THE APPLICATION OF SUSTAINABLE INVESTING IN PORTFOLIO MANAGEMENT

By

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Abstract

With more and more companies actively taking steps to improve and minimize their negative impacts on the environment, society, and the economy, corporations' sustainability practices are bearing increasing weight in the investment decisions of fund managers and individual investors. The following paper examines particular criteria and indices that classify a company as sustainable, as well as how these factors have the potential to add value to an investment portfolio. In addition, particular examples of current sustainable equity holdings in the University of Arizona Foundation's student-run portfolio are analyzed. Lastly, Pinnacle West Capital Corporation, an Arizona-based utility company, is valuated using a combination of fundamental analysis and sustainability analysis to determine whether or not the inclusion of the company's stock in a portfolio would generate positive returns. Pinnacle West was chosen as part of the applied portfolio management class's on-going project to compile and valuate a database of Arizona companies actively engaging in sustainability practices.

In today's world, it appears that every other company has "gone green," introducing eco-friendly products and implementing environmentally sustainable production practices. Whether it is reusable cups or solar energy, corporations are making a conscious effort to show their consumers and the public that they are invested in being socially responsible. Even so, companies must employ a number of practices to classify as sustainable. Sustainable companies provide the proof that multi-billion dollar corporations can produce greater amounts of wealth from fewer material resources, all the while honoring the social contract (Global 100, 2010).

Corporate Social Responsibility

Corporate social responsibility, commonly referred to as CSR, has become such a buzz word in the business world that most companies nowadays practice at least some form of it in their day to day operations. The actual definition of CSR, however, leaves much left up to interpretation. Most corporations see CSR as a way of maximizing benefits to both shareholders and consumers; however, some companies believe that restructuring and rerouting funds are not profitable and therefore see no need to implement CSR practices. Paul Portney, Dean of the Eller College of Management at the University of Arizona, defines CSR as follows:

> "CSR is a consistent pattern, at the very least, of firms doing more than they are required to do under applicable laws and regulations governing the environment, worker safety and health, and investments in the communities in which they operate," (Hay, 2005).

In essence, a company that goes above and beyond minimum legal requirements to ensure the safety and prosperity of its workers, community, and surrounding environment can be considered socially responsible. These firms believe that an investment in CSR will yield long-term benefits, and therefore attract more investors, retain more employees, and increase their customer bases.

The Dow Jones Sustainability Index

Sustainability is very similar to corporate social responsibility in that it examines the three same areas: environmental welfare, workers, and the community. Even so, there are several areas that a company must focus on to be considered sustainable in addition to practicing CSR. The Dow Jones Sustainability Index classifies and measures the financial performance of sustainable companies. At the time of its inception in 1999, the DJSI was the first index used internationally to track the financial performance of sustainability-driven companies across the globe. As was mentioned before, the actual evaluation of a company's sustainability and CSR practices can be somewhat subjective; in order to minimize this uncertainty, the DJSI assesses a firm's sustainability performance based on a combination of general and industry-specific criteria, with more weight being given to the industry-specific criteria. If, after this assessment, a corporation's sustainability score ranks within the top 20%, it becomes a part of the DJSI. A breakdown of the sustainability assessment criteria can be seen in Figure 1 (Dow Jones Sustainability Index, 2010).

Figure 1: *DJSI Assessment Criteria*

Dimension	Criteria	Weighting (%)
Economic	Codes of Conduct / Compliance / Corruption&Bribery	6.0
	Corporate Governance	6.0
	Risk & Crisis Management	6.0
	Industry Specific Criteria	Depends on Industry
Environment	Environmental Reporting*	3.0
	Industry Specific Criteria	Depends on Industry
Social	Corporate Citizenship/ Philanthropy	3.0
	Labor Practice Indicators	5.0
	Human Capital Development	5.5
	Social Reporting*	3.0
	Talent Attraction & Retention	5.5
	Industry Specific Criteria	Depends on Industry

The Dow Jones Sustainability Index examines several criteria, as well as numerous subcategories, when evaluating corporations for placement on the DJSI. The first focuses on economic factors, including corporate governance, risk and crisis management, codes of conduct, compliance with regulations, and several industry specific criteria, such as brand management, customers relations, and research and development. The second category focuses on the environment, including environmental reporting and climate strategy. The third category examines the company's social practices, such as human capital development, recruitment, labor practices, corporate citizenship and philanthropy, social reporting, and occupational health and safety standards. Overall, the DJSI looks for more industry specific qualities in a company other than those covered by the traditional qualifications of corporate social responsibility.

