

BEFORE THE PENNSYLVANIA PUBLIC UTILITY COMMISSION

Pennsylvania Public Utility Commission)

)

v.)

DOCKET NO. R-2018-2647577

)

Columbia Gas of Pennsylvania, Inc.)

DIRECT TESTIMONY OF

MARLON F. GRIFFING, PH.D.

ON BEHALF OF THE

OFFICE OF THE CONSUMER ADVOCATE OF PENNSYLVANIA

JUNE 7, 2018

TABLE OF CONTENTS

	<u>PAGE</u>
I. Introduction	1
II. The Cost of Equity in the Regulatory Environment	3
1. The Role of Economic Theory	3
2. Standards for Finding a Fair Rate of Return	5
III. Selecting the Comparison Group	12
IV. DCF Overview	20
V. DCF Analysis for the Comparison Group	22
VI. Reasonableness Check and Recommended ROE	29
1. CAPM Analysis	30
2. Authorized ROEs Comparison	35
3. Recommended ROE.....	38
VII. Appropriate Capital Structure for Ratemaking	40
VIII. Recommended ROE and Overall Rate of Return	40
IX. Review of the Company’s ROE Analysis.....	41
1. DCF Approach.....	42
2. Risk Premium Approach	46
3. CAPM Analyses.....	46
4. Comparable Earnings.....	51
5. Mr. Moul’s Recommended ROE	52
X. Summary	52

EXHIBITS:

MFG-1.....	Qualifications and Prior Testimony
MFG-2.....	Value Line Natural Gas Utilities and Screens
MFG-3.....	Natural Gas Regulated Percentage Screen
MFG-4.....	Market Intelligence article regarding AltaGas Acquisition of WGL Holdings
MFG-5.....	Market Intelligence article regarding Maryland Law Judge Recommendation for South Jersey Industries-Elkton Gas Acquisition
MFG-6.....	S&P Key Attributes of Creditworthiness
MFG-7.....	NiSource S&P Credit Rating
MFG-8.....	Common Equity Prices of Comparison Group Companies
MFG-9.....	Dividends of Comparison Group Companies
MFG-10, Schedule 1.....	Constant-Growth Discounted Cash Flow (DCF) Analysis
MFG-10, Schedule 2.....	NiSource Bond Yield
MFG-10, Schedule 3.....	Congressional Budget Office Growth-Rate Projection
MFG-10, Schedule 4.....	U.S. Energy Information Administration Growth-Rate Projection
MFG-10, Schedule 5.....	<i>New Regulatory Finance</i> , Multistage DCF excerpt
MFG-10, Schedule 6.....	Multi-Stage DCF Analysis
MFG-10, Schedule 7.....	Analysis of the effect of the Tax Cut and Jobs Act on the Dividend Yield of Gas Distribution Companies
MFG-11, Schedule 1.....	Daily Treasury Yield Curve
MFG-11, Schedule 2.....	Value Line Betas
MFG-11, Schedule 3.....	Value Line Summary & Index, May 18, 2018
MFG-11, Schedule 4.....	CAPM/ECAPM Analyses
MFG-11, Schedule 5.....	<i>New Regulatory Finance</i> , ECAPM excerpt
MFG-12.....	Regulatory Research Associates Authorized ROEs
MFG-13.....	Rate of Return (ROR) Analysis
MFG-14.....	<i>Blue Chip</i> Forecasted Interest Rates versus Actual Interest Rates
MFG-15.....	30-Year Treasury Rates, March 1, 2017-May 18, 2018

1 **I. INTRODUCTION**

2 **Q. PLEASE STATE YOUR NAME, OCCUPATION AND BUSINESS ADDRESS.**

3 A. My name is Dr. Marlon F. Griffing. I am a Senior Consultant with the economic
4 consulting firm of PCMG & Associates Inc. (“PCMG”). My business address is 22
5 Brookes Drive, Gaithersburg, MD 20785.

6 **Q. PLEASE DESCRIBE PCMG.**

7 A. PCMG was founded in 2015 to conduct research on a consulting basis into the rates,
8 revenues, costs, and economic performance of regulated firms and industries. The firm has
9 a professional staff of four with expertise in economics, accounting, and cost analysis.
10 Most of its work involves the development, preparation, and presentation of expert witness
11 testimony before federal and state regulatory agencies.

12 **Q. HAVE YOU PREPARED A SUMMARY OF YOUR QUALIFICATIONS AND**
13 **EXPERIENCE, INCLUDING COST-OF-CAPITAL TESTIMONY IN**
14 **REGULATORY PROCEEDINGS?**

15 A. Yes. Exhibit MFG-1 is a summary of my qualifications, experience, and testimony given
16 before state regulatory agencies regarding cost of capital.

17 **Q. FOR WHOM ARE YOU APPEARING IN THIS PROCEEDING?**

18 A. I am appearing on behalf of the Pennsylvania Office of the Consumer Advocate (“OCA”).

19 **Q. WHAT ARE YOUR RESPONSIBILITIES IN THIS COMMISSION**
20 **PROCEEDING?**

21 A. My responsibility is to determine a fair rate of return on common equity capital and a fair
22 overall rate of return for the natural-gas distribution company Columbia Gas of Pennsylvania,
23 Inc. (“CPA” or the “Company”). CPA is a wholly-owned subsidiary of NiSource Gas

1 Distribution Group, which is a wholly-owned subsidiary of NiSource, Inc. (“NiSource”).

2 In addition, I respond to the cost of capital testimony of Columbia Gas witness Paul R.

3 Moul.

4 **Q. HOW DO YOU DEVELOP A RECOMMENDED RATE OF RETURN FOR THE**
5 **COMPANY?**

6 A. To arrive at a recommended overall rate of return (ROR), I analyze the Company’s requested
7 capital structure and costs for each component of that structure.

8 **Q. HOW IS YOUR TESTIMONY ORGANIZED?**

9 A. My testimony is organized as follows:

- 10 • First, I discuss economic considerations and legal precedents underlying the cost of
11 equity in regulatory proceedings.
- 12 • Second, I explain how I selected the members of the Comparison Group of
13 companies used in my analysis.
- 14 • Third, I provide an overview of the Discounted Cash Flow (DCF) analysis.
- 15 • Fourth, I perform a DCF analysis for the Comparison Group, check it for
16 reasonableness, and recommend a return on equity (ROE) for the Company.
- 17 • Fifth, I recommend a capital structure and ROR for the Company.
- 18 • Sixth, I review the Company’s rate of return analysis.
- 19 • Seventh, I summarize my testimony and recommendations

20 **Q. PLEASE STATE YOUR CONCLUSIONS REGARDING THE COMPANY’S ROE**
21 **AND ROR.**

22 A. My recommended ROE for CPA is 9.45 percent. When this number is included in the
23 calculation of the weighted-average ROR for the Company, adopting the Company’s
24 requested capital structure and costs of debt,¹ the result is a cost of capital of 7.32 percent.

¹ CPA Schedule No. 400, Page 1 of 28, Schedule 1 (1 of 2). As noted below, I reserve the right to revisit the external capital structure based on future information and testimony by other parties.

1 If the Company's requested Weather Normalization Adjustment is made permanent, then
2 the recommended ROE is 9.38 percent and the recommended ROR is 7.28 percent.

3 **II. THE COST OF EQUITY IN THE REGULATORY ENVIRONMENT**

4 **1. The Role of Economic Theory**

5 **Q. WHAT IS THE BASIS IN ECONOMIC THEORY FOR REGULATING CERTAIN**
6 **INDUSTRIES?**

7 A. According to economic theory, the forces of supply and demand interacting in a competitive
8 environment produce an allocation of resources that yields an optimal mix of goods and
9 services. Firms and individuals maximize profits and satisfaction given the prices and incomes
10 that the interplay of market forces generates. This outcome is described as economically
11 efficient. Put simply, there is no better output of goods and services that can be produced
12 with the available resources.

13 **Q. DOES THE ECONOMICALLY EFFICIENT OUTCOME OCCUR IN ALL**
14 **INDUSTRIES?**

15 A. No, several conditions must be present, including many buyers and sellers, identical
16 products, perfect information about prices, and so forth. If these conditions exist, then price
17 is the only way for providers of goods and services to compete in markets. If the conditions
18 for competition do not exist, however, then letting supply and demand work unfettered will
19 not produce the socially desired efficient outcome.

20 **Q. ARE THERE LEGAL OBSTACLES TO COMPETITION IN PUBLIC UTILITY**
21 **MARKETS?**

22 A. Even if a firm is willing and able to raise the capital needed to be a viable gas distribution
23 company, state and local governments typically have permitting processes that govern

1 where and when utilities can build facilities. Thus, high start-up costs are not the only
2 barrier that must be overcome.

3 **Q. ARE THERE OTHER ASPECTS OF A GAS DISTRIBUTION UTILITY'S COSTS**
4 **THAT RESULT IN FEW SELLERS?**

5 A. Yes. The gas distribution industry is what is typically known as a declining-cost industry.

6 **Q. WHAT IS A DECLINING-COST INDUSTRY?**

7 A. A declining-cost industry is one where the average cost of service declines over the range
8 of effective demand.

9 **Q. IS A DECLINING AVERAGE COST OF SERVICE SUFFICIENT FOR AN**
10 **INDUSTRY TO BE TERMED "DECLINING COST?"**

11 A. No. In fact, average costs decline in most industries as production and sales increase.
12 However, in most industries, average cost eventually rises and does so at a sales level that
13 is smaller than the total demand for the product in a given industry. As a consequence, a
14 few to many firms share the market because, beyond the sales volume at which average
15 costs rise, firms lose, rather than gain, cost advantage.

16 **Q. ARE PUBLIC UTILITIES DECLINING-COST INDUSTRIES?**

17 A. Yes. With their high fixed costs, public utilities have high initial average costs, but as their
18 sales increase, the average cost drops. What qualifies public utilities as a declining-cost
19 industry is that their average costs continue to decline over very high volumes of sales, up
20 to and beyond total, or effective, market demand for the product. This condition creates
21 market failure (when the market produces an outcome that is inefficient). As a natural gas
22 distribution firm increases its sales and market share, its average costs decline, and continue
23 to do so. Thus, the firm with the largest market share has an increasing cost advantage over

1 competitors. In effect, there is not enough room in the market for another distributor. The
2 logical result is a market with one distributor—often referred to as a natural monopoly—
3 not the many firms envisioned in the theory of competition.

4 **Q. HOW HAS SOCIETY RESPONDED TO THE ABSENCE OF COMPETITION IN**
5 **PUBLIC UTILITY MARKETS?**

6 A. Since sufficient competition does not exist in the markets for public utilities to ensure low
7 prices and adequate service, society has typically turned to regulation to achieve these
8 goals. Firms are granted exclusive franchises to serve areas in return for accepting
9 government regulation of their prices. The government regulators generally are charged
10 with pursuing an outcome that approximates the efficient outcome of the competitive
11 model. Regulation is viewed as a way to decrease prices and increase services provided by
12 a natural monopoly. A challenge for regulators is to set policies that ensure that the
13 regulated firm provides an appropriate supply of services at reasonable rates. A reasonable
14 rate enables a public utility not only to recover its operating expenses, depreciation, and
15 taxes, but also to compete for funds in capital markets.

16 **2. Standards for Finding a Fair Rate of Return**

17 **Q. DO STANDARDS EXIST FOR DETERMINING A FAIR RATE OF RETURN?**

18 A. Yes. Two United States Supreme Court (“Court”) cases are the basis for rate of return
19 regulation in the United States. They are the *Bluefield Water Works*² and the *Hope Natural*
20 *Gas*³ cases. In *Hope*, the Court established the following standards for the return on equity
21 that must be allowed a regulated public utility to provide for a “reasonable return”:

² *Bluefield Water Works & Improvement Co. v. Public Service Commission of West Virginia*, 262 U.S. 679 (1923).

³ *Federal Power Commission v. Hope Natural Gas Co.*, 320 U.S. 591 (1944).

1 [T]he return to the equity owner should be commensurate with the
2 returns on investments in other enterprises having corresponding
3 risks. That return, moreover, should be sufficient to assure
4 confidence in the financial integrity of the enterprise, so as to
5 maintain its credit and to attract capital.⁴

6 It can be seen from this excerpt that there are essentially three standards for determining
7 an appropriate return on equity from the standpoint of the equity owners of a regulated
8 utility. The first is the “comparable earnings” standard—the earnings must be
9 “commensurate with the returns on investments in other enterprises having corresponding
10 risks.” The second is that earnings must be sufficient to assure “confidence in the financial
11 integrity of the enterprise.” The third is that earnings must allow the utility to “attract
12 capital.”

13 **Q. CAN THE COMPARABLE EARNINGS STANDARD BE APPLIED IN**
14 **ESTIMATING THE RATE OF RETURN ON EQUITY CAPITAL?**

15 A. There is circularity to the comparable earnings standard because the competitive nature of
16 the capital markets virtually ensures that the returns to all enterprises are comparable with
17 each other. Investors establish the price of each traded stock in capital markets based on
18 prospective earnings and perceived risk. The prices for common equity for companies with
19 high earnings are bid up, while the prices for companies with low earnings are bid down.
20 If earnings were the only concern, the ratio of earnings to share prices, the return for
21 investors, would become equal for all companies. However, investors recognize relative
22 risk as they buy and sell common equity shares. For companies with high risk, share prices
23 will be lower; for companies with low risk, share prices will be higher. Thus, the

⁴ *Id.*, at 603.

1 comparable earnings test becomes a nullity: All returns, because they are adjusted for risk,
2 are comparable with all other returns.

3 **Q. HOW IS THIS CIRCULARITY TYPICALLY RESOLVED IN PUBLIC UTILITY**
4 **REGULATION?**

5 A. In public utility regulation, the conventional procedure for resolving this circularity is to
6 identify the required equity return based on the market value of a utility's stock. That return
7 is combined with the cost of debt, and the blended return to total capital is then applied to
8 a rate base reflective of the book value of the utility's investment. The book value is the
9 accountant's quantification of the depreciated original cost of the utility's assets adjusted
10 for ratepayer contributions such as deposits and deferred taxes. Under this procedure, the
11 market price of a stock is used only to determine the return that investors expect from that
12 stock. That expectation is then applied to the book value of the utility's investment to
13 identify the level of earnings that regulation will allow the utility's common shareholders
14 to recover.

15 **Q. HOW CAN THE FINANCIAL INTEGRITY AND CAPITAL ATTRACTION**
16 **STANDARDS ENUNCIATED IN *HOPE* BE APPLIED IN ESTIMATING THE**
17 **RATE OF RETURN ON EQUITY CAPITAL?**

18 A. If a utility can earn a return on its investment comparable to that required by enterprises of
19 comparable risk, then it should have no difficulty in attracting capital and maintaining
20 credit. Investors would have no reason to pass on purchasing the common equity of such a
21 utility in favor of other investment opportunities. Thus, if the comparable earnings test is
22 met, then the financial integrity and capital attraction standards are met as well.

1 **Q. WHAT IS RISK?**

2 A. Risk is the chance of that an investment will lose value. A business, for example, may
3 introduce a new product, supporting it with investment in plant and equipment. There is,
4 of course, no guarantee that consumers will purchase the product, putting the investment
5 in the plant and equipment at risk. The risk investors attach to the company varies inversely
6 with their view as to the probability of the product doing well. In general, the greater the
7 risk of an investment, the greater the return required to attract investors, and vice versa.

8 **Q. DOES SETTING AN ALLOWED RATE OF RETURN MEAN THAT THE**
9 **UTILITY WILL EARN THAT RETURN?**

10 A. No. There is no guarantee that the utility will earn the allowed rate of return. The utility
11 has the reasonable *opportunity* to earn the allowed rate of return; in practice, the utility may
12 earn more or less than this return, depending on whether and how its management responds
13 to technological and market developments, among other matters.

14 **Q. WHAT SHOULD THE COMMISSION CONSIDER IN SETTING AN**
15 **APPROPRIATE RATE OF RETURN?**

16 A. The Commission should look to current market conditions as it balances investor and
17 consumer interests. In this case, the rate of return should reflect the condition of the capital
18 markets in which CPA will have to compete with other firms for funding. Historically
19 allowed rates and historical performances are not appropriate inputs in this forward-looking
20 approach. This statement does not mean that historical rates and performance are irrelevant.
21 They are factors because they affect investors' views of a company's prospects and,
22 therefore, the investors' willingness to purchase its common equity shares.

1 **Q. PLEASE EXPLAIN HOW THE METHODS YOU HAVE USED TO DETERMINE**
2 **THE COST OF COMMON EQUITY CAPITAL FOR THE COMPANY REFLECT**
3 **CURRENT MARKET CONDITIONS.**

4 A. I used a market-oriented approach to determine the common equity cost for the Company.
5 I analyzed the equity return that investors currently expect to receive from investing in
6 companies with risks similar to the risk of the Company. Many factors influence these
7 investor expectations, among them: past performance of the companies, estimates of how
8 the companies will perform in the future, possible technological change, tax rates, and
9 predicted general economic conditions. As investors decide where to place their funds
10 among the investment options available to them, they weigh the information they have.
11 Then they decide how much to pay to acquire common equity shares, or to turn to the other
12 side of the question, what price will lead them to sell the shares. Either way, the factors are
13 reflected in current prices in capital markets. Thus, my analysis is forward-looking because
14 it relies on investors' current assessment of what is likely to happen with their investments.

15 **Q. WHAT IS THE ROLE OF OPPORTUNITY COSTS IN YOUR ANALYSIS?**

16 A. An opportunity cost is the value of the next best choice forgone as the result of making a
17 decision. Opportunity costs are central to my analysis. As investors decide where to place
18 their assets, they have many opportunities from which to choose in the financial markets.
19 Economic theory says they will choose the opportunity they think will provide them the best
20 return, taking into account the level of risk with which they are comfortable. Thus, for a
21 company to attract capital, its forward-looking fair rate of return must at least equal the
22 expected rate of return for the best alternative opportunity with similar risk.

1 **Q. HOW DO YOU KNOW WHAT EQUITY RATE OF RETURN THE COMPANY**
2 **MUST OFFER TO INVESTORS TO BE AN ATTRACTIVE OPPORTUNITY?**

3 A. No one knows with certainty what specific rate of return the Company must offer to
4 investors that is just sufficient to make the Company an attractive opportunity. However,
5 various methods have been derived for reliably estimating what investors currently think
6 that rate is. I have used the Discounted Cash Flow (DCF) method, which is widely used in
7 utility general rate cases, and has been presented in past rate cases before the Pennsylvania
8 Public Utility Commission (“Commission”). I use other methods and recently authorized
9 returns for other distribution companies as checks on the reasonableness of the DCF
10 outcome.

11 **Q. PLEASE SUMMARIZE THE DCF METHOD.**

12 A. The DCF method uses the current dividend yield and the expected growth rate of this yield
13 to determine a required rate of return on an investment opportunity. The required rate of
14 return from a DCF analysis is derived from a formula for determining the net present value,
15 or price, of a share of stock. There are several variations of DCF, but the constant-growth
16 form I have selected assumes that dividends (D) are received at the end of each year, the
17 annual growth rate of dividends (g) is constant forever, and the discount rate for dividends
18 (k) is constant forever. The equation form of this constant-growth DCF model is the
19 following:

20

1
$$k = \frac{D_1}{P_0} + g$$

2
3 Where:

4 k is the discount rate, which also is the fair rate of return for equity;

5 D_1 is the annual dividend one year from the present;

6 P_0 is the current price of a stock share; and

7 g is the expected growth rate of the dividend.

