

YIELDCOS AS SOCIALLY RESPONSIBLE
INVESTMENT VEHICLES

by

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ABSTRACT

This study examines how YieldCo's fit within a socially responsible investment strategy and tests the validity of a long YieldCo, short parent sponsor hedge strategy. Three tests were utilized: first, YieldCo's were compared to their parent sponsor using cumulative historical (dividend-reinvested) returns. Second, the daily returns Yieldco's were compared to the daily returns of three major SRI indices in order to derive abnormal returns. Finally, a hedge strategy involving going long a YieldCo and shorting its respective parent sponsor. On average, each YieldCo outperformed its parent by 23% from the date of IPO (31% annualized). YieldCos have outperformed the three major sustainability indices. Additionally, on average, the hedged YieldCo strategy generated a positive alpha of 0.128% above the S&P 500 and a historical beta of (0.525) with a below 0.05 level of significant (p value). The implications of using YieldCos as socially responsible investments is discussed.

INTRODUCTION

Socially Responsible Investing (SRI) has gained significant popularity over the last decade. According to Yu (2014), at the beginning of 2010, professionally managed SRI assets (including mutual funds, private and institutional ethically screened portfolios) managed around \$3.07 trillion in assets (p. 9). According to De Graff and Slager (2009), socially responsible investment decision making incorporates Environmental, Social and Corporate Governance (ESG) issues.

Because of their innate exclusionary characteristics, a socially responsible investment portfolio lacks the diversification of a conventional portfolio. According to traditional portfolio theory (e.g. Markowitz, 1959), a diversified portfolio is superior to a restrictive portfolio. Due to this, a socially responsible portfolio should underperform relative to a conventional, non-restrictive portfolio. However, Hamilton et al (1993), Goldreyer and Diltz (1999), Statman (2000), and Bello (2005) show that U.S. SRI fund performance is not significantly different from conventional funds.

Renewable Energy companies have become increasingly more attractive for socially responsible investing because of their environmentally responsible attributes, fast developing technologies and accommodative federal and state governmental policy. According to Ellabban, Abu-Rub, and Blaabjerg (2014), renewable energy is defined as energy that generally comes from resources that are naturally replenished on a human timescale such as sunlight, wind, rain, tides, waves and geothermal heat. In 2014, a total of \$310 billion was invested in clean and renewable energy technologies, representing a 16% Year-over-Year

increase. Of that \$310 billion, \$19 billion was invested in initial public or secondary equity offerings (Mills, 2014)

A YieldCo is a new trend in the renewable energy space. A YieldCo is a publicly traded C-Corporation that operates and acquires contracted renewable and conventional generation and thermal infrastructure assets (Edison Investment Research, 2014). YieldCos typically represent subsidiaries of independent power, utility or energy companies that have been set up with fully operational assets, and pay out a high proportion of their cash flows as dividends to investors. These cash flows and dividends are attractive to investors because they are often secured by power purchase agreements (PPAs), negotiated with utilities or other customers, who have agreed to pay for the power for periods of 10-25+ years on average. This study intends to examine how YieldCo's fit within a socially responsible investment strategy and test the validity of a long YieldCo, short parent sponsor hedge strategy.

REVIEW OF LITERATURE

YieldCo Overview

Master Limited Partnerships (MLPs) have become a very popular asset class in recent years; in 2013, there were 21 initial public offerings (IPOs) of MLPs. An MLP is a business structure that generates income from qualifying natural resource activities, is traded on a public securities exchange, and, opposed to a traditional C Corporation, is not subject to federal income taxes at the entity level (Ernst & Young).

In 2013, YieldCo's emerged as a new type of investment vehicle.

YieldCo's closely resemble MLPs, but do not possess the type of assets necessary to qualify for pass-through tax treatment. Therefore, YieldCo's are business structures that own, operate and acquire non-"MLP-able" assets, such as contracted renewable and conventional generation and thermal infrastructure assets.

