

KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.
Form N-CSR
January 29, 2015
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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)

811 Main Street, 14th Floor, Houston, Texas
(Address of principal executive offices)

77002
(Zip code)

David Shladovsky, Esq.

KA Fund Advisors, LLC, 811 Main Street, 14th Floor, 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, 2014

Date of reporting period: November 30, 2014

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.

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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, 2014 is attached below.

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Midstream/Energy Fund

KMF Annual Report

November 30, 2014

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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 expressions 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 14, 2015

Dear Fellow Stockholders:

While the investment environment has become increasingly challenging since the end of our fiscal year, we are pleased with our performance during fiscal 2014 and remain optimistic that we will see the energy markets strengthen over the remainder of 2015. The domestic economy continued to improve during calendar 2014, and the broader equity markets recorded a third consecutive year of double-digit returns, with the S&P 500 index generating a 14% total return. The MLP market, as measured by the Alerian MLP index, also set several new all-time highs during the year, but declined sharply after Thanksgiving as crude oil prices fell and sentiment in the energy sector turned decidedly more negative. Despite the sell-off in November and December, MLPs still generated a total return of 5% for calendar 2014. While we remain very optimistic about the long-term return potential of the MLPs and Midstream Companies, there will likely be some strong headwinds during the first half of calendar 2015.

As we have discussed in previous annual letters, the Shale Revolution has created both challenges and opportunities for energy companies. One key challenge that we have highlighted in the past is the potential for increased production to put pressure on commodity prices, and at the end of this year we saw that dynamic play out pretty dramatically in the crude oil market. Over the last several months, crude oil and natural gas liquids (NGL) prices have fallen by over 50% from summer 2014 levels. As a result, the energy market became extremely challenging at the end of our fiscal year and those challenges have continued during the first two months of fiscal 2015. While we expect that the prices of these commodities will continue to be under pressure during the first half of the year, we do not believe these lows prices are sustainable, and we anticipate a recovery during the second half of calendar 2015.

It is important to remember that MLPs and Midstream Companies, as a whole, are much less impacted by lower commodity prices than any other segment of the energy industry, because many of these companies have fee-based activities and very little volume risk. That being said, there are certain MLPs and Midstream Companies that are impacted directly and indirectly by lower commodity prices, in particular, those companies with gathering and processing assets concentrated in the unconventional basins. In general, we think that the biggest impact for these companies will be that volume growth on their assets will moderate, but volume will not decline. Nonetheless, we are constantly re-evaluating our models on these companies in this ever-changing environment as the upstream companies react to lower commodity prices. Our team of investment professionals has a long record of navigating the full range of commodity price environments, and we believe we are well positioned to identify the MLPs and Midstream Companies that are best positioned and capitalize on opportunities as they develop.

During fiscal 2014, we believe the Fund performed very well. 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. For fiscal 2014, the Fund delivered a Net Asset Value Return of 16.4%. During the same period, the total return of the Alerian MLP index was 12.9%, a return which KMF outperformed by 3.5%. Fiscal 2014 was the Fund's fourth year of operations and the fourth year in which the Fund delivered a double-digit return. Over this time period, the Fund raised its distribution 21% and significantly outperformed both the S&P 500 and the Alerian MLP index.

Another metric by which we measure the Fund's performance is Market Return, which is equal to the change in share price plus the cash distributions paid during the period, assuming reinvestment through our dividend reinvestment program. Our Market Return was 15.3% for fiscal 2014. This measure was below our Net Asset Value Return, as the discount of our share price to NAV increased during the year from 8.5% on November 30, 2013 to 9.3% on November 30, 2014.

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KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.

LETTER TO STOCKHOLDERS

Energy Market Update

Currently, the biggest story in the energy market is the precipitous drop in crude oil prices. As of this writing, West Texas Intermediate (WTI), which is the domestic crude oil benchmark, is trading between \$45 and \$48 per barrel, down more than 50% from its high in July of \$108 per barrel. This steep decline is principally a result of a shift in the market's expectation for crude oil supply over the next 12 months. In particular, when OPEC decided not to reduce production at its November meeting, the market was confronted with the reality that the crude oil market will be oversupplied during 2015. As we have highlighted in the past, the continued development of shale plays has caused domestic production of crude oil, NGLs and natural gas to increase significantly over the past several years, and the increase in crude oil production has been the most astounding. The EIA estimates that domestic crude oil production averaged 8.7 million barrels per day in calendar 2014, up an unbelievable 3.7 million barrels per day, or 73%, since production troughed in 2008. Substantially all of this production growth came from the development of unconventional oil reserves in plays such as the Bakken Shale, the Eagle Ford Shale and the Permian Basin, and the development of these reserves was encouraged by crude oil prices that were high relative to natural gas prices. Currently, domestic crude oil production is estimated to be approximately 9.2 million barrels per day—slightly less than the level the EIA is projecting for calendar 2015.

At current prices, many of the non-core areas in the shale plays generate inadequate returns for upstream companies. In response to falling prices, we have seen domestic upstream companies dramatically cut their capital budgets for 2015 relative to 2014 spending levels, often choosing to focus only on their highest return opportunities. Based on a group of over 50 upstream companies that we track, the average reduction in capex is almost 35%. Many of these companies are still predicting that production will grow in 2015 on a year-over-year basis, even with the slowdown in drilling, but we expect growth to be much more modest when you compare production in the fourth quarter of 2015 to current levels.

On the demand side, the economy is growing at its fastest rate in years, and lower energy costs are expected to be a net benefit for consumers and businesses. We also expect incremental demand to materialize at current price levels, and so the current downdraft in crude oil prices is a classic, self-correcting commodity price cycle. While we do not expect to see WTI return to \$100 per barrel any time in the foreseeable future, we do expect that prices will rise significantly over the course of the year and continue to strengthen into 2016 as both supply and demand respond.

The natural gas market was the first mover in the Shale Revolution and so has experienced lower prices for a longer period of time than the crude oil market. Nonetheless, production continues to grow, as producers continue to drive down costs as technology and drilling techniques improve. In fact, the EIA estimates that natural gas production averaged 70 billion cubic feet per day in 2014, up 5% over 2013, which is the second largest increase in production in the last 20 years. This continued production growth and the resulting low natural gas prices has been a godsend for domestic manufacturers, and by early 2016, the first exports of LNG are expected to ship from the U.S. Gulf Coast. There are a number of MLPs and Midstream Companies that are evaluating these LNG liquefaction projects, which are multi-billion dollar capital projects. While we do not believe that all of the announced projects will be built, the fact that we are about to begin exporting natural gas is a prime example of new demand emerging in response to low prices. Further, the projects that are built will be beneficial for the MLPs and Midstream Companies that undertake the projects or transport the natural gas to these facilities and should provide support to domestic natural gas prices.

What many people do not realize is that NGL prices are at least as important to the MLP and Midstream sectors as crude oil and natural gas prices are. Like crude oil and natural gas production, NGL production has increased significantly over the last several years (up 66% since 2008), and prices have fallen by over 50% in the last 12 months. Similar to the crude oil and natural gas markets, we expect to see demand growth in the short-term as a result of increased exports of ethane and propane, and in the long-term from newly constructed petrochemical plants that use NGLs as feedstocks.

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LETTER TO STOCKHOLDERS

Market Update

While MLPs generated a strong total return of 12.9% during the fiscal year, the MLP market declined along with crude oil prices in December. As a result, MLPs delivered a more modest 4.8% total return for calendar 2014. While MLPs underperformed the broader equity markets last year, they have significantly outperformed over the longer-term. Over the last 10 calendar years, MLPs have generated a total return of 265% versus 109% for the S&P 500 index. As we have noted over the years, we believe the primary reason for this strong relative performance is the unique combination of current yield and attractive distribution growth that MLPs, as a group, provide.

During 2014, MLPs also became more attractively valued relative to other income-oriented investments. At the beginning of the fiscal year, the average MLP yield was 5.90%, which represented a 316 basis point premium to the 2.74% yield on 10-year U.S. Treasury Bonds. Contrary to widely held expectations, interest rates fell during the year, despite the Federal Reserve's termination of its quantitative easing program, and 10-year U.S. Treasury Bonds were yielding 2.19% by November 30, 2014. Over this same time period, the average MLP yield declined to 5.73%, resulting in an expansion in the MLP spread to Treasuries from 316 basis points to 353 basis points. So far in fiscal 2015, the spread to Treasuries has widened further and now stands at 456 basis points (as of January 14, 2015).

As noted above, the other driver of MLP total returns is distribution growth. MLPs have consistently increased distributions over time, and we expect they will continue to do so for many years to come. In 2014, distributions grew 7.5% compared to 7.1% in 2013 and 7.3% in 2012. Due to the rapid fall in commodity prices, there is more uncertainty with respect to the amount of distribution growth that can be expected in 2015, but we are relatively confident it will exceed 5%. Even after taking a lower rate of distribution growth into consideration, MLPs look very attractive at current prices relative to other income alternatives.

Capital expenditures, including both acquisitions and new growth projects, drive MLP distribution growth, and calendar 2014 was another strong year. In last year's letter, we indicated that conditions could be ripe for further consolidation after a flurry of merger and acquisition activity in 2013, and 2014 did not disappoint in this regard. We estimate that MLPs announced a record \$171 billion in acquisitions during calendar 2014, including a record five MLP-to-MLP mergers and the \$71 billion acquisition by Kinder Morgan, Inc. of its related MLPs (Kinder Morgan Energy Partners and El Paso Pipeline Partners). In addition, we estimate that MLPs spent in excess of \$30 billion on organic capital projects during calendar 2014 to construct and expand the midstream infrastructure required to handle growing oil, natural gas and NGL production from the development of unconventional reserves.

During calendar 2014, MLPs continued to have excellent access to capital, which is critical to funding the significant capital expenditures in the sector. MLPs raised \$13 billion in follow-on equity offerings, over \$6 billion in at-the-market equity offerings and \$37 billion in debt during the year. Calendar 2014 was also another robust year for IPOs in the sector, with 18 IPOs raising \$6.4 billion. As a result, there are currently 125 MLPs trading, more than half of which went public in the last four years. In our opinion, the expansion of the sector has been facilitated by the significant inflows of institutional capital into the MLP sector. We estimate that in the last three years nearly \$50 billion of new money has come into the sector—a significant sum when considering that the total market capitalization of the MLP sector currently stands at approximately \$475 billion.

Midstream Companies performed very well during fiscal 2014, generating a total return of 21.1% based on an index of 23 companies that we track. This return was significantly better than the S&P 500 return of 16.9% over the same time period, and this performance comes on the heels of five straight years of double digit returns. Increasingly, the Midstream Companies in which we invest are more closely tied to the MLP sector, as six of our largest 10 Midstream Company investments are the general partner of an MLP. We are proud that our portfolio of Midstream Company investments did even better than the overall group, as stock selection was particularly

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KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.

LETTER TO STOCKHOLDERS

important during the year. We continue to believe that Midstream Companies are well positioned to benefit from the same long-term trends that are driving growth in the MLP sector and that Midstream Companies will remain active in the acquisition market. In fact, the Kinder Morgan transaction noted above is a perfect example of a strategic transaction in which a Midstream Company, Kinder Morgan, Inc., was utilized creatively to highlight the growth potential of the midstream assets that were housed in the underlying MLPs. While we do not expect to see very many Midstream Companies with MLPs follow suit, the transaction highlights that energy companies with midstream assets can employ a number of strategies to perpetuate their growth. Notwithstanding a positive long-term outlook for the group, we do anticipate some challenges in 2015 for certain Midstream Companies with assets that have more commodity price sensitivity. Lower commodity prices may cause some of these companies to moderate their near-term growth outlook.

Sentiment in the energy debt market shifted dramatically as crude oil prices fell, and the fixed income securities issued by Upstream Companies were impacted the most. Several of the debt securities we own have fallen in value by over 30% since the beginning of our fiscal fourth quarter. We have reduced our allocation to energy debt (8% of long-term investments as of year-end), as we continue to trim our holdings in names where we are concerned about the ability of those companies to be profitable in a sustained low-price environment. On the other hand, we continue to hold the debt securities of several Upstream Companies where the market prices are severely discounted and we believe the company has the wherewithal to survive the current environment for an extended period of time. We are watching the energy debt markets very closely as we believe the sell-off in bonds issued by Upstream Companies has created some very attractive opportunities to invest in companies whose debt is well supported by asset value.

2015 Outlook

Despite our expectation for a challenging energy market this year (most notably due to lower crude oil prices), our outlook for 2015 and beyond is positive. We expect that distribution growth of at least 5% will position the MLP sector to post another year of low double-digit total returns in calendar 2015. We believe the potential exists for MLPs to generate substantially higher returns in 2015 if the commodity market improves as expected and the negative market sentiment towards energy companies abates. Similarly, we believe that Midstream Companies should continue to generate strong returns and that the Midstream Companies that the Fund owns will deliver distribution growth well in excess of the MLP market in 2015.

We believe the Fund is very well positioned to navigate a challenging energy market. The portfolio is well diversified with a strong bias towards midstream MLPs and Midstream Companies. The Fund's leverage ratios are at target levels, and virtually all of its leverage is long-term, fixed-rate financings. We plan to remain prudent, long-term investors, but have the ability to capitalize on market disruptions. We also continue to believe that the development of unconventional reserves is a multi-decade story and that the development of these reserves will create plentiful growth opportunities for MLPs and Midstream Companies. However, we have seen that this secular growth story may have setbacks along the way, and we believe it is more important than ever to have a team that can discern which companies are best positioned over the long-term.

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KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.

LETTER TO STOCKHOLDERS

We look forward to executing on our business plan of achieving high after-tax total returns by investing in MLPs, Midstream Companies and other 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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| Holding | Sector⁽¹⁾ | Percent of Long-Term Investments as of November 30, | |
|--|------------------------------|---|--------------|
| | | 2014 | 2013 |
| 1. Kinder Morgan, Inc. ⁽³⁾ | Midstream Company | 15.4% | 5.2% |
| 2. The Williams Companies, Inc. | Midstream Company | 8.2 | 7.7 |
| 3. Enbridge Energy Management, L.L.C. | Midstream MLP | 8.1 | 5.8 |
| 4. Plains GP Holdings, L.P. | Midstream Company | 4.7 | 3.7 |
| 5. ONEOK, Inc. | Midstream Company | 3.8 | 6.9 |
| 6. Golar LNG Partners LP | Midstream Company | 3.3 | 3.1 |
| 7. Regency Energy Partners LP ⁽⁴⁾ | Midstream MLP | 3.1 | 1.6 |
| 8. Energy Transfer Partners, L.P. | Midstream MLP | 2.2 | 1.4 |
| 9. Williams Partners L.P. ⁽⁵⁾ | Midstream MLP | 2.0 | 1.7 |
| 10. Plains All American Pipeline, L.P. | Midstream MLP | 1.9 | 2.1 |

(1) See Glossary of Key Terms for definitions.

(2) Includes MLP affiliates.

(3) On November 26, 2014, Kinder Morgan, Inc. (KMI) completed its acquisition of the outstanding equity securities of Kinder Morgan Management (KMR). As of November 30, 2013, our investment in KMI and KMR represented 12.8% of long-term investments on a combined basis.

(4) On March 21, 2014, PVR Partners, L.P. (PVR) completed its merger with and into Regency Energy Partners LP (Regency). As of November 30, 2013, our investment in Regency and PVR represented 2.3% of long-term investments on a combined basis.

