

KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.

Form N-CSR

February 07, 2012

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**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549
FORM N-CSR
CERTIFIED SHAREHOLDER REPORT OF REGISTERED
MANAGEMENT INVESTMENT COMPANIES
Investment Company Act file number 811-22467
Kayne Anderson Midstream/Energy Fund, Inc.**

(Exact name of registrant as specified in charter)

717 Texas Avenue, Suite 3100, Houston, Texas

77002

(Address of principal executive offices)

(Zip code)

David Shladovsky, Esq.

KA Fund Advisors, LLC, 717 Texas Avenue, Suite 3100, Houston, Texas 77002

(Name and address of agent for service)

Registrant's telephone number, including area code: (713) 493-2020

Date of fiscal year end: November 30, 2011

Date of reporting period: November 30, 2011

Form N-CSR is to be used by management investment companies to file reports with the Commission not later than 10 days after the transmission to stockholders of any report that is required to be transmitted to stockholders under Rule 30e-1 under the Investment Company Act of 1940 (17 CFR 270.30e-1). The Commission may use the information provided on Form N-CSR in its regulatory, disclosure review, inspection, and policymaking roles.

A registrant is required to disclose the information specified by Form N-CSR, and the Commission will make this information public. A registrant is not required to respond to the collection of information contained in Form N-CSR unless the Form displays a currently valid Office of Management and Budget (OMB) control number. Please direct comments concerning the accuracy of the information collection burden estimate and any suggestions for reducing the burden to Secretary, Securities and Exchange Commission, 450 Fifth Street, NW, Washington, DC 20549-0609. The OMB has reviewed this collection of information under the clearance requirements of 44 U.S.C. § 3507.

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Item 1. Reports to Stockholders.

The report of Kayne Anderson Midstream/Energy Fund, Inc. (the Registrant) to stockholders for the fiscal year ended November 30, 2011 is attached below.

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CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS: This report of Kayne Anderson Midstream/Energy Fund, Inc. (the Fund) contains forward-looking statements as defined under the U.S. federal securities laws. Generally, the words believe, expect, intend, estimate, anticipate, project, will and similar identify forward-looking statements, which generally are not historical in nature. Forward-looking statements are subject to certain risks and uncertainties that could cause actual results to materially differ from the Fund's historical experience and its present expectations or projections indicated in any forward-looking statement. These risks include, but are not limited to, changes in economic and political conditions; regulatory and legal changes; MLP industry risk; leverage risk; valuation risk; interest rate risk; tax risk; and other risks discussed in the Fund's filings with the Securities and Exchange Commission (SEC). You should not place undue reliance on forward-looking statements, which speak only as of the date they are made. The Fund undertakes no obligation to publicly update or revise any forward-looking statements made herein. There is no assurance that the Fund's investment objectives will be attained.

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**KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.
LETTER TO STOCKHOLDERS**

January 27, 2012

Dear Fellow Stockholders:

We are extremely proud of the Fund's accomplishments during our first full year of operations. The Fund's portfolio generated outstanding returns and we were able to increase our quarterly distribution from an initial payment of \$0.375 per share to \$0.4175 per share for our most recent quarter. This increase was a combination of fully investing the proceeds from our IPO as well as better than anticipated portfolio performance. The Fund accomplished these results despite substantial volatility in both the broader markets and the MLP market. We believe that developments in the energy markets over the last twelve months have validated the Fund's investment thesis that the development of unconventional reserves will create growth opportunities for both Midstream MLPs and Midstream Corporations for many years to come. We believe the outlook for our portfolio in 2012 is very strong and we are excited to build on our first year's successes.

As we highlighted during the roadshow for our initial public offering, the biggest trend in the energy sector is the accelerating development of unconventional reserves, which are more commonly referred to as shale plays. It became even more evident in 2011 that these unconventional reserves will be increasingly important to domestic energy supply. While this has had a negative impact on natural gas prices, it is expected to lead to a substantial increase in demand for midstream assets. Regardless of price, once the natural gas has been produced, it needs to be transported to market through midstream assets. In fact, a recent report by the Interstate Natural Gas Association of America estimates that \$250 billion of new midstream infrastructure will be required over the next two decades. As a result, the visibility for growth projects is as good as it has ever been in the midstream sector.

Many experts are beginning to highlight the impact of unconventional reserves on domestic manufacturing and the broader domestic economy. Not only will these new infrastructure projects create jobs, but the abundance of low-cost energy supply is making domestic production of many derivative projects (such as plastics) more competitive. It has been a very long time since the United States was a low-cost energy producer.

We are extremely pleased with the Fund's financial performance during fiscal 2011. One of the measures we employ to evaluate our performance is Net Asset Value Return, which is equal to the change in net asset value per share plus the cash distributions paid during the period, assuming reinvestment through our dividend reinvestment program. Our Net Asset Value Return was 14.7% for fiscal 2011. During the same period, the MLP market, as measured by the Alerian MLP index, had a total return of 9.5%, and the S&P 500 had a total return of 7.8%. The Fund's returns were top of the class among the MLP-related closed end funds. The Fund outperformed its nearest competitor by approximately 190 basis points (100 basis points is equal to one percentage point) and generated a total return that was more than double the average total return for the remaining MLP-related closed-end funds, open-end funds, and exchange traded funds. Our performance for calendar year 2011 was even better, with a Net Asset Value return of 20.8%. We believe the calendar year results, which exclude our first month of operations, better reflect the performance of the portfolio over our first year.

During the Fund's initial public offering, we indicated that we anticipated paying a distribution equivalent to a 6.25% to 6.50% yield on the IPO price of \$25 per share once the Fund was fully invested. The Fund became fully invested during the second quarter of fiscal 2011 and paid a distribution of \$0.41 per share for such quarter (which is equivalent to a 6.6% yield on the IPO price). The Fund's most recent distribution was \$0.4175 per share, which is equivalent to a 6.7% yield on the IPO price. Strong distribution increases by the Fund's portfolio securities helped us accomplish this distribution increase.

The Fund's share price performance during fiscal 2011 was a disappointment. During our fiscal year, the Fund's shares declined 10.1%, in spite of a 9.0% increase in NAV. The Fund traded at a discount to NAV for most of the year and the discount grew larger in the final months of fiscal 2011. We are encouraged by the fact that since the start of fiscal 2012, the Fund's shares have increased 15.3% (as of January 26, 2012) and the Fund's discount to NAV has narrowed to 8.2% (as compared to a discount of 13.4% as of November 30, 2011).

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**KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.
LETTER TO STOCKHOLDERS**

In addition to its NAV and distribution performance, the Fund had several other key accomplishments during fiscal 2011. We entered into a \$100 million revolving credit facility and raised \$150 million of leverage via the issuance of senior notes and mandatory redeemable preferred stock. We are pleased to say that all of the Fund's leverage is long-term in nature and has a weighted average maturity date of 4.7 years. We believe committed financing with a multi-year maturity date is critical in today's markets.

In spite of the volatility in the financial markets during fiscal 2011, we successfully navigated the turbulent markets and maintained strong leverage ratios during the year. For most of the year, we operated with leverage well below our targeted levels. We expect volatility to continue into fiscal 2012 and are managing our leverage levels accordingly.

Market Overview

MLPs performed very well during the fiscal year, with a 9.5% total return for the Alerian MLP Index. We believe that MLP market performance was driven by strong distribution growth and increased demand for yield securities by individual investors. We think that MLPs are being increasingly viewed by market participants as a distinct asset class with very attractive total return characteristics. Fiscal 2011 marked the twelfth straight year MLPs outperformed the S&P 500 index. Over that 12-year period, MLPs have generated a total return of over 700% versus a total return of 12% for the S&P 500 index. With an average yield of 6.0% for the group as of January 26, 2012 and distribution growth prospects of 6% to 7% for 2012, we continue to view MLPs as a very compelling investment opportunity.

Like the broader markets, MLP equity prices were volatile during fiscal 2011. The MLP market rose during the first five months of fiscal 2011 to set a new all-time high in late April. Concerns about the U.S. economy, the European debt crisis, the downgrade of the U.S. Government's credit rating and the sell-off of the broader markets contributed to weak MLP performance during the summer. At the low point in early August, the MLP market had declined 19% from its April high. MLPs stabilized in August and then generated strong gains during the last three months of fiscal 2011 to finish the year with a total return of 9.5%. The MLP market is off to a great start in fiscal 2012, with the MLP index generating a total return of 8.8% through January 26, 2012, and set an all-time high on January 25, 2012.

MLP distribution growth accelerated during the year, as MLPs benefited from acquisitions and development projects and management teams became increasingly comfortable with the current operating environment. Distributions grew 6.3% during 2011 compared to 4.6% in 2010 and 2.8% in 2009. We believe that prospects for distribution growth in 2012 look as strong or better than 2011, as the need for new midstream assets to transport, process and store unconventional reserves is leading to substantial new growth projects.

When reviewing MLP valuations, we pay close attention to MLP yields versus other income alternatives. As illustrated in Figure 1 on the next page, MLP yields compare very favorably to other income-oriented investments. Current yields for MLPs are much higher than yields for U.S. Treasury bonds, investment grade bonds, utilities and REITs. This comparison is even more compelling when you take into account the prospect of strong distribution growth for MLPs.

While the MLP market performed well during fiscal 2011, the MLP market became even more attractively valued on a relative basis. At the beginning of the fiscal year, the average MLP yield was 6.3%, which represented a 352 basis point premium (100 basis points equals one percent) to the yield on 10-year U.S. Treasury bonds. This difference is often referred to as the spread to Treasuries. By November 30, 2011, the spread to Treasuries had increased to 434 basis points. As of January 26, 2012, the spread to Treasuries was 403 basis points, which is still well above the 219 basis point average for the five-year period prior to the financial crisis.

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Figure 1. MLP Yields versus Other Income Alternatives (January 26, 2012)

Capital expenditures by MLPs, including both acquisitions and new growth projects, continued at robust levels in 2011. We estimate that MLPs completed \$31 billion in acquisitions and spent \$16 billion on new projects during the year. There were two notable transactions that are not included in the totals above: Kinder Morgan, Inc.'s acquisition of El Paso Corporation (\$38 billion transaction) and Energy Transfer Equity's acquisition of Southern Union Company (\$9 billion transaction). In both transactions, the general partner of an MLP is acquiring a corporation with substantial midstream assets. The expectation is that the general partner will subsequently drop down such midstream assets to their affiliated MLP. We think these transactions are noteworthy for a few reasons. First, they highlight the strategic value of the MLP structure and the valuation differential between MLPs and C-corporations. They also highlight the benefits of strong corporate sponsorship, as well as the options available to the general partners to enhance the growth prospects of their affiliated MLP. Lastly, both transactions enabled the acquirers to substantially increase their exposure to unconventional resources.

Access to capital markets is critical in order to finance these growth projects, and capital markets activity for MLPs reached a new high in calendar 2011. During the year, MLPs raised \$13 billion in follow-on equity and \$21 billion in debt, surpassing activity levels in 2010 despite the volatility in the stock market. Calendar 2011 was also a very active year for initial public offerings (IPOs) in the MLP sector, with 14 IPOs totaling \$5.3 billion. There was great variability in the quality of the IPOs and, as a result, we opted not to participate in several of these deals. Not surprisingly, nine deals were up for the year but five deals had negative returns for the year. We expect the IPO market to remain active and we plan to continue to be selective in our participation.

Midstream Companies performed exceptionally well in fiscal 2011, delivering a total return of 32.1% versus 7.8% for the S&P 500. The year got off to a strong start with the IPOs of Targa Resources Corp. and Kinder Morgan Inc. This positive momentum continued through the first half of 2011, as The Williams Companies and El Paso Corporation each announced plans to separate their midstream assets and E&P assets into separate publicly traded companies. Investors applauded these moves and both companies' share price performed quite well. Midstream Companies placed increasing focus on dividend growth in 2011 and we expect this to continue in the years to come.

The Energy Debt in the Fund's portfolio generated total returns of 5.9% in fiscal 2011. These returns compare to a total return of 3.7% for the Merrill Lynch High Yield index and a total return of 7.5% for the Merrill Lynch Energy High Yield index. Our portfolio outperformed the overall high yield market because of our debt investments in E&P Companies and Midstream Companies that had exposure to shale plays. The Fund's debt investments in Marine Transportation Companies, which declined in value during fiscal 2011 due to challenging market conditions, caused the Fund to underperform the energy high yield market.

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LETTER TO STOCKHOLDERS**

Energy Market Overview

As we mentioned last year, the biggest story in the domestic energy business is the development of unconventional reserves, which is an industry term that refers to oil and natural gas reserves produced using advanced drilling and completion techniques. This trend has continued in 2011 and the development of unconventional reserves could be one of the biggest stories as it relates to the long-term impact on the domestic economy. Examples of unconventional reserves include the Barnett Shale, Haynesville Shale, Woodford Shale, Fayetteville Shale, Eagle Ford Shale, Marcellus Shale, Bakken Shale, as well as developing plays such as the Utica Shale, Niobrara Shale and Tuscaloosa Marine Shale.

The rapid development of unconventional reserves has fundamentally changed the domestic energy industry. Natural gas production, which declined from 2000 to 2005, has increased by 24% since 2006. In 2011, natural gas production is expected to increase by 6.5% compared to 2010 levels, which is the largest annual increase since the mid-1980s. Domestic crude oil production grew in each of the last three years; 2009 was the first year-over-year increase in production since the early 1990s. Crude oil production has increased by 14% since 2008 and is projected to grow by 10% to 15% over the next five to ten years.

Significant amounts of capital are being spent by energy companies to develop these reserves. In fact, major oil companies, foreign oil companies and national oil companies spent approximately \$50 billion in 2011 (after spending over \$60 billion in 2010) to acquire unconventional reserves, either directly or through joint ventures. After shunning domestic opportunities in favor of international projects for many years, major oil companies are now devoting significant capital and resources to domestic unconventional resources. We believe their technical expertise, capital discipline and financial resources will ensure these reserves are developed in a prudent fashion.

This trend is very important for MLPs and Midstream Companies, as development of these new reserves will require substantial amounts of new midstream infrastructure. We agree with industry estimates that \$250 billion will need to be spent building midstream assets over the next two decades to facilitate the development of unconventional reserves. We believe this will provide attractive investment opportunities for the midstream sector.

The price of crude oil was volatile during the year but ended the year higher as a result of demand growth, a weaker U.S. dollar and reduced production from Libya. Prices peaked in the spring on concerns of social unrest in the Middle East / North Africa and declined significantly during the summer on concerns about the U.S. economy and European debt crisis. Of note, 2011 was the first time people had to distinguish between two key benchmarks for oil: West Texas Intermediate (WTI), which is the domestic benchmark, and Brent, which is the European benchmark. Historically, the price of WTI has been very similar to the price of Brent. The price relationship broke down during 2011, with WTI trading at a substantial discount to Brent for most of the year. The price differential peaked in October 2011, with Brent trading at a premium of \$28/barrel, but has tightened substantially over the past few months. The differential was largely a function of increased North American supply of oil and insufficient oil pipeline takeaway capacity at Cushing, Oklahoma (the delivery point for WTI), as well as reduced production from Libya as a result of its civil war. MLPs with crude oil gathering and transportation assets have benefited from this price differential and certain MLPs have announced pipeline projects intended to alleviate the supply bottleneck at Cushing. We expect crude oil prices to trade in a range of \$90 to \$100/barrel over the next few years and expect the price differential between WTI and Brent to moderate over that timeframe.

Natural gas prices declined steadily during 2011, as production growth was much higher than demand growth. Current prices are well below \$3/mcf and we believe that the market will be oversupplied for years to come. While lower gas

prices are a negative for conventional dry gas wells, many of the gas wells being drilled currently are focused on areas with wet gas . Wet gas is natural gas that has a high natural gas liquids or NGL content. Because NGL prices are more closely correlated with crude oil prices, these wet gas wells are economic even at very low natural gas prices due to the high price of the associated NGLs.

The focus on wet gas, as well as the price differential between natural gas and NGLs, has created significant opportunities for MLPs to build additional natural gas processing and NGL fractionation assets. In addition, as a

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**KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.
LETTER TO STOCKHOLDERS**

result of the expectation of continued growth in natural gas supply, certain energy companies are actively looking to develop LNG export facilities in the U.S. with the plan of selling natural gas to international markets where prices are much higher.

2012 Outlook

In our Annual Letter last year, we accurately predicted MLP distribution growth of 5% to 6% and low double-digit total returns. As we consider the outlook for fiscal 2012, we remain very optimistic for the MLP sector. We expect that distribution growth in the 6% to 7% range in 2012 will lead to low double-digit total returns in the MLP sector. We believe the operating environment will continue to improve, as development of the unconventional resources has created tremendous growth opportunities for the sector and will translate into increased distribution growth rates during fiscal 2012. Further, we believe the sector has good visibility for distribution growth for many years as a result of the long-term investments required by the shale plays. That outlook, coupled with historically low interest rates and a dearth of attractive yield alternatives for investors, reinforces our belief that MLPs remain an attractive investment. For similar reasons, we believe the operating environment is very favorable for Midstream Companies. Investment opportunities associated with the unconventional reserves should generate strong returns and result in dividend increases that could exceed the MLP sector's growth rate.

