Eaton Vance Enhanced Equity Income Fund II Form N-CSR February 27, 2013

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: 811-21670

Eaton Vance Enhanced Equity Income Fund II

(Exact Name of Registrant as Specified in Charter)

Two International Place, Boston, Massachusetts 02110

(Address of Principal Executive Offices)

Maureen A. Gemma

Two International Place, Boston, Massachusetts 02110

(Name and Address of Agent for Services)

(617) 482-8260

(Registrant s Telephone Number)

December 31

Date of Fiscal Year End

December 31, 2012

Date of Reporting Period

Item 1. Reports to Stockholders

Enhanced Equity Income Fund II (EOS)

Annual Report

December 31, 2012

Managed Distribution Plan. Pursuant to an exemptive order issued by the Securities and Exchange Commission (Order), the Fund is authorized to distribute long-term capital gains to shareholders more frequently than once per year. Pursuant to the Order, the Fund s Board of Trustees approved a Managed Distribution Plan (MDP) pursuant to which the Fund makes monthly cash distributions to common shareholders, stated in terms of a fixed amount per common share.

The Fund currently distributes monthly cash distributions equal to \$0.0875 per share in accordance with the MDP. You should not draw any conclusions about the Fund s investment performance from the amount of these distributions or from the terms of the MDP. The MDP will be subject to regular periodic review by the Fund s Board of Trustees and the Board may amend or terminate the MDP at any time without prior notice to Fund shareholders. However, at this time there are no reasonably foreseeable circumstances that might cause the termination of the MDP.

The Fund may distribute more than its net investment income and net realized capital gains and, therefore, a distribution may include a return of capital. A return of capital distribution does not necessarily reflect the Fund s investment performance and should not be confused with yield or income. With each distribution, the Fund will issue a notice to shareholders and a press release containing information about the amount and sources of the distribution and other related information. The amounts and sources of distributions contained in the notice and press release are only estimates and are not provided for tax purposes. The amounts and sources of the Fund s distributions for tax purposes will be reported to shareholders on Form 1099-DIV for each calendar year.

Fund shares are not insured by the FDIC and are not deposits or other obligations of, or guaranteed by, any depository institution. Shares are subject to investment risks, including possible loss of principal invested.

Annual Report December 31, 2012

Eaton Vance

Enhanced Equity Income Fund II

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Enhanced Equity Income Fund II

December 31, 2012

Management s Discussion of Fund Performance

Economic and Market Conditions

Early in the 12-month period ended December 31, 2012, U.S. stocks began a rally that continued through early April 2012. Equities were generally fueled by stronger economic growth, falling unemployment and what the markets perceived as a successful restructuring of Greek debt, which lowered the potential for European contagion. Then in May 2012, the third consecutive mid-year economic slowdown arrived amid renewed concerns over Europe, slowing growth in China and continuing political uncertainty in the United States ahead of the elections.

However, despite a slowdown in consumer spending, weakening employment data and downward revisions of growth expectations, U.S. stocks rallied from June 2012 through early October 2012. Several catalysts appeared to be driving a market rally that defied U.S. economic data. First, investors anticipated that worsening economic news would prompt the U.S. Federal Reserve to initiate another round of quantitative easing to stimulate the economy which it did in September 2012. Second, many of the investors who were hunting for yield in a historically low interest-rate environment were driven to stocks that offered higher yields than bonds. Finally, Europe s ongoing debt crisis and a slowdown in Chinese growth made the United States, despite its problems, look relatively attractive to many global investors.

In the final months of the fiscal year, however, from early October 2012 through December 2012, U.S. stocks gave back some of their gains amid elevated market volatility. With the U.S. elections leaving Congress still divided on economic issues, investors grew increasingly worried about a political deadlock on tax and spending policies an impasse that left the United States rushing toward a so-called fiscal cliff that threatened to drag down its economy. On the positive side, investors appeared to be encouraged by improving employment numbers, signs of an accelerating recovery in the housing market, and the European Central Bank s efforts to strengthen and centralize the European banking system.

Fund Snapshot at December 31, 2012⁵

Objective The primary investment objective is to provide current income, with a secondary objective of capital

appreciation.

