reporting an impairment in 2016 - a practice accountants use at their discretion in attempts to manipulate their reported earnings. Financial manipulation is evident when viewing the amount of goodwill reported by each company in the five years being reviewed, as some of the numbers may be repeated consecutively. However, as in the case with Duke Energy, their values varied and remained relatively constant, but it was not until their goodwill reported was represented as a percentage of their total PP&E that the accounting strategy used was made more clear. The percentage of goodwill to total PP&E is useful in determining which accounting principles a company may be using to compose their financial statements.

Hedging

NRG follows the appropriate accounting principles for their hedging derivatives. These contracts are classified as assets or liabilities, and even broken down to long term and short term derivatives on the balance sheet. In addition to following base policies, NRG provides additional information for their hedging activities. Derivatives that are designated as cash flow derivatives are placed on the 10-K with their fair value. These cash flow derivatives are further broken down by specific activity such as interest rate contracts and commodity contracts. Competitors such as Duke Energy and FirstEnergy also disclose specific cash flow derivatives and lists the fair value for each. With the degree of information provided, it can be concluded that NRG offers high levels of disclosure for this accounting policy.

Research and Development

According to their 10-K, NRG reports capitalized development expenses under "Development Expenses" on their statement of operations until the project is available for operation, at which point it is reclassified as Property, Plant, and Equipment. It is then amortized via the straight-line method for the remainder of its useful life. It is not explained how these assets are valued. Since operational capitalized development projects are reclassified as an asset on the balance sheet, it is possible for managers to over-exaggerate its value. This would be done to in an attempt increase the value of the firm. This practice may also understate the firm's liabilities. Any projects that are deemed a "lost cause" or failed are written off.

Other development costs are not explained. Competitors of NRG, such as Duke Energy and FirstEnergy, tend to break up these costs into categories such as “wind energy development” and “nuclear development”. NRG markets themselves as an environmental friendly company and discusses “going more green” in many documents, including their financial statements, but they do not offer any other details. The company only states that these costs were used for developing renewable energy. NRG meets the minimum levels of disclosure for when reporting their development costs: what is spent on development is listed as an expense until it becomes operational (for capitalized development only), then it is listed as an asset.

Operating and Capital Leases

NRG has very few capital leases, which were put on the balance sheet with long term debt. They do have a substantial amount of operating leases that were found in the 10-K. NRG follows GAAP principles by placing these leases in operational expenses. It does not raise a red flag that NRG follows bare minimum accounting principles, however it should be noted that these could affect the liabilities of the firm. Since NRG does not place operating leases as its own item under operational costs, we believe this firm has low disclosure.

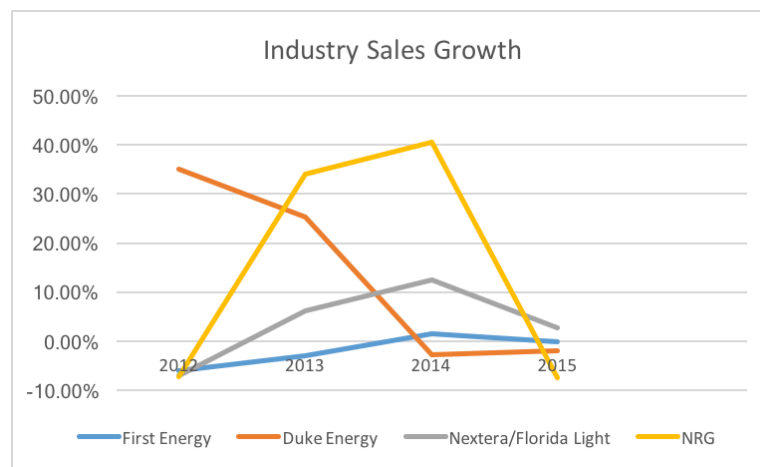
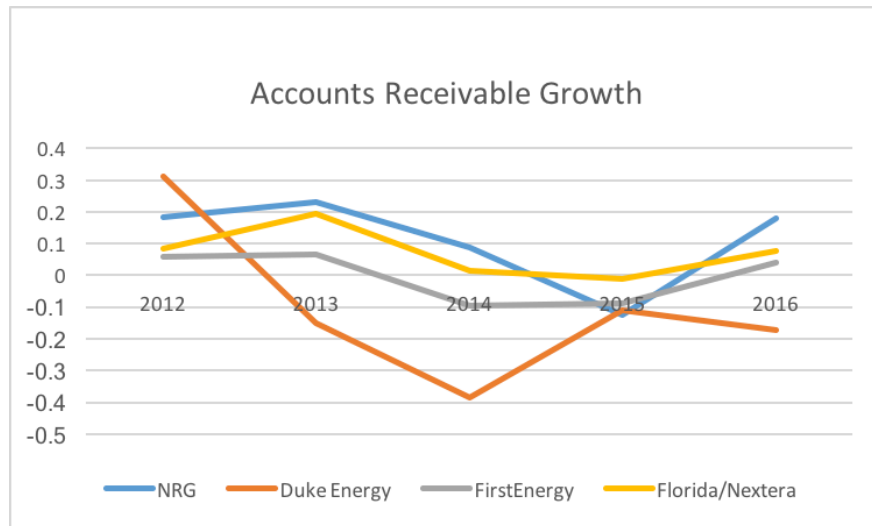
Identifying Potential “Red Flags”

In this section we will attempt to identify quantitative “red flags” through various ratios. “Red flags” indicate possible financial distress or a manipulation of accounting practices in order to make the firm appear more profitable. The presence of “red flags” may indicate that the firm is not a profitable investment.

Quantitative Analysis

Net Sales and Accounts Receivables

A firm should not have unusually high increase in accounts receivables in relation to sales. If a firm’s balance sheet reveals a high increase in accounts receivable compared to an increase (or lack of) in sales the firm may be trying to inflate their revenue. A company may open channels of distribution so they may record the revenues and make their business look more profitable for the period. Below we have created two charts to compare the growth of sales and the growth of accounts receivables.

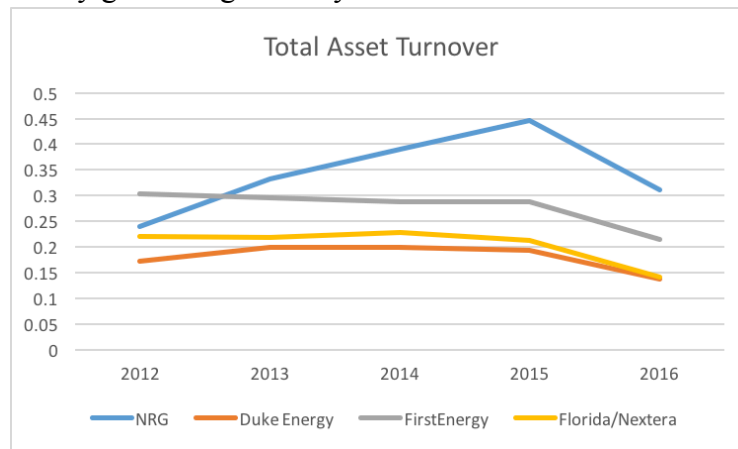


It can be seen that, as an industry, sales growth was experienced until 2015 (note that 2016 is not included on the sales growth chart as only three quarters of the year have been reported). This dramatic drop is explained by the U.S. Energy Information Administration as the result of market saturation and more efficient electricity-using equipment. It can be seen that as sales rise the accounts receivables for companies, except for Duke Energy, first increased steadily through 2013 and then decreased into 2015. Accounts receivable are currently rising for the three quarters of 2016 that have been recorded. NRG specifically experienced tremendous growth through 2014 due to decreased natural gas prices. In 2015 the company experienced a sharp decrease in growth due to the factors mentioned above, and large income tax expenses. The firm experienced a decrease in accounts receivables in 2014 and an even sharper decrease in 2015. The decrease in 2015 may be attributed to the harsh year experienced by the entire industry. We have not identified a red flag for NRG in this section.

Asset Turnover

This ratio will be used to uncover how well the firm is using their assets and if they are attempting to inflate their sales. Firms within the electricity generating industry are incredibly

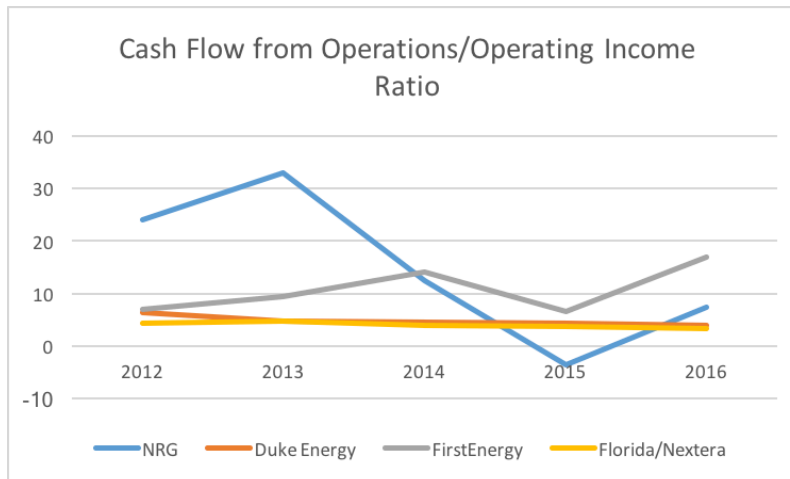
reliant upon their assets, particularly their property, plant, and equipment. NRG's financial statements reflect numerous acquisitions made in the past and in recent years as well as purchases of new plants. As total assets increase it is expected that revenue increases as well. If a company has a low total asset turnover ratio it means that they are not utilizing their assets well and their sales are not supported by their assets. The graph below showcases the total asset turnover for the electricity generating industry.



It can be seen that the industry experienced relatively constant asset turnover. The firms have assets that support their level of revenue. NRG has experienced a steady growth in asset turnover. This is because their sales have increased proportionately with their total assets. In 2015 the company experienced a decrease in assets. NRG experienced a decrease in cash, property, plant and equipment, and goodwill value in 2015. The decrease in capitalized assets is attributed to the retirement of various outdated pieces of equipment, and there is also a significant decrease noted in the goodwill section that can be attributed to the impairment of several of their assets and acquisitions. The fair value of the reporting units of these assets fell below their carrying value and were deemed impaired. A drop in sales is to expected from a firm with so many assets becoming inoperable, which is exactly what happened that same year (2015). The decrease in sales and total assets was proportional, so there were no sharp rises or drops in the graph. The industry as a whole displays a decrease in asset turnover for 2016, which is simply due to the fact that only three quarters of the year have been reported. There were no red flags raised for NRG in this section.

