

Kayne Anderson Midstream/Energy Fund Announces Approval of a Stock Repurchase Program of up to \$20 Million of Common Stock

Houston, TX – April 15, 2014 – Kayne Anderson Midstream/Energy Fund, Inc. (the “Fund”) (NYSE: KMF) announced today that its Board of Directors has approved a program to purchase up to \$20 million of the Fund's common stock. The Board has decided to implement the share repurchase program with the expectation it will increase net asset value (“NAV”) per share through the accretive nature of the purchases. As of April 10, 2014, the Fund's common stock was trading at a 9.7% discount to NAV.

The repurchase program will continue until the earlier of (i) the repurchase of \$20 million of common stock or (ii) September 30, 2014. The Fund will authorize its agents to make purchases in the open market when shares are trading at a discount of at least 8% to the Fund's NAV per share and the Fund has sufficient borrowing capacity relative to its target leverage ratios.

Kevin McCarthy, Chief Executive Officer of the Fund, stated, “We believe the purchase of shares at a substantial discount to NAV represents an attractive investment opportunity for KMF. Like the PIPE investments that we have made at a discount to the market price of such securities, a stock repurchase at an 8% or greater discount will lead to increases in NAV per share.”

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There is no assurance that the Fund will purchase shares at any specific discount levels or in any specific amounts. The Fund's repurchase activity will be disclosed in its stockholder report for the relevant fiscal period. There is no assurance that the market price of the Fund's shares, either absolutely or relative to NAV, will increase as a result of any share repurchases, or that the program will enhance shareholder value over the long-term.

Kayne Anderson Midstream/Energy Fund, Inc. is a non-diversified, closed-end management investment company registered under the Investment Company Act of 1940, whose common stock is traded on the New York Stock Exchange. The Fund's investment objective is to provide a high level of total return with an emphasis on making quarterly cash distributions to its stockholders by investing at least 80% of its total assets in securities of companies in the Midstream/Energy Sector, consisting of: (a) Midstream Master Limited Partnerships (“MLPs”), (b) Midstream Companies, (c) Other MLPs and (d) Other Energy Companies. The Fund anticipates that the majority of its investments will consist of investments in Midstream MLPs and Midstream Companies. See Glossary of Key Terms on page ii of the Prospectus for definitions of certain key terms.

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS: *This press release 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 differ from the Fund's historical experience and its present expectations or projections indicated in any forward-looking statements. 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 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 objective will be attained.*

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