The Global 100

The Global 100 is one other way to measure a company's sustainability in comparison to others. Unlike the DJSI, the Global 100 is a list of the top one hundred most sustainable companies in the world that have been most proactive in managing the ESG matters of their firms' business: environmental, social, and governance. The Global 100 aims to provide investors with a solidified compilation of selection data for attractive corporations based on an aggregate of specific weighted criteria. These key performance indicators, or KPIs, are examined in Figure 2.

Figure 2: *Global 100 Universal KPIs*

Universal Key Performance Indicators

Energy Productivity	*Sales (US$) / Total energy consumption*
Carbon Productivity	*Sales (US$) / Total carbon emissions*
Water Productivity	*Sales (US$) / Total water use*
Waste Productivity	*Sales (US$) / Total waste produced*
Leadership Diversity	*% women board directors*
CEO-to-Avg. Worker Pay	*Ratio of highest paid salary to average employee's*
% Tax Paid	*% tax obligation paid in cash*
Sustainability Leadership	*Existence of sustainability committee*
Sustainability Pay Link	*Officer pay link to sustainability*
Innovation Capacity	*R&D / Sales*

As sustainability factors continue to increase their influence on the valuation of companies, the amount of weight given to traditional valuation methods decreases. Although these traditional assessment models, such as discounted cash flow analysis and relative valuation, provide useful information in determining attractive investments, investors are beginning to view sustainability criteria as carrying just as much weight in investment decisions. The Global 100's mission statement states:

> "There is also a growing investment case for strong management of extra-financial risks and opportunities. As we move deeper and deeper into the era of knowledge-value based on sustainability issues, conventional methods of company analysis will capture and reflect less and less of a company's true value and competitive potential. These sustainability value drivers are difficult to measure, but they are absolutely central to companies' competitiveness and profitability going forward," (Global 100, 2010).

Even though there is no definitive sustainability valuation tactic, the inclusion of sustainable companies in investment portfolios can have a positive effect on the portfolios return. This is due to both consumer and investor confidence combined with corporations' long-term growth and profitability strategies.

Class Portfolio DJSI Holdings

As of April 2010, the Eller College of Management's Applied Portfolio Management class held seven equity holdings in corporations belonging to the DJSI in its portfolio: Baxter International, Becton-Dickinson, Cisco Systems, Life Technologies, Praxair, Procter and Gamble, and Starbucks. Spread over five sectors and representing 24.5% of the portfolio's equity weighting, these securities all performed consistently well during the time they have been in the portfolio. After analyzing the one-year and five-year price returns for each DJSI member company, it is apparent that these holdings have had a positive effect on the class portfolio. Each company's returns were compared to its two top competitors in the industry, and then to the overall returns of the sector in which it is listed. For a company to be considered a competitor, it must have both a similar market share and offer a comparable product or service. Within the past year, most of these companies posted price returns similar to or greater than their competitors and sector average. Because the stock market has been extremely volatile in the past two years, the holdings were also evaluated based on five-year price returns. As can be seen in Figure 3, these returns show that the portfolio's sustainable companies have more often than not outperformed their competitors and the market since 2005. Additionally, Figure 4 shows the total return of each of the DJSI holdings since their date of purchase in the portfolio. Starbucks is of particular note, boasting a total return since its date of purchase in February 2009 of 182%. This gain, when multiplied by Starbucks' overall equity weighting of 3.9%, shows that the inclusion of this sustainable company in the class portfolio contributed to an overall equity gain of 7.10%, or almost 5% of the total portfolio. Considering the current market value of the class's portfolio is slightly less than $1 million, the gains these companies are contributing to the portfolio are extremely significant.

Figure 3: *Portfolio Sustainable Holdings*

DJSI Holding Performance Comparison							
Symbol	**Company**	**1yr return**	**5yr return**	**Symbol**	**Company**	**1yr return**	**5yr return**
BAX	**Baxter International**	**17.79%**	**29.63%**	CSCO	**Cisco Systems**	**46.63%**	**54.96%**
BDX	**Becton-Dickinson**	**21.72%**	**33.05%**	LIFE	**Life Technologies**	**66.56%**	**19.77%**
	Competitor 1- ABT	15.50%	4.62%		Competitor 1- INTC	49.49%	0.47%
	Competitor 2- CAH	5.50%	-34.47%		Competitor 2- ORCL	31.28%	117.95%
	Healthcare Sector	18.80%	-11.40%		IT Sector	37.89%	41.21%
PX	**Praxair**	**19.07%**	**40.67%**	PG	**Procter & Gamble**	**27.47%**	**17.11%**
	Competitor 1- APD	23.67%	19.60%		Competitor 1- JNJ	26.24%	-6.15%
	Competitor 2- SCCO	-0.42%	N/A		Competitor 2- CLX	13.64%	1.06%
	Materials Sector	34.98%	48.89%		CS Sector	27.81%	7.23%
SBUX	**Starbucks**	**96.37%**	**16.46%**				
	Competitor 1- YUM	22.68%	78.77%				
	Competitor 2- MCD	29.87%	134.63%				
	CD Sector	53.18%	11.39%				