Cash Flow From Operations and Operating Income

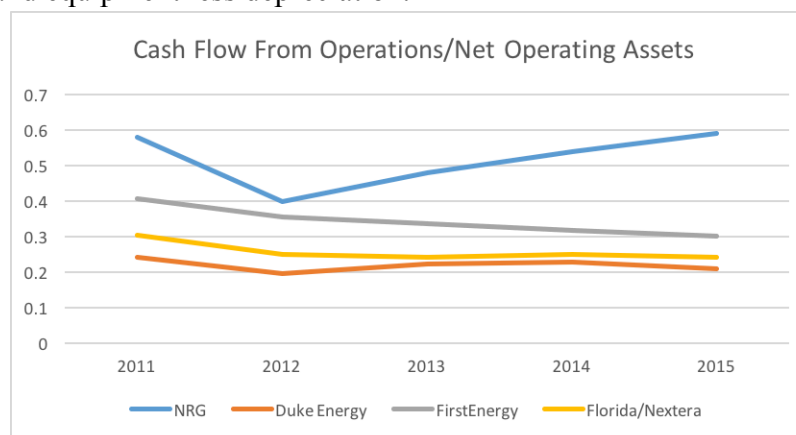
The cash flow from operations/operating income ratio will reveal if the firms are manipulating their expenses. These two values should be fairly correlated with no large spikes or drops. Sudden large increases in this ratio would indicate that a firm is manipulating expenses. The graph below displays the ratio.



It can be seen that Florida/Nextera, FirstEnergy, and Duke Energy have enjoyed a fairly steady relationship between their cash flow from operations and operating income. NRG shows a concerning line on this graph. The firm experienced a dramatic drop from 2013 to 2015. Upon further investigation it was found that NRG had extremely large impairment losses, particularly in 2015. These losses correlate with the fact that the company lost property, plant, and equipment in 2015 along with an impairment loss of nearly 61% from several of their acquisitions. This may indicate that management is not effective at valuing their assets. This is a likely situation since the firm paid taxes rather than deferring. Companies sometimes take what is already a “bad year” and add on any other impending expenses or impairment in order to defer their taxes. As we have already mentioned, NRG did not do that. This ratio did not reveal a red flag for expense distortion, however it did reveal a red flag for possible poor management.

Cash Flow From Operations and Net Operating Assets

This ratio will be used to determine if the operating assets, of a firm support the cash flow from operations(CFFO). This ratio will be used to check for expense manipulation. It is expected that CFFO will increase with net operating assets. Any discrepancies, such as a large increase in CFFO but a decrease in net operating income, will raise a red flag for a firm as an expense manipulation. In order to find the net operating assets of a firm we used their operational property, plant, and equipment less depreciation.



This graph demonstrates that the industry maintained a stable relationship between their CFFO and net operating assets - in other words, the assets supported the cash from operations. 2016 was not included on this graph because only three quarters of the year were recorded, and which skewed the graph. The line representing NRG's numbers show some deviations. In 2012 a small decrease can be seen. This was due to an increase in net operating assets, but a slight decrease in CFFO. An explanation for this could not be found in the financial statements. A possible explanation could be an overvaluation of completed plants. From 2012 to 2015, the line moves upwards. There are no sharp peaks or drops, indicating that the CFFO are supported by the operating assets. This ratio is larger for NRG than it is for competitors. This is because NRG is receiving as many CFFO as competitors, but using significantly less operating assets. It could not be determined why this is. Some possible explanations could be that NRG is undervaluing their PPE for those years. Another explanation could be that NRG is recording revenues from services rendered that do not stem from their PPE. For example, NRG offers home security systems from their retail line. Revenue may be recorded for installing such systems. NRG also states that they record revenues from investment and interest income before tax expenses. These activities are not revenues generated from their operating income and therefore skew the ratio. This may raise a red flag, NRG does not differentiate the revenues and we cannot be sure what revenue is made from generating energy specifically.

Goodwill

Utilizing the reported goodwill to net fixed assets ratio, NRG and its top competitors were assessed for any intentional over or understatements of goodwill that would distort the reported assets or expenses, and further affect the net income. Because goodwill is not subject to amortization, regulations needed to be instilled to prevent companies from reporting their goodwill at its full value, thus giving it an indefinite life. Currently, companies must assess their goodwill at least once a year; NRG's financial statements claim they perform this assessment as often as necessary and during times which certain events may drive the fair value of the goodwill below the carrying value. As mentioned in a previous section, companies do have a fair amount of accounting flexibility when reporting goodwill amounts. If a company reports over 30% of goodwill in relation to net fixed assets, red flags will arise. This will indicate the company is overstating goodwill, understating expenses, and overstating their net income.

NRG does not raise any red flags in their reporting of goodwill. In 2015, they experienced a large impairment on several of their acquisitions. However, their percentage of goodwill to net fixed assets remained within a reasonable proportion. Both Duke and FirstEnergy had much larger proportion of goodwill compared to their total PP&E with percentages reaching nearly 20%. This would raise a red flag and indicate there may be financial distortion occurring within these companies in attempts to make their financial statements appear more attractive.

Research and Development Costs

In the energy industry, research and development costs (R&D) are used to build more plants, develop more efficient equipment, and even create new products, such as NRG's electric car chargers. As mentioned in previous sections, research and development costs are already a potential red flag. This is because these costs are revalued as property, plant, and equipment once

they become operational, and there is no way to know how these companies value their new assets. Research and development costs may produce yet another red flag if they reduce operating income by more than 20%. This may indicate that they are spending more of their sales on R&D than they should, or that they are not generating enough revenue for what they are spending on these projects. This would also indicate some distortion in their accounting, which would need to be undone for accurate analysis.

The table below shows how much R&D costs decreased the operating income of NRG.

Operating Income Reduction Due to R&D Costs

2012	2013	2014	2015	2016
9%	20%	7%	4%	5%

NRG has kept their development costs in a good range. In 2013 they spent more than usual in development for their home solar panels. Since R&D costs did not reduce operating income by more than 20% it is unlikely that investors should worry about this cost. The costs are also small enough that they do not distort income.

Operating and Capital Expenses

In this section we will discern if NRG could have more liabilities than what is reported on the balance sheet. This is a possibility because operating leases, which they have many of, are reported under operational costs. Fortunately, we were able to find what was specifically spent on operating leases in the 10-K each year. Operating leases would create a distortion in our accounting analysis if they were to be capitalized and increase non-current liabilities by more than 20%. Below we have added operating leases to the total non-current debt and calculated the percent change. 2016 was not included in this analysis because in February 2016 the accounting rules changed, forcing firms to report all but short term leases as capital. Operating leases are now reported differently, so we did not include it.

Change in Non-Current Debt by Operating Leases

2011	2012	2013	2014	2015
4.22%	12.7%	11.48%	11.12%	10.65%

It can be seen that should operating leases be capitalized, they would not increase the non-current debt by more than 20%. Operating leases do not create a distortion, or a red flag, for NRG.

Undoing Accounting Distortions

In order to accurately analyze the value of a firm, certain items on the balance sheet may need to be restated. This is done because firms may artificially overstate or understate items on the income statement or balance sheet to make their firm appear more profitable than it truly is. According to the “red flags” identified in the previous section, there are few red flags for NRG. In fact, it was revealed that NRG may just be poor at placing proper value to their assets, which is mostly related to management skill. Distortions would have been undone if goodwill had been more than 30% of fixed assets, if goodwill impairment had eliminated more than 30% of

operational income, if development and research expenses had reduced operating income by more than 20%, and if the capitalization of operating leases had increased non-current liabilities by more than 20%. These boundaries were not exceeded, so they need not be restated.

Conclusion

NRG follows accounting principles well. They also offer a high degree of disclosure for most of their accounting practices. Upon an analysis of these accounting policies and key ratios, there were no substantial red flags discovered. A few of the ratios revealed that, if anything, NRG is under poor management and would benefit from some more efficient practices.

Empirical Analysis

In this section, the firm will be evaluated on several factors including current financial ratios, the current estimated cost of capital, and the firm's financial forecast. These evaluations will aid in the overall valuation of the firm both in the present and the possible value in future points in time.

Financial Ratio Analysis

Financial ratios are a highly useful tool in gaining a deeper insight of several aspects of a company. The results of decisions made by the company will be reflected within these ratios as well as management's ability to direct such decisions. Investors can examine these ratios and decide how to direct any future investments in the company. In addition, these ratios provide common size results that allow for a quick comparison between companies within the same industries. Below are several different categories of ratios and the respective ratios used to analyze various sets of information derived from the financial statements.

Growth					
	2016	2015	2014	2013	2012
PM	2.169%	-43.492%	0.844%	-3.417%	3.503%
ROA	0.676%	-19.409%	0.330%	-1.139%	0.840%
ROE	3.878%	-117.446%	1.148%	-3.688%	2.810%
Asset Turnover	0.312	0.446	0.390	0.333	0.240
Dupont ROE	3.878%	-117.446%	1.148%	-3.688%	2.810%

The table above measures NRG's growth to determine how NRG is utilizing their assets and equity in order to successfully generate profit and overall growth for the company. Examining the profit margin, return on assets, return on equity, and the Dupont ROE ratios, NRG

demonstrated alternating years of growth and decline starting in 2012. However, despite indicating growth in 2012, 2014, and 2016, the ratios produced results lower than 5%, suggesting the growth was minimal. In 2014, the profit margin ratio shows that NRG only made \$0.008 for every dollar of revenue earned. In 2015, NRG experienced a sharp decline in growth. Their profit margin in 2013 was -3.417%, increased to a positive number in 2014, then dropped down to -43.492% in 2015. The ROE for 2015 also reflected a sharp drop from 1.148% in 2014 down to -117.446%. The asset turnover ratios for all five years listed did not break over 0.5, indicating the company is not able to generate as much revenue per dollar of its assets. The ratios from 2015 strongly correlate with the large unusual purchase made by the company, the significant impairment of goodwill, and the nearly 50% drop in stock price driven by a depression of natural gas prices in 2014.

Short-Term Solvency, Liquidity					
	2016	2015	2014	2013	2012
NWC	2,713	3,016	3,723	3,392	3,280
Current Ratio	1.631	1.689	1.766	1.807	1.705
Cash Ratio	0.566	0.347	0.435	0.536	0.448

The next section evaluates short-term solvency and the liquidity of the company. NRG's net working capital is substantially sufficient to cover their short-term debt, and this is evident for all five years examined. Additionally, the current ratio remains well over 1 for all five years, indicating the company is sufficiently able to meet both long-term and short-term obligations. NRG's cash ratios, however, are below 1 each year, demonstrating a lack of cash on hand to pay for their debt. Overall, NRG has adequate resources to finance and cover existing short-term obligations, however they are lacking sufficient amounts of cash.