Strategy

The Fund invests in a portfolio of primarily large- and mid-cap securities that the investment adviser believes have above-average growth and financial strength and writes call options on individual securities to generate current earnings from the option premium.

Options Strategy Write Single Stock Covered Calls
Equity Benchmark² Russell 1000 Growth Index
Morningstar Category Large Growth
Distribution Frequency Monthly
Common Stock Portfolio
Positions Held 77

 % US / Non-US
 96.7/3.3

 Avg. Market Cap
 \$66.3 Billion

Call Options

% Portfolio with Call Options58Average Days to Expiration32 daysWeighted Average %3.24%of Strike Prices:out-of-the-money

See Endnotes and Additional Disclosures in this report.

Past performance is no guarantee of future results. Returns are historical and are calculated by determining the percentage change in net asset value (NAV) or market price (as applicable) with all distributions reinvested. Fund performance at market price will differ from its results at NAV due to factors such as changing perceptions about the Fund, market conditions, fluctuations in supply and demand for Fund shares, or changes in Fund distributions. Investment return and principal value will fluctuate so that shares, when sold, may be worth more or less than their original cost. Performance less than one year is cumulative. Performance is for the stated time period only; due to market volatility, current Fund performance may be lower or higher than the quoted return. For performance as of the most recent month end, please refer to www.eatonvance.com.

Enhanced Equity Income Fund II

December 31, 2012

Management s Discussion of Fund Performance continued

Fund Performance

For the fiscal year ended December 31, 2012, Eaton Vance Enhanced Equity Income Fund II (the Fund) had a total return of 12.13% at net asset value (NAV), underperforming the 15.26% return of the Fund s common stock benchmark, the Russell 1000 Growth Index (the Index) and outperforming the returns of the Fund s options benchmarks, the CBOE S&P 500 BuyWrite Index and the CBOE NASDAQ-100 BuyWrite Index, which returned 5.20% and 3.39%, respectively. While the Fund s underlying common stock portfolio underperformed the common stock Index during the period, the Fund s options overlay strategy was a larger detractor from Fund performance relative to the Index.

In the Fund s underlying common stock portfolio, stock selection in the health care sector detracted from Fund performance relative to the Index during the period. Within the sector, stock selection in health care equipment and supplies and in health care technology held back relative Fund returns versus the Index during the period, as did stock selection and an overweight position in pharmaceuticals. In a generally rising market during the period, the Fund s cash position weighed on relative Fund performance versus the Index as well.

In contrast, stock selection and an overweight in the information technology (IT) sector, stock selection and an underweight in the consumer staples sector, and stock selection in the consumer discretionary sector all helped Fund performance relative to the Index during the period. Within IT, stock selection in Internet software & services as well as an underweight in semiconductors & semiconductor equipment contributed to Fund returns versus the Index. Stock selection in food & staples retailing and an overweighting in tobacco stocks contributed to relative Fund performance versus the Index in the consumer staples sector. In the consumer discretionary sector, relative Fund returns versus the Index were buoyed by stock selection and an overweight in Internet & catalog retail and stock selection in multiline retail.

The Fund employs an options strategy of writing (selling) call options on individual securities in its underlying common stock portfolio. The options strategy, which is designed to help limit the Fund s exposure to market volatility and enhance current income, can be beneficial during periods of market weakness such as we experienced in May of 2012, but may detract from

Fund performance versus the Index during periods of market strength. When the market was trending upward, as it was for much of the fiscal year, the Fund s writing of call options held back Fund returns versus the Index, as premium income was relatively low and some short calls ended in losses. For the 12-month period as a whole, the Fund s options program hurt relative Fund returns versus the Index.

See Endnotes and Additional Disclosures in this report.