8
9 **Q. WHAT INFORMATION IS USED TO DEVELOP VALUES FOR THE VARIOUS**
10 **TERMS IN THE DCF EQUATION?**

11 A. The annual dividend one year from now is derived by applying the growth-rate estimate (g),
12 adjusted for an average interval of dividend increases, to the actual current annual dividend
13 (D_0), information that is publicly available.

14 **Q. DOES YOUR EQUITY RATE OF RETURN ANALYSIS USE INFORMATION**
15 **SPECIFIC TO THE COMPANY?**

16 A. No. As noted, CPA is an operating unit of NiSource. The Company is not publicly traded
17 and, therefore, no common equity share price is available for performing a direct DCF
18 analysis on the Company.

19 **Q. DOES YOUR EQUITY RATE OF RETURN ANALYSIS USE INFORMATION FOR**
20 **NISOURCE?**

21 A. Yes. NiSource does trade publicly and has a positive record of making dividend payments.

1 **Q. HOW DO YOU USE THE DCF ANALYSIS TO ESTIMATE THE COMPANY'S**
2 **REQUIRED RATE OF RETURN?**

3 A. I perform a DCF analysis on a group of natural gas distribution utilities comparable to CPA
4 that are publicly traded and have similar investment risk, as discussed below. The estimated
5 rates of return for members of this group form the basis for my estimate of a fair rate of
6 return for the Company.

7 **III. SELECTING THE COMPARISON GROUP**

8 **Q. PLEASE DISCUSS YOUR PROCEDURE FOR SELECTING THE COMPARISON**
9 **GROUP.**

10 A. I set out to find a group of companies that are, from the perspective of investors, similar to
11 CPA. Thus, I wanted firms that are natural gas distribution companies that represent
12 approximately the same investment risk as does the Company.

13 **Q. PLEASE DESCRIBE HOW YOU FOUND SUITABLE CANDIDATE COMPANIES**
14 **FOR THE COMPARISON GROUP.**

15 A. I looked at Value Line, a widely used investor service, for companies that Value Line
16 classifies as members of the Natural Gas Utility Industry. The March 2, 2018 edition of the
17 *Value Line Investment Survey* includes eleven companies in this category. These companies
18 are: Atmos Energy Corp., Chesapeake Utilities, New Jersey Resources Corp., NiSource
19 Inc., Northwest Natural Gas Co., One Gas, Inc., RGC Resources, Inc., South Jersey
20 Industries, Inc., Southwest Gas Holdings, Inc. Spire Inc., and WGL Holdings, Inc.

1 **Q. HOW DID YOU USE THIS INFORMATION IN YOUR SELECTION PROCESS?**

2 A. I applied screens to the initial set of Value Line Natural Gas Utility companies to ensure
3 that the companies included in my Comparison Group were similar in risk to the risk of the
4 Company.

5 **Q. PLEASE LIST THE CRITERIA YOU APPLIED IN THE SELECTION OF THE**
6 **COMPARISON GROUP.**

7 A. I applied the following screens⁵ to the initial set of Natural Gas Utility companies:

- 8 1. shares publicly traded on a stock exchange;
- 9 2. U.S. firm based in the continental 48 states;
- 10 3. a stable record of paying dividends;
- 11 4. not be expected to sell, merge into or be acquired by another company, or
12 be engaged in an unusual regulatory proceeding;
- 13 5. have an investment-grade Standard & Poor's ("S&P") credit rating;
- 14 6. have 65 percent or more of the three-year average of net income, net
15 operating income, or operating revenue be derived from regulated natural-
16 gas distribution operations; and
- 17 7. have positive growth-rate projections from expert analysts.

18 **Q. WHAT PURPOSE IS SERVED BY REQUIRING THAT THE COMPANIES BE**
19 **PUBLICLY TRADED?**

20 A. The primary analytical tool that I use for finding a company's ROE, the DCF model,
21 requires information about common equity share prices, dividends, and growth-rate
22 projections. The requirement that companies be publicly traded ensures that their common

⁵ Exhibit MFG-2, Exhibit MFG-3, Exhibit MFG-7.

1 equity share prices are available. The eleven Value Line Natural Gas Utility companies are
2 publicly traded.

3 **Q. WHAT IS THE PURPOSE OF APPLYING THE CRITERION THAT THE**
4 **COMPANIES BE BASED IN THE CONTINENTAL UNITED STATES?**

5 A. I sought companies that face a business environment similar to that in which CPA operates.
6 The Company's operating utility in this case is in Pennsylvania and subject to state
7 regulation, statutes, and rules that are similar to those found in the rest of the United States.
8 The states of Alaska and Hawaii, although having regulation systems similar to those of
9 the other states, have business environments—due to their geography—that are
10 substantially different from the business environment in the rest of the country. Therefore,
11 I have limited candidates for the Comparison Group to companies based in the 48
12 continental U.S. states.

13 **Q. DO YOU EXCLUDE ANY COMPANIES BECAUSE THEY ARE NOT BASED IN**
14 **THE CONTINENTAL UNITED STATES?**

15 A. None of the Value Line companies are located outside the continental United States.

16 **Q. WHAT PURPOSE IS SERVED BY REQUIRING THAT THE COMPANIES HAVE**
17 **A STABLE RECORD OF PAYING DIVIDENDS?**

18 A. The DCF model requires dividends as an input. If a company is not paying dividends or
19 has a record of cutting dividends, then its DCF analysis is not reliable. All eleven Value
20 Line companies have paid dividends regularly.⁶

⁶ Exhibit MFG-2.

1 **Q. WHY IS IT IMPORTANT THAT COMPANIES INVOLVED IN SALES,**
2 **MERGERS, OR ACQUISITIONS, USUALLY BE EXCLUDED FROM YOUR**
3 **ANALYSIS?**

4 A. The share prices of companies involved in sales, mergers or acquisitions can be volatile.
5 Extreme increases in the share prices of companies that are part of sales, mergers, or
6 acquisitions drive down the ROE results in DCF analysis, while extreme decreases in the
7 share prices drive up the ROE results. Neither outcome yields meaningful DCF results.
8 Therefore, it is usually appropriate to exclude such companies from the analysis.

9 **Q. ARE ANY COMPANIES IN THE INITIAL SET INVOLVED IN SALES,**
10 **MERGERS, OR ACQUISITIONS?**

11 A. Yes. Washington Gas Light Holdings, Inc. (“WGL”) is being acquired by AltaGas Ltd. and
12 South Jersey Industries (“SJI”)⁷ is acquiring Elkton Gas (“Elkton”) and Elizabethtown
13 Gas.⁸

14 **Q. DO YOU ELIMINATE WASHINGTON GAS LIGHT HOLDINGS FROM YOUR**
15 **ANALYSIS?**

16 A. Yes. I eliminate WGL from Comparison Group consideration. The Alta Gas acquisition of
17 WGL has been approved by the Federal Energy Regulatory Commission (“FERC”) and
18 the Virginia State Corporation Commission. In Maryland, an administrative law judge
19 approved an agreement in which Alta Gas and WGL accepted the Public Service
20 Commission of Maryland’s conditions on the acquisition, while in the District of
21 Columbia, the companies and the D.C. Public Service Commission reached a settlement
22 agreement. Therefore, the acquisition has either been approved by or an agreement has

⁷ Exhibit MFG-4.

⁸ Exhibit MFG-5.

1 been reached with the regulatory agencies with jurisdiction. Thus, WGL will soon not be
2 an independent gas distribution utility, so it is not an appropriate company to include in an
3 ROE analysis.

4 **Q. DO YOU ELIMINATE SOUTH JERSEY INDUSTRIES FROM YOUR**
5 **ANALYSIS?**

6 A. No. I retain SJI in the Comparison Group even though SJI is acquiring Elkton. SJI is well
7 along in its acquisition of Elkton. The intended transaction was announced in October
8 2017, meaning that the effect on the company's stock price caused by investors seeking
9 arbitrage gains has been absorbed by the market. Further, uncertainty about whether the
10 transaction will be approved by regulators is diminishing. In addition to the events in
11 Maryland and the District of Columbia cited above, negotiations concerning SJI's
12 acquisition of Elizabethtown Gas are progressing in New Jersey. Thus, the chances for
13 volatility in SJI's common equity price due to uncertainty about the acquisition are small.
14 Finally, SJI, in contrast to WGL, will be the surviving party of the transaction. SJI has been
15 a sound distribution company for a long time. Nothing about the proposed acquisition will
16 change the basic nature of the company. For these reasons I continue to consider SJI as a
17 possible member of the Comparison Group.

18 **Q. WHAT IS THE PURPOSE OF USING THE S&P CREDIT RATING AS A SCREEN?**

19 A. S&P's experts incorporate financial risk and business risk into a firm's credit rating. Within
20 these risk categories, S&P assesses such factors for public utilities as competitive advantage,
21 operating efficiency, and scale, scope, and diversity. This last set of factors includes the
22 effects of a utility's markets, service territories, and customer diversity on the company's cash-
23 flow stability, and in turn on its risk level. After considering all the factors, S&P assigns a credit

1 rating to a company. If companies have identical or similar credit ratings as determined by
2 expert analysts, then their relative risks are similar. As S&P states:

3 Creditworthiness is a multi-faceted phenomenon. Although there is
4 no “formula” for combining the various facets, our credit ratings
5 attempt to condense their combined effects into rating symbols
6 along a simple, one-dimensional scale. Indeed, as discussed below,
7 the relative importance of the various factors may change in
8 different situations.⁹

9 **Q. WHAT S&P CREDIT RATING DO YOU USE AS THE BASIS OF YOUR SCREEN**
10 **IN THE SELECTION OF THE COMPARISON GROUP FOR CPA?**

11 A. I require that the companies have at least an investment-grade credit rating from S&P,
12 which is a rating of BBB- or better. Many large institutional investors require that a
13 company have an S&P investment-grade credit rating to be considered for inclusion in their
14 portfolios. Therefore, companies with non-investment grade ratings are excluded by a large
15 share of buyers and are not comparable.

16 **Q. DOES CPA HAVE AN INVESTMENT-GRADE CREDIT RATING?**

17 A. CPA does not have an independent S&P credit rating, but the credit rating for NiSource, its
18 parent company, is BBB+, an investment-grade rating.¹⁰

19 **Q. WHAT IS THE RESULT OF APPLYING YOUR CREDIT-RATING SCREEN?**

20 A. Chesapeake Utilities and RGC Resources, Inc. do not have S&P credit ratings. Therefore,
21 I eliminated them from inclusion in the Comparison Group.¹¹ All the other companies have
22 investment-grade credit ratings. Their ratings range from BBB+ to A+.

⁹ Exhibit MFG-6.

¹⁰ Exhibit MFG-7

¹¹ Exhibit MFG-2.

1 **Q. YOU ALSO EMPLOY AS A SCREEN THAT MORE THAN 65 PERCENT OF A**
2 **COMPANY'S THREE-YEAR AVERAGE OF OPERATING INCOME, BE**
3 **DERIVED FROM REGULATED NATURAL GAS OPERATIONS. PLEASE**
4 **EXPLAIN THE PURPOSE OF THIS CRITERION.**

5 A. This criterion identifies whether the companies are engaged primarily in regulated natural
6 gas distribution operations. Setting 65 percent of operating income as the standard for
7 inclusion in the Comparison Group ensures that the firms are regulated natural gas
8 companies and, therefore, operating in the same risk environment as CPA. By using a three-
9 year average of the regulated percentage of operating income I avoid the chance of one
10 year of extreme weather, either hot or cold, or some other one-time event, causing a
11 company to either be inappropriately excluded or included.

12 **Q. IS THERE A COMPANY THAT HAS HAD AN ANOMALOUS PERFORMANCE?**

13 A. Yes. SJI had a very low operating income in 2017. Two of its unregulated units lost money
14 in the year. However, its operating subsidiary South Jersey Gas, which typically accounts
15 for 65-75 percent of the company's operating income, had results consistent with that long-
16 term trend. Therefore, I again chose to keep SJI in the Comparison Group. Chances are
17 good that the parent company will sort out its poorly performing units and return South
18 Jersey Gas to representing about 70 percent of its operating income. The average for 2015-
19 2016 is 70.5 percent.¹²

20 **Q. WHAT IS THE OUTCOME OF YOUR APPLICATION OF THIS SCREEN?**

21 A. The seven other companies under consideration for the Comparison Group meet the 65
22 percent regulated natural gas distribution operating revenues screen. The three-year

¹² Exhibit MFG-3.

1 averages of operating income derived from regulated natural gas operations range from
2 68.1 percent for NiSource to 100 percent for One Gas, Inc.¹³

3 **Q. DOES YOUR EQUITY RATE OF RETURN ANALYSIS USE RESULTS FROM**
4 **NISOURCE?**

5 A. The answer is a qualified “Yes.” NiSource does trade publicly and has a positive record of
6 making dividend payments, so it can be part of a DCF ROE analysis. However, I prefer
7 not to use a company under analysis or its parent company as a member of the Comparison
8 Group for the company under analysis. If the company is included, it introduces circularity
9 into the analysis. Nevertheless, I do include NiSource in my analysis because there are
10 only eight gas distribution companies that qualify for the Comparison Group. The NiSource
11 data point provides additional information for the small sample of companies. Therefore, I
12 conduct analysis with NiSource as a member of the Comparison Group and with NiSource
13 excluded from the Comparison Group, reporting both ROE outcomes.

14 **Q. PLEASE DESCRIBE THE COMPARISON GROUP AFTER YOUR SCREENING.**

15 A. The Comparison Group is composed of eight Natural Gas Utility firms. They are: Atmos
16 Energy Corp., New Jersey Resources Corp., NiSource Inc., Northwest Natural Gas Co.,
17 One Gas, Inc., South Jersey Industries, Inc., Southwest Gas Holdings, Inc., and Spire Inc.¹⁴
18 As will be seen in the next section, these companies all have earnings per share growth-
19 rate estimates from Zacks, Yahoo! Finance, and Value Line, the final screen for the group.

¹³ *Id.*

¹⁴ *Id.*

1 **Q. PLEASE COMPARE THE MEMBERSHIP OF MR. MOUL’S GAS GROUP WITH**
2 **THE MEMBERSHIP OF YOUR COMPARISON GROUP.**

3 A. Mr. Moul includes Chesapeake Utilities in his Gas Group, a company that I exclude from
4 my Comparison Group. Mr. Moul excludes NiSource on the grounds of its extensive
5 electric operations. As noted previously, I typically would exclude NiSource because it is
6 the parent company of CPA. In this rate case I report ROE outcomes for the Comparison
7 Group with and without NiSource. The share of NiSource’s operating income that comes
8 from its regulated gas utilities indicate those operations are its primary activity. Otherwise,
9 the memberships of Mr. Moul’s Gas Group and my Comparison Group are the same, with
10 seven companies in common.

11 **Q. WHY DID YOU NOT INCLUDE CHESAPEAKE?**

12 A. Chesapeake does not have an S&P credit rating, which is one of my selection screens.

13 **IV. DCF OVERVIEW**

14 **Q. WHAT IS THE PURPOSE OF A DCF ANALYSIS?**

15 A. The goal of this analysis is to estimate an appropriate, forward-looking rate of return on
16 equity. A DCF analysis requires a determination of expected growth rates and dividend
17 yields in order to estimate this return.

18 **Q. PLEASE DISCUSS EXPECTED GROWTH RATES.**

19 A. Because a DCF analysis is forward-looking, I want to estimate the expected growth rate of
20 dividends. Historical growth rates would be good indicators of the expected growth rate if
21 both of the following are true:

- 22 • the dividend payout ratio and the realized rate of return on equity capital
23 were constant in the past and could be assumed to remain constant in the
24 future; and

- any growth in book equity was attributable solely to retained earnings.

If, in practice, these conditions held, then earnings per share (“EPS”), dividends per share (“DPS”), and book value per share (“BPS”) would all grow at the same rate, and the past growth rates for these factors would be the rate at which they would grow in the future.

Q. DO YOU USE HISTORICAL GROWTH RATES IN YOUR ANALYSIS?

A. No. The conditions necessary for historical growth rates to be good indicators of future growth rates are rarely satisfied. Most utilities’ returns on equity and payout ratios have not remained constant over time. Further, growth in book value has occurred not only due to retained earnings, but also due to the issuance of new shares of common stock. Consequently, past growth rates of earnings, dividends, and book equity are frequently unequal. Moreover, an industry may face a changed business environment, thereby making the past a poor basis for projecting the future. Historical growth rates can differ significantly from forward-looking projected growth rates due to such factors as inflation rates, tax rates, the role of an industry in the economy, and the regulatory environment. In view of these limitations of using historical growth rates, I base my estimated growth rates on projected growth rates as publicly provided by “Zacks Investment Research,” a respected investor services company, Thomson Financial Network estimates provided on Yahoo! Finance, and “The Value Line Investment Survey.”

Q. PLEASE DISCUSS THE DIVIDEND YIELDS USED IN YOUR DCF ANALYSIS.

A. To estimate the required rate of return on equity capital today, I estimate the expected dividend yield, D_1/P_0 where P_0 is the price of a share of common equity today and D_1 is the dividend in the next period. The use of this dividend yield assumes that dividends are distributed at the end of each period (year). This version is known as the constant-growth DCF model.

1 Since the current equity share price incorporates all market information considered relevant
2 by investors, generally speaking, non-recent historical prices should be avoided in
3 calculating the dividend yield. However, since share prices are volatile in the short run, it
4 is desirable to use a period long enough to avoid short-term aberrations in the capital market.

5 **Q. WHAT PERIOD DO YOU USE TO ESTABLISH AVERAGE COMMON EQUITY**
6 **SHARE PRICES FOR THE COMPANIES IN THE COMPARISON GROUP?**

7 A. I use the trading period of April 23, 2018-May 18, 2018 to find average common equity share
8 prices. This four-week period is long enough to dampen any short-term aberrations in the
9 capital market. It is also close to the June 7, 2018, date of this Testimony, thus making the
10 results timely. I used closing prices for the Comparison Group member companies obtained
11 at Yahoo! Finance.¹⁵

12 **V. DCF ANALYSIS FOR THE COMPARISON GROUP**

13 **Q. PLEASE DISCUSS THE REQUIRED RATE OF RETURN FOR THE**
14 **COMPARISON GROUP.**

15 A. To estimate the required rate of return for the group, I estimated the expected growth rate,
16 g, and the expected dividend yield, D_1/P_0 .

17 **Q. PLEASE DISCUSS THE EXPECTED GROWTH RATE FOR THE COMPARISON**
18 **GROUP.**

19 A. As noted above, it is appropriate in this proceeding to use only the forecasted growth rates
20 to estimate the expected growth rate to be used in the DCF analysis. Zacks and Yahoo!
21 Finance provide five-year growth-rate projections for EPS and Value Line provides five-

¹⁵ Exhibit MFG-8, Pages 1–2.

1 year growth rate projections for EPS, DPS, and BPS. To maintain consistency across the
2 sources, I used only the EPS estimates from Value Line.