An MLP, which is usually of combination of assets spun-off from a traditional C-Corp, is a publicly traded limited partnership, where the limited partner (LP) unit holders traditionally own 98% of the entity and the general partner (GP) owns the remaining 2% (Ernst & Young).

In contrast, a YieldCo is a publicly traded corporation formed in order to raise capital for Class A shares of an operating subsidiary consisting of previously spun-off assets. The "Public," or capital raised through the IPO, owns 100% of the Class A common stock in the YieldCo entity, which represents 100% of the economic interest and a variable percent of the voting interest in the entity. The "Sponsor," or corporation that spun-off the assets into the YieldCo, owns 100% of the Class B common stock, which represent 0% economic interest and a variable amount of voting interest (depending on how much voting interest the Class A shareholders maintain) in the entity. The YieldCo is the newly created entity that holds 100% of the Class A shares in an Operating Company (OPCO) (where the actual assets are held). Class A shares represent a variable economic interest in the entity. The sponsor retains 100% ownership of the Class B shares of the OPCO, which represent a variable economic interest (depending on how much economic interest the YieldCo retains) (Latham & Watkins, 2015).

MLPs and YieldCo's differ most in their tax treatment. YieldCo's are structured to retain contracted assets that generate stable cash-flows and optimize tax efficiencies. For example, the assets held by a YieldCo are often eligible for tax credits and accelerated depreciation in the form of a modified accelerated cost recovery system, as well as bonus depreciation. If properly structured, a portfolio of renewable and conventional assets may provide a steady stream of credits and accelerated depreciation, thus resulting in minimal taxable income for the YieldCo. YieldCo structures are expected to pay little or no corporate income tax during their early years (N.C. State University, 2015).

In addition to paying little to no taxes at the corporate level, investors in YieldCo's often receive dividends as tax-free distributions. Distributions are treated as dividends under US tax law only to the extent paid out of current or accumulated earnings and profits. For U.S. tax purposes, if cash dividends exceed current and accumulated earnings for a taxable year, the excess cash dividends are not taxable as dividends, but rather are treated as a return of capital. This return of capital results in a reduction of the adjusted tax basis of shares; any balance in excess of adjusted basis is treated as a gain (N.C. State University, 2015).

Assets spun-off into the YieldCo typically accrue Net Operating Losses (NOLs) because of high costs associated with initial development and planning of renewable projects. These accrued NOLs are carried forward in order to offset taxable income (Edison Investment Research, 2014).

According to Latham and Watkins (2015), there are seven currently active

YieldCos: Brookfield Renewable Energy Partners, Terraform Power, Abengoa Yield, Nextera Energy Partners, NRG Yield, Pattern Energy Group, and TransAlta Renewables. Of these seven, all but two went public in 2014. Additionally, Nextera Energy Partners is structured as a partnership, but is treated as a regular C-corp for tax purposes and is therefore classified as a YieldCo.

Federal Policies Affecting YieldCo's

Renewed most recently by the *Tax Increase Prevention Act of 2014* (H.R. 5771, Sec. 155), the Renewable Electricity Production Tax Credit (PTC) is an inflation-adjusted Per-Kilowatt-Hour (kWh) tax credit for electricity generated by qualified energy resources and sold to an unrelated party. The base amount of the tax credit is \$0.015 per kWh (or \$0.0075 per kWh for some technologies) in 1993 dollars, which is then multiplied by the inflation adjustment factor (published by the IRS) for the calendar year. For example, in 2014, the credit amount for wind was \$0.023 per kWh, while qualified hydroelectric was \$0.011 per kWh. The duration of the credit is generally 10 years after the date the facility is placed in service (N.C. State University, 2015).

The U.S Department of Energy (DOE) Loan Guarantee Program, Section 1703 of Title XVII of the Energy Policy Act (EPAct), allows the DOE to issue loan guarantees for projects with high technology risks that “avoid, reduce or sequester air pollutants or anthropogenic emissions of greenhouse gases; and employ new or significantly improved technologies as compared to commercial technologies in service in the United States at the time the guarantee is issued.”