Figure 4: *Portfolio Gains*

	Return since DOP	% of Equities	Equity Gain	Portfolio Gain
Baxter International	73.9%	2.3%	1.70%	1.15%
Becton-Dickinson	13.3%	2.9%	0.39%	0.26%
Cisco Systems	73.5%	4.1%	3.01%	2.04%
Life Technologies	56.3%	4.3%	2.42%	1.64%
Praxair	71.0%	2.0%	1.42%	0.96%
Procter & Gamble	11.8%	5.0%	0.59%	0.40%
Starbucks	182.0%	3.9%	7.10%	4.80%

Sustainable Companies in Arizona: Pinnacle West

Pinnacle West Capital is a holding corporation specializing in energy and energy-related products and services in the state of Arizona. The company is made up of four subsidiaries: Arizona Public Service (APS), SunCor Development Company, APS Energy Services, and El Dorado Investment Company. Arizona Public Service is by far the largest contributor to Pinnacle West's annual earnings, with contributions in 2009 totaling 96% of operating revenue. APS has operating segments in the generation, selling, and distribution of both its electricity and energy-related products and services, and is a leader in the development of sustainable solar energy technology. With approximately 1.1 million customers state-wide, APS is one of the most widely-distributed and fastest-growing energy providers in the nation. Pinnacle also has a small stake in the real estate arena with SunCor Development Company, developing residential, commercial, and industrial properties. The remaining affiliates include El Dorado Investment Company, an investment and venture capital firm, and APS Energy Services, a subsidiary of APS that is a specialized retail energy service provider (Pinnacle West Capital Corporation, 2010).

Pinnacle West & Sustainability

Pinnacle West and its subsidiaries practice a continued dedication to sustainable business practices and corporate social responsibility. As stated in the company's annual Corporate Responsibility Report, "Sustainability is not a flavor of the month, or a green initiative that comes and goes depending on other priorities; rather, it is our business model" (Brandt). This statement says a great deal about the recent advent of companies using a "go green" campaign to attract customers and investors. Green initiatives, although environmentally friendly, tend to ignore the needs of communities and the economy as a whole. Pinnacle's sustainability metrics carry so much importance that they were actually integrated into the company's overall business plan. As shown in Figure 5, the business plan's outer circle shows the values that are expected to be upheld as a company and a workforce, while the inner ring shows a list of different components that must be examined before any plan or idea is put into action.

Figure 5: *PNW Business Plan*

As a result of maintaining these sustainable business practices, Pinnacle has been elected to both the Dow Jones Sustainability Index (DJSI) and the Global 100 for the past five years. The company has also earned an AAA rating from Innovest Strategic Value Advisors for its exemplary environmental performance.

Valuation of Pinnacle West

In order to determine whether or not Pinnacle West is fairly priced in the current market, and therefore a good investment for a portfolio, both a discounted cash flow analysis and relative valuation were conducted. First, the discounted cash flow analysis examined financial data from 2005 to the most recent fiscal year, and then estimated revenue growth out to 2018. This long growth horizon is to assure that any jumps or dips in revenue stream in the short term will be offset by an average of all thirteen years. For Pinnacle's DCF, a weighted average cost of capital of 6.01% was calculated, which is very similar to Bloomberg's estimate of 6.45%. Using the Bloomberg WACC of 6.45%, with a modest terminal growth rate of 3%, Pinnacle West's fair price was calculated to $37.21, which is slightly lower than its current price of $37.61 (Figure 6).

Figure 6: *DCF Calculated Price*

DCF Calculated Price		
	Calculated WACC: 6.01%	**Bloomberg WACC: 6.45%**
Price per Share	$ 43.59	$ 37.21
Current Price (4/26/10)	$ 37.61	$ 37.61
Difference	$ 5.98	$ (0.40)

This is a fairly accurate price estimate, as the estimated growth rates used in the DCF took into account the companies recent research and development ventures and long-term sustainability investments. In addition to this DCF, a sensitivity analysis was conducted using terminal growth rates of 3-5%. As shown in Figure 7, this analysis gave a price range from $29.51 to $263.40, indicating that Pinnacle is currently undervalued in its market price, for the current stock price of $37.61 resides at the lower end of this range. Long-term analyst estimates expect this recent investment in sustainability technology and research to have a positive impact on Pinnacle's earnings as well as its share price. This coupled with the discounted cash flow analysis supports the conclusion that Pinnacle is undervalued at the present time.