We expect the MLP sector will continue to increase in size during fiscal 2012. The total market capitalization of the energy MLP market has increased from approximately \$45 billion in 2004 to \$265 billion at December 31, 2011. With the increase in size, the MLP market has increased its liquidity and investment opportunities, as well as garnered more mainstream media coverage and gained better investor understanding. As a result, MLP success stories are well documented and we believe that more energy companies will come to understand the strategic merits of having an affiliated MLP own its midstream assets. We believe this trend bodes well for Midstream Companies. We will continue to invest in companies that have attractive midstream assets that we believe are not being valued appropriately by the market.

We look forward to continuing to execute on our business plan of achieving high after-tax total returns by investing in MLPs and Midstream Companies. We invite you to visit our website at kaynefunds.com for the latest updates.

Sincerely,

Kevin S. McCarthy
Chairman of the Board of Directors,
President and Chief Executive Officer

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**KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.
PORTFOLIO SUMMARY
(UNAUDITED)**

Portfolio Investments by Category

(1) Commencement of operations was November 24, 2010.

Top 10 Holdings by Issuer

Holding	Sector⁽¹⁾	Percent of Total Investments⁽²⁾ as of November 30, 2011
1. The Williams Companies, Inc.	Midstream Company	9.3%
2. Kinder Morgan Management, LLC	Midstream MLP	8.6
3. Kinder Morgan, Inc.	Midstream Company	6.3
4. El Paso Corporation	Midstream Company	4.4
5. Buckeye Partners, L.P.	Midstream MLP	4.2
6. Enbridge Energy Management, L.L.C.	Midstream MLP	4.0
7. ONEOK, Inc.	Midstream Company	3.4
8. Targa Resources Corp.	Midstream Company	3.3
9. Teekay Offshore Partners	Midstream Company	2.9
10. OGE Energy Corp.	Other Energy	2.7

(1) See Glossary for definitions.

(2) Includes cash and repurchase agreement (if any).

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**KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.
MANAGEMENT DISCUSSION
(UNAUDITED)**

Fund Overview

Kayne Anderson Midstream/Energy Fund, Inc. is a non-diversified, closed-end fund. We commenced operations on November 24, 2010. Our shares of common stock are listed on the New York Stock Exchange under the symbol KMF.

Our investment objective is to provide a high level of total return with an emphasis on making quarterly cash distributions to our stockholders. We seek to achieve that investment objective by investing at least 80% of our total assets in the securities of companies in the Midstream/Energy Sector, consisting of (a) Midstream MLPs, (b) Midstream Companies, (c) Other MLPs and (d) Other Energy Companies. We anticipate that the majority of our investments will consist of investments in Midstream MLPs and Midstream Companies. Please see the Glossary on page 38 for description of these investment categories.

As of November 30, 2011, we had total assets of \$768.5 million, net assets applicable to our common stock of \$562.0 million (net assets per share of \$25.94), and 21.7 million shares of common stock outstanding. As of November 30, 2011, we held \$634.7 million in equity investments and \$120.3 million in debt investments.

Results of Operations For the Three Months Ended November 30, 2011

Investment Income. Investment income totaled \$5.7 million and consisted primarily of net dividends and distributions and interest income on our investments. Interest income was \$2.6 million, and we received \$6.7 million of cash dividends and distributions, of which \$3.6 million was treated as return of capital during the quarter. During the quarter, we received \$1.9 million of paid-in-kind dividends, which are not included in investment income, but are reflected as an unrealized gain.

Operating Expenses. Operating expenses totaled \$4.5 million, including \$1.9 million of net investment management fees after fee waiver, \$1.7 million of interest expense (including non-cash amortization of debt issuance costs of \$0.1 million), and \$0.4 million of other operating expenses. Management fees are calculated based on the average total assets under management and the management fee waiver was \$0.4 million. Preferred stock distributions for the quarter were \$0.5 million.

Net Investment Income. Our net investment income totaled \$1.2 million.

Net Realized Losses. We had net realized losses of \$0.1 million.

Net Change in Unrealized Gains. We had a net change in unrealized gains of \$50.5 million. The net change consisted of \$50.7 million of unrealized gains from investments and \$0.2 million of net unrealized losses from option activity.

Net Increase in Net Assets Resulting from Operations. We had an increase in net assets resulting from operations of \$51.6 million. This increase was composed of net investment income of \$1.2 million; net realized losses of \$0.1 million; and net change in unrealized gains of \$50.5 million, as noted above.

Results of Operations For the Fiscal Year Ended November 30, 2011

Investment Income. Investment income totaled \$21.6 million and consisted primarily of net dividends and distributions and interest income on our investments. Interest income was \$9.6 million, and we received \$25.1 million of cash dividends and distributions, of which \$13.1 million was treated as return of capital during the year. During the year, we received \$6.0 million of paid-in-kind dividends, which is not included in investment income but is reflected as an unrealized gain.

Operating Expenses. Operating expenses totaled \$15.6 million, including \$7.1 million of net investment management fees after fee waiver, \$5.3 million of interest expense (including non-cash amortization of debt issuance costs of \$0.4 million), and \$1.7 million of other operating expenses. Management fees are calculated based

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**KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.
MANAGEMENT DISCUSSION
(UNAUDITED)**

on the average total assets under management and the management fee waiver was \$1.7 million. Preferred stock distributions for the year were \$1.5 million (including non-cash amortization of \$0.1 million).

Net Investment Income. Our net investment income totaled \$6.1 million.

Net Realized Gains. We had net realized gains from our investments of \$29.0 million.

Net Change in Unrealized Gains. We had a net change in unrealized gains of \$37.0 million. The net change consisted of \$37.3 million of unrealized gains from investments and \$0.3 million of net unrealized losses from option activity.

Net Increase in Net Assets Resulting from Operations. We had an increase in net assets resulting from operations of \$72.1 million. This increase was composed of net investment income of \$6.1 million; net realized gains of \$29.0 million; and net change in unrealized gains of \$37.0 million, as noted above.

Distribution to Common Stockholders

We pay quarterly distributions to our common stockholders, funded in part by net distributable income (NDI) generated from our portfolio investments. NDI is the amount of income received by us from our portfolio investments less operating expenses, subject to certain adjustments as described below. NDI is not a financial measure under the accounting principles generally accepted in the United States of America (GAAP). Refer to the Reconciliation of NDI to GAAP section below for a reconciliation of this measure to our results reported under GAAP.

Income from portfolio investments includes (a) cash dividends and distributions, (b) paid-in-kind dividends received (i.e., stock dividends), (c) interest income from debt securities and commitment fees from private investments in public equity (PIPE investments) and (d) net premiums received from the sale of covered calls.

Operating expenses include (a) investment management fees paid to our investment adviser, (b) other expenses (mostly attributable to fees paid to other service providers) and (c) interest expense and preferred stock distributions.

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KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.
MANAGEMENT DISCUSSION
(UNAUDITED)

Net Distributable Income (NDI)
(amounts in millions, except for per share amounts)

	Three Months Ended November 30, 2011	Fiscal Year Ended November 30, 2011
Distributions and Other Income from Investments		
Dividends and Distributions	\$ 6.7	\$ 25.1
Paid-In-Kind Dividends and Distributions	1.9	6.0
Interest and Other Income ⁽¹⁾	2.7	10.1
Net Premiums Received from Call Options Written	2.5	9.0
Total Distributions and Other Income from Investments	13.8	50.2
Expenses		
Investment Management Fee, net of Fee Waiver	(1.9)	(7.1)
Other Expenses	(0.4)	(1.7)
Total Management Fee and Other Expenses	(2.3)	(8.8)
Interest Expense	(1.6)	(4.9)
Preferred Stock Distributions	(0.5)	(1.4)
Net Distributable Income (NDI)	\$ 9.4	\$ 35.1
Weighted Shares Outstanding	21.6	21.3
NDI per Weighted Share Outstanding	\$ 0.44	\$ 1.65
Distributions paid per Common Share⁽²⁾	\$ 0.4175	\$ 1.6125

(1) Includes \$0.1 million and \$0.7 million of commitment fees from PIPE investments, which are recorded as reductions to the cost of the investments.

(2) The distribution of \$0.4175 per share for the fourth quarter of fiscal 2011 was paid to common stockholders on January 13, 2012. Distributions for fiscal 2011 include the distributions paid in March 2011, July 2011, October 2011 and the distribution paid in January 2012.

Payment of future distributions is subject to Board of Directors approval, as well as meeting the covenants of our debt agreements and terms of our preferred stock. In determining our quarterly distribution to common stockholders, our Board of Directors considers a number of factors that include, but are not limited to:

NDI generated in the current quarter;

Expected NDI over the next twelve months, and

Realized and unrealized gains generated by the portfolio.

On December 15, 2011, we declared our quarterly distribution of \$0.4175 per common share for the fiscal fourth quarter for a total of \$9.0 million. The distribution was paid on January 13, 2012 to common stockholders of record on December 30, 2011.

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**KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.
MANAGEMENT DISCUSSION
(UNAUDITED)**

Reconciliation of NDI to GAAP

The difference between distributions and other income from investments in the NDI calculation and total investment income as reported in our Statement of Operations is reconciled as follows:

GAAP recognizes that a significant portion of the cash distributions received from MLPs is characterized as a return of capital and therefore excluded from investment income, whereas the NDI calculation includes the return of capital portion of such distributions.

NDI includes the value of dividends paid-in-kind, whereas such amounts are not included as investment income for GAAP purposes, but rather are recorded as unrealized gains upon receipt.

NDI includes commitment fees from PIPE investments, whereas such amounts are generally not included in investment income for GAAP purposes, but rather are recorded as a reduction to the cost of the investment.

Many of our investments in debt securities were purchased at a discount or premium to the par value of such security. When making such investments, we consider the security's yield to maturity, which factors in the impact of such discount (or premium). Interest income reported under GAAP includes the non-cash accretion of the discount (or amortization of the premium) based on the effective interest method. When we calculate interest income for purposes of determining NDI, in order to better reflect the yield to maturity, the accretion of the discount (or amortization of the premium) is calculated on a straight-line basis to the earlier of the expected call date or the maturity date of the debt security.

We may sell covered call option contracts to generate income or to reduce our ownership of certain securities that we hold. In some cases, we are able to repurchase these call option contracts at a price less than the fee that we received, thereby generating a profit. The amount we received from selling call options, less the amount that we pay to repurchase such call option contracts, is included in NDI. For GAAP purposes, premiums received from call option contracts sold is not included in investment income. See Note 2 Significant Accounting Policies for a full discussion of the GAAP treatment of option contracts.

The treatment of expenses included in NDI also differs from what is reported in the Statement of Operations as follows:

The non-cash amortization or write-offs of capitalized debt issuance costs and preferred stock offering costs related to our financings is included in interest expense and distributions on mandatory redeemable preferred stock for GAAP purposes, but is excluded from our calculation of NDI.

Liquidity and Capital Resources

Total leverage outstanding at November 30, 2011 of \$195.0 million was comprised of \$115.0 million of senior unsecured notes (the Senior Notes), \$35.0 million of mandatory redeemable preferred stock and \$45.0 million outstanding under our senior unsecured revolving credit facility (the Credit Facility). Total leverage represented 25% of total assets at November 30, 2011. As of January 19, 2011, we had \$65 million borrowed under our Credit Facility, and we had \$2.8 million of cash.

The Credit Facility has a \$100.0 million commitment maturing on January 20, 2014. The interest rate may vary between LIBOR plus 1.75% to LIBOR plus 2.25%, depending on our asset coverage ratios. Outstanding loan balances will accrue interest daily at a rate equal to one-month LIBOR plus 1.75%, based on current asset coverage ratios. We will pay a commitment fee of 0.35% per annum on any unused amounts of the Credit Facility. A full copy of the Credit Facility is available on our website www.kaynefunds.com.

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**KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.
MANAGEMENT DISCUSSION
(UNAUDITED)**

At November 30, 2011, our asset coverage ratios under the Investment Company Act of 1940, as amended (the 1940 Act), were 473% and 388% for debt and total leverage (debt plus preferred stock), respectively. We currently target an asset coverage ratio with respect to our debt of 400%, but at times may be above or below our target depending on market conditions.

At November 30, 2011, we had \$115.0 million of Senior Notes outstanding, which mature in 2016 and 2018. As of the same date, we had \$35.0 million of mandatory redeemable preferred stock, which is subject to mandatory redemption in 2018.

Our leverage, at November 30, 2011, consisted of both fixed rate (77%) and floating rate (23%) obligations. At such date, the weighted average interest rate on our leverage was 4.07%.

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KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.
SCHEDULE OF INVESTMENTS
NOVEMBER 30, 2011

(amounts in 000 s, except number of option contracts)

Description	No. of Shares/Units	Value
Long-Term Investments 134.3%		
Equity Investments⁽¹⁾ 112.9%		
United States 112.1%		
Midstream Company⁽²⁾ 50.8%		
Capital Product Partners L.P. ⁽³⁾	1,354	\$ 8,395
CenterPoint Energy, Inc.	156	3,110
DHT Holdings, Inc.	1,086	891
El Paso Corporation	1,331	33,298
Golar LNG Partners LP ⁽³⁾	610	17,767
Kinder Morgan, Inc.	1,620	47,775
Knightsbridge Tankers Limited	252	3,926
National Fuel Gas Company	171	9,919
NiSource Inc.	25	573
ONEOK, Inc. ⁽⁴⁾	312	25,983
Spectra Energy Corp.	352	10,347
Targa Resources Corp. ⁽⁴⁾	721	24,924
Teekay Offshore Partners L.P. ⁽³⁾⁽⁴⁾	599	16,719
Teekay Offshore Partners L.P. Unregistered ⁽³⁾⁽⁵⁾	209	5,428
Teekay Tankers Ltd.	1,458	5,540
The Williams Companies, Inc. ⁽⁴⁾	2,188	70,614
		285,209
Midstream MLP⁽²⁾⁽⁶⁾⁽⁷⁾ 50.8%		
Buckeye Partners, L.P.	248	15,844
Buckeye Partners, L.P. Class B Unit ⁽⁵⁾⁽⁸⁾	283	16,213
Crestwood Midstream Partners LP	116	3,465
Crestwood Midstream Partners LP Class C Unit ⁽⁵⁾⁽⁸⁾	172	4,605
DCP Midstream Partners, LP ⁽⁴⁾	165	7,075
Enbridge Energy Management, L.L.C. ⁽⁸⁾⁽⁹⁾	955	30,439
Energy Transfer Equity, L.P. ⁽⁴⁾	120	4,222
Energy Transfer Partners, L.P.	416	18,214
Enterprise Products Partners L.P. ⁽⁴⁾	154	6,983
Exterran Partners, L.P.	387	8,391
Global Partners LP	351	7,264
Inergy, L.P.	237	5,735
Kinder Morgan Management, LLC ⁽⁸⁾⁽⁹⁾	925	65,453
Oiltanking Partners, L.P. ⁽⁴⁾	125	3,606
PAA Natural Gas Storage, L.P.	806	14,093
Penn Virginia Resource Partners, L.P.	383	9,326

Plains All American GP LLC Unregistered ⁽⁹⁾⁽¹⁰⁾	7	11,817
Plains All American Pipeline, L.P. ⁽¹⁰⁾	198	12,839
Regency Energy Partners L.P.	766	17,619
Targa Resources Partners L.P. ⁽⁴⁾	125	4,702
TC PipeLines, LP	95	4,508
Teekay LNG Partners L.P.	19	596
Tesoro Logistics LP	188	5,122
Williams Partners L.P. ⁽⁴⁾	122	7,059
		285,190

See accompanying notes to financial statements.

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KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.
SCHEDULE OF INVESTMENTS
NOVEMBER 30, 2011
(amounts in 000 s, except number of option contracts)

Description	No. of Shares/Units	Value
Other Energy 6.8%		
Chesapeake Granite Wash Trust ⁽¹¹⁾⁽¹²⁾	9	\$ 177
Enduro Royalty Trust	2	43
OGE Energy Corp.	388	20,538
PPL Corporation 9.50% Preferred Shares ⁽⁴³⁾	155	8,844
SandRidge Permian Trust ⁽¹¹⁾	278	5,308
VOC Energy Trust	160	3,322
		38,232
Other 3.4%		
Navios Maritime Partners L.P. ⁽³⁾	538	7,342
Seaspan Corporation 9.50% Preferred Shares	455	12,035
		19,377
Other MLP⁽⁷⁾ 0.3%		
Alliance Holdings GP, L.P. ⁽⁴⁾	12	623
BreitBurn Energy Partners L.P. ⁽⁴⁾	64	1,190
		1,813
Total United States (Cost \$587,162)		629,821
Canada 0.8%		
Midstream Company⁽²⁾ 0.8%		
Provident Energy Ltd. (Cost \$4,316)	512	4,849
Total Equity Investments (Cost \$591,478)		634,670

Interest Rate	Maturity Date	Principal Amount
------------------	------------------	---------------------

Debt Instruments 21.4%
United States 18.0%
Upstream 9.5%

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Antero Resources LLC	9.375%	12/1/17	\$ 8,328	8,828
Antero Resources LLC	7.250	8/1/19	1,000	1,005
Carrizo Oil & Gas, Inc.	8.625	10/15/18	14,835	14,798
Chaparral Energy, Inc.	8.875	2/1/17	4,000	4,100
Chaparral Energy, Inc.	9.875	10/1/20	1,500	1,613
Chaparral Energy, Inc.	8.250	9/1/21	500	495
Clayton Williams Energy, Inc.	7.750	4/1/19	10,496	9,709
Comstock Resources, Inc.	7.750	4/1/19	5,000	4,750
Kodiak Oil & Gas Corp.	8.125	12/1/19	750	762
Petroleum Development Corporation	12.000	2/15/18	6,750	7,256
				53,316
Coal 3.7%				
Foresight Energy LLC	9.625	8/15/17	15,233	15,233
Patriot Coal Corporation ⁽¹⁴⁾	3.250	5/31/13	4,000	3,655
Patriot Coal Corporation	8.250	4/30/18	2,300	2,196
				21,084
Midstream⁽²⁾ 3.4%				
Crestwood Holdings Partners, LLC	(15)	10/1/16	6,168	6,261
Navios Maritime Acquisition Corporation	8.625	11/1/17	7,945	6,078
Teekay Corporation	8.500	1/15/20	7,325	6,977
				19,316

See accompanying notes to financial statements.