3 **Q. WHAT INFORMATION DID YOU USE FROM ZACKS?**

4 A. I used the Zacks EPS five-year growth projections available May 22, 2018 for the individual
5 firms in the Comparison Group.¹⁶

6 **Q. WHAT INFORMATION DID YOU USE FROM YAHOO! FINANCE?**

7 A. I used the Yahoo! Finance EPS five-year growth projections available May 22, 2018 for the
8 individual firms in the Comparison Group.¹⁷

9 **Q. WHAT INFORMATION DID YOU USE FROM VALUE LINE?**

10 A. I used the Value Line EPS five-year growth projections for the individual firms in the
11 Comparison Group as reported by Value Line in its March 2, 2018 issue.¹⁸

12 **Q. DID YOU USE ALL OF THE EPS GROWTH-RATE ESTIMATES FROM THE
13 THREE SOURCES IN YOUR ANALYSIS?**

14 A. No. The Value Line EPS growth rate for NiSource, Inc. was 18.00 percent. I omitted this
15 value from my analysis.

16 **Q. PLEASE EXPLAIN YOUR DECISION TO NOT INCLUDE THE NISOURCE
17 VALUE LINE GROWTH RATE VALUE IN YOUR ANALYSIS.**

18 A. This value is an extreme outlier among growth rate estimates. The next highest EPS
19 growth-rate among the Comparison Group gas distribution companies in the current
20 analysis is 12.40 percent by Zacks for South Jersey Industries. It is also my experience that
21 an EPS growth rate of 18.00 percent is well outside the typical range of values for gas

¹⁶ Exhibit MFG-10, Schedule 1.

¹⁷ *Id.*

¹⁸ *Id.*

1 distribution utilities. Except for one outlier result, the highest gas distribution ROE awarded in
2 a fully litigated rate case since January 1, 2018 is 10.10 percent.¹⁹Therefore, for NiSource, Inc.
3 I include only the Zacks and Yahoo! Finance EPS growth rates in my analysis.

4 **Q. HOW DO YOU COMBINE THE ZACKS, YAHOO! FINANCE, AND VALUE LINE**
5 **ESTIMATES?**

6 A. I weighted the Zacks, Yahoo! Finance, and Value Line EPS values equally to find my best
7 estimate of the expected growth rate for each company in the Comparison Group.

8 **Q. PLEASE DISCUSS YOUR CALCULATION OF THE EXPECTED DIVIDEND**
9 **YIELD FOR THE COMPARISON GROUP.**

10 A. The appropriate dividend to use in the constant-growth DCF model is the annual dividend
11 rate at the beginning of the next period (year). I began my estimation of the expected
12 dividend yield by finding the quarterly dividends that each Comparison Group member
13 company last paid as reported by Value Line in its March 2, 2018 issue. I multiplied those
14 amounts by four to calculate the annualized dividend one year from now.

15 **Q. DID YOU SEARCH ELSEWHERE FOR DIVIDEND REPORTS FOR THE**
16 **COMPARISON GROUP COMPANIES?**

17 A. Yes. I compared these Value Line annual dividends as calculated for the member
18 companies with the dividends reported by Zacks on May 22, 2018. The dividends for Value
19 Line and Zacks were identical except for Atmos Energy, South Jersey Industries, and
20 Southwest Gas. For Atmos Energy, Value Line had the higher dividend at \$1.98 versus
21 \$1.94 by Zacks. For South Jersey Industries and Southwest Gas, Zacks had the higher
22 dividends at \$1.12 for South Jersey Industries and \$2.08 for Southwest Gas, compared with

¹⁹ Exhibit MFG-14.

1 the respective Value Line dividends of \$1.11 and \$1.98. I used the higher dividend value
2 in these cases in my analysis.²⁰

3 **Q. PLEASE EXPLAIN THE NEXT STEP IN CALCULATING THE EXPECTED**
4 **DIVIDEND YIELD.**

5 A. I adjusted the annualized dividends for expected growth. The dividends of all the
6 companies in the Comparison Group are expected to increase, but the increases can come
7 after one quarter, two quarters, and so forth. The method I use assumes that the dividend
8 increases are evenly distributed over time. Hence, the average dividend will increase by
9 one-half a year's projected growth rate. The annualized dividend yield for a firm is,
10 therefore, transformed into the expected dividend yield by multiplying it by one-half the
11 growth-rate estimate derived for the firm and adding the product to the annualized dividend
12 yield. The equation for carrying out this transformation follows:

$$13 \quad D_1 = \frac{D_0}{P} (1 + 0.5g)$$

14 Applying this equation to the dividend yield for each company yields the D_1 values that I
15 use in my estimates.²¹

16 **Q. WHAT FINAL ROE DID YOU FIND FOR THE COMPARISON GROUP?**

17 A. The Comparison Group has a final mean ROE of 9.38 percent. The mean growth-rate is
18 6.38 percent and the mean expected dividend yield is 3.00 percent. I note that if NiSource
19 is excluded from the analysis the ROE is 9.47 percent.²²

²⁰ Exhibit MFG-9.

²¹ Exhibit MFG-10, Schedule 1.

²² *Id.*

1 **Q. DID YOU CONSIDER MAKING ADJUSTMENTS TO THE COMPARISON**
2 **GROUP AT THIS POINT?**

3 A. Yes. I analyzed the individual ROEs for each Comparison Group member to see if they
4 were reasonable. CPA issued 30-year bonds on January 31, 2017, paying interest of 4.44
5 percent.²³ Common equity returns for companies in the Comparison Group must exceed
6 the bond return plus compensation for the added risk associated with equity in order to
7 attract investors. When 250 basis points are added to the CPA bond interest rate, the result
8 is a return of 6.94 percent. This percentage is my point for checking the reasonableness of
9 Comparison Group member companies' returns.

10 **Q. WHAT WAS THE PURPOSE OF APPLYING THE 6.69 PERCENT STANDARD**
11 **TO THE COMPARISON GROUP COMPANIES' INDIVIDUAL DCF ROES?**

12 A. Investors demand a higher return from common equity than from debt to compensate for
13 the greater risk of common equity. My reasoning was that investors would demand a
14 greater ROE return from the Comparison Group companies compared with the CPA debt
15 yield, or they would choose the CPA debt over common equity investments in the
16 companies. Thus, CPA would not be competing with these companies for capital.

17 **Q. DID ANY OF THE COMPARISON GROUP COMPANIES' ROES FAIL TO**
18 **EXCEED THE 6.94 PERCENT STANDARD?**

19 A. No. Northwest Natural Gas had the lowest ROE at 8.30 percent, well above 6.94 percent.
20 Therefore, I did not exclude any company from further analysis, and my constant-growth
21 DCF ROE is unchanged.²⁴

²³ Exhibit MFG-10, Schedule 2.

²⁴ Exhibit MFG-10, Schedule 1.

1 **Q. DID YOU CALCULATE ANOTHER DCF ANALYSIS FOR THE COMPARISON**
2 **GROUP?**

3 A. Yes. I conducted a multistage DCF analysis. A multistage analysis assumes that the growth
4 rate for companies in a proxy group will not continue at the current growth rate. In my
5 analysis, I assumed that the long-term growth rate would be equal to the mean of the long-
6 term forecast for nominal gross domestic product (“GDP”) growth of 3.90 percent
7 published by the Congressional Budget Office (“CBO”)²⁵ and the 4.3 percent Reference
8 Case forecast for 2018-2050 published by the U.S. Energy Information Administration
9 (“EIA”).²⁶ That mean is 4.10 percent.

10 **Q. PLEASE EXPLAIN YOUR ANALYSIS.**

11 A. I calculated DCF ROEs for the Comparison Group of eight companies with 4.10 percent
12 substituted for the mean of the growth-rate forecasts from Zacks, Yahoo! Finance, and
13 Value Line. I then blended the two growth rates for each company, weighting the analysts’
14 growth projections two-thirds and the average of the forecasts of the respective federal
15 agencies one-third.²⁷ The result is a mean ROE of 8.62 percent. If NiSource is excluded
16 from the analysis the ROE is 8.67 percent.²⁸

17 **Q. PLEASE SUMMARIZE YOUR DCF MODEL ANALYSES.**

18 A. My constant-growth DCF analysis ROE is 9.47 percent with NiSource excluded (9.38
19 percent with NiSource included, while my multistage DCF analysis ROE is 8.67 percent
20 with NiSource excluded (8.62 percent with NiSource included).

²⁵ *Id.*, Schedule 3.

²⁶ *Id.*, Schedule 4.

²⁷ *Id.* Schedule 5, Morin, Roger, *New Regulatory Finance (2006)*, Public Utilities Reports, Inc., Vienna, Virginia, page 309.

²⁸ *Id.* Schedule 6.

1 **Q. HAVE YOU ADJUSTED YOUR ROE TO ACCOMMODATE INDIVIDUAL**
2 **ECONOMIC EVENTS SUCH AS THE TAX CUT AND JOBS ACT (TCJA) OF**
3 **2017?**

4 A. No. The DCF model incorporates factors that affect investors' view of the world and does
5 not require ad hoc adjustments. The share price of common equity is the mechanism
6 through which factors such as the TCJA are translated into the ROE.

7 **Q. PLEASE REVIEW THIS PROCESS.**

8 A. If investors come to view a company as having increased risk, then they will decrease the
9 price that they are willing to pay for common-equity shares of the company. Consequently,
10 the dividend yield of the company will increase in value, increasing the DCF ROE of the
11 company.

12 **Q. DO YOU HAVE EVIDENCE THAT GAS DISTRIBUTION COMPANY SHARE**
13 **PRICES HAVE DECLINED SINCE THE TJCA BECAME LAW ON DECEMBER**
14 **22, 2017?**

15 A. Yes. The common-equity share prices of companies in the Comparison Group decreased
16 an average of 7.44 percent from the period November 6, 2017-December 1, 2017 to the
17 period covered in this docket, April 23, 2017-May 18, 2017.²⁹

18 **Q. WHAT HAS HAPPENED TO DIVIDEND YIELDS IN THE SAME SPAN?**

19 A. Dividend yields for the companies in the Comparison Group have increased an average of
20 21 basis points after changes in annual dividends paid are factored out of the analysis,
21 isolating price changes as the cause.³⁰

²⁹ Exhibit MFG-10, Schedule 7.

³⁰ *Id.*

1 **Q. IS THIS CHANGE IN THE DIVIDEND YIELD AND THE ROE OF A COMPANY**
2 **CONSISTENT WITH THEORY REGARDING RISK AND REQUIRED RETURN?**

3 A. Yes. The greater the risk of a company, the greater is the required return for investing in
4 the company. If investors believe that the TCJA does increase the risk of Columbia Gas of
5 PA and other utilities, the DCF model captures their views through the share prices of the
6 companies. The falling share prices increase the dividend yields and result in higher ROEs.

7 **Q. DO SHARE PRICES RESPOND THE SAME WAY TO OTHER ECONOMIC**
8 **EVENTS?**

9 A. Yes. Investors respond to all economic events through common-equity share prices,
10 weighing what they judge will have the most effect on companies among such factors as
11 interest-rate levels, unemployment levels, and international politics. Thus, the DCF model
12 reflects the most current thinking of investors about the risk of companies.

13 **Q. PLEASE SUMMARIZE YOUR DCF ANALYSIS.**

14 A. My constant-growth DCF analysis ROE is 9.47 percent and my multi-stage DCF analysis
15 ROE is 8.67 percent.

16 **VII. REASONABLENESS CHECK AND RECOMMENDED ROE**

17 **Q. HAVE YOU CHECKED THE REASONABLENESS OF YOUR DCF ROE**
18 **ESTIMATE?**

19 A. Yes. I checked the reasonableness of my DCF analyses' outcomes by performing Capital
20 Asset Pricing Model ("CAPM") analyses. I also compared the DCF ROEs with recent
21 ROEs authorized in fully litigated natural gas rate cases across the 48 contiguous states.

1 **1. CAPM Analysis**

2 **Q. WHAT CAPM ANALYSIS DID YOU PERFORM?**

3 A. I performed a CAPM analysis for the eight companies in the Comparison Group. I also
4 conducted empirical CAPM (“ECAPM”) analyses on the same companies. The ECAPM
5 is a version of the CAPM modified to adjust for identified shortcomings in the CAPM.

6 **Q. PLEASE DISCUSS THE CAPM METHOD.**

7 A. The basic premise of the CAPM method is that any risk, which is company-specific, can be
8 diversified away by investors. Therefore, the only risk that matters is the systematic risk of
9 the stock. This systematic risk is measured by beta (β). A beta higher than 1 indicates that
10 a stock will be more volatile than the market, and a beta lower than 1 indicates that a stock
11 will be less volatile than the market. The simplest form of the CAPM is:

12 $k = r + \beta (k_m - r)$, where:

13 k is the required rate of return for the stock in question;

14 r is the rate of return on a riskless asset;

15 β is beta, the measure of systematic risk; and

16 k_m is the required rate of return on the market portfolio.

17 **Q. WHAT ARE THE STRENGTHS AND WEAKNESSES OF THE CAPM METHOD?**

18 A. The CAPM is theoretically sound, but its application raises some issues. The analyst using
19 CAPM selects a riskless asset, beta, and market risk premium. The ROE analysis can vary
20 considerably depending on the analyst’s choices for these variables. Thus, what at first may
21 seem like a model that is straightforward actually depends heavily on the particular input
22 values used by an analyst.

1 **Q. ARE YOU RECOMMENDING REJECTING CAPM?**

2 A. No. I used the CAPM, but only to check the reasonableness of my DCF analysis, which is
3 a more reliable method of measuring equity returns. Because of the CAPM's extensive
4 requirement for judgment in selecting each of the inputs, I question its value in directly
5 estimating a return on equity.

6 **Q. PLEASE EXPLAIN THE CALCULATION OF A CAPM ROE.**

7 A. First, the analyst must select the rate of return for a riskless asset. Short-term assets such as
8 90-day Treasury Bills are considered virtually riskless: the default risk is next to nothing
9 and the inflation risk is negligible. Equity investors, however, typically have a longer
10 planning horizon than the 90-day maturity of these instruments, so the return on these bills
11 is not suitable for this application of the CAPM. Long-Term Treasury Bonds, on the other
12 hand, match the planning horizon and have yields that are closer to common equity returns.
13 However, these instruments are subject to substantial inflation risk and, therefore, are not
14 riskless. Intermediate Treasury securities, those with maturities of three to five years, are a
15 compromise solution. The inflation risk is smaller than that for long-term bonds and the
16 maturity period corresponds to the time span for the EPS growth-rate estimates made by
17 expert analysts that are relied upon in DCF analysis. Typically, I would use the Intermediate
18 Treasury securities in my analysis for these reasons. However, as I explain below, I did not
19 use Intermediate Treasury securities in my CAPM analysis in the current docket.

1 **Q. ARE THERE REASONS NOT TO USE THE INTERMEDIATE TREASURY**
2 **SECURITIES IN THIS DOCKET?**

3 A. Yes. Intermediate Treasury bonds' yields have been low since the Federal Reserve took
4 unusual measures to combat the Great Recession of December 2007 to June 2009.
5 Therefore, I choose not to use them in the current CAPM analysis.

6 **Q. WHICH SECURITY DID YOU USE AS THE RISKLESS ASSET IN YOUR CAPM**
7 **ANALYSIS?**

8 A. I used the average yield on a 30-year Treasury Bond for April 23, 2018-May 18, 2018 as
9 my riskless asset rate. This average yield is 3.15 percent.³¹ However, the 30-year Treasury
10 Bond is not a free-risk asset. The yield on 30-year Treasury Bonds incorporates a risk-
11 premium associated with interest risk, which is the premium investors must be paid to
12 induce them to forego the opportunity of possibly earning higher interest rates later.
13 Therefore, using 30-year Treasury Bonds in a CAPM analysis results in an upward bias of
14 the ROE.

15 **Q. HOW DID DERIVE YOUR BETA (β)?**

16 A. Beta serves to capture the difference in volatility between individual companies and the
17 market. I used the betas for each of the companies in the Comparison Group provided in
18 March 2, 2018 issues of the Value Line Investment Survey. The average beta for the eight
19 companies in the Comparison Group is 0.73 (0.74 percent without NiSource).³²

20 **Q. WHAT ELSE IS INVOLVED IN YOUR CALCULATION?**

21 A. I need to calculate a market rate of return. The term within parentheses in the CAPM
22 equation is called the "market risk premium (MRP)." The MRP reflects the additional

³¹ Exhibit MFG-11, Schedule 1.

³² *Id.*, Schedule 2.

1 return over the return of a risk-free asset sufficient to induce investors to take on the
2 additional risk of common equity. A specific number is frequently calculated using
3 historical data. I do not, however, use historical data.

4 **Q. PLEASE EXPLAIN YOUR CALCULATION OF THE MRP.**

5 A. Because rates are set to ensure the utility has an opportunity to earn its authorized rate of
6 return in the immediate future, it is important to ensure MRP reflects current market
7 conditions rather than past conditions. Historical data reflects the conditions present in past
8 market environments that no longer apply, including different demographic and inflation
9 assumptions. To make my CAPM analysis reflect current market conditions, I employed
10 forecast data from Value Line regarding the dividend yield and growth rates for the broad
11 economy (1,700 stocks in the “Value Line Universe,” incorporating more market
12 information than the S&P 500). Value Line forecasts the dividend yield and the 3- to 5-
13 year appreciation potential for these companies in the *Value Line Summary and Index*,
14 which is published weekly. The values for these two inputs are 2.1 percent and 45 percent,
15 respectively, in the May 18, 2018 issue.³³

16 **Q. WHAT METHOD DID YOU USE TO FIND THE MRP?**

17 A. The appreciation potential number is used to find the estimated broad market return per
18 year. It is calculated by finding the annual growth rate over four years (the midpoint of the
19 3- to 5-year period) that produces the forecast appreciation potential. This growth rate is
20 9.73 percent. The forward-looking ROE for the companies is calculated by adding the 2.1
21 percent dividend yield to this annual growth rate, which produces a market rate of return
22 of 11.83 percent.

³³ *Id.*, Schedule 3.

1 **Q. WHAT IS THE NEXT STEP IN FINDING THE CAPM RETURN ON EQUITY?**

2 A. The MRP is calculated by subtracting the yield on the 30-year Treasury Bond from the
3 market rate of return. The result of this operation is 8.68 percent. This value is multiplied
4 by the average beta for the Comparison Group. That product is added to the risk-free rate
5 to find the CAPM ROE.³⁴

6 **Q. WHAT IS THE RESULT OF YOUR CAPM ANALYSIS?**

7 A. My CAPM analysis yields an ROE value of 9.45 percent (9.60 percent without NiSource).

8 **Q. HAVE YOU PERFORMED AN ADDITIONAL CAPM ANALYSIS?**

9 A. Yes. There is evidence that the simple CAPM underestimates the ROE for companies with
10 betas less than 1 and overestimates the ROE for companies with betas greater than 1. The
11 ECAPM has been developed to address this issue.³⁵

12 **Q. HOW DOES THE ECAPM DEAL WITH THE UNDER OR OVER-ESTIMATION
13 OF ROE?**

14 A. There are different versions of the ECAPM, but what they have in common is that by
15 adding an adjustment factor to the elements of the CAPM equation, they increase its
16 intercept and reduce its slope. This operation has the effect of increasing the ROE produced
17 by decreasing amounts as beta approaches 1.

18 **Q. PLEASE EXPLAIN THE ECAPM THAT YOU USE IN YOUR ANALYSIS.**

19 A. The ECAPM that I use includes an adjustment factor “x,” as shown in the following
20 modified CAPM equation.³⁶

21
$$k = r + x (k_m - r) + (1-x) \beta (k_m - r)$$

³⁴ *Id.*, Schedule 4.