The loan guarantee, however, does not support R&D projects. Up to \$2.5 billion is available for projects in renewable energy, efficient end-use, and efficient generation, transmission, and distribution technologies (N.C. State University, 2015).

Under the federal Modified Accelerated Cost-Recovery System (MACRS), businesses may recover investments in certain property through depreciation deductions. MACRS establishes a set of class lives for various types of property, ranging from 3 to 50 years, over which the property may be depreciated. A number of renewable energy technologies are classified as five-year property (26 USC § 168(e)(3)(B)(vi)) under the MACRS, which refers to 26 USC § 48(a)(3)(A), often known as the energy Investment Tax Credit (ITC) to define eligible property (N.C. State University, 2015).

The federal Economic Stimulus Act of 2008, enacted in February 2008, included a 50% first-year bonus depreciation (26 USC § 168(k)) provision for eligible renewable-energy systems acquired and placed in service in 2008. The allowance for bonus depreciation has since been extended and modified several times since the original enactment, most recently in December 2014 by the Tax Increase Prevention Act Of 2014 (H.R. 5771, Sec. 125). This legislation extended the "in-service" provision for qualifying property through to December 31, 2014, and thus also did so retroactively for property placed in service after December 31, 2013, through to enactment (N.C. State University, 2015).

State Policies Affecting YieldCo's

Similar to the federal government, state governing bodies have enacted and enforced a wide-array of policies and incentives for renewable energy. The financial incentives vary by type and magnitude in each state. Generally speaking, financial incentives for renewable energy may be summarized in the following categories: corporate taxes, property taxes, rebates, grants, loans, industry support, and performance-based incentives.

One of the largest programs many states implement is Renewable Portfolio Standards (RPS) (also referred to as Renewable Electricity Standards (RES)). According to the Energy Information Administration (EIA), RPS policies require or encourage electricity producers within a given jurisdiction to supply a certain minimum share of their electricity from designated renewable resources. Renewable resources generally wind, solar, geothermal, biomass, and some types of hydroelectricity. According to the United States Environmental Protection Agency (EPA) (2014), RPS requirements are established in 37 states.

Review of Socially Responsible Investing Literature

Socially Responsible Investment Criteria

Berry and Junkus (2012) define Socially Responsible Investing (SRI) as “Integrating personal values and societal concerns with investment decisions” (p. 708). Berry and Junkus go on to say that “there is no underlying financial framework to relate the marginal social responsibility of an investment to an investment’s performance. In other words, there is no theoretical model to determine how much social responsibility is appropriate, or to define the optimal

trade-off between social responsibility and other investment criteria, primarily risk and return.”

However, since 2005, the United Nations through its support of the Principles for Responsible Investment (PRI) initiative has developed the criteria for socially responsible investment. According to the PRI, “Responsible investment can be differentiated from conventional approaches to investment in two ways. The first is that timeframes are important; the goal is the creation of sustainable, long-term investment returns not just short-term returns. The second is that responsible investment requires that investors pay attention to the wider contextual factors, including the stability and health of economic and environmental systems and the evolving values and expectations of the societies of which they are part” (Principles for Responsible Investment).

In order to qualify as a socially responsible investment, investment managers must consider environmental, social and governmental (ESG) factors. The PRI outlines six strategies investment managers can implement in order to use ESG information. First, managers must perform an integrated analysis that involves a proactive consideration of ESG factors. This may involve considering these factors as part of top-down or bottom-up stock selection or in asset allocation. For example, integrated analysis can result in investments being over-weighted, under weighted or avoided in the portfolio. Second, management must implement an active ownership strategy that involves investors using their formal influence (e.g. the ability to vote shareholdings) and informal influence (e.g. their ability to engage) to encourage companies to improve their management