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KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.
SCHEDULE OF INVESTMENTS
NOVEMBER 30, 2011
(amounts in 000 s, except number of option contracts)

Description	Interest Rate	Maturity Date	Principal Amount	Value
Other 1.4%				
Navios Maritime Holdings Inc.	8.125%	2/15/19	\$ 10,000	\$ 7,750
Total United States (Cost \$107,860)				101,466
Canada 3.4%				
Upstream 3.4%				
Paramount Resources Ltd.	8.250	12/13/17	(16)	7,302
Southern Pacific Resource Corp.	(17)	1/7/16	11,518	11,576
Total Canada (Cost \$18,583)				18,878
Total Debt Investments (Cost \$126,443)				120,344
Total Long-Term Investments (Cost \$717,921)				755,014

**No. of
Contracts**

Liabilities**Call Option Contracts Written⁽¹⁸⁾****Midstream Company**

ONEOK, Inc., call options expiring 12/16/11 @ \$80.00	(900)	(252)
ONEOK, Inc., call options expiring 12/16/11 @ \$82.50	(400)	(60)
Targa Resources Corp., call options expiring 12/16/11 @ \$35.00	(250)	(24)
Teekay Offshore Partners L.P., call options expiring 12/16/11 @ \$25.00	(750)	(225)
The Williams Companies, Inc., call options expiring 12/16/11 @ \$32.00	(650)	(71)
		(632)

Midstream MLP

DCP Midstream Partners, LP., call options expiring 12/16/11 @ \$45.00	(600)	(18)
Energy Transfer Equity, L.P., call options expiring 12/16/11 @ \$40.00	(500)	(5)
Enterprise Products Partners L.P., call options expiring 12/16/11 @ \$45.00	(400)	(46)
Oiltank Partners, L.P., call options expiring 12/16/11 @ \$25.00	(500)	(185)
Targa Resources Partners L.P., call options expiring 12/16/11 @ \$35.00	(500)	(111)

Williams Partners L.P., call options expiring 12/16/11 @ \$60.00	(1,000)	(40)
		(405)
Other MLP		
Alliance Holdings GP, L.P., call options expiring 12/16/11 @\$50.00	(100)	(14)
BreitBurn Energy Partners L.P., call options expiring 12/16/11 @ \$17.50	(200)	(10)
		(24)
Total Call Option Contracts Written (Premiums Received \$780)		(1,061)
Revolving Credit Facility		(45,000)
Senior Unsecured Notes		(115,000)
Mandatory Redeemable Preferred Stock at Liquidation Value		(35,000)
Other Liabilities		(10,351)
Total Liabilities		(206,412)
Other Assets		13,442
Total Liabilities in Excess of Other Assets		(192,970)
Net Assets Applicable to Common Stockholders		\$ 562,044

See accompanying notes to financial statements.

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KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.
SCHEDULE OF INVESTMENTS
NOVEMBER 30, 2011
(amounts in 000 s, except number of option contracts)

- (1) Unless otherwise noted, equity investments are common units/common shares.
- (2) Securities are categorized as Midstream if they are Midstream Companies or Midstream MLPs as defined in the Glossary.
- (3) This company is structured like an MLP but is not treated as a publicly-traded partnership for RIC qualification purposes.
- (4) Security or a portion thereof is segregated as collateral on option contracts written.
- (5) Fair valued securities, restricted from public sale. See Notes 2, 3 and 7 in Notes to Financial Statements.
- (6) Includes limited liability companies.
- (7) Unless otherwise noted, securities are treated as a publicly-traded partnership for regulated investment company (RIC) qualification purposes. To qualify as a RIC for tax purposes, the Fund may directly invest up to 25% of its total assets in equity and debt securities of entities treated as publicly traded partnerships. The Fund had less than 25% of its total assets invested in publicly traded partnerships at November 30, 2011. It is the Fund s intention to be treated as a RIC for tax purposes.
- (8) Distributions are paid-in-kind.
- (9) Security is not treated as a publicly-traded partnership for RIC qualification purposes.
- (10) The Fund believes that it is an affiliate of Plains All American GP LLC and Plains All American Pipeline, L.P. See Note 6 Agreements and Affiliations.
- (11) Security is treated as a publicly-traded partnership for RIC qualification purposes.
- (12) Security is not currently paying cash distributions but is expected to pay cash distributions within the next 12 months.
- (13) Security is mandatorily convertible to common shares of PPL Corporation and consists of a purchase contract for a beneficial ownership interest in PPL Capital Funding, Inc. s 4.625% junior subordinated notes and a quarterly payment of 4.875% per annum of the \$50 per share stated amount of the security.
- (14) Security is convertible into common shares of the issuer.
- (15) Floating rate first lien senior secured term loan. Security pays interest at a rate of LIBOR + 850 basis points with a 2% LIBOR floor (10.50% as of November 30, 2011).
- (16) Principal amount is 7,250 Canadian dollars.

- (17) Floating rate second lien senior secured term loan. Security pays interest at a base rate of 3.25% + 750 basis points (10.75% as of November 30, 2011).
- (18) Security is non-income producing.

See accompanying notes to financial statements.

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KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.
STATEMENT OF ASSETS AND LIABILITIES
NOVEMBER 30, 2011

(amounts in 000 s, except share and per share amounts)

ASSETS

Investments, at fair value:	
Non-affiliated (Cost \$695,943)	\$ 730,358
Affiliated (Cost \$21,978)	24,656
Total investments (Cost \$717,921)	755,014
Cash	3,530
Deposits with brokers	250
Receivable for securities sold	4,315
Interest, dividends and distributions receivable (Cost \$3,177)	3,179
Deferred debt issuance and preferred stock offering costs and other assets	2,168
Total Assets	768,456

LIABILITIES

Revolving credit facility	45,000
Payable for securities purchased	7,407
Investment management fee payable	656
Call option contracts written (Premiums received \$780)	1,061
Accrued directors' fees and expenses	45
Accrued expenses and other liabilities	2,243
Senior unsecured notes	115,000
Mandatory redeemable preferred stock, \$25.00 liquidation value per share (1,400,000 shares issued and outstanding)	35,000
Total Liabilities	206,412

NET ASSETS APPLICABLE TO COMMON STOCKHOLDERS \$ 562,044

NET ASSETS APPLICABLE TO COMMON STOCKHOLDERS CONSIST OF

Common stock, \$0.001 par value (21,663,977 shares issued and outstanding and 198,600,000 shares authorized)	\$ 22
Paid-in capital	515,648
Accumulated net investment income less distributions not treated as tax return of capital	3,319
Accumulated net realized gains	6,242
Net unrealized gains	36,813

NET ASSETS APPLICABLE TO COMMON STOCKHOLDERS \$ 562,044

NET ASSET VALUE PER COMMON SHARE \$ 25.94

See accompanying notes to financial statements.

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KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.
STATEMENT OF OPERATIONS
FOR THE FISCAL YEAR ENDED NOVEMBER 30, 2011
(amounts in 000 s)

INVESTMENT INCOME**Income**

Dividends and distributions:

Non-affiliated investments	\$ 24,227
Affiliated investments	868
Total dividends and distributions (after foreign taxes withheld of \$172)	25,095
Return of capital	(13,051)
Net dividends and distributions	12,044
Interest and other income	9,595
Total investment income	21,639

Expenses

Investment management fees, before investment management fee waiver	8,801
Professional fees	431
Administration fees	403
Insurance	178
Directors' fees and expenses	176
Reports to stockholders	125
Custodian fees	105
Other expenses	292
Total expenses before investment management fee waiver, interest expense and preferred distributions	10,511
Investment management fee waiver	(1,729)
Interest expense and amortization of debt issuance costs	5,329
Distributions on mandatory redeemable preferred stock and amortization of offering costs	1,452
Total expenses	15,563
Net Investment Income	6,076

REALIZED AND UNREALIZED GAINS (LOSSES)**Net Realized Gains (Losses)**

Investments non-affiliated	26,142
Investments affiliated	(8)
Foreign currency transactions	(657)
Options	3,898
Payments on interest rate swap contracts	(337)
Net Realized Gains	29,038

Net Change in Unrealized Gains (Losses)		
Investments	non-affiliated	34,636
Investments	affiliated	2,678
Options		(282)
Net Change in Unrealized Gains		37,032
Net Realized and Unrealized Gains		66,070
NET INCREASE IN NET ASSETS APPLICABLE TO COMMON STOCKHOLDERS RESULTING FROM OPERATIONS		\$ 72,146

See accompanying notes to financial statements.

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KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.
STATEMENT OF CHANGES IN NET ASSETS APPLICABLE TO COMMON STOCKHOLDERS
(amounts in 000 s, except share amounts)

	For the Fiscal Year Ended November 30, 2011	For the Period November 24, 2010⁽¹⁾ through November 30, 2010
OPERATIONS		
Net investment income (loss) ⁽²⁾	\$ 6,076	\$ (273)
Net realized gains	29,038	
Net change in unrealized gains (losses)	37,032	(219)
Net Increase (Decrease) in Net Assets Resulting from Operations	72,146	(492)
DIVIDENDS TO COMMON STOCKHOLDERS⁽³⁾		
Dividends	(25,608)	
CAPITAL STOCK TRANSACTIONS		
Proceeds from initial public offering of 19,000,000 shares of common stock		475,000
Proceeds from issuance of 2,300,000 shares of common stock in connection with exercise of overallotment option	57,500	
Underwriting discounts and offering expenses associated with the issuance of common stock	(2,703)	(22,325)
Issuance of 359,977 shares of common stock from reinvestment of distributions	8,426	
Net Increase in Net Assets Applicable to Common Stockholders from Capital Stock Transactions	63,223	452,675
Total Increase in Net Assets Applicable to Common Stockholders	109,761	452,183
NET ASSETS APPLICABLE TO COMMON STOCKHOLDERS		
Beginning of year	452,283	100
End of year	\$ 562,044	\$ 452,283

(1) Commencement of operations.

(2) Distributions on the Fund's mandatory redeemable preferred stock are treated as an operating expense under GAAP and are included in the calculation of net investment income. See Note 2 – Significant Accounting Policies. Distributions in the amount of \$1,397 paid to mandatory redeemable preferred stockholders for the fiscal year ended November 30, 2011 were characterized as dividend income. This characterization is based on the Fund's earnings and profits.

- (3) Distributions paid to common stockholders for the fiscal year ended November 30, 2011 are characterized as dividend income for such holders. This characterization is based on the Fund's earnings and profits.

See accompanying notes to financial statements.

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KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.
STATEMENT OF CASH FLOWS
FOR THE FISCAL YEAR ENDED NOVEMBER 30, 2011
(amounts in 000 s)

CASH FLOWS FROM OPERATING ACTIVITIES

Net increase in net assets resulting from operations	\$ 72,146
Adjustments to reconcile net increase in net assets resulting from operations to net cash used in operating activities:	
Return of capital distributions	13,051
Net realized gains (excluding foreign currency transactions)	(29,695)
Net unrealized gains (excluding impact of foreign currency translations)	(37,032)
Amortization of bond premiums, net	325
Purchase of long-term investments	(1,128,433)
Proceeds from sale of long-term investments	483,501
Proceeds from sale of short-term investments, net	431,942
Increase in deposits with brokers	(250)
Increase in receivable for securities sold	(4,315)
Increase in interest, dividends and distributions receivable	(2,663)
Increase in other assets, net	(102)
Amortization of deferred debt issuance costs	432
Amortization of mandatory redeemable preferred stock offering costs	55
Decrease in payable for securities purchased	(27,989)
Increase in investment management fee payable	569
Increase in call option contracts written, net	780
Increase in accrued directors' fees and expenses	42
Increase in accrued expenses and other liabilities	1,104
Net Cash Used in Operating Activities	(226,532)

CASH FLOWS FROM FINANCING ACTIVITIES

Proceeds from revolving credit facility	45,000
Proceeds from offering of mandatory redeemable preferred stock	35,000
Proceeds from issuance of senior unsecured notes	115,000
Proceeds from issuance of common stock	57,500
Costs associated with issuance of the revolving credit facility	(1,079)
Costs associated with issuance of mandatory redeemable preferred stock	(518)
Costs associated with issuance of senior unsecured notes	(956)
Underwriting discount and offering expenses associated with the issuance of common stock	(2,703)
Cash distributions paid to common stockholders	(17,182)
Net Cash Provided by Financing Activities	230,062

NET INCREASE IN CASH 3,530

CASH BEGINNING OF YEAR

CASH END OF YEAR \$ 3,530

Supplemental disclosure of cash flow information:

Non-cash financing activities not included herein consist of reinvestment of distributions of \$8,426 pursuant to the Fund's dividend reinvestment plan.

During the fiscal year ended November 30, 2011, interest paid was \$3,638 and there were no income taxes paid.

During the fiscal year ended November 30, 2011, the Fund received \$5,999 of paid-in-kind dividends. See Note 2 Significant Accounting Policies.

See accompanying notes to financial statements.

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KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.
FINANCIAL HIGHLIGHTS
(amounts in 000 s, except share and per share amounts)

	For the Fiscal Year Ended November 30, 2011	For the Period November 24, 2010⁽¹⁾ Through November 30, 2010
Per Share of Common Stock⁽²⁾		
Net asset value, beginning of period	\$ 23.80	\$ 23.83 ⁽³⁾
Net investment income (loss) ⁽⁴⁾	0.29	(0.02)
Net realized and unrealized gains (losses)	3.12	(0.01)
 Total income (loss) from operations	 3.41	 (0.03)
 Common dividends ⁽⁵⁾	 (1.20)	
Effect of shares issued in reinvestment of dividends	(0.04)	
Effect of issuance of common stock	(0.03)	
 Net asset value, end of period	 \$ 25.94	 \$ 23.80
 Per share market value, end of period	 \$ 22.46	 \$ 25.00
 Total investment return based on common stock market value ⁽⁶⁾	 (5.5)%	 0.0%
Supplemental Data and Ratios⁽⁷⁾		
Net assets applicable to common stockholders, end of period	\$ 562,044	\$ 452,283
Ratio of expenses to average net assets		
Management fees ⁽⁸⁾	1.6%	1.3%
Other expenses	0.3	0.3 ⁽⁹⁾
 Subtotal	 1.9	 1.6
Interest expense and distributions on mandatory redeemable preferred stock	1.3	
Management fee waiver	(0.3)	(0.3)
 Total expenses	 2.9%	 1.3%
 Ratio of net investment income (loss) to average net assets ⁽⁴⁾	 1.1%	 (1.3)% ⁽⁹⁾
Net increase (decrease) in net assets applicable to common stockholders resulting from operations to average net assets ⁽¹⁰⁾	13.4%	(0.1)%
Portfolio turnover rate	74.1%	0.0% ⁽¹⁰⁾
Average net assets	\$ 537,044	\$ 452,775
Senior unsecured notes outstanding, end of period	115,000	
Revolving credit facility outstanding, end of period	45,000	

Mandatory redeemable preferred stock, end of period	35,000	
Average shares of common stock outstanding	21,273,512	19,004,000
Asset coverage of total debt ⁽¹¹⁾	473.2%	
Asset coverage of total leverage (debt and preferred stock) ⁽¹²⁾	388.2%	
Average amount of borrowings per share of common stock during the period ⁽²⁾	\$ 6.50	

See accompanying notes to financial statements.

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**KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.
FINANCIAL HIGHLIGHTS**

(amounts in 000 s, except share and per share amounts)

- (1) Commencement of operations.
- (2) Based on average shares of common stock outstanding.
- (3) Initial public offering price of \$25.00 per share less underwriting discounts of \$1.125 per share and offering costs of \$0.05 per share.
- (4) Distributions on the Fund's mandatory redeemable preferred stock are treated as an operating expense under GAAP and are included in the calculation of net investment income. See Note 2 Significant Accounting Policies.
- (5) Total distributions paid to common stockholders for the fiscal year ended November 30, 2011 are characterized as dividend income for such holders and are based on the Fund's earnings and profits.
- (6) Total investment return is calculated assuming a purchase of common stock at the market price on the first day and a sale at the current market price on the last day of the period reported. The calculation also assumes reinvestment of distributions at actual prices pursuant to the Fund's dividend reinvestment plan.
- (7) Unless otherwise noted, ratios are annualized.
- (8) Ratio reflects total management fee before waiver.
- (9) For purposes of annualizing other expenses of the Fund, professional fees and reports to stockholders are fees associated with the annual audit and annual report and therefore have not been annualized.
- (10) Not annualized.
- (11) Calculated pursuant to section 18(a)(1)(A) of the 1940 Act. Represents the value of total assets less all liabilities not represented by Senior Notes or any other senior securities representing indebtedness and mandatory redeemable preferred stock divided by the aggregate amount of Senior Notes and any other senior securities representing indebtedness. Under the 1940 Act, the Fund may not declare or make any distribution on its common stock nor can it incur additional indebtedness if at the time of such declaration or incurrence its asset coverage with respect to senior securities representing indebtedness would be less than 300%. For purposes of this test, the revolving credit facility is considered a senior security representing indebtedness.
- (12) Calculated pursuant to section 18(a)(2)(A) of the 1940 Act. Represents the value of total assets less all liabilities not represented by Senior Notes, any other senior securities representing indebtedness and preferred stock divided by the aggregate amount of Senior Notes, any other senior securities representing indebtedness and preferred stock. Under the 1940 Act, the Fund may not declare or make any distribution on its common stock nor can it issue additional preferred stock if at the time of such declaration or issuance, its asset coverage with respect to all senior securities would be less than 200%. In addition to the limitations under the 1940 Act, the Fund, under the terms of its mandatory redeemable preferred stock, would not be able to declare or pay any distributions on its common stock if such declaration would cause its asset coverage with respect to all senior

securities to be less than 225%. For purposes of these asset coverage ratio tests, the revolving credit facility is considered a senior security representing indebtedness.