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Enhanced Equity Income Fund II

December 31, 2012

Performance²

Portfolio Managers Walter A. Row III, CFA, CMT and Michael A. Allison, CFA

Since

| % Average Annual Total Returns | Inception Date | One Year | Five Years | Inception |
|--------------------------------|----------------|----------|------------|-----------|
| Fund at NAV | 01/31/2005 | 12.13% | 1.69% | 4.65% |
| Fund at Market Price | | 12.74 | 0.86 | 2.88 |
| Russell 1000 Growth Index | 01/31/2005 | 15.26% | 3.12% | 5.68% |
| CBOE S&P 500 BuyWrite Index | 01/31/2005 | 5.20 | 1.13 | 3.75 |
| CBOE NASDAQ-100 BuyWrite Index | 01/31/2005 | 3.39 | 0.26 | 2.39 |

% Premium/Discount to NAV

12.64%

Distributions³

| Distributions | |
|--|-------------|
| Total Distributions per share for the period | \$ 1.059 |
| Distribution Rate at NAV | 8.79% |
| Distribution Rate at Market Price | 10.06% |

Fund Profile

Sector Allocation (% of total investments)⁴

Top 10 Holdings (% of total investments)⁴

| Apple, Inc. | 7.0% |
|---------------------------------------|------|
| International Business Machines Corp. | 4.1 |
| Google, Inc., Class A | 3.8 |
| Philip Morris International, Inc. | 3.5 |
| Coca-Cola Co. (The) | 3.3 |

| QUALCOMM, Inc. | 3.2 |
|------------------|-------|
| Amazon.com, Inc. | 3.1 |
| Microsoft Corp. | 3.0 |
| Danaher Corp. | 2.3 |
| Monsanto Co. | 2.1 |
| Total | 35.4% |

See Endnotes and Additional Disclosures in this report.

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Enhanced Equity Income Fund II

December 31, 2012

Endnotes and Additional Disclosures

- The views expressed in this report are those of the portfolio manager(s) and are current only through the date stated at the top of this page. These views are subject to change at any time based upon market or other conditions, and Eaton Vance and the Fund(s) disclaim any responsibility to update such views. These views may not be relied upon as investment advice and, because investment decisions are based on many factors, may not be relied upon as an indication of trading intent on behalf of any Eaton Vance fund. This commentary may contain statements that are not historical facts, referred to as forward looking statements. The Fund s actual future results may differ significantly from those stated in any forward looking statement, depending on factors such as changes in securities or financial markets or general economic conditions, the volume of sales and purchases of Fund shares, the continuation of investment advisory, administrative and service contracts, and other risks discussed from time to time in the Fund s filings with the Securities and Exchange Commission.
- ² Russell 1000 Growth Index is an unmanaged index of U.S. large-cap growth stocks. CBOE S&P 500 BuyWrite Index measures the performance of a hypothetical buy-write strategy on the S&P 500 Index. CBOE NASDAQ-100 BuyWrite Index measures the performance of a theoretical portfolio that owns stocks included in the NASDAQ-100 Index and writes (sells) NASDAQ-100 Index covered call options. Unless otherwise stated, index returns do not reflect the effect of any applicable sales charges, commissions, expenses, taxes or leverage, as applicable. It is not possible to invest directly in an index.
- ³ The Distribution Rate is based on the Fund s last regular distribution per share in the period (annualized) divided by the Fund s NAV or market price at the end of the period. The Fund s distributions may be composed of ordinary income, tax-exempt income, net realized capital gains and return of capital. In recent years, a significant portion of the Fund s distributions has been characterized as a return of capital. The Fund s distribution rate is determined by the investment adviser based on its current assessment of the Fund s long-term return potential. As portfolio and market conditions change, the rate of distributions paid by the Fund could change.
- ⁴ Depictions do not reflect the Fund s option positions. Excludes cash and cash equivalents.
- ⁵ The following terms as used in the Fund snapshot:

Average Market Cap: The average market capitalization of the companies that have issued the common stocks owned by a Fund. Market Cap is determined by multiplying the price of a share of a company s common stock by the number of shares outstanding.

Call Option: For a call option on a security, the option buyer has the right to purchase, and the option seller (or writer) has the obligation to sell, a specified security at a specified price (exercise price or strike price) on or before a specified date (option expiration date). The buyer of a call option makes a cash payment (premium) to the seller (writer) of the option upon entering into the option contract.

Covered Call Strategy: A strategy of owning a portfolio of common stocks and writing call options on all or a portion of such stocks to generate current earnings from option premium.

Out-of-the-Money: For a call option on common stock, the extent to which the exercise price of the option exceeds the current price of the stock.