Figure 7: *Sensitivity Analysis*

Sensitivity Analysis Matrix			
	Terminal Growth		
Discount Rate	3.00%	4.00%	5.00%
7.45%	$29.51	$37.28	$51.39
6.45%	$37.21	$51.19	$84.46
5.45%	$51.01	$83.97	$263.40

In order to better valuate Pinnacle West, a relative valuation was performed comparing it to its competitors, peers, the utilities sector, and the market. The two competitors chosen were Alliant Energy and NSTAR. Alliant Energy Corporation operates in the electric energy, natural gas, and steam service businesses in Iowa, Minnesota, and Wisconsin. NSTAR is an investor-owned gas and electric utility company that operates predominantly in the eastern region of the United States. Alliant Energy and NSTAR's P/E ratios are 18.85 and 16.30, respectively, with Pinnacle's P/E of 15.62 standing lower than both. Bloomberg peers had a 5-year average P/E ratio of 16.04, which slightly undervalues Pinnacle West in comparison. With the sector and S&P price-earnings averages at 15.89 and 18.58, Pinnacle again seems to be undervalued in comparison. Pinnacle's PEG ratio is currently 0.61, which is slightly higher the average of its 5-year range, but much lower than the S&P, sector, peer, and competitor ratios. Looking at these numbers, it is apparent that Pinnacle West is currently undervalued. (Other figures examined during the valuation were P/CF, P/Book, and P/Sales ratios, the results of which can be seen in the relative valuation worksheet in Appendix D.)

Based on the fundamental analysis performed on Pinnacle West's financial statistics and competitor data, it is apparent that Pinnacle West is currently underpriced in the market. This, along with the company's history and the ever-increasing need for energy in both the state of Arizona and the world, provide evidence that Pinnacle West is a good investment and would add diversity to a portfolio.

Added Value of Sustainably Practices

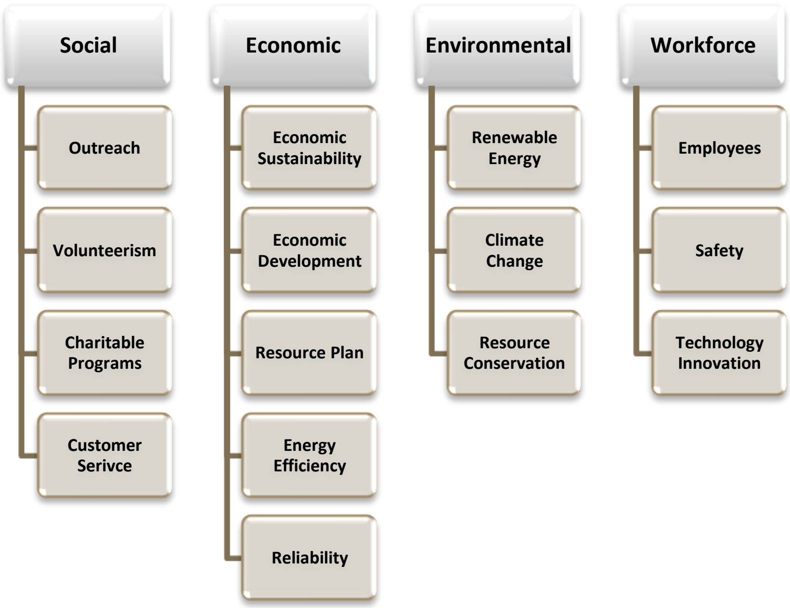
In addition to fundamental and relative valuations of the company, Pinnacle's sustainable practices also add value. Last year alone, Pinnacle West was able to decrease nitrogen oxide emissions by 8.5%, carbon dioxide emissions by 3.2%, and overall hazardous waste by 50%, resulting in a huge improvement in the environmental section of its operations. Lost time from accidents decreased by approximately 26.8%, adding to the workforce and social sustainability component of the company (2009 Form 10-K). Overall, Pinnacle West improved its ESG (Environmental, Social, and Governmental) Disclosure Score by 15.2%. In addition, Pinnacle West and APS are in the process of improving the energy efficiency aspect of the company's new resource plan. In approximately five years, the percentage of electricity needs from customers serviced by renewable energy is expected to increase to ten percent, an eight percent increase from 2010 figures. Also, because Arizona provides copious amounts of sunlight throughout the year, a solar project is being developed that would generate 100 megawatts of solar energy across the state. This would not only help the environment, but also contribute economically to the state, as the required investment is upwards of $500 million.