See accompanying notes to financial statements.

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KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.
NOTES TO FINANCIAL STATEMENTS
(amount in 000 s, except number of option contracts, share and per share)

1. Organization

Kayne Anderson Midstream/Energy Fund, Inc. (the Fund) was organized as a Maryland corporation on August 26, 2010 and commenced operations on November 24, 2010. The Fund is registered under the Investment Company Act of 1940, as amended (the 1940 Act), as a non-diversified, closed-end investment management company. The Fund s shares of common stock are listed on the New York Stock Exchange, Inc. (NYSE) under the symbol KMF.

2. Significant Accounting Policies

A. Use of Estimates The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America (GAAP) requires management to make estimates and assumptions that affect the reported amount of assets and liabilities and disclosure of contingent assets and liabilities as of the date of the financial statements and the reported amounts of revenue and expenses during the period. Actual results could differ materially from those estimates.

B. Cash and Cash Equivalents Cash and cash equivalents include short-term, liquid investments with an original maturity of three months or less and include money market fund accounts.

C. Calculation of Net Asset Value The Fund determines its net asset value no less frequently than as of the last day of each month based on the most recent close of regular session trading on the NYSE, and makes its net asset value available for publication monthly. Currently, the Fund calculates its net asset value on a weekly basis. Net asset value is computed by dividing the value of the Fund s assets (including accrued interest and distributions), less all of its liabilities (including accrued expenses, distributions payable and any indebtedness) and the liquidated value of any outstanding preferred stock, by the total number of common shares outstanding.

D. Investment Valuation Readily marketable portfolio securities listed on any exchange other than the NASDAQ Stock Market, Inc. (NASDAQ) are valued, except as indicated below, at the last sale price on the business day as of which such value is being determined. If there has been no sale on such day, the securities are valued at the mean of the most recent bid and ask prices on such day. Securities admitted to trade on the NASDAQ are valued at the NASDAQ official closing price. Portfolio securities traded on more than one securities exchange are valued at the last sale price on the business day as of which such value is being determined at the close of the exchange representing the principal market for such securities.

Equity securities traded in the over-the-counter market, but excluding securities admitted to trading on the NASDAQ, are valued at the closing bid prices. Debt securities that are considered bonds are valued by using the mean of the bid and ask prices provided by an independent pricing service. For debt securities that are considered bank loans, the fair market value is determined by using the mean of the bid and ask prices provided by the agent or syndicate bank or principal market maker. When price quotes are not available, fair market value will be based on prices of comparable securities. In certain cases, the Fund may not be able to purchase or sell debt securities at the quoted prices due to the lack of liquidity for these securities.

Exchange-traded options and futures contracts are valued at the last sales price at the close of trading in the market where such contracts are principally traded or, if there was no sale on the applicable exchange on such day, at the mean between the quoted bid and ask price as of the close of such exchange.

The Fund holds securities that are privately issued or otherwise restricted as to resale. For these securities, as well as any other portfolio security held by the Fund for which reliable market quotations are not readily available, valuations are determined in a manner that most fairly reflects fair value of the security on the valuation date. Unless otherwise determined by the Board of Directors, the following valuation process is used for such securities:

Investment Team Valuation. The applicable investments are valued by senior professionals of KA Fund Advisors, LLC (KAFA or the Adviser) who are responsible for the portfolio investments. The

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investments will be valued quarterly, unless a new investment is made during the quarter, in which case such investment is valued at the end of the month in which the investment was made.

Investment Team Valuation Documentation. Preliminary valuation conclusions will be determined by senior management of KAFA. Such valuations are submitted to the Valuation Committee (a committee of the Fund's Board of Directors) or the Board of Directors on a monthly or quarterly basis, as appropriate, and stand for intervening periods of time.

Valuation Committee. The Valuation Committee meets to consider the valuations submitted by KAFA (1) at the end of each month for new investments, if any, and (2) at the end of each quarter for existing investments. Between meetings of the Valuation Committee, a senior officer of KAFA is authorized to make valuation determinations. All valuation determinations of the Valuation Committee are subject to ratification by the Board of Directors at its next regular meeting.

Valuation Firm. No less than quarterly, a third-party valuation firm engaged by the Board of Directors reviews the valuation methodologies and calculations employed for these securities.

Board of Directors Determination. The Board of Directors meets quarterly to consider the valuations provided by KAFA and the Valuation Committee, if applicable, and ratify valuations for the applicable securities. The Board of Directors considers the report provided by the third-party valuation firm in reviewing and determining in good faith the fair value of the applicable portfolio securities.

Unless otherwise determined by the Board of Directors, securities that are convertible into or otherwise will become publicly traded (e.g., through subsequent registration or expiration of a restriction on trading) are valued through the process described above, using a valuation based on the fair value of the publicly traded security less a discount. The discount is initially equal in amount to the discount negotiated at the time the purchase price is agreed to. To the extent that such securities are convertible or otherwise become publicly traded within a time frame that may be reasonably determined, this discount will be amortized on a straight line basis over such estimated time frame.

As of November 30, 2011, the Fund held 6.8% of its net assets applicable to common stockholders (5.0% of total assets) in securities that were fair valued pursuant to the procedures adopted by the Board of Directors. The aggregate fair value of these securities at November 30, 2011 was \$38,063. See Note 7 – Restricted Securities.

E. Repurchase Agreements The Fund has agreed, from time to time, to purchase securities from financial institutions subject to the seller's agreement to repurchase them at an agreed-upon time and price (repurchase agreements). The financial institutions with whom the Fund enters into repurchase agreements are banks and broker/dealers which KAFA considers creditworthy. The seller under a repurchase agreement is required to maintain the value of the securities as collateral, subject to the agreement, at not less than the repurchase price plus accrued interest. KAFA monitors daily the mark-to-market of the value of the collateral, and, if necessary, requires the seller to maintain additional securities, so that the value of the collateral is not less than the repurchase price. Default by or bankruptcy of the seller would, however, expose the Fund to possible loss because of adverse market action or delays in connection with the disposition of the underlying securities. As of November 30, 2011, the Fund did not have any repurchase agreements.

F. *Short Sales* A short sale is a transaction in which the Fund sells securities it does not own (but has borrowed) in anticipation of or to hedge against a decline in the market price of the securities. To complete a short sale, the Fund may arrange through a broker to borrow the securities to be delivered to the buyer. The proceeds received by the Fund for the short sale are retained by the broker until the Fund replaces the borrowed securities. In borrowing the securities to be delivered to the buyer, the Fund becomes obligated to replace the securities borrowed at their market price at the time of replacement, whatever the price may be.

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The Fund's short sales, if any, are fully collateralized. The Fund is required to maintain assets consisting of cash or liquid securities equal in amount to the liability created by the short sale. These assets are adjusted daily to reflect changes in the value of the securities sold short. The Fund is liable for any dividends or distributions paid on securities sold short.

The Fund may also sell short against the box (*i.e.*, the Fund enters into a short sale as described above while holding an offsetting long position in the security which it sold short). If the Fund enters into a short sale against the box, the Fund would segregate an equivalent amount of securities owned as collateral while the short sale is outstanding. During the fiscal year ended November 30, 2011, the Fund did not engage in any short sales.

G. Derivative Financial Instruments The Fund may utilize derivative financial instruments in its operations.

Interest rate swap contracts. The Fund may use hedging techniques such as interest rate swaps to mitigate potential interest rate risk on a portion of the Fund's leverage. Such interest rate swaps would principally be used to protect the Fund against higher costs on its leverage resulting from increases in short term interest rates. The Fund does not hedge any interest rate risk associated with portfolio holdings. Interest rate transactions the Fund uses for hedging purposes expose it to certain risks that differ from the risks associated with its portfolio holdings. A decline in interest rates may result in a decline in the value of the swap contracts, which, everything else being held constant, would result in a decline in the net assets of the Fund. In addition, if the counterparty to an interest rate swap defaults, the Fund would not be able to use the anticipated net receipts under the interest rate swap to offset its cost of financial leverage.

Interest rate swap contracts are recorded at fair value with changes in value during the reporting period, and amounts accrued under the agreements, included as unrealized gains or losses in the Statement of Operations. Monthly cash settlements under the terms of the interest rate swap agreements or termination payments are recorded as realized gains or losses in the Statement of Operations. The Fund generally values its interest rate swap contracts based on dealer quotations, if available, or by discounting the future cash flows from the stated terms of the interest rate swap agreement by using interest rates currently available in the market. See Note 8 Derivative Financial Instruments.

Option contracts. The Fund is also exposed to financial market risks including changes in the valuations of its investment portfolio. The Fund may purchase or write (sell) call options. A call option on a security is a contract that gives the holder of the option, in return for a premium, the right to buy from the writer of the option the security underlying the option at a specified exercise price at any time during the term of the option.

The Fund would normally purchase call options in anticipation of an increase in the market value of securities of the type in which it may invest. The Fund would realize a gain on a purchased call option if, during the option period, the value of such securities exceeded the sum of the exercise price, the premium paid and transaction costs; otherwise the Fund would realize either no gain or a loss on the purchased call option. The Fund may also purchase put option contracts. If a purchased put option is exercised, the premium paid increases the cost basis of the securities sold by the Fund.

The Fund may also write (sell) call options with the purpose of generating realized gains or reducing its ownership of certain securities. If the Fund writes a call option on a security, the Fund has the obligation upon exercise of the option to deliver the underlying security upon payment of the exercise price. The Fund will only write call options on securities that the Fund holds in its portfolio (*i.e.*, covered calls).

When the Fund writes a call option, an amount equal to the premium received by the Fund is recorded as a liability and is subsequently adjusted to the current fair value of the option written. Premiums received from writing options that expire unexercised are treated by the Fund on the expiration date as realized gains from investments. If the Fund repurchases a written call option prior to its exercise, the difference between the premium received and the amount paid to repurchase the option is treated as a realized gain or loss. If a call option is exercised, the premium is

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added to the proceeds from the sale of the underlying security in determining whether the Fund has realized a gain or loss. The Fund, as the writer of an option, bears the market risk of an unfavorable change in the price of the security underlying the written option. See Note 8 Derivative Financial Instruments.

H. *Security Transactions* Security transactions are accounted for on the date these securities are purchased or sold (trade date). Realized gains and losses are reported on an identified cost basis.

I. *Return of Capital Estimates* Dividends and distributions received from the Fund's investments are comprised of income and return of capital. The payments made by MLPs are categorized as distributions and payments made by corporations are categorized as dividends. At the time such dividends and distributions are received the Fund estimates the amount of such payment that is considered investment income and the amount that is considered a return of capital. Such estimates are based on historical information available from each investment and other industry sources. These estimates may subsequently be revised based on information received from investments after their tax reporting periods are concluded.

The following table sets forth (1) the components of total dividends and distributions, (2) the percentage of return of capital attributable to each category and (3) the estimated total return of capital portion of the dividends and distributions received from investments and the amounts that are attributable to net realized gains (losses) and net change in unrealized gains (losses). The return of capital portion of the dividends and distributions received is a reduction to investment income, results in an equivalent reduction in the cost basis of the associated investments, and increases net realized gains (losses) and net change in unrealized gains (losses).

	Fiscal Year Ended November 30, 2011
Dividends from investments	\$ 14,763
Distributions from investments	10,504
Total dividends and distributions from investments (before foreign taxes withheld of \$172)	\$ 25,267
Dividends % return of capital	24%
Distributions % return of capital	90%
Total dividends and distributions % return of capital	52%
Return of capital attributable to net realized gains (losses)	\$ 2,149
Return of capital attributable to net change in unrealized gains (losses)	10,902
Total return of capital	\$ 13,051

J. Investment Income The Fund records dividends and distributions on the ex-dividend date. Interest income is recognized on the accrual basis, including amortization of premiums and accretion of discounts. When investing in securities with payment in-kind interest, the Fund will accrue interest income during the life of the security even though it will not be receiving cash as the interest is accrued. To the extent that interest income to be received is not expected to be realized, a reserve against income is established. During the fiscal year ended November 30, 2011, the Fund did not have a reserve against interest income, since all interest income accrued is expected to be received.

Many of the debt securities that the Fund holds were purchased at a discount or premium to the par value of the security. The non-cash accretion of a discount to par value increases interest income while the non-cash amortization of a premium to par value decreases interest income. The accretion of a discount and amortization of a premium are based on the effective interest method. The amount of these non-cash adjustments can be found in the Fund's Statement of Cash Flows. The non-cash accretion of a discount increases the cost basis of the debt security,

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which results in an offsetting unrealized loss. The non-cash amortization of a premium decreases the cost basis of the debt security which results in an offsetting unrealized gain. To the extent that par value is not expected to be realized, the Fund discontinues accruing the non-cash accretion of the discount to par value of the debt security.

The Fund receives paid-in-kind dividends in the form of additional units from its investments in Buckeye Partners, L.P. (Class B Units), Crestwood Midstream Partners LP (Class C Units), Enbridge Energy Management, L.L.C. and Kinder Morgan Management, LLC. In connection with the purchase of units directly from PAA Natural Gas Storage, L.P. in a private investment in public equity (PIPE investments) transaction, the Fund was entitled to the distribution paid to unitholders of record on February 4, 2011, even though such investment had not closed at such date. Pursuant to the purchase agreement, the purchase price for the PAA Natural Gas Storage, L.P. units was reduced by the amount of such dividend, which had the effect of paying such distribution in additional units. The additional units are not reflected in investment income during the period received but are recorded as unrealized gains. During the fiscal year ended November 30, 2011, the Fund received the following paid-in-kind dividends.

	Fiscal Year Ended November 30, 2011
Buckeye Partners, L.P. (Class B Units)	\$ 1,089
Crestwood Midstream Partners LP (Class C Units)	230
Enbridge Energy Management, L.L.C.	1,327
Kinder Morgan Management, LLC	2,950
PAA Natural Gas Storage, L.P.	403
 Total paid-in-kind dividends	 \$ 5,999

K. Distributions to Stockholders Distributions to common stockholders are recorded on the ex-dividend date. Distributions to mandatory redeemable preferred stockholders are accrued on a daily basis as described in Note 12 Preferred Stock. As required by the Distinguishing Liabilities from Equity topic of the Financial Accounting Standards Board (FASB) Accounting Standards Codification, the Fund includes the accrued distributions on its mandatory redeemable preferred stock as an operating expense due to the fixed term of this obligation. For tax purposes the payments made to the holders of the Fund s mandatory redeemable preferred stock are treated as dividends or distributions.

The estimated characterization of the distributions paid to stockholders will be either a dividend (ordinary income) or distribution (return of capital). This estimate is based on the Fund s operating results during the period. The actual characterization of the stock distributions made during the current year will not be determinable until after the end of the fiscal year when the Fund can determine earnings and profits and, therefore, the characterization may differ from the preliminary estimates.

L. Partnership Accounting Policy The Fund records its pro-rata share of the income/(loss) and capital gains/(losses), to the extent of distributions it has received, allocated from the underlying partnerships and adjusts the cost basis of the underlying partnerships accordingly. These amounts are included in the Fund s Statement of Operations.

M. Taxes It is the Fund's intention to be treated as and to qualify each year for special tax treatment afforded a regulated investment company (RIC) under Subchapter M of the Internal Revenue Code of 1986, as amended. As long as the Fund meets certain requirements that govern its source of income, diversification of assets and timely distribution of earnings to stockholders, the Fund will not be subject to U.S. federal income tax. See Note 4 Taxes.

Dividend income received by the Fund from sources within Canada is subject to a 15% foreign withholding tax. Interest income on Canadian corporate obligations may be subject to a 10% withholding tax unless an

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exemption is met. The most common exemption available is for corporate bonds that have a tenor of at least 5 years, provided that not more than 25% of the principal is repayable in the first five years and provided that the borrower and lender are not associated. Further, interest is exempt if derived from debt obligations guaranteed by the Canadian government.

The Accounting for Uncertainty in Income Taxes Topic of the FASB Accounting Standards Codification defines the threshold for recognizing the benefits of tax-return positions in the financial statements as more-likely-than-not to be sustained by the taxing authority and requires measurement of a tax position meeting the more-likely-than-not criterion, based on the largest benefit that is more than 50% likely to be realized.

The Fund's policy is to classify interest and penalties associated with underpayment of federal and state income taxes, if any, as income tax expense on its Statement of Operations. For the fiscal year ended November 30, 2011, the Fund did not have any interest or penalties associated with the underpayment of any income taxes. All tax years since inception remain open and subject to examination by tax jurisdictions.