³⁵ *Id.*, Schedule 5, Morin, Roger, *New Regulatory Finance (2006)*, Public Utilities Reports, Inc., Vienna, Virginia, pages 190-191.

³⁶ *Id.*, Schedule 5.

1 The x-term multiplied by the market risk premium increases the intercept (the risk-free
2 rate), while the term $(1 - x)$ decreases the slope of the equation.

3 **Q. HOW IS THE VALUE OF X DETERMINED?**

4 A. The value of x is determined empirically. The suggested value for x is 0.25. The analysis I
5 conducted confirms that $x = 0.25$ returns values that are reasonable. I focused on scenarios
6 where the intercept value of the equation is more in line with current risk-free rates than is
7 the approximately 8 percent intercept presented in Exhibit MFG-11, Schedule 5. This
8 analysis confirmed that a value for x of 0.25 is appropriate. Please note that x itself is not
9 a percentage.³⁷

10 **Q. WHAT RESULT DO YOU GET FOR YOUR ECAPM ANALYSIS?**

11 A. Using the same inputs for the risk-free rate, the MRP, and beta as I did in my CAPM
12 analysis, I obtained an ECAPM ROE of 10.04 percent (10.16 percent without NiSource).³⁸

13 **Q. PLEASE SUMMARIZE THE RESULTS OF THE VARIOUS CAPM AND ECAPM**
14 **ANALYSES.**

15 A. The results of the CAPM and ECAPM analyses without NiSource are 9.60 percent and
16 10.16 percent, both greater than my DCF result of 9.47 percent.

17 **2. Authorized ROEs Comparison**

18 **Q. PLEASE EXPLAIN WHAT AUTHORIZED ROES YOU USED TO CHECK THE**
19 **REASONABLENESS OF YOUR DCF ROES.**

20 A. I collected a set of authorized ROEs from other jurisdictions in fully litigated gas rate cases
21 from editions of SNL's Regulatory Research Associates ("RRA") *Regulatory Focus*. SNL
22 publishes summaries quarterly of completed electric and natural gas rate cases from the

³⁷ *Id.*, Schedule 4.

³⁸ *Id.*

1 United States in *Regulatory Focus*. SNL also makes available the results of very recent rate
2 cases on its website. I updated my list from that source.

3 **Q. HOW DO YOU USE THIS SET OF AUTHORIZED ROES?**

4 A. I use the recent authorized ROEs as a basis for evaluating the reasonableness of my DCF
5 ROE results. I do not use it as a substitute for that analysis.

6 **Q. WHY ARE AUTHORIZED ROES NOT A GOOD SUBSTITUTE FOR CURRENT,
7 FORWARD-LOOKING DCF ANALYSIS?**

8 A. Recently authorized ROEs reflect the results of rate cases conducted in a variety of
9 environments and at different times. Test years, conditions in capital markets, general
10 economic indicators such as inflation rates, and so forth for previous rate cases can be
11 different and become outdated when compared with these factors for a current rate case.
12 Therefore, recently authorized ROEs should serve only to establish whether a current ROE
13 result is reasonably close to what has happened, not to be a substitute for forward-looking
14 analysis based on current conditions.

15 **Q. PLEASE DESCRIBE THE SET OF AUTHORIZED ROES YOU COLLECTED.**

16 A. I found seven fully litigated rate cases that had been decided between January 1, 2018 and
17 May 3, 2018. I found another seven cases for 2017 in which ROEs were authorized in fully
18 litigated rate cases. I found nine authorized ROEs for the same type of cases for 2016. I
19 rejected outcomes of settled cases because settlements can reflect tradeoffs parties make to
20 reach agreement. Thus, an authorized ROE in a settled case may reflect compromise rather
21 than strict application of ratemaking principles.

1 **Q. WHAT WERE THE ROE VALUES YOU FOUND IN YOUR SET?**

2 A. The mean authorized ROE for the seven cases decided so far in 2018 was 9.63 percent,
3 with a range from 9.30 percent to 9.80 percent. The mean ROE for the 2017 cases was 9.82
4 percent, with a range from 8.70 to 11.88 percent. The mean ROE for the 2016 cases was
5 9.59 percent, with a range of 9.11 to 10.10 percent. The median ROEs were 9.70 percent
6 in 2018, and 9.50 percent in 2017 and 2016.³⁹

7 **Q. PLEASE DISCUSS THE ROE AWARDS MADE IN 2018, 2017, AND 2016.**

8 A. The following table summarizes the authorized ROE results for all fully litigated cases in
9 2018, 2017, and 2016.

Year	No. of Cases	Mean ROE	Median ROE	ROE Range
2018	7	9.63	9.70	9.30-9.80
2017	9	9.82 (9.48 w/o Alaska)	9.50	8.70-11.88 (8.70-10.10 w/o Alaska)
2016	9	9.59	9.50	9.11-10.10

10
11 The result, 9.47 percent, of my DCF analysis ROE is almost exactly the midpoint of the
12 range of the seven 2018 cases. It is close to the medians and means for all three years,
13 particularly if the ROE award of 11.88 percent from 2017 is dropped as an outlier. This
14 award was made to an Alaskan company (serving to illustrate why I exclude awards made
15 in that state and Hawaii from my ROE analysis).⁴⁰ The Alaska ROE is 1.78 percent higher
16 than any other award in 2016-2018. If it is removed from the 2017 set of awards, the

³⁹ Exhibit MFG-14.

⁴⁰ The company, ENSTAR, also operates a pipeline. The ROE award includes an accommodation for this aspect of the company's activities.

1 average award drops to 9.48 percent. My recommended ROE fits within the ranges of all
2 three years, confirming that it is reasonable.

3 **3. Recommended ROE**

4 **Q. PLEASE SUMMARIZE THE RESULTS OF YOUR ROE ANALYSES.**

5 A. My constant-growth DCF analysis produced an ROE of 9.47 percent. My other methods,
6 multi-stage DCF, CAPM, and ECAPM analyses, produced ROE outcomes ranging from
7 8.67 percent to 10.16 percent.⁴¹

8 **Q. WHAT CONCLUSION ABOUT THE RECOMMENDED ROE FOR CPA DO YOU
9 DRAW FROM YOUR ROE ANALYSES?**

10 A. Of all these models, the constant-growth DCF model relies the least on analyst judgment,
11 which makes it my preferred method. Therefore, I give the most weight to the DCF results.
12 In addition to the ROE of 9.47 percent that is the result of excluding NiSource from the
13 analysis, the DCF ROE for the full Comparison Group is 9.38 percent. The corresponding
14 CAPM ROEs are 9.45 percent and 9.60 percent. Thus, these results cluster in a range from
15 9.38 percent to 9.60 percent. The multistage and ECAPM results point to much lower and
16 much higher values for the ROE, so I give them little weight. I have selected 9.45 percent
17 as my recommended ROE. This number is the average of my two constant-growth DCF
18 analyses, plus a small upward adjustment that recognizes the slightly higher CAPM results.
19 This value also is in the middle of the results from the survey of recent ROE awards,
20 reinforcing the idea that it is a reasonable recommendation.

⁴¹ Exhibit MFG-14.

1 **Q. PLEASE DISCUSS THE COMPANY'S WEATHER NORMALIZATION**
2 **ADJUSTMENT ("WNA").**

3 A. The Company has been operating with a WNA established in Docket No. R-2012-2321748
4 and is requesting that the WNA be made permanent. One effect of the WNA is to reduce
5 variations in the Company's revenue, thereby reducing the risk of the Company.

6 **Q. HAVE YOU ADJUSTED YOUR ROE TO ACCOMMODATE THE REDUCED**
7 **RISK OF THE COMPANY'S WNA?**

8 A. Yes. CPA is asking that its WNA be made permanent. The transition from a temporary to
9 a permanent WNA would decrease CPA's risk further and is not reflected in my ROE
10 analysis because investors have not had a chance to react to the change in status. Therefore,
11 an adjustment to the recommended ROE would be appropriate.

12 **Q. WHAT ADJUSTMENT TO THE CPA ROE DO YOU RECOMMEND IF THE**
13 **WNA IS MADE PERMANENT?**

14 A. I recommend that the ROE for CPA be decreased to the bottom of my range, which is 9.38
15 percent.

16 **Q. WHAT IS YOUR RECOMMENDED ROE FOR THE COMPANY?**

17 A. I recommend that the Company be authorized an ROE of 9.45 percent. However, if the
18 Company's WNA is made permanent, my recommended ROE is 9.38 percent.

1 **VII. APPROPRIATE CAPITAL STRUCTURE FOR RATEMAKING**

2 **Q. WHAT CAPITAL STRUCTURE HAS THE COMPANY PROPOSED TO USE IN**
3 **THIS GENERAL RATE CASE?**

4 A. Company Witness Paul Moul proposes a capital structure of 44.42 percent long-term debt,
5 3.24 percent short-term debt, and 52.34 percent common equity.⁴² Mr. Moul bases this
6 proposed capital structure on the Company's Fully Projected Future Test Year ("FPFTY"),
7 which ends December 31, 2019.

8 **Q. WHAT CAPITAL STRUCTURE DO YOU PROPOSE FOR CPA?**

9 A. At this time, I accept Mr. Moul's proposed capital structure of 44.42 percent long-term
10 debt, 3.24 percent short-term debt, and 52.34 percent common equity. The ratios are
11 consistent with CPA's stated intentions regarding the issuance of long-term debt. However,
12 I reserve the right to revisit the external capital structure based on future information and
13 testimony by the other parties.

14 **VIII. RECOMMENDED ROE AND OVERALL RATE OF RETURN**

15 **Q. WHAT COSTS OF CAPITAL DID YOU USE IN YOUR CALCULATION OF THE**
16 **COMPANY'S OVERALL RATE OF RETURN?**

17 A. I reviewed the Company's calculations for cost of long-term debt and cost of short-term
18 debt.⁴³ Mr. Moul sets forth these requested costs in his Direct Testimony.⁴⁴ The
19 calculations of the cost of these capital-structure elements are supported in the Company's
20 exhibits. I accept CPA's proposed cost of long-term debt of 5.11 percent, and short-term

⁴² Moul, Exhibit No. 400, Schedule 5 (1 of 1), page 10 of 28.

⁴³ Exhibit No. 400, Schedule 6 (3 of 3), page 13 of 28.

⁴⁴ Moul at 19-20.

1 debt of 3.20 percent. However, I reserve the right to revisit these costs based on future
2 information and testimony by the other parties.

3 **Q. WHAT COSTS OF CAPITAL DID YOU USE IN YOUR CALCULATION OF THE**
4 **COMPANY'S OVERALL RATE OF RETURN?**

5 A. I used the Company's proposed costs, except for the cost of equity, where I used my
6 recommended value of 9.45 percent in place of the 10.95 percent ROE recommended by
7 Mr. Moul.⁴⁵

8 **Q. WHAT IS YOUR RECOMMENDATION REGARDING THE OVERALL RATE OF**
9 **RETURN (ROR) FOR THE COMPANY?**

10 A. I multiply the long-term debt and common equity ratios by their appropriate cost rates. The
11 sum of these weighted costs is the overall rate of return on capital.

12 **Q. PLEASE SUMMARIZE YOUR RECOMMENDATIONS.**

13 A. When I include my recommended ROE of 9.45 percent, I obtain an overall rate of return
14 (ROR) of 7.32 percent for CPA.⁴⁶ I recommend that the Commission approve this ROR as
15 the representative forward-looking cost of capital for the Company.

16 **IX. REVIEW OF THE COMPANY'S ROE ANALYSIS**

17 **Q. WHAT IS MR. MOUL'S RECOMMENDED ROE FOR CPA?**

18 A. Mr. Moul recommends an ROE of 10.95 percent for CPA.

19 **Q. HOW DOES MR. MOUL DETERMINE HIS 10.95 PERCENT ROE?**

20 A. Mr. Moul performs a constant-growth DCF analysis, which in its initial stage is similar to
21 the constant-growth DCF analysis that I perform. Once Mr. Moul has performed this

⁴⁵ Exhibit MFG-13.

⁴⁶ If the Company's WNA is made permanent, my recommended ROE is 9.38 percent. Then the ROR for the Company is 7.28 percent. Exhibit MFG-13.

1 analysis, however, he adds adjustments for leverage and credit quality that increase his
2 DCF ROE substantially. I will address those adjustments later, but I note that without them
3 Mr. Moul's DCF result is 9.35 percent, very close to the 9.47 percent I obtain from my
4 constant-growth analysis. Mr. Moul next conducts a risk-premium analysis, performing a
5 regression analysis with average rates and equity risk premiums as the variables. He adds
6 a credit-quality adjustment. Mr. Moul also performs a CAPM analysis, which includes
7 leverage and company-size adjustments. His final ROE analysis is a comparable earnings
8 approach for a group of non-utility companies that he asserts are of similar risk to the Gas
9 Group companies. He combines these results to arrive at his recommended ROE of 10.95
10 percent.

11 **Q. DO YOU HAVE CRITICISMS OF MR. MOUL'S RECOMMENDED ROE?**

12 A. Yes. I will address differences between our approaches and methods in applying the DCF
13 model. I also will discuss Mr. Moul's various approaches and critique his applications of
14 them.

15 **1. DCF Approach**

16 **Q. WHAT METHODS ARE THE SAME IN YOUR DCF APPLICATIONS?**

17 A. Mr. Moul and I agree on how to calculate the expected dividend yield and that earnings per
18 share ("EPS") projections from experts that follow the companies are the appropriate
19 information for the growth-rate component of the DCF equations. I disagree with how Mr.
20 Moul has used the experts' EPS projections to determine the growth-rate component of his
21 DCF analysis.

1 **Q. PLEASE IDENTIFY DIFFERENCES BETWEEN MR. MOUL'S APPLICATION**
2 **OF THE CONSTANT-GROWTH DCF MODEL AND YOUR APPLICATION.**

3 A. Mr. Moul and I apply the constant-growth DCF model in similar fashion. Rather than
4 finding a weighted average of the EPS growth rates as I do, Mr. Moul finds averages for
5 his six input sources. Mr. Moul selects 6.75 percent as his growth rate, stating that it is
6 appropriate given the range of results from his six sources.

7 **Q. PLEASE EVALUATE WHETHER MR. MOUL'S EPS GROWTH RATE IS**
8 **APPROPRIATE.**

9 A. The growth rate selected by Mr. Moul for the growth-rate component of his DCF analysis
10 is among the highest for his six EPS growth-rate analyses. It matches the Value Line
11 average and is exceeded by only the Morningstar average of 8.60 percent. The average of
12 the six growth rates is 6.55 percent. Thus, Mr. Moul has chosen a growth rate higher than
13 the average of his six averages. Moreover, the Morningstar result is an outlier. It is 1.85
14 percent higher than the next highest value, compared with a range of 1.11 percent from the
15 lowest to the highest of the other five averages. Finally, the Morningstar average contains
16 forecasts for only four of the companies, as does his Reuters' average. These two sources
17 should not receive equal weighting with the other four of Mr. Moul's sources. When they
18 are removed from the analysis, the growth-rate average is 6.15 percent for the remaining
19 four sources. Mr. Moul's growth rate is too high as it is not supported by the evidence.

20 **Q. PLEASE CONTINUE WITH MR. MOUL'S DCF ANALYSIS.**

21 A. Mr. Moul combines his high value of a 6.75 percent growth rate with a dividend yield of
22 2.60 percent and obtains a DCF ROE of 9.35 percent. As noted, this ROE is close to my
23 DCF ROE outcome of 9.47 percent. However, as our DCF ROE outcomes are compared,

1 it must be remembered that Mr. Moul performed his analysis with data from the Fall of
2 2017 and I used inputs from March through May of 2018. I have already discussed how
3 the TCJA has increased my DCF ROE outcome. Other factors have also changed between
4 our two analyses.

5 **Q. IS A LEVERAGE ADJUSTMENT APPROPRIATE FOR AN ROE?**

6 A. No. The market-value capital-structure ratios that are the basis of Mr. Moul's leverage
7 adjustment are well known to investors. They also know that in the regulatory process that
8 an ROE based on market prices is applied to a book value rate base. Thus, the DCF model
9 already captures the information upon which Mr. Moul bases his leverage adjustment. The
10 adjustment double counts the data.

11 **Q. HOW DOES MR. MOUL JUSTIFY HIS LEVERAGE ADJUSTMENT?**

12 A. Mr. Moul's adjustment process incorporates market-value capital structures for the firms
13 in his Gas Group. He asserts that the existence of utility stock prices above book value
14 creates greater financial risk for a book value capital structure versus a market value capital
15 structure since the book value capital structure has a lower common equity ratio than the
16 market value capital structure.

17 **Q. PLEASE EXPLAIN HOW THE DCF MODEL CAPTURES THE MARKET-TO-
18 BOOK VALUE DIFFERENCES.**

19 A. Investors are aware of the leverage of a company when they make their decisions to
20 purchase or retain shares of common equity in that company. Thus, leverage, along with
21 differences among other factors, both general and specific to firms, affect the price that
22 investors are willing to pay. If differences in market-value and book-value capital
23 structures arise and persist, it is because investors accept them and the level of return on

1 their investment that the prices imply. They are reflected in the DCF model through the
2 mechanism of share price, which affects the expected dividend-yield component of the
3 model. Making a leverage adjustment in addition to the adjustments made by investors
4 counts the effect of leverage twice.

5 **Q. DOES ANY ADJUSTMENT NEED TO BE MADE TO THE DCF ROE FOR THE**
6 **MARKET-TO-BOOK VALUE DIFFERENCES?**

7 A. No. Investors are well aware that gas utilities have their rates established based upon the
8 book value of their assets (rate base) and capitalization. As a result, investors are not
9 expecting a regulatory award on any other basis, nor should they be compensated for any
10 difference between the book value and market value of their common equity.

11 **Q. HAS THE COMMISSION REJECTED A LEVERAGE ADJUSTMENT IN**
12 **RECENT CASES?**

13 A. In the 2008 Aqua Pennsylvania Docket No. R-00072711 the Commission rejected Mr.
14 Moul's proposed 65 basis-point leverage adjustment. In addition, in Docket No. R-2012-
15 2290597 (which involved PPL Electric), the Commission rejected the leverage adjustments
16 proposed by Mr. Moul. In its December 5, 2012 Order, the Commission noted, "Based
17 upon our analysis of the evidence of record, we are persuaded by the arguments of the OCA
18 and I&E that PPL's requested leverage adjustment is not reasonable and should be denied."

19 **Q. IS MR. MOUL'S CREDIT QUALITY ADJUSTMENT JUSTIFIED?**

20 A. No. As I have stated above, companies with similar, but not identical, S&P credit ratings
21 can be grouped for ROE analysis. Mr. Moul's creation of a credit-quality difference based

1 on the credit ratings of different bonds and the returns on those bonds is an ad hoc
2 adjustment to the DCF model that is not justified.⁴⁷

3 **2. Risk Premium Approach**

4 **Q. PLEASE DISCUSS MR. MOUL'S RISK-PREMIUM ANALYSIS.**

5 A. Mr. Moul's risk-premium analysis depends on historical data and the relationships among
6 variables being static. Therefore, it is not forward-looking. The goal in this docket is to
7 determine an ROE that incorporates investors' views as to the future, not the past. The risk-
8 premium analysis should be rejected.

