Adapting Master Limited Partnerships as a Policy Option for the Renewable Energy Industry

by

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MP Advisor’s Signature: _______________________________
Abstract

Innovation is key to the broader adaptation of renewables into the energy sector. Innovation is not only needed in technology but also in business models and public policy. The Obama Administration has emphasized its commitment to investing in the development of clean energy through financing to enhance infrastructure and technology and by creating incentives to foster a market for innovation.\(^1\) Expanding the master limited partnership (MLP) business structure, which has enabled oil markets to become robust, would allow the renewable energy sector to attract additional capital to the sector.

A master limited partnership (MLP) is a business structure that operates without entity level taxation, as opposed to C-corporations which are subject to double taxation. MLPs are publically traded companies that are able to access the capital markets in similar ways as C-corporations. This lack of taxation and access to capital permits an MLP to secure capital at a lower cost, which has proven to increase investment in the given industry.

The master limited partnership (MLP) tax deferred structure was passed by Congress in the 1980’s to encourage investment in the energy sector. Congress’ definition of an MLP allowed oil and natural gas activities access to the MLP structure, but renewable energy sources were excluded. The Emergency Economic Stabilization Act of 2008 expanded the definition of income from qualifying sources to include transportation of certain renewable and alternative fuels, such as ethanol and biodiesel.

This paper examines the characteristics of successful MLPs in the oil and gas sector, with the purpose of exploring the potential of expanding the policies currently in place for master limited partnerships to the renewable energy sector. While the renewables industry isn’t a perfect fit for the current MLP structure, given the volatile nature of its cash flows, modifications can be made to the MLP structure to allow the renewable energy sector not only to be successful in the partnership structure but also in attracting additional capital and stimulating investment in the industry.

Approved

___________________________
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Date

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Introduction

Innovation is key to the broader adaptation of renewables into the energy sector. Innovation is not only needed in technology but also in business models and public policy. The Obama Administration has emphasized its commitment to investing in the development of clean energy through financing to enhance infrastructure and technology and by creating incentives to foster a market for innovation.\(^2\) Tax credits have been the primary means by which to promote investment in renewable energy. However, given that developers have lacked a significant tax liability, they have not been able to efficiently utilize the existing tax benefits. Expanding the incentives that have enabled oil markets to become robust over the past century may give the renewable energy industry increased availability and decreased cost of financing. These “taxpayer giveaways,” as Obama has called them, have played a central role in the development of the U.S. oil market and ultimately have guided consumer behavior.\(^3\) Without access to similar incentives, the renewable energy industry faces a number of financing challenges. Granting renewable energy companies access to the master limited partnership (MLP) business structure is one option which could attract additional capital to the sector.

Master limited partnerships (MLPs) are engaged in the transportation, storage, processing, refining, marketing, exploration, production and mining of minerals or natural resources. An MLP is a business structure that operates without entity level taxation, as opposed to C-corporations which are subject to double taxation. MLPs are publically traded companies that are able to access the capital markets in similar ways as C-corporations. This lack of taxation and access to capital permits an MLP to secure capital at a lower cost, which has proven to increase investment in the given industry.

The master limited partnership (MLP) tax deferred structure was passed by Congress in the 1980’s to encourage investment in the energy sector. Congress defined an MLP as a business structure that derived 90% of its income from primary sources, which included dividends, interest, rents, capital gains, and mining and natural resources income. As a result, oil and natural gas extraction and transportation could qualify as an MLP, but renewable energy sources were excluded. The Emergency Economic Stabilization Act of 2008 expanded the definition of

\(^2\) Ibid.
\(^3\) Ibid.
income from qualifying sources to include transportation of certain renewable and alternative fuels, such as ethanol and biodiesel.

The aim of this paper is to explore the potential of expanding the policies currently in place for master limited partnerships (MLPs) to the broader renewable energy industry. The first section provides an overview of master limited partnerships including the history, structure, valuation, and investor perspective of this asset class. This paper then considers the characteristics that have made for a successful MLP over the past thirty years. Next, the renewable energy industry is compared against the characteristics that make for a successful MLP. While a few characteristics do not hold for the renewables industry, the most problematic is the volatile nature of a renewable energy company’s cash flows. Two solutions are then proposed to the MLP structure to make it a viable option for the renewable energy industry. Thus, modifications can be made to the MLP structure to allow the renewable energy sector not only to be successful in the partnership structure but also in attracting additional capital and stimulating investment in the industry.
Background

What is an MLP?

A Master Limited Partnership (MLP) is a pass-through partnership structured as a limited partnership rather than a corporation. Limited partnerships trade on public exchanges in the form of units (similar to the common stock of a C-corporation) and primarily focus on the natural resources sector of the economy. MLPs pay no corporate-level taxes, instead the business owners pay taxes on their distributions (similar to dividends of a C-corporation) according to the individual income tax system. Thus, the MLP structure provides the tax benefit of a limited partnership along with the liquidity of a C-Corporation. The tax benefit is the primary benefit of the MLP structure as it affords the partnership a lower cost of capital⁴ than typically available to corporations, which allows an MLP to pursue projects that might not be feasible for a taxable entity. MLPs operate capital-intensive businesses that generate revenue streams at either fixed or federally regulated rates. MLPs typically have below-investment-grade credit ratings and pay out almost all of their distributable cash flow through quarterly distributions. Energy MLPs are primarily engaged in the midstream portion of the energy chain and have proliferated recently due to the strong demand for energy infrastructure in the U.S. and the sector’s track record of strong returns.

MLP History

Congress passed the MLP structure in the 1980’s following the energy crisis of the 1970’s to spur investment in the energy sector for oil and gas exploration, storage, refining, and transportation by providing specific tax advantages to investors. The first Master Limited Partnership (MLP) appeared in 1980’s; in 1981, when oil prices first reached $40 per barrel, up from $12 a few years earlier, Apache Oil Company created Apache Petroleum Company (APC), becoming the country’s first MLP.⁵ Other oil and gas companies, along with some real estate companies, followed suit and soon there were well over 100 MLPs. The MLP structure became more favorable for tax purposes than the corporate structure after Congress passed the Tax Reform Act of 1986, which reduced the top marginal individual income tax rate to a level lower than the top marginal corporate tax rate. However, this same Act limited the attractiveness of

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⁴ All words italicized appear in the glossary, which is located in the appendix.
MLPs for investors as it introduced passive loss rules, which prevented investors from using MLP deductions to offset other types of income. On the whole, though, this law did not halt the registration of companies into the partnership business structure and the number of MLPs continued to grow.

Congress soon became worried that a large number of corporations would become MLPs to avoid corporate taxes, which would ultimately erode the corporate tax base. In the House Report accompanying the H.R. 3545, the 100th Congress noted that partnerships tended “to jeopardize the corporate tax base” and that the intent of the pre-1987 tax law was “being circumvented by the growth in publically traded partnerships that are taking advantage of an unintended opportunity for disincorporation and elective integration of the corporate and shareholder levels of tax.” As a result, Congress modified the rules of MLPs in 1987 to state that partnerships whose ownership interests were publically traded were to be treated as corporations for tax purposes. However, an exception was made for partnerships meeting two criteria: the partnership was in existence on December 17, 1987, and at least 90% of its gross income came from passive sources, such as rents, royalties, and natural resource income (such as, oil gas, petroleum, timber, coal, and other minerals).