(5) On October 24, 2014, Williams Partners L.P. (WPZ) entered into a merger agreement with and into Access Midstream Partners, L.P. (ACMP). At November 30, 2014, our holding in ACMP represented 0.4% of our long-term investments. The merger is expected to close in early 2015.

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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 of Key Terms on page 45 for a description of these investment categories and for the meaning of capitalized terms not otherwise defined herein.

As of November 30, 2014, we had total assets of \$1.2 billion, net assets applicable to our common stock of \$0.9 billion (net asset value of \$39.51 per share), and 21.6 million shares of common stock outstanding. As of November 30, 2014, we held \$1.1 billion in equity investments and \$99 million in debt investments.

Results of Operations For the Three Months Ended November 30, 2014

Investment Income. Investment income totaled \$8.0 million for the quarter and consisted primarily of net dividends and distributions and interest income on our investments. We received \$12.5 million of dividends and distributions, of which \$7.0 million was treated as return of capital. Return of capital was increased by \$0.6 million during the quarter due to 2013 tax reporting information that was received in fiscal 2014. Interest income was \$2.5 million. We received \$3.3 million of paid-in-kind dividends during the quarter, which are not included in investment income, but are reflected as an unrealized gain.

Operating Expenses. Operating expenses totaled \$8.7 million, including \$4.2 million of investment management fees, \$2.8 million of interest expense (including non-cash amortization of debt issuance costs of \$0.1 million), \$1.3 million of preferred stock distributions (including non-cash amortization of offering costs of \$0.1 million) and \$0.4 million of other operating expenses.

Net Investment Loss. Our net investment loss totaled \$0.7 million.

Net Realized Loss. We had a net realized loss of \$0.8 million, which included \$1.2 million of net realized gains from option activity.

Net Change in Unrealized Gains. We had a net decrease in unrealized gains of \$160.9 million. The net decrease consisted of \$163.3 million of unrealized losses from investments and \$2.4 million of net unrealized gains from option activity.

Net Decrease in Net Assets Resulting from Operations. We had a decrease in net assets resulting from operations of \$162.4 million. This decrease was comprised of net investment loss of \$0.7 million, net realized loss of \$0.8 million and a net decrease in unrealized gains of \$160.9 million, as noted above.

Results of Operations For the Fiscal Year Ended November 30, 2014

Investment Income. Investment income totaled \$32.1 million for the fiscal year and consisted primarily of net dividends and distributions and interest income on our investments. We received \$47.2 million of dividends and distributions, of which \$24.8 million was treated as return of capital. Return of capital was increased by \$0.6 million during the fiscal year due to 2013 tax reporting information that was received in fiscal year 2014. Interest income was \$9.7 million. We received \$12.1 million of paid-in-kind dividends during the fiscal year, which are not included in investment income, but are reflected as an unrealized gain.

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KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.

MANAGEMENT DISCUSSION

(UNAUDITED)

Operating Expenses. Operating expenses totaled \$32.3 million, including \$15.7 million of investment management fees, \$10.7 million of interest expense (including non-cash amortization of debt issuance costs of \$0.6 million), \$4.3 million of preferred stock distributions (including non-cash amortization of offering costs of \$0.2 million) and \$1.6 million of other operating expenses.

Net Investment Loss. Our net investment loss totaled \$0.2 million.

Net Realized Gains. We had net realized gains of \$76.9 million, which included \$3.5 million of net realized gains from option activity.

Net Change in Unrealized Gains. We had a net increase in unrealized gains of \$48.0 million. The net increase consisted of \$47.4 million of unrealized gains from investments and \$0.6 million of net unrealized gains from option activity.

Net Increase in Net Assets Resulting from Operations. We had an increase in net assets resulting from operations of \$124.7 million. This increase was comprised of net investment loss of \$0.2 million, net realized gains of \$76.9 million and a net increase in unrealized gains of \$48.0 million, as noted above.

Distributions to Common Stockholders

We pay quarterly distributions to our common stockholders, funded generally 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 comprised of fees paid to other service providers), (c) accrual for estimated excise taxes and (d) interest expense and preferred stock distributions.

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(amounts in millions, except for per share amounts)

| | Three Months Ended November 30, 2014 | Fiscal Year Ended November 30, 2014 |
|--|---|--|
| Distributions and Other Income from Investments | | |
| Dividends ⁽¹⁾ | \$ 12.5 | \$ 47.2 |
| Paid-In-Kind Dividends and Distributions ⁽¹⁾ | 3.3 | 12.1 |
| Interest | 2.5 | 9.7 |
| Net Premiums Received from Call Options Written | 1.4 | 7.4 |
| Total Distributions and Other Income from Investments | 19.7 | 76.4 |
| Expenses | | |
| Investment Management Fee | (4.2) | (15.7) |
| Other Expenses | (0.4) | (1.6) |
| Excise Taxes ⁽²⁾⁽³⁾ | | |
| Interest Expense | (2.7) | (10.1) |
| Preferred Stock Distributions | (1.2) | (4.2) |
| Net Distributable Income (NDI) | \$ 11.2 | \$ 44.8 |
| Weighted Shares Outstanding | 21.6 | 21.9 |
| NDI per Weighted Share Outstanding | \$ 0.520 | \$ 2.046 |
| Adjusted NDI per Weighted Share Outstanding⁽⁴⁾ | \$ 0.520 | \$ 2.046 |
| Distributions paid per Common Share⁽⁵⁾ | \$ 0.495 | \$ 1.935 |

- (1) See Note 2 (Investment Income) to the Financial Statements for additional information regarding paid-in-kind and non-cash dividends and distributions.
- (2) During the fiscal year ended November 30, 2014, we paid \$0.79 million of excise taxes related to undistributed income during 2013. At November 30, 2013, we accrued \$0.75 million in excise taxes and increased this amount by \$0.04 million during the fiscal year ended November 30, 2014 based on the actual amount of excise taxes paid.
- (3) As of November 30, 2014, we intended to declare a special distribution prior to the end of calendar 2014 to avoid the excise tax and, as a result, we did not accrue any excise tax for fiscal 2014 as the liability was not probable and estimable. Due to unfavorable market conditions after our fiscal year end, we determined in early December 2014 not to make a special distribution of income in order to avoid

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excise tax. As a result, an excise tax accrual of \$2.3 million was recorded in the first quarter of fiscal 2015, which will result in a reduction to NDI during fiscal 2015 of \$0.58 million (\$0.027 per share) per quarter. See Note 6 Taxes and Note 14 Subsequent Events.

- (4) There were no adjustments to NDI during the three months ended and year ended November 30, 2014.
- (5) The distribution of \$0.4950 per share for the fourth quarter of fiscal 2014 was paid on January 16, 2015. Distributions for fiscal 2014 include the distributions paid in April 2014, July 2014, October 2014 and January 2015. 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 and adjusted NDI generated in the current quarter;

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KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.

MANAGEMENT DISCUSSION

(UNAUDITED)

Expected NDI over the next twelve months; and

Realized and unrealized gains generated by the portfolio.

On December 18, 2014, we declared a quarterly distribution of \$0.4950 per common share for the fourth quarter of fiscal 2014 (a total distribution of \$10.7 million). The distribution represents an increase of 1.5% from the prior quarter's distribution and an increase of 6.5% from the distribution for the quarter ended November 30, 2013.

As a regulated investment company (RIC), we are required to distribute all of our income to avoid paying federal income taxes. See Note 2 Significant Accounting Policies and Note 6 Taxes. At November 30, 2014, we had a total of \$69.4 million of undistributed ordinary income and long-term capital gains (collectively, Undistributed Income). We plan to make a special distribution to common stockholders during fiscal 2015 to avoid paying income taxes on this Undistributed Income. This special distribution is subject to approval by the Board of Directors, and, if approved, would be declared prior to August 15, 2015. We estimate that this special distribution will be at least \$35 million (or approximately \$1.60 per share), but it could be a larger amount based on a variety of factors, including our Undistributed Income at such time.

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 paid-in-kind dividends and distributions 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.

Certain 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 call premium that we received, thereby generating a profit. The premium we receive from selling call options, less (i) the amount that we pay to repurchase such call option contracts and (ii) the amount by which the market price of an underlying security is above the strike price at the time a new call option is written (if

any), is included in NDI. For GAAP purposes, premiums received from call option contracts sold are not included in investment income. See Note 2 Significant Accounting Policies for a full discussion of the GAAP treatment of option contracts.

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KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.

MANAGEMENT DISCUSSION

(UNAUDITED)

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 preferred stock for GAAP purposes, but is excluded from our calculation of NDI.

NDI also includes recurring payments (or receipts) on interest rate swap contracts or the amortization of termination payments on interest rate swap contracts entered into in anticipation of an offering of unsecured notes (Notes) or mandatory redeemable preferred shares (MRP Shares). The termination payments on interest rate swap contracts are amortized over the term of the Notes or MRP Shares issued. For GAAP purposes, these amounts are included in the realized gains/losses section of the Statement of Operations.

Under GAAP, excise taxes are accrued when probable and estimable. For NDI, we have assumed no excise tax expense for fiscal 2014 and estimate our excise tax expense to be \$2.3 million (\$0.58 million per quarter) for fiscal 2015.

Liquidity and Capital Resources

Total leverage outstanding at November 30, 2014 of \$386 million was comprised of \$235 million of Notes, \$46 million outstanding under our unsecured revolving term loan (Term Loan) and \$105 million of MRP Shares. At November 30, 2014, we did not have any borrowings outstanding under our unsecured revolving credit facility (the Credit Facility). Total leverage represented 31% of total assets at November 30, 2014. As of January 27, 2015, we had \$15 million borrowed under our Term Loan and we had \$1 million of cash. As of January 27, 2015, we did not have any borrowings outstanding under our Credit Facility.

Our Credit Facility has a total commitment of \$105 million and matures on November 21, 2016. The interest rate on outstanding loan balances may vary between LIBOR plus 1.50% and LIBOR plus 2.15%, depending on our asset coverage ratios. Outstanding loan balances accrue interest daily at a rate equal to LIBOR plus 1.50% based on current asset coverage ratios. We pay a fee of 0.25% per annum on any unused amounts of the Credit Facility.

Our Term Loan has a total commitment of \$50 million and matures on July 25, 2019. Borrowings under the Term Loan bear interest at a rate of LIBOR plus 1.30%. We pay a fee of 0.25% per annum on any unused amount of the Term Loan.

At November 30, 2014, we had \$235 million of Notes outstanding that mature between 2016 and 2023, and we had \$105 million of MRP Shares outstanding, that are subject to mandatory redemption in 2018, 2020 and 2021.

At November 30, 2014, our asset coverage ratios under the Investment Company Act of 1940, as amended (the 1940 Act), were 441% for debt and 321% for total leverage (debt plus preferred stock). Our long-term target asset coverage ratio with respect to our debt is 400%, but at times we may be above or below our target depending on market conditions.

As of November 30, 2014, our total leverage consisted of both fixed rate (88%) and floating rate (12%) obligations. At such date, the weighted average interest/dividend rate on our total leverage was 3.91%.

We plan to make a special distribution to common stockholders during fiscal 2015. This special distribution is subject to board approval and, if approved by the board, would be declared prior to August 15, 2015. We estimate that this special distribution will be at least \$35 million, but it could be a larger amount based on our Undistributed Income at such time.

Table of Contents**KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.****SCHEDULE OF INVESTMENTS****NOVEMBER 30, 2014****(amounts in 000 s, except number of option contracts)**

| Description | No. of Shares/Units | Value |
|--|------------------------|----------|
| Long-Term Investments 144.5% | | |
| Equity Investments⁽¹⁾ 132.9% | | |
| United States 124.8% | | |
| Midstream Company⁽²⁾ 66.8% | | |
| Capital Product Partners L.P. ⁽³⁾ | 721 | \$ 5,636 |
| Capital Products Partners L.P. Class B Units ⁽³⁾⁽⁴⁾⁽⁵⁾ | 606 | 5,358 |
| CenterPoint Energy, Inc. | 458 | 10,964 |
| Dynagas LNG Partners LP ⁽³⁾ | 1,138 | 20,373 |
| Golar LNG Partners LP ⁽³⁾ | 1,252 | 41,201 |
| Höegh LNG Partners LP ⁽³⁾ | 174 | 3,202 |
| Kinder Morgan, Inc. ⁽⁶⁾ | 4,605 | 190,434 |
| KNOT Offshore Partners LP ⁽³⁾ | 771 | 17,065 |
| National Fuel Gas Company | 150 | 10,384 |
| NiSource Inc. ⁽⁶⁾ | 253 | 10,594 |
| Nordic American Offshore Ltd. | 65 | 851 |
| ONEOK, Inc. | 856 | 46,351 |
| Plains GP Holdings, L.P. ⁽³⁾⁽⁷⁾ | 411 | 10,688 |
| Plains GP Holdings, L.P. ⁽³⁾⁽⁴⁾⁽⁷⁾⁽⁸⁾ | 1,836 | 47,169 |
| Spectra Energy Corp. ⁽⁶⁾ | 473 | 17,929 |
| Targa Resources Corp. ⁽⁹⁾ | 26 | 2,910 |
| Teekay Corporation | 45 | 2,237 |
| Teekay Offshore Partners L.P. ⁽³⁾ | 419 | 10,779 |
| Teekay Offshore Partners L.P. Series A Preferred Unit ⁽³⁾ | 300 | 7,245 |
| VTTI Energy Partners LP ⁽³⁾ | 326 | 7,978 |
| The Williams Companies, Inc. ⁽⁶⁾ | 1,954 | 101,100 |
| | | 570,448 |
| Midstream MLP⁽²⁾⁽¹⁰⁾ 46.4% | | |
| Access Midstream Partners, L.P. ⁽⁶⁾⁽¹¹⁾ | 87 | 5,472 |
| Antero Midstream Partners LP ⁽¹²⁾ | 131 | 3,633 |
| Arc Logistics Partners LP | 82 | 1,806 |
| Atlas Pipeline Partners, L.P. ⁽⁹⁾ | 65 | 2,135 |
| Buckeye Partners, L.P. ⁽⁶⁾ | 135 | 10,373 |
| Compressco Partners, L.P. | 53 | 1,087 |
| CONE Midstream Partners LP ⁽¹²⁾ | 17 | 478 |
| Crestwood Midstream Partners LP | 1,090 | 21,882 |
| DCP Midstream Partners, LP | 354 | 16,937 |
| Enable Midstream Partners, LP | 41 | 817 |
| Enbridge Energy Management, L.L.C. ⁽¹³⁾⁽¹⁴⁾ | 2,737 | 99,645 |
| Energy Transfer Equity, L.P. | 89 | 5,304 |
| Energy Transfer Partners, L.P. ⁽¹⁵⁾ | 424 | 27,638 |
| EnLink Midstream Partners, LP | 409 | 11,417 |
| Enterprise Products Partners L.P. ⁽¹⁵⁾ | 405 | 15,140 |
| Exterran Partners, L.P. | 288 | 7,114 |
| Global Partners LP | 266 | 11,126 |
| Holly Energy Partners, L.P. ⁽⁶⁾ | 144 | 4,832 |

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| | | |
|--|-----|--------|
| MarkWest Energy Partners, L.P. ⁽⁶⁾⁽⁷⁾ | 264 | 18,733 |
| Midcoast Energy Partners, L.P. | 128 | 1,967 |
| Niska Gas Storage Partners LLC | 24 | 112 |

See accompanying notes to financial statements.