9 **3. CAPM Analyses**

10 **Q. PLEASE IDENTIFY DIFFERENCES BETWEEN YOUR CAPM ANALYSIS AND**
11 **MR. MOUL'S CAPM ANALYSIS.**

12 A. Mr. Moul uses information from the S&P 500 in his calculation of the market risk premium
13 ("MRP") instead of the broader-based Value Line indicator that I use (500 stocks versus
14 1,700 stocks). Consequently, his cost of equity and MRP are larger than mine, with the
15 expected effect of making his CAPM result greater than mine. Mr. Moul also makes a
16 leverage-based adjustment to the Beta in his CAPM equation.

17 **Q. PLEASE EXPLAIN HOW THE CAPM CAPTURES THE MARKET-TO-BOOK**
18 **VALUE DIFFERENCES.**

19 A. Beta reflects volatility of share price for a firm. Thus, leverage's effect on share price
20 influences the value of beta. Again, adjustments for leverage make the effect count twice.

⁴⁷ MFG-6.

1 **Q. PLEASE DISCUSS MR. MOUL’S RISK-FREE RATE INPUTS.**

2 A. As stated, Mr. Moul performs a CAPM analysis using a *Blue Chip Economic Indicators*
3 projected yield for the 30-year Treasury bond yields as the risk-free rates in the respective
4 analyses.

5 **Q. WHY IS THE CURRENT 30-YEAR TREASURY BOND YIELD THE**
6 **APPROPRIATE RISK-FREE RATE?**

7 A. Current yields on the 30-year Treasury bond are the best risk-free rate. The current yield
8 captures the beliefs of investors as to where yields on the instruments are headed. Other
9 values for the risk-free rate, such as *Blue Chip Economic Indicators’* projected yields (Mr.
10 Moul’s source for his projected bond yield) have for years overstated what actual yields
11 turn out to be, and thus have inflated ROEs derived from CAPM analyses.

12 **Q. HOW ARE INVESTORS’ BELIEFS ABOUT THE FUTURE INCORPORATED**
13 **INTO CURRENT 30-YEAR TREASURY YIELDS?**

14 A. The following equation shows the calculation of the yield on a bond.⁴⁸

15
$$\text{Bond Yield} = \frac{\text{Coupon rate}}{\text{Bond Price}}$$

16 The coupon rate is the stated, fixed interest rate on the par value (face value) of the Treasury
17 bond. The yield on a bond with a par value of \$1,000 with a coupon rate of 4 percent is
18 also 4 percent, all other factors equal and coupon rates expected to be stable. Investors will
19 pay \$1,000 for the bond because its yield of 4 percent cannot be bettered. However, if
20 investors really believe that actions by the Federal Open Market Committee (“FOMC”), or
21 other economic factors, are going to cause the coupon rate on 30-year Treasury bonds

⁴⁸ There are other measures of yield such as yield to maturity, but the all yield terms come down to an expected flow of payments from a bond divided by the price investors are willing to pay to own the bond.

1 issued in the future to be greater than 4 percent, then the amount that owners of the bonds
2 with the 4 percent coupon rate will not be able to sell their bonds for the \$1,000 face value.
3 Investors with \$1,000 will buy the new bonds with the higher coupon rate and higher yield.
4 Owners of the 4 percent bonds can sell their bonds, but at a price less than \$1,000. The
5 price will fall until the yield on the bond, with 4 percent as the numerator, is equal to the
6 yield on the new bonds.

7 **Q. ARE THERE DIFFERENT YIELDS ON 30-YEAR TREASURY BONDS WITH**
8 **DIFFERENT COUPON RATES?**

9 A. No. The yield on all 30-year Treasury bonds will even out with the prices at which the
10 bonds can be bought and sold serving as the mechanism that brings the yields of the bonds
11 with different coupon rates into conformity with one another. These prices are influenced
12 by investor beliefs about the future levels of interest rates, among other factors.

13 **Q. ARE INVESTORS' VIEWS ABOUT THE YIELD THEY ARE WILLING TO**
14 **ACCEPT ON A 30-YEAR TREASURY BOND AFFECTED BY FORECASTS OF**
15 **FOMC, INCREASES IN THE FEDERAL FUNDS TARGET RATE AND OTHER**
16 **FORECASTS OF INCREASED YIELDS?**

17 A. Yes, if the investors believe completely in the forecasts and there are no other economic
18 factors to take into consideration, then the current yields should rise swiftly to the level of
19 the forecasted yields. However, investors may not believe wholeheartedly in the forecasts,
20 or other factors may cause U.S. instruments such as the 30-year Treasury bond to continue
21 to be attractive to investors at yields less than the forecasted yields. For example, foreign
22 political economic and political events may make the 30-year U.S. Treasury bond attractive

1 at low yields because of the nearly nonexistent risk of default. If so, the current yields will
2 not increase to forecasted levels because investors will place their funds in U.S. assets.

3 **Q. PLEASE DISCUSS THE RECORD OF THE *BLUE CHIP ECONOMIC***
4 ***INDICATORS* FORECAST AS AN INDICATOR OF LONG-TERM INTEREST**
5 **RATES.**

6 A. *Blue Chip Economic Indicators* has been high with its bond-yield forecasts since at least
7 2009. The forecasts have always been greater than the rates that actually ensued, often by
8 100 basis points or more.⁴⁹ Relying on the *Blue Chip* forecasts as the appropriate input for
9 the risk-free rate would be a mistake that leads to inflating the CAPM outcome.

10 **Q. IS THERE EVIDENCE THAT INCREASES IN THE FEDERAL FUNDS TARGET**
11 **RATE BY THE FOMC DO NOT RESULT IN PROPORTIONAL INCREASES IN**
12 **CAPITAL COSTS?**

13 A. Forecasting bodies often state that expected increases in the federal funds target rate is the
14 factor that will lead to higher yields on the 30-year Treasury bond, with the bond yield
15 presumably rising by roughly the same number of basis points as the federal funds rate.
16 The recent record does not support this position. The 30-year Treasury yield for March
17 2017 was 3.08 percent.⁵⁰ Since that date, the FOMC has increased the federal funds target
18 rate range by 25 basis points four times, on March 16, 2017; on June 15, 2017; on
19 December 14, 2017; and on March 22, 2018. As noted above, the 30-year Treasury yield
20 average for April 23, 2018-May 18, 2018 was 3.15 percent.⁵¹ Therefore, despite four
21 federal funds target rate increases totaling 100 basis points since March 1, 2017, the 30-

⁴⁹ Exhibit MFG-14.

⁵⁰ Exhibit MFG-15.

⁵¹ *Id.*

1 year Treasury's yield was just 7 basis points higher than it was 14 months before. The
2 actual yield in March 2017 was a better predictor of the ensuing actual yield more than a
3 year later than was the *Blue Chip* forecast, which indicated that the average yield over the
4 next six quarters would be 3.52 percent.⁵² Therefore, Mr. Moul's CAPM/ECAPM ROE
5 analyses using the average of projected 30-year Treasury bond yields by *Blue Chip* and
6 other forecasters should be given little weight.

7 **Q. ARE MR. MOUL'S ADJUSTMENTS FOR DIFFERENCES IN FIRM SIZE TO**
8 **THE CAPM ROE APPROPRIATE?**

9 A. No. Size adjustments are not appropriate. Size is a factor in risk assessment. S&P includes
10 size as an element in its determination of credit ratings for companies. Therefore, the effect
11 of size on the risk for companies in the Comparison Group (and by extension to Mr. Moul's
12 Gas Group) is reflected in the credit ratings of the companies. The credit ratings of the
13 eight companies are not identical, but they do not have to be for the companies to be similar
14 in risk. Further, investors and the experts who make the EPS growth-rate projections are
15 aware of the size of the firms. Thus, their beliefs about the firms as investment vehicles are
16 reflected in common-equity share prices, the movement of which affects the value of beta.
17 Size is already captured in the CAPM analysis.

18 **Q. DO YOU HAVE AN ADDITIONAL COMMENT ABOUT ADJUSTMENTS FOR**
19 **SIZE?**

20 A. Yes. CPA and the natural gas distribution utilities in the Comparison Group are regulated
21 monopolies. As monopolies, they have market power in their service territories. Therefore,
22 one of the benefits that size can bestow on non-regulated firms—market power—is already

⁵² Exhibit MFG-14.

1 an aspect of the operations of regulated natural gas utilities. Moreover, the studies such as
2 the Ibbotson adjustments that Mr. Moul relies on, are developed using the performances of
3 non-regulated firms. Their application to regulated utilities is problematic.

4 **4. Comparable Earnings**

5 **Q. PLEASE DESCRIBE MR. MOUL'S COMPARABLE EARNINGS ANALYSIS.**

6 A. Mr. Moul selects a set of unregulated companies that he asserts have risk comparable to
7 that of CPA. He applies a DCF analysis to the companies to arrive at ROEs, using historical
8 returns on book equity and Value Line forecasted book value returns.

9 **Q. PLEASE DESCRIBE MR. MOUL'S COMPARABLE EARNINGS FINDINGS.**

10 A. The individual ROEs for Mr. Moul's unregulated companies range up to 87.5 percent. Mr.
11 Moul, perhaps recognizing that such returns are not comparable for regulated gas utilities,
12 finds an average only for members of the group with ROEs less than 20 percent, in addition
13 to finding average historical and forecasted ROEs for the whole group. Mr. Moul's 20-
14 percent threshold, which is well above any ROE authorized for a gas distribution company
15 recently, eliminates 20 of the 28 members of the group, based on historical returns and 19
16 of the 28 based on forecasted returns. The average of Mr. Moul's four analyses is an ROE
17 of 12.85 percent.

18 **Q. DID YOU TAKE MR. MOUL'S COMPARABLE EARNINGS ANALYSIS A STEP**
19 **FURTHER?**

20 A. Yes. I lowered the threshold to 15 percent, still above reasonable gas utility ROEs.⁵³ Three
21 more companies are eliminated based on forecasted returns, leaving six. The averages for
22 these small sets are 10.8 percent and 11.7 percent. With so many companies eliminated,

⁵³ MFG-16.

1 these Comparable Earnings results are not reliable. Further, the range of ROEs for the
2 unregulated firms demonstrates that they are not operating in an environment comparable
3 to the regulated environment in which CPA operates. Thus, this approach should be
4 excluded in consideration of a CPA ROE.

5 **5. Mr. Moul's Recommended ROE**

6 **Q. HOW DOES MR. MOUL ARRIVE AT HIS RECOMMENDED ROE?**

7 A. Mr. Moul lists the ROEs from each of his models and states in his testimony, which range
8 from 10.87 percent to 12.85 percent.⁵⁴ He drops the highest of these values, the comparable
9 earnings result and states that 10.95 percent (including 20 basis points for good
10 management performance) is the appropriate CPA ROE given the resulting range. Mr.
11 Moul does not elaborate on how he arrives at his pre-performance award value of 10.75
12 percent. There is no explanation as to what weighting he uses. Therefore, his ROE range
13 and recommendation are arbitrary. Moreover, Mr. Moul does not support the 20-basis point
14 addition for management performance. It should be excluded.

15 **XI. SUMMARY**

16 **Q. WHAT ARE THE CRITERIA THE COMMISSION SHOULD CONSIDER IN**
17 **SETTING THE COMPANY'S ROE AND ROR?**

18 A. The Commission should only consider whether the ROE and ROR meet the *Bluefield* and
19 *Hope* criteria for a fair return. Recounting, these criteria include returns commensurate with
20 returns being earned on other investments with equivalent risks, rates of return sufficient
21 to enable the utility to attract capital, and returns sufficient to enable the regulated company
22 to maintain its credit rating and financial integrity. The interpretation of the *Hope* and

⁵⁴ Moul at 5.

1 *Bluefield* criteria is that a company should be given the opportunity to earn an ROE and
2 ROR sufficient to meet these standards.

3 **Q. WHAT DOES YOUR ROE ANALYSIS REFLECT?**

4 A. My ROE analysis reflects the latest views of investors regarding the prospects of the
5 Comparison Group companies. I have shown that the outcome of my forward-looking DCF
6 analysis is compatible with recent ROE awards to natural gas utilities. I considered the
7 CAPM result, which indicates that my recommended 9.45 percent ROE is appropriate.

8 **Q. WHAT IS YOUR RECOMMENDED RETURN ON EQUITY AND OVERALL
9 COST OF CAPITAL?**

10 A. I recommend a return on equity of 9.45 percent and an overall rate of return of 7.32 percent.
11 If the Company's WNA is made permanent, my recommended ROE is 9.38 percent and
12 my recommended ROR is 7.28 percent.

13 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

14 A. Yes. However, I reserve the right to update this testimony as may be necessary.

PCMG and Associates

Marlon Griffing, Ph.D

Education

Ph.D., M.A., B.A., Economics, University of Nebraska-Lincoln

Position

Senior Consultant – PCMG and Associates	2015 – present
Senior Consultant – Snavelly King Majoros and Associates	2013 – 2014
Utilities Financial Analyst – Minnesota Department of Commerce	2003 – 2013
Independent Consultant	2003
Senior Consultant – QSI Consulting	2000 – 2002
Economic Analyst – Nebraska Public Service Commission	1998 – 2000

Professional Experience

Dr. Griffing holds bachelors, masters, and doctoral degrees in economics. Dr. Griffing is well versed in microeconomics, cost/benefit analysis and econometric analysis. He has over 18 years' experience as an expert witness and consultant, addressing the cost of capital, capital structure, and rate design of natural-gas and electric utilities in general rate cases; reliability and supply adequacy for natural-gas, electricity and oil-pipeline companies in certificate of need cases; and competitive-environment issues for telecommunications utilities. Dr. Griffing testified on cost-of-capital issues for the Minnesota Department of Commerce (DOC) from 2004-2013. He also managed the DOC's testimony in two oil-pipeline certificate-of-need cases and arbitrated a telecommunications dispute for the Nebraska Public Service Commission. Dr. Griffing has appeared over 30 times before the regulatory agencies of Maine, Minnesota, Nebraska, New Jersey, New Mexico, Pennsylvania, and South Dakota.

Cost of Capital Appearances

1. In Re: The Matter of the Columbia Gas of Pennsylvania for a General Rate Increase in Distribution Gas Service (Appearance: Cost of Capital on behalf of the Pennsylvania Office of Consumer Advocate)
Pennsylvania Public Utility Commission -- Docket No. R-2018-2647577
2. In the Matter of the Application of Black Hills Energy Arkansas, Inc. for Approval of a General Tariff Change in Rates and Tariffs (2018) - (Appearance: return on equity, cost of capital on behalf of the Office of the Arkansas Attorney General)
Arkansas Public Service Commission Docket 17-071-U

3. In the Matter of the Application of Oklahoma Gas and Electric Company for an Order of the Commission Authorizing Applicant to Modify Its Rates, Charges, and Tariffs for Retail Electric Service in Oklahoma (2017) - (Appearance: return on equity, cost of capital on behalf of the Office of the Oklahoma Attorney General)
Oklahoma Commerce Commission Cause No. PUD 201700496
4. Application of Fayson Lake Water Company for the Approval of an Increase in Rates and Other Appropriate Relief (2017) – (Appearance: cost of equity, cost of debt, capital structure, overall rate of return on behalf of the New Jersey Division of Rate Counsel)
New Jersey Board of Public Utilities Docket No. WR17101041
5. Petition of Middlesex Water Company for Approval of an Increase in its Rates for Water Service and Other Tariff Changes, and an Order Authorizing Special Accounting Treatment of Income Tax Refund Proceeds and Future Income Tax Deductions (2017) – (Appearance: cost of equity, cost of debt, capital structure, overall rate of return on behalf of the New Jersey Division of Rate Counsel)
New Jersey Board of Public Utilities Docket No. WR17101049
6. In the Matter of the Petition of New Jersey-American Water Company, Inc. for Approval of an Increased Tariff Rates and Charges for Water and Sewer Service, Change in Depreciation Rates, and Other Tariff Modifications (2017) – (Appearance: cost of equity, cost of debt, capital structure, overall rate of return on behalf of the New Jersey Division of Rate Counsel)
New Jersey Board of Public Utilities Docket No. WR17090985
7. In re: Montana-Dakota Utilities Co., Application to Increase Natural Gas Rates (2017) - (Appearance: cost of equity, cost of debt, capital structure, overall rate of return on behalf of the North Dakota Public Service Commission Staff)
ND Public Service Commission Case No. PU-17-295
8. In the Matter of the Petition of Andover Utility Company, Inc. for Approval of an Increase in Rates for Wastewater Service (2017) – (Appearance: cost of equity, cost of debt, capital structure, overall rate of return on behalf of the New Jersey Division of Rate Counsel)
New Jersey Board of Public Utilities Docket No. WR17070726
9. In the Matter of the Application of Application of Public Service Company of Oklahoma, An Oklahoma Corporation, for An Adjustment in Its Rates and Charges and the Electric Service Rules, Regulations and Conditions for Service in the State of Oklahoma (2017) - (Appearance: return on equity, cost of capital on behalf of the Office of the Oklahoma Attorney General)
Oklahoma Commerce Commission Cause No. PUD 201700151
10. In the Matter of Petition of SUEZ Water Arlington Hills Inc. for Approval of an Increase in Rates for Wastewater Services and other Tariff Changes (2016-2017) - (Appearance: return on equity, cost of capital on behalf of the New Jersey Division of Rate Counsel)
New Jersey Board of Public Utilities Docket No. WR16050510

11. In the Matter of Request by Emera Maine for Approval of a Rate Change (2016) - (Appearance: cost of equity, cost of debt, capital structure, overall rate of return on behalf of the Maine Office of the Public Advocate)
Maine Public Utilities Commission Docket No. 15-00360
12. ENMAX Energy Corporation (EEC) Regulated Rate Option Non-Energy Tariff Application (2015-2016) - (Analysis: cost of capital, risk element identification on behalf of the Alberta Utilities Consumer Advocate)
Alberta Utilities Commission Proceeding 20480
13. Pennsylvania Public Utilities Commission vs. West Penn Power Co., Pennsylvania Electric Co., Pennsylvania Power Co., and Metropolitan Edison Co. (2014-2015) - (Appearance: cost of equity, cost of debt, capital structure, overall rate of return behalf of the Office of the Pennsylvania Consumer Advocate)
PA Docket Nos. R-2014-2428742-R-2014-2428745
14. In the Matter of the Application of Minnesota Energy Resources Corporation for Authority to Increase Rates for Natural Gas Service in Minnesota (2010-2012) - (Appearance: cost of equity, cost of debt, capital structure, overall rate of return on behalf of the Minnesota Department of Commerce)
MN Docket No. G007,011/GR-10-977
15. In the Matter of the Application of Otter Tail Power Company for Authority to Increase Rates for Electric Utility Service in Minnesota (2010-2011) - (Appearance: cost of equity, cost of debt, capital structure, overall rate of return on behalf of the Minnesota Department of Commerce)
MN Docket No. E017/GR-10-239
16. In the Matter of the Petition of Northern States Power Company, a Minnesota Corporation, for Authority to Increase Rates for Natural Gas Service in Minnesota (2009-2010) - (Appearance: cost of equity, cost of debt, capital structure, overall rate of return on behalf of the Minnesota Department of Commerce)
MN Docket No. G002/GR-09-1153
17. In the Matter of an Application by CenterPoint Energy Resources Corp., D/B/A CenterPoint Minnesota Gas to Increase Natural Gas Rates in Minnesota (2008-2009) - (Appearance: cost of equity, cost of debt, capital structure, overall rate of return on behalf of the Minnesota Department of Commerce)
MN Docket No. G008/GR-08-1075
18. In the Matter of Minnesota Energy Resources Corporation's Application for Authority to Increase Natural Gas Rates in Minnesota (2008-2009) - (Appearance: cost of equity, cost of debt, capital structure, overall rate of return on behalf of the Minnesota Department of Commerce)
MN Docket No. G007,011/GR-08-835