Since that time, there have been two additional modifications to the MLP legislation. In 2004 under the American Jobs Creation Act legislative changes were made which expanded the potential pool of MLP investors by allowing mutual funds to invest in MLPs. Most recently, under the Emergency Economic Stabilization Act of 2008, the definition of qualifying MLP income was expanded to include transportation and storage of certain renewable and alternative fuels, including ethanol and biodiesel, and other activities involving industrial sources of carbon dioxide. As a result, biofuel pipelines now have access to the same tax treatment as petroleum pipelines.7

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6 House Report 100-391, 100th Congress, 1st Session 1065 & 1066.
7 U.S. Congress, Joint Committee on Taxation, General Explanation of Tax Legislation Enacted in the 110th Congress, 110th Congress, March 2009, JCS-1-09, p. 599.
MLP Structure

MLPs are created from existing assets owned publicly or privately. Typically an MLP’s equity ownership structure consists of a general partner (GP) and limited partners (LP).

Figure 1. Basic MLP Structure

Hypothetical MLP Example. Owner of the general partner controls operations.

The general partner is usually an LLC which is 100% owned by an energy related corporation. The general partner acts as the sponsor, has full management responsibility of the partnership, holds a 2% equity ownership stake in the partnership, and is entitled to receive incentive distribution rights (IDRs). IDRs are a rising profit share on incremental per-share distributions. Conceptually, the purpose of the IDR mechanism is to incentivize the sponsor to grow its assets and distributions to its limited partners. The general partners’ profit share is just 2% with no IDRs to start, but as per-share distributions rise by 15%, 25% and 50%, the IDRs rise accordingly up to a 50% profit split.

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8 Morgan Stanley, “Midstream Asset MLP Primer.”
Table 1. MLP Incentive Distribution Tiers

<table>
<thead>
<tr>
<th>Tier</th>
<th>LP%</th>
<th>GP%</th>
<th>LP Annual Distribution up to:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tier 1</td>
<td>98%</td>
<td>2%</td>
<td>$2.00</td>
</tr>
<tr>
<td>Tier 2</td>
<td>85%</td>
<td>15%</td>
<td>$2.50</td>
</tr>
<tr>
<td>Tier 3</td>
<td>75%</td>
<td>25%</td>
<td>$3.00</td>
</tr>
<tr>
<td>Tier 4</td>
<td>50%</td>
<td>50%</td>
<td>Above $3.00</td>
</tr>
</tbody>
</table>

Distributions are issued on a quarterly basis but IDRs are based off of annualized LP distributions.

While the GP’s IDRs dilute the LP equity in the MLP as a whole, and acts as a large tax on growth, the GP only receives this additional ownership if they are producing a steady stream of cash for the LPs. In response to this, some MLPs have capped IDR profit splits at 25% and others have gone public without IDRs.

The limited partners are the common unit holders and they provide capital to the partnership and receive quarterly cash distributions but they have no role in the partnership’s operations and management. The limited partner interests are represented by the limited partner units that are publicly traded. In 2011, MLP limited partnership units were held mainly by retail investors at around 65%, followed by closed end funds at 15%, and mutual funds and hedge funds each hold about 10%.^10^  

**MLP Valuation**

MLPs generate value by investing in projects that generate returns in excess of the partnership’s cost of capital. MLPs have a lower cost of capital than C-Corporations because of their tax-advantaged partnership and initial low cash flow outlay to the general partner of 2%. However, this advantage is temporary and erodes over time due to the incentive distribution rights. As the incentive distribution rights increase, the partnership must pay a greater percentage of its total cash flow to the GP. Thus, there are three components to an MLP’s Cost of Capital: LP Equity, GP Equity, and debt. The Cost of LP Equity is comprised of the distributions paid to the LP unit holders over the next four quarters, also called the forward yield, plus distribution

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^10^ FactSet and Morgan Stanley Research.
growth. This represents an investor’s required rate of return, or their expected return for the risk undertaken in owning LP units. The Cost of GP Equity is the cash flow paid to the GP over the next four quarters, also called the Forward GP Yield, plus the expected growth in cash flow payments to the GP. Because the GP could be entitled up to 50% of the MLP’s cash flow through IDRs, the GP equity is substantially more expensive than LP equity.

**Figure 2. MLPs Three Main Sources of Capital**

- **Cost of GP Equity** = Implied GP Yield + GP Interest Growth
- **Cost of LP Equity** = Forward Yield + Distribution Growth
- **Cost of Debt**

An MLP has three main sources of capital: Debt, LP Equity and GP Equity, with ascending cost.

MLPs with investment grade ratings generally have better access to capital at a lower cost. An MLPs cost of capital is a function of its business risk profile, which is comprised of two main components – cash flow volatility and cash flow sustainability. Volatility refers to the quarterly fluctuation in operating cash flow. Sustainability of cash flows concerns the regulatory environment in which an MLP operates and whether or not its asset base is depleting in nature.

An MLP usually carries a premium valuation as its assets typically trade higher than those within a C-corporation structure. The value of an MLP is primarily driven by the capital-spending discipline that comes with a high-dividend obligation, similar to the leveraged buyout (LBO) effect. The most attractive characteristic of MLPs is their high payout ratio. MLPs pay out all available cash every quarter less a reserve that management deems appropriate to maintain the assets. The high distribution payout shifts a large portion of the distributable cash flow to steady quarterly payments, lowering the volatility and covariance of the returns. The industry standard for MLP valuation is relative yield, which attempts to capture cash flow risk by taking a one-year forward distribution estimate, dividing by a distribution yield assumption, and comparing it to other MLPs. An MLPs current yield may also be used which is calculated by annualizing the

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11 Wells Fargo Securities, “MLP Primer,” 73.
current quarterly distribution and dividing it by the current unit price. MLPs typically provide yields from 6% to 10%.

Another valuation metric is distribution growth. Distributions are similar to dividends and are paid out on a quarterly basis. In a typical MLP all of the distributable cash flow is to be distributed to unit holders. Distribution growth is key to the health of an MLP as it demonstrates the MLP is continuing to grow. There is an inverse relationship between distribution growth and MLP yield. Faster growing MLPs command lower yields and vice versa. MLPs typically grow 4-5% annually.

A final valuation metric is the distribution coverage ratio. The Distribution Coverage Ratio measures the ratio of available cash flow to the distributions paid to the LP and GP.

\[
\text{Distribution Coverage Ratio} = \frac{\text{Available Cash Flow (to GP and LP)}}{\text{Distributions paid (to GP and LP)}}
\]

This ratio essentially measures how much extra money the MLP has left over after paying the distribution. For example, a distribution coverage ratio of 1.0 means that the MLP paid out all of its distributable cash flow as distributions and retained none for further operations. This would not be an ideal scenario as a company always needs to retain some money for continuing operations. As a result, under this scenario, it is not likely that a company would hit their distribution target; rather, they would retain some money for operations and lower their distribution. Thus, the higher the ratio is, the greater the safety of the distribution.