Long-Term Solvency					
	2016	2015	2014	2013	2012
Total Debt Ratio	0.825	0.825	0.705	0.684	0.694
D/E Ratio	4.729	4.990	2.456	2.215	2.320
TIE	2.731	-2.193	2.497	1.886	1.967

Examining NRG's long-term solvency, it is evident there is a much higher proportion of debt compared to their total assets. Their total debt ratios have increased each year, with the sharpest increase occurring in 2015. However, given the nature of the industry, a high total debt ratio is almost a norm. The debt/equity ratio also reflects the outlying year of 2015, as the company experienced relatively constant results, then nearly doubled from 2014 to 2015. The times interest earned ratio remained positive every year, with the exception of 2015, where it dropped to -2.193. During this year, the company was not able to generate enough cash from operations to cover any of their interest costs.

Asset Utilization					
	2016	2015	2014	2013	2012
Asset Turnover	0.312	0.446	0.39	0.333	0.24
Receivables Turnover	7.209	12.683	12.003	9.304	7.938
Days Sales in Receivables	50.629	28.779	30.409	39.231	45.983

When analyzing NRG's asset utilization, they are not able to generate a sufficient asset turnover. All five years listed have asset turnover all reported under 1, meaning they are not able to efficiently utilize their assets to generate revenue. However, NRG has high receivable turnover, especially in 2015, indicating the company has a strong collecting process. The days sales in receivables varies each year. NRG has reported on their financial statements that a number of their assets are old or outdated and therefore not as efficient as newer assets might be. The small asset turnover could be related to the obsolete machinery and equipment still being used at NRG's plants.

Market Value					
	2016	2015	2014	2013	2012
P/E	16.238	---	68.545	---	18.23
Market -to-Book Ratio	0.63	0.713	0.787	0.884	0.512
EPS	0.676	-19.398	0.401	-1.195	1.272

NRG's market value demonstrates fluctuation in alternating years. 2013 and 2015 yielded no price to earnings, and as such there was a -\$1.195 and -\$19.398 earnings per share,

respectively, those years. The price to earnings ratio peaked in 2014 indicating investors were anticipating higher growth in the future. However the earnings per share remained low that same year. The market-to-book ratios all remain under 1, indicating the firm has overvalued their stocks. From further analysis of the stock prices done in previous sections, these ratios provide somewhat of an accompanying explanation as to the rise and fall of the stock prices through the years.

Internal Vs. External Growth Rate					
	2016	2015	2014	2013	2012
Payout	-0.45	0.029	3.89	0.274	-0.165
Plowback	1.45	0.971	-2.89	0.726	1.165
Internal Growth	0.99%	-15.86%	-0.94%	-0.82%	0.99%
External Growth	5.96%	-53.28%	-3.21%	-2.61%	3.38%

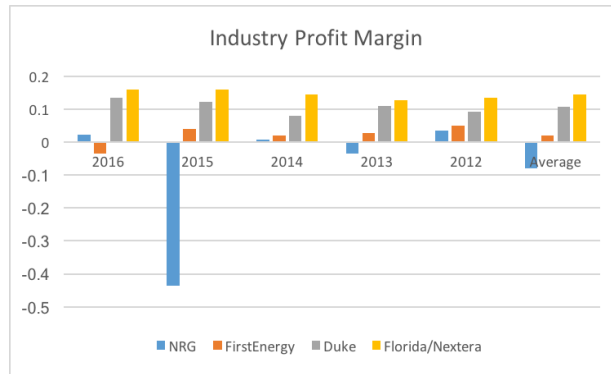
The final section analyzed was the internal vs. external growth ratios. These ratios demonstrate the relationship between NRG's financial reports and the current drop in gas prices. In 2012 and 2016, NRG experienced negative payout ratios, and because of falling gas prices, NRG and other business in the energy industry can expect to continue to generate negative payouts. NRG did not may any payouts in 2012 and as of September 30, 2016. In 2014, however, the company had a negative plowback of -2.890, meaning they paid much more out in dividends than they earned in net income. With the exception of 2012 and 2016, NRG also experienced negative internal and external growth ratios. These years, the company did not have the retained earnings needed to satisfy any debt and needed to issue debt. The negative external growth rate corresponds to the lack of internal financing needed by the company.

Overall, NRG is experiencing minimal growth, but where they lack in profit and growth, they are able to make up in their cash, repayment and handling of short-term debt, and the collecting on accounts receivables. Most of the date represented in this section is highly reflective of 2015's gas price decline and the company's own poor mistakes. However, outside that year, NRG has not been making sound decisions about the company. They lack sufficient financing needed to repay long-term debt and even to pay out their dividends.

Cross-Sectional Analysis

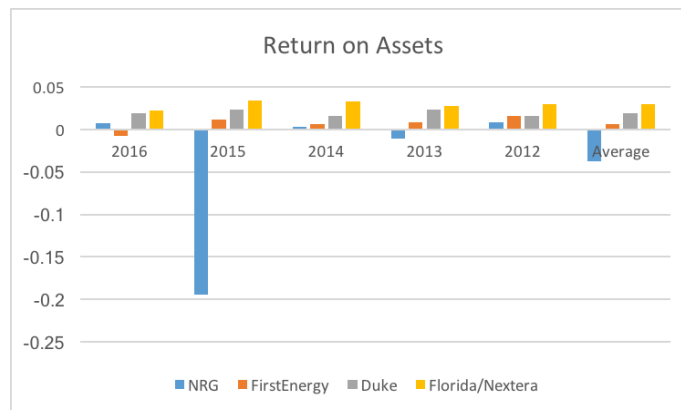
Cross-sectional analysis allows us to examine NRG's financial ratios as they compare to other companies within the energy industry. Below, we break down each ratio and evaluate how each company is doing as far as profitability, growth, liquidity, solvency, and asset utilization.

Profit-Margin (PM)



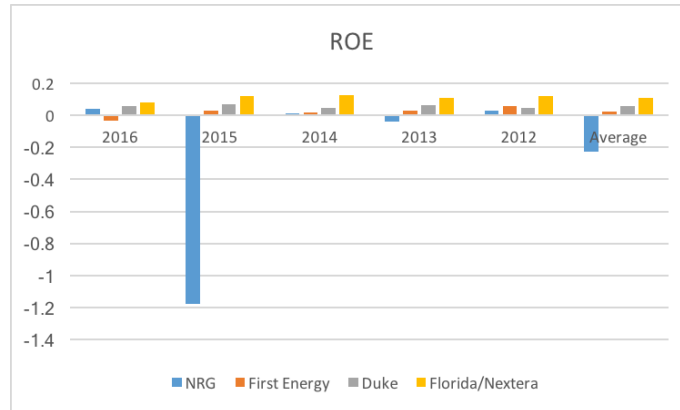
While comparing NRG to 3 other companies, we found that for the most part, Duke, FirstEnergy and Florida/Nextera were pretty consistent with their PM. These companies, particularly Florida/Nextera are good when it comes to using their sales to generate a high net income. In 2015, they managed to bring .15 cents of every dollar of sales to net income. NRG saw a decline, with -.43 cents of their sales making it to their net income, which helps explain why NRG had a negative net income for 2015.

Return on Assets



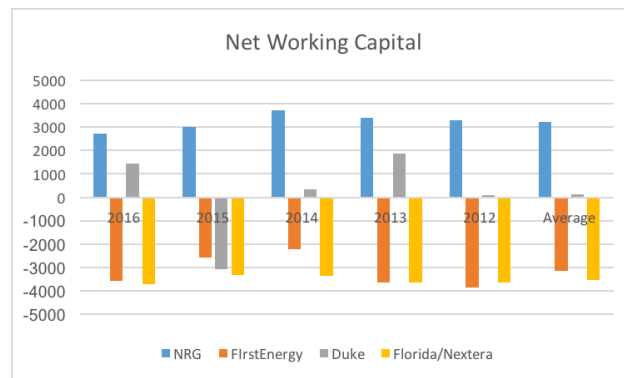
Once again, Duke, FirstEnergy, and Florida/Nextera have a constant return on their assets. Florida/Nextera are best able to generate net income based on their assets with their net income with a .03 cents of their profit per dollar of assets. While this number is not very high, it is better than NRG, who had -.19 cents of their profit per dollar of assets.

Return on Equity



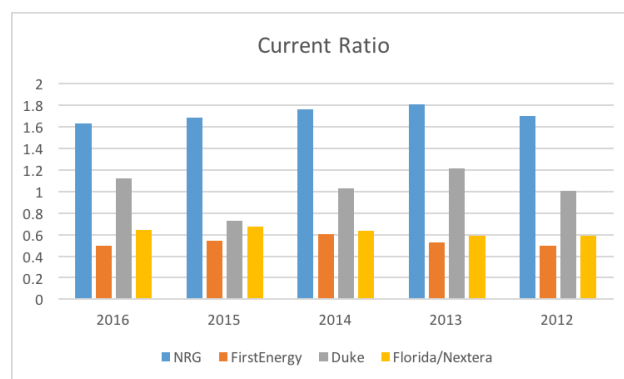
Out of the 3 companies competing against NRG, Florida/Nextera was best able to generate net income per dollar of equity. In 2015, they had an ROE of .1195 cents of their profit per dollar of equity. Meanwhile, NRG, had -1.7 cents of their profit per dollar of equity.

Net Working Capital



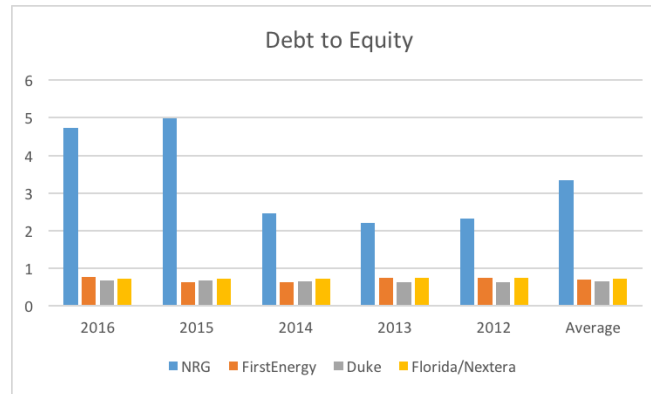
NRG will have no worries when it comes to meeting their short-term obligations, they are a highly liquid company, with about 3 billion dollars in cash. This can also be a bad thing, because if they are holding too much cash which can put them in a bad situation later down the road with investors. The companies that have the worst NWC are: Nextera and FirstEnergy. These values are highly negative while hovering in the -3-billion-dollar range.