Fund snapshot and profile subject to change due to active management.

Important Notice to Shareholders

On August 6, 2012, the Fund s Board of Trustees adopted a share repurchase program for the Fund and authorized it to repurchase up to 10% of its then currently outstanding common shares in open-market transactions at a discount to net asset value. Establishing the repurchase program

does not obligate the Fund to purchase specific amounts of shares. For more information on the Fund $\,$ s share repurchase program, please see Note 5 in the Fund $\,$ s Notes to Financial Statements.

Enhanced Equity Income Fund II

December 31, 2012

Portfolio of Investments

Common Stocks 99.1%)

| Security | Shares | Value |
|--|--|---|
| Aerospace & Defense 2.9% Boeing Co. (The) United Technologies Corp. | 102,686 110,273 | \$ 7,738,417 9,043,489 \$ 16,781,906 |
| Air Freight & Logistics 0.8% United Parcel Service, Inc., Class B | 61,728 | \$ 4,551,205 \$ 4,551,205 |
| Beverages 4.2% Beam, Inc. Coca-Cola Co. (The) | 87,921 517,026 | \$ 5,371,094 18,742,192 \$ 24,113,286 |
| Biotechnology 3.6% Celgene Corp. ⁽²⁾ Gilead Sciences, Inc. ⁽²⁾ | 114,686 154,526 | \$ 9,028,082 11,349,935 \$ 20,378,017 |
| Capital Markets 0.6% Walter Investment Management Corp.(2) | 75,712 | \$ 3,257,130 \$ 3,257,130 |
| Chemicals 5.5% Air Products and Chemicals, Inc. Ecolab, Inc. LyondellBasell Industries NV, Class A Monsanto Co. PPG Industries, Inc. | 45,828 110,560 65,442 124,971 32,341 | \$ 3,850,469 7,949,264 3,736,084 11,828,505 4,377,354 |

| | \$ 31,741,676 |
|--|---------------------------------------|
| Commercial Banks 1.4% PNC Financial Services Group, Inc. 49,54 Wells Fargo & Co. 141,31 | |
| Communications Equipment 3.1% QUALCOMM, Inc. 289,52 | |
| Security Share | \$ 17,956,527 S Value |
| Computers & Peripherals 6.9% Apple, Inc. 74,34 | \$ 39,628,648 \$ 39,628,648 |
| Consumer Finance 1.2% American Express Co. 123,41 | \$ 7,093,607 \$ 7,093,607 |
| Diversified Telecommunication Services 0.8% CenturyLink, Inc. 45,74 Verizon Communications, Inc. 67,34 | |
| Electrical Equipment 1.1% Emerson Electric Co. 113,62 | 7 \$ 6,017,686 \$ 6,017,686 |
| Energy Equipment & Services 1.4% Schlumberger, Ltd. | \$ 7,888,251 \$ 7,888,251 |
| Food & Staples Retailing 1.5% Costco Wholesale Corp. CVS Caremark Corp. 69,15 30,76 | |
| Food Products 0.4% Hershey Co. (The) Kraft Foods Group, Inc. 21,44 Kraft Foods Group, Inc. | |

Health Care Equipment & Supplies 1.9%

 Covidien PLC
 111,929
 \$ 6,462,780

 Varian Medical Systems, Inc.⁽²⁾
 64,178
 4,507,863

\$ 10,970,643

Hotels, Restaurants & Leisure 1.6%

McDonald s Corp. 103,025 \$ 9,087,835

\$ 9,087,835

Household Products 1.8%

Colgate-Palmolive Co. 98,091 \$10,254,433

6

\$ 10,254,433

See Notes to Financial Statements.