**MLP Investor & Energy Industry Perspective**

Investors and the Energy Sector have made significant gains from MLPs. MLPs have a high payout ratio, with current yields at around 6.0%, attracting investors with moderate risk. MLPs have a high payout ratio based on their strong performance and typical low correlation with the broader market. Additionally, while C-corporations reinvest their cash, history demonstrates that most of these companies will disappoint investors; however, MLPs pay out nearly all of their available cash every quarter. MLPs are expected to continue to perform well given increased demand for US infrastructure needs as natural gas production continues to shift toward unconventional resource plays. Currently, small- to mid- cap early life cycle MLPs are
very attractive from an investor’s perspective because they have a lot of potential for growth and are not very far into their IDR tiers.

From an energy industry perspective, the aim of the MLP structure has been successful in the sense that MLPs have been a major participant in the build out of U.S. energy infrastructure. The majority of MLP infrastructure investment has been in the natural gas pipeline industry. According to the *Energy Information Administration (EIA)*, from 2005-2009 MLPs were involved in 27%, or 69 out of 254 U.S. natural gas pipeline infrastructure projects. The EIA states that during this time frame total domestic natural gas pipeline investments, capacity additions and pipeline miles added totaled $29.3 billion, 112.2 billion cubic feet per day (Bcf/d) and 11,278 miles, respectively. It is estimated that MLPs accounted for 59%, 36% and 53% respectively of these totals. Table 2 provides greater detail on the historical U.S. natural gas pipeline infrastructure build out from 2005 – 2009.

**Table 2. Historical U.S. Natural Gas Pipeline Infrastructure Investments**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S natural gas pipeline investment</td>
<td>$1.3</td>
<td>$2.3</td>
<td>$4.2</td>
<td>$11.6</td>
<td>$9.9</td>
<td>$29.3</td>
</tr>
<tr>
<td>Associated capacity additions (Bcf/d)</td>
<td>8.2</td>
<td>12.7</td>
<td>14.9</td>
<td>44.6</td>
<td>31.9</td>
<td>112.2</td>
</tr>
<tr>
<td>Pipeline miles added</td>
<td>1,152</td>
<td>1,582</td>
<td>1,663</td>
<td>3,893</td>
<td>2,988</td>
<td>11,278</td>
</tr>
<tr>
<td>No. of natural gas pipeline projects</td>
<td>31</td>
<td>46</td>
<td>50</td>
<td>84</td>
<td>43</td>
<td>254</td>
</tr>
<tr>
<td>MLP Related Investments</td>
<td>$.4</td>
<td>$.8</td>
<td>$1.6</td>
<td>$5.3</td>
<td>$9.1</td>
<td>$17.3</td>
</tr>
<tr>
<td>% of Total</td>
<td>35%</td>
<td>36%</td>
<td>39%</td>
<td>46%</td>
<td>92%</td>
<td>59%</td>
</tr>
<tr>
<td>MLP Related Bcf/d Additions</td>
<td>2.7</td>
<td>2.8</td>
<td>5.2</td>
<td>14.0</td>
<td>15.3</td>
<td>39.9</td>
</tr>
<tr>
<td>% of Total</td>
<td>32%</td>
<td>22%</td>
<td>35%</td>
<td>31%</td>
<td>48%</td>
<td>36%</td>
</tr>
<tr>
<td>MLP Related Pipeline Miles Added</td>
<td>618</td>
<td>389</td>
<td>691</td>
<td>2,219</td>
<td>2,092</td>
<td>6,009</td>
</tr>
<tr>
<td>% of Total</td>
<td>54%</td>
<td>25%</td>
<td>42%</td>
<td>57%</td>
<td>70%</td>
<td>53%</td>
</tr>
<tr>
<td>MLP Related Projects</td>
<td>6</td>
<td>7</td>
<td>16</td>
<td>26</td>
<td>14</td>
<td>69</td>
</tr>
<tr>
<td>% of Total</td>
<td>19%</td>
<td>15%</td>
<td>32%</td>
<td>31%</td>
<td>33%</td>
<td>27%</td>
</tr>
</tbody>
</table>

From 2005-2009 a significant portion of the U.S. Natural Gas Pipeline Investments were MLP related.

There are about 90 MLPs, of which 68 (pro-forma for year-end 2011) are energy related with an aggregate market capitalization of approximately $221 billion; the majority of MLPs are

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12 EIA, “Natural Gas Year in Review” July 2010.
energy related businesses – about 80% by number, representing about 90% of MLP market capital (Figure 3).

**Figure 3. Types of Publicly Traded Partnerships**

![Figure 3. Types of Publicly Traded Partnerships](image)

Nearly 80% of current MLPs are concentrated in the Energy sector.

Energy MLPs have a combined trading volume of about $250 million per day. The largest number of MLPs is in the midstream sector (Table 3). This contributes to the success of the MLP, as midstream players have a ‘toll-road’ business model, in that they do not own the commodity flowing through the pipeline, which results in cash flow stability.

**Table 3. Changes in MLP Energy Industry Concentration**

<table>
<thead>
<tr>
<th>Industry</th>
<th>1990</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil and Gas Midstream</td>
<td>10%</td>
<td>45%</td>
</tr>
<tr>
<td>Oil and Gas Exploration &amp; Production</td>
<td>21%</td>
<td>10%</td>
</tr>
<tr>
<td>Propane and Refined Fuel Distribution</td>
<td>0%</td>
<td>7%</td>
</tr>
<tr>
<td>Oil and Gas Marine Transportation</td>
<td>1%</td>
<td>6%</td>
</tr>
<tr>
<td>Coal Leasing or Production</td>
<td>0%</td>
<td>6%</td>
</tr>
<tr>
<td>Other Minerals, Timber</td>
<td>5%</td>
<td>4%</td>
</tr>
</tbody>
</table>

From 1990 to 2011, there has been significant growth in the oil and gas midstream sector from 10 to 45%, respectively.

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13 National Association of Publicly Traded Partnerships, 32.
14 Bloomberg.
15 Data from National Association of Publicly Traded Partnerships, 34.
Methodology

This study encompasses a comparative analysis of the characteristics that have made for a successful MLP, with the ultimate objective of identifying any hurdles that the renewable energy industry may face if the MLP structure were expanded to include renewables. Since their inception, many ONG MLPs have failed and have been forced to de-list. Thus, the first step in this analysis is to identify the characteristics that have made for a successful MLP. A successful MLP is defined as one which makes regular, growing distributions to its unit holders. In general, energy MLPs generate predictable and growing cash flows by operating long-lived, high-value physical assets that engage in the transportation and storage of petroleum products and natural gas. These characteristics will then be compared against the renewable energy sector to identify which characteristics could hold true for a renewable MLP, should the policies currently in place for master limited partnerships be expanded to renewables.

The second step is to quantify any potential LCOE gains to different renewable energy technologies resulting from the MLP structure. This analysis is imperfect given that each MLP structures their IDR tiers differently and some forego them altogether. However, it will still be useful in identifying if there are LCOE gains with the MLP structure over and above the current Tax Credits in place. In the baseline, this model assumes a developer has a large enough tax liability to reap all of the tax credit benefits, which, as stated before, is usually never the case.