In terms of community work, Pinnacle and APS hold annual summits to provide information to social service agencies about programs for lower-income customers. Last year, employees of the company volunteered over 150,000 hours to non-profit organizations in the community. It is this type of commitment to causes outside of the company that makes Pinnacle West a model for both sustainability and fine-tuned corporate social responsibility practices.

Although there might not be a definitive or quantitative way to evaluate exactly how much value is derived from being sustainable, Pinnacle's performance, growth, and presence in the community are strong indicators of its increasing value. As shown in Figure 8, Pinnacle's

Principles of Sustainability address the needs of the community, economy, environment, and company, all of which significantly contribute to the business's core value.

***Figure 8**: Principles of Sustainability*



Conclusion

After evaluating Pinnacle West's financial data, company history, and sustainability aspects, it is apparent that the inclusion of the company in an investment portfolio would yield long-term positive returns. Pinnacle West is extremely involved in the Arizona community, has historically outperformed its competitors and the industry average, and is constantly looking for ways to improve its sustainability practices and minimize the negative effects of its production on the environment. It is this type of dedication to the community, economy, and environment that make Pinnacle West a model company for sustainable companies everywhere.

Works Cited

Alliant Energy Corporation. (2010). *Form 10-K: 2009*. Retrieved from http://sec.gov/Archives/edgar/data/52485/000035254110000009/form10k123109.htm

Brandt, Donald. (2009). *2008 Corporate Responsibility Report*. Retrieved from http://www.pinnaclewest.com/main/pnw/AboutUs/commitments/ehs/2008/2008.html

Climate Registry, The. (2010). *The Climate Registry Website*. Retrieved from http://www.theclimateregistry.org

Crane, A., McWilliams, A., Matten, D., Moon, J., & Siegel, D. (Eds.). (2008). *The Oxford Handbook of Corporate Social Responsibility.* New York: Oxford University Press.

Dow Jones Sustainability Index. (2010). *Criteria and Weightings.* Retrieved from http://www.sustainability-index.com/07_htmle/assessment/criteria.html

Global 100, The. (2010). *Criteria & Weights.* Retrieved from http://global100.org/methodology/criteria-a-weights.html

Hay, B., Stavins, R., & Vietor, R. (Eds.). (2005). *Environmental Protection and the Social Responsibility of Firms: Perspectives from Law, Economics, and Business, Resources for the Future.* Johns Hopkins University Press.

NSTAR. (2010). *Form 10-K: 2009*. Retrieved from http://sec.gov/Archives/edgar/data/1035675/000119312510023451/d10k.htm

Occupational Safety and Health Administration. *(2010). Regulations (Standards - 29 CFR).* United States Department of Labor. Retrieved from http://www.osha.gov/pls/oshaweb/owasrch.search_form?p_doc_type=STANDARDS&p_toc_level=0&p_keyvalue=

Pinnacle West Capital Corporation. (2010). *2009 Annual Report.* Retrieved from http://www.pinnaclewest.com/files/annual/2009/PNW_2009_Annual_Report.pdf

Pinnacle West Capital Corporation. (2010). *Form 10-K: 2009.* Retrieved from http://sec.gov/Archives/edgar/data/7286/000095012310014366/c96360e10vk.htm

Pinnacle West Capital Corporation. (2009). *Form 10-K: 2008.* Retrieved from http://sec.gov/Archives/edgar/data/7286/000095013409003359/p14106e10vk.htm

Sustainable Investing LLC. (2009). *Returns.* Retrieved from http://www.sustainableinvesting.net/Main/index.php/returns/

Appendix A

PINNACLE WEST (PNW)

PINNACLE WEST (PNW)
INDUSTRY: UTILITIES

Analyst: Rae Murillo

Summary Statistics			
Price (04/26/10):	$37.61	FY EPS 07:	$3.06
52-week range:	$25.28 – $39.10	FY EPS 08:	$2.40
Shares Outstanding:	101.16 M	FY EPS 09:	$0.68
Market Cap:	$3.81 B	Est. FY EPS 10:	$2.99
Avg. Daily Volume:	1.10 M	Current PE:	15.62
Beta:	0.75	PEG Ratio:	0.61
S&P 500 Wt.	N/A	Dividend Yield:	$2.10 (5.60%)

INVESTMENT THESIS

Conclusion:

Pinnacle West has solid growth opportunities in the renewable energy market, and is estimated to continue to produce stable earnings in the future. In fiscal 2009 and into the first quarter of 2010, Pinnacle West has continued to generate strong and steady cash flows and maintained healthy liquidity, providing it with the financial flexibility to implement vital restructuring efforts, as well as make ongoing investments in its dedication to sustainable business practices.