systems, their ESG performance or their reporting. Engagement with public policy makers is increasingly seen as an integral part of active ownership. Third, managers must apply negative screening strategies. This involves excluding companies from the investment universe on the basis of criteria relating to their products, activities, policies or performance. For example, this includes sector-based screening (where entire sectors are excluded) and norm-based screening (where companies are excluded if they are considered to have violated internationally accepted norms in areas such as human rights and labor standards). These approaches may be derived from legal obligations on an investor (e.g. in the case of some European pension funds) or from the need for the investor to align activities with the needs and interests of beneficiaries or clients. Fourth, managers must apply positive screening strategies. This involves preferentially investing in companies or sectors based on products, activities, policies or performance. Fifth, managers must use best-in-class approaches. For example, this involves preferentially investing in companies with better governance and management processes and ESG performance. Sixth, managers must pursue a thematic investing approach. This involves selecting assets on the basis of investment themes such as climate change or demographic change.

Another approach to developing socially responsible investment criteria is the Corporate Social Responsibility (CSR) approach. CSR standards attempt to use national regulatory frameworks and the values and expectations of social communities to prescribe appropriate business behavior and define the

responsibilities of business firms (Scherer and Palazzo, 2008). CSR standards and statements of principles have been created by a host of Non-Governmental Organizations (NGOs) and supranational organizations. Principles for multinationals in the areas of sustainability (Global Reporting Initiative), discrimination (Sullivan Principles), and moral capitalism (Caux Principles) have been created by NGOs. Such initiatives primarily tend to be focused on societal issues with lesser emphasis on economic issues.

Environmental, Social, And Corporate Governance (ESG) Issues

ESG issues are those which are associated with the environment, society, and corporate governance principles. According to the CFA Institute (2008), the key environmental factors to consider include: carbon emissions; greenhouse gas emissions; disclosure/measurement and reporting; climate change; effect on company/risk exposure/opportunities; ecosystem change; facilities citing environmental risks; hazardous waste disposal/cleanup; license to operate in communities; pollution; renewable energy; resource depletion; and toxic chemical use and disposal.

Key social issues to consider include: animal welfare; child labor; community relations; discrimination; diversity (employee/Board diversity); facilities, citing social risks; genetically modified organisms; living wage disputes; predatory lending; political contributions; political risk of involvement in troubled markets, countries; sexual harassment; shareowner advisory vote on executive compensation; and slave labor.

Finally, key corporate governance issues to consider include: cumulative

voting; dual-class share structure; executive compensation (pay for performance, pay equity); majority voting; poison pills; say on pay; separation of chairman/CEO position; shareowner rights; staggered Boards; and takeover defenses/market for control.

On what do SR Investment Managers Place Importance?

Berry and Junkus (2005) conduct a survey of over 5,000 respondents regarding what SRI category was most important to them. Respondents of the survey were divided into two groups: those who had chosen to invest using SRI criteria in the past (the SRI group) and those who had not (the non-SRI group). Each of the respondents then were asked to check which major categories they felt should be included in SR investing. Of the six category choices respondents were given, Environment was most important to both the SRI and non-SRI investor groups. Within the environment category, respondents listed environmental performance and environmental impact of products as the two most important sub-categories. These findings were consistent with the Rosen (1991) analysis of SR investor responses to an open-ended question regarding “the most important factors in determining whether a company’s behavior can be considered socially responsible,” where environment was the most important. In addition, Berry and Junkus (2005) found Investors seem to prefer to reward firms who display overall positive social behavior rather than to exclude firms on the basis of certain products or practices.

Opposition to things such as adult entertainment and abortion products is generally much stronger among religious based restricted investing than among

non-religious based restricted investing. There are also differences across denominations. Evangelical Christians are more likely than Catholics or members of mainline Protestant denominations to avoid companies associated with adult entertainment, abortion products, gambling, alcohol production, and equal family benefits to homosexual employees, while Catholics and mainline Protestants are more concerned about companies' environmental records (Statman, 2005).