Successful MLP Characteristics

In the 1980’s, when the partnership structure emerged, energy companies across the value chain became MLPs. Though, when crude oil fell from $40 in 1981 to $10 in 1986 virtually all the MLPs involved in cyclical commodity businesses cut distributions, suffered dramatic drops in valuation, and de-listed. These upstream MLPs failed because of high exposure to commodity prices, due to a lack of availability of hedging tools, over-leveraged balance sheets, and misaligned management and Limited Partner incentives. Because MLPs are similar to bonds in making regular and predictable payments to investors, failure to issue a distribution is akin to bond default. As a direct result, cash flow and market prices significantly decline.

The MLP sector learned from these early mistakes in the 1980’s. In the late 1990’s with the meltdown of Enron and the independent power producer, the opportunity arose for MLPs to
acquire pipeline assets at relatively attractive valuations, which in turn enabled them to achieve returns superior to corporations and aggressively raise distributions. Since this time successful MLPs have been concentrated in oil and natural gas midstream assets because of the overall low risk of their business model (Figure 4).

**Figure 4. MLP Business Model Comparison**

<table>
<thead>
<tr>
<th>Risk Factors</th>
<th>1980’s Upstream MLPs that Failed</th>
<th>Current Typical Long Haul Pipeline MLPs</th>
<th>Current Typical G&amp;P MLPs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commodity Price</td>
<td>Direct</td>
<td>Indirect</td>
<td>Direct &amp; Indirect</td>
</tr>
<tr>
<td>Re-Contracting</td>
<td>Short Term</td>
<td>Medium Term</td>
<td>Short Term</td>
</tr>
<tr>
<td>Volume</td>
<td>None</td>
<td>‘Firm’ transport revenues</td>
<td>None</td>
</tr>
<tr>
<td>Inflation</td>
<td>None</td>
<td>Depreciated rate base</td>
<td>None</td>
</tr>
<tr>
<td>Capital</td>
<td>None</td>
<td>Rate Review</td>
<td>None</td>
</tr>
<tr>
<td>Cost</td>
<td>None</td>
<td>Cost of Service</td>
<td>Varies</td>
</tr>
<tr>
<td>Overall Business Model</td>
<td>High Risk</td>
<td>Low Risk</td>
<td>Moderate Risk</td>
</tr>
</tbody>
</table>

Upstream MLPs failed in the 1980’s because of their high risk profile. Low risk, long haul pipelines have proven to have the most successful business model.

MLPs with low risk business models have proven to be the most successful at issuing steady, growing distributions. Thus, the Energy MLP industry is concentrated in long-haul, midstream assets and has experienced a significant decrease in failure rate. For the decade ending 2010, there were eleven MLPs that experienced distribution failure, down 40% from the decade prior. Of these eleven MLPs that failed, most failed because of the recession, followed by failures that occurred because of commodity prices, including those that hedge this exposure.  

While hedging aims to mitigate commodity risk, a prolonged period of low commodity prices could force MLPs to cut distributions.

Beyond long-haul, midstream assets, successful MLPs have been characterized by the following attributes: stable, growing cash flows; low, predictable maintenance capital expenditures; regulations that help, not hinder; high barriers to entry; access to capital markets; and low exposure to commodity prices. In the remainder of this section, each of these characteristics is explored in more detail.

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Stable, Growing Cash Flows: The long-term cash flow stability of an MLP is a key driver of stock value as investors prefer partnerships with the most stable cash flows. Accordingly, MLPs have an incentive distribution schedule that rewards the GP for increasing the cash distributions to the limited partners. While not all energy MLPs are midstream assets, a high concentration of them are because of the overall high cash flow stability of these assets. Pipelines are entrenched and regulated assets with predictable income from long-term contracts and limited commodity price exposure given their largely fee revenue model. Midstream assets’ contract structure comes in three basic arrangements: keep whole, percent of proceeds and fee-based. Keep whole arrangements are used very limitedly as they expose an MLP to the most commodity risk as the processor purchases and then sells natural gas at the market price. Instead, MLPs rely heavily on contract structures in which the pipeline operator is exposed to limited or no commodity risk. Thus, these assets have historically low correlation with other assets.

Low and Predictable Maintenance Capital Expenditures: Distributable cash flow for an MLP, a metric that measures the health of an MLP, is calculated by taking Net Income and adding back depreciation and amortization and subtracting maintenance capex. For this reason it is important that MLPs have long-lived assets that require very little maintenance capital expenditures, so that there is maximum cash flow available to the partnership to pay distributions to both LP unitholders and the GP. In the case of midstream assets, pipelines are long-lived assets that are depreciated over 35 years; however, with minimal maintenance capital expenditures they can be used for up to 100 years.

Regulations that Protect Revenues: MLPs are regulated across a number of industries. Regulatory risk invariably exists as regulators could make legal changes, which detrimentally affect the sector. However, regulations help shape a more stable environment for MLPs, which in turn supports the partnerships’ stable earnings and distribution growth. The Federal Energy Regulatory Commission (FERC) closely regulates an MLP’s assets, while protecting rights of way and providing attractive rates of return. While pipeline regulation can be viewed negatively as FERC regulation caps the rates at which pipelines can charge customers and FERC could lower rates through a rate case, which would in turn erode future potential distributable cash flow, on the whole,
FERC regulation protects an MLPs revenues adding to long term stability. MLPs further mitigate this risk by holding intrastate pipelines, which are not subject to FERC regulation, but rather are regulated the governing body of the individual state in which they operate.

- High Barriers to Entry: Most MLP assets operate in a natural monopoly as MLP activity is extremely capital intensive and high barriers of entry exist for new market players. These barriers to entry exist not only because of heavy initial investments but also because there are financial, institutional, structural and strategic barriers to entry. Some examples of these barriers are the need for specialized workers to operate equipment and fuel linkages which create high levels of concentration.

- Access to Capital Markets: Because MLPs pay out the majority of their operating cash flows to partners, they regularly rely on capital markets for access to equity and debt financing. MLPs are essentially all non-investment grade that can access the capital markets as easily as C-Corporations and they do so annually (Figure 5).

**Figure 5. MLP Market Activity**

From 2007 to 2011, MLPs have had access to the debt and equity capital markets.

- Low Exposure to Commodity Prices: While MLPs’ exposure to commodity price risk varies; it is low relative to other companies in the energy industry (Table 4). The midstream asset contract structure helps diminish this exposure. Additionally, MLPs take advantage of hedging tools to mitigate commodity price risk.

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18 Wells Fargo MLP Monthly, through March 31, 2011.
Table 4. Commodity Price Change Effects on MLPs

<table>
<thead>
<tr>
<th></th>
<th>Short-Term Increase in Prices</th>
<th>Sustained Increase in Prices</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Natural Gas</td>
<td>NGLs</td>
</tr>
<tr>
<td>Pipeline MLPs</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Gathering and</td>
<td>Negative</td>
<td>Positive</td>
</tr>
<tr>
<td>Processing MLPs</td>
<td>Positive</td>
<td>Positive</td>
</tr>
</tbody>
</table>

MLPs have limited negative exposure to commodity prices, which lowers their overall risk profile and adds to the security of their cash flows.