Rationale and Catalyst:

There are several that Pinnacle West is a good investment. Its discounted cash flow analysis and relative valuation both suggest that the company is undervalued, which is a good indicator for future growth. The utilities sector is one of the fastest-growing in the field of sustainability development, and Pinnacle West is no exception. Its mission, "To create a sustainable energy future for Arizona," is what drives its constant development in the fields of green energy research and generation. Pinnacle West's Principles of Sustainability address the needs of the community, economy, environment, and company, all of which significantly contribute to the business's core value.

Investment Positives:

- Fast-growing customer base in the state of Arizona
- Pays a high and reliable dividend
- Continued dedication to CSR
- Five-year analyst estimates show growth superior to industry predictions
- Electric outages per APS customer decreased by almost 50% in 2009
- Installation of 300,000 "smart meters" for customers in 2009

- Resource Plan Initiative to increase consumption by 50% without increasing carbon dioxide emissions

Investment Negatives:

- Unstable EPS due to high expenses
- DCF valuations show that Pinnacle West is currently undervalued
- The demand for energy in Arizona is very uneven throughout the year
- SunCor subsidiary showing decreases in earnings, which might indicate a sell-off of this real estate division in the future

COMPANY DESCRIPTION

Profitability:

Consolidated net revenues were $3.297 billion for fiscal 2009, a decrease of approximately 0.4 percent, compared with $3.311 billion for fiscal 2008, driven by a decline in energy use due to lower temperatures for the year in the areas in which the company services. Estimated 2010 earnings per share is $2.99. The current price-to-earnings ratio of 15.62 is lower than both the industry average and Pinnacle West's competitors, suggesting its value is higher than other companies in the utilities sector.

COMPANY VALUATION:

Valuation and Sensitivity Analysis:

Sensitivity Analysis Matrix			
	Terminal Growth		
Discount Rate	3.00%	4.00%	5.00%
7.45%	$29.51	$37.28	$51.39
6.45%	$37.21	$51.19	$84.46
5.45%	$51.01	$83.97	$263.40

The Valuation and Sensitivity analysis was calculated using the Discounted Cash Flows Model in conjunction with projections from company and analyst estimates. Bloomberg's discount rate of 6.45% came very close to the calculated discount rate of 6.01%, and therefore was used in evaluating Pinnacle West's terminal growth projections.

As indicated in the above chart, Pinnacle West's current share price of $37.61 is on the lower end of the valuation spectrum. However, we feel that this is not unusual for the company due to the fact that it has a lower price-earnings ratio than most companies, and has posted very steady growth estimates for the coming years. This, in conjunction with Pinnacle West's recovery indicators in the first and second quarters of fiscal 2010, leads us to the conclusion that the company's undervaluation provides us with enough incentive to recommend purchasing this stock at the current time.

Industry Outlook

Growth:

The utilities sector has always remained fairly stable, seeing as almost all consumers require energy in their everyday lives. However, more and more customers are looking to switch to more sustainable methods of energy use, which means that in order to retain customers, Pinnacle must continue to practice sustainable energy production.

Competitors:

Alliant Energy (LNT), NSTAR (NST), and Salt River Project (privately held).

Sources

The above information was obtained from:

Bloomberg, Value Line, SEC Filings, Analysts' Reports, DCF Valuation Model

Appendix B
Pinnacle West Sustainability Aspects

SOCIAL

Pinnacle West is an active member of the Arizona community, organizing and contributing to charitable organizations and outreach programs both in state and nation-wide. In addition to monetary donations made by the company, Pinnacle West's employees also help to carry out the company's commitment to sustainability, community improvement and involvement.

Below is a description of Pinnacle West's current social involvement and charitable contributions:

- **Educational Summits**
  APS, Pinnacle West's largest subsidiary, conducts over 20 educational summits for the purpose of teaching social service programs about services designed specifically to accommodate lower-income customers. Since its inception, this program has reached out to over 300 social service agencies in the past three years.

- **Volunteerism**
  Each year, Pinnacle West's employees and their families strive to donate a certain amount of volunteer hours. In 2008, this number was 150,000 hours, performed at over 400 non-profit organizations in Arizona.

- **Community Involvement**
  APS and its employees continue to be the top "Leadership Givers" to United Way's annual fundraising campaign for the state of Arizona, aiming to donate at least $1,000 each year.

- **Customer Satisfaction**
  Out of all public utilities companies in the west, J.D. Power and Associates ranked APS second in its annual Residential Customer Satisfaction Survey.