N. Foreign Currency Translations The books and records of the Fund are maintained in U.S. dollars. Foreign currency amounts are translated into U.S. dollars on the following basis: (i) market value of investment securities, assets and liabilities at the rate of exchange as of the valuation date; and (ii) purchases and sales of investment securities, income and expenses at the relevant rates of exchange prevailing on the respective dates of such transactions.

The Fund does not isolate that portion of gains and losses on investments in equity and debt securities which is due to changes in the foreign exchange rates from that which is due to changes in market prices of equity and debt securities. Accordingly, realized and unrealized foreign currency gains and losses with respect to such securities are included in the reported net realized and unrealized gains and losses on investment transactions balances.

Net realized foreign exchange gains or losses represent gains and losses from transactions in foreign currencies and foreign currency contracts, foreign exchange gains or losses realized between the trade date and settlement date on security transactions, and the difference between the amounts of interest and dividends recorded on the Fund's books and the U.S. dollar equivalent of such amounts on the payment date.

Net unrealized foreign exchange gains or losses represent the difference between the cost of assets and liabilities (other than investments) recorded on the Fund's books from the value of the assets and liabilities (other than investments) on the valuation date.

O. Offering Costs Offering costs incurred in connection with the sale of shares of common stock are charged to paid-in capital when the shares are issued. During the Fund's first quarter of fiscal 2011, offering costs of \$115 were incurred in connection with the issuance of common stock pursuant to the exercise of the overallotment option.

P. Indemnifications Under the Fund's organizational documents, its officers and directors are indemnified against certain liabilities arising out of the performance of their duties to the Fund. In addition, in the normal course of business, the Fund enters into contracts that provide general indemnification to other parties. The Fund's maximum exposure under these arrangements is unknown, as this would involve future claims that may be made against the Fund that have not yet occurred, and may not occur. However, the Fund has not had prior claims or losses pursuant to these contracts and expects the risk of loss to be remote.

3. Fair Value

As required by the Fair Value Measurement and Disclosures of the FASB Accounting Standards Codification, the Fund has performed an analysis of all assets and liabilities measured at fair value to determine the significance and character of all inputs to their fair value determination.

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The fair value hierarchy prioritizes the inputs to valuation techniques used to measure fair value into the following three broad categories. Note that the valuation levels below are not necessarily an indication of the risk or liquidity associated with the underlying investment.

Level 1 Quoted unadjusted prices for identical instruments in active markets traded on a national exchange to which the Fund has access at the date of measurement.

Level 2 Quoted prices for similar instruments in active markets; quoted prices for identical or similar instruments in markets that are not active; and model-derived valuations in which all significant inputs and significant value drivers are observable in active markets. Level 2 inputs are those in markets for which there are few transactions, the prices are not current, little public information exists or instances where prices vary substantially over time or among brokered market makers.

Level 3 Model derived valuations in which one or more significant inputs or significant value drivers are unobservable. Unobservable inputs are those inputs that reflect the Fund's own assumptions that market participants would use to price the asset or liability based on the best available information.

The following table presents the Fund's assets and liabilities measured at fair value on a recurring basis at November 30, 2011. The Fund presents these assets by security type and description on its Schedule of Investments.

	Total	Quoted Prices in Active Markets (Level 1)	Prices with Other Observable Inputs (Level 2)	Unobservable Inputs (Level 3)
<u>Assets at Fair Value</u>				
Equity investments	\$ 634,670	\$ 596,607	\$	\$ 38,063
Debt investments	120,344		120,344	
Total assets at fair value	\$ 755,014	\$ 596,607	\$ 120,344	\$ 38,063
<u>Liabilities at Fair Value</u>				
Call option contracts written	\$ 1,061	\$	\$ 1,061	\$

For the fiscal year ended November 30, 2011, there were no transfers between Level 1 and Level 2.

In May 2011, FASB issued Accounting Standards Update (ASU) No. 2011-04 Amendments to Achieve Common Fair Value Measurement and Disclosure Requirements in U.S. GAAP and IFRSs. ASU No. 2011-04 establishes common requirements for measuring fair value and for disclosing information about fair value measurements in accordance with U.S. GAAP and International Financial Reporting Standards (IFRSs). ASU No. 2011-04 is effective for interim and annual periods beginning after December 15, 2011 and is applied prospectively. Management is currently

evaluating ASU No. 2011-04 and does not believe that it will have a material impact on the Fund's financial statements and disclosures.

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The following table presents the Fund's assets measured at fair value on a recurring basis using significant unobservable inputs (Level 3) for the fiscal year ended November 30, 2011.

	Equity Investments
Balance November 30, 2010	\$
Purchases	87,915
Issuances	1,319
Transfers out	(53,751)
Realized gain (losses)	
Unrealized gains, net	2,580
Balance November 30, 2011	\$ 38,063

The \$2,580 of unrealized gains presented in the table above for the fiscal year ended November 30, 2011 relate to investments that were still held at November 30, 2011, and the Fund presents these unrealized gains on the Statement of Operations Net Change in Unrealized Gains.

The purchases of \$87,915 for the fiscal year ended November 30, 2011 relate to the Fund's investments in Buckeye Partners, L.P. (Class B Units), Buckeye Partners, L.P. (Common Units), Crestwood Midstream Partners LP (Common Units), Crestwood Midstream Partners LP (Class C Units), PAA Natural Gas Storage, L.P., Plains All American GP LLC, Regency Energy Partners L.P. (Common Units) and Teekay Offshore Partners L.P. (Common Units). The issuances of \$1,319 relate to additional units received from Buckeye Partners, L.P. (Class B Units) and Crestwood Midstream Partners LP (Class C Units). The Fund's investment in the common units of Buckeye Partners, L.P., Crestwood Midstream Partners LP, PAA Natural Gas Storage, L.P. and Regency Energy Partners L.P., which are noted as transfers out of Level 3 in the tables above, became readily marketable during the fiscal year ended November 30, 2011.

4. Taxes

Income and capital gain distributions made by RICs often differ from GAAP basis net investment income (loss) and any net realized gains (losses). For the Fund, the principal reason for these differences is the return of capital treatment of dividends and distributions from MLPs and certain other of its investments. Net investment income and net realized gains for GAAP purposes may differ from taxable income for federal income tax purposes due to wash sales, disallowed partnership losses from MLPs and foreign currency transactions.

As of November 30, 2011, the principal temporary differences were (a) realized losses that were recognized for book purposes, but disallowed for tax purposes due to wash sale rules; (b) disallowed partnership losses related to the Fund's MLP investments; and (c) other basis adjustments in the Fund's MLPs and other investments. For purposes of characterizing the nature of the dividends/distributions to investors, the amounts in excess of the Fund's earnings and profits for federal income tax purposes are treated as a return of capital. Earnings and profits differ from taxable income due principally to adjustments related to the Fund's investments in MLPs. During the fiscal year ended

November 30, 2011, the Fund reclassified (\$55) from accumulated net investment income to paid-in capital primarily due to the permanent difference between GAAP and tax treatment of the amortization of mandatory redeemable preferred stock offering costs investment income. The Fund also reclassified \$22,796 of accumulated capital gains to accumulated net investment income due to permanent differences between GAAP and tax treatment of certain net realized gains.

The tax basis of the components of distributable earnings can differ from the amounts reflected in the Statement of Assets and Liabilities due to temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes. The Fund had \$7,672 of

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distributable earnings on a tax basis as of November 30, 2011. The following table sets forth the components of accumulated income on a tax basis for the Fund.

		As of November 30, 2011
Undistributed ordinary income	\$	7,672
Unrealized appreciation		35,382
Total accumulated income	\$	43,054

For the fiscal year ended November 30, 2011, the tax character of the total \$25,608 distributions paid to common stockholders and the tax character of the total \$1,397 distributions paid to mandatory redeemable preferred stockholders was all ordinary income. During the period November 24, 2010 (commencement of operations) through November 30, 2010, the Fund did not make any distributions to stockholders.

Under the Regulated Investment Company Modernization Act of 2010 (the Act), any net capital losses recognized after December 31, 2010 may be carried forward indefinitely, and their character is retained as short-term and/or long-term losses. As of November 30, 2011, the Fund had no capital loss carryforwards.

At November 30, 2011, the cost basis of investments for federal income tax purposes was \$719,352, and the net cash received on option contracts written was \$779. At November 30, 2011, gross unrealized appreciation and depreciation of investments and options for federal income tax purposes were as follows:

Gross unrealized appreciation of investments (including options)		\$ 74,872
Gross unrealized depreciation of investments (including options)		(39,492)
Net unrealized appreciation of investments before foreign currency related translations		35,380
Unrealized appreciation on foreign currency related translations		2
Net unrealized appreciation of investments	\$	35,382

5. Concentration of Risk

The Fund's investment objective is to obtain a high level of total return with an emphasis on making quarterly cash distributions to its stockholders. Under normal circumstances, the Fund will invest at least 80% of total assets in securities of companies in the Midstream/Energy Sector and will invest at least 50% of total assets in securities of Midstream MLPs and Midstream Companies. Additionally, the Fund may invest up to 30% of its total assets in debt securities. It may directly invest up to 25% (or such higher amount as permitted by any applicable tax diversification rules) of its total assets in equity or debt securities of MLPs. The Fund may invest up to 50% of its total assets in unregistered or otherwise restricted securities of Midstream/Energy Sector. It will not invest more than 15% of its

total assets in any single issuer. The Fund may, for defensive purposes, temporarily invest all or a significant portion of its assets in investment grade securities, short-term debt securities and cash or cash equivalents. To the extent the Fund uses this strategy, it may not achieve its investment objectives.

6. Agreements and Affiliations

A. Administration Agreement The Fund has entered into an administration agreement with Ultimus Fund Solutions, LLC (Ultimus) which may be amended from time to time. Pursuant to the administration agreement, Ultimus will provide certain administrative services for the Fund. The administration agreement has automatic one-year renewals unless earlier terminated by either party as provided under the terms of the administration agreement.

B. Investment Management Agreement The Fund has entered into an investment management agreement with KAFA under which the Adviser, subject to the overall supervision of the Fund's Board of Directors, manages

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the day-to-day operations of, and provides investment advisory services to, the Fund. For providing these services, the Adviser receives a management fee from the Fund. The current agreement is effective until November 22, 2012. The agreement may then be renewed annually upon the approval of the Fund's Board of Directors and a majority of the Fund's Directors who are not interested persons of the Fund, as such term is defined in the 1940 Act.

For the fiscal year ended November 30, 2011, the Fund paid management fees at an annual rate of 1.25% of average monthly total assets of the Fund. During the first year of investment activities following the Fund's initial offering, KAFA has contractually agreed to waive or reimburse the Fund for fees in an amount equal on an annual basis to 0.25% of its monthly average total assets. The fee waiver expired on November 24, 2011.

For purposes of calculating the management fee, the average total assets for each monthly period are determined by averaging the total assets at the last business day of that month with the total assets at the last business day of the prior month. The total assets of the Fund shall be equal to its average monthly gross asset value (which includes assets attributable to or proceeds from the Fund's use of debt and preferred stock, minus the sum of the Fund's accrued and unpaid dividends/distributions on any outstanding common stock and accrued and unpaid dividends/distributions on any outstanding preferred stock and accrued liabilities (other than liabilities associated with borrowing or leverage by the Fund). Liabilities associated with borrowing or leverage include the principal amount of any debt issued by the Fund, the liquidation preference of any outstanding preferred stock, and other liabilities from other forms of borrowing or leverage such as short positions and put or call options held or written by the Fund.

C. Portfolio Companies From time to time, the Fund may control or may be an affiliate of one or more portfolio companies, each as defined in the 1940 Act. In general, under the 1940 Act, the Fund would control a portfolio company if the Fund owned 25% or more of its outstanding voting securities and would be an affiliate of a portfolio company if the Fund owned 5% or more of its outstanding voting securities. The 1940 Act contains prohibitions and restrictions relating to transactions between investment companies and their affiliates (including the Fund's investment adviser), principal underwriters and affiliates of those affiliates or underwriters.

The Fund believes that there is significant ambiguity in the application of existing Securities and Exchange Commission (SEC) staff interpretations of the term voting security to complex structures such as limited partnership interests of the kind in which the Fund invests. As a result, it is possible that the SEC staff may consider that certain securities investments in limited partnerships are voting securities under the staff's prevailing interpretations of this term. If such determination is made, the Fund may be regarded as a person affiliated with and controlling the issuer(s) of those securities for purposes of Section 17 of the 1940 Act.

In light of the ambiguity of the definition of voting securities, the Fund does not intend to treat any class of limited partnership interests that it holds as voting securities unless the security holders of such class currently have the ability, under the partnership agreement, to remove the general partner (assuming a sufficient vote of such securities, other than securities held by the general partner, in favor of such removal) or the Fund has an economic interest of sufficient size that otherwise gives it the de facto power to exercise a controlling influence over the partnership. The Fund believes this treatment is appropriate given that the general partner controls the partnership, and without the ability to remove the general partner or the power to otherwise exercise a controlling influence over the partnership due to the size of an economic interest, the security holders have no control over the partnership.

Plains All American GP LLC and Plains All American Pipeline, L.P. Robert V. Sinnott is Chief Executive Officer of Kayne Anderson Capital Advisors, L.P. (KACALP), the managing member of KAFA. Mr. Sinnott also serves as a

director on the board of Plains All American GP LLC (Plains GP), the general partner of Plains All American Pipeline, L.P. (PAA). Members of senior management of KACALP and KAFA and various affiliated funds managed by KACALP, including the Fund, own units of Plains GP. The Fund believes that it is an affiliate of Plains GP and PAA under the 1940 Act by virtue of (i) the Fund s and other affiliated Kayne Anderson funds ownership interests in Plains GP and (ii) Mr. Sinnott s participation on the board of Plains GP.

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KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.
NOTES TO FINANCIAL STATEMENTS
(amount in 000 s, except number of option contracts, share and per share)

PAA Natural Gas Storage, L.P. (PNG) is an affiliate of PAA and Plains GP. PAA owns 62% of PNG s limited partner units and owns PNG s general partner. The Fund does not believe it is an affiliate of PNG based on the current facts and circumstances.

7. Restricted Securities

From time to time, certain of the Fund s investments may be restricted as to resale. For instance, private investments that are not registered under the Securities Act of 1933, as amended, cannot be offered for public sale in a non-exempt transaction without first being registered. In other cases, certain of the Fund s investments have restrictions such as lock-up agreements that preclude the Fund from offering these securities for public sale.

At November 30, 2011, the Fund held the following restricted investments:

Investment	Security	Acquisition Date	Type of Restriction	Number of Units, Principal (\$)(in 000s)	Cost Basis	Fair Value	Fair Value Per Unit	Percent of Net Assets	Percent of Total Assets
Level 3 Investments									
⁽¹⁾									
Buckeye Partners, L.P.	Class B Units	1/18/11	(2)	283	\$ 14,779	\$ 16,213	\$ 57.34	2.9%	2.1%
Crestwood Midstream Partners LP	Class C Units	4/1/11	(2)	172	4,001	4,605	26.81	0.8	0.6
Plains All American GP LLC ⁽³⁾	Common Units	(4)	(5)	7	9,261	11,817	1,695.65	2.1	1.6
Teekay Offshore Partners L.P.	Common Units	11/25/11	(2)	209	5,000	5,428	25.95	1.0	0.7
Total					\$ 33,041	\$ 38,063		6.8%	5.0%

Level 2 Investments

⁽⁶⁾									
Antero Resources	Senior Notes	7/27/11	(2)	\$ 1,000	\$ 1,000	\$ 1,005	n/a	0.2%	0.1%

LLC Clayton Williams Energy, Inc.	Senior Notes	(2)	10,496	10,218	9,709	n/a	1.7	1.3
Crestwood Holdings Partners, LLC	Secured Term Loan	(4) (5)	6,168	6,355	6,261	n/a	1.1	0.8
Foresight Energy LLC	Senior Notes	(4) (5)	15,233	16,231	15,233	n/a	2.7	2.0
Kodiak Oil and Gas	Senior Notes	(4) (2)	750	750	762	n/a	0.1	0.1
Paramount Resources Ltd.	Senior Notes	(4) (2)	(7)	7,063	7,302	n/a	1.3	0.9
Southern Pacific Resources Corp.	Secured Term Loan	11/30/10 (2) (4)	11,518	11,520	11,576	n/a	2.1	1.5
Total				\$ 53,137	\$ 51,848		9.2%	6.7%
Total of all restricted securities				\$ 86,178	\$ 89,911		16.0%	11.7%

- (1) Securities are valued using inputs reflecting the Fund's own assumptions as more fully described in Note 2 Significant Accounting Policies.
- (2) Unregistered or restricted security of a public company.
- (3) In determining the fair value for Plains All American GP, LLC (PAA GP), the Fund's valuation is based on publicly available information. Robert V. Sinnott, the CEO of KACALP, sits on PAA GP's board of directors (see Note 6 for more detail). Certain private investment funds managed by KACALP may value its investment in PAA GP based on non-public information, and, as a result, such valuation may be different than the Fund's valuation.
- (4) Unregistered security of a private company.
- (5) Security was acquired at various dates during the fiscal periods ended November 30, 2010 or November 30, 2011.
- (6) These securities have a fair market value determined by the mean of the bid and ask prices provided by an agent or a syndicate bank, principal market maker or an independent pricing service as more fully described in Note 2 Significant Accounting Policies. These securities have limited trading volume and are not listed on a national exchange.
- (7) Principal amount is 7,250 Canadian dollars.