In summary, over the past thirty years, those MLPs that have been successful have demonstrated the following characteristics: stable, growing cash flows; low, predictable maintenance capital expenditures; regulations that help, not hinder; high barriers to entry; access to capital markets; and low exposure to commodity prices. While this does not mean that MLPs are subject to limited risks, but rather that there are structures in place to mitigate these risks.

Comparing the Successful MLP Characteristics to Renewables

Prior to expanding the MLP policy to renewables, it is important to compare each of these characteristics to the renewable energy sector to gauge if the MLP structure is a viable option to secure additional capital for renewables. In general, the most significant difference between the renewable energy sector and the ONG sector is where each industry lies along its developmental lifecycle. The ONG industry began in 1859 when the first oil well was tapped and had over a century of development prior to the MLP structure being introduced to the sector. The renewable energy sector is nowhere near being as developed as the ONG sector was in the 1980’s when the MLP structure was introduced. As a direct result, the renewable energy sector has a higher hurdle rate than midstream ONG assets, given that the infrastructure returns, yields and risks are not very far along their developmental cycle (Figure 6).

---

19 Wells Fargo Securities, 24.
Clean Energy Infrastructure has low and unstable operating cash flow in its initial stages of development.

While some technologies such as solar and wind have been around for the past several decades, and are thus further along their developmental lifecycle, many technologies are still in very early stages of their development cycle and have not been scaled to any significant degree. Even technologies such as solar and wind are in their infancy, compared to where the ONG sector was in the 1980’s when the MLP structure was established. Thus, cash flow volatility and cash flow sustainability, which directly increases the risk profile for any given technology, is more volatile for all renewables. As to be expected, where a technology is in its lifecycle directly impacts the types of investors it is able to attract given the differences in the investment risk and expected operating cash flow.

Based on this significant difference in the developmental cycle between renewable and ONG assets, it appears as though the MLP structure may not fit perfectly with the renewable energy sector. Although the industry itself is at a different stage in its lifecycle, it is still worth exploring the master limited partnership structure for renewables since the sector is in need of access to large amounts of capital and innovation in our energy mix will require innovation in the policies that support the current energy infrastructure. In the remainder of this section, each of the characteristics that have been identified in a successful MLP, is explored in more detail against the renewable energy sector.

---

Stable, Growing Cash Flows: The long-term cash flow stability of an MLP is a key driver of stock value as investors prefer partnerships with the most stable cash flows. Detailed financial data for renewable energy generation isn’t available, given that none of these companies are publicly traded and are therefore not required to report their financial data to the SEC. There are, however, eight US based renewable energy manufacturing companies listed on the NASDAQ. Not surprisingly, these companies are primarily concentrated in the photovoltaics manufacturing industry, given that is has a 25+ year track record and therefore carries a lower technology risk. Of these eight companies, two of them, GPRE and VRNM, are in the ethanol and biofuels production industry. The cash flows between publicly traded renewable companies and ONG MLPs have been compared using the financial metric EBITDA (See Figures 7 and 8). In Figure 7 all of the MLPs generally demonstrate steady, growing EBITDA. Two MLPs, RGP and EROC, demonstrate a decline in cash flow in 2009. Upon further examination of their financials, this volatility is due to the recession and the resulting decline in oil field services activity. These dips are temporary as the companies are seen recovering in fiscal year 2010. Figure 8 represents the EBITDA numbers for eight publicly traded renewable energy companies. Several companies, ESLR, GTAT, GPRE, DSTI, and VRNM show steadily growing cash flows. However, companies such as FSLR and ASTI demonstrate EBITDA volatility in one or more years. This volatility is due to the loss of competitiveness of their photovoltaic manufacturing processes. As solar panel manufacturing becomes cheaper in China, this volatility is to be expected of the solar manufacturing industry.

Figure 7. EBITDA for 5 ONG Energy MLPs

Figure 8. EBITDA for 8 publicly traded Renewable energy manufacturing companies

Figure 7 demonstrates some volatility but Figure 8 demonstrates unsteady cash flows – both in terms of volatility and negative cash flow – which would make for an unhealthy MLP.
While this is an imperfect comparison, given the differences in renewable energy generation vs. manufacturing and production, it is useful for a couple reasons. First, it demonstrates that there is a high degree of cash flow stability, which can be attributed to regulation safeguards, advances in the renewable technology, and the increase in scale of renewable energy. However, it also demonstrates the volatility that can exist even amongst the most advanced renewable energy technology. Despite the advances made in the solar industry, given where the technology is in the development stage, this volatility both in manufacturing and generation of renewables is still to be expected. As can be seen in Figure 9 and 10 below, the renewable energy sector must go through the cash flow valley of death before potentially realizing sustained cash flow.

Figure 9. The Cash Flow Valley of Death as a Function of Development Stage (time), with Typical Investors shown for the Various Stages.  

Figure 10. Market Development and Creation Function of Business Development Stage

Both of these figures demonstrate the cash flow volatility that a product goes through in its early developmental stages. Additionally, these figures highlight the investor pool and potential market available to products as they progress in their development.

As Figures 9 and 10 demonstrate, though these companies currently demonstrate volatile cash flows, this is not to be expected in the long term as the technology moves further along the developmental stage given that clean energy is characterized by locked in, contracted revenues through power purchase agreements (PPAs) and inflation hedging.
(through indexed revenue). Thus, it appears as though renewable energy generation could experience more volatile cash flows given the scale of the technology and its adoption rate based on comparable LCOE; however, this risk is to a large degree mitigated through long-term power purchase agreements put in place at the outset of operation.

- Low and Predictable Maintenance Capital Expenditures: Distributable cash flow for a partnership is calculated by taking net income and adding back depreciation and amortization and subtracting maintenance capital expenditures. Renewable energy assets have long lived assets, though not as long lived as ONG midstream assets. Renewable energy assets are generally depreciated over 25 years but with maintenance capex can be used for up to 50 years. However, like midstream assets, renewable energy assets require very little maintenance capital expenditures. For example, an ONG MLP aims to have maintenance capital expenditures less than 10% of EBITDA and a typical wind farm incurs annual maintenance capex ranging from 3.5-5.3% of the total cost of the wind turbines.\textsuperscript{23} Additionally, they have low ongoing operational costs. Thus, it appears that the maintenance capital expenditures of renewables would allow for maximum cash flow to the partnership, despite the need for repurchasing assets on a shortened schedule (every 50 years vs. every 100 years).

- Regulations that Protect Revenues: Like current energy MLPs, the renewable energy industry is regulated across a number of industries and FERC regulation protects a renewable energy company’s revenues adding to long term stability. For example, many policies currently support the renewable energy market such as: binding and non-binding targets; feed-in-tariffs; energy certificates; renewable portfolio standards; tax credits; grants; and accelerated depreciation.

However, due to ongoing deficit-reduction negotiations, many renewable energy incentives face an uncertain future. For example, in the past year Congress failed to extend the Production Tax Credit (PTC) that helped incentivize wind power investment and production, and the Senate repealed $5.4 billion worth of ethanol subsidies. The loss of these incentives casts uncertainty on the sustainability of renewable energy growth.