Table of Contents**KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.****SCHEDULE OF INVESTMENTS****NOVEMBER 30, 2014****(amounts in 000 s, except number of option contracts)**

| Description | No. of Shares/Units | Value |
|--|--------------------------------|--------------|
| Midstream MLP⁽²⁾⁽¹⁰⁾ (continued) | | |
| ONEOK Partners, L.P. | 431 | \$ 18,983 |
| Plains All American Pipeline, L.P. ⁽⁷⁾ | 459 | 23,611 |
| QEP Midstream Partners, LP | 38 | 607 |
| Regency Energy Partners LP | 1,341 | 38,184 |
| Shell Midstream Partners, L.P. ⁽¹²⁾ | 105 | 3,846 |
| Sprague Resources LP | 26 | 577 |
| Summit Midstream Partners, LP | 79 | 3,582 |
| Targa Resources Partners LP ⁽⁹⁾ | 103 | 5,647 |
| USA Compression Partners, LP | 46 | 868 |
| USD Partners LP ⁽¹²⁾ | 119 | 1,774 |
| Western Gas Partners, LP ⁽⁶⁾ | 91 | 6,430 |
| Williams Partners L.P. ⁽¹¹⁾ | 475 | 24,570 |
| | | 396,327 |
| Other Energy Company 8.7% | | |
| Abengoa Yield plc | 242 | 6,827 |
| CONSOL Energy Inc. ⁽⁶⁾ | 323 | 12,655 |
| Dominion Resources, Inc. 6.375% Series A Preferred Shares | 13 | 647 |
| Enduro Royalty Trust | 320 | 2,257 |
| EQT Corporation ⁽⁶⁾ | 22 | 2,002 |
| HollyFrontier Corporation | 125 | 5,107 |
| LinnCo, LLC ⁽³⁾ | 344 | 5,637 |
| Marathon Petroleum Corporation ⁽⁶⁾ | 48 | 4,342 |
| NRG Yield, Inc. | 58 | 2,763 |
| Pacific Coast Oil Trust | 376 | 3,053 |
| Phillips 66 ⁽⁶⁾ | 221 | 16,108 |
| Seadrill Partners LLC ⁽³⁾ | 356 | 6,024 |
| Tesoro Corporation | 2 | 130 |
| Transocean Partners LLC ⁽³⁾ | 108 | 1,697 |
| Valero Energy Corporation ⁽⁶⁾ | 109 | 5,298 |
| VOC Energy Trust | 15 | 117 |
| | | 74,664 |
| Other 1.5% | | |
| Navios Maritime Holdings Inc. 8.625% Series H Preferred Shares | 132 | 2,904 |
| Seaspan Corporation 7.95% Series D Preferred Shares | 200 | 5,104 |
| Seaspan Corporation 8.25% Series E Preferred Shares | 200 | 5,162 |
| | | 13,170 |
| Other MLP⁽¹⁰⁾ 1.4% | | |
| BreitBurn Energy Partners L.P. | 113 | 1,491 |
| Foresight Energy LP | 285 | 5,011 |

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| | | |
|---|-----|-----------|
| LRR Energy LP | 22 | 245 |
| Suncoke Energy Partners, L.P. | 177 | 4,804 |
| | | 11,551 |
| Total United States (Cost \$751,010) | | 1,066,160 |

See accompanying notes to financial statements.

Table of Contents**KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.****SCHEDULE OF INVESTMENTS****NOVEMBER 30, 2014****(amounts in 000 \$, except number of option contracts)**

| Description | No. of Shares/Units | Value |
|--|--------------------------------|--------------|
| Canada 8.1% | | |
| Midstream Company⁽²⁾ 6.6% | | |
| AltaGas Ltd. ⁽⁶⁾ | 404 | \$ 14,970 |
| Enbridge Inc. | 498 | 22,911 |
| Gibson Energy Inc. ⁽¹⁵⁾ | 113 | 2,683 |
| Inter Pipeline Ltd. | 160 | 4,555 |
| Pembina Pipeline Corporation | 206 | 7,136 |
| TransCanada Corporation | 82 | 3,954 |
| | | 56,209 |
| Other Energy Company 1.5% | | |
| ARC Resources Ltd. ⁽¹⁵⁾ | 162 | 3,838 |
| Baytex Energy Corp. | 140 | 2,992 |
| Bonavista Energy Corporation | 153 | 1,285 |
| Bonterra Energy Corp. | 31 | 1,162 |
| Crescent Point Energy Corp. ⁽¹⁵⁾ | 129 | 3,350 |
| Pengrowth Energy Corporation ⁽¹⁵⁾ | 48 | 160 |
| | | 12,787 |
| Total Canada (Cost \$72,175) | | 68,996 |
| Total Equity Investments (Cost \$823,185) | | 1,135,156 |

| | Interest Rate | Maturity Date | Principal Amount | Value |
|-------------------------------------|--------------------------|--------------------------|-----------------------------|--------------|
| Debt Instruments 11.6% | | | | |
| Upstream 11.3% | | | | |
| American Eagle Energy Corporation | 11.000% | 9/1/19 | \$ 4,800 | 4,320 |
| American Energy-Woodford, LLC | 9.000 | 9/15/22 | 1,500 | 1,162 |
| BlackBrush Oil & Gas, L.P. | ⁽¹⁶⁾ | 7/30/21 | 12,700 | 11,748 |
| Canbriam Energy Inc. | 9.750 | 11/15/19 | 2,250 | 2,149 |
| Chief Oil & Gas LLC | ⁽¹⁷⁾ | 5/16/21 | 4,000 | 3,810 |
| CrownRock, L.P. | 7.125 | 4/15/21 | 2,500 | 2,387 |
| Goodrich Petroleum Corporation | 8.875 | 3/15/19 | 6,950 | 4,517 |
| Halcón Resources Corporation | 9.750 | 7/15/20 | 10,500 | 8,085 |
| Jonah Energy LLC | ⁽¹⁸⁾ | 5/29/21 | 3,000 | 2,865 |
| Jupiter Resources Inc. | 8.500 | 10/1/22 | 10,000 | 7,800 |
| Magnum Hunter Resources Corporation | 9.750 | 5/15/20 | 8,650 | 7,915 |
| Midstates Petroleum Company, Inc. | 10.750 | 10/1/20 | 3,500 | 2,502 |
| Midstates Petroleum Company, Inc. | 9.250 | 6/1/21 | 6,750 | 4,759 |
| Parsley Energy, Inc. | 7.500 | 2/15/22 | 6,025 | 5,596 |
| Resolute Energy Corporation | 8.500 | 5/1/20 | 4,900 | 3,216 |
| RKI Exploration & Production, LLC | 8.500 | 8/1/21 | 12,500 | 11,937 |

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| | | | | |
|------------------------------------|-------|----------|-------|--------|
| RSP Permian, Inc. | 6.625 | 10/1/22 | 1,200 | 1,092 |
| Teine Energy Ltd. | 6.875 | 9/30/22 | 2,500 | 2,188 |
| Triangle USA Petroleum Corporation | 6.750 | 7/15/22 | 800 | 604 |
| Vantage Energy, LLC | (19) | 12/31/18 | 8,952 | 8,236 |
| | | | | 96,888 |

See accompanying notes to financial statements.

Table of Contents**KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.****SCHEDULE OF INVESTMENTS****NOVEMBER 30, 2014****(amounts in 000 s, except number of option contracts)**

| Description | Interest Rate | Maturity Date | Principal Amount | Value |
|---|---------------|-----------------|------------------|-----------|
| Other 0.3% | | | | |
| Navios Maritime Holdings, Inc. | 7.375% | 1/15/22 | \$ 2,500 | \$ 2,422 |
| Total Debt Investments (Cost \$116,534) | | | | 99,310 |
| Total Long-Term Investments (Cost \$939,719) | | | | 1,234,466 |
| | | | | |
| | Strike Price | Expiration Date | No. of Contracts | Value |
| Call Option Contracts Written⁽²⁰⁾ | | | | |
| United States | | | | |
| Midstream Company | | | | |
| Kinder Morgan, Inc. | \$ 40.00 | 12/19/14 | 900 | (169) |
| Kinder Morgan, Inc. | 42.50 | 1/16/15 | 500 | (43) |
| NiSource Inc. | 42.00 | 1/16/15 | 500 | (45) |
| NiSource Inc. | 43.00 | 1/16/15 | 500 | (20) |
| Spectra Energy Corp. | 39.00 | 12/19/14 | 1,200 | (42) |
| The Williams Companies, Inc. | 57.50 | 12/19/14 | 1,400 | (14) |
| | | | | (333) |
| Midstream MLP | | | | |
| Access Midstream Partners, L.P. | 65.00 | 12/19/14 | 400 | (17) |
| Buckeye Partners, L.P. | 80.00 | 12/19/14 | 450 | (40) |
| Holly Energy Partners, L.P. | 35.00 | 12/19/14 | 350 | (13) |
| MarkWest Energy Partners, L.P. | 75.00 | 12/19/14 | 300 | (12) |
| MarkWest Energy Partners, L.P. | 77.50 | 12/19/14 | 300 | (9) |
| Western Gas Partners, LP | 75.00 | 12/19/14 | 450 | (26) |
| | | | | (117) |
| Other Energy Company | | | | |
| CONSOL Energy Inc. | 42.00 | 12/19/14 | 800 | (18) |
| EQT Corporation | 95.00 | 12/19/14 | 220 | (31) |
| Marathon Petroleum Corporation | 95.00 | 12/19/14 | 450 | (43) |
| Marathon Petroleum Corporation | 97.50 | 12/19/14 | 30 | (2) |
| Phillips 66 | 77.50 | 12/19/14 | 300 | (28) |
| Phillips 66 | 80.00 | 12/19/14 | 300 | (14) |
| Phillips 66 | 82.50 | 12/19/14 | 600 | (9) |
| Valero Energy Corporation | 52.50 | 12/19/14 | 1,050 | (27) |
| | | | | (172) |
| Total United States (Premium Received \$1,026) | | | | (622) |

Canada

Midstream Company

| | | | | |
|---------------------------------------|-------|----------|-----|-----|
| AltaGas Ltd. (Premiums Received \$20) | 48.00 | 12/19/14 | 400 | (2) |
|---------------------------------------|-------|----------|-----|-----|

| | | | | |
|--|--|--|--|--------------|
| Total Call Option Contracts Written (Premiums Received \$1,046) | | | | (624) |
|--|--|--|--|--------------|

| | | | | |
|-------------|--|--|--|------------------|
| Debt | | | | (281,000) |
|-------------|--|--|--|------------------|

| | | | | |
|--|--|--|--|------------------|
| Mandatory Redeemable Preferred Stock at Liquidation Value | | | | (105,000) |
|--|--|--|--|------------------|

| | | | | |
|--|--|--|--|--------------|
| Other Assets in Excess of Other Liabilities | | | | 6,415 |
|--|--|--|--|--------------|

| | | | | |
|---|--|--|--|-------------------|
| Net Assets Applicable to Common Stockholders | | | | \$ 854,257 |
|---|--|--|--|-------------------|

(1) Unless otherwise noted, equity investments are common units/common shares.

See accompanying notes to financial statements.

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KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.

SCHEDULE OF INVESTMENTS

NOVEMBER 30, 2014

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

- (2) Refer to the Glossary of Key Terms (page [45]) for the definitions of Midstream Companies and Midstream MLPs.
- (3) This company is structured like an MLP, but is not treated as a publicly-traded partnership for RIC qualification purposes.
- (4) Fair valued security, restricted from public sale. See Notes 2, 3 and 7 in Notes to Financial Statements.
- (5) Class B Units are convertible on a one-for-one basis into common units of Capital Product Partners L.P. (CPLP) and are senior to the common units in terms of liquidation preference and priority of distributions. The Class B Units pay quarterly cash distributions of \$0.21375 per unit and are convertible at any time at the option of the holder. If CPLP increases the quarterly cash distribution per common unit, the distribution per Class B Unit will increase by an equal amount. If CPLP does not redeem the Class B Units by May 2022, then the distribution increases by 25% per quarter to a maximum of \$0.33345 per unit. CPLP may require that the Class B Units convert into common units after May 2015 if the common unit price exceeds \$11.70 per unit, and the Class B Units are callable after May 2017 at a price of \$9.27 per unit and after May 2019 at \$9.00 per unit.
- (6) Security or a portion thereof is segregated as collateral on option contracts written.
- (7) As of November 30, 2014, the Fund believes that it is an affiliate of MarkWest Energy Partners, L.P., Plains All American Pipeline, L.P. and Plains GP Holdings, L.P. (Plains GP). See Note 5 Agreements and Affiliations.
- (8) The Fund holds an interest in Plains AAP, L.P. (PAA GP), which controls the general partner of Plains All American, L.P. The Fund s ownership of PAA GP is exchangeable into shares of Plains GP (which trades on the NYSE under the ticker PAGP) on a one-for-one basis at the Fund s option. See Note 3 Fair Value.
- (9) On October 13, 2014, Targa Resources Corp. and Targa Resources Partners LP entered into agreements to acquire Atlas Energy, L.P. and Atlas Pipeline Partners, L.P., respectively. The acquisitions are expected to close in the first quarter of 2015.
- (10) 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 24.7% of its total assets invested in publicly-traded partnerships at November 30, 2014. It is the Fund s intention to be treated as a RIC for tax purposes.
- (11) On October 24, 2014, Williams Partners L.P. entered into a merger agreement with and into Access Midstream Partners, L.P. The merger is expected to close in early 2015.

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- (12) Security is not currently paying cash distributions but is expected to pay cash distributions within the next 12 months.
- (13) Dividends are paid-in-kind.
- (14) Security is not treated as a publicly-traded partnership for RIC qualification purposes.
- (15) In lieu of cash distributions, the Fund has elected to receive distributions in additional units/stock through the issuer's dividend reinvestment program.
- (16) Floating rate second lien secured term loan. Security pays interest at a rate of LIBOR + 650 basis points with a 1.00% LIBOR floor (7.50% as of November 30, 2014).
- (17) Floating rate second lien secured term loan. Security pays interest at a rate of LIBOR + 650 basis points with a 1.00% LIBOR floor (7.50% as of November 30, 2014).
- (18) Floating rate second lien secured term loan. Security pays interest at a rate of LIBOR + 650 basis points with a 1.00% LIBOR floor (7.50% as of November 30, 2014).
- (19) Floating rate second lien secured term loan. Security pays interest at a rate of LIBOR + 750 basis points with a 1.00% LIBOR floor (8.50% as of November 30, 2014).
- (20) Security is non-income producing.

See accompanying notes to financial statements.