19. In the Matter of the Petition of Northern States Power Company, a Minnesota Corporation and Wholly Owned Subsidiary of Xcel Energy Inc., for Authority to Increase Rates for Natural Gas Service in Minnesota (2006-2007) - (Appearance: cost of equity, cost of debt, capital structure, overall rate of return on behalf of the Minnesota Department of Commerce)
MN Docket No. G002/GR-06-1429
20. In the Matter of the Application of CenterPoint Energy Resources Corp., D/B/A CenterPoint Energy Minnesota Gas, for Authority to Increase Natural Gas Rates in Minnesota (2005-2006) - (Appearance: cost of equity, cost of debt, capital structure, overall rate of return on behalf of the Minnesota Department of Commerce)
MN Docket No. G008/GR-05-1380
21. In the Matter of a Petition by Interstate Power and Light Company for Authority to Increase Electric Rates in Minnesota (2005) - (Appearance: cost of equity, cost of debt, capital structure, overall rate of return on behalf of the Minnesota Department of Commerce)
MN Docket No. E001/GR-05-748
22. In the Matter of the Petition of Northern States Power Company dba Xcel Energy Request for General Rate Increase (2004-2005) - (Appearance: cost of equity, cost of debt, capital structure, overall rate of return on behalf of the Minnesota Department of Commerce)
MN Docket No. G002/GR-04-1511
23. In the Matter of the Petition of Great Plains Natural Gas Company's Request for General Rate Increase (2004-2005) - (Appearance: cost of equity, cost of debt, capital structure, overall rate of return on behalf of the Minnesota Department of Commerce)
MN Docket No. G004/GR-04-1487
24. In the Matter of the Petition of CenterPoint Energy Minnegasco, A Division of CenterPoint Resources Corp. for Authority to Increase Natural Gas Rates in Minnesota (2004-2005) - (Appearance: cost of equity, cost of debt, capital structure, overall rate of return on behalf of the Minnesota Department of Commerce)
Docket No. G008/GR-04-901

ROE and ROR Analysis for Columbia Gas Pennsylvania
 Comparison Group
 Value Line Natural Gas Utilities and Screens
 Value Line Investment Survey March 2, 2018

Docket No. R-2018-2647577
 Exhibit MFG-2

Company	Ticker	Exchange	U.S. Based	Paying Dividend	Merger or Acquisition	S&P Credit Rating
Atmos Energy Corporation	ATO	NYSE	Yes	Yes	No	A
Chesapeake Utilities	CPK	NYSE	Yes	Yes	No	NA
New Jersey Resources Corporation	NJR	NYSE	Yes	Yes	No	A*
NiSource, Inc	NI	NYSE	Yes	Yes	No	BBB+
Northwest Natural Gas Company	NWN	NYSE	Yes	Yes	No	A+
ONE Gas, Inc.	OGS	NYSE	Yes	Yes	No	A
RGC Resources, Inc.	RGCO	NASDAQ	Yes	Yes	No	NA
South Jersey Industries, Inc.	SJI	NYSE	Yes	Yes	Yes**	BBB+
Southwest Gas Holdings, Inc.	SWX	NYSE	Yes	Yes	No	BBB+
Spire Inc.	SR	NYSE	Yes	Yes	No	A-
WGL Holdings, Inc.	WGL	NYSE	Yes	Yes	Yes	A

*-Rating for New Jersey Natural Gas (NJNG), New Jersey Resources (NJR) subsidiary. NJNG issues its own bonds. NJR does not issue bonds. See MFG-Workpaper 1.

** -See Direct Testimony pages 15-16 for discussion of South Jersey Industries and its acquisition of Elizabethtown Gas.

Indicates not passing a screen

ROE and ROR Analysis for Columbia Gas Pennsylvania
 Comparison Group Regulated Percentage Screen
 Company 10Ks

Docket No. R-2018-2647577
 Exhibit MFG-3

Name	Operating Income for Natural Gas Utilities (In thousands of dollars)****				Regulated Natural Gas as % of Company			3-Year Average
	2017*	2016	2015	2017*	2017*	2016	2015	
Atmos Energy Corporation	505,642	441,884	422,962	727,546	69.5%	67.2%	69.1%	68.6%
New Jersey Resources Corporation	151,641	126,233	130,047	167,044	90.8%	75.3%	52.3%	72.8%
NiSource	574,000	555,800	537,000	858,200	66.9%	69.5%	68.1%	68.1%
Northwest Natural Gas Company**	54,567	53,391	58,587	58,895	92.7%	99.4%	99.8%	97.3%
ONE Gas, Inc.	299,476	269,120	239,129	299,476	100.0%	100.0%	100.0%	100.0%
South Jersey Industries, Inc.***	136,487	122,455	119,585	4,410	3094.9%	64.7%	76.2%	70.5%
Southwest Gas Holdings, Inc.	276,650	236,728	234,783	323,700	85.5%	80.1%	81.4%	82.3%
Spire Inc.	321,600	278,300	274,600	321,700	100.0%	98.6%	100.8%	99.8%

*-Atmos Energy, New Jersey Resources, and Spire, Inc. have fiscal years running from October 1 to September 30. The data for these companies is taken from their 10Ks from fiscal years ending in 2015, 2016, and 2017. The remaining five companies have fiscal years running from January 1 to December 31. Data from these companies is also taken from their 10Ks for fiscal years ending in 2015, 2016, and 2017.

**-Net income. Utility operating income not available.

***-South Jersey Industries had large losses in two non-Gas Utility units in 2017. Its average regulated natural gas percentage is for 2015 and 2016.

****-See Workpapers

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RRA REGULATORY FOCUS

AltaGas, WGL merger settlement in DC offers modest incremental commitments

Wednesday, May 09, 2018 7:17 AM CT

By Monica Hlinka

A unanimous settlement has come to fruition between WGL Holdings Inc., AltaGas Ltd. and various parties to a proceeding in which the District of Columbia Public Service Commission is reviewing the proposed acquisition of Washington Gas Light Co.'s parent WGL by AltaGas.

In addition to the companies, parties to the May 8 settlement include the government of Washington, D.C., the Office of People's Counsel, the Apartment and Office Building Association of Metropolitan Washington, the United States Department of Defense and all other federal executive agencies, the Laborers' International Union of North America, its affiliated District Council, and local unions serving or located in Washington, D.C., the National Consumer Law Center/National Housing Trust, and Local 2 of the Office and Professional Employees International Union, AFL-CIO.

The parties request that the commission reopen the record for the limited purpose of admitting the settlement into evidence. While there is no statutory deadline by which the commission must render a decision, the parties are requesting that the PSC issue a final decision no later than June 30, 2018.

The proposed settlement consists of commitments that closely mirror previous conditions that the companies offered. The commitment enhancements outlined in the settlement include a rate case stay-out, extension/expansion of safety, customer assistance, workforce development and energy efficiency program funding and increased support for renewable resource development. The settlement commitments are summarized below.

Rate credits: The companies would provide residential customers approximately \$20.5 million in one-time rate credits, allocated in accordance with each residential class's cumulative non-gas revenues as determined by the PSC in Washington Gas's last base rate case, which equates to roughly \$150 for each residential-heating ratepayer. Additionally, AltaGas would provide approximately \$5.4 million in one-time rate credits for non-residential customers, determined on a volumetric basis. The credits would be distributed within 60 days after the merger closes.

Enhanced program funding: AltaGas would provide approximately \$4.2 million for energy efficiency and energy conservation initiatives with a primary focus on assisting low and limited-income residents who are living in affordable multifamily units. The companies would provide \$1.5 million of supplemental funding over the five years following the merger close to the Washington Area Fuel Fund to provide emergency gas utility bill assistance to qualifying low-income customers and moderate-income customers. Approximately \$260,000 would be earmarked specifically for qualifying District ratepayers.

AltaGas would fund a new public safety program at Washington Gas focused on preventing third-party excavation damages. Specifically, AltaGas would provide \$2.4 million over a five-year period to add one damage prevention trainer/educator to each of Washington Gas's jurisdictions. AltaGas would also provide \$350,000 in incremental funding to Washington Gas, recovery of which would not be sought from customers for educational and damage prevention awareness and safety.

AltaGas would provide roughly \$6 million over a two-year period for workforce development initiatives in the District, such as the "Mayor's D.C. Infrastructure Academy." AltaGas agreed to focus its contribution to programs that promote training and job creation in the energy sector, and would take special efforts to fund programs to support formerly justice-involved juveniles, who have successfully completed the District's "A.C.E. program." Approximately \$2 million would be allocated to a program that works with District-based contractors on growing their capacity to work on Washington Gas's D.C. system and to promote hiring by those contractors of D.C. residents. AltaGas would not seek recovery from ratepayers of the costs associated with the project.

S&P Global

RRA REGULATORY FOCUS

Law judge recommends approval of South Jersey Industries, Elkton Gas acquisition

Wednesday, May 23, 2018 3:38 PM CT

By Monica Hlinka and Lillian Federico

A public utility law judge issued a proposed order in a proceeding in which the Maryland Public Service Commission is reviewing South Jersey Industries Inc.'s proposed acquisition of Pivotal Utility Holdings Inc. division Elkton Gas Co.

The May 16 proposed order would approve a settlement filed with the commission earlier in the month, and thereby authorize South Jersey Industries's, or SJI's, acquisition of Elkton Gas. Unless any party decides to appeal or the commission modifies the proposed decision, it will become a PSC final order on May 31.

The conditions incorporated in the May 4 settlement are summarized below.

Customer rate credits: Elkton would provide one-time rate credits of approximately \$215,680, or \$32 per customer, 90 days after closing; the company had initially proposed a \$17 per-customer credit, or \$117,000 in aggregate, while the staff recommended one-time credits of \$30.28 per customer, or \$204,800, and the Office of Peoples's Counsel, or OPC, had recommended aggregate customer credits of \$400,000, or roughly \$60 per customer. In addition, the current asset management agreement governing upstream pipeline capacity management and gas supply services between Elkton and Sequent Energy Management LP that is scheduled to expire March 31, 2019, would be renewed for an additional five years, with guaranteed minimum annual customer credits of \$10,800 over that period.

Ongoing customer rates: While no immediate savings to Elkton Gas are expected as a result of the transaction, the companies had agreed that to the extent any net savings are realized, such savings would be flowed through to Elkton Gas customers in the normal ratemaking process. In the first base rate case in which the test year in question includes "costs to achieve", if costs to achieve exceed achieved synergy savings during the test year in question, Elkton Gas would amortize the costs to achieve over a Commission-determined period of time so that amortized costs to achieve do not exceed achieved synergy savings during the test year in question.

As recommended by staff, in any rate case filed after the close, the company would file detailed information regarding the costs related to the post-close master service agreement, shared services agreement and transition service agreement.

In addition, as proposed by the OPC, Elkton Gas would refrain from seeking recovery in rates of any acquisition premium associated with the transaction, any costs associated with goodwill arising from the acquisition, any transaction costs associated with the transaction or any related financing costs. The companies commit that there would be no change to Elkton Gas' existing ratemaking capital structure ratios in connection with the acquisition.

Elkton Gas would be required to file a base rate case on or before June 30, as required by the PSC's order approving the AGL/Southern merger, but, as proposed by the OPC, would refrain from filing an application for an adjustment to its retail rates for distribution service for at least two and a half years, or 30 months, following the conclusion of that mandated rate case. This presumably includes adjustments under Elkton's Strategic Infrastructure Development and Enhancement rider.

Corporate governance: Elkton Gas' core management team would be maintained. Elkton Gas would continue to comply with the PSC's Code of Conduct Regulations, and as proposed by the staff, the companies would be required to file an updated cost allocation manual within 90 days of the close and tender annual ring-fencing reports; the state's "ring-fencing" requirements are designed to prevent cross-subsidization and govern affiliate transactions.

Ring fencing: The companies commit that measures and practices now used to ensure the stability and financial well-

being of Elkton Gas would remain in place following the close of the transaction. Elkton Gas would refrain from issuing debt or equity to fund the acquisition and would maintain a rolling 12-month average equity ratio of at least 48%. In addition, SJI would agree to refrain from pledging any asset of Elkton Gas as support for any securities SJI or any of its affiliates may issue and would continue to comply with the commission's regulations regarding payments and guarantees to its affiliates.

In addition, as proposed by the OPC, SJI would use "reasonable efforts" to maintain its credit ratings at investment grade for its publicly traded securities and senior unsecured debt. Elkton would not include any cross-default provisions, financial covenants, or rating agency triggers related to SJI or any of its affiliates in any of its debt or credit agreements; assume liability for or issue any guarantees against the debt of SJI or any of its affiliates; use Elkton cash flows as collateral or other lien instrument for the benefit of SJI; or commingle funds with other SJI affiliates. Elkton would be required to maintain separate books and records and continue to hold its property in its own name.

Elkton would not pay dividends to its parent if SJI's senior unsecured debt is rated below investment grade by two of the three major credit rating agencies, or the dividend payment would result in a drop in Elkton Gas's common equity level below the rolling 12-month average annual equity ratio of at least 48%.

As proposed by staff, the settlement includes a "divestiture provision" such that the commission could order SJI to divest its interest in Elkton, if a bankruptcy filing is tendered by SJI or a subsidiary that constitutes more than 10% of SJI's consolidated net income; the rating for SJI's unsecured debt is downgraded to a rating "that is indicative of substantial risks" by at least two of the major credit rating agencies; or SJI or its subsidiaries have "committed a pattern of material violations of lawful commission orders or regulations" and have continued to do so despite warnings issued by the PSC.

Employee protections: For five years following the close, the companies would maintain, at a minimum, the existing level of the Maryland workforce supporting Elkton Gas' operations in the state; the company had initially offered this guarantee for a three-year period. All existing employees would be offered employment with the new entity on terms and at compensation and benefit levels comparable to current terms and benefits. SJI would assume all responsibility for pension and retiree benefits.

Community support: For at least five years years after closing, the company would maintain its headquarters and service center in Elkton, Md; the company had initially committed to three years. In addition, as recommended by the staff, the company would provide the commission with at least two-years advance notice of any plan to close or relocate facilities, and prior PSC approval would be required before the facilities are closed or moved. The companies would maintain Elkton Gas' current level of community support contributions for 10 years post-close. In addition, the companies would commit to increase over time Elkton Gas' current Diverse Spend Ratio to 25% by 2020, from the 19.54% achieved in 2017.

Safety and reliability: The companies would continue implementing Elkton Gas' plan for replacing certain Aldyl-A pipeline, as approved by the PSC on Dec. 12, 2017, and Elkton would be required to file annual updates of its gas pipeline remediation plan. SJI would commit to providing Elkton Gas with the resources necessary to invest in capital and infrastructure projects to help ensure that Elkton Gas may continue to provide safe, reliable and adequate utility service.

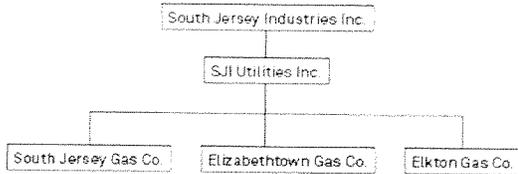
As recommended by the staff, the companies would be required to file annual reports regarding response times to notifications regarding potential leaks, including post-acquisition documentation with respect to safety violations, customer service complaints, the time required to satisfy the customer complaints and demonstrate the response time of Elkton Gas and the satisfaction or non-satisfaction of the resolution of the customer complaints.

As recommended by the Maryland Energy Administration, within 12 months of closing, the companies would commence a study of "all relevant factors to be considered for economical and prudent natural gas expansion in the Elkton Gas service area, including customer preferences and demands, local government growth laws and strategies, availability and pricing of qualified local construction contractors, ground conditions for trenching of pipeline, access to natural gas for county and municipal government facilities, and whether Elkton Gas's existing infrastructure has the necessary volumetric capacity (or would need upgrading or replacement) to support gas expansion."

Most favored nations clause: As proposed by the OPC and staff, the companies would file with the PSC final orders from other jurisdictions that are reviewing the proposed transaction, and to the extent the value for customers of commitments secured in other jurisdictions is greater than those ultimately approved for Maryland customers, the Maryland commitments would be modified to create commensurate value.

Transaction overview

Proposed post-transaction corporate structure



As of April 3, 2018.
Source: Testimony of the Maryland Public Service Commission staff in Case No. 9475

The proposed acquisition is part of a transaction announced Oct. 16, 2017, under which SJI would acquire Pivotal's Elizabethtown Gas Company Inc., or ETG, division, which operates in New Jersey, and Elkton Gas division, which operates in Maryland. The transaction does not involve Pivotal's Florida City Gas division. Pivotal was acquired by Southern Co. as part of its 2016 acquisition of AGL Resources and is part of Southern Co. Gas.

SJI is the parent of South Jersey Gas Co., which serves customers in the seven southernmost counties of New Jersey. After the close of the transaction, Elkton Gas and ETG would be held by SJI Utilities, along with South Jersey

Gas, which would be a first-tier subsidiary of SJI.

For a detailed discussion of the proposed acquisition, refer to Regulatory Research Associates' Special Report, South Jersey Industries to acquire Pivotal Utility Holdings' New Jersey and Maryland assets.

The companies filed for PSC approval of the transaction on Jan. 16, and as part of the filing, offered a series of commitments designed to address concerns raised by the intervening parties and the PSC with respect to other recent mergers.

The parties filed testimony on April 3, recommending that the PSC approve the transaction only if certain incremental conditions are met.

Other regulatory reviews

SJI's related acquisition of ETG is subject to review by the New Jersey Board of Public Utilities, or BPU, and both transactions are subject to review by the Federal Energy Regulatory Commission.

SJI filed with the BPU on Dec. 21, 2017, for approval of its plan to acquire ETG. In reviewing an acquisition of control of a utility, state law directs the BPU to consider the impact of the transaction on competition, the rates paid by retail customers, the employees of the utility and the provision of safe and adequate service at just and reasonable rates. There is no requisite time frame within which the BPU must complete its review. For additional detail on the BPU and past mergers it has reviewed, refer to the New Jersey Commission Profile.

Assuming all regulatory approvals are received, the companies hope to close the transaction the third quarter of 2018.

Regulatory Research Associates is an offering of S&P Global Market Intelligence.

For a complete, searchable listing of RRA's in-depth research and analysis, please go to the S&P Global Market Intelligence Energy Research Library.

From: *General Criteria: Understanding Standard & Poor's Rating Definitions*, second paragraph of "Key Attributes of Standard & Poor's Credit Ratings." Available at the Standard & Poor's website: https://www.standardandpoors.com/en_US/web/guest/article/-/view/sourceId/5435305 Accessing the publication may require free registration.

explicit discussions of the assumptions we used in forming our opinions, and changes we have made to our rating criteria for several asset classes resulting from macroeconomic developments and ongoing performance data.

By providing more information and data about ratings, we can help market participants better understand how we develop our ratings and -- whether they agree or disagree with our assessment -- act accordingly.

This article is designed to help market participants better understand what Standard & Poor's credit ratings mean. Although the official definitions appear outwardly to be very simple, they embody multiple factors that compose the overall assessment of creditworthiness.