While many incentives remain uncertain, two have significantly helped developers secure project financing: Renewable Portfolio Standards and Tax Equity

Investments. Renewable Portfolio Standards (RPSs) exist in 29 states and the District of Columbia and they will continue to drive clean energy investments in the U.S. In fact, several hundred billion dollars of investment in renewable energy generation projects will be required between now and 2030 to meet RPS targets now in place.

Renewable developers that do not have adequate tax liability cannot use traditional tax credits and deductions efficiently and, therefore, do not entice renewable energy investment. Tax equity financing works by shifting breaks from developers, who don’t have enough profits to use them, to investors who do. While renewable energy companies can bank these credits for 20 years, they would rather sell these credits to receive an infusion of cash for their project. Tax equity investments allow an investor with large tax liabilities to buy a project’s tax benefits and offset their tax liability. The annual tax benefits to investors usually run in the tens of millions of dollars. Investors also get a share of future revenues or an equity stake in the project, which typically generates returns between 8 and 10 percent. However, the number of tax equity investors is very small. In 2007, the number of investors was around 25 worth about $6.1 billion but fell drastically with the financial crisis to 5 with transactions around $1 billion in 2009. Since then, the number of investors has slowly increased to around 15 but with Wall Street Firms still experiencing falling profits through 2011, investments have not returned to 2007 levels. This limited investor pool is problematic given that according to the National Renewable Energy Laboratory’s Renewable Finance Tracking Initiative tax equity partnerships are the most common form of financing for large photovoltaic and wind projects, coming in at 52% and 53% respectively for the fourth quarter of 2009 to the fourth quarter of 2011.\textsuperscript{24}

Given these limited financing incentives, exploring other options which promote investment in renewable energy, such as allowing renewable energy companies access to the MLP business structure, are of increasing importance.

\begin{itemize}
  \item High Barriers to Entry: Like MLPs, renewable energy assets are extremely capital intensive and high barriers of entry exist for new market players. These barriers to entry exist not only because of heavy initial investments but also because there are financial, institutional, structural and strategic barriers to entry. While distributed energy
\end{itemize}

\textsuperscript{24} Hubbell Ryan and Michael Mendelsohn, NREL’s Renewable Energy Finance Tracking Initiative (REFTI), 2011.
generation typically has a lower cost to integrate into the existing grid, the nature of these projects is not suitable for the MLP structure. Distributed renewable generation projects are typically smaller construction and generation projects under 20 MWs which generate electricity very close to where it is used. As such, the scale and growth potential of these projects is limited. The successful MLP structure requires not only stable but growing cash flows, which would be difficult to realize.

- Access to Capital Markets: Because Renewables are extremely capital intensive and there are infrastructure needs, access to the capital markets through debt and equity financing is imperative. Similar to MLPs, Renewable projects may seek debt financing from banks, government agencies, private/public bond issues, or life insurance companies. In terms of equity financing, Renewables projects may seek funding from pension funds, private equity firms, investment arms of various operating companies, or income trusts. While renewable energy is an attractive asset for receiving project finance, funding may be more difficult to obtain depending on the price of competing power suppliers and the noninvestment grade nature of the technologies. Thus, renewable energy does not have access to the capital markets in the same way as ONG assets but the master limited partnership structure has the potential to make this easier for renewables.

- Low Exposure to Commodity Prices: Renewable energy power assets generally have low exposure to commodity price volatility, either possessing a regulated, government-backed revenue stream, or a long-term off-take contract with a utility or fuels supplier, which are subject to increasingly aggressive renewable energy mandates.

In summary, the renewable energy sector is comparable in many ways to the successful MLP characteristics found in the ONG industry. However, the renewable energy market does differ in three main characteristics: stable, growing cash flows; regulations that protect revenues; and access to capital markets. The following table summarizes the ways in which the renewable energy sector compares to the successful MLP characteristics.
Table 5. Successful MLP Characteristics: ONG Assets vs. Renewable Energy Sector

<table>
<thead>
<tr>
<th></th>
<th>ONG Midstream Assets</th>
<th>Renewable Energy Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stable, Growing Cash Flows</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Low, Predictable Maintenance Capex</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Regulations that Protect Revenues</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>High Barriers to Entry</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Access to Capital Markets</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Low Exposure to Commodity Prices</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>

The Renewable Energy Industry differs from ONG Midstream assets in three significant ways (circled in red).
LCOE Implications of MLP Structure

While the elimination of taxes would be a positive gain for C-corporations, it is not necessarily the case for a renewable energy company given the current impact of tax benefits on the Levelized Cost of Electricity (LCOE). The LCOE equation evaluates the life-cycle cost and production of energy. It does this by capturing the capital costs, ongoing system-related costs, fuel costs, and electricity production costs and converting them into a common metric: $/kWh. It is useful because it allows alternative technologies to be compared when different scales of operation, investment or operating time periods exist. The LCOE is calculated by taking the net present value of the total life cycle costs of a project divided by the quantity of energy produced over the life of the system.

\[
LCOE = \frac{\text{Total Life Cycle Cost}}{\text{Lifetime Energy Production}}
\]

This equation can be further broken down further as follows:

\[
Initial\ \text{Investment} = \sum_{n=1}^{N} \frac{\text{Depreciation}^n}{(1 + \text{Discount Rate})^n} \times \text{(Tax Rate)} + \sum_{n=1}^{N} \frac{\text{Annual Costs}^n}{(1 + \text{Discount Rate})^n} \times (1 - \text{Tax Rate}) - \frac{\text{Residual Value}}{(1 + \text{Discount Rate})^N}
\]

\[
\sum_{n=1}^{N} \frac{\text{Initial kWh} \times (1 - \text{System Degradation Rate})^n}{(1 + \text{Discount Rate})^n}
\]

While the LCOE provides a useful benchmark for levelized life cycle energy costs, the actual price of energy may differ substantially given Power Purchase Agreements or feed-in-tariffs.

The major LCOE inputs are as follows: initial investment, depreciation tax benefit, annual costs, system residual value and system energy production. The initial investment is the total cost of the project plus construction financing. This initial capital cost is driven by area related costs, grid interconnection costs and project related costs, such as overhead, sales, and marketing. The Depreciation Tax Benefit, through the Modified Accelerated Cost Recovery System (MACRS), is the present value of the depreciation tax benefit over the financial life of the asset. Annual Costs include the operation and maintenance costs of the project. Finally, the system residual value is the present value of the end of life asset value, which is deducted from the total life cycle cost in the LCOE calculation.

To determine if MLPs would negatively affect the LCOE of renewable energy technologies, a baseline must first be established. Figure 11 demonstrates the impact of these tax
benefits on LCOE. This baseline LCOE data was pulled using both the California Public Utilities Commission Calculator and the E3 Renewable Energy Costing Tool. In this graph the busbar price represents a 20 year nominal levelized LCOE, net of tax benefits. The two main tax benefits are the Modified Accelerated Cost Recovery System (MACRS) and Tax Credit. The 5 year MACRS shows the incremental tax benefit above a 20 year MACRS schedule. The tax credit in this graph assumes the Production Tax Credit (PTC) for wind, which is set to expire at the end of 2012, and the Investment Tax Credit (ITC) for solar thermal and PV.