Table of Contents**KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.****STATEMENT OF ASSETS AND LIABILITIES****NOVEMBER 30, 2014****(amounts in 000 s, except share and per share amounts)**

| | |
|---|-------------------|
| ASSETS | |
| Investments, at fair value: | |
| Non-affiliated (Cost \$896,404) | \$ 1,134,265 |
| Affiliated (Cost \$43,315) | 100,201 |
| Total investments (Cost \$939,719) | 1,234,466 |
| Cash | 1,466 |
| Deposits with brokers | 244 |
| Receivable for securities sold | 2,340 |
| Interest, dividends and distributions receivable (Cost \$3,339) | 3,337 |
| Deferred debt and preferred stock offering costs and other assets | 4,470 |
| Total Assets | 1,246,323 |
| LIABILITIES | |
| Investment management fee payable | 1,317 |
| Call option contracts written (Premiums received \$1,046) | 624 |
| Accrued directors' fees and expenses | 52 |
| Accrued expenses and other liabilities | 4,073 |
| Term loan | 46,000 |
| Notes | 235,000 |
| Mandatory redeemable preferred stock, \$25.00 liquidation value per share (4,200,000 shares issued and outstanding) | 105,000 |
| Total Liabilities | 392,066 |
| NET ASSETS APPLICABLE TO COMMON STOCKHOLDERS | \$ 854,257 |
| NET ASSETS APPLICABLE TO COMMON STOCKHOLDERS CONSIST OF | |
| Common stock, \$0.001 par value (22,141,297 shares issued, 21,621,933 shares outstanding and 195,800,000 shares authorized) | \$ 22 |
| Paid-in capital | 507,652 |
| Accumulated net investment income less distributions not treated as tax return of capital | (16,428) |
| Accumulated net realized gains less distributions not treated as tax return of capital | 67,853 |
| Net unrealized gains | 295,158 |
| NET ASSETS APPLICABLE TO COMMON STOCKHOLDERS | \$ 854,257 |
| NET ASSET VALUE PER COMMON SHARE | \$ 39.51 |

See accompanying notes to financial statements.

Table of Contents**KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.****STATEMENT OF OPERATIONS****FOR THE FISCAL YEAR ENDED NOVEMBER 30, 2014****(amounts in 000 s)****INVESTMENT INCOME****Income**

Dividends and distributions:

| | |
|----------------------------|-----------|
| Non-affiliated investments | \$ 43,544 |
| Affiliated investments | 3,619 |

| | |
|---|----------|
| Total dividends and distributions (after foreign taxes withheld of \$365) | 47,163 |
| Return of capital | (24,786) |

| | |
|---------------------------------|--------|
| Net dividends and distributions | 22,377 |
| Interest and other income | 9,741 |

| | |
|-------------------------|--------|
| Total Investment Income | 32,118 |
|-------------------------|--------|

Expenses

| | |
|------------------------------|--------|
| Investment management fees | 15,750 |
| Professional fees | 474 |
| Administration fees | 314 |
| Directors' fees and expenses | 196 |
| Insurance | 145 |
| Reports to stockholders | 141 |
| Custodian fees | 83 |
| Other expenses | 209 |

| | |
|--|--------|
| Total Expenses before interest expense, preferred distributions and excise taxes | 17,312 |
| Interest expense and amortization of offering costs | 10,652 |
| Distributions on mandatory redeemable preferred stock and amortization of offering costs | 4,343 |
| Excise taxes | 42 |

| | |
|----------------|--------|
| Total Expenses | 32,349 |
|----------------|--------|

| | |
|----------------------------|--------------|
| Net Investment Loss | (231) |
|----------------------------|--------------|

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

| | |
|-------------------------------|--------|
| Investments non-affiliated | 72,773 |
| Investments affiliated | 1,123 |
| Foreign currency transactions | (55) |
| Options | 3,459 |
| Interest rate swap contracts | (431) |

| | |
|--------------------|--------|
| Net Realized Gains | 76,869 |
|--------------------|--------|

Net Change in Unrealized Gains

| | |
|-------------------------------|--------|
| Investments non-affiliated | 36,612 |
| Investments affiliated | 10,839 |
| Foreign currency translations | (4) |

| | |
|---|-------------------|
| Options | 610 |
| Net Change in Unrealized Gains | 48,057 |
| Net Realized and Unrealized Gains | 124,926 |
| NET INCREASE IN NET ASSETS APPLICABLE TO COMMON STOCKHOLDERS RESULTING FROM OPERATIONS | \$ 124,695 |

See accompanying notes to financial statements.

Table of Contents**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, | |
|--|---|-----------------|
| | 2014 | 2013 |
| OPERATIONS | | |
| Net investment (loss) ⁽¹⁾ | \$ (231) | \$ (2,315) |
| Net realized gains | 76,869 | 43,922 |
| Net change in unrealized gains | 48,057 | 146,243 |
| Net Increase in Net Assets Resulting from Operations | 124,695 | 187,850 |
| DIVIDENDS AND DISTRIBUTIONS TO COMMON STOCKHOLDERS⁽¹⁾⁽²⁾ | | |
| Dividends | (34,315) | (25,108) |
| Distributions net long-term capital gains | (7,401) | (14,572) |
| Dividends and Distributions to Common Stockholders | (41,716) | (39,680) |
| CAPITAL STOCK TRANSACTIONS | | |
| Issuance of 97,252 and 148,803 shares of common stock from reinvestment of dividends and distributions, respectively | 3,220 | 4,661 |
| Common stock purchased under the share repurchase program (519,364 shares) | (19,999) | |
| Net Increase (Decrease) in Net Assets Applicable to Common Stockholders from Capital Stock Transactions | (16,779) | 4,661 |
| Total Increase in Net Assets Applicable to Common Stockholders | 66,200 | 152,831 |
| NET ASSETS APPLICABLE TO COMMON STOCKHOLDERS | | |
| Beginning of year | 788,057 | 635,226 |
| End of year | \$ 854,257 | \$ 788,057 |

(1) Distributions on the Fund's mandatory redeemable preferred stock (MRP Shares) are treated as an operating expense under GAAP and are included in the calculation of net investment loss. See Note 2 Significant Accounting Policies. Distributions in the amount of \$4,168 paid to holders of MRP shares for the fiscal year ended November 30, 2014 were characterized as dividends (\$3,228) and as long-term capital gains (\$940). Distributions in the amount of \$3,212 paid to holders of MRP shares for the fiscal year ended November 30, 2013 were characterized as dividends (\$2,007) and as long-term capital gains (\$1,205). A portion of the distributions characterized as dividends (for both fiscal 2014 and fiscal 2013), was eligible to be treated as qualified dividend income. This characterization is based on the Fund's earnings and profits.

(2) Distributions paid to common stockholders for the fiscal years ended November 30, 2014 and 2013, respectively, were characterized as either dividends (a portion of which was eligible to be treated as qualified dividend income) or distributions (long-term capital gains or return of capital). This characterization is based on the Fund's earnings and profits.

See accompanying notes to financial statements.

Table of Contents**KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.****STATEMENT OF CASH FLOWS****FOR THE FISCAL YEAR ENDED NOVEMBER 30, 2014****(amounts in 000 s)**

| | |
|---|-----------------|
| CASH FLOWS FROM OPERATING ACTIVITIES | |
| Net increase in net assets resulting from operations | \$ 124,695 |
| Adjustments to reconcile net increase in net assets resulting from operations to net cash used in operating activities: | |
| Return of capital distributions | 24,786 |
| Net realized gains (excluding foreign currency transactions) | (76,924) |
| Net unrealized gains (excluding foreign currency translations) | (48,061) |
| Accretion of bond discounts, net | (27) |
| Purchase of long-term investments | (597,132) |
| Proceeds from sale of long-term investments | 567,937 |
| Decrease in deposits with brokers | 274 |
| Decrease in receivable for securities sold | 2,127 |
| Decrease in interest, dividends and distributions receivable | 720 |
| Amortization of deferred debt offering costs | 625 |
| Amortization of mandatory redeemable preferred stock offering costs | 175 |
| Increase in other assets | (728) |
| Decrease in payable for securities purchased | (5,459) |
| Increase in investment management fee payable | 204 |
| Decrease in premiums received on call option contracts written | (704) |
| Increase in accrued directors fees and expenses | 2 |
| Decrease in accrued excise taxes | (750) |
| Increase in accrued expenses and other liabilities | 724 |
| Net Cash Used in Operating Activities | (7,516) |
| CASH FLOWS FROM FINANCING ACTIVITIES | |
| Decrease in borrowings under credit facility | (50,000) |
| Increase in borrowings under term loan | 46,000 |
| Proceeds from offering of notes | 30,000 |
| Proceeds from offering of mandatory redeemable preferred stock | 40,000 |
| Shares of common stock repurchased | (19,999) |
| Costs associated with offering of notes | (242) |
| Costs associated with offering of mandatory redeemable preferred stock | (576) |
| Costs associated with issuance of term loan | (363) |
| Cash distributions paid to common stockholders | (38,496) |
| Net Cash Provided by Financing Activities | 6,324 |
| NET DECREASE IN CASH | (1,192) |
| CASH BEGINNING OF YEAR | 2,658 |
| CASH END OF YEAR | \$ 1,466 |

Supplemental disclosure of cash flow information:

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Non-cash financing activities not included herein consisted of reinvestment of distributions of \$3,220 pursuant to the Fund's dividend reinvestment plan.

During the fiscal year ended November 30, 2014, interest paid was \$9,703 and federal excise tax paid was \$792.

During the fiscal year ended November 30, 2014, the Fund received \$14,612 of paid-in-kind and non-cash dividends and distributions. See Note 2 Significant Accounting Policies.

See accompanying notes to financial statements.

Table of Contents**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, | | | | For the Period November 24, 2010 ⁽¹⁾ through November 30, 2010 |
|---|--|----------|----------|----------|---|
| | 2014 | 2013 | 2012 | 2011 | |
| Per Share of Common Stock⁽²⁾ | | | | | |
| Net asset value, beginning of period | \$ 35.75 | \$ 29.01 | \$ 25.94 | \$ 23.80 | \$ 23.83 ⁽³⁾ |
| Net investment income (loss) ⁽⁴⁾ | (0.01) | (0.06) | 0.17 | 0.29 | (0.02) |
| Net realized and unrealized gains (losses) | 5.61 | 8.61 | 4.64 | 3.12 | (0.01) |
| Total income (loss) from operations | 5.60 | 8.55 | 4.81 | 3.41 | (0.03) |
| Common dividends dividend income ⁽⁵⁾ | (1.57) | (1.15) | (1.30) | (1.20) | |
| Common distributions long-term capital gain ⁽⁵⁾ | (0.34) | (0.66) | (0.41) | | |
| Common distributions return of capital ⁽¹⁾ | | | | | |
| Total dividends and distributions common | (1.91) | (1.81) | (1.71) | (1.20) | |
| Effect of shares issued in reinvestment of distributions | (0.02) | | (0.03) | (0.04) | |
| Effect of issuance of common stock | | | | (0.03) | |
| Effect of common stock repurchased | 0.09 | | | | |
| Net asset value, end of period | \$ 39.51 | \$ 35.75 | \$ 29.01 | \$ 25.94 | \$ 23.80 |
| Market value per share of common stock, end of period | \$ 35.82 | \$ 32.71 | \$ 28.04 | \$ 22.46 | \$ 25.00 |
| Total investment return based on common stock market value ⁽⁶⁾ | 15.3% | 23.5% | 33.3% | (5.5)% | 0.0% ⁽⁷⁾ |

See accompanying notes to financial statements.

Table of Contents**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, | | | | For the Period November 24, 2010 ⁽¹⁾ through November 30, 2010 |
|---|--|------------|------------|------------|---|
| | 2014 | 2013 | 2012 | 2011 | |
| Supplemental Data and Ratios⁽⁸⁾ | | | | | |
| Net assets applicable to common stockholders, end of period | \$ 854,257 | \$ 788,057 | \$ 635,226 | \$ 562,044 | \$ 452,283 |
| Ratio of expenses to average net assets | | | | | |
| Management fees ⁽⁹⁾ | 1.7% | 1.8% | 1.7% | 1.6% | 1.3% |
| Other expenses | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 ⁽¹⁰⁾ |
| Subtotal | 1.9 | 2.0 | 2.0 | 1.9 | 1.6 |
| Interest expense and distributions on mandatory redeemable preferred stock ⁽⁴⁾ | 1.7 | 1.8 | 1.8 | 1.3 | |
| Management fee waiver | | | | (0.3) | (0.3) |
| Excise taxes | | 0.1 | | | |
| Total expenses | 3.6% | 3.9% | 3.8% | 2.9% | 1.3% |
| Ratio of net investment income (loss) to average net assets ⁽⁴⁾ | (0.0)% | (0.2)% | 0.6% | 1.1% | (1.3)% ⁽¹⁰⁾ |
| Net increase (decrease) in net assets applicable to common stockholders resulting from operations to average net assets | 14.0% | 25.9% | 16.8% | 13.4% | (0.1)% ⁽⁷⁾ |
| Portfolio turnover rate | 45.3% | 49.1% | 67.6% | 74.1% | 0.0% ⁽⁷⁾ |
| Average net assets | \$ 887,585 | \$ 726,248 | \$ 620,902 | \$ 537,044 | \$ 452,775 |
| Notes outstanding, end of period | 235,000 | 205,000 | 165,000 | 115,000 | |
| Credit facility outstanding, end of period | | 50,000 | 48,000 | 45,000 | |
| Term loan outstanding, end of period | 46,000 | | | | |
| Mandatory redeemable preferred stock, end of period | 105,000 | 65,000 | 65,000 | 35,000 | |
| Average shares of common stock outstanding | 21,897,671 | 21,969,288 | 21,794,596 | 21,273,512 | 19,004,000 |
| Asset coverage of total debt ⁽¹¹⁾ | 441.4% | 434.5% | 428.7% | 473.2% | |
| Asset coverage of total leverage (debt and preferred stock) ⁽¹²⁾ | 321.3% | 346.3% | 328.5% | 388.2% | |
| Average amount of borrowings per share of common stock during the period ⁽²⁾ | \$ 12.84 | \$ 10.51 | \$ 8.85 | \$ 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 MRP Shares are treated as an operating expense under GAAP and are included in the calculation of net investment income (loss). See Note 2 Significant Accounting Policies.
- (5) The information presented for each period is a characterization of the total distributions paid to the common stockholders as either a dividend (a portion of which was eligible to be treated as qualified dividend income) or a distribution (long-term capital gains or return of capital) and is 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) Not annualized.
- (8) Unless otherwise noted, ratios are annualized.
- (9) Ratio reflects total management fee before waiver.
- (10) 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.
- (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 unsecured notes (Notes) or any other senior securities representing indebtedness and MRP Shares divided by the aggregate amount of 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 Credit Facility and the Term Loan are considered senior securities 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 Notes, any other senior securities representing indebtedness and MRP Shares divided by the aggregate amount of Notes, any other senior securities representing indebtedness and MRP Shares. 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 MRP Shares, 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 Credit Facility and the Term Loan are considered senior securities 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 investment objective is to provide a high level of return with an emphasis on making quarterly cash distributions to its stockholders. The Fund seeks to achieve that investment objective by investing at least 80% of its 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. 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

The following is a summary of the significant accounting policies that the Fund uses to prepare its financial statements in accordance with accounting principles generally accepted in the United States of America (GAAP). The Fund is an investment company and follows accounting and reporting guidance of the Financial Accounting Standards Board (FASB) Accounting Standards Codification (ASC) Topic 946 Financial Services Investment Companies.

A. Use of Estimates The preparation of financial statements in conformity with 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. Any securities for which (a) reliable market quotations are not available in the judgment of KA Fund Advisors, LLC (KAFA), or (b) the pricing service does not provide a valuation or provides a valuation that in the judgment of KAFA is stale or does not represent fair value, shall each be valued

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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)

in a manner that most fairly reflects fair value of the security on the valuation date. 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.