Current Ratio



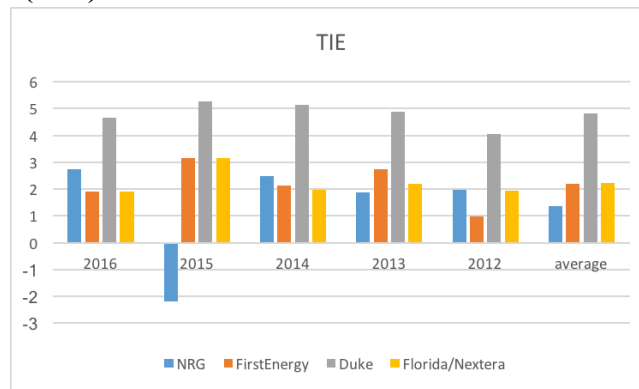
A number above 1.0 is highly recommended as this shows the company has more assets than liabilities. NRG will have no trouble with their short-term obligations. In 2015, they could cover their current liabilities 1.6 times with their current assets. The companies that fall short here are FirstEnergy, and Nextera. With a ratio below 1.0 they are in trouble when it comes to meeting their short-term obligations.

Debt to Equity



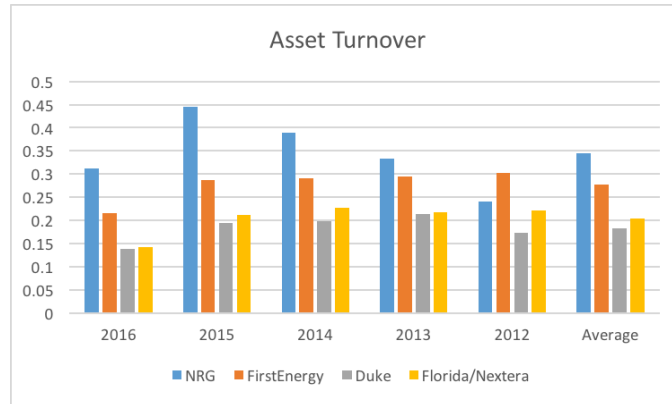
This ratio measures how much debt a firm has in compared to its equity. In 2015, NRG had 4.99 times as much debt as they have equity. They are a highly leveraged firm, which could be problematic if NRG ever goes into bankruptcy. Meanwhile, the other 3 firms are not highly leveraged, which is good considering their short-term obligations are not great. The company that had the best D/E for 2015 was Duke, as they had .63 as much debt as equity.

Times Interest Earned (TIE)



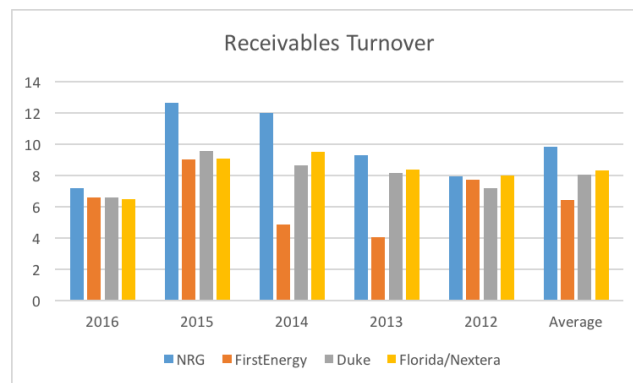
With this ratio, we are looking at how able the firm can pay off interest. For the most part, NRG wants to keep up with the other 3 firms, except in 2015 when they had a -2.19 TIE, which means their EBIT was not sufficient to pay of their interest expense. The company with the best TIE ratio is Duke, in 2015 they can cover their interest expense 5.27 times with their EBIT.

Asset Turnover



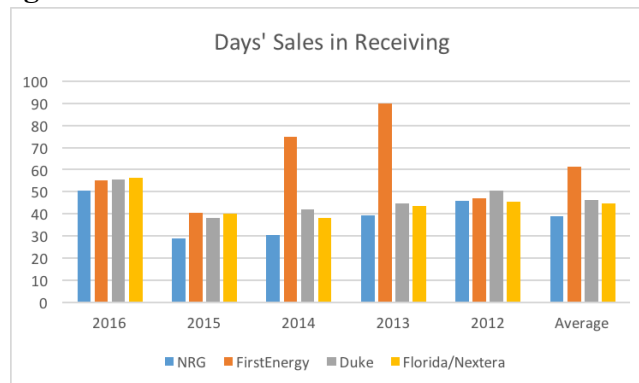
Surprisingly, NRG was one of the higher companies when it comes to utilizing their assets. In 2015, they could generate 1 dollar in assets, they can generate .34 cents in sales. The company that was the worst at this was Duke. For every 1 dollar in assets, they generated .19 cents in net income.

Receivables Turnover



For the year 2015, NRG can collect their receivables 12.68 times per year. While this number is not too bad, their competitors can collect less receivables per year. For 2015, all three competitors can collect their receivables about 9 times a year.

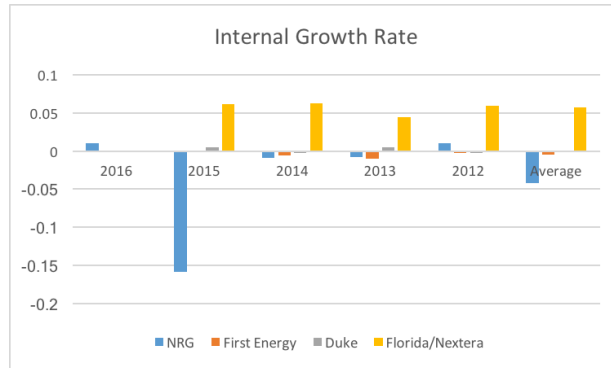
Days' Sales in Receiving



Since NRG can collect more receivables per year, in 2015, they can collect their receivables every 28.779 days. Their competition takes a little longer, around 40 days to collect

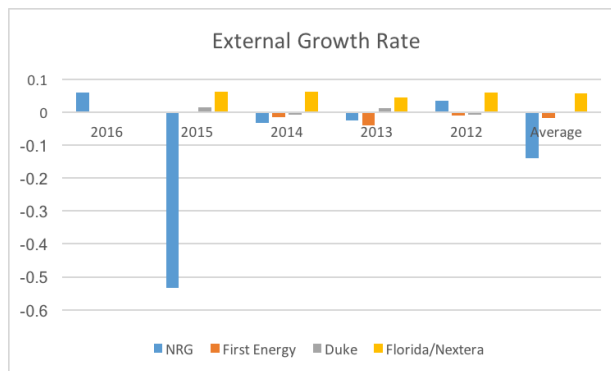
their receivables. This can be a good thing and a bad thing. While it gives the chance for their customers to have more time to pay them, there is also a greater probability that the receivables will not be paid.

Internal Growth Rate



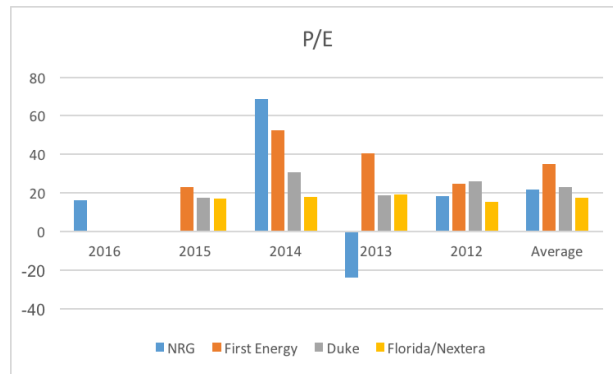
The max growth rate that NRG can achieve with no external financing is not great, in 2015 they need a -15.87% growth, while their competition with Duke and Nextera, excluding First energy since they were also negative, could achieve a maximum growth of .498% and 6.17%, respectively.

External Growth Rate



To maintain a constant debt to equity ratio while having the max growth rate a firm can achieve with no external equity, NRG must have a EGR -53.27%, while Duke and Nextera can have 1.5% and .06% EGR, respectively.

Price-Earnings Ratio (P/E)



Since NRG had a negative P/E for 2015 and 2013 they cannot be included as this information does not tell you anything. When their P/E was not negative, however, they can outperform the other companies. In 2014, they had a P/E of 68.544 which shows that the market over-values their stock and is willing to pay more for it. On the other hand, the other three companies do not have as high of a P/E ratio, theirs remains fairly constant which shows the market that they are a much more stable company.

Financial Statement Forecast

Forecasting financial documents is useful for determining the status of a company in coming years. Forecasting is not very accurate and may not give a perfect picture, however it can give an idea that may help investors make decisions.

Forecasting the Income Statement

We begin forecasting the income statement by looking at sales. We begin by observing factors that have changed sales growth in the past five years (2010-2015) for the electricity generating industry. In 2010 and 2011 the industry experienced nice sales growth, about 6% each year. This was due to a “bounce back” after the recession. In 2012 the sales growth was not as large, almost 4%. In 2013 and 2014, growth increased significantly. This is due to an increase in electricity prices. We believe prices were increased in response to rising natural gas prices in 2013. In 2015 the industry experienced almost -2% in growth. This is attributed to more efficient technology, which allows customers to use less electricity to generate the same amount of power. According to the U.S. Energy Information Administration, gas prices are expected to be lower for the whole of 2016. This may cause firms in the electricity industry to lower prices, which may decrease revenue for the year. When comparing the three reported quarters for 2016 to 2015, firms show an average of -5.5% growth. We expect this level average to also apply to the yearly sales numbers, and will use this number to forecast sales for 2016. This decrease is likely due to decreased costs and more efficient technology.

In order to forecast sales for 2017-2025, we did some research. We found that the U.S. Energy Information Administration expects the electricity sales to increase gradually every year. This is due to less “electricity intensity”, meaning technology is more efficient and less electricity is needed to generate power. The few firms that were chosen to represent the industry for our analysis paint a more volatile and changing picture (an average 7.5% growth over the past five years), particularly since NRG reports extreme differences in sales every year. This

makes it extremely difficult to estimate growth for the firm. We have decided to estimate a growth rate between the expected 0.7% sales growth rate for the U.S. and the 7.5% growth rate found from the firms we chose to represent the industry. Since NRG has shown overall positive growth rate in the past five years, we believe 2017, 2018, and 2019, will show small positive growth rates of 1.5%. 2020, 2021, and 2022 will show even more growth with a 2% rate, and the following years will experience a 2.5% growth.

In order to calculate cost of goods sold, operating income, and net income, we looked at the historical values of each. The average cost of goods sold was 73.17% of sales, income from operations was 5.5% of sales, and net income was calculated as 0.91% of sales. 2015 was not included in these averages, as it would have skewed the numbers dramatically.