Figure 11. Impact of Tax Benefits on LCOE.²⁵

Tax credits have the potential to play a significant role in lowering LCOE, if a developer’s tax liability is big enough to efficiently access the credits.

While the MACRS benefit is significant, it is not nearly as substantial as the current tax credits. Thus, if the overall goal is to encourage investment and make renewables more competitive, then it would be helpful to gauge if removing the tax burden, and potentially the full value of state and federal income tax benefits, through the MLP structure would in fact have a negative impact on LCOE.

²⁵ CGGT Source: http://www.cpuc.ca.gov/PUC/energy/Procurement/LTPP/LTPP2010/2010+LTPP+Tools+and+Spreadsheets.htm
To estimate the various differences in LCOE, the baseline was again established by using both the California Public Utilities Commission Calculator and the E3 Renewable Energy Costing Tool. The outputs for the baseline scenario are represented in Table 6.

### Table 6. Baseline LCOE for Renewable Energy

<table>
<thead>
<tr>
<th>Summary</th>
<th>Reference</th>
<th>Low</th>
<th>High</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biomass</td>
<td>$122</td>
<td>$110</td>
<td>$136</td>
<td>$27</td>
</tr>
<tr>
<td>Geothermal</td>
<td>$112</td>
<td>$84</td>
<td>$131</td>
<td>$47</td>
</tr>
<tr>
<td>Wind - Onshore</td>
<td>$97</td>
<td>$51</td>
<td>$110</td>
<td>$59</td>
</tr>
<tr>
<td>Solar PV - Utility Scale - Crystalline</td>
<td>$171</td>
<td>$171</td>
<td>$186</td>
<td>$15</td>
</tr>
<tr>
<td>Solar PV - Utility Scale - Thin Film</td>
<td>$158</td>
<td>$158</td>
<td>$179</td>
<td>$21</td>
</tr>
<tr>
<td>Solar Trough Dry-Cooled No Storage</td>
<td>$185</td>
<td>$169</td>
<td>$254</td>
<td>$65</td>
</tr>
<tr>
<td>Solar Trough Wet-Cooled No Storage</td>
<td>$175</td>
<td>$170</td>
<td>$242</td>
<td>$67</td>
</tr>
<tr>
<td>Solar Trough Dry-Cooled 6hr Storage</td>
<td>$190</td>
<td>$185</td>
<td>$241</td>
<td>$55</td>
</tr>
<tr>
<td>Solar Trough Wet-Cooled 6hr Storage</td>
<td>$173</td>
<td>$169</td>
<td>$232</td>
<td>$63</td>
</tr>
</tbody>
</table>

To account for the MLP structure in the renewable energy space, the following modifications were made based on current standards for ONG MLPs:

- Federal Income Tax eliminated
- After tax WACC ranges from 8-12%
- Debt interest rate of 6%
- Financing with 50% equity and debt

All renewable energy technologies achieve LCOE gains with the removal of Federal taxes and the MLP general structure (Table 6). In the Reference scenario, the average LCOE gain is $4.78/MWh, across all technologies.

### Table 7. MLP LCOE for Renewable Energy without Federal Tax Credits

<table>
<thead>
<tr>
<th>Summary</th>
<th>Reference</th>
<th>Low</th>
<th>High</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biomass</td>
<td>$118</td>
<td>$105</td>
<td>$135</td>
<td>$30</td>
</tr>
<tr>
<td>Geothermal</td>
<td>$110</td>
<td>$82</td>
<td>$134</td>
<td>$52</td>
</tr>
<tr>
<td>Wind - Onshore</td>
<td>$96</td>
<td>$50</td>
<td>$114</td>
<td>$64</td>
</tr>
<tr>
<td>Solar PV - Utility Scale - Crystalline</td>
<td>$165</td>
<td>$156</td>
<td>$190</td>
<td>$34</td>
</tr>
<tr>
<td>Solar PV - Utility Scale - Thin Film</td>
<td>$152</td>
<td>$144</td>
<td>$182</td>
<td>$39</td>
</tr>
<tr>
<td>Solar Trough Dry-Cooled No Storage</td>
<td>$189</td>
<td>$173</td>
<td>$259</td>
<td>$80</td>
</tr>
<tr>
<td>Solar Trough Wet-Cooled No Storage</td>
<td>$170</td>
<td>$156</td>
<td>$247</td>
<td>$91</td>
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<tr>
<td>Solar Trough Dry-Cooled 6hr Storage</td>
<td>$183</td>
<td>$169</td>
<td>$246</td>
<td>$77</td>
</tr>
<tr>
<td>Solar Trough Wet-Cooled 6hr Storage</td>
<td>$167</td>
<td>$153</td>
<td>$237</td>
<td>$83</td>
</tr>
</tbody>
</table>

These new LCOE numbers demonstrate that the MLP structure would not negatively affect LCOE, and in fact, there could be marginal LCOE gains. Additionally, the MLP structure could increase a renewable energy developer’s access to capital in two significant ways. For one, the MLP structure would allow a developer to realize all of these gains, whereas with the current tax credit structure a developer, who does not have a large enough tax liability, must rely on a tax equity investor. Second, with the uncertain future of many tax credits, for example, the
Production Tax Credit which has been built into the baseline LCOE but is to be phased out at the end of this year, the MLP structure looks even more appealing. Not only would this structure lend itself more to assuring stable cash flows but it would also enable a developer to fully utilize government incentives, which would ultimately encourage investment in the sector.
**Solutions**

Given that there are some distinct differences between the renewable energy sector and the characteristics of successful ONG MLPs, applying the MLP structure directly to renewables does not appear necessarily promising. History demonstrates that there is precedent to modify the laws surrounding MLPs to make the structure work as intended. Innovating the law further for renewables seems reasonable and in line with the laws initial intent which was to encourage investment in the U.S. energy sector so as to ensure greater energy security.

As has been demonstrated, renewables currently possess many of the characteristics that make for a successful MLP. Three main issues face the renewable energy industry with regards to the MLP structure: stable, growing cash flows; regulations that protect revenues; and access to capital markets. Given that the MLP structure would eliminate the last two issues, the only remaining issue facing a renewable energy MLP is its stable growing cash flows. An asset with unsteady cash flows would be negatively valued. Because of this, many renewable energy technologies are unsuitable for the MLP structure – especially those that are in preliminary or experimental phases of its developmental lifecycle. However, some renewable energy technologies, such as wind and solar, may be suitable for the MLP structure with slight modifications.

This section outlines two potential solutions to this issue. The first pertains to creating tiered distributions to accommodate the cash flow volatility and the second attempts to have a renewable energy MLP function more like a ‘toll-road’ type of business with more stable earnings. The second involves structuring a renewable MLP so that it functions more like a ‘toll-road’/pass through entity, similar to midstream ONG assets, by structuring the MLP around the land on which a renewable energy company operates as it would receive steady earnings from the land lease, similar to a Real Estate Investment Trust (REIT).
First Solution: Tiered LP Units

The first potential solution is to create two tiered LP units with different distributions. There is precedent for this in C-Corporations, as some companies issue dual class stocks, which carry different voting rights and different dividend payments. Under the current MLP setup, all LP units are valued the same and each unit receives the same quarterly distribution. Successful MLPs demonstrate growing cash flows, which in turn allows them to increase their overall distributions to unit holders. Atlas Energy is an MLP focused on the production, transportation, and processing of natural gas and oil in the U.S. In Figure 12 below, we see Atlas Energy’s cash flows steadily growing, which in turn increases distributions to LP unit holders.