On November 27, 2014, OPEC met and decided to maintain its crude oil production quotas. As a result of this decision, on November 28, 2014, the price of crude oil (as measured by the price of West Texas Intermediate, or WTI) declined \$7.54 per barrel, or 10.2%, compared to the close of business on November 26, 2014. The U.S. financial markets were open on November 28, 2014, but experienced light trading volume. On November 28, 2014 (the last trading day of the Fund's fiscal year), KAFA observed that prices, provided by an independent pricing service pursuant to the Fund's Valuation Procedures, for certain of the fixed income securities in the Fund's portfolio, were unchanged from prices provided as of November 26, 2014. KAFA believes that the unchanged prices did not represent the fair value for these debt securities. KAFA concluded that the prices provided by the independent pricing service on December 1, 2014 reflected the fair value for these securities as of November 30, 2014. Consequently, KAFA reduced the value of these debt securities by \$4,340 or approximately 4.2%.

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 accurately 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 KAFA who are responsible for the portfolio investments. The investments will be valued monthly, with new investments valued at the time such investment was made.

Investment Team Valuation Documentation. Preliminary valuation conclusions will be determined by senior management of KAFA. Such valuations and supporting documentation is submitted to the Valuation Committee (a committee of the Fund's Board of Directors) and the Board of Directors on a quarterly basis.

Valuation Committee. The Valuation Committee meets to consider the valuations submitted by KAFA at the end of each quarter. 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. Quarterly, a third-party valuation firm engaged by the Board of Directors reviews the valuation methodologies and calculations employed for these securities, unless the aggregate fair value of such security is less than 0.1% of total assets.

Board of Directors Determination. The Board of Directors meets quarterly to consider the valuations provided by KAFA and the Valuation Committee 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.

As of November 30, 2014, the Fund held 6.1% of its net assets applicable to common stockholders (4.2% 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, 2014 was \$52,527. See Note 3 Fair Value and Note 7 Restricted Securities.

E. *Repurchase Agreements* From time to time, the Fund has agreed to purchase securities from financial institutions subject to the seller's agreement to repurchase them at an agreed-upon time and price ("repurchase

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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)

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, 2014, 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.

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, 2014, 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 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.

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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 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 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 (and other entities treated as partnerships for federal income tax purposes) 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 payments that is considered investment income and the amount that is considered a return of capital. The Fund estimates that 90% of the MLP distributions received will be treated as a return of capital. Such estimates for MLPs and other investments 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 return of capital portion of the distributions is a reduction to investment income, an equivalent reduction in the cost basis of the associated investments and an increase to net realized gains (losses) and net change in unrealized gains (losses). If the cash distributions received by the Fund exceed its cost basis (*i.e.* its cost basis has been reduced to zero), the distributions are treated as realized gains.

The Fund includes all cash distributions received on its Statement of Operations and reduces its investment income by (i) the estimated return of capital and (ii) the distributions in excess of cost basis (if any). For the fiscal year ended November 30, 2014, the Fund had \$24,786 of return of capital and there were no cash distributions that were in excess of cost basis.

In accordance with GAAP, the return of capital cost basis reductions for the Fund's MLP investments are limited to the total amount of the cash distributions received from such investments. For income tax purposes, the cost basis reductions for the Fund's MLP investments typically exceed cash distributions received from such investments due to allocated losses from these investments.

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(amount in 000 s, except number of option contracts, share and per share)

The following table sets forth the Fund's estimated return of capital portion of the distributions received from its investments.

| | For the Fiscal Year Ended November 30, 2014 |
|--|--|
| Dividends from investments | \$ 27,548 |
| Distributions from investments | 19,980 |
| Total dividends and distributions from investments (before foreign taxes withheld of \$365) | \$ 47,528 |
| Dividends % return of capital | 21% |
| Distributions % return of capital | 95% |
| Total dividends and distributions % return of capital | 52% |
| Return of capital attributable to net realized gains (losses) | \$ 3,100 |
| Return of capital attributable to net change in unrealized gains (losses) | 21,686 |
| Total return of capital | \$ 24,786 |

For the fiscal year ended November 30, 2014, the Fund estimated the return of capital portion of distributions received to be \$24,177 (51%). This amount was increased by \$609 due to 2013 tax reporting information received by the Fund in fiscal 2014. As a result, the return of capital percentage for the fiscal year ended November 30, 2014 was 52%.

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, 2014, 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, 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.

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The Fund receives paid-in-kind and non-cash dividends and distributions in the form of additional units or shares from the investments listed in the table below. For paid-in-kind dividends, the additional units are not reflected in investment income during the period received but are recorded as unrealized gains upon receipt. Non-cash distributions are reflected in investment income because the Fund has the option to receive its distribution in cash or in additional units of the security. During the fiscal year ended November 30, 2014, the Fund received the following paid-in-kind and non-cash dividends and distributions.

| | For the Fiscal Year Ended November 30, 2014 |
|--|--|
| <u>Paid-in-kind dividends</u> | |
| Enbridge Energy Management, L.L.C. | \$ 5,407 |
| Kinder Morgan Management, LLC | 6,677 |
| | 12,084 |
| <u>Non-cash dividends and distributions</u> | |
| ARC Resources Ltd. | 95 |
| Bonavista Energy Corporation | 38 |
| Crescent Point Energy Corp. | 154 |
| Enbridge, Inc. | 148 |
| Energy Transfer Partners, L.P. | 1,290 |
| Enterprise Products Partners L.P. | 732 |
| Gibson Energy Inc. | 69 |
| Pengrowth Energy Corporation | 2 |
| | 2,528 |
| Total paid-in-kind and non-cash dividends and distributions | \$ 14,612 |

K. Distributions to Stockholders Distributions to common stockholders are recorded on the ex-dividend date. Distributions to holders of MRP Shares are accrued on a daily basis as described in Note 12 Preferred Stock. As required by the Distinguishing Liabilities from Equity topic of the FASB Accounting Standards Codification (ASC 480), the Fund includes the accrued distributions on its MRP Shares 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 MRP Shares are treated as dividends or distributions.

The characterization of the distributions paid to holders of MRP Shares and common stock for the fiscal year ended November 30, 2014 as either a dividend (eligible to be treated as qualified dividend income) or a distribution (long-term capital gains or return of capital) is determined after the end of the fiscal year based on the Fund's actual 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 continue 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 (the Code). As long as the Fund meets certain

requirements that govern its sources of income, diversification of assets and timely distribution of earnings to stockholders, the Fund will not be subject to U.S. federal income tax.

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The Fund must pay distributions equal to 90% of its investment company taxable income (ordinary income and short-term capital gains) to qualify as a RIC and it must distribute all of its taxable income (ordinary income, short-term capital gains and long-term capital gains) to avoid federal income taxes. The Fund will be subject to federal income tax on any undistributed portion of income. For purposes of the distribution test, the Fund may elect to treat as paid on the last day of its taxable year all or part of any distributions that are declared after the end of its taxable year if such distributions are declared before the due date of its tax return, including any extensions (August 15th). See Note 6 Taxes.

All RICs are subject to a non-deductible 4% excise tax on income that is not distributed on a timely basis in accordance with the calendar year distribution requirements. To avoid the tax, the Fund must distribute during each calendar year an amount at least equal to the sum of (i) 98% of its ordinary income for the calendar year, (ii) 98.2% of its net capital gains for the one-year period ending on November 30, the last day of our taxable year, and (iii) undistributed amounts from previous years on which the Fund paid no U.S. federal income tax. A distribution will be treated as paid during the calendar year if it is paid during the calendar year or declared by the Fund in October, November or December, payable to stockholders of record on a date during such months and paid by the Fund during January of the following year. Any such distributions paid during January of the following year will be deemed to be received by stockholders on December 31 of the year the distributions are declared, rather than when the distributions are actually received.

The Fund will be liable for the excise tax on the amount by which it does not meet the distribution requirement and will accrue an excise tax liability at the time that the liability is estimable and probable. During the first fiscal quarter of 2015, the Fund accrued an excise tax liability of \$2,300. See Note 6 Taxes and Note 14 Subsequent Events.

Dividend income received by the Fund from sources within Canada is subject to a 15% foreign withholding tax. For non-cash dividends received from ARC Resources Ltd., Bonavista Energy Corporation, Crescent Point Energy Corp. and Gibson Energy Inc. during the fiscal year ended November 30, 2014, there was no foreign withholding tax. Interest income, on Canadian corporate debt obligations, paid or payable to a non-resident entity that deals at arm's length with the Canadian resident should generally be exempt from withholding tax on interest, with a few exceptions (e.g., a profit participating debt interest).

The Accounting for Uncertainty in Income Taxes Topic of the FASB Accounting Standards Codification (ASC 740) 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, 2014, 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 federal and state tax authorities.

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

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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. 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.

P. Offering and Debt Issuance Costs Offering costs incurred by the Fund related to the issuance of its common stock reduce additional paid-in-capital when the stock is issued. Costs incurred by the Fund related to the issuance of its debt (revolving credit facility, term loan or senior notes) or its preferred stock are capitalized and amortized over the period the debt or preferred stock is outstanding.

3. Fair Value

The Fair Value Measurement Topic of the FASB Accounting Standards Codification (ASC 820) defines fair value as the price at which an orderly transaction to sell an asset or to transfer a liability would take place between market participants under current market conditions at the measurement date. As required by ASC 820, 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. Inputs are the assumptions, along with considerations of risk, that a market participant would use to value an asset or a liability. In general, observable inputs are based on market data that is readily available, regularly distributed and verifiable that the Fund obtains from independent, third-party sources. Unobservable inputs are developed by the Fund based on its own assumptions of how market participants would value an asset or a liability.

Accounting Standards Update (ASU) No. 2011-04 Amendments to Achieve Common Fair Value Measurement and Disclosure Requirements in U.S. GAAP and IFRSs amends ASC 820. The amended guidance clarifies the wording used to describe many requirements in accounting literature for fair value measurement and disclosure to establish consistency between U.S. GAAP and International Financial Reporting Standards (IFRSs).

ASU No. 2011-04 requires the inclusion of additional disclosures on assumptions used by the Fund to determine fair value. Specifically, for assets measured at fair value using significant unobservable inputs (Level 3), ASU No. 2011-04 requires that the Fund (i) describe the valuation process, (ii) disclose quantitative information about unobservable inputs and (iii) provide a qualitative discussion about the sensitivity of the fair value measurement to changes in the unobservable inputs and inter-relationships between the inputs.

The fair value hierarchy prioritizes the inputs to valuation techniques used to measure fair value into the following three broad categories.

Level 1 Valuations based on 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.

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Level 2 Valuations based on 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, 2014, and the Fund presents these assets and liabilities by security type and description on its Schedule of Investments or on its Statement of Assets and Liabilities. Note that the valuation levels below are not necessarily an indication of the risk or liquidity associated with the underlying investment.

| | Total | Quoted Prices in Active Markets (Level 1) | Prices with Other Observable Inputs (Level 2) | Unobservable Inputs (Level 3) |
|-----------------------------|--------------|---|---|-------------------------------------|
| Assets at Fair Value | | | | |
| Equity investments | \$ 1,135,156 | \$ 1,082,629 | \$ | \$ 52,527 |
| Debt investments | 99,310 | | 99,310 | |
| Total assets at fair value | \$ 1,234,466 | \$ 1,082,629 | \$ 99,310 | \$ 52,527 |

Liabilities at Fair Value

| | | | | |
|-------------------------------|--------|----|--------|----|
| Call option contracts written | \$ 624 | \$ | \$ 624 | \$ |
|-------------------------------|--------|----|--------|----|

For the fiscal year ended November 30, 2014, there were no transfers between Level 1 and Level 2.

As of November 30, 2014, the Fund had Notes outstanding with aggregate principal amount of \$235,000 and 4,200,000 shares of MRP Shares outstanding with a total liquidation value of \$105,000. The Notes and MRP Shares were issued in private placements to institutional investors and are not listed on any exchange or automated quotation system. See Note 11 Notes and Note 12 Preferred Stock. As a result, the Fund categorizes the Notes and MRP Shares as Level 3 securities and determines the fair value of these instruments based on estimated market yields and credit spreads for comparable instruments with similar maturity, terms and structure.

The Fund records the Notes and MRP Shares on its Statement of Assets and Liabilities at principal amount or liquidation value. As of November 30, 2014, the estimated fair values of these leverage instruments are as follows.

| Security | Principal Amount/ Liquidation Value | Fair Value |
|------------|---|---------------|
| Notes | \$ 235,000 | \$ 248,200 |
| MRP Shares | \$ 105,000 | \$ 110,700 |

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, 2014.

| | Equity Investments |
|--------------------------------|-------------------------------|
| Balance November 30, 2013 | \$ 45,096 |
| Purchases | |
| Issuances | |
| Transfers out to Level 1 and 2 | |
| Realized gains (losses) | |
| Unrealized gains, net | 7,431 |
| Balance November 30, 2014 | \$ 52,527 |

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The \$7,431 of net unrealized gains relate to investments that were still held at November 30, 2014, and the Fund includes these unrealized gains on the Statement of Operations Net Change in Unrealized Gains.

Valuation Techniques and Unobservable Inputs

Unless otherwise determined by the Board of Directors, the Fund values its private investments in public equity (PIPE) investments that are convertible into or otherwise will become publicly-tradeable (e.g., through subsequent registration or expiration of a restriction on trading) based on the market value of the publicly-traded security less a discount. This discount is initially equal to the discount negotiated at the time the Fund agrees to a purchase price. 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.

The Fund's investment in Plains AAP, L.P. (PAA GP), which controls the general partner of Plains All American, L.P., is valued as a PIPE investment. The Fund's ownership of PAA GP is exchangeable into shares of Plains GP Holdings, L.P. (Plains GP) on a one-for-one basis at the Fund's option. Plains GP completed its initial public offering in October 2013 and in connection with the offering, the Fund agreed to a 15-month lock-up on any Plains GP shares it receives in exchange for its ownership in PAA GP. During the 15-month lock-up period, the Fund valued its investment in PAA GP on an as exchanged basis based on the public market value of Plains GP less a discount because of the lack of liquidity. On January 21, 2015, the lock-up expired, and, as a result, the Fund will no longer value its investment in PAA GP at a discount after such date.

One of the Fund's private investments is Class B Units of Capital Product Partners L.P. (CPLP). The Class B Units are convertible units (convertible on a one-for-one basis into common units) and are senior to CPLP's common units in terms of liquidation preference and priority of distributions. The Fund's Board of Directors has determined that it is appropriate to value the Class B Units using a convertible pricing model. This model takes into account the attributes of the Class B Units, including the preferred dividend, conversion ratio and call features, to determine the estimated value of such units. In using this model, the Fund estimates (i) the credit spread for CPLP's Class B Units, which is based on credit spreads for companies in a similar line of business as CPLP and (ii) the expected volatility for CPLP's common units, which is based on CPLP's historical volatility. The Fund applies a discount to the value derived from the convertible pricing model to account for an expected discount in market prices for convertible securities relative to the values calculated using pricing models. If this resulting price per Class B Unit is less than the public market price for CPLP's common units at such time, the public market price for CPLP's common unit will be used for the Class B Units.

Due to the inherent uncertainty of determining the fair value of investments that do not have a readily available market value, the fair value of the Fund's investments may fluctuate from period to period. Additionally, the fair value of the Fund's investments may differ from the values that would have been used had a ready market existed for such investments and may differ materially from the values that the Fund may ultimately realize.