As Stated Income Statement					
	2011	2012	2013	2014	2015
Annual Sales Growth	2.60%	-7.24%	34.11%	40.49%	-7.52%
Sales (Total)	\$ 9,079.00	\$ 8,422.00	\$ 11,295.00	\$15,868.00	\$ 14,674.00
Cost of Goods Sold	6,675	6,140	8,121	11,779	10,755
Gross Profit on Sales	2,404	2,282	3,174	4,089	3,919
Operating Expenses	1,769	1,932	2,831	2,818	7,959
Income from Operations	635	350	343	1,271	(4,040)
Other Expenses	(1,281)	(362)	(977)	(1,136)	(1,054)
Income Before Taxes	(646)	(12)	(634)	135	(5,094)
Income Tax Expense	(843)	(327)	(282)	3	1,342
Net Income	\$197.00	\$315.00	\$(352.00)	\$132.00	\$ (6,436.00)

Forecasted Income Statement 2016-2025										
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025

Annual Sales Growth	5.50%	1.5%	1.5%	1.5%	2%	2%	2%	2.5%	2.5%	2.5%
Sales (Total)	\$ 13,866 .93	\$ 14,074 .93	\$ 14,286 .06	\$ 14,500 .35	\$ 14,790 .36	\$ 15,086 .16	\$ 15,387 .89	\$ 15,772 .58	\$ 16,166 .90	\$ 16,571 .07
Cost of Goods Sold	10,146 .40	10,298 .59	10,453 .07	10,609 .87	10,822 .07	11,038 .51	11,259 .28	11,540 .76	11,829 .28	12,125 .01
Gross Profit on Sales	3,720. 53	3,776. 34	3,832. 99	3,890. 48	3,968. 29	4,047. 66	4,128. 61	4,231. 82	4,337. 62	4,446. 06
Operating Expenses										
Income from Operations	769.49	781.04	792.75	804.64	820.74	837.15	853.89	875.24	897.12	919.55
Other Expenses										
Income Before Taxes										
Income Tax Expense										
Net Income	\$ 125.69	\$ 127.57	\$ 129.48	\$ 131.43	\$ 134.06	\$ 136.74	\$ 139.47	\$ 142.96	\$ 146.53	\$ 150.20

		As Stated Common Sized Income Statement			
	2011	2012	2013	2014	2015
Annual Sales Growth	2.60%	-7.24%	34.11%	40.49%	-7.52%
Sales (Total)	100%	100%	100%	100%	100%

Cost of Goods Sold	73.17 %	73.17 %	73.17 %	73.17 %	73.17 %	73.17 %	73.17 %	73.17 %	73.17 %	73.17 %
Gross Profit on Sales	26.83 %	26.83 %	26.83 %	26.83 %	26.83 %	26.83 %	26.83 %	26.83 %	26.83 %	26.83 %
Operating Expenses										
Income from Operations	5.55 %	5.55 %	5.55 %	5.55 %	5.55 %	5.55 %	5.55 %	5.55 %	5.55 %	5.55 %
Other Expenses										
Income Before Taxes										
Income Tax Expense										
Net Income	0.91 %	0.91 %	0.91 %	0.91 %	0.91 %	0.91 %	0.91 %	0.91 %	0.91 %	0.91 %

Based on these forecasted statements, we expect future cost of good sold to stay around 73% of sales, and gross profits to stay around almost 27% of sales. We also expect NRG to keep less than 1% of their sales as net income. Though we forecasted NRG's sales to grow steadily, we also predicted that their costs of production will make up the same percent of sales. Based on past expenses, we do not expect NRG to gain control of their erratic spending anytime soon.

Forecasting the Balance Sheet

We forecast the balance sheet for many of the same reasons that we forecast the income statement. It can be a useful tool for determining the future state of the firm. We build the forecasted balance sheet from parts of the forecasted income statement, namely the forecasted sales. It should be noted that forecasted assets are fairly accurate, but forecasted liabilities and equity are not. Often times, forecasting liabilities is difficult. As a result, equity is forecasted and liabilities are "filled in" to make sure everything balances out.

First, we forecast assets. We found forecasted total assets by multiplying the average asset turnover ratio by the forecasted sales. We then set out to find the forecasted non-current and current assets. We first found what percent of current assets made up total assets. This average

was then multiplied by the forecasted total assets. We then subtracted current assets from total assets to find the non-current assets.

In order to find forecasted liabilities and shareholders equity, we utilized the formula $\text{Total Assets} = \text{Total Liabilities} + \text{Total Shareholders Equity}$. Since we know how many total assets we have (both recorded and forecasted), we know how many total liabilities and total shareholders equity we have (Total L&E). In order to find forecasted equity, we take the total equity from the previous year (2015), and add the forecasted years net income and dividends. Forecasted retained earnings are found using the same formula. To find total liabilities we simply subtract total equity from total equity and liabilities. We can then find the forecasted current assets by multiplying the forecasted total liabilities by the average historical current ratio, which is total assets over current liabilities. Non-current liabilities are found by subtracting current liabilities from total liabilities.

Balance Sheet As Stated				
(In millions, except shares)	As of December 31st, 2012	As of December 31st, 2013	As of December 31st, 2014	As of December 31st, 2015
ASSETS				
Accounts receivable, net	1061	1214	1322	1157
Inventory	911	898	1247	1252
Total current assets	7935	7596	8582	7391
Property, plant and equipment, net	20241	19851	30257	25536
Other non-current assets	600	740	1244	1214
Total other assets	6928	6455	9716	6759
Total Assets	35104	33902	40665	32882
LIABILITIES AND STOCKHOLDERS EQUITY				
Total Liabilities	24357	23184	28679	27117
Total Stockholders Equity	10498	10467	11676	5434
Total Liabilities and Stockholders Equity	35104	33902	40665	32882

Balance Sheet Forecast										
(In millions, except shares)	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
ASSETS										
Accounts receivable, net	1304.16	1323.72	1343.57	1363.73	1391.00	1418.82	1447.20	1483.38	1520.46	1558.48
Inventory	1200.06	1218.06	1236.34	1254.88	1279.98	1305.58	1331.69	1364.98	1399.11	1434.08
Total current assets	1081.95	1098.18	1114.65	1131.37	1154.00	1177.08	1200.62	1230.64	1261.40	1292.94
Property, plant and equipment, net	2787.62	2829.43	2871.87	2914.95	2973.25	3032.71	3093.37	3170.70	3249.97	3331.22
Total other assets	1016.413117	1031.659314	1047.134203	1062.841216	1084.098041	1105.780001	1127.895601	1156.092991	1184.995316	1214.620199
Total Assets	4885.988714	4959.278544	5033.667722	5109.172738	5211.356193	5315.583317	5421.894983	5557.442358	5696.378417	5838.787877

LIABILITIES AND STOCKHOLDERS EQUITY										
Total Liabilities	3591.22995	3645.09839	3699.77487	3755.27149	3830.37692	3906.98446	3985.12415	4084.75226	4186.87106	4291.54284
Total Stockholders Equity	1294.75876	1314.18014	1333.89284	1353.90124	1380.97926	1408.59885	1436.77082	1472.69009	1509.50735	1547.24503
Total Liabilities and Stockholders Equity	4885.98871	4959.27854	5033.66772	5109.17273	5211.35619	5315.58331	5421.89498	5557.44235	5696.37841	5838.78787

Common-sized Balance Sheet				
% of Total Assets	As of December 31st, 2015	As of December 31st, 2014	As of December 31st, 2013	As of December 31st, 2012
ASSETS				
Accounts receivable, net	3.5186%	3.2510%	3.5809%	3.0224%
Inventory	3.8076%	3.0665%	2.6488%	2.5951%
Total current assets	22.4773%	21.1041%	22.4058%	22.6043%
Property, plant and equipment, net	77.6595%	74.4055%	58.5541%	57.6601%
Total other assets	20.5553%	23.8928%	19.0402%	19.7356%

Total Stockholders Equity	26.50%	26.50%	26.50%	26.50%	26.50%	26.50%	26.50%	26.50%	26.50%	26.50%
Total Liabilities and Stockholders Equity	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Based on these forecasted statements, we expect NRG to increase in total assets. This is due to their steady increase in sales and because of NRG's past behavior - they continue to buy other firms, plants, and equipment. This is also reflected in their predicted increasing non-current assets. We expect NRG to increase their debt and equity in order to finance these assets. Particularly, we expect liabilities to grow, as the firm is already heavily leveraged. It is expected that equity will start to make up slightly larger part of debt and equity than debt. We expect also retained earnings to lessen each year, since the firm began paying dividends.

Forecasted Statement of Cash Flows

The statement of cash flows explains the inflows and outflows of cash from operating activities. We will use many of the same forecasting methods used to forecast the income statement and balance sheet, and rely heavily on forecasted sales. We used the CFFO/Sales ratio in order to forecast future operating cash flows. We found the yearly average for this ratio and multiplied it by forecasted sales to find forecasted operating cash flows.

We begin to find the forecasted cash used by investing activities by finding the average change in non-current assets. This is done because the cash from investing activities is used mostly for non-current assets. The average change in non-current assets is the multiplied first by 2015 in order to forecast the cash used in investing activities for 2016, the value for 2016 is then multiplied by the same change in non-current assets to find the value for 2017, and so on. We will use forecasted dividends from the DDM model in order to forecast the net cash used by financing activities.

Based on these forecasts, we anticipate NRG to receive an increase in cash from operations and a decrease in cash from investing activities.

Statement of Cash Flows As Stated (in millions)	As of December 31st, 2015	As of December 31st, 2014	As of December 31st, 2013	As of December 31st, 2012
Net (loss)/income	-6436	132	-352	315
Net Cash Provided by Operating Activities	1309	1510	1270	1149

Net Cash Used by Investing Activities	-1485	-2903	-2528	-2262
Net Cash (Used)/Provided by Financing	-432	1265	1427	2099

Forecasted Statement of Cash Flows										
(in millions)	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Net Income	125.6859	127.5712	129.4848	131.427	134.0556	136.7367	139.4714	142.9582	146.53217	150.1955
Net Cash Provided by Operating Activities	1501.903	1524.431	1547.298	1570.507	1601.918	1633.956	1666.635	1708.301	1751.0084	1794.784
Net Cash Used by Investing Activities	283.365	287.616	291.93	296.309	302.235	308.28	314.445	322.306	330.3641	--338.623
Net Cash (Used)/Provided by Financing	138.473	44.3863	14.2276	4.56053	1.46183	0.46858	0.1502	0.04814	0.015432	0.00495

Common Sized Statement of Cash Flows (in millions)	As of December 31st, 2015	As of December 31st, 2014	As of December 31st, 2013	As of December 31st, 2012
Net (loss)/income	100%	100%	100%	100%
Net Cash Provided by Operating Activities	-20.34%	1143.94%	-360.80%	364.76%

Net Cash Used by Investing Activities	23.07%	2199.24%	718.18%	-718.10%
Net Cash (Used)/Provided by Financing	6.71%	958.33%	-405.40%	666.35%