Standard & Poor's has striven to maintain comparability of ratings across sectors. This has been done by relating all ratings to common default behavior and measurement and by common approaches to risk analysis. In the spirit of promoting greater transparency, Standard & Poor's is now articulating a set of economic stress scenarios enumerated in Appendix IV, which we intend to use as benchmarks for enhancing the consistency and comparability of ratings across sectors and over time. Each scenario describes particular conditions of economic stress, which we associate with a particular rating level, as described in the appendix. Credits rated in each category are intended to be able to withstand particular conditions of economic stress without defaulting (though they might be downgraded significantly as economic stresses increase).

This publication intends to promote greater understanding of ratings and help investors attribute clearer meanings to different rating categories.

Key Attributes Of Standard & Poor's Credit Ratings

Rank ordering of creditworthiness

Standard & Poor's credit ratings express forward-looking opinions about the creditworthiness of issuers and obligations (see Appendix I for a description of "issuer" and "issue" ratings). More specifically, Standard & Poor's credit ratings express a relative ranking of creditworthiness. Issuers and obligations with higher ratings are judged by us to be more creditworthy than issuers and obligations with lower credit ratings. (See Appendix III for a relevant excerpt from the rating definitions.)

Creditworthiness is a multi-faceted phenomenon. Although there is no "formula" for combining the various facets, our credit ratings attempt to condense their combined effects into rating symbols along a simple, one-dimensional scale. Indeed, as discussed below, the relative importance of the various factors may change in different situations.

The term creditworthiness refers to the question of whether a bond or other financial instrument will be paid according to its contractual terms. At first blush, the idea of creditworthiness seems entirely straightforward. However, delving beneath the outward simplicity reveals the true multi-dimensional nature.

Primary factor -- likelihood of default

In our view, likelihood of default is the centerpiece of creditworthiness. That means likelihood of default--encompassing both capacity and willingness to pay--is the single most important factor in our assessment of the creditworthiness of an issuer or an obligation. Therefore, consistent with our goal of achieving a rank ordering of creditworthiness, higher ratings on issuers and obligations reflect our expectation that the rated issuer or obligation should default less frequently than issuers and obligations with lower ratings, all other things being equal.

Although we emphasize the rank ordering of default likelihood, we do not view the rating categories solely in relative terms. We associate each successively higher rating category with the ability to withstand successively more stressful economic environments, which we view as less likely to occur. We associate issuers and obligations rated in the highest categories with the ability to withstand extreme or severe stress in absolute terms without defaulting. Conversely, we associate issuers and obligations rated in lower categories with vulnerability to mild or modest stress. (See Appendix IV for stress scenarios by rating level that we intend to use in promoting ratings comparability. Appendix V contains a listing of historical examples of stress conditions, including the magnitude of stress that we associate with each.)

Looking to absolute stress levels is part of how we try to achieve comparability of ratings across different types of securities, different times, different currencies, and different regions. That is, we strive to make our rating symbols correspond to the same approximate level of creditworthiness wherever they appear. Thus, when we use a given rating

NiSource Inc.

NYSE: NI (MI KEY: 4057051; SPCIQ KEY: 292092)

CREDIT RATINGS

TOOLS &
 FILTERS

View Ratings Scale (<https://platform.mi.spglobal.com/InteractiveX/CreditRatingScale.aspx?Printable=1>)

Subsidiaries

Credit Ratings

	S&P	MOODY'S
Long-Term Rating	BBB+	Baa2
Outlook	Stable	Stable
Watch		
As of Date	6/18/2015	2/28/2018
	BBB- (WP) 9/29/2014	Baa2 (OS) Upgrade 4/28/2017
	BBB- (OS) 3/5/2009	(P)Ba1 (OS) Affirm 11/9/2016
History	BBB- (ON) 12/16/2008	(P)Ba1 (OS) Affirm 6/17/2015
	BBB- (OS) Downgrade 12/18/2007	(P)Ba1 (OS) Upgrade 1/31/2014
	BBB (WN) 11/2/2007	(P)Ba2 (WP) Affirm 11/8/2013

Credit Ratings Details

Headlines**

**ROE and ROR Analysis for Columbia Gas Pennsylvania
Comparison Group
Dividends**

**Docket No. R-2018-2647577
Exhibit MFG-9**

Name	Value Line	Zacks	Highest Dividend
Atmos Energy	\$ 1.98	\$ 1.94	\$ 1.98
New Jersey Resources	\$ 1.09	\$ 1.09	\$ 1.09
NiSource, Inc.	\$ 0.78	\$ 0.78	\$ 0.78
Northwestern Natural Gas	\$ 1.89	\$ 1.89	\$ 1.89
ONE Gas, Inc.	\$ 1.84	\$ 1.84	\$ 1.84
South Jersey Industries	\$ 1.11	\$ 1.12	\$ 1.12
Southwest Gas	\$ 1.98	\$ 2.08	\$ 2.08
Spire, Inc.	\$ 2.25	\$ 2.25	\$ 2.25

Value Line dividends taken from March 2, 2018 Research Reports

Zacks dividends taken from website on May22, 2018

ROE and ROR Analysis for Columbia Gas Pennsylvania
Comparison Group
Discounted Cash Flow Constant-Growth Model Analysis
Common Equity Share Prices April 23-May 18, 2018
Zacks, Yahoo! Finance, and Value Line EPS Growth-
Rate Estimates--March-May 2018

Docket No. R-2018-2647577
Exhibit MFG-10, Schedule I

Company Name	A	B	C	D	I
	Zacks EPS Growth Rate (%)	Yahoo! Finance EPS Growth Rates (%)	Value Line EPS Growth Rates (%)	Zacks-Yahoo! Finance-Value Line Mean Growth Rate (%)	
Atmos Energy	7.00%	7.00%	7.50%	7.17%	
New Jersey Resources	6.00%	6.00%	9.50%	7.17%	
NiSource, Inc.	5.49%	5.55%	18.00%	5.52%	
Northwest Natural Gas	4.33%	4.00%	7.00%	5.11%	
ONE Gas, Inc.	5.70%	5.50%	8.00%	6.40%	
South Jersey Industries	12.40%	6.00%	6.50%	8.30%	
Southwest Gas	NA	4.00%	7.50%	5.75%	
Spire, Inc.	3.68%	4.10%	9.00%	5.59%	
Mean	6.37%	5.27%	9.13%	6.38%	
			w/o NiSource	6.50%	
			w/o SJH	6.10%	
Company Name	E	F	G	H	I
	Average of Closing Prices	Annualized Dividend	Dividend Yield (Rate/Price)	Expected Dividend Yield	Required Rate of Return on Equity
Atmos Energy	\$ 86.95	\$ 1.98	2.28%	2.36%	9.53%
New Jersey Resources	\$ 42.33	\$ 1.09	2.58%	2.67%	9.84%
NiSource, Inc.	\$ 24.68	\$ 0.78	3.16%	3.25%	8.77%
Northwest Natural Gas	\$ 60.81	\$ 1.89	3.11%	3.19%	8.30%
ONE Gas, Inc.	\$ 71.27	\$ 1.84	2.58%	2.66%	9.06%
South Jersey Industries	\$ 31.46	\$ 1.12	3.56%	3.71%	12.01%
Southwest Gas	\$ 72.80	\$ 2.08	2.86%	2.94%	8.69%
Spire, Inc.	\$ 71.10	\$ 2.25	3.16%	3.25%	8.85%
Mean			2.91%	3.00%	9.38%
		w/o NiSource	2.88%	2.97%	9.47%
		w/o SJH	2.82%	2.90%	9.00%

A: Zacks website, May 22, 2018. See Workpapers.

B: Yahoo! Finance website; May 22, 2018. See Workpapers.

C: Value Line Investment Survey; March 2, 2018. See Workpapers.

E: Yahoo! Finance website; April 23-May 18, 2018 (20 trading days).

F: Higher of Value Line Investment Survey; March 2, 2018 and Zacks report, May 22, 2018. See Exhibit MFG-9.

D: $(A + B + C)/3$

G: F/E

H: $G*(1+(0.5*D))$

I: D + H

ROE and ROR Analysis for Columbia Gas Pennsylvania
Comparison Group
Discounted Cash Flow Constant-Growth Model Analysis

Docket No. R-2018-2647577
Exhibit MFG-10, Schedule 2
Columbia Gas PA Response to OCA Interrogatory 4-003

CPA - Embedded Cost of Long Term Debt
Based on 2018 AFP Corporate Assumptions
For 2018 AFP

<u>Balance As Of</u>	<u>Amount of Note</u>	<u>Date of Issuance</u>	<u>Date of Maturity</u>	<u>Interest Rates</u>	<u>Debt Service Requirement</u>	<u>Rate</u>
	\$54,515,000	November 28, 2005	November 28, 2025	5.920%	3,227,288	
	\$20,000,000	November 1, 2006	November 1, 2021	6.015%	1,203,000	
	\$58,000,000	December 14, 2007	December 14, 2027	6.865%	3,981,700	
	\$28,000,000	December 16, 2010	December 16, 2030	6.020%	1,685,600	
	\$30,000,000	March 28, 2012	March 26, 2032	5.355%	1,606,500	
	\$35,000,000	March 28, 2012	March 26, 2042	5.890%	2,061,500	
	\$65,000,000	November 28, 2012	November 28, 2042	5.260%	3,419,000	
	\$23,000,000	June 19, 2013	June 19, 2043	5.530%	\$1,271,900	
	\$32,000,000	December 18, 2013	December 18, 2043	6.290%	\$2,012,800	
	\$30,000,000	December 18, 2014	December 16, 2044	4.430%	\$1,329,000	
	\$60,000,000	March 24, 2015	March 24, 2045	4.150%	\$2,490,000	
	\$60,000,000	September 28, 2015	September 28, 2035	4.510%	\$2,706,000	
	\$45,000,000	March 31, 2016	March 30, 2046	4.190%	\$1,885,500	
December 31, 2016	<u>\$540,515,000</u>				<u>\$28,879,788</u>	5.34%
	<u>\$85,000,000</u>	January 31, 2017	January 31, 2047	4.439%	<u>\$3,772,810</u>	
December 31, 2017	<u>\$625,515,000</u>				<u>\$32,652,598</u>	5.22%
	<u>\$80,000,000</u>	June 30, 2018	June 30, 2048	4.850%	<u>\$3,880,000</u>	
December 31, 2018	<u>\$705,515,000</u>				<u>\$36,532,598</u>	5.18%
	<u>\$80,000,000</u>	June 30, 2019	June 30, 2049	5.000%	<u>\$4,000,000</u>	
December 31, 2019	<u>\$785,515,000</u>				<u>\$40,532,598</u>	5.16%

Underlined 30-year note issued on January 31, 2017 is referenced on page 26 of the testimony.

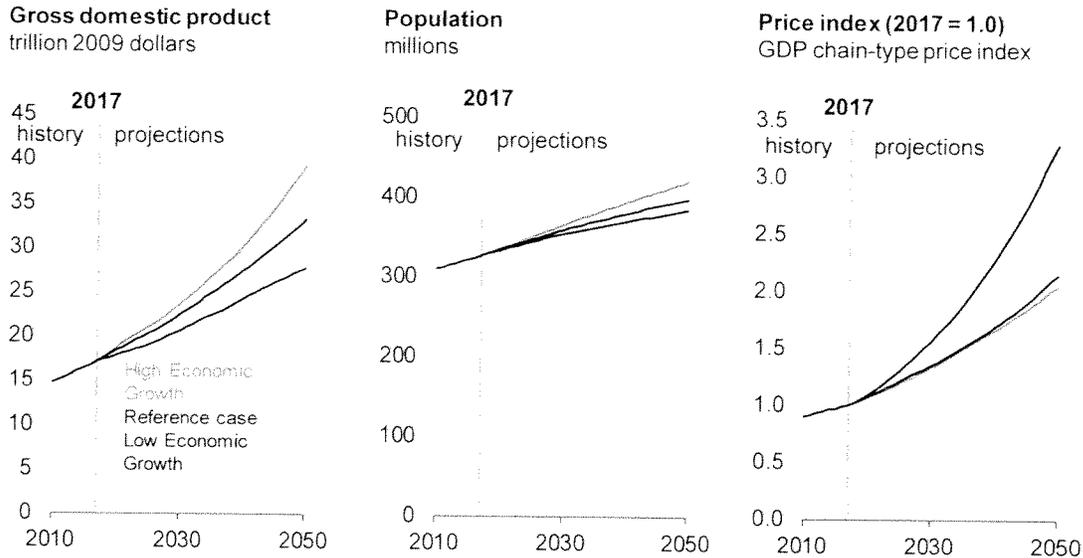
This file presents data that supplements CBO's April 2018 report *The Budget and Economic Outlook: 2018 to 2028*.
 Available at: www.cbo.gov/publication/53651

April 2018 Baseline Forecast—Data Release (Calendar Year)

	Units	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Output														
Gross Domestic Product (GDP)	Billions of dollars	18625	19387	20362	21369	22247	23079	23937	24857	25832	26849	27867	28957	30087
	Percentage change, annual rate	2.8	4.1	5.0	4.9	4.1	3.7	3.7	3.8	3.9	3.9	3.8	3.9	3.9
Gross National Product (GNP)	Billions of dollars	18822	19603	20544	21506	22340	23160	24028	24968	25969	26991	28006	29088	30210
	Percentage change, annual rate	2.7	4.2	4.8	4.7	3.9	3.7	3.7	3.9	4.0	3.9	3.8	3.9	3.9
Potential GDP	Billions of dollars	18875	19531	20278	21118	22022	22966	23933	24934	25958	26990	28037	29114	30238
	Percentage change, annual rate	3.0	3.5	3.8	4.1	4.3	4.3	4.2	4.2	4.1	4.0	3.9	3.8	3.9
Real GDP	Billions of 2009 dollars	16716	17093	17613	18118	18472	18754	19040	19347	19679	20028	20361	20728	21101
	Percentage change, annual rate	1.5	2.3	3.0	2.9	2.0	1.5	1.5	1.6	1.7	1.8	1.7	1.8	1.8
Real GNP	Billions of 2009 dollars	16879	17271	17757	18218	18531	18800	19090	19410	19756	20106	20432	20789	21152
	Percentage change, annual rate	1.4	2.3	2.8	2.6	1.7	1.5	1.5	1.7	1.8	1.8	1.6	1.7	1.7
Real Potential GDP	Billions of 2009 dollars	16940	17219	17541	17905	18285	18663	19037	19407	19774	20133	20485	20841	21207
	Percentage change, annual rate	1.7	1.6	1.9	2.1	2.1	2.1	2.0	1.9	1.9	1.8	1.7	1.7	1.8
Prices														
Price Index, Personal Consumption Expenditures (PCE)	2009=100	110.8	112.7	114.7	116.9	119.4	121.9	124.5	127.2	129.8	132.4	135.1	137.8	140.5
	Percentage change, annual rate	1.2	1.7	1.8	1.9	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0
Price Index, PCE, Excluding Food and Energy	2009=100	111.4	113.1	115.1	117.4	120.0	122.6	125.2	127.8	130.5	133.1	135.7	138.3	141.1
	Percentage change, annual rate	1.8	1.5	1.8	2.0	2.2	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0
Consumer Price Index, All Urban Consumers (CPI-U)	1982-84=100	240.0	245.1	250.4	256.0	262.3	268.9	275.6	282.3	289.1	296.0	303.0	310.1	317.5
	Percentage change, annual rate	1.3	2.1	2.2	2.2	2.4	2.5	2.5	2.4	2.4	2.4	2.4	2.4	2.4
CPI-U, Excluding Food and Energy	1982-84=100	247.6	252.2	257.5	263.7	270.6	277.7	284.7	291.6	298.5	305.6	312.7	320.1	327.6
	Percentage change, annual rate	2.2	1.8	2.1	2.4	2.6	2.6	2.5	2.4	2.4	2.4	2.3	2.3	2.4
Chained CPI-U	Dec 1999=100	136.6	139.2	142.0	144.8	148.0	151.3	154.7	158.1	161.5	164.9	168.4	171.9	175.5
	Percentage change, annual rate	0.9	1.9	2.0	2.0	2.2	2.3	2.2	2.2	2.2	2.1	2.1	2.1	2.1
GDP Price Index	2009=100	111.4	113.4	115.6	117.9	120.4	123.1	125.7	128.5	131.3	134.1	136.9	139.7	142.6
	Percentage change, annual rate	1.3	1.8	1.9	2.0	2.1	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1
Employment Cost Index (ECI)	December 2005=100	126.2	129.5	133.2	137.7	142.7	147.8	152.8	157.8	162.9	168.0	173.3	178.6	184.2
	Percentage change, annual rate	2.4	2.6	2.9	3.4	3.6	3.6	3.4	3.3	3.2	3.2	3.1	3.1	3.1
Refiners' Acquisition Cost of Crude Oil	Dollars per barrel	38.7	49.2	60.4	57.4	55.2	54.3	55.7	58.1	60.7	63.4	66.2	68.3	69.9
Price of Crude Oil, West Texas Intermediate	Dollars per barrel	43.1	50.9	61.9	58.7	56.5	55.3	56.6	59.0	61.6	64.3	67.1	69.1	70.8
Price of Natural Gas, Henry Hub	Dollars per MMBtu	2.5	3.0	2.8	2.8	2.8	2.9	2.9	2.9	3.0	3.0	3.1	3.1	3.2
FHFA House Price Index	Pur 1991Q1=100	231.7	247.0	259.0	266.9	274.9	284.2	294.3	304.6	314.8	324.8	335.1	345.1	356.2
	Percentage change, annual rate	189.5	188.5	184.5	183.9	182.8	182.1	181.6	181.0	180.4	179.8	179.1	178.5	177.9

The long-term growth-rate used in this analysis is the 3.9 percent average of the years 2024-2028. They are shaded above.

Different macroeconomic assumptions address the energy implications of the uncertainty—



--inherent in future economic growth trends

- The Reference, High Economic Growth, and Low Economic Growth cases illustrate three possible paths for U.S. economic growth. The High Economic Growth case assumes higher **annual growth and lower annual inflation rates** (2.6% and 2.2%, respectively) than in the **Reference case** (2.0% and 2.3%, respectively), while the Low Economic Growth case assumes lower annual growth and higher annual inflation rates (1.5% and 3.7%, respectively) than in the Reference case.
- In general, higher economic growth (as measured by gross domestic product) leads to greater investment, increased consumption of goods and services, more trade, and greater energy consumption.
- Differences among the cases reflect different expectations for growth in population, labor force, capital stock, and productivity. These changes affect growth rates in household formation, industrial activity, and amounts of travel, as well as investment decisions about energy production.
- All three economic growth cases assume smooth economic growth and do not anticipate business cycles or large economic shocks.

Chapter 9: Discounted Cash Flow Application

growth than to insert a constant growth rate into the plain vanilla DCF equation. The practical challenge is to establish a reasonable growth path for future dividends. As previously discussed, an excellent starting point is security analysts' earnings growth forecasts (available from IBES, Zacks, Reuters, First Call) as a proxy for dividend forecasts. These forecasts are typically for the next five years. From the standpoint of the DCF model that extends into perpetuity, this forecasting horizon may be too short. For example, it is quite possible that a company's dividends can grow faster than the general economy for five years, but it is quite implausible for such growth to continue into perpetuity. The two-stage DCF model is based on the premise that investors expect the growth rate for the utilities to be equal to the company-specific growth rates for the next 5 years, let us say, (Stage 1 Growth), and to converge to an expected steady-state long-run rate of growth from year 6 onward (Stage 2 Growth). For example, it is quite plausible that near-term DCF growth estimates for a given company are unduly high and unsustainable over long periods, and that such growth rates are expected to decline toward a lower long-run level over time. Another example of this situation is that of companies that operate in a relatively undeveloped industry (e.g. wholesale power generation) or companies that are experiencing very high growth rates. Here again, the assumption of a constant perpetual growth rate may not be reasonable.