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The following table summarizes the significant unobservable inputs that the Fund used to value its portfolio investments categorized as Level 3 as of November 30, 2014:

Quantitative Table for Valuation Techniques

| Assets at Fair Value | Fair Value | Valuation Technique | Unobservable Inputs | Range | | Average |
|---|------------------|--|---|-----------------------|-----------------------|-----------------------|
| | | | | Low | High | |
| Equity securities of public companies (PIPE) valued based on a discount to market value | \$ 47,169 | - Discount to publicly-traded securities | - Current discount | 1.1% | 1.1% | 1.1% |
| Equity securities of public companies valued based on pricing model | 5,358 | - Convertible pricing model | - Credit spread - Volatility - Discount for marketability | 7.5% 27.5% 8.0% | 8.0% 32.5% 8.0% | 7.8% 30.0% 8.0% |
| Total | \$ 52,527 | | | | | |

4. Concentration of Risk

The Fund's investments are concentrated in the energy sector. The focus of the Fund's portfolio within the energy sector may present more risks than if the Fund's portfolio were broadly diversified across numerous sectors of the economy. A downturn in the energy sector would have a larger impact on the Fund than on an investment company that does not focus on the energy sector. The performance of securities in the energy sector may lag the performance of other industries or the broader market as a whole. Additionally, to the extent that the Fund invests a relatively high percentage of its assets in the securities of a limited number of issuers, the Fund may be more susceptible than a more widely diversified investment company to any single economic, political or regulatory occurrence. At November 30, 2014, the Fund had the following investment concentrations.

| Category | Percent of Long-Term Investments |
|---|----------------------------------|
| Securities of Energy Companies ⁽¹⁾ | 98.7% |
| Equity securities | 92.0% |
| Debt securities | 8.0% |
| Securities of MLPs ⁽¹⁾ | 33.0% |
| Largest single issuer | 15.4% |
| Restricted securities | 9.8% |

(1) Refer to the Glossary of Key Terms (page 45) for the definitions of Energy Companies and MLPs.

5. Agreements and Affiliations

A. Administration Agreement The Fund has an administration and accounting agreement with Ultimus Fund Solutions, LLC (Ultimus) that may be amended from time to time. Pursuant to the agreement, Ultimus will provide certain administrative and accounting services for the Fund. The agreement has an initial term of two years (expiring on November 14, 2015) and has automatic one-year renewals unless earlier terminated by either party as provided under the terms of the agreement.

B. Investment Management Agreement The Fund has entered into an investment management agreement with KAFA under which KAFA, subject to the overall supervision of the Fund's Board of Directors, manages the day-to-day operations of, and provides investment advisory services to, the Fund. For providing these services, KAFA receives an investment management fee from the Fund. On September 29, 2014, the Fund renewed its agreement with

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KAFA for a period of one year, which expires on October 19, 2015. The agreement may be renewed annually upon the approval of the Fund's Board of Directors (including 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, 2014, the Fund paid management fees at an annual rate of 1.25% of the average monthly total assets of the Fund.

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 the Fund's use of debt and preferred stock, minus the sum of the Fund's accrued and unpaid dividends and distributions on any outstanding common stock and accrued and unpaid dividends and 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 of its portfolio companies, as each of these terms is defined in the 1940 Act. In general, under the 1940 Act, the Fund would be presumed to control a portfolio company if the Fund and its affiliates owned 25% or more of its outstanding voting securities and would be an affiliate of a portfolio company if the Fund and its affiliates 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 are several factors that determine whether or not a security should be considered a voting security in complex structures such as limited partnerships of the kind in which the Fund invests. The Fund also notes that the Securities and Exchange Commission (the SEC) staff has issued guidance on the circumstances under which it would consider a limited partnership interest to constitute a voting security. Under most partnership agreements, the management of the partnership is vested in the general partner, and the limited partners, individually or collectively, have no rights to manage or influence management of the partnership through such activities as participating in the selection of the managers or the board of the limited partnership or the general partner. As a result, the Fund believes that many of the limited partnership interests in which it invests should not be considered voting securities. However, it is possible that the SEC staff may consider the limited partner interests the Fund holds in certain limited partnerships to be voting securities. If such a determination were 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 making such a determination as to whether to treat any class of limited partnership interests the Fund holds as a voting security, the Fund considers, among other factors, whether or not the holders of such limited partnership interests have the right to elect the board of directors of the limited partnership or the general partner. If the holders of such limited partnership interests do not have the right to elect the board of directors, the Fund generally has not treated such security as a voting security. In other circumstances, based on the facts and circumstances of those partnership agreements, including the right to elect the directors of the general partner, the Fund has treated those securities as voting securities. If the Fund does not consider the security to be a voting security, it will not consider such partnership to be an affiliate unless the Fund and its affiliates own more than 25% of the outstanding securities of such partnership. Additionally, certain partnership agreements give common unitholders the right to elect the partnership's board of directors, but limit the amount of voting securities any limited partner can hold to no more than 4.9% of the partnership's outstanding voting securities (*i.e.*, any amounts held in excess of such limit by a limited partner do not have voting rights). In such instances, the Fund does not consider itself to be an affiliate if it owns more than 5% of such partnership's common units.

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There is no assurance that the SEC staff will not consider that other limited partnership securities that the Fund owns and does not treat as voting securities are, in fact, voting securities for the purposes of Section 17 of the 1940 Act. If such determination were made, the Fund will be required to abide by the restrictions on control or affiliate transactions as proscribed in the 1940 Act. The Fund or any portfolio company that it controls, and its affiliates, may from time to time engage in certain of such joint transactions, purchases, sales and loans in reliance upon and in compliance with the conditions of certain exemptive rules promulgated by the SEC. The Fund cannot make assurances, however, that it would be able to satisfy the conditions of these rules with respect to any particular eligible transaction, or even if the Fund were allowed to engage in such a transaction, that the terms would be more or as favorable to the Fund or any company that it controls as those that could be obtained in arm's length transaction. As a result of these prohibitions, restrictions may be imposed on the size of positions that may be taken for the Fund or on the type of investments that it could make.

As of November 30, 2014, the Fund believes that MarkWest Energy Partners, L.P. meets the criteria described above and is therefore considered an affiliate of the Fund.

Plains GP Holdings, L.P., Plains AAP, L.P. 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 of (i) PAA GP Holdings LLC, which is the general partner of Plains GP Holdings, L.P. (Plains GP) and (ii) Plains All American GP LLC (Plains All American GP), which controls 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 shares of Plains GP as well as interests in Plains AAP, L.P. (PAA GP) (which are exchangeable into shares of Plains GP as described in Note 3 Fair Value). 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 interest in Plains GP and PAA GP and (ii) Mr. Sinnott's participation on the boards of Plains GP and Plains All American GP.

6. Taxes

It is the Fund's intention to continue to be treated as and to qualify as a RIC under Subchapter M of the Code and distribute all of its taxable income. Accordingly, no provision for federal income taxes is required in the financial statements. See Note 2 Significant Accounting Policies.

Income and capital gain distributions made by RICs often differ from GAAP basis net investment income (loss) and 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.

As of November 30, 2014, the principal temporary differences between income for GAAP purposes and taxable income were (a) realized losses that were recognized for GAAP 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.

During the fiscal year ended November 30, 2014, the Fund reclassified \$220 from paid-in capital to accumulated net investment income and accumulated capital gains primarily due to the permanent differences between GAAP and tax treatment of the amortization of MRP Shares offering costs and non-deductible excise taxes paid. The Fund also reclassified \$8,906 of accumulated realized gains to accumulated net investment income due to permanent differences between GAAP and tax treatment of certain net realized gains.

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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 following table sets forth the components of accumulated income for the Fund.

| | As of November 30, 2014 |
|--|--|
| Undistributed ordinary income (including short-term capital gains) | \$ 20,094 |
| Undistributed long-term capital gains | 49,282 |
| Capital loss carryforward | |
| Unrealized appreciation of investments | 275,289 |
| Total accumulated income | \$ 344,665 |

At November 30, 2014, the Fund had \$69,376 of undistributed ordinary income and long-term capital gains (collectively, Undistributed Income). In order to avoid paying federal income taxes on such Undistributed Income, the Fund intends to make a special distribution to common stockholders during fiscal 2015. This special distribution is subject to approval by the Board of Directors and, if approved, would be declared prior to August 15, 2015. We estimate that this special distribution will be at least \$35,000, but it could be larger based on a variety of factors, including the Fund's Undistributed Income at such time.

For the fiscal year ended November 30, 2014, the tax character of the total \$41,716 distributions paid to common stockholders was \$34,315 of dividend income and \$7,401 of long-term capital gains, and the tax character of the total \$4,168 distributions paid to holders of MRP Shares was \$3,228 of dividend income and \$940 of long-term capital gains.

For the fiscal year ended November 30, 2013, the tax character of the total \$39,680 distributions paid to common stockholders was \$25,108 of dividend income and \$14,572 of long-term capital gains, and the tax character of the total \$3,212 distributions paid to holders of MRP Shares was \$2,007 of dividend income and \$1,205 of long-term capital gains.

For purposes of determining the tax character 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.

The Fund is subject to a non-deductible 4% excise tax on income that is not distributed in accordance with the calendar year distribution requirements. See Note 2 Significant Accounting Policies. As of November 30, 2013, the Fund accrued \$750 for excise taxes related to estimated undistributed income for the calendar year ended December 31, 2013. During the fiscal year ended November 30, 2014, the Fund paid \$792 in estimated excise taxes attributable to the Fund's activities during calendar 2013. The incremental amount paid (\$42) is reflected as an expense on the Fund's Statement of Operations.

As of November 30, 2014, the Fund intended to declare a special distribution prior to the end of calendar 2014 to avoid the excise tax and, as a result, it did not accrue any excise tax for fiscal 2014 as the liability was not probable and estimable. Due to unfavorable market conditions after the Fund's fiscal year end, it determined in early December 2014 not to make a special distribution of income in order to avoid excise tax. As a result, an excise tax accrual of \$2,300 was recorded in the first quarter of fiscal 2015. See Note 14 Subsequent Events.

Under the Regulated Investment Company Modernization Act of 2010, 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, 2014, the Fund had no

capital loss carryforwards.

Table of Contents**KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.****NOTES TO FINANCIAL STATEMENTS**

(amount in 000 s, except number of option contracts, share and per share)

At November 30, 2014, the cost basis of investments for federal income tax purposes was \$959,587, and the premiums received on outstanding option contracts written were \$1,046. At November 30, 2014, gross unrealized appreciation and depreciation of investments and options for federal income tax purposes were as follows:

| | |
|---|------------|
| Gross unrealized appreciation of investments (including options) | \$ 331,855 |
| Gross unrealized depreciation of investments (including options) | (56,553) |
| Net unrealized appreciation of investments before foreign currency related translations | 275,302 |
| Unrealized depreciation on foreign currency related translations | (13) |
| Net unrealized appreciation of investments | \$ 275,289 |

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 (the Securities Act), 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, 2014, the Fund held the following restricted investments:

| Investment | Acquisition Date | Type of Restriction | Number of Units, Principal (\$)(in 000s) | Cost Basis (GAAP) | Fair Value | Fair Value Per Unit | Percent of Net Assets | Percent of Total Assets |
|--|------------------|---------------------|--|-------------------|------------|---------------------|-----------------------|-------------------------|
| Level 2 Investments⁽¹⁾ | | | | | | | | |
| American Eagle Energy Corporation | 8/13/14 | (2) | \$ 4,800 | \$ 4,755 | \$ 4,320 | n/a | 0.5% | 0.3% |
| American Energy-Woodford, LLC | 9/11/14 | (3) | 1,500 | 1,439 | 1,162 | n/a | 0.1 | 0.1 |
| BlackBrush Oil & Gas, L.P. | 7/21/14 | (3) | 12,700 | 12,606 | 11,748 | n/a | 1.4 | 0.9 |
| Canbriam Energy Inc. | 11/10/14 | (3) | 2,250 | 2,116 | 2,149 | n/a | 0.3 | 0.2 |
| Chief Oil & Gas LLC | 5/12/14 | (3) | 4,000 | 3,962 | 3,810 | n/a | 0.4 | 0.3 |
| CrownRock, L.P. | (4) | (3) | 2,500 | 2,500 | 2,387 | n/a | 0.3 | 0.2 |
| Jonah Energy LLC | 5/8/14 | (3) | 3,000 | 2,958 | 2,865 | n/a | 0.3 | 0.2 |
| Jupiter Resources Inc. | 9/11/14 | (3) | 10,000 | 9,585 | 7,800 | n/a | 0.9 | 0.6 |
| Navios Maritime Holdings, Inc. | (4) | (2) | 2,500 | 2,590 | 2,422 | n/a | 0.3 | 0.2 |
| Parsley Energy, Inc. | (4) | (2) | 6,025 | 6,141 | 5,596 | n/a | 0.6 | 0.5 |
| RKI Exploration & Production, LLC | 7/15/13 | (3) | 12,500 | 12,679 | 11,937 | n/a | 1.4 | 1.0 |
| RSP Permian, Inc. | 9/23/14 | (2) | 1,200 | 1,200 | 1,092 | n/a | 0.1 | 0.1 |
| Teine Energy Ltd. | 9/9/14 | (3) | 2,500 | 2,481 | 2,188 | n/a | 0.3 | 0.2 |
| Triangle USA Petroleum Corporation | 7/15/14 | (3) | 800 | 800 | 604 | n/a | 0.1 | 0.1 |
| Vantage Energy, LLC | (4) | (3) | 8,952 | 8,894 | 8,236 | n/a | 1.0 | 0.7 |

| | | | | | | | | |
|--|-----|-----|-------|-----------|------------|---------|-------|------|
| Total | | | | \$ 74,706 | \$ 68,316 | | 8.0% | 5.5% |
| Level 3 Investments⁽⁵⁾ | | | | | | | | |
| Capital Products Partners L.P. | | | | | | | | |
| Class B Units | (4) | (2) | 606 | \$ 4,530 | \$ 5,358 | \$ 8.84 | 0.6% | 0.4% |
| Plains GP Holdings, L.P. | | | | | | | | |
| Common Units | (4) | (6) | 1,836 | 6,291 | 47,169 | 25.69 | 5.5 | 3.8 |
| Total | | | | \$ 10,821 | \$ 52,527 | | 6.1% | 4.2% |
| Total of all restricted securities | | | | \$ 85,527 | \$ 120,843 | | 14.1% | 9.7% |

- (1) 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, a 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.

Table of Contents**KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.****NOTES TO FINANCIAL STATEMENTS**

(amount in 000 s, except number of option contracts, share and per share)

- (2) Unregistered or restricted security of a publicly-traded company.
- (3) Unregistered security of a private company.
- (4) Security was acquired at various dates during the fiscal year ended November 30, 2014 and/or in prior fiscal years.
- (5) Securities are valued using inputs reflecting the Fund's own assumptions as more fully described in Note 2 Significant Accounting Policies and Note 3 Fair Value.
- (6) The Fund holds an interest in PAA GP, which controls the general partner of Plains All American, L.P. The Fund's ownership of PAA GP is exchangeable into shares of Plains GP (which trades on the NYSE under the ticker PAGP) on a one-for-one basis at the Fund's option. The Fund agreed to a 15-month lock-up on any Plains GP shares it receives in exchange for its ownership in PAA GP (lock-up expired in January 2015). See Note 3 Fair Value.