SRI Indices

Indexes include the Calvert Social Index, the FTSE4Good US Select Index, and the MSCI KLD 400 Social Index. The MSCI KLD 400 Social Index excludes companies involved in alcohol, gambling, tobacco, military weapons, civilian firearms, nuclear power, adult entertainment, and genetically modified organisms (GMO). The Index aims to serve as a benchmark for investors whose objectives include owning companies with very high ESG ratings and avoiding companies that are incompatible with specific values-based criteria. Launched in May 1990 as the Domini 400 Social Index, it is one of the first Socially Responsible Investing (SRI) indexes. Constituent selection is based on data from MSCI ESG Research (MSCI, 2015). Problems in one area do not necessarily lead to the exclusion of a company from the KLD 400 Index. Rather, MSCI excludes from the index companies whose records, on balance, are negative (Statman, 2006).

Calvert starts by taking the 1,000 largest companies in the U.S., based on total market capitalization, included in the Dow Jones Total Market Index (the Dow Jones TMI). Then Calvert's Sustainability Research Department determines

which companies meet each one of Calvert's Signature Strategies environmental, social and governance (ESG) criteria. The Index encompasses only those companies that satisfy all of the ESG criteria. Calvert evaluates company performance on the environment, workplace, product safety and impact, international operations and human rights, community relations, and indigenous people's rights (Calvert, 2015). For example, Calvert favors Starbucks because it was the first agricultural commodities company in the U.S. to develop a code of conduct for coffee plantation workers. Calvert excludes companies with interests in gambling, tobacco, and military weapons, but includes companies with interests in alcohol, firearms, and nuclear power, unless such interests are substantial. So, for example, Calvert includes in its index the Darden Corporation, which operates Red Lobster and Olive Garden restaurants, because the alcohol portion of its revenues falls below its 20% cutoff. Companies are then included if they meet Calvert's criteria. The index also maintains a target economic sector weighting scheme (Statman, 2006).

The FTSE4Good US Select Index, an index within the FTSE4Good Series, is designed to measure the performance of companies demonstrating strong Environmental, Social and Governance (ESG) practices. Criteria are developed using an extensive market consultation process and are approved by an independent committee of experts. A broad range of stakeholders help shape the criteria, including NGOs, governmental bodies, consultants, academics, the investment community and the corporate sector. To remain consistent with market expectations and developments in ESG practice, the inclusion criteria are

revised regularly. FTSE engages with companies that do not meet the standards and they are given a period of grace to try and improve their scores. If there is no improvement then the company is deleted from the index series. The criteria have been designed to help investors minimize ESG risks. Companies with the largest risk and impacts have to meet additional sector specific criteria (FTSE, 2015).

ANALYSIS

Yieldco Return Versus Parent Sponsor

Until recently, YieldCo historical performance data was limited because few YieldCos in existenced; those which did only recently went public. This study attempts to fill this performance data void by analyzing the historical returns of each YieldCo currently in existence. Specifically, this study will compare the historical returns of YieldCos to their respective parent sponsor.

Each YieldCo in this study will be compared to its parent using cumulative historical (dividend-reinvested) returns. Returns will compared as total (unannualized) and annualized numbers. The results of this test is presented on the following pages:

Table 1

YieldCo total return versus sponsor total return since IPO of Yieldco

Ticker	IPO date	Total return	Annualized return
ABY	6/13/2014	(8%)	(12%)
ABGB		(45%)	(59%)
NEP	6/27/2014	25%	43%
NEE		8%	13%
NYLD	7/17/2013	102%	57%
NRG		(3%)	(2%)
TERP	7/18/2014	(5%)	(8%)
SUNE		(10%)	(16%)
BEP	11/15/2005	158%	11%
BAM		256%	15%
RNW.TO	8/12/2013	39%	25%
TAC		(30%)	(21%)
PEGI*	9/27/2013	29%	20%
XLU	11/15/2005	118%	9%

This table reports the above securities' dividend reinvested total and annualized return from IPO through February 10, 2015.

*PEGI is a pure-play YieldCo, meaning it does not have a parent, or sponsor.