- **Smart Meters**
  As of the end of 2009, Pinnacle installed "smart meters" for approximately 300,000 of its customers to help them keep track of their energy usage throughout the year, with the goal of covering one million customers by 2013.

ECONOMIC

Pinnacle West consistently demonstrates sustainable practices that result in cost-reductions, decreases in carbon dioxide emissions, job creation, and service reliability. Following is a more detailed explanation of Pinnacle West's economic sustainability aspects:

- **Corporate Knights Global 100**

Since 2004, Pinnacle West has been included on the Corporate Knights Global 100 list of most sustainable corporations in the world. Criteria for selection includes a combination of these key performance indicators: Energy productivity, carbon productivity, water productivity, waste productivity, leadership diversity, CEO-to-average worker pay, percent of taxes paid, sustainability leadership, sustainability pay link, innovation capacity, and transparency.

- **Business Ethics Award**
  Last year, APS was the recipient of the Better Business Bureau's Business Ethics Award for the company's ongoing commitment to ethical business practices.

- **Business Development and Job Creation**
  In 2008 alone, APS and Pinnacle West contributed over $100 million in capital investment, one million square feet of industrial and business development space, and 1,000 new jobs to the state of Arizona.

- **Resource Plan Initiative**
  A recently approved Resource Plan allows APS to improve its operations in order to increase customer energy consumption by over 50% without having to increase carbon dioxide emissions. This allows the company to provide greater amounts of energy to its customers without negatively impacting the community or environment.

- **Demand Side Management Programs**
  APS' Demand Side Management (DSM) programs help to tailor operations so that there is not an excess amount of energy being produced or going to waste. Last year, these programs achieved savings of $73 million, almost triple the cost of implementation, and three million megawatt hours of electricity.

ENVIRONMENTAL

As a corporation whose primary subsidiaries operate as energy service providers, Pinnacle West is aware of the negative impact plant emissions can have on the environment, and is constantly developing new environmentally-friendly production practices. These processes are outlined below:

- **Renewable Energy Resources**
  Last year, Pinnacle provided 609,926 megawatt hours of energy to its customers that were generated using renewable resources. This amount is significantly higher than previous years' numbers, and the company plans to continue this steady increase in renewable resource-based production.

- **Solana Generating Station**
  Currently, Pinnacle is in the pre-building stage for a 280-megawatt generating station. Upon completion, this station is expected to provide enough electricity to power 70,000 homes in the Arizona area.

- **Decreases in Co2 Emissions**
  Two components of the aforementioned Resource Plan focus on renewable energy and energy efficiency, and are projected to impede 30 million metric tons of carbon dioxide emissions during the next several years.

- **The Climate Registry**
  APS is a founding member of The Climate Registry, a nonprofit group that sets clear and reliable standards to help evaluate and publicly report greenhouse gas emissions into one database.

- **Water Conservation**
  Almost 75% of the water used at APS generating stations and power plants comes direct from treated city waste water.

- **Recycling**
  In 2009 alone, Pinnacle West and its subsidiaries' recycling efforts resulted in the re-use of 617,684 tons of coal ash, a decrease in greenhouse gas emissions by 130,000 tons, and construction of a 3-mile space shuttle runway at Edwards Air Force Base using recycled fly ash.

EMPLOYEES AND OTHER STAKEHOLDERS

- **Employee and Customers**
  Pinnacle's improved efficiency has kept its workforce population stable and, since 2000, has helped the company to sign over 300,000 new customers throughout the state of Arizona. In addition, discussions and articles relating to sustainability are published daily in the company's employee communications.

- **Improved Safety Performance**
  APS' succeeded in achieving its goal of improving safety performance in its day-to-day operations, posting a 39% decrease in recordable injuries from last year. (OHSA)

- **The Edison Award**
  APS recently received The Edison Award of its TOAN system, a system that uses artificial intelligence to monitor transformers in close to real time. Each year, the Edison Electric Institute presents this honor to utility companies that have made significant contributions to the development of the power industry,

Brandt, Donald. (2009). *2008 Corporate Responsibility Report*. Retrieved from http://www.pinnaclewest.com/main/pnw/AboutUs/commitments/ehs/2008/2008.html