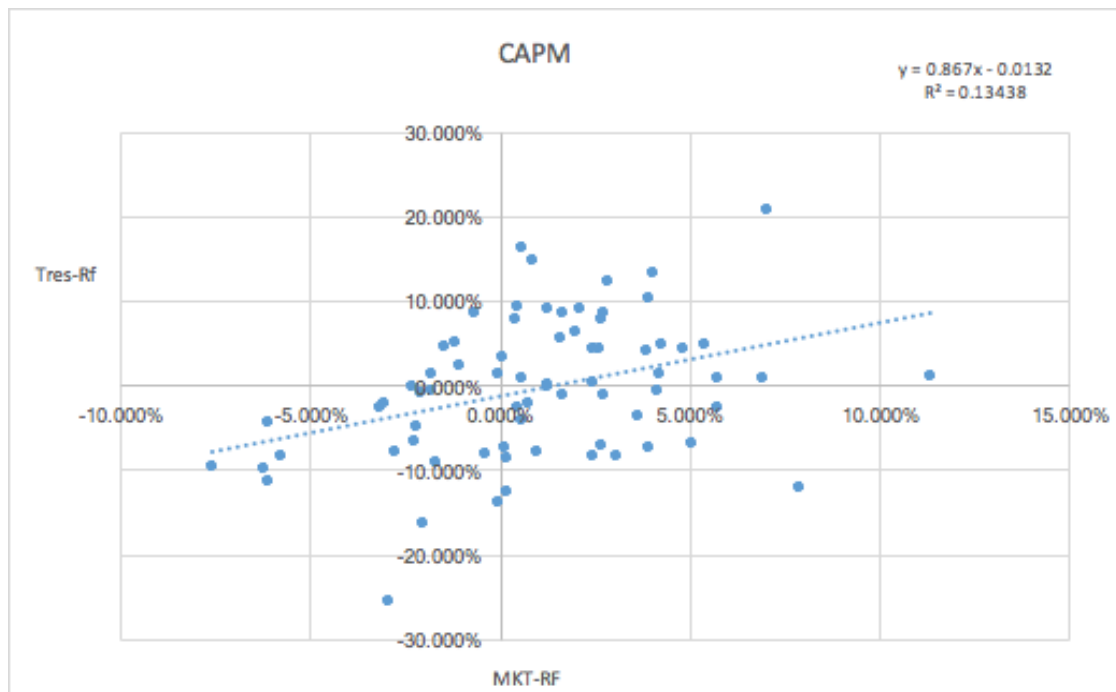
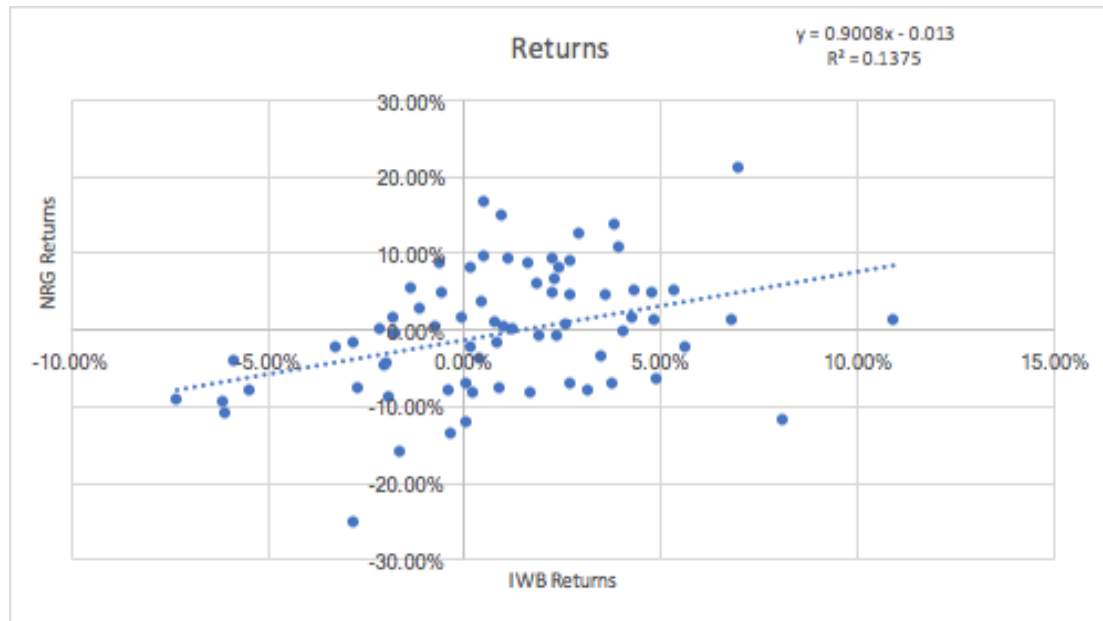
Common Sized Cash Flow Forecast	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Net Cash Provided by Operating Activities	11.94 965	11.94 965	11.94 965	11.94 965	11.94 965	11.94 965	11.94 965	11.94 965	11.949 652	11.94 965
Net Cash Used by Investing Activities	2.254 55	2.254 55	2.254 55	2.254 55	2.254 55	2.254 55	2.254 55	2.254 55	2.2545 5	2.254 55
Net Cash (Used)/Pro vided by Financing	1.101 74	0.347 93	0.109 88	0.034 7	0.010 9	0.003 43	0.001 08	0.000 34	0.0001 05	-3.3E- 05

Cost of Capital Estimation

Estimating the Cost of Equity

CAPM Method

Using the data and graphs below from the calculations using CAPM method, we can determine and evaluate some pertinent issues regarding the risk and return of the firm. Below are the graphs for the data using the CAPM and the Market model. It can be seen that the results from both models are nearly identical indicating that the Market model is very close to the CAPM in this case.



From the data above, it can be seen that the firm has almost no correlation to the market. This large spread makes it incredibly difficult to accurately predict how the firm may react to a given scenario or how it may grow in the future. Although this firm is very difficult to predict, it is not necessarily considered high risk.

NRG Monthly Returns					
	72 months	60 months	48 months	36 months	24 months
Mean	-0.421%	-0.659%	-0.944%	-2.134%	-3.617%

Median	-0.201%	-0.370%	-0.778%	-1.914%	-5.687%
Standard Deviation	8.245%	8.660%	8.676%	9.306%	9.912%
Sample Variance	0.007	0.007	0.008	0.009	0.010
Kurtosis	0.410	0.257	0.610	0.559	1.211
Skewness	-0.087	-0.062	-0.160	0.121	0.563
Range	0.461	0.461	0.461	0.461	0.461
Minimum	-25.452%	-25.452%	-25.452%	-25.452%	-25.452%
Maximum	20.686%	20.686%	20.686%	20.686%	20.686%

In the table above, it can be seen that the monthly returns are generally negative. The returns have been trending negatively as time has gone on. This is reflected both in the median and the mean as they are both significantly larger closer to the present time. The standard deviation is becoming larger closer to the present indicating a larger spread among the data points. This could be due to the increasing inconsistency in the firm or due to the fact that there are less points overall in this calculation. Sample variance is also larger closer to the present. This could again be due to the volatility of the company recently or could be due to the smaller amount of data points present. The Kurtosis of the returns is generally trending upward, although there was a dip in the 60 month calculation. A larger Kurtosis is indicative of the data having a narrower, more pointed distribution curve. This can either be found by having far outliers from the rest of the data, which reflects the volatility of the firm in general as becoming more pronounced. The skewness of the data has shifted over time from a negative skew, which will allow the data to appear more negative than in actuality, to positively skewed. This is understandable since the average and mean are both much more negative as it approaches the present day than in past values. One point of consistency in the firm is that the range, the minimum, and the maximum are all the same in all data sets. This is due to the firm having both its maximum and its minimum values in the past 24 months. This data rules out the likelihood that the rest of the data may be skewed due to the presence of less data points and confirms that the firm is becoming more volatile and inconsistent as time goes on.

DDM Method

Utilizing the Dividend Discount Model, the firm's dividend just paid, current price, dividend growth rates for various time spans, estimated growth rate via the plowback ratio and return on equity, and the cost of equity capital were calculated and compiled. The firm did not begin issuing stock and thus dividends until the second quarter of the 2012 financial year. The 10-year, 7-yr and 5-year growth rates and return percentiles could not be calculated because of this. Below are the calculated values for the data found in this section.

Price as of	Annual
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12/31/2015	Dividend as of 12/31/2016
11.77	0.58

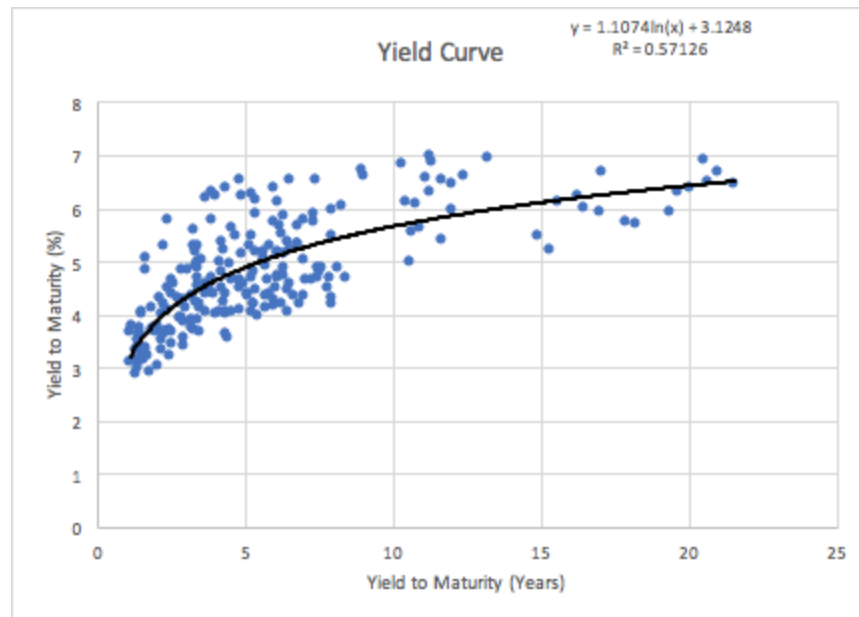
	g	Re
2yr	9.924%	15.341%
3yr	6.511%	11.759%
Accounting Data	5.62%	7.812%
Morning star Beta	N/A	15.264%
Estimated Beta	N/A	11.019%
Ideal Beta	N/A	10.430%

Beta	3 month	1 year	3 year	5 year	10 year
24 month	1.078	1.078	1.078	1.078	1.078
36 month	1.217	1.217	1.217	1.217	1.217
48 month	1.142	1.142	1.142	1.142	1.142
60 month	1.041	1.041	1.041	1.041	1.041
72 month	0.849	0.849	0.849	0.849	0.849

From the data above, it can be seen that the firm is growing at a relatively stable rate. These calculations do not take into account the 2016 dividends and thus is not the most accurate prediction model, however, the past year is believed to be an outlier which does not reflect the firm's overall growth. We were then able to find the Re using several different methods. The first 2 were found using the Dividend Discount Model and the growth rates that were found from the dividends. The third Re was found by using the ROE and plowback ratio from September 30th, 2016. The last two were found using CAPM. We found the returns for NRG's stock as well as IWB for the last 6 years. IWB gives us a good idea on the average market return in this time. We used the beta found on morningstar as of 12/09/2016, as well as the risk-free rate of the 1 year treasury rate as of 10/29/2016. We then used the formula $Re = R_f + \text{Beta} * (E(R_m) - (E(NRG)))$.