Table 1a

YieldCo return above (below) parent sponsor

Ticker	IPO date	Total return	Annualized return
ABY	6/13/2014	37%	48%
NEP	6/27/2014	17%	30%
NYLD	7/17/2013	106%	59%
TERP	7/18/2014	5%	8%
BEP	11/15/2005	(98%)	(4%)
RNW.TO	8/12/2013	69%	46%
PEGI*	9/27/2013	NA	NA
Average		23%	31%

This table reports the above securities' dividend reinvested total and annualized return from IPO through February 10, 2015.

*PEGI is a pure-play YieldCo, meaning it does not have a parent, or sponsor.

Discussion Of Results

As illustrated above, the only YieldCo to underperform its parent sponsor was Brookfield Renewable Energy (Brookfield Renewable Energy is also the oldest YieldCo in existence). On average, each YieldCo outperformed its parent by 23% from the date of IPO (31% annualized).

Yieldco Abnormal Returns Above (Below) SRI Indices

Next, each YieldCo in this study will be compared to three major SRI indices. The daily returns of each Yieldco will be compared to the daily returns of each SRI index in order to derive abnormal returns:

$$\text{Abnormal Return} = AR_{it} = R_{it} - Index_t$$

The three indexes used for comparison include: the Calvert Social Index, the MSCI KLD Social 400, and the FTSE Social Index. The start date of each test will be the IPO date of the YieldCo under study. The end date used is February 10th, 2015. Dividend-reinvested Returns are calculated using daily prices. Using these abnormal returns, an arithmetic average, standard deviation, t-stat, and annualized average will be calculated.

Finally, the abnormal returns above or below each SRI index calculated will be averaged across each YieldCo. These daily abnormal return averages will be used as a proxy for comparing a portfolio of YieldCo's against the three major SRI indexes.

$$\overline{AR}_t = \sum_{i=1}^N \frac{AR_{it}}{N}$$

Five out of the seven YieldCo's in study produced positive average abnormal returns. The average abnormal returns of each YieldCo were either positive or negative for all three SRI indices (meaning if a YieldCo produced positive average abnormal returns compared to one SRI index, for example, it also had positive average abnormal returns for the other two indices). The YieldCo with the highest average abnormal returns above the three indices was Nextera Energy Partners; the YieldCo with the lowest was Abengoa Yield. The results for each YieldCo is presented below:

Table 2
Abengoa Yield abnormal returns

	Calvert Social Index	MSCI KLD Social 400	FTSE Social Index
Average	(0.072%)	(0.058%)	(0.077%)
Standard deviation	0.0260	0.0260	0.0259
t-stat	(0.358)	(0.289)	(0.385)
Annualized avg.	(0.86%)	(0.70%)	(0.92%)

Start date: 6/13/2014

Table 3
Nextera Energy Partners abnormal returns

	Calvert Social Index	MSCI KLD Social 400	FTSE Social Index
Average	0.108%	0.123%	0.103%
Standard deviation	0.0194	0.0194	0.0194
t-stat	0.696	0.794	0.666
Annualized avg.	1.30%	1.49%	1.24%

Start date: 6/27/2014

Table 4
NRG Yield abnormal returns

	Calvert Social Index	MSCI KLD Social 400	FTSE Social Index
Average	0.128%	0.135%	0.123%
Standard deviation	0.0153	0.0153	0.0154
t-stat	1.660	1.749	1.597
Annualized avg.	1.55%	1.63%	1.49%

Start date: 7/17/2013

Table 5
Terraform Power abnormal returns

	Calvert Social Index	MSCI KLD Social 400	FTSE Social Index
Average	(0.035%)	(0.018%)	(0.041%)
Standard deviation	0.0314	0.0314	0.0313
t-stat	(0.135)	(0.067)	(0.157)
Annualized avg.	(0.42%)	(0.21%)	(0.49%)

Start date: 7/18/2014

Table 6
Brookfield abnormal returns

	Calvert Social Index	MSCI KLD Social 400	FTSE Social Index
Average	0.015%	0.013%	0.014%
Standard deviation	0.0175	0.0166	0.0182
t-stat	0.105	0.097	0.094
Annualized avg.	0.18%	0.16%	0.17%