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KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.
NOTES TO FINANCIAL STATEMENTS
(amount in 000 s, except number of option contracts, share and per share)

8. Derivative Financial Instruments

As required by the Derivatives and Hedging Topic of the FASB Accounting Standards Codification, the following are the derivative instruments and hedging activities of the Fund. See Note 2 Significant Accounting Policies.

Option Contracts Transactions in option contracts for the fiscal year ended November 30, 2011 were as follows:

	Number of Contracts	Premium
Call Options Written		
Options outstanding at November 30, 2010		\$
Options written	130,704	10,891
Options subsequently repurchased ⁽¹⁾	(59,850)	(4,687)
Options exercised	(49,279)	(4,281)
Options expired	(14,825)	(1,143)
Options outstanding at November 30, 2011 ⁽²⁾	6,750	\$ 780

(1) The price at which the Fund subsequently repurchased the options was \$1,913, which resulted in net realized gains of \$2,774.

(2) The percentage of total investments subject to call options written was 4.2% at November 30, 2011.

Interest Rate Swap Contracts The Fund may enter into interest rate swap contracts to partially hedge itself from increasing interest expense on its leverage resulting from increasing short-term interest rates. A decline in future interest rates may result in a decline in the value of the swap contracts, which, everything else being held constant, would result in a decline in the net assets of the Fund. In addition, if the counterparty to the interest rate swap contracts defaults, the Fund would not be able to use the anticipated receipts under the swap contracts to offset the interest payments on the Fund's leverage. At the time the interest rate swap contracts reach their scheduled termination, there is a risk that the Fund would not be able to obtain a replacement transaction or that the terms of the replacement transaction would not be as favorable as on the expiring transaction. In addition, if the Fund is required to terminate any swap contract early, then the Fund could be required to make a termination payment. As of November 30, 2011, the Fund did not have any interest rate swap contracts outstanding.

During the fiscal year ended November 30, 2011, the Fund entered into interest rate swap contracts (\$125,000 notional amount) in anticipation of the private placements of senior unsecured notes and mandatory redeemable preferred stock. In conjunction with the pricing of the private placements on February 17, 2011, these interest rate swap contracts were terminated, which resulted in a \$337 realized loss.

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KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.
NOTES TO FINANCIAL STATEMENTS
(amount in 000 s, except number of option contracts, share and per share)

The following table sets forth the fair value of the Fund's derivative instruments on the Statement of Assets and Liabilities:

Derivatives Not Accounted for as	Statement of Assets and Liabilities Location	Fair Value as of November 30, 2011
Hedging Instruments		
Call options	Call option contracts written	\$ (1,061)

The following table sets forth the effect of the Fund's derivative instruments on the Statement of Operations:

Derivatives Not Accounted for as Hedging Instruments	Location of Gains/(Losses) on Derivatives Recognized in Income	For the Fiscal Year Ended November 30, 2011 Change in	
		Net Realized Gains/(Losses) on Derivatives Recognized in Income	Unrealized Losses on Derivatives Recognized in Income
Call options	Options	\$ 3,898	\$ (282)
Interest rate swap contracts	Interest rate swap contracts	(337)	
		\$ 3,561	\$ (282)

9. Investment Transactions

For the fiscal year ended November 30, 2011, the Fund purchased and sold securities in the amounts of \$1,128,433 and \$483,501 (excluding short-term investments and options), respectively.

10. Revolving Credit Facility

On January 20, 2011, the Fund entered into a \$100,000 unsecured revolving credit facility (the "Credit Facility") with a syndicate of banks. The Credit Facility has a three-year commitment maturing on January 20, 2014. The interest rate may vary between LIBOR plus 1.75% to LIBOR plus 2.25%, depending on the Fund's asset coverage ratios. Outstanding loan balances will accrue interest daily at a rate equal to one-month LIBOR plus 1.75%, based on current asset coverage ratios. The Fund will pay a fee of 0.35% per annum on any unused amounts of the Credit Facility. See Financial Highlights for the Fund's asset coverage ratios under the 1940 Act.

For the fiscal year ended November 30, 2011, the average amount outstanding under the Credit Facility was \$52,219 with a weighted average interest rate of 2.08%. As of November 30, 2011, the Fund had \$45,000 outstanding under the Credit Facility at an interest rate of 2.09%.

11. Senior Unsecured Notes

On March 3, 2011, the Fund completed a private placement with institutional investors of \$115,000 of senior unsecured notes (Senior Notes). The net proceeds from the offerings were used to repay the outstanding balance on the Credit Facility, to make new portfolio investments and for general corporate purposes.

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KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.
NOTES TO FINANCIAL STATEMENTS
(amount in 000 s, except number of option contracts, share and per share)

The table below sets forth the key terms of each series of the Senior Notes.

Series	Principal Outstanding, November 30, 2011	Estimated Fair Value, November 30, 2011	Fixed Interest Rate	Maturity
A	\$ 55,000	\$ 57,900	3.93%	3/3/16
B	60,000	64,900	4.62%	3/3/18
	\$ 115,000	\$ 122,800		

Holder of the fixed rate Senior Notes (Series A and Series B) are entitled to receive cash interest payments semi-annually (on September 3 and March 3) at the fixed rate. During the fiscal year ended November 30, 2011, the weighted average interest rate on the outstanding Senior Notes was 4.29%.

As of November 30, 2011, each series of Senior Notes were rate AAA by FitchRatings. In the event the credit rating on any series of Senior Notes falls below A- (FitchRatings), the interest rate on such series will increase by 1% during the period of time such series is rated below A- .

The Senior Notes were issued in private placement offerings to institutional investors and are not listed on any exchange or automated quotation system. The Senior Notes contain various covenants related to other indebtedness, liens and limits on the Fund's overall leverage. Under the 1940 Act and the terms of the Senior Notes, the Fund may not declare dividends or make other distributions on shares of its common stock or make purchases of such shares if, at any time of the declaration, distribution or purchase, asset coverage with respect to the outstanding Senior Notes would be less than 300%.

The Senior Notes are redeemable in certain circumstances at the option of the Fund. The Senior Notes are also subject to a mandatory redemption to the extent needed to satisfy certain requirements if the Fund fails to meet an asset coverage ratio required by law and is not able to cure the coverage deficiency by the applicable deadline, or fails to cure a deficiency as stated in the Fund's rating agency guidelines in a timely manner.

The Senior Notes are unsecured obligations of the Fund and, upon liquidation, dissolution or winding up of the Fund, will rank: (1) senior to all the Fund's outstanding preferred shares; (2) senior to all of the Fund's outstanding common shares; (3) on a parity with any unsecured creditors of the Fund and any unsecured senior securities representing indebtedness of the Fund; and (4) junior to any secured creditors of the Fund.

At November 30, 2011, the Fund was in compliance with all covenants under the agreements of the Senior Notes.

12. Preferred Stock

On March 3, 2011, the Fund issued 1,400,000 shares of Series A mandatory redeemable preferred stock, with a total liquidation value of \$35,000, to institutional investors through a private placement. The mandatory redeemable

preferred stock has a seven-year term with a mandatory redemption date of March 3, 2018 and has a liquidation value of \$25.00 per share. The estimated fair value of the mandatory redeemable preferred stock as of November 30, 2011 was \$37,300.

Holders of the mandatory redeemable preferred stock are entitled to receive cumulative cash dividend payments on the first business day following each quarterly period (February 28, May 31, August 31 and November 30) at a fixed rate of 5.32% per annum.

As of November 30, 2011, the Fund's mandatory redeemable preferred stock were rated AA by FitchRatings. The dividend rate on the Fund's mandatory redeemable preferred stock will increase between 0.5% and 4.0% if the credit rating is downgraded below A (FitchRatings). Further, the annual dividend rate will

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**KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.
NOTES TO FINANCIAL STATEMENTS
(amount in 000 s, except number of option contracts, share and per share)**

increase by 4.0% if no ratings are maintained, and the dividend rate will increase by 5.0% if the Fund fails to make quarterly dividend or certain other payments.

The mandatory redeemable preferred stock ranks senior to all of the Fund's outstanding common shares and on parity with any other preferred stock. The mandatory redeemable preferred stock is redeemable in certain circumstances at the option of the Fund and is also subject to a mandatory redemption if the Fund fails to meet a total leverage (debt and preferred stock) asset coverage ratio of 225% or fails to maintain its basic maintenance amount as stated in the Fund's rating agency guidelines.

Under the terms of the mandatory redeemable preferred stock, the Fund may not declare dividends or make other distributions on shares of its common stock or make purchases of such shares if, at any time of the declaration, distribution or purchase, asset coverage with respect to total leverage would be less than 225%.

The holders of the mandatory redeemable preferred stock have one vote per share and will vote together with the holders of common stock as a single class except on matters affecting only the holders of mandatory redeemable preferred stock or the holders of common stock. The holders of the mandatory redeemable preferred stock, voting separately as a single class, have the right to elect at least two directors of the Fund.

At November 30, 2011, the Fund was in compliance with the asset coverage and basic maintenance requirements of its mandatory redeemable preferred stock.

13. Common Stock

At November 30, 2011, the Fund has 198,600,000 shares of common stock authorized. Of the 21,663,977 shares of common stock outstanding at November 30, 2011, KAFA owned 4,000 shares. Transactions in common shares for the fiscal year ended November 30, 2011 were as follows:

Shares outstanding at November 30, 2010	19,004,000
Shares issued through reinvestment of distributions	359,977
Shares issued in connection with the exercise of the overallotment option	2,300,000
 Shares outstanding at November 30, 2011	 21,663,977

14. Subsequent Events

On December 15, 2011, the Fund declared its quarterly distribution of \$0.4175 per common share for the fiscal fourth quarter for a total of \$9,045. The distribution was paid on January 13, 2012 to common stockholders of record on December 30, 2011. Of this total, pursuant to the Fund's dividend reinvestment plan, \$2,197 was reinvested into the Fund through the issuance of 91,796 shares of common stock.

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**KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.
REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM**

To the Board of Directors and Stockholders of
Kayne Anderson Midstream/Energy Fund, Inc.

In our opinion, the accompanying statement of assets and liabilities, including the schedule of investments, and the related statements of operations, of changes in net assets applicable to common stockholders and of cash flows and the financial highlights present fairly, in all material respects, the financial position of Kayne Anderson Midstream/Energy Fund (the Fund) at November 30, 2011, and the results of its operations and cash flows for the year then ended, the changes in its net assets applicable to common stockholders for each of the two years in the period then ended and the financial highlights for each of the periods presented, in conformity with accounting principles generally accepted in the United States of America. These financial statements and financial highlights (hereafter referred to as financial statements) are the responsibility of the Fund s management. Our responsibility is to express an opinion on these financial statements based on our audits. We conducted our audits of these financial statements in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, and evaluating the overall financial statement presentation. We believe that our audits, which included confirmation of securities at November 30, 2011 by correspondence with the custodian and brokers, provide a reasonable basis for our opinion.

PRICEWATERHOUSECOOPERS LLP

Los Angeles, California
January 30, 2012

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**KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.
GLOSSARY
(UNAUDITED)**

This glossary contains definitions of certain key terms, as they are used in our investment objective and policies and as described in this Annual Report. These definitions may not correspond to standard sector definitions.

Energy Assets means assets that are used in the energy sector, including assets used in exploring, developing, producing, generating, transporting, transmitting, storing, gathering, processing, refining, distributing, mining or marketing of natural gas, natural gas liquids, crude oil, refined products, coal or electricity.

Energy Companies means companies that own and operate Energy Assets or provide energy-related services. For purposes of this definition, this includes companies that (i) derive at least 50% of their revenues or operating income from operating Energy Assets or providing services for the operation of such Energy Assets or (ii) have Energy Assets that represent the majority of their assets.

General Partner MLPs means Master Limited Partnerships whose assets consist of ownership interests of an affiliated Master Limited Partnership (which may include general partnership interests, incentive distribution rights, common units and subordinated units).

Master Limited Partnerships means limited partnerships and limited liability companies that are publicly traded and are treated as partnerships for federal income tax purposes.

Midstream Assets means assets used in energy logistics, including, but not limited to, assets used in transporting, storing, gathering, processing, distributing, or marketing of natural gas, natural gas liquids, crude oil or refined products.

Midstream Companies means companies, other than Midstream MLPs, that own and operate Midstream Assets. Such companies are not structured as Master Limited Partnerships and are taxed as corporations. For purposes of this definition, this includes companies that (i) derive at least 50% of their revenue or operating income from operating Midstream Assets or (ii) have Midstream Assets that represent the majority of their assets.

Midstream/Energy Sector consists of (a) Midstream MLPs, (b) Midstream Companies, (c) Other MLPs and (d) Other Energy Companies.

Midstream Sector consists of (a) Midstream MLPs and (b) Midstream Companies.

Midstream MLPs means MLPs that principally own and operate Midstream Assets. Midstream MLPs also include (a) MLPs that provide transportation and distribution services of energy related products through the ownership of marine transportation vessels, (b) General Partner MLPs whose assets consist of ownership interests of an affiliated Midstream MLP and (c) MLP Affiliates of Midstream MLPs.

MLPs means entities that are structured as Master Limited Partnerships and their affiliates and includes Midstream MLPs, Other MLPs and MLP Affiliates.

MLP Affiliates means affiliates of Master Limited Partnerships, substantially all of whose assets consist of i-units. MLP Affiliates are not treated as partnerships for federal income tax purposes.

Other Energy Companies means Energy Companies, excluding MLPs and Midstream Companies.

Other MLPs consists of (a) upstream MLPs, (b) coal MLPs, (c) propane MLPs and (d) MLPs that operate other energy assets or provide energy-related services.

For our affiliates everyday business purposes information about your transactions and experiences No We don't share

For our affiliates everyday business purposes information about your creditworthiness No We don't share

For nonaffiliates to market to you No We don't share

Questions? Call 877-657-3863 or go to <http://www.kaynefunds.com>

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**KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.
PRIVACY POLICY NOTICE
(UNAUDITED)**

Who we are

Who is providing this notice?

KMF

What we do

How does KMF protect my personal information?

To protect your personal information from unauthorized access and use, we use security measures that comply with federal law. These measures include computer safeguards and secured files and buildings.

Access to your personal information is on a need-to-know basis. KMF has adopted internal policies to protect your non-public personal information.

How does KMF collect my personal information?

We collect your personal information, for example, when you

- n Open an account or provide account information
 - n Buy securities from us or make a wire transfer
 - n Give us your contact information
- We also collect your personal information from other companies.

Why can't I limit all sharing?

Federal law gives you the right to limit only

- n sharing for affiliates everyday business purposes information about your creditworthiness
- n affiliates from using your information to market to you
- n sharing for nonaffiliates to market to you

State laws and individual companies may give you additional rights to limit sharing.

Definitions

Affiliates

Companies related by common ownership or control. They can be financial and nonfinancial companies.

- n *KMF does not share with our affiliates.*

Nonaffiliates

Companies not related by common ownership or control. They can be financial and nonfinancial companies.

- n *KMF does not share with nonaffiliates so they can market to you.*

Joint marketing

A formal agreement between nonaffiliated financial companies that together market financial products or services to you. n *KMF does not jointly market.*

Other important information

None.

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**KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.
DIVIDEND REINVESTMENT PLAN
(UNAUDITED)**

Kayne Anderson Midstream/Energy Fund, Inc., a Maryland corporation (the Fund), has adopted the following plan (the Plan) with respect to distributions declared by its Board of Directors (the Board) on shares of its Common Stock:

1. Unless a stockholder specifically elects to receive cash as set forth below, all distributions hereafter declared by the Board shall be payable in shares of the Common Stock of the Fund, and no action shall be required on such stockholder's part to receive a distribution in stock.
2. Such distributions shall be payable on such date or dates as may be fixed from time to time by the Board to stockholders of record at the close of business on the record date(s) established by the Board for the distribution involved.
3. The Fund may use newly-issued shares of its Common Stock or purchase shares in the open market in connection with the implementation of the plan. The number of shares to be issued to a stockholder shall be based on share price equal to 95% of the closing price of the Fund's Common Stock one day prior to the dividend payment date.
4. The Board may, in its sole discretion, instruct the Fund to purchase shares of its Common Stock in the open market in connection with the implementation of the Plan as follows: If the Fund's Common Stock is trading below net asset value at the time of valuation, upon notice from the Fund, the Plan Administrator (as defined below) will receive the dividend or distribution in cash and will purchase Common Stock in the open market, on the New York Stock Exchange or elsewhere, for the Participants' accounts, except that the Plan Administrator will endeavor to terminate purchases in the open market and cause the Fund to issue the remaining shares if, following the commencement of the purchases, the market value of the shares, including brokerage commissions, exceeds the net asset value at the time of valuation. These remaining shares will be issued by the Fund at a price equal to the greater of (i) the net asset value at the time of valuation or (ii) 95% of the then current market price.
5. In a case where the Plan Administrator has terminated open market purchases and caused the issuance of remaining shares by the Fund, the number of shares received by the participant in respect of the cash dividend or distribution will be based on the weighted average of prices paid for shares purchased in the open market, including brokerage commissions, and the price at which the Fund issues remaining shares. To the extent that the Plan Administrator is unable to terminate purchases in the open market before the Plan Administrator has completed its purchases, or remaining shares cannot be issued by the Fund because the Fund declared a dividend or distribution payable only in cash, and the market price exceeds the net asset value of the shares, the average share purchase price paid by the Plan Administrator may exceed the net asset value of the shares, resulting in the acquisition of fewer shares than if the dividend or distribution had been paid in shares issued by the Fund.
6. A stockholder may, however, elect to receive his or its distributions in cash. To exercise this option, such stockholder shall notify American Stock Transfer & Trust Company, the plan administrator and the Fund's transfer agent and registrar (collectively the Plan Administrator), in writing so that such notice is received by the Plan Administrator no later than the record date fixed by the Board for the distribution involved.
7. The Plan Administrator will set up an account for shares acquired pursuant to the Plan for each stockholder who has not so elected to receive dividends and distributions in cash (each, a Participant). The Plan Administrator may hold each Participant's shares, together with the shares of other Participants, in non-certificated form in the Plan Administrator's name or that of its nominee. Upon request by a Participant, received no later than three (3) days prior to the payable date, the Plan Administrator will, instead of crediting shares to and/or carrying shares in a Participant's

account, issue, without charge to the Participant, a certificate registered in the Participant's name for the number of whole shares payable to the Participant and a check for any fractional share less a broker commission on the sale of such fractional shares. If a request to terminate a

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**KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.
DIVIDEND REINVESTMENT PLAN
(UNAUDITED)**

Participant's participation in the Plan is received less than three (3) days before the payable date, dividends and distributions for that payable date will be reinvested. However, subsequent dividends and distributions will be paid to the Participant in cash.