8. Derivative Financial Instruments

As required by the Derivatives and Hedging Topic of the FASB Accounting Standards Codification (ASC 815), 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, 2014 were as follows:

| | Number of Contracts | Premium |
|---|------------------------|----------|
| Call Options Written | | |
| Options outstanding at November 30, 2013 | 19,189 | \$ 1,750 |
| Options written | 79,372 | 8,506 |
| Options subsequently repurchased ⁽¹⁾ | (13,003) | (1,648) |
| Options exercised | (50,224) | (5,009) |
| Options expired | (23,934) | (2,553) |
| Options outstanding at November 30, 2014 ⁽²⁾ | 11,400 | \$ 1,046 |

(1) The price at which the Fund subsequently repurchased the options was \$746, which resulted in net realized gains of \$902.

(2) The percentage of total investments subject to call options written was 5.0% at November 30, 2014.

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Interest Rate Swap Contracts The Fund may enter into interest rate swap contracts to partially hedge itself from increasing expense on its leverage resulting from increasing interest rates. 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.

During the fiscal second quarter of 2014, the Fund entered into interest rate swap contracts (\$30,000 aggregate notional amount) in anticipation of a private placement of Notes and MRP Shares. On April 14, 2014, the interest rate swap contracts were terminated and resulted in a \$431 realized loss. As of November 30, 2014, the Fund did not have any interest rate swap contracts outstanding.

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 Hedging Instruments | Statement of Assets and Liabilities Location | Fair Value as of November 30, 2014 |
|---|--|---------------------------------------|
| Call options written | Call option contracts written | \$ (624) |

Table of Contents**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 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, 2014 | |
|---|---|--|--|
| | | Net Realized Gains/(Losses) on Derivatives Recognized in Income | Change in Unrealized Gains/(Losses) on Derivatives Recognized in Income |
| Call options written | Options | \$ 3,459 | \$ 610 |
| Interest rate swap contracts | Interest rate swap contracts | (431) | |
| | | \$ 3,028 | \$ 610 |

9. Investment Transactions

For the fiscal year ended November 30, 2014, the Fund purchased and sold securities in the amounts of \$597,132 and \$567,937 (excluding short-term investments and options).

10. Credit Facility and Term Loan

At November 30, 2014, the Fund had a \$105,000 unsecured revolving credit facility (the Credit Facility) with a syndicate of lenders. The Credit Facility has a three-year commitment, maturing on November 21, 2016. The interest rate on outstanding loan balances may vary between LIBOR plus 1.50% and LIBOR plus 2.15%, depending on the Fund's asset coverage ratios. Outstanding loan balances accrue interest daily at a rate equal to LIBOR plus 1.50%, based on current asset coverage ratios. The Fund pays a fee of 0.25% 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, 2014, the average amount outstanding under the Credit Facility was \$41,696 with a weighted average interest rate of 1.70%. As of November 30, 2014, the Fund had no outstanding borrowings under the Credit Facility.

On July 25, 2014, the Fund entered into a \$50,000 unsecured revolving term loan (Term Loan). The Term Loan has a five-year commitment and borrowings under the Term Loan bear interest at a rate of LIBOR plus 1.30%. The Fund pays a fee of 0.25% per annum on any unused amount of the Term Loan.

From the initial borrowing on July 30, 2014 through November 30, 2014, the average amount outstanding under the Term Loan was \$49,871 with a weighted average interest rate of 1.46%. As of November 30, 2014, the Fund had \$46,000 outstanding under the Term Loan at an interest rate of 1.46%.

As of November 30, 2014, the Fund was in compliance with all financial and operational covenants required by the Credit Facility and Term Loan.

11. Notes

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At November 30, 2014, the Fund had \$235,000 aggregate principal amount of Notes outstanding. On April 30, 2014, the Fund completed a \$30,000 private placement of Notes. Net proceeds from the Notes offering were used to make new portfolio investments, to refinance existing indebtedness and for general corporate purposes.

Table of Contents**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 Notes at November 30, 2014.

| Series | Principal Outstanding, November 30, 2013 | Principal Issued | Principal Outstanding, November 30, 2014 | Estimated Fair Value November 30, 2014 | Fixed Interest Rate | Maturity |
|--------|--|------------------|--|--|---------------------|----------|
| A | \$ 55,000 | \$ | \$ 55,000 | \$ 57,300 | 3.93% | 3/3/16 |
| B | 60,000 | | 60,000 | 65,400 | 4.62% | 3/3/18 |
| C | 50,000 | | 50,000 | 53,600 | 4.00% | 3/22/22 |
| D | 40,000 | | 40,000 | 40,800 | 3.34% | 5/1/23 |
| E | | 30,000 | 30,000 | 31,100 | 3.46% | 7/30/21 |
| | \$ 205,000 | \$ 30,000 | \$ 235,000 | \$ 248,200 | | |

Holders of the Notes 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, 2014, the weighted average interest rate on the outstanding Notes was 3.99%.

As of November 30, 2014, each series of Notes was rated AAA by FitchRatings. In the event the credit rating on any series of Notes falls below A-, the interest rate on such series will increase by 1% during the period of time such series is rated below A-. The Fund is required to maintain a current rating from one rating agency with respect to each series of Notes.

The Notes were issued in private placement offerings to institutional investors and are not listed on any exchange or automated quotation system. The 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 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 Notes would be less than 300%.

The Notes are redeemable in certain circumstances at the option of the Fund. The 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 Notes are unsecured obligations of the Fund and, upon liquidation, dissolution or winding up of the Fund, will rank: (1) senior to all of 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, 2014, the Fund was in compliance with all covenants under the agreements of the Notes.

12. Preferred Stock

At November 30, 2014, the Fund had 4,200,000 shares of MRP Shares outstanding, with a total liquidation value of \$105,000 (\$25.00 per share). On April 30, 2014, the Fund completed a \$40,000 private placement of MRP Shares. Net proceeds from the MRP Shares offering were used to make new portfolio investments, to refinance existing indebtedness and for general corporate purposes.

Table of Contents**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 MRP Shares at November 30, 2014.

| Series | Liquidation | Liquidation | Liquidation | Estimated | Rate | Maturity |
|--------|----------------------|------------------|----------------------|----------------------|-------|------------|
| | Value | Value | Value | Fair Value | | Redemption |
| | November 30, 2013 | Shares Issued | November 30, 2014 | November 30, 2014 | | Date |
| A | \$ 35,000 | \$ | \$ 35,000 | \$ 37,800 | 5.32% | 3/3/18 |
| B | 30,000 | | 30,000 | 31,700 | 4.50% | 3/22/20 |
| C | | 40,000 | 40,000 | 41,200 | 4.06% | 7/30/21 |
| | \$ 65,000 | \$ 40,000 | \$ 105,000 | \$ 110,700 | | |

Holders of the MRP Shares 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).

As of November 30, 2014, each series of the Fund's MRP Shares was rated AA by FitchRatings. The dividend rate on the Fund's MRP Shares will increase between 0.5% and 4.0% if the credit rating is downgraded below A by FitchRatings. Further, the annual dividend rate for all series of MRP Shares will increase by 4.0% if no ratings are maintained, and the annual dividend rate will increase by 5.0% if the Fund fails to make quarterly dividend or certain other payments. The Fund is required to maintain a current rating from one rating agency with respect to each series of MRP Shares.

The MRP Shares rank senior to all of the Fund's outstanding common shares and on parity with any other preferred stock. The MRP Shares are 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 MRP Shares, 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 MRP Shares 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 MRP Shares or the holders of common stock. The holders of the MRP Shares, voting separately as a single class, have the right to elect at least two directors of the Fund.

At November 30, 2014, the Fund was in compliance with the asset coverage and basic maintenance requirements of its MRP Shares.

13. Common Stock

At November 30, 2014, the Fund had 195,800,000 shares of common stock authorized and 21,621,933 shares outstanding. As of that date, KAFA owned 4,000 shares. On April 15, 2014, the Fund announced that its Board of Directors approved a program to purchase up to \$20,000 of the Fund's common stock. The repurchase program was to continue until the earlier of (i) the repurchase of \$20,000 of common stock or (ii) September 30, 2014. Under this program, the Fund authorized its agents to make purchases in the open market when shares were trading at a discount of at least 8% to the Fund's net asset value (NAV) per share and the Fund had sufficient borrowing capacity relative to its target leverage ratios. As of November 30, 2014, the Fund had repurchased

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

519,364 shares of its common stock at an average price of \$38.50 (total cost of \$19,999), which represented an average discount to the Fund's NAV per share of approximately 9.3%. Transactions in common shares for the fiscal year ended November 30, 2014 were as follows:

| | |
|---|------------|
| Shares outstanding at November 30, 2013 | 22,044,045 |
| Shares issued through reinvestment of distributions | 97,252 |
| Shares repurchased | (519,364) |
| Shares outstanding at November 30, 2014 | 21,621,933 |

14. Subsequent Events

On December 18, 2014, the Fund declared its quarterly distribution of \$0.4950 per common share for the fourth quarter of fiscal 2014 for a total quarterly distribution payment of \$10,703. The distribution was paid on January 16, 2015 to common stockholders. Of this total, pursuant to the Fund's dividend reinvestment plan, \$1,204 was reinvested into the Fund through the issuance of 41,203 shares of common stock.

As of November 30, 2014, the Fund intended to declare a special distribution prior to the end of calendar 2014 to avoid excise taxes and, as a result, it did not accrue any excise tax for fiscal 2014 as the liability was not probable and estimable. Due to unfavorable market conditions after the Fund's fiscal year end, it determined in early December 2014 not to make a special distribution of income in order to avoid excise tax. As a result, an excise tax accrual of \$2,300 was recorded in the first quarter of fiscal 2015.

The Fund has performed an evaluation of subsequent events through the date the financial statements were issued and has determined that no additional items require recognition or disclosure.

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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 in securities, 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 the Kayne Anderson Midstream/Energy Fund, Inc. (the Fund) at November 30, 2014, the results of its operations and its cash flows for the year then ended, the changes in its net assets 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 audit 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, 2014 by correspondence with the custodian and brokers, provide a reasonable basis for our opinion.

PricewaterhouseCoopers LLP

Los Angeles, California

January 28, 2015

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KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.

GLOSSARY OF KEY TERMS

(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 and are taxed as corporations for federal income tax purposes. This includes companies structured like MLPs, but not treated as a publicly-traded partnership for RIC qualification purposes. 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.

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KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.

PRIVACY POLICY NOTICE

(UNAUDITED)

Rev. 01/2011

FACTS

WHAT DOES KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC. (KMF) DO WITH YOUR PERSONAL INFORMATION?

Why?

Financial companies choose how they share your personal information. Federal law gives consumers the right to limit some but not all sharing. Federal law also requires us to tell you how we collect, share, and protect your personal information. Please read this notice carefully to understand what we do.

What?

The types of personal information we collect and share depend on the product or service you have with us. This information can include:

- n Social Security number and account balances

- n Payment history and transaction history

- n Account transactions and wire transfer instructions

When you are *no longer* our customer, we continue to share your information as described in this notice.

How?

All financial companies need to share customers' personal information to run their everyday business. In the section below, we list the reasons financial companies can share their customers' personal information; the reasons KMF chooses to share; and whether you can limit this sharing.

| Reasons we can share your personal information | Does KMF share? | Can you limit this sharing? |
|--|------------------------|------------------------------------|
| For our everyday business purposes such as to process your transactions, maintain your account(s), respond to court orders and legal investigations, or report to credit bureaus | Yes | No |
| For our marketing purposes to offer our products and services to you | No | No |
| For joint marketing with other financial companies | No | We don't share |
| 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.

How does KMF collect my personal information?

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

Why can't I limit all sharing?

We also collect your personal information from other companies. 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.

Nonaffiliates

n KMF does not share with our affiliates.

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

Joint marketing

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

A formal agreement between nonaffiliated financial companies that together market financial products or services to you.

n KMF doesn't 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

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KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.

DIVIDEND REINVESTMENT PLAN

(UNAUDITED)

request to terminate a 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 on September 29, 2014 approved the continuation of the Fund's Investment Management Agreement (the Agreement) with KA Fund Advisors, LLC (the Adviser) for an additional one-year term through October 19, 2015.

During the course of each year and in connection with its consideration of the Agreement, the Board of Directors received various materials from the Adviser, including, but not limited to, (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 Fund's fees and expenses compare to other registered investment companies that follow investment strategies similar to those of the Fund; (iv) information regarding brokerage and portfolio transactions; (v) comparative information showing how the Fund's performance compares to other registered investment companies that follow investment strategies similar to those of the Fund, as well as applicable indexes; and (vi) information on any legal proceedings or regulatory audits or investigations affecting the Fund or the Adviser.

After receiving and reviewing these materials, the Board of Directors, at an in-person meeting called for such purpose, discussed the terms of the Agreement. Representatives from the Adviser attended the meeting and presented additional oral and written information to the Board of Directors to assist in its considerations. 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.

The Independent Directors reviewed various factors, detailed information provided by the Adviser at the meeting and at other times throughout the year, 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 and quality of services that have been provided by the Adviser under the Agreement. The Independent Directors considered the quality of the investment research capabilities of the Adviser and the other resources the Adviser has dedicated to performing services for the Fund, including the high caliber of portfolio managers and research analysts involved, the large and experienced team of investment, accounting, administrative, legal, trading and compliance professionals at the Adviser dedicated to the Fund, and the continued addition of professionals at the Adviser to broaden its research and coverage efforts. The quality of other services, including the Adviser's assistance in the coordination of the activities of some of the Fund's other service providers, the provision of certain administrative, compliance, reporting and financial services by the Adviser, the use of call options and the responsible handling of the leverage target, also was considered. The Independent Directors took note of the Adviser's excellent track record in identifying and executing on key investment themes and in sourcing and negotiating private investments in public equity (PIPE) and other private investments for the Fund as well as the Fund's best-in-class access to investments, financing and capital markets due in part to the Adviser's credibility with institutional investors. The Independent Directors also considered the nature and quality of the services provided by the Adviser to the Fund in light of their experience as Directors of the Fund and another registered investment company managed by the Adviser, 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 the past. The Independent Directors noted the high quality of services provided by the Adviser when the market faced significant turmoil a few years ago and continued to experience various challenges as well as the Adviser's efforts to maximize returns and its leadership position in the markets in which it invests. 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 in light of the services provided.

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KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.

INVESTMENT MANAGEMENT AGREEMENT APPROVAL DISCLOSURE

(UNAUDITED)

The Fund's performance under the management of the Adviser

The Independent Directors reviewed information pertaining to the performance of the Fund. This data compared the Fund's performance to the performance of certain other registered investment companies that follow investment strategies similar to those of the Fund as well as various indexes specialized in energy-related investments. The comparative information showed that the performance of the Fund compares favorably to other similar closed-end funds and the specialized indexes whether in terms of long-term performance (approximately 4-year period), intermediate-term performance (approximately 2-year period), or short-term performance (most recently completed fiscal quarter). The Independent Directors also considered the fact that the Fund has consistently outperformed its peer closed-end funds and the specialized indexes over the last four years. Based upon their review, the Independent Directors concluded that the Fund's investment performance over time has been consistently satisfactory compared to other closed-end funds that focus on investments in midstream and energy companies and that the Fund has generated strong returns for investors. The Independent Directors noted that in addition to the information received for this meeting, the Independent Directors also receive detailed performance information for the Fund at each regular meeting of the Board of Directors during the year. The Independent Directors considered the investment performance of other registered investment companies managed by the Adviser but noted that they are of limited value because of various differences in strategy and structure between the Fund and the other registered investment companies. The Independent Directors did not consider the performance of other accounts of the Adviser as there were no accounts similar enough to be relevant for performance purposes.