Start date: 11/15/2005

Table 7
Pattern Energy Group abnormal returns

	Calvert Social Index	MSCI KLD Social 400	FTSE Social Index
Average	0.021%	0.027%	0.016%
Standard deviation	0.0177	0.0176	0.0176
t-stat	0.153	0.198	0.115
Annualized avg.	0.25%	0.32%	0.19%

Start date: 9/27/2013

Table 8
TransAlta Renewables abnormal returns

	Calvert Social Index	MSCI KLD Social 400	FTSE Social Index
Average	0.028%	0.034%	0.024%
Standard deviation	0.0106	0.0105	0.0108
t-stat	0.342	0.416	0.284
Annualized avg.	0.34%	0.41%	0.28%

Start date: 8/12/2013

Taking an average of the abnormal returns across all the YieldCos tested yielded the following results:

Table 9
Average abnormal returns

	Calvert Social Index	MSCI KLD Social 400	FTSE Social Index
Average	0.024%	0.024%	0.023%
Standard deviation	0.0170	0.0193	0.0176
t-stat	0.183	0.163	0.168
Annualized avg.	0.29%	0.29%	0.28%

For this test, the abnormal returns from each YieldCo were averaged daily starting on November 16th, 2005. Since each YieldCo went public at different dates, only the YieldCo's which were public on the date of the observation were included. For example, on November 16th, 2005, Brookfield Renewable Energy was the only YieldCo in existence. Not until July 18th, 2013 did another YieldCo go public (NRG Yield), and only starting on July 21st, 2014 were all seven YieldCos included in the test public (with the IPO of Terraform Power).

Using July 18th, 2013 as the starting date, the results were as follows:

Table 10
Average abnormal returns

	Calvert Social Index	MSCI KLD Social 400	FTSE Social Index
Average	0.045%	0.063%	0.040%
Standard deviation	0.0098	0.0098	0.0099
t-stat	0.586	0.823	0.521
Annualized avg.	0.54%	0.75%	0.48%

Start date: July 18, 2013

Using July, 21st, 2014 as the starting date, the results are as follows:

Table 11
Average abnormal returns

	Calvert Social Index	MSCI KLD Social 400	FTSE Social Index
Average	(0.026%)	(0.008%)	(0.031%)
Standard deviation	0.0120	0.0119	0.0120
t-stat	(0.278)	(0.088)	(0.340)
Annualized avg.	(0.31%)	(0.10%)	(0.38%)

Start date: July 21, 2014

According to the results of these tests (with the exception of using a July 21, 2014 starting date), as a group YieldCos have outperformed the three major sustainability indices. Due to this, one is able to ascertain that YieldCos have historically outperformed major sustainable fund performance objectives and would be a good candidate for inclusion in these funds.

When using a start date of July 21, 2014, the average abnormal return of the YieldCo group is negative. Due to this, one might assume that YieldCos have historically underperformed major sustainable fund performance objectives and would not be a good candidate for inclusion in these funds. However, the poor performance of Abengoa Yield and Terraform Power significantly influence these numbers. Since IPO, Abengoa Yield and Terraform Power have returned an annualized (12%) and (8%), respectively. On average, Abengoa has had

negative abnormal returns when compared with the Calvert Social Index, MSCI KLD Social 400, and FTSE Social Index of (0.072%), (0.058%), and (0.077%), respectively. On average, Terraform power has had negative abnormal returns when compared with the Calvert Social Index, MSCI KLD Social 400, and FTSE Social Index of (0.035%), (0.018%), and (0.041%), respectively.

Normalizing for Abengoa Yield and Terraform Power and starting on July 21st, 2014, the results are as follows:

Table 11
Average abnormal returns (excluding ABY and TERP)

	Calvert Social Index	MSCI KLD Social 400	FTSE Social Index
Average	0.012%	0.029%	0.005%
Standard deviation	0.0121	0.0119	0.0121
t-stat	0.133	0.318	0.050
Annualized avg.	0.15%	0.35%	0.06%

Start date: July 21, 2014

Discussion Of Results

Based on the above results, one can conclude YieldCos meet the performance objectives a SRI fund. However, in order to be considered by SR investment managers, YieldCos must also fit according to qualitative criteria as well.