Enhanced Equity Income Fund II

December 31, 2012

Portfolio of Investments continued

| Security | Shares | Value |
|--|--|---|
| Industrial Conglomerates 2.3% Danaher Corp. | 237,462 | \$ 13,274,126 \$ 13,274,126 |
| Insurance 0.5% AmTrust Financial Services, Inc. | 103,787 | \$ 2,977,649 \$ 2,977,649 |
| Internet & Catalog Retail 3.0% Amazon.com, Inc.(2) | 69,039 | \$ 17,338,454 \$ 17,338,454 |
| Internet Software & Services 8.3% eBay, Inc. ⁽²⁾ Equinix, Inc. ⁽²⁾ Google, Inc., Class A ⁽²⁾ Rackspace Hosting, Inc. ⁽²⁾ VeriSign, Inc. ⁽²⁾ | 217,809 21,622 30,660 52,638 163,990 | \$ 11,112,615 4,458,457 21,749,284 3,909,424 6,366,092 \$ 47,595,872 |
| IT Services 6.6% Accenture PLC, Class A International Business Machines Corp. Teradata Corp. ⁽²⁾ Visa, Inc., Class A | 149,846 123,079 18,883 20,023 | \$ 9,964,759 23,575,783 1,168,669 3,035,086 \$ 37,744,297 |
| Life Sciences Tools & Services 0.6% Agilent Technologies, Inc. | 77,873 | \$ 3,188,121 \$ 3,188,121 |

| Machinery 1.6% Deere & Co. | 103,764 | \$ 8,967,285 |
|---|--|--|
| Detre & Co. | 103,704 | |
| | | \$ 8,967,285 |
| Media 3.8% Comcast Corp., Class A Lions Gate Entertainment Corp. ⁽²⁾ Virgin Media, Inc. Walt Disney Co. (The) | 199,435 140,617 87,877 177,235 | \$ 7,454,880 2,306,119 3,229,480 8,824,531 |
| | | |
| | | \$ 21,815,010 |
| Security | Shares | Value |
| Multiline Retail 3.6% Dollar General Corp.(2) Macy s, Inc. Target Corp. | 199,170 192,125 73,031 | \$ 8,781,405 7,496,718 4,321,244 |
| | | \$ 20,599,367 |
| | | |
| Oil, Gas & Consumable Fuels 4.3% ConocoPhillips EOG Resources, Inc. Exxon Mobil Corp. Phillips 66 Range Resources Corp. | 64,100 27,831 106,736 29,550 103,940 | \$ 3,717,159 3,361,706 9,238,001 1,569,105 6,530,550 |
| | | \$ 24,416,521 |
| Pharmaceuticals 5.2% Perrigo Co. Pfizer, Inc. Roche Holding AG PC Shire PLC ADR Watson Pharmaceuticals, Inc. ⁽²⁾ | 72,236 235,524 14,982 60,628 92,729 | \$ 7,514,711 5,906,942 3,029,078 5,588,689 7,974,694 |
| | | \$ 30,014,114 |
| Real Estate Investment Trusts (REITs) 1.6% American Tower Corp. AvalonBay Communities, Inc. | 46,913 13,100 | \$ 3,624,968 1,776,229 |
| Public Storage, Inc. | 27,040 | 3,919,718 |
| | | \$ 9,320,915 |
| | | |
| Road & Rail 2.3% Kansas City Southern Union Pacific Corp. | 112,904 28,341 | \$ 9,425,226 3,563,030 |
| | | \$ 12,988,256 |
| Semiconductors & Semiconductor Equipment 1.0% | | |
| Semiconductors & Semiconductor Equipment 1.070 | | |

Cypress Semiconductor Corp.⁽²⁾ 52,743 571,734

\$ 5,472,955

Software 4.8%

 Microsoft Corp.
 637,001
 \$ 17,027,037

 Oracle Corp.
 312,254
 10,404,303

7

\$ 27,431,340

See Notes to Financial Statements.

Enhanced Equity Income Fund II

December 31, 2012

Portfolio of Investments continued

| Security | Shares | Value |
|---|------------------------------|---|
| Specialty Retail 3.6% Home Depot, Inc. (The) TJX Companies, Inc. (The) Urban Outfitters, Inc. (2) | 83,834 143,018 240,312 | \$ 5,185,133 6,071,114 9,458,680 \$ 20,714,927 |
| Textiles, Apparel & Luxury Goods 1.2% NIKE, Inc., Class B | 134,986 | \$ 6,965,278 \$ 6,965,278 |
| Tobacco 3.5% Philip Morris International, Inc. | 238,972 | \$ 19,987,618 \$ 19,987,618 |

Wireless Telecommunication Services 0.6%