Figure 12. Atlas Energy’s Cash Flow

As Atlas Energy’s Cash Flow increases, so too do the LP and IDR Distributions. Atlas Energy is a great example of a healthy MLP, which has steadily growing cash flow and is able to meet its distribution payments. However, in the case of renewables, there exists more volatility in the cash flows, which would result in more volatile distributions. Overall, this is undesirable and points to an unhealthy partnership.

Tiered distributions aim to reward investors who invest in the more risky portion of the cash flows. Key to this solution is determining the minimum level of cash flow stability that the partnership is creating. For example, in Figure 13 after the first year of cash flow, the minimum level maintained is $10 million. Therefore, the first tier of LP distributions would be based off of

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26 Atlas Energy website.
this steady cash flow of $10 million. Given that these distributions are more secure, and therefore less risky, their payout ratio could be fixed at a much lower rate than the tier 2 units. The tier 2 units would be based off of the cash flows above the specified threshold, in this example $10 million, and would receive a much higher payout rate than the tier 1 units.

**Figure 13. Tiered LP Distributions**

![Cash Flow Chart]

This solution does not smooth earnings in any way but rather attempts to work with the volatile nature of the cash flows by rewarding investors accordingly.

While there is precedent for tiered stocks, and this solution would only require slight modification of the current MLP structure, it isn’t clear how feasible it would be to establish the cutoffs for each tier. Arriving at these tiers assumes one is able to establish a baseline – or an industry average based on the scale of a particular wind or solar farm. However, the majority of renewable energy financial data is not reported to the SEC because these companies are privately held. Opening up the MLP structure to renewables may be enough for existing companies to share data to establish these parameters, but this is highly uncertain. Therefore, this solution would require some industry buy-in so that current companies understand the gains that could be made for their company and the industry as a whole, in order to make them willing to share data to establish industry estimates for the tiers based on different company sizes.
Second Solution: Renewable Energy MLP structured as ‘toll-road’ Type of Business

A second potential solution is constructing the MLP not around the entity that generates the renewable energy, but rather around the long term leases or real estate property of the wind/solar farms. The precedent for this is based on the Real Estate Investment Trust (REIT) structure. In the U.S. a REIT is a company that owns and operates income-producing real estate properties and mortgages. REITs are traded on major exchanges. REITs are similar to MLPs in that they are pass-through entities that avoid double taxation and pay out large portions of their cash flow in dividends to investors.

In forming renewable energy MLPs like this, the cash flows would be based off of these long term leases which wouldn’t expose the MLP to the fluctuations in cash flows that the wind/solar farm itself may experience. So that the renewable energy generation was actually benefiting from the MLP structure, it would seem the lease holder would have to be a parent company of the renewable energy company. Additionally, the lease would have to be structured so that revenues increased year over year so that distributions could also grow. This type of set up would be advantageous as it would smooth the earnings issue. Given that there are many nuances to the REIT structure, more investigation should be conducted around this potential solution to determine if there are any serious drawbacks to structuring in this way.
Conclusion

Expanding investment in the renewable energy sector had been a policy priority of the Obama Administration. However, the discussions to encourage investment in the renewable energy sector have focused on tax credits and not on removing the tax liability that Master Limited Partnerships (MLP) are afforded. As Congress evaluates other policies to attract additional capital to the renewable energy sector, permitting renewable energy entities to structure as MLPs is a promising option.

This paper has explored the potential of expanding the policies currently in place for master limited partnerships (MLPs) to the broader renewable energy industry. The first section provides an overview of master limited partnerships including the history, structure, valuation, and investor perspective of this asset class. This paper then considers the characteristics that have made for a successful MLP over the past thirty years. Next, the renewable energy industry is compared against the characteristics that make for a successful MLP. While a few characteristics do not hold for the renewables industry, the most problematic is the volatile nature of a renewable energy company’s cash flows. Two solutions are then proposed to the MLP structure to make it a viable option for the renewable energy industry. Thus, modifications can be made to the MLP structure to allow the renewable energy sector not only to be successful in the partnership structure but also in attracting additional capital and stimulating investment in the industry.

While it appears that the MLP structure could successfully be applied to the renewable energy sector, this paper does not consider the tax losses the government would incur as a result. This is a considerable concern in light of the government’s tremendous deficit. However, it doesn’t seem reasonable to penalize the renewable energy sector over and above the ONG industry, given the government’s energy and environmental concerns. Therefore it seems reasonable to create innovations in the MLP policy to further investment in the U.S. renewable energy sector.
### Appendix

#### Glossary

<table>
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<tr>
<th>Term</th>
<th>Definition</th>
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<tr>
<td><strong>Cost of Capital</strong></td>
<td>the required return necessary to make a capital budgeting project worthwhile, including both the cost of debt and the cost of equity</td>
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<td><strong>EBITDA</strong></td>
<td>Earnings Before Interest Depreciation and Amortization (EBITDA) is a proxy for cash flow. It can be used to compare the profitability of companies because it eliminates the effects of financing and accounting decisions.</td>
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<tr>
<td><strong>Energy Information Administration (EIA)</strong></td>
<td>The EIA is an independent statistical agency of the U.S. Department of Energy (DOE). The EIA provides energy data, short- and long-term forecasts, and analyses that is used to understand energy usage in the U.S.</td>
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<tr>
<td><strong>General Partner (GP)</strong></td>
<td>The GP manages the day-to-day operations of the partnership, has a 2% ownership stake in the partnership and is eligible to receive an incentive distribution.</td>
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<td><strong>Incentive Distribution Rights (IDRs)</strong></td>
<td>IDR are usually held by the general partners and allow them to receive an increasing percentage of quarterly distributions after the target distribution thresholds have been met. In most partnerships, the highest tier is achieved when the GP receives 50% of every incremental dollar paid to the LP unit holders. This is known as the 50/50 tier.</td>
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<td><strong>Leveraged Buyout Effect (LBO Effect)</strong></td>
<td>In an LBO an investor acquires a controlling interest in a company’s equity by financing a significant portion of the purchase price through leverage (borrowing). As a result, there are significant debt obligations to be met, which demand disciplined capital spending so that the company does not default on its debts.</td>
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<td><strong>Limited Partner (LP)</strong></td>
<td>The LP provides capital, has no role in the MLP’s operations or management, and receives cash distributions.</td>
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<td><strong>Maintenance Capex</strong></td>
<td>The expenses that a company incurs in order to maintain its fixed assets. This includes funds necessary to renew, repair or replace an asset in order for it to continue to function as needed.</td>
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<td><strong>Midstream</strong></td>
<td>Midstream refers to the gathering, treating, processing, transportation, or storage of a product after it has left the wellhead (upstream), but before it has been distributed to the end user (downstream).</td>
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Bibliography


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U.S. Congress, Joint Committee on Taxation, General Explanation of Tax Legislation Enacted in the 110th Congress, 110th Congress, March 2009, JCS-1-09, p. 599.