8. The Plan Administrator will confirm to each Participant each acquisition made pursuant to the Plan as soon as practicable but not later than ten (10) business days after the date thereof. Although each Participant may from time to time have an undivided fractional interest (computed to three decimal places) in a share of Common Stock of the Fund, no certificates for a fractional share will be issued. However, dividends and distributions on fractional shares will be credited to each Participant's account. In the event of termination of a Participant's account under the Plan, the Plan Administrator will adjust for any such undivided fractional interest in cash at the market value of the Fund's shares at the time of termination.

9. The Plan Administrator will forward to each Participant any Fund related proxy solicitation materials and each Corporation report or other communication to stockholders, and will vote any shares held by it under the Plan in accordance with the instructions set forth on proxies returned by Participants to the Fund.

10. In the event that the Fund makes available to its stockholders rights to purchase additional shares or other securities, the shares held by the Plan Administrator for each Participant under the Plan will be added to any other shares held by the Participant in certificated form in calculating the number of rights to be issued to the Participant.

11. The Plan Administrator's service fee, if any, and expenses for administering the Plan will be paid for by the Fund.

12. Each Participant may terminate his or its account under the Plan by so notifying the Plan Administrator via the Plan Administrator's website at www.amstock.com, by filling out the transaction request form located at the bottom of the Participant's Statement and sending it to American Stock Transfer and Trust Company, P.O. Box 922, Wall Street Station, New York, NY 10269-0560 or by calling the Plan Administrator at (888) 888-0317. Such termination will be effective immediately. The Plan may be terminated by the Fund upon notice in writing mailed to each Participant at least 30 days prior to any record date for the payment of any dividend or distribution by the Fund. Upon any termination, the Plan Administrator will cause a certificate or certificates to be issued for the full shares held for the Participant under the Plan and a cash adjustment for any fractional share to be delivered to the Participant without charge to the Participant. If a Participant elects by his or its written notice to the Plan Administrator in advance of termination to have the Plan Administrator sell part or all of his or its shares and remit the proceeds to the Participant, the Plan Administrator is authorized to deduct a \$15.00 transaction fee plus a \$0.10 per share brokerage commission from the proceeds.

13. These terms and conditions may be amended or supplemented by the Fund at any time but, except when necessary or appropriate to comply with applicable law or the rules or policies of the Securities and Exchange Commission or any other regulatory authority, only by mailing to each Participant appropriate written notice at least 30 days prior to the effective date thereof. The amendment or supplement shall be deemed to be accepted by each Participant unless, prior to the effective date thereof, the Plan Administrator receives written notice of the termination of his or its account under the Plan. Any such amendment may include an appointment by the Plan Administrator in its place and stead of a successor agent under these terms and conditions, with full power and authority to perform all or any of the acts to be performed by the Plan Administrator under these terms and conditions. Upon any such appointment of any agent for the purpose of receiving dividends and distributions, the Fund will be authorized to pay to such successor agent, for each Participant's account, all dividends and distributions payable on shares of the Fund held in the

Participant's name or under the Plan for retention or application by such successor agent as provided in these terms and conditions.

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**KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.
DIVIDEND REINVESTMENT PLAN
(UNAUDITED)**

14. The Plan Administrator will at all times act in good faith and use its best efforts within reasonable limits to ensure its full and timely performance of all services to be performed by it under this Plan and to comply with applicable law, but assumes no responsibility and shall not be liable for loss or damage due to errors unless such error is caused by the Plan Administrator's negligence, bad faith, or willful misconduct or that of its employees or agents.

15. These terms and conditions shall be governed by the laws of the State of Maryland.

Adopted: November 18, 2010

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**KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.
INVESTMENT MANAGEMENT AGREEMENT APPROVAL DISCLOSURE
(UNAUDITED)**

The Fund's Board of Directors approved the Fund's Investment Management Agreement (the Agreement) with KA Fund Advisors, LLC (the Adviser) for an initial term of two years.

In connection with the approval of the Agreement, the Board of Directors was provided with the proposed Agreement as well as any related agreements prior to the in-person meeting called for that purpose. The Board of Directors discussed the terms of the Agreement, and representatives from the Adviser presented additional oral and written information to the Board of Directors to assist in its considerations. The Adviser also discussed its expected profitability from its relationship with the Fund under the Agreement. The Directors who are not parties to the Agreement or interested persons (as defined in the 1940 Act) of any such party (the Independent Directors) also met in executive session to further discuss the terms of the Agreement and the information provided by the Adviser.

Because the Fund had not yet commenced investment operations, the Board of Directors considered the Adviser's services provided to other closed-end funds managed by the Adviser (the Other Funds). The Board of Directors noted that the Adviser provides various written materials to the boards of directors of the Other Funds during the course of each year as well as in connection with the consideration of the investment management agreements between those Other Funds and the Adviser, including (i) information on the advisory personnel of the Adviser; (ii) information on the internal compliance procedures of the Adviser; (iii) comparative information showing how the Other Funds proposed fee schedules compare to other registered investment companies that follow investment strategies similar to those of the Other Funds; (iv) information regarding brokerage and portfolio transactions; (v) comparative information showing how the Other Funds' performance compares to other registered investment companies that follow investment strategies similar to those of the Other Funds; and (vi) information on any legal proceedings or regulatory audits or investigations affecting the Adviser. The Board of Directors was informed by the Adviser that the Adviser intends to follow the same practices for the Fund.

The Independent Directors reviewed various factors, detailed information provided by the Adviser at the meeting, and other relevant information and factors including the following, no single factor of which was dispositive in their decision whether to approve the Agreement:

The nature, extent, and quality of the services to be provided by the Adviser

The Independent Directors considered the scope of services that are to be provided by the Adviser under the Agreement, the investment research and other capabilities of the Adviser, and other resources the Adviser is expected to dedicate to the performance of services for the Fund. Because of the Fund's lack of operating history, the Board of Directors considered the quality of services provided by the Adviser to the Other Funds, including the quality of advisory and other services, such as the Adviser's assistance in the coordination of the activities of some of the Other Funds' other service providers, the provision of administrative services by the Adviser, the call strategy used and the responsible handling of the leverage target. In particular, the Independent Directors considered the nature and quality of the services that are expected to be provided by the Adviser to the Fund in light of their experience as Directors of one of the Other Funds, Kayne Anderson Energy Development Company (KED), their confidence in the Adviser's integrity and competence gained from that experience and the Adviser's responsiveness to questions, concerns or requests for information raised or made by them in serving as Directors of KED. The Independent Directors also noted the high quality of services provided by the Adviser to the Other Funds in the wake of past market turbulence and the Adviser's efforts to maximize returns for the Other Funds. Based on the foregoing, the Independent Directors concluded that the Adviser has the quality and depth of personnel and investment methods essential to performing its duties under the Agreement and that the nature and the proposed cost of such advisory services are fair and reasonable.

for the services expected to be provided.

The Fund's performance under the management of the Adviser

Because the Fund does not have any performance history, the Independent Directors reviewed information pertaining to the performance of the Other Funds. Based on the oral and written information provided by the Adviser that compares the performance of the Other Funds with the performance of certain other registered

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**KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.
INVESTMENT MANAGEMENT AGREEMENT APPROVAL DISCLOSURE
(UNAUDITED)**

investment companies that follow investment strategies similar to those of the Other Funds as well as specialized and more general market indexes, the Independent Directors were satisfied with the Other Funds' favorable performance over time. The Independent Directors also noted that, based on their experience as Directors of KED, the Independent Directors would receive detailed performance information at each regular board of directors meeting during the year rather than annually at the meeting for the approval of the investment management agreement. The Independent Directors then noted the Adviser's ongoing efforts to increase distributions to stockholders of the Other Funds.

The costs of the services to be provided by the Adviser and the profits to be realized by the Adviser and its affiliates from the relationship with the Fund

The Independent Directors considered the profitability of the services to be provided by the Adviser, recognizing that it is difficult to make comparisons of profitability from investment advisory contracts. The Independent Directors considered that the Adviser's relationship with the Fund is not expected to be one of its significant sources of revenue given that the fee waivers and other arrangements will substantially reduce the net fees retained by the Adviser. The Independent Directors considered certain benefits the Adviser will realize due to its relationship with the Fund. In particular, they noted that the Adviser has soft dollar arrangements under which certain brokers may provide industry research to the Adviser's portfolio managers through the use of a portion of the brokerage commissions generated from the Adviser's trading activities on behalf of the Fund. The Independent Directors acknowledged that the Fund's stockholders will also benefit from these soft dollar arrangements because the Adviser receives this research, which is used in the management of the Fund's portfolio, by aggregating securities trades.

The Independent Directors also considered the Fund's management fee under the Agreement in comparison to the management fees of funds within the Fund's expected peer group and believed such comparisons to be acceptable to the Fund. The Adviser's successful handling of the past market downturn and related leverage challenges for the Other Funds was also noted by the Independent Directors as relevant considerations in evaluating the reasonableness of the management fee given that the Fund does not have any operating history. Based on those comparisons, the Independent Directors concluded that the management fee to be paid to the Adviser under the Agreement is reasonable.

The extent to which economies of scale would be realized as the Fund grows and whether fee levels reflect these economies of scale for the benefit of stockholders

The Independent Directors also considered possible economies of scale that the Adviser could achieve in its management of the Fund. They considered the anticipated asset levels of the Fund, the information provided by the Adviser relating to its estimated costs, and information comparing the fee rate to be charged by the Adviser with fee rates charged by other unaffiliated investment advisers to their investment company clients. The Independent Directors also considered the Adviser's commitment to retaining its current professional staff in a competitive environment for investment professionals based on their experience in serving as Directors for KED. In view of the information provided by the Adviser and in light of the Independent Directors' experience with the Adviser as Directors of KED, the Independent Directors concluded that the fee structure was reasonable. The Independent Directors also noted that the fee structure currently does not provide for a sharing of any economies of scale that might be experienced from substantial future growth of the Fund. Because the Fund was yet to be operational, the Independent Directors recognized that an evaluation of possible economies of scale will be more appropriate if the Fund reaches a substantially larger size.

Based on the review of the Board of Directors of the Fund, including their consideration of each of the factors discussed above and the materials requested from and provided by the Adviser, the Board of Directors concluded, in agreement with the recommendation of the Independent Directors, that the Fund and its stockholders could expect to receive reasonable value in return for the advisory fees and other amounts proposed to be paid to the Adviser by the Fund under the Agreement and that the approval of the initial term of the Agreement was in the best interests of stockholders of the Fund.

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**KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.
INFORMATION CONCERNING DIRECTORS AND CORPORATE OFFICERS
(UNAUDITED)**

Independent Directors⁽¹⁾

Name, (Year Born)	Position(s) Held with Fund, Term of Office/Time of Service	Principal Occupations During Past Five Years	Other Directorships Held by Director/Officer During Past Five Years
William R. Cordes (born 1948)	Director. 3-year term as Director (until the 2013 Annual Meeting of Stockholders). Served since inception.	Retired from Northern Border Pipeline Company in March 2007 after serving as President from October 2000 to March 2007. Chief Executive Officer of Northern Border Partners, L.P. from October 2000 to April 2006. President of Northern Natural Gas Company from 1993 to 2000. President of Transwestern Pipeline Company from 1996 to 2000.	Current: Kayne Anderson Energy Development Company (KED Boardwalk Pipeline Partners, LP (pipeline MLP) Prior: Northern Border Partners, L.P. (midstream MLP)
Barry R. Pearl (born 1949)	Director. 2-year term (until the 2012 Annual Meeting of Stockholders). Served since inception.	Executive Vice President of Kealine, LLC, a private developer and operator of petroleum infrastructure facilities (and its affiliate WesPac Energy LLC an energy infrastructure developer), since February 2007. Provided management consulting services from January 2006 to February 2007. President of Texas Eastern Products Pipeline Company, LLC (TEPPCO), (the general partner of TEPPCO Partners, L.P.) from February 2001 to December 2005. Chief	Current: KED Targa Resources Partners LP (midstream MLP) Magellan Midstream Partners, L.P. (midstream MLP) Peregrine Midstream Partners LLC (natural gas storage MLP) Prior: Seaspan Corporation (containership chartering) TEPPCO Partners, L.P. (midstream MLP)

Executive Officer and director of TEPPCO from May 2002 to December 2005; and Chief Operating Officer from February 2001 to May 2002.

<p>Albert L. Richey (born 1949)</p>	<p>Director. 3-year term (until the 2013 Annual Meeting of Stockholders). Served since inception.</p>	<p>Vice President of Anadarko Petroleum Corporation since December 2008; Vice President of Corporate Development from December 2005 to December 2008; Vice President and Treasurer from 1995 to 2005; and Treasurer from 1987 to 1995.</p>	<p>KED</p> <p>Boys & Girls Clubs of Houston</p> <p>Boy Scouts of America</p>
<p>William L. Thacker (born 1945)</p>	<p>Director. 2-year term (until the 2012 Annual Meeting of Stockholders). Served since inception.</p>	<p>Retired from the Board of TEPPCO in May 2002 after serving as Chairman from March 1997 to May 2002; Chief Executive Officer from January 1994 to May 2002; and President, Chief Operating Officer and Director from September 1992 to January 1994.</p>	<p>Current:</p> <p>KED</p> <p>Copano Energy, L.L.C. (midstream MLP)</p> <p>GenOn Energy, Inc. (electricity generation and sales)</p> <p>Prior:</p> <p>Pacific Energy Partners, L.P. (midstream MLP)</p>

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**KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.
INFORMATION CONCERNING DIRECTORS AND CORPORATE OFFICERS
(UNAUDITED)**

Interested Director and Non-Director Officers

Name, (Year Born)	Position(s) Held with Fund, Term of Office/Time of Service	Principal Occupations During Past Five Years	Other Directorships Held by Director/Officer During Past Five Years
Kevin S. McCarthy ⁽²⁾ (born 1959)	Chairman of the Board of Directors, President and Chief Executive Officer. 1-year term as a director (until the 2012 Annual Meeting of Stockholders), elected annually as an officer. Served since inception. ⁽³⁾	Senior Managing Director of KACALP since June 2004 and of KAFA since 2006. President and Chief Executive Officer of Kayne Anderson MLP Investment Company (KYN); Kayne Anderson Energy Total Return Fund, Inc. (KYE); and Kayne Anderson Energy Development Company (KED) since inception (KYN inception in 2004; KYE inception in 2005; and KED inception in 2006). Global Head of Energy at UBS Securities LLC from November 2000 to May 2004.	Current: KYN KYE KED Range Resource Corporation (oil and natural gas company) Direct Fuel Partners, L.P. (transmix refining and fuels distribution) ProPetro Services, Inc. (oilfield services) Prior:

Clearwater Natural Resources, L.P. (coal mining MLP)

International Resource Partners LP (coal mining MLP)

K-Sea Transportation Partners LP (shipping MLP)

Terry A. Hart
(born 1969)

Chief Financial Officer and Treasurer. Elected annually. Served since inception. Chief Financial Officer and Treasurer of KYN and KYE since December 2005, and KED since September 2006. Director of Structured Finance, Assistant Treasurer, Senior Vice President and Controller of Dynegy, Inc. from 2000 to 2005. None

David J. Shladovsky (born 1960)

Secretary and Chief Compliance Officer. Elected annually. Served since inception. Managing Director and General Counsel of KACALP since 1997 and of KAFA since 2006. Secretary and Chief Compliance Officer of KYN since 2004; of KYE since 2005, and of KED since 2006. None

J.C. Frey
(born 1968)

Executive Vice President, Assistant Treasurer and Assistant Secretary. Elected annually. Served since inception. Senior Managing Director of KACALP since 2004 and of KAFA since 2006, and Managing Director of KACALP since 2000. Portfolio Manager of KACALP since 2000, Portfolio Manager, Vice President, Assistant Secretary and Assistant Treasurer of KYN since 2004; of KYE since 2005, and of KED since 2006. Executive Vice President of KYN, KYE and KED since June 2008. None

James C. Baker
(born 1972)

Executive Vice President. Elected annually. Served since inception. Senior Managing Director of KACALP and KAFA since February 2008, Managing Director of KACALP and KAFA since December 2004 and 2006, respectively. Vice President of KYN and KYE from 2005 to 2008; and of KED from 2006 to 2008, and Executive Vice President of KYN, KYE and KED since June 2008. Current:

ProPetro Services, Inc.
(oilfield services)

Petris Technology, Inc.
(data management for energy companies)

Prior:

K-Sea Transportation Partners LP (shipping MLP)

Jody C. Meraz
(born 1978)

Vice President. Elected annually. Served since 2011. Senior Vice President of KACALP and KAFA since 2011. Vice President of KACALP from 2007 to 2011. Associate of KACALP and KAFA since 2005 and 2006. Vice President of KYN, KYE, and KED since 2011. None

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**KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.
INFORMATION CONCERNING DIRECTORS AND CORPORATE OFFICERS
(UNAUDITED)**

- (1) Each Independent Director oversees two registered investment companies in the fund complex.
- (2) Mr. McCarthy is an interested person of the Fund by virtue of his employment relationship with Kayne Anderson.
- (3) Mr. McCarthy currently serves on the boards of directors of KYN, KYE, and KED, all closed-end investment companies registered under the Investment Company Act of 1940, as amended, that are managed by KAFA.