According to Berry and Junkus (2005), environment is the most important qualitative investment consideration for SR focused investors. Because of this, YieldCos present a desirable investment opportunity for SR focused fund managers, since YieldCo's typically own and operate renewable energy assets. In addition, Berry and Junkus (2005) found that investment managers whom were concerned about the social impact of the companies which they invested in were more likely to reward companies which pursued socially responsible

endeavors, as opposed to companies which merely operate socially responsibly.

Of the PRI's six socially responsible investment strategies, it is likely that YieldCos would be most desirable to managers who employ positive screening and thematic investment strategies. Managers who employ a thematic investment strategy will likely find YieldCo's desirable because of their renewable energy focus. Whereas investment managers whom employ a positive screening strategy are likely to find YieldCo's as an alternative to traditional energy and utilities companies. In addition, as this study has concluded, YieldCo's have historically offered higher returns than their parent sponsor, which, if that continues, would give fund managers additional incentive to bypass traditional utilities companies and invest directly in their YieldCo affiliates.

Because of federal production tax credits, loan guarantees and modified accelerated and bonus depreciation, in addition to state renewable portfolio standards mandates, YieldCo's renewable assets can now legitimately compete against non-renewable energy assets. However, while the recent developments in favor of creating a more appealing environment for investment in renewable energy have made it economically feasible, the rules and regulations in place are not permanent. Without the federal and state assistance renewable assets receive, it is unlikely they would be able to generate attractive returns, making it difficult for renewable energy asset owning firms to raise capital. Fund managers who invest in this space must be aware of this risk. More study is needed in order to ascertain whether or not fund managers include this extraordinary political risk when making investment decisions. One might assume that because of the

additional political risk renewable energy companies' face, fund managers expect a higher rate of return from these companies.

Yieldco Hedge Strategy

This test will examine the validity of a hedge strategy for use when investing in YieldCos. The strategy being tested is one that involves going long a YieldCo while simultaneously shorting the YieldCo's respective sponsor. For this test, absolute value of both the long and short position is assumed to be equal.

In order to test the validity of such a strategy, the excess daily returns of a YieldCo above (or below) its sponsor's daily returns are regressed against the daily returns of the broad market (specifically the S&P 500 index). This is illustrated as follows:

$$YieldCo - Sponsor = \alpha + \beta(R_m - R_f)$$

The results of this test for each YieldCo are presented below:

Table 12
Hedge Strategy Results

Ticker	IPO date	Alpha	Beta	Beta P-value
ABY	6/13/2014	0.21%	(0.86)	10.198%
NEP	6/27/2014	0.12%	(0.20)	31.659%
NYLD	7/17/2013	0.19%	0.06	63.753%
TERP	7/18/2014	0.06%	(1.22)	0.001%
BEP*	11/15/2005	0.01%	(0.82)	0.000%
RNW.TO	8/12/2013	0.19%	(0.11)	32.082%
Average		0.128%	(0.525)	22.95%

This table reports the results of regressing the above security's abnormal returns (returns above parent sponsor) against the S&P 500 from the date of IPO to February 10, 2015

*BEP's P-value is 4.285E-145

Discussion Of Results

On average the hedged YieldCo strategy (going long the YieldCo and short the parent sponsor in an equal amount) generated a positive alpha of 0.128% above the S&P 500. The same portfolio of YieldCos had a an average historical beta of (0.525), however, using a 5% significance level ($p < 0.05$), the observed effect of the explanatory variable (the S&P 500) is statistically insignificant.

Using a 5% significance level, the historical beta of each hedged yieldco postive is statistically insignificant, except for Terraform Power and TransAlta Renewables. However, each yieldco position generated positive alpha.

From the results of this test, one can conclude that a long Yieldco, short

parent sponsor strategy has historically generated positive alpha while hedging most (if not all) market risk.

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