The reasonability of the management fee and fall-out benefits

The Independent Directors considered the Fund's management fee under the Agreement in comparison to the management fees of funds within the Fund's peer group and believed such comparisons to be acceptable to the Fund. The Independent Directors observed that the fee rate for the Fund is generally higher when compared to that of its peer funds but believe that various factors, including the Fund's favorable performance, the significant amount of resources dedicated to the Fund, and the Fund's access to PIPE transactions, justify the management fee. The Independent Directors also compared the fee structure under the Agreement with that of various private funds and separately managed accounts (the "Other Accounts") advised by the Adviser or its affiliates and concluded that the fee rate under the Agreement is lower than many of the Other Accounts because the Adviser charges a performance fee for many of the Other Accounts. The Board of Directors considered the greater risks and burdens associated with managing the Fund and noted that the comparison to the Other Accounts had limited value given the differences in strategy between, and the substantial differences in services provided to, the Fund and such Other Accounts. The Adviser's successful handling of the past market downturn and related leverage challenges, the Fund's lower level of operating expenses (other than management fees), the Fund's participation in private investments, the Adviser's long standing relationships with management teams in the energy space, and the Adviser's successful pricing and timing strategies related to the capital raising for the Fund were also noted by the Independent Directors as relevant considerations in evaluating the reasonableness of the management fee. Based on those comparisons, the Independent Directors concluded that the management fee remains reasonable.

The Independent Directors also considered certain benefits the Adviser realizes 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 also benefit from these soft dollar arrangements because the Adviser is able to receive this research, which is used in the management of the Fund's portfolio, by aggregating securities trades.

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KAYNE ANDERSON MIDSTREAM/ENERGY FUND, INC.

INVESTMENT MANAGEMENT AGREEMENT APPROVAL DISCLOSURE

(UNAUDITED)

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 considered economies of scale that are being enjoyed by stockholders of the Fund. In this regard, they noted the extent to which operating expenses declined over the past several years and noted that the Adviser added professionals to its already robust and high-quality team, both of which represented a sharing of those economies of scale. The Independent Directors also considered further possible economies of scale that the Adviser could achieve in its management of the Fund. The Independent Directors acknowledged the Adviser's various efforts to control and reduce operating expenses of the Fund, which in part are related to the scale of all the affiliated registered investment companies managed by the Adviser. They considered the anticipated asset levels of the Fund, the information provided by the Adviser relating to its estimated costs and profitability, 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 and compliance professionals. The Independent Directors concluded that the fee structure was reasonable in view of the information provided by the Adviser. 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. The Independent Directors also noted that they would monitor and review further growth of the Fund to remain comfortable with the applicable sharing of future economies of scale.

Based on the review by the Board of Directors, 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 received reasonable value in return for the management fees and other amounts paid to the Adviser by the Fund under the Agreement, that stockholders could expect to receive reasonable value in return for the management fees and other amounts proposed to be paid to the Adviser by the Fund under the Agreement and that the approval of the continuation 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 2016 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. 3-year term (until the 2015 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 Midstream 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 Executive Officer and director of TEPPCO from May 2002 to December 2005; and Chief Operating Officer from February 2001 to May 2002. | Current: KED Targa Resources Partners LP (midstream MLP) Magellan Midstream Partners, L.P. (midstream MLP) Prior: |

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| | | | |
|-----------------------------------|---|---|---|
| | | | Peregrine Midstream Partners LLC (natural gas storage) |
| | | | Seaspan Corporation (containership chartering) |
| | | | TEPPCO Partners, L.P. (midstream MLP) |
| Albert L. Richey (born 1949) | Director. 3-year term (until the 2016 Annual Meeting of Stockholders)/served since inception | Senior Vice President Finance and Treasurer of Anadarko Petroleum Corporation since January 2013; Vice President Special Projects from January 2009 to December 2012; Vice President Corporate Development from 2006 to December 2008; Vice President and Treasurer from 1995 to 2005 and Treasurer from 1987 to 1995. | KED Boys & Girls Clubs of Houston |
| | | | Boy Scouts of America |
| William L. Thacker (born 1945) | Director. 3-year term (until the 2015 Annual Meeting of Stockholders)/served since inception | Chairman of the Board of Directors of Copano Energy, L.L.C. from 2009 to 2013. 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. | Current: KED |
| | | | QEP Resources Inc. (oil and gas exploration and production company) |
| | | | Prior: |
| | | | Copano Energy, L.L.C. (midstream MLP) |
| | | | Pacific Energy Partners, L.P. (midstream MLP) |
| | | | GenOn Energy, Inc. (electricity generation and sales) |

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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. 3-year term as a director (until the 2017 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. | <p>Current:</p> <p>KYN</p> <p>KYE</p> <p>KED</p> <p>Emerge Energy Services LP (frac sand MLP)</p> <p>Range Resource Corporation (oil and gas exploration and production company)</p> <p>Prior:</p> <p>Clearwater Natural Resources, L.P. (coal mining)</p> <p>Direct Fuels Partners, L.P. (transmix refining and fuels distribution)</p> |

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| | | | |
|-------------------------------|--|---|---|
| | | | International Resource Partners LP (coal mining) |
| | | | K-Sea Transportation Partners LP (shipping MLP) |
| | | | ProPetro Services, Inc. (oilfield services) |
| 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 from 2000 to 2004. Portfolio Manager of KACALP since 2000, Co-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 from December 2004 and 2006, respectively, to February 2008. 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: KED |
| | | | Prior: |
| | | | K-Sea Transportation Partners LP (shipping MLP) |
| | | | Petris Technology, Inc. (data management for energy companies) |
| | | | ProPetro Services, Inc. (oilfield services) |
| 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. | Current: The Source for Women (not-for-profit organization) |

Table of Contents**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 |
|------------------------------------|---|---|--|
| Ron M. Logan, Jr. (born 1960) | Senior Vice President Elected annually/served since September 2012 | Senior Managing Director of KACALP and KAFA since February 2014. Managing Director KACALP and KAFA from September 2006 to February 2014. Senior Vice President of KED since September 2006. Senior Vice President of KYN and KYE since September 2012. Independent consultant to several leading energy firms. Senior Vice President of Ferrellgas Inc. from 2003 to 2005. Vice President of Dynegy Midstream Services from 1997 to 2002. | Prior: VantaCore Partners LP (aggregates MLP) |
| Jody C. Meraz (born 1978) | Vice President. Elected annually. Elected annually/served since 2011 | Managing Director of KACALP and KAFA since February 2014. Senior Vice President of KACALP and KAFA from 2011 to February 2014. Vice President of KACALP from 2007 to 2011. Associate of KACALP and KAFA since 2005 and 2006, respectively. Vice President of KYN, KYE, and KED since 2011. | None |
| Michael O. Neil (born 1983) | Chief Compliance Officer. Elected annually/served since 2013 | Chief Compliance Officer of KACALP and KAFA since March 2012 and of KYN, KED, KYE since December 2013 and KA Associates, Inc. (broker-dealer) since January 2013. A Compliance Officer at BlackRock Inc. from January 2008 to February 2012. | None |
| David J. Shladovsky (born 1960) | Secretary. Elected annually/served since inception | Managing Director and General Counsel of KACALP since 1997 and of KAFA since 2006. Secretary and Chief Compliance Officer (through December 2013) of KYN since 2004; of KYE since 2005, and of KED since 2006. | None |

(1) The 1940 Act requires the term "Fund Complex" to be defined to include registered investment companies advised by KAFA, the Fund's investment advisor, and the Fund Complex includes the Fund, KYN, KYE, and KED. Each Independent Director oversees two registered investment companies in the Fund Complex, the Fund and KED, as noted above.

(2) Mr. McCarthy is an interested person of the Fund as defined by the 1940 Act by virtue of his employment relationship with 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 <http://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/MLP-FUND;

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

on the SEC's website, <http://www.sec.gov>.

Information regarding how the Fund voted proxies relating to portfolio securities during the most recent 12-month period ended June 30 is available without charge, upon request, by calling (877) 657-3863/MLP-FUND, and on the SEC's website at <http://www.sec.gov> (see Form N-PX).

The Fund files a complete schedule of its portfolio holdings for the first and third quarters of each of its fiscal years with the SEC on Form N-Q and Form N-30B-2. The Fund's Form N-Q and Form N-30B-2 are 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 1-800-SEC-0330. The Fund also makes its Form N-Q and Form N-30B-2 available on its website at <http://www.kaynefunds.com>.

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 and preferred stock and its Notes in the open market or in a privately negotiated transactions.

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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 | Secretary |
| Michael O Neil | Chief Compliance Officer |
| J.C. Frey | Executive Vice President, Assistant Secretary and Assistant Treasurer |
| James C. Baker | Executive Vice President |
| Ron M. Logan, Jr. | Senior Vice President |
| Jody C. Meraz | Vice President |

Investment Adviser

KA Fund Advisors, LLC
811 Main Street, 14th Floor
Houston, TX 77002

1800 Avenue of the Stars, Third Floor
Los Angeles, CA 90067

Administrator

Ultimus Fund Solutions, LLC
225 Pictoria Drive, Suite 450
Cincinnati, OH 45246

Stock Transfer Agent and Registrar

American Stock Transfer & Trust Company, LLC
6201 15th Avenue
Brooklyn, NY 11219

(888) 888-0317

Custodian

JPMorgan Chase Bank, N.A.
14201 North Dallas Parkway, Second Floor
Dallas, TX 75254

Independent Registered Public Accounting Firm

PricewaterhouseCoopers LLP
601 S. Figueroa Street, Suite 900
Los Angeles, CA 90017

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.

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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 controller, 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 controller, 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 controller, 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 (i) fiscal year ended November 30, 2014, and (ii) fiscal year ended November 30, 2013.

| | 2014 | 2013 |
|--------------------|-------------------|-------------------|
| Audit Fees | \$ 186,640 | \$ 179,200 |
| Audit-Related Fees | | 12,000 |
| Tax Fees | 162,500 | 157,800 |
| All Other Fees | | |
| Total | \$ 349,140 | \$ 349,000 |

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 years ended November 30, 2014 and 2013 were \$162,500 and \$157,800, respectively. The aggregate non-audit fees billed by PricewaterhouseCoopers LLP totaled \$894,000 and \$0 for services rendered to the Registrant's investment adviser and any entity controlling, controlled by, or under common control with the adviser that provides ongoing services to the Registrant for the fiscal years ended November 30, 2014 and 2013, respectively.

(h) The Registrant's Audit Committee has considered the provision of non-audit services that were rendered to the Registrant's investment adviser and any entity controlling, controlled by, or under common control with the investment adviser that provides ongoing services to the Registrant that were not pre-approved pursuant to paragraph (c)(7)(ii) of Rule 2-01 of Regulation S-X and has determined that the provision of such non-audit services is compatible with maintaining the Registrant's principal accountant's independence.

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.

(a) Please see the schedule of investments contained in the KMF Annual Report for the fiscal year ended November 30, 2014 included under Item 1 of this Form N-CSR.

(b) Not applicable.

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 the date of filing this report, the following individuals (the Portfolio Managers) are primarily responsible for the day-to-day management of the Registrant's portfolio:

Kevin S. McCarthy has served as the Registrant's President, Chief Executive Officer and co-portfolio manager since November 2010 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' 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 (since November 2010) and a Senior Managing Director of Kayne Anderson (since June 2004). He serves as portfolio manager of Kayne Anderson's various 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 \$6 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, and include accounts that pay advisory fees based on account performance shown in the separate table below under (a)(2)(iii). Information is shown as of November 30, 2014. 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 | \$ 9,540 | 2 | \$ 1,761 | 2 | \$ 172 |
| J.C. Frey | 5 | \$ 10,269 | 15 | \$ 5,755 | 14 | \$ 1,444 |

(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, 2014. 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 | \$ 1,761 | 2 | \$ 172 |
| J.C. Frey | | N/A | 13 | \$ 5,578 | 2 | \$ 138 |

(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.

Table of Contents**(a)(3) Compensation of Each Portfolio Manager:**

As of November 30, 2014, Messrs. McCarthy and Frey are compensated by Kayne Anderson through partnership distributions from Kayne Anderson, based on the amount of assets they manage, and they receive a portion of the advisory fees applicable to those accounts (including the Registrant), which, with respect to certain accounts (not including the Registrant), 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 generally available to all salaried employees.

(a)(4) As of November 30, 2014, 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: \$500,001-\$1,000,000

J.C. Frey: \$500,001-\$1,000,000

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 the Registrant's equity securities.

(b) Not applicable.

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

REGISTRANT PURCHASES OF EQUITY SECURITIES

| Period | (a) Total Number of Shares Purchased | (b) Average Price Paid per Share | (c) Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs* | (d) Maximum Approximate Dollar Value of Shares that May Yet Be Purchased Under the Plans or Programs* |
|--|--|---|---|--|
| December 1 through December 31, 2013 | | | | |
| January 1 through January 31, 2014 | | | | |
| February 1 through February 28, 2014 | | | | |
| March 1 through March 31, 2014 | | | | |
| April 1 through April 30, 2014 | 23,250 | \$ 35.18 | 23,250 | \$ 19,181,959 |
| May 1 through May 31, 2014 | 210,950 | \$ 36.54 | 210,950 | \$ 11,473,532 |
| June 1 through June 30, 2014 | 53,174 | \$ 38.84 | 53,174 | \$ 9,408,361 |
| July 1 through July 31, 2014 | 102,787 | \$ 39.80 | 102,787 | \$ 5,317,511 |
| August 1 through August 31, 2014 | 125,597 | \$ 41.09 | 125,597 | \$ 156,632 |
| September 1 through September 30, 2014 | 3,606 | \$ 43.26 | 3,606 | \$ 633 |
| October 1 through October 31, 2014 | | | | |
| November 1 through November 30, 2014 | | | | |
| Total | 519,364 | \$ 38.50 | 519,364 | |

* The Registrant's stock repurchase program (the "Repurchase Program") was publicly announced on April 15, 2014, and all of the shares were purchased by the Registrant through the Repurchase Program. Under the Repurchase Program, the Registrant may purchase, in open market transactions, up to \$20,000,000 of shares of its outstanding common stock, if and when such shares are trading at a discount of at

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least 8% to the Registrant's net asset value per share. The Repurchase Program was to continue until the earlier of (i) the repurchase of \$20,000,000 of common stock or (ii) September 30, 2014, and was actually completed on September 3, 2014. As of November 30, 2014, the Registrant had repurchased 519,364 shares of its common stock at an average price of \$38.50 per share (total cost of \$19,999,367).

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 the filing of this report 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) or 15d-15(b) under the Exchange Act.

(b) There have been 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 of the Registrant 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 of the Registrant 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: January 28, 2015

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: January 28, 2015

By: /s/ KEVIN S. MCCARTHY
Kevin S. McCarthy
Chairman of the Board of Directors,

President and Chief Executive Officer

Date: January 28, 2015

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

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