The next beta was found by taking the slope of NRG's returns and IWB's returns, this gave us an estimated beta. The last beta was found using the regression analysis, which looked at different treasury rates for 3 month, 1 year, 3 year, 5 year, and 10 year. The beta was found by taking the slope of the past 72 months on the returns for these treasury rates. The reason we chose to use this beta rather than the others is because it was closest to our betas that we found using the CAPM. This beta was then applied to the above formula.

Estimating the Weighted Average Cost of Debt



Average Time to Maturity	6.615 years
Rd	5.22%

Debt (D) (Book Value)	\$ 21,840,000,000.00
Debt (D)(BV sum of princ. Debt)	\$ 9,682,335,000.00
Debt(D) (MV)	\$ 9,803,791,180.00

	S&P	Moody
Credit Rating	BB-	B1

The Debt (Book value) data was found using the 2015 year end balance sheet. We found the net debt by adding short and long-term debt together and subtracting cash out. The book value of the principal debt was found using the the data from NRG's bonds. This is the sum of

the amount that each bond is worth. The last value was found using the market value of the debt. In this, we took the sum product of the amount of the bond and the price of each bond. From this, we can tell that NRG is a highly-levered company which could be troubling if they keep this up year-over-year.

Generally a 'BB' rating from Standard & Poor's indicates that a firm does not have high-risk like other firms, but is still vulnerable the economic shifts and turns in business that may cause the firm to be unable to meet its current obligations. This is an accurate representation of the firm because although it is quite volatile in nature, it is not doing so poor as to be considered high risk.

A credit rating of 'B1' from Moody indicates a firm that experiences default, but has a 99%-100% expected recovery rate. This type of rating is considered to be 'not prime' for investment purposes. This means that they may at times experience default, but will not be considered a risk for the short-term investment. They may however be considered a larger risk for the long term investment. This reflects the volatile nature of the firm more accurately than the Standard and Poor's rating.

Weighted Average Cost of Capital (WACC)

Cost Of Equity Capital, Re	
Re_1 (2 year)	15.341%
Re_2 (3 year)	11.759%
Re_3 (Accounting Estimate)	7.812%
Re_4 (CAPM w/ Morning star)	15.264%
Re_5 (CAPM w/ Est b)	11.019%
Re_6 (Ideal Beta using Regression)	10.430%
Cost of Debt, Rd	
Rd (Bonds from Yahoo, all companies)	7.136%
Rd (Bonds from MorningStar, only NRG)	5.217%
Capital Structure Weights	
We	14.070%
Wd	85.930%

Tax Rate	
Tax Rate (T)	36.680%
WACC Estimate (Before-Tax, After-Tax)	
1	8.290%, 6.042%
2	7.790%, 5.538%
3	7.230%, 4.982%
4	8.280%, 6.031%
5	7.680%, 5.433%
6	7.600%, 5.350%
7	6.640%, 4.998%
8	6.140%, 4.494%
9	5.580%, 3.938%
10	6.630%, 4.987%
11	6.030%, 4.389%
12	5.950%, 4.306%
WACC average (Before-Tax)	6.990%
WACC average (After-Tax)	5.041%
WACC (Before-Tax) = $We * Re + Wd * Rd$	
WACC (After-Tax) = $We * Re + Wd * (1 - \text{Tax rate}) * Rd$	

We found our WACC by finding 12 different estimates of WACC and taking the average of these values afterwards. The formula that was used to find the first six before-tax estimates was $WACC = We * Re + Wd * Rd$ (from bond data using yahoo), with the only thing changing is the cost of equity. To find the next 6, it is still the same equation by the Rd is different. It is the bond data for NRG itself. To find the After-Tax WACC, the equation we used was $WACC = We * Re + Wd (1 - \text{Tax Rate}) * Rd$. We used the same methods for the different Rd values as with the before-tax analysis. We found our after-tax WACC to be 5.041%, meaning for every dollar that is spent by lenders and equity holders, NRG is creating .05 cents of value. We think this number is fairly low and could be due to how the volatility of our cost of equities.

WACC Sensitivity Analysis

		Estimated Cost of Equity					
		0%	2%	4%	6%	8%	10%
Estimated Cost of Debt	0%	0.0000%	0.1473%	0.2946%	0.4418%	0.5891%	0.7364%
	2%	1.1732%	1.3204%	1.4677%	1.6150%	1.7623%	1.9095%
	4%	2.3463%	2.4936%	2.6409%	2.7881%	2.9354%	3.0827%
	6%	3.5195%	3.6667%	3.8140%	3.9613%	4.1086%	4.2559%
	8%	4.6926%	4.8399%	4.9872%	5.1344%	5.2817%	5.4290%
	10%	5.8658%	6.0130%	6.1603%	6.3076%	6.4549%	6.6022%

In the table above, the weighted values for the firm as well as the tax rate were held constant while the estimated cost of debt and equity were increased from zero to ten percent. For this it can be clearly seen that the WACC is highly sensitive to debt and insensitive to equity for the firm.

Summary

This section examined NRG's financial statements through empirical analysis. By taking a look at the various financial ratios used to evaluate different aspects of the company's growth and compared them to NRG's top competitors as well as the industry as a whole. In turn, these values allowed us to create a forecasting model as well as an actual forecasted income statement for our company. We created regression analysis that allowed us to estimate the cost of capital for NRG as well as the cost of equity and the weighted average cost of debt. We were able to value our company and gain a better insight, not only to NRG, but to the energy industry as a whole. Despite having a bad year in 2015, NRG is forecasted to grow at a rather steady rate for the next 10 years. Currently, NRG is a highly levered firm, but we believe they are getting ready to expand their market into retail and make the movement toward producing energy with more natural resources. However, several analyses show that NRG is demonstrating erratic behavior with their purchases and expenses, making it difficult to accurately predict how the company will continue to grow in the future.

Valuation

In this section we will use multiple valuation models in order to gauge if the stock price of NRG is overvalued, undervalued, or fairly valued.

DDM and DCF

As discussed in the previous section on DDM, the following tables include the dividend just paid, price and growth rate as well as returns as of the fiscal year end in 2015. By using this

data to forecast the growth rate of the dividend over the next several years, a perpetuity can be created and the Discounted Cash Flow can be used to value the stock at the fiscal year end.

Price as of 12/31/2015	Annual Dividend as of 12/31/2016
11.77	0.58

	g	Re
2yr	9.9242%	15.3410%
3yr	6.5113%	11.7599%
Accounting Data	5.62%	7.812%

The growth rate used in the DCF model is the oldest calculated historical data growth rate from the DDM model. Below is the data used in and the resulting value of the DCF.

Time consistent Model Price on 12/31/2015	\$ 16.13
Observed Share Price (12/31/2015)	\$11.77
Initial Cost of Equity	11.02%
Perpetuity Growth Rate (g)	6.51%

It can be seen from the above data that the stock value at the fiscal year end was undervalued using this model. Although this is considered valid, this model does not take into account the recent volatility of the firm. This is also highly influenced by the short amount of time that the firm has been paying dividends. Overall, given the weaknesses of this model, it can be considered a fairly accurate albeit imprecise valuation and it can be concluded that the firm is undervalued.

Comparables

In this section we will use the method of comparables to determine if NRG is overvalued, undervalued, or valued fairly. This method uses a variety of standard industry averages to compute what price NRG should be selling their stock for, based on the industry. These methods are not always accurate, and are subject to various errors. A computed price above the stated price of one share of NRG (\$11.77), will mean the firm is undervalued. A computed price lower than the stated price will mean the firm is overvalued. We will use 2015 values for this method, including the 2015 December closing stock price for NRG, \$11.77. It should be noted that NRG is not included in any industry averages.

Price/Earning Trailing

	PPS	EPS	P/E	Computed Price
Duke Energy	74.09		17.37	
FirstEnergy	33.37		22.86	
Florida/Nextera	114.14		17.11	
NRG	11.77	-19.17	-0.6	N/A
Industry Average			19.11	

This ratio uses the industry average P/E, not including NRG. This value is then multiplied by the earnings per share of NRG. However, NRG reported a negative earnings per share in 2015, so this ratio cannot be used.

Price/Earning Forecast

	PPS	EPS	Forward P/E	Computed Price
Duke Energy	74.09		15.88	
FirstEnergy	33.37		11.42	
Florida/Nextera	114.14		17.43	
NRG	11.77	0.097	32.33	1.447866
Industry Average			14.91	

This ratio is calculated using the same method as the trailing price/earning ratio. The industry average for the P/E is found, and multiplied by the forecasted earnings for the firm in question. The forecasted earnings for the firm may be inaccurate due to the largely changing earnings per share of NRG. Based on this ratio, NRG should be selling their stock for \$1.45, which places their 2015 stock price as being severely overvalued. However, we believe, due to the volatile earnings per share of NRG, that this ratio is inaccurate.

Price/Earning/Growth

	PPS	EPS	Growth	PEG (5 yrs)	Computed Price
Duke Energy	74.09			9.21	
FirstEnergy	33.37			-2.2	
Florida/Nextera	114.14			2.67	
NRG	11.77	0.097	0.143	0.11	0.04501
Industry Average				3.22	

The PEG ratio is calculated by dividing the P/E by the earnings per share growth rate. It is generally accepted that a PEG ratio above 1 is not a good investment, while a PEG ratio below 1 is a good investment. It should be noted in this forecast that the NRG PEG ratio was not included in the industry average. It was included to display how small the ratio is, which indicates that NRG should be a very good investment. The industry PEG is much higher than NRG's PEG ratio. This ratio values NRG stock at \$0.04, which means NRG is overvalued. However, once again we believe that the forecasted earnings per share of NRG is inaccurate due to the erratic historical earnings it was based on.

Price/Book

	PPS	BPS	P/B	Computed Price
Duke Energy	74.09		1.26	
FirstEnergy	33.37		1.12	
Florida/Nextera	114.14		2.25	
NRG	11.77	17.29	1.21	26.68
Industry Average			1.54	

The price/book ratio compares the market price of a stock and its book value. Because book value stems solely from what is reported on financial statements, which are subject to the valuation practices of managers. The P/B ratio is found by dividing the price of the stock by the book value per share. The computed value of the NRG stock is found by multiplying the industry average P/B by the book price per share of NRG. Based on this calculation, NRG should be priced at \$26.68 per share and NRG is undervalued.