Appendix C

Discounted Cash Flow Analysis of PNW

DCF Valuation

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	
EBIT	580	495	402	376	346	330	310	310	307	329	
EBIT(1 - Tax Rate)	374	322	261	245	225	214	202	201	200	214	
Plus: Deprecation & Amortization	443	487	536	590	649	714	785	864	950	1,045	
Plus: Non Cash Compensation	8	8	9	9	10	11	11	12	13	13	
Operating Cash Flow	825	817	807	844	884	939	998	1,077	1,162	1,272	
CAPEX	(786)	(802)	(810)	(818)	(826)	(835)	(843)	(851)	(860)	(869)	
+/- changes in NWC*	(3)	(3)	(3)	(3)	(3)	(3)	(4)	(4)	(4)	(4)	
Free Cash Flow	**36**	**12**	**(7)**	**23**	**54**	**101**	**151**	**221**	**298**	**399**	**411**
Period	0	1	2	3	4	5	6	7	8	9	9
PV Using Calculated WACC (W1)	**36**	**12**	**(6)**	**19**	**43**	**75**	**107**	**147**	**187**	**236**	**8,073**
PV Using Bloomberg WACC (W2)	**36**	**12**	**(6)**	**19**	**42**	**74**	**104**	**143**	**181**	**227**	**6,789**
	(W1)	(W2)									
Total PV of Cash Flows:	8,928	7,621									
Less Market Value of Debt	4,518	3,857									
FCF available for Equity	4,409	3,764									
Shares Outstanding	101	101									
Price per Share	$ 43.59	$ 37.21									
Current Market Price Per Share	$ 37.61	$ 37.61									
Difference	$ 5.98	$ (0.40)									
		-	-	-	-	-	-	-	-	-	

Key Assumptions for PV:

Discount Rate	6.45%
Terminal Growth	3.00%
Valueline Beta	0.75
Risk Premium	6.00%
Risk Free Rate (10yr T-Bond)	3.67%
Cost of Equity	9.36%
Calculated WACC	6.01%
Bloomberg WACC (Disc Rate)	6.45%
Sensitivity Analysis	
High Discount Rate	7.45%
Actual Discount/CAPM Rate	6.45%
Low Discount Rate	5.45%

Appendix D

Relative Valuation of PNW

Pinnacle West																
NASDAQ - PNW																
Relative Valuation																
	PNW					Utilities	S & P 500 (SPX)				Major Competitors (Current)					
	Current	2010E	5 yr.			Current	Current	5 yr.			Bloomberg Peers				Alliant Energy	Nstar
			High	Avg.	Low	Index Avg.	Index Avg.	High	Avg.	Low	Current	5 yr. High	5 yr. Avg.	5 yr. Low	LNT	NST
Current Mrkt Price																
$ 37.61																
P/E	15.62	12.74	18.22	16.16	14.73	15.89	18.58	18.58	16.11	14.58	15.97	19.10	16.04	11.95	18.85	16.30
Relative P/E	0.84					0.85									1.01	0.88
P/CF	3.77	5.05	12.88	6.51	3.60	5.21	8.47	14.68	11.16	5.80	5.29	19.01	9.21	5.19	5.98	6.19
P/BV	1.18	1.09	1.47	1.19	0.94	1.60	2.32	2.71	2.41	1.99	1.64	2.24	1.83	1.36	1.42	2.11
P/S	1.18	1.05	1.49	1.24	0.98	1.27	1.38	1.48	1.28	0.88	1.29	1.46	1.25	0.95	1.14	1.30
BEst. PEG	0.61		0.61	0.53	0.48	2.72	3.05	44.98	15.93	1.23	4.68	5.02	3.43	0.88	2.75	2.71

	PNW					CD Sector	S & P 500 (SPX)				Major Competitors (Current)					
	Current	2010E	5 yr.			Current	Current	5 yr.			Bloomberg Peers				Alliant Energy	Nstar
			High	Avg.s	Low	Index Avg.	Index Avg.	High	Avg.	Low	Current	5 yr. High	5 yr. Avg.	5 yr. Low		
Current Mrkt Price											vs. PNW					vs. PNW
$ 37.61				vs. PNW Current		vs. PNW Current		vs. PNW 5 yr.			Current	vs. PNW 5 yr.			vs. PNW Current	Current
P/E				Under		Under	Under	Under	Over	Over	Under	Under	Over	Over	Under	Under
Relative P/E						Under	Over								Under	Under
P/CF				Under		Under	Under	Under	Under	Under	Under	Under	Under	Under	Under	Under
P/BV				Under		Under	Under	Under	Under	Under	Under	Under	Under	Under	Under	Under
P/S				Under		Under	Under	Over	Under	Over	Under	Over	Under	Over	Over	Under
BEst. PEG				Over		Under	Under	Under	Under	Under	Under	Under	Under	Under	Under	Over
				Under		Under	Under	Under	Under	Under	Under	Under	Under	Under	Under	Under
Undervalued Indicators	52															
Overvalued Indicators	12															
Prevailing Indication	**Undervalued**															

Appendix E

Pinnacle West One-Year Price Chart