Additional information regarding the Fund's directors is contained in the Fund's Statement of Additional Information, the most recent version of which can be found on the Fund's website at www.kaynefunds.com or is available without charge, upon request, by calling (877) 657-3863.

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**KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.
ANNUAL CERTIFICATION
(UNAUDITED)**

The Fund's Chief Executive Officer has filed an annual certification with the NYSE that, as of the date of the certification, he was unaware of any violation by the Fund of the NYSE's corporate governance listing standards.

**PROXY VOTING AND PORTFOLIO HOLDINGS INFORMATION
(UNAUDITED)**

The policies and procedures that the Fund uses to determine how to vote proxies relating to its portfolio securities are available:

without charge, upon request, by calling (877) 657-3863;

on the Fund's website, <http://www.kaynefunds.com>; and

on the website of the Securities and Exchange Commission, <http://www.sec.gov>.

The Fund will file a complete schedule of its portfolio holdings for the first and third quarters of its fiscal year with the SEC on Form N-Q. The Fund's Forms N-Q will be available on the SEC's website at <http://www.sec.gov> and may be reviewed and copied at the SEC's Public Reference Room in Washington, DC. Information on the operation of the SEC's Public Reference Room may be obtained by calling 1-202-551-8090. The Fund will also make its Forms N-Q available on its website at <http://www.kaynefunds.com>.

**SHARE REPURCHASE DISCLOSURE
(UNAUDITED)**

Notice is hereby given in accordance with Section 23(c) of the 1940 Act, that the Fund may from time to time purchase shares of its common stock in the open market.

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Directors and Corporate Officers

Kevin S. McCarthy

Chairman of the Board of Directors,
President and Chief Executive Officer

William R. Cordes

Director

Barry R. Pearl

Director

Albert L. Richey

Director

William L. Thacker

Director

Terry A. Hart

Chief Financial Officer and Treasurer

David J. Shladovsky

Chief Compliance Officer and Secretary

J.C. Frey

Executive Vice President, Assistant

Secretary and Assistant Treasurer

James C. Baker

Executive Vice President

Jody C. Meraz

Vice President

Investment Adviser

KA Fund Advisors, LLC

717 Texas Avenue, Suite 3100

Houston, TX 77002

Administrator

Ultimus Fund Solutions, LLC

350 Jericho Turnpike, Suite 206

Jericho, NY 11753

1800 Avenue of the Stars, Third Floor

Los Angeles, CA 90067

Stock Transfer Agent and Registrar

American Stock Transfer & Trust Company

59 Maiden Lane

New York, NY 10038

Custodian

JPMorgan Chase Bank, N.A.

14201 North Dallas Parkway, Second Floor

Dallas, TX 75254

Independent Registered Public Accounting Firm

PricewaterhouseCoopers LLP

350 South Grand Avenue

Los Angeles, CA 90071

Legal Counsel

Paul Hastings LLP

55 Second Street, 24th Floor

San Francisco, CA 94105

Please visit us on the web at <http://www.kaynefunds.com> or call us toll-free at 1-877-657-3863.

This report, including the financial statements herein, is made available to stockholders of the Fund for their information. It is not a prospectus, circular or representation intended for use in the purchase or sale of shares of the Fund or of any securities mentioned in this report.

Table of Contents**Item 2. Code of Ethics.**

(a) As of the end of the period covered by this report, the Registrant has adopted a code of ethics that applies to the Registrant's principal executive officer, principal financial officer, principal accounting officer, or persons performing similar functions.

(c) and (d) During the period covered by this report, there was no amendment to, and no waiver, including implicit waiver, was granted from, any provision of the Registrant's code of ethics that applies to the Registrant's principal executive officer, principal financial officer, principal accounting officer, or persons performing similar functions.

(f)(1) Pursuant to Item 12(a)(1), the Registrant is attaching as an exhibit (EX-99.CODE ETH) a copy of its code of ethics that applies to its principal executive officer, principal financial officer, principal accounting officer, or persons performing similar functions.

Item 3. Audit Committee Financial Expert.

(a)(1) The Registrant's board of directors has determined that the Registrant has four audit committee financial experts serving on its audit committee.

(a)(2) The audit committee financial experts are William R. Cordes, Barry R. Pearl, Albert L. Richey, and William L. Thacker. Messrs. Cordes, Pearl, Richey, and Thacker are independent for purposes of this Item.

Item 4. Principal Accountant Fees and Services.

(a) through (d) The information in the table below is provided for professional services rendered to the Registrant by its independent registered public accounting firm, PricewaterhouseCoopers LLP, during the Registrant's (a) last fiscal year ended November 30, 2011, and (b) initial fiscal period ended November 30, 2010.

	2011	2010
Audit Fees	\$ 181,000	\$ 70,000
Audit-Related Fees		35,000
Tax Fees	42,500	42,500
All Other Fees		
Total	\$ 223,500	\$ 147,500

With respect to the table above, Audit Fees are the aggregate fees billed for professional services for the audit of the Registrant's annual financial statements and services provided in connection with statutory and regulatory filings or engagements. Audit-Related Fees are the aggregate fees billed for assurance and related services reasonably related to the performance of the audit of the Registrant's financial statements and are not reported under Audit Fees. Tax Fees are the aggregate fees billed for professional services for tax compliance, tax advice and tax planning.

(e)(1) Audit Committee Pre-Approval Policies and Procedures.

Before the auditor is (i) engaged by the Registrant to render audit, audit related or permissible non-audit services to the Registrant or (ii) with respect to non-audit services to be provided by the auditor to the Registrant's investment adviser or any entity in the investment Registrant complex, if the nature of the services provided relate directly to the operations or financial reporting of the Registrant, either: (a) the Audit Committee shall pre-approve such engagement; or (b) such engagement shall be entered into pursuant to pre-approval policies and procedures established by the Audit Committee. Any such policies and procedures must be detailed as to the particular service and not involve any delegation of the Audit Committee's responsibilities to the Registrant's investment adviser. The Audit Committee may delegate to one or more of its members the authority to grant pre-approvals. The pre-approval policies and procedures shall include the requirement that the decisions of any member to whom authority is delegated under this provision be presented to the full Audit Committee at its next scheduled meeting. Under certain limited circumstances, pre-approvals are not required if certain de minimis thresholds are not exceeded, as such thresholds are set forth by the Audit Committee and in accordance with applicable Securities and Exchange Commission rules and regulations.

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(e)(2) None of the services provided to the Registrant described in paragraphs (b) through (d) of this Item 4 were pre-approved by the Audit Committee pursuant to paragraph (c)(7)(i)(C) of Rule 2-01 of regulation S-X.

(f) No disclosures are required by this Item 4(f).

(g) The aggregate non-audit fees billed by PricewaterhouseCoopers LLP for services rendered to the Registrant for the fiscal periods ended November 30, 2011 and 2010 were \$42,500 and \$42,500, respectively. There were no non-audit fees billed by PricewaterhouseCoopers LLP for services rendered to the Registrant's investment adviser (not including any sub-adviser whose role is primarily portfolio management and is subcontracted with or overseen by another investment adviser) or any entity controlling, controlled by, or under common control with the investment adviser that provides ongoing services to the Registrant for the fiscal periods ended November 30, 2011 and 2010.

(h) No disclosures are required by this Item 4(h).

Item 5. Audit Committee of Listed Registrants.

The Registrant has a separately-designated standing Audit Committee established in accordance with Section 3(a)(58)(A) of the Securities and Exchange Act of 1934 (the Exchange Act), as amended. William R. Cordes (Chair), Barry R. Pearl, Albert L. Richey and William L. Thacker are the members of the Registrant's Audit Committee.

Item 6. Investments.

Please see the schedule of investments contained in the Report to Stockholders included under Item 1 of this Form N-CSR.

Item 7. Disclosure of Proxy Voting Policies and Procedures for Closed-End Management Investment Companies.

The Registrant has delegated the voting of proxies relating to its voting securities to its investment adviser, KA Fund Advisors, LLC (the Adviser). The respective Proxy Voting Policies and Procedures of the Registrant and the Adviser are attached as Exhibit 99.VOTEREG and Exhibit 99.VOTEADV hereto.

Item 8. Portfolio Managers of Closed-End Management Investment Companies.

(a)(1) As of November 30, 2011, the following individuals (the Portfolio Managers) are primarily responsible for the day-to-day management of the Registrant's portfolio:

Kevin S. McCarthy is the Registrant's President, Chief Executive Officer and co-portfolio manager and has served as the President, Chief Executive Officer and co-portfolio manager of Kayne Anderson MLP Investment Company (KYN) since June 2004, of Kayne Anderson Energy Total Return Fund, Inc. (KYE) since May 2005 and of Kayne Anderson Energy Development Company (KED) since September 2006. Mr. McCarthy has served as a Senior Managing Director of Kayne Anderson Capital Advisors, L.P. (KACALP) since June 2004 and of the Adviser (collectively with KACALP, Kayne Anderson) since 2006. Prior to that, he was Global Head of Energy at UBS Securities LLC. In this role, he had senior responsibility for all of UBS's energy investment banking activities. Mr. McCarthy was with UBS Securities from 2000 to 2004. From 1995 to 2000, Mr. McCarthy led the energy investment banking activities of Dean Witter Reynolds and then PaineWebber Incorporated. He began his investment banking career in 1984. He earned a BA degree in Economics and Geology from Amherst College in 1981, and an MBA degree in Finance from the University of Pennsylvania's Wharton School in 1984.

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J.C. Frey is the Registrant's Executive Vice President, Assistant Secretary, Assistant Treasurer and co-portfolio manager and a Senior Managing Director of Kayne Anderson. He serves as portfolio manager of Kayne Anderson's funds investing in MLP securities, including serving as a co-portfolio manager, Assistant Secretary and Assistant Treasurer of KYN since June 2004, of KYE since May 2005, and of KED since September 2006, Vice President of KYN from June 2004 through June 2008, of KYE from May 2005 through June 2008, and of KED from September 2006 through July 2008, and Executive Vice President of KYN and KYE since June 2008 and of KED since July 2008. Mr. Frey began investing in MLPs on behalf of Kayne Anderson in 1998 and has served as portfolio manager of Kayne Anderson's MLP funds since their inception in 2000. In addition to the closed-end funds, Mr. Frey manages approximately \$3 billion in assets in MLPs and midstream companies and other Kayne Anderson funds. Prior to joining Kayne Anderson in 1997, Mr. Frey was a CPA and audit manager in KPMG Peat Marwick's financial services group, specializing in banking and finance clients and loan securitizations. Mr. Frey graduated from Loyola Marymount University with a BS degree in Accounting in 1990. In 1991, he received a Master's degree in Taxation from the University of Southern California.

(a)(2)(i) and (ii) Other Accounts Managed by Portfolio Managers:

The following table reflects information regarding accounts for which the Portfolio Managers have day-to-day management responsibilities (other than the Registrant). Accounts are grouped into three categories: (i) registered investment companies, (ii) other pooled investment vehicles, and (iii) other accounts. To the extent that any of these accounts pay advisory fees that are based on account performance, this information will be reflected in a separate table below. Information is shown as of November 30, 2011. Asset amounts are approximate and have been rounded.

Portfolio Manager	Registered Investment Companies (excluding the Registrant)		Other Pooled Investment Vehicles		Other Accounts	
	Number of Accounts	Total Assets in the Accounts (\$ in millions)	Number of Accounts	Total Assets in the Accounts (\$ in millions)	Number of Accounts	Total Assets in the Accounts (\$ in millions)
Kevin S. McCarthy	3	\$ 5,183		N/A		N/A
J.C. Frey	3	\$ 5,183		N/A	6	\$ 219

(a)(2)(iii) Other Accounts that Pay Performance-Based Advisory Fees Managed by Portfolio Managers:

The following table reflects information regarding accounts for which the Portfolio Managers have day-to-day management responsibilities (other than the Registrant) and with respect to which the advisory fee is based on the performance of the account. Information is shown as of November 30, 2011. Asset amounts are approximate and have been rounded.

Portfolio Manager	Registered Investment Companies (excluding the Registrant)		Other Pooled Investment Vehicles		Other Accounts	
	Number of Accounts	Total Assets in the Accounts (\$ in millions)	Number of Accounts	Total Assets in the Accounts (\$ in millions)	Number of Accounts	Total Assets in the Accounts (\$ in millions)
Kevin S. McCarthy		N/A	2	\$ 498		N/A
J.C. Frey		N/A	14	\$ 2,528	2	\$ 51

(a)(2)(iv) Potential Material Conflicts of Interest:

Some of the other accounts managed by Messrs. McCarthy and Frey have investment strategies that are similar to those of the Registrant. However, Kayne Anderson manages potential conflicts of interest by allocating investment opportunities in accordance with its written allocation policies and procedures.

(a)(3) Compensation of Each Portfolio Manager, as of November 30, 2011:

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Messrs. McCarthy and Frey are compensated by KACALP through partnership distributions from KACALP, based on the amount of assets they manage, and they receive a portion of the advisory fees applicable to those accounts, which, with respect to certain accounts, as noted above, are based in part on the performance of those accounts. Additional benefits received by Messrs. McCarthy and Frey are normal and customary benefits provided by investment advisers.

(a)(4) As of November 30, 2011, the end of the Registrant's most recently completed fiscal year, the dollar range of equity securities beneficially owned by each Portfolio Manager in the Registrant is shown below:

Kevin S. McCarthy: \$100,001-\$500,000

J.C. Frey: \$100,001-\$500,000

Through their limited partnership interests in KACALP, which owns shares of Registrant's common stock, Messrs. McCarthy and Frey could be deemed to also indirectly own a portion of Registrant's securities.

(b) Not Applicable.

Item 9. Purchases of Equity Securities by Closed-End Management Investment Company and Affiliated Purchasers.

None.

Item 10. Submission of Matters to a Vote of Security Holders.

None.

Item 11. Controls and Procedures.

(a) The Registrant's principal executive and principal financial officers have evaluated the Registrant's disclosure controls and procedures (as defined in Rule 30a-3(c) under the Investment Company Act of 1940, as amended (the 1940 Act)) as of a date within 90 days of this filing and have concluded that the Registrant's disclosure controls and procedures are effective, as of such date, based on the evaluation of these controls and procedures required by Rule 30a-3(b) under the 1940 Act and Rule 13a-15(b) under the Exchange Act.

(b) The Registrant's principal executive and principal financial officers are aware of no changes in the Registrant's internal control over financial reporting (as defined in Rule 30a-3(d) under the 1940 Act) that occurred during the second fiscal quarter of the period covered by this report that have materially affected, or are reasonably likely to materially affect, the Registrant's internal control over financial reporting.

Item 12. Exhibits.

(a)(1) Code of Ethics attached hereto as EX-99.CODE ETH.

(a)(2) Separate certifications of Principal Executive and Principal Financial Officers pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 attached hereto as EX-99.CERT.

(b) Certification of Principal Executive and Principal Financial Officers pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 attached hereto as EX-99.906 CERT.

(99) Proxy Voting Policies of the Registrant attached hereto as EX-99.VOTEREG.

(99) Proxy Voting Policies of the Adviser attached hereto as EX-99.VOTEADV.

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SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934 and the Investment Company Act of 1940, the Registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

KAYNE ANDERSON
MIDSTREAM/ENERGY FUND, INC.

Date: February 7, 2012

By: /s/ Kevin S. McCarthy
Kevin S. McCarthy
Chairman of the Board of Directors,
President and Chief Executive Officer

Pursuant to the requirements of the Securities Exchange Act of 1934 and the Investment Company Act of 1940, this report has been signed below by the following persons on behalf of the Registrant and in the capacities and on the dates indicated.

Date: February 7, 2012

By: /s/ Kevin S. McCarthy
Kevin S. McCarthy
Chairman of the Board of Directors,
President and Chief Executive Officer

Date: February 7, 2012

By: /s/ Terry A. Hart
Terry A. Hart
Chief Financial Officer and Treasurer

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Exhibit Index

- (a)(1) Code of Ethics attached hereto as EX-99.CODE ETH.
- (a)(2) Separate certifications of Principal Executive and Principal Financial Officers pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 attached hereto as EX-99.CERT.
- (b) Certification of Principal Executive and Principal Financial Officers pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 attached hereto as EX-99.906 CERT.
- (99) Proxy Voting Policies of the Registrant attached hereto as EX-99.VOTEREG.
- (99) Proxy Voting Policies of the Adviser attached hereto as EX-99.VOTEADV.