Price/EBITDA

	Price	EBITDA	P/EBITDA	Computed Price
Duke Energy	74.09	9610	0.007709677	
FirstEnergy	33.37	4000	0.0083425	
Florida/Nextera	114.14	8000	0.0142675	
NRG	11.77	2770	0.004046931	27.99
Industry Average			0.010106559	

The price/EBITDA ratio measures how many times a share sells above its EBITDA. In order to compute a value, we multiplied the industry average price/EBITDA ratio by NRG's EBITDA. This resulting value is \$27.99, meaning that NRG is undervalued.

Enterprise Value/EBITDA

	Price	EBITDA	EV/EBITDA	Cash	Shares	Computed Price
Duke Energy	74.09		4.13			
FirstEnergy	33.37		8.8			
Florida/Nextera	114.14		5.1			
NRG	11.77	2770	7.74	2435	315	60.58
Industry Average			6.01			

Enterprise value is the value of the actual operations of the firm. It is found by adding the equity and liabilities of the firm, and subtracting out the cash assets. This value is divided by

EBITDA in order to find the enterprise value/EBITDA ratio. The industry EV/EBITDA is multiplied by the EBITDA of NRG in order to compute a price for NRG. The computed price is \$60.58, which means NRG is undervalued.

Enterprise Value/Sales

	Price	EV/Sales	Sales	Cash+E q.	Shares	Computed Price
Duke Energy	74.09	4.13				
FirstEnergy	33.37	2.46				
Florida/Nextera	114.14	2.5				
NRG	11.77	1.67	9819	2435	315	102.17
Industry Average		3.03				

This ratio examines the looks at the cost of a firm's sales and their value. A smaller ratio suggests that the firm is undervalued. Though it was not included in the industry average, the EV/sales ratio for NRG was included in the table. This was done to show that NRG is undervalued based solely on this ratio. Once the industry ratio was multiplied sales, added to cash assets, and divided by sales, a price could be computed. This ratio prices NRG at \$102.17, which is considerably higher than the 2015 price of \$11.21. This means NRG is undervalued.

Enterprise Value/Future Cash Flows

	Price	EV	FCF	EV/FCF	Cash	Shares	Computed Price
Duke Energy		94580	5592	16.91			
FirstEnergy		35190	2580	13.63			
Florida/Nextera		41260	5294	7.79			
NRG	11.77	2140	1733	1.23	2435	315	78.05
Industry Average				12.78			

This ratio compares the free cash flows (sum of cash flows from operating and investing activities) and the value of the firm. It examines the relationship between the value of the firm

and its ability to generate cash flows. The lower the ratio, the greater the firm's ability to increase in value. In order to generate a price for NRG, we multiply the industry average ratio by the FCF of NRG, add back the cash assets, and finally divide by the number of shares. This produces a price of \$78.05, which means NRG is undervalued.

Dividend Payout

	Price	Payout Ratio	Annual DPS	Shares	Computed Price
Duke Energy		0.83			
FirstEnergy		0			
Florida/Nextera		0.64			
NRG	11.77	0	0	315	N/A
Industry Average		0.49			

This ratio observes the relationship between the firm's dividends per share and the price per share. However, since NRG did not pay a dividend in 2015, this ratio cannot be used.

AEG and RI

Residual Income

The residual income model is a stable and reliable method of valuation because it is less sensitive to growth and cost of equity. We must use our previously forecasted net income and dividends to begin this valuation. We can then forecast the book value of equity by adding the forecasted net income to the book value of equity for 2015, and then subtracting the forecasted dividends. This formula will be used to forecast every year of book equity through 2025. A benchmark is then found for net income by multiplying the firm's cost of equity by the book value of equity. Finally, residual income is found by subtracting this benchmark net income from the forecasted net income. These values are negative for NRG, meaning that the firm is destroying value for their investors. We also used our initial equity of 11.02%, and the perpetuity growth rate of -6.51% found previously. NRG model share price is \$8.84. Since the observed share price is \$11.77, NRG is overvalued using this model. Below we used a sensitivity analysis to observe the effects of change in perpetuity growth rate and cost of equity on computed price.

		Perpetuity Growth Rate:				
		13.49%	3.49%	-6.51%	-16.51%	-26.51%
	7.02%	\$12.97	\$12.37	\$11.97	\$11.69	\$11.50

Cost of Equity	9.02%	\$11.37	\$10.71	\$10.26	\$9.95	\$9.73
	11.02%	\$10.02	\$9.32	\$8.84	\$8.51	\$8.27
	13.02%	\$8.88	\$8.16	\$7.67	\$7.32	\$7.07
	15.02%	\$10.13	\$7.19	\$6.68	\$6.33	\$6.08

10% Analyst Position

Overvalued <	\$10.59	< Fair <	\$12.95	< Undervalued
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For this sensitivity model we computed prices for values 0.02 and 0.04 above and below the costs of equity, and 0.01 and 0.02 above and below the perpetuity rate. We decided to create a ten percent analyst position, meaning that any values more than ten percent below the observed price of \$11.77 would cause the firm to be considered overvalued, and any values ten percent above the observed price would label the firm as undervalued. Based off of our sensitivity model, NRG stock price is considered mostly overvalued. When the cost of equity is 9.02% and the perpetuity rate is above -6.51%, the price is deemed fairly valued. When the cost of equity is 7.02%, the stock is fairly valued for all perpetuity rates. Overall, this model places NRG stock price as being overvalued.

Abnormal Earnings Growth

The abnormal earnings growth model looks at the company's dividend reinvestment income and its earnings to determine how managerial decisions affect the company's performance. We conducted an AEG valuation on NRG to determine whether or not the company's stock is currently over or underpriced. We used their forecasted income statement how it affects the share price. Using our cost of equity and perpetuity growth rate, we were able to calculate a benchmark net income to compare to our cumulative earnings. The difference between these two values gives us our abnormal earnings growth value. We used our perpetuity rate to calculate our forecasted income beginning from December 31, 2015, as the 2016 fiscal year has not yet ended and the 10-Q data would skew our results.

Time consistent Model Price on 12/31/2015	\$14.85
Observed Share Price (12/31/2015)	\$11.77
Initial Cost of Equity	11.02%
Perpetuity Growth Rate (g)	6.51%

Using our cost of Equity and growth rates mentioned in the table above, we found our stock was undervalued. Our AEG model produced a stock price of \$14.85, when our stock was actually priced at \$11.77, resulting in a \$3.08 difference.

Final Recommendation

Our team evaluated NRG using intrinsic and comparable models to determine whether the company was over or undervalued, and therefore whether or not it is a good investment. Overall, NRG is undervalued. We believe that NRG is moving towards more renewable sources of energy and to producing a larger retail line. This conclusion was drawn because almost half of NRG's sales are due to their retail items, and the bulk of their goodwill purchases were renewable energy companies. NRG is likely taking out large amounts of debt in order to finance these endeavors, we draw this conclusion because NRG is highly leveraged. In recent years NRG has also been buying back large numbers of shares, which tells us that NRG is anticipating the price of their stock to rise. NRG has also just now begun to pay dividends, however these payments are erratic. Our valuations also conclude that NRG is for the most part, undervalued. However, because our valuation shows poor payback to investors, we believe this stock is a low risk and low return stock. We also believe that NRG is under poor management, based on the analysis of accounting principles. Because of the current low value of return and evidence of poor management, we would not invest in this stock.

References

Derivatives and Hedging . (2014). *Accounting Standards Update*, 2014(03), January.

Hodge, T. (2015, March 16). Growth in residential electricity prices highest in 6 years, but expected to slow in 2015. Retrieved from <http://www.eia.gov/todayinenergy/detail.php?id=20372>

Jahmani, Y., Dowling, W. A., & Torres, P. D. (2010, February). Goodwill Impairment: A Window For Earnings Management? *Journal of Business & Economics Research*, 8(2).

Klaiman, K. (2016, March 14). Total electricity sales fell in 2015 for 5th time in 8 years. Retrieved from <http://www.eia.gov/todayinenergy/detail.php?id=25352>

Klaiman, K. (2016, June 15). Total electricity sales projected to grow slowly as electricity intensity declines. Retrieved from <http://www.eia.gov/todayinenergy/detail.php?id=26672>

March 7, 2016 average historical annual gasoline pump price. (2016, March 7). Retrieved from <http://www.eia.gov/todayinenergy/detail.php?id=25352>

Rating symbols and definitions. (2016, October). Retrieved December 1, 2016, from Moody's Investors Service, <https://www.moodys.com/sites/products/AboutMoodyRatingsAttachments/MoodysRatingSymbolsandDefinitions.pdf>

References

NRG EnergyMarketCap:.(n.d.).Retrieved November 13, 2016, from
https://ycharts.com/companies/NRG/market_cap
https://ycharts.com/companies/NRG/market_cap

http://www.eia.gov/electricity/annual/html/epa_08_03.html

<http://www.eia.gov/electricity/data/browser/>

<http://www.eia.gov/todayinenergy/detail.php?id=17791>

<https://www.isa.org/templates/one-column.aspx?pageid=111294&productId=119455>

<https://www.sec.gov/Archives/edgar/data/1031296/000103129616000071/fe-12312015x10k.htm#s6CF1B890A20D5D8EAF3A67EF527E4400>

<https://www.sec.gov/Archives/edgar/data/1031296/000103129614000010/fe-12312013x10k.htm>

<https://www.sec.gov/Archives/edgar/data/20947/000103129612000012/fe-12312011x10k.htm>

<https://www.sec.gov/Archives/edgar/data/1031296/000103129616000121/fe-09302016x10q.htm>

<https://www.sec.gov/Archives/edgar/data/17797/000132616016000221/duk-20151231x10k.htm#s6C9318FBAC38DF0961C450C0E3381A85>

<https://www.sec.gov/Archives/edgar/data/17797/000132616014000003/form10k.htm>

<https://www.sec.gov/Archives/edgar/data/17797/000132616016000411/duk-20160930x10q.htm#s188943B28B4A53F1BCAD63F4BFA867C4>

<https://www.sec.gov/Archives/edgar/data/17797/000132616016000411/duk-20160930x10q.htm#s188943B28B4A53F1BCAD63F4BFA867C4>

<https://www.sec.gov/Archives/edgar/data/37634/000075330814000025/nee-12312013x10k.htm>

<https://www.sec.gov/Archives/edgar/data/37634/000075330812000025/nee-12312011x10k.htm>

<https://www.sec.gov/Archives/edgar/data/37634/000075330816000444/nee10q3q2016.htm#s3F84392A6F7150E7B7A3408C7F77E6CF>

http://www.nrg.com/news/uploads/blogs/Breaking_news.jpg