Blended Growth Approach

One way to account for the two stages of growth is to modify the single-stage DCF model by specifying the growth rate as a weighted average of short-term and long-term growth rates. The blended growth rate is calculated as a weighted average giving two-thirds weight to the analysts' five-year growth projections (Zacks, IBES, etc.) and one-third to historical long-term growth of the economy as a whole and/or the long-range projections of growth in Gross Domestic Product (GDP) projected for the very long term. FERC has adopted such a method in the past for determining the return on equity for gas and oil utilities.

To illustrate, two-stage DCF estimates for a group of widely traded dividend-paying diversified natural gas producers are shown on Table 9-5. Column 1 shows the spot dividend yield for each company. Column 2 shows the analyst consensus growth forecast for the next five years for each company, and column 3 shows the long-range GDP forecast of 6.5% for the U.S. economy at that time. Column 4 computes the weighed average growth, giving 2/3 weight to column 1 and 1/3 weight to column 2. Averages are shown at the bottom of the table. Adding the average blended growth rate of 9.02% to the average expected dividend yield of 2.83% shown at the bottom of Column 6 produces an estimate of equity costs of 11.85% for the group, unadjusted for flotation costs. Allowance for flotation costs to the results of Column 7 brings the return on equity estimate to 12.00%, shown in Column 7. Note

ROE and ROR Analysis for Columbia Gas Pennsylvania Comparison Group
Discounted Cash Flow Constant-Growth Model Analysis
Common Equity Share Prices April 23, May 18, 2018
Zacks, Yahoo! Finance, and Value Line EPS Growth- Rate Estimates--March-May 2018

Docket No. R-2018-2647577
 Exhibit MFG-10, Schedule 6

	A	B	C	D	E	F
	Zacks EPS Growth Rate (%)	Yahoo! Finance EPS Growth Rates (%)	Value Line EPS Growth Rates (%)	Zacks-Yahoo! Finance-Value Line Mean Growth Rate (%)	Average of Closing Prices	Annualized Dividend
Amos Energy	7.00%	7.00%	7.50%	7.17%	\$ 86.95	\$ 1.98
New Jersey Resources	6.00%	6.00%	9.50%	7.17%	\$ 42.33	\$ 1.09
NiSource, Inc.	5.49%	5.55%	18.00%	5.52%	\$ 24.68	\$ 0.78
Northwest Natural Gas	4.33%	4.00%	7.00%	5.11%	\$ 60.81	\$ 1.89
ONE Gas, Inc.	5.70%	5.50%	8.00%	6.40%	\$ 71.27	\$ 1.84
South Jersey Industries	12.40%	6.00%	6.50%	8.30%	\$ 31.46	\$ 1.12
Southwest Gas	NA	4.00%	7.50%	5.75%	\$ 72.80	\$ 2.08
Spire, Inc.	3.68%	4.10%	9.00%	5.59%	\$ 71.10	\$ 2.25

	Mean
	6.37%
	9.13%
	6.38%
	w/o NiSource
	6.50%

	G	H	I	J	K	L	M
	Dividend Yield (Rate/Price)	Expected Dividend Yield	CBO Long-Run Projected Growth Rate	EIA Long-Run Projected Growth Rate	Average Growth Rate	Weighted Projected Growth Rate	Multistage Weighted Cost of Equity
Amos Energy	2.28%	2.36%	3.9%	4.3%	4.10%	4.1%	8.50%
New Jersey Resources	2.58%	2.67%	3.90%	4.30%	4.10%	6.14%	8.82%
NiSource, Inc.	3.16%	3.25%	3.90%	4.30%	4.10%	5.05%	8.29%
Northwest Natural Gas	3.11%	3.19%	3.90%	4.30%	4.10%	4.77%	7.96%
ONE Gas, Inc.	2.58%	2.66%	3.90%	4.30%	4.10%	5.63%	8.30%
South Jersey Industries	3.56%	3.71%	3.90%	4.30%	4.10%	6.90%	10.61%
Southwest Gas	2.86%	2.94%	3.90%	4.30%	4.10%	5.20%	8.14%
Spire, Inc.	3.16%	3.25%	3.90%	4.30%	4.10%	5.10%	8.35%
Mean	2.91%	3.00%				5.62%	8.62%
	w/o NiSource	2.88%			w/o NiSource	5.70%	8.67%

A: Zacks website, May 22, 2018. See Workpapers.
 B: Yahoo! Finance website; May 22, 2018. See Workpapers.
 C: Value Line Investment Survey; March 2, 2018. See Workpapers.
 E: Yahoo! Finance website; April 23-May 18, 2018 (20 trading days).
 F: Higher of Value Line Investment Survey; March 2, 2018 and Zacks report, May 22, 2018. See Exhibit MFG-9.
 J: Congressional Budget Office, *Budget and Economic Outlook: 2018 to 2028*, April 9, 2018, www.cbo.gov/publication/52801. See Exhibit MFG-10, Schedule 3.
 K: U.S. Energy Information Administration, *Annual Energy Outlook 2018*, Table A20. See Exhibit MFG-10, Schedule 4.

D: $D = (A + B + C) / 3$ G: $G = F * E$ H: $H = G * (1 + (0.5 * J))$ K: $K = (I + J) / 2$ L: $L = ((2/3 * D) + (1/3 * (4.1)))$
 M: $M = H + L$

	1	2	3	4
	Average of Closing Prices			
	November 6, 2017-December 1, 2017; Docket No. PU-17-295, North Dakota Public Service Commission	April 23, 2018-May 18, 2018; Docket No. R-2018-2647577; Pennsylvania Public Utilities Commission	Decrease (2 -1)	Percentage Change from Docket No. PU-17-295 to Docket No. R-2018-2647577 (3/1)
Companies in the Comparison Groups				
Atmos Energy	\$ 89.72	\$ 86.95	\$ (2.77)	-3.09%
New Jersey Resources	\$ 44.14	\$ 42.33	\$ (1.81)	-4.11%
NiSource, Inc.	\$ 27.27	\$ 24.68	\$ (2.59)	-9.51%
Northwest Natural Gas	\$ 67.17	\$ 60.81	\$ (6.36)	-9.47%
ONE Gas, Inc.	\$ 77.26	\$ 71.27	\$ (5.99)	-7.76%
South Jersey Industries	\$ 32.69	\$ 31.46	\$ (1.23)	-3.77%
Southwest Gas	\$ 82.62	\$ 72.80	\$ (9.83)	-11.89%
Spire, Inc.	\$ 78.97	\$ 71.10	\$ (7.86)	-9.96%
			Mean	-7.44%
	5	6	7	8
	Annualized Dividend			
	Docket No. PU-17-295, North Dakota Public Service Commission	Docket No. R-2018-2647577; Pennsylvania Public Utilities Commission	Increase (6 - 5)	Increase in Dividend Yield due to Annualized Dividend Change (7/2)
Companies in the Comparison Groups				
Atmos Energy	\$ 1.98	\$ 1.98	\$ -	0.00%
New Jersey Resources	\$ 1.09	\$ 1.09	\$ -	0.00%
NiSource, Inc.	\$ 0.70	\$ 0.78	\$ 0.08	0.32%
Northwest Natural Gas	\$ 1.89	\$ 1.89	\$ -	0.00%
ONE Gas, Inc.	\$ 1.68	\$ 1.84	\$ 0.16	0.22%
South Jersey Industries	\$ 1.09	\$ 1.12	\$ 0.03	0.10%
Southwest Gas	\$ 1.98	\$ 2.08	\$ 0.10	0.14%
Spire, Inc.	\$ 2.25	\$ 2.25	\$ -	0.00%
	9	10	11	12
	Dividend Yield			
	Docket No. PU-17-295, North Dakota Public Service Commission (5/1)	Docket No. R-2018-2647577; Pennsylvania Public Utilities Commission (6/2)	Total Increase (10 - 9)	Increase with Difference Due to Annualized Dividend Change Increases Removed (11 - 8)
Companies in the Comparison Groups				
Atmos Energy	2.21%	2.28%	0.07%	0.07%
New Jersey Resources	2.47%	2.58%	0.11%	0.11%
NiSource, Inc.	2.57%	3.16%	0.59%	0.27%
Northwest Natural Gas	2.81%	3.11%	0.29%	0.29%
ONE Gas, Inc.	2.17%	2.58%	0.41%	0.18%
South Jersey Industries	3.33%	3.56%	0.23%	0.13%
Southwest Gas	2.40%	2.86%	0.46%	0.32%
Spire, Inc.	2.85%	3.16%	0.32%	0.32%
			Mean	0.21%

Daily Treasury Yield Curve Rates (Percent)

April 23, 2018-May 18, 2018

Date	1 mo	3 mo	6 mo	1 yr	2 yr	3 yr	5 yr	7 yr	10 yr	20 yr	30 yr
4/23/2018	1.69	1.87	2.04	2.25	2.49	2.64	2.83	2.94	2.98	3.05	3.15
4/24/2018	1.70	1.87	2.05	2.25	2.48	2.63	2.83	2.95	3.00	3.08	3.18
4/25/2018	1.65	1.85	2.03	2.26	2.49	2.64	2.84	2.97	3.03	3.12	3.21
4/26/2018	1.62	1.82	2.02	2.25	2.49	2.63	2.82	2.95	3.00	3.08	3.18
4/27/2018	1.62	1.82	2.02	2.24	2.49	2.62	2.80	2.92	2.96	3.03	3.13
4/30/2018	1.65	1.87	2.04	2.24	2.49	2.62	2.79	2.91	2.95	3.01	3.11
5/1/2018	1.68	1.85	2.05	2.26	2.50	2.66	2.82	2.93	2.97	3.03	3.13
5/2/2018	1.69	1.84	2.03	2.24	2.49	2.64	2.80	2.92	2.97	3.04	3.14
5/3/2018	1.68	1.84	2.02	2.24	2.49	2.62	2.78	2.90	2.94	3.02	3.12
5/4/2018	1.67	1.84	2.03	2.24	2.49	2.63	2.78	2.90	2.95	3.02	3.12
5/7/2018	1.69	1.86	2.05	2.25	2.49	2.64	2.78	2.90	2.95	3.02	3.12
5/8/2018	1.69	1.87	2.05	2.26	2.51	2.66	2.81	2.93	2.97	3.04	3.13
5/9/2018	1.68	1.88	2.05	2.27	2.54	2.68	2.84	2.96	3.00	3.07	3.16
5/10/2018	1.69	1.90	2.05	2.27	2.54	2.69	2.83	2.94	2.97	3.04	3.12
5/11/2018	1.68	1.92	2.06	2.28	2.54	2.69	2.84	2.94	2.97	3.03	3.10
5/14/2018	1.70	1.93	2.09	2.28	2.55	2.70	2.85	2.96	3.00	3.06	3.13
5/15/2018	1.69	1.92	2.09	2.31	2.58	2.75	2.92	3.04	3.08	3.14	3.20
5/16/2018	1.69	1.92	2.09	2.32	2.58	2.76	2.94	3.05	3.09	3.16	3.21
5/17/2018	1.70	1.92	2.10	2.32	2.57	2.75	2.94	3.07	3.11	3.19	3.25
5/18/2018	1.68	1.91	2.09	2.32	2.55	2.71	2.90	3.02	3.06	3.14	3.20
										Mean	3.15

Source: <https://www.treasury.gov/resource-center/data-chart-center/interest-rates/Pages/TextView.aspx?data=yieldAll>

**ROE and ROR Analysis for Columbia Gas Pennsylvania
 Capital Asset Pricing Model (CAPM) Analysis
 Beta calculation for Comparison Group**

**Docket No. R-2018-2647577
 Exhibit MFG-11, Schedule 2**

Company Name	Value Line Betas-- Comparison Group	Value Line Betas-- Comparison Group w/o NiSource	Value Line Betas-- Comparison Group w/o South Jersey Industries
Atmos Energy	0.70	0.70	0.70
New Jersey Resources	0.80	0.80	0.80
NiSource, Inc.	0.60		0.60
Northwest Natural Gas	0.70	0.70	0.70
ONE Gas, Inc.	0.70	0.70	0.70
South Jersey Industries	0.80	0.80	
Southwest Gas	0.80	0.80	0.80
Spire, Inc.	0.70	0.70	0.70
Mean	0.73	Mean	0.74
			0.71

Value Line betas taken from March 2, 2018 Investment Survey Research Reports.



File at the front of the
Ratings & Reports
binder. Last week's
Summary & Index
should be removed.

May 18, 2018

TABLE OF SUMMARY & INDEX CONTENTS		Summary & Index Page Number
Industries, in alphabetical order		1
Stocks, in alphabetical order		2-23
Noteworthy Rank Changes		24-25
SCREENS		
Industries, in order of Timeliness Rank	24	
Timely Stocks in Timely Industries	25-26	
Timely Stocks (1 & 2 for Performance)	27-29	
Conservative Stocks (1 & 2 for Safety)	30-31	
Highest Dividend Yielding Stocks	32	
Stocks with High 3- to 5-year Price Potential	32	
Biggest "Free Flow" Cash Generators	33	
Best Performing Stocks last 13 Weeks	33	
Worst Performing Stocks last 13 Weeks	33	
Widest Discounts from Book Value	34	
Stocks with Lowest P/Es		35
Stocks with Highest P/Es		35
Stocks with Highest Annual Total Returns		36
Stocks with Highest 3- to 5-year Dividend Yield		36
High Returns Earned on Total Capital		37
Bargain Basement Stocks		37
Untimely Stocks (5 for Performance)		38
Highest Dividend Yielding Non-utility Stocks		38
Highest Growth Stocks		39

The Median of Estimated
PRICE-EARNINGS RATIOS
of all stocks with earnings

17.8

26 Weeks Ago	Market Low	Market High
19.6	10.3	21.1

The Median of Estimated
DIVIDEND YIELDS
(next 12 months) of all dividend
paying stocks under review

2.1%

26 Weeks Ago	Market Low	Market High
2.0%	4.0%	1.8%

The Estimated Median Price
APPRECIATION POTENTIAL
of all 1700 stocks in the Value Line
universe in the hypothesized
economic environment 3 to 5 years hence

45%

26 Weeks Ago	Market Low	Market High
30%	185%	20%

ANALYSES OF INDUSTRIES IN ALPHABETICAL ORDER WITH PAGE NUMBER
Numeral in parenthesis after the industry is rank for probable performance (next 12 months).

PAGE		PAGE		PAGE		PAGE	
Advertising (31)	2388	Electric Utility (West) (81)	2222	Investment Co.(Foreign) (--)	419	Railroad (36)	339
Aerospace/Defense (43)	701	Electronics (50)	1317	Machinery (22)	1701	R.E.I.T. (93)	1510
Air Transport (41)	301	Engineering & Const (82)	1231	Maritime (97)	330	Recreation (23)	2301
Apparel (71)	2101	Entertainment (40)	2326	Medical Services (7)	795	Reinsurance (96)	2022
*Automotive (44)	101	Entertainment Tech (90)	2008	*Med Supp Invasive (51)	169	Restaurant (59)	351
Auto Parts (10)	973	Environmental (49)	409	*Med Supp Non-Invasive (42)	195	Retail Automotive (14)	2118
Bank (18)	2501	Financial Svcs. (Div.) (16)	2535	Metal Fabricating (68)	730	Retail Building Supply (26)	1137
Bank (Midwest) (21)	777	Food Processing (66)	1901	Metals & Mining (Div.) (65)	1579	Retail (Hardlines) (55)	2164
Beverage (38)	1965	Foreign Electronics (28)	1984	Natural Gas Utility (17)	547	Retail (Softlines) (52)	2198
Biotechnology (87)	830	Funeral Services (4)	1837	Natural Gas (Div.) (67)	525	Retail Store (48)	2134
Brokers & Exchanges (20)	1793	Furn/Home Furnishings (74)	1147	Newspaper (80)	2381	Retail/Wholesale Food (57)	1945
Building Materials (19)	1101	Healthcare Information (77)	822	Office Equip/Supplies (75)	1410	Semiconductor (9)	1347
Cable TV (62)	1019	*Heavy Truck & Equip (30)	151	Oil/Gas Distribution (60)	609	Semiconductor Equip (1)	1380
Chemical (Basic) (64)	1595	Homebuilding (5)	1123	Oilfield Svcs/Equip. (94)	2418	Shoe (61)	2155
Chemical (Diversified) (3)	2442	Hotel/Gaming (25)	2348	Packaging & Container (32)	1173	Steel (13)	741
Chemical (Specialty) (15)	559	Household Products (86)	1188	Paper/Forest Products (12)	1163	Telecom. Equipment (88)	939
Computers/Peripherals (37)	1394	Human Resources (11)	1634	Petroleum (Integrated) (56)	501	Telecom. Services (76)	918
Computer Software (27)	2587	Industrial Services (54)	378	Petroleum (Producing) (46)	2398	Telecom. Utility (84)	1027
Diversified Co. (33)	1738	Information Services (24)	433	Pharmacy Services (2)	965	Thrift (83)	1501
Drug (69)	1605	IT Services (8)	2610	Pipeline MLPs (79)	1247, 619	Tobacco (95)	1992
E-Commerce (29)	1814	Insurance (Life) (34)	1551	Power (85)	1214	Toiletries/Cosmetics (58)	1008
Educational Services (63)	1999	Insurance (Prop/Cas.) (53)	756	Precious Metals (72)	1563	Trucking (35)	318
Electrical Equipment (39)	1301	Internet (70)	2632	*Precision Instrument (47)	112	Water Utility (91)	1783
Electric Util. (Central) (45)	901	Investment Banking (6)	1806	Public/Private Equity (92)	2657	Wireless Networking (78)	593
*Electric Utility (East) (73)	138	Investment Co. (--)	1203	Publishing (89)	2374		

*Reviewed in this week's issue.

In three parts: This is Part 1, the Summary & Index. Part 2 is Selection & Opinion. Part 3 is Ratings & Reports. Volume LXXIII, No. 40.
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Index to Stocks

Prices quoted are as of May 8, 2018.

All shares are traded on the New York Stock Exchange except where noted.

PAGE NUMBERS

Bold type refers to Ratings and Reports

RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price			Safety		Technical		3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings to 12-31-18	(f) Est'd Div'd next 12 mos.	LATEST RESULTS					Do Options Trade?		
		Time	High	Low	Timeliness	Stability	Beta	Qtr. Ended						Earns. Per sh.	Year Ago	Qtr. Ended	Latest Div'd	Year Ago			
1702 AAR Corp.	AAR	30.50	4	3	2	1.30	40-60	(30-95%)	22.6	0.9	1.35	26	22	3/31	♦0.08	.19	3/31	NIL	NIL	YES	
702 AAR Corp.	AIR	46.45	3	3	3	1.20	40-55	(N-20%)	21.9	0.6	2.12	30	43	2/28	♦.49	.38	6/30	0.75	0.75	YES	
1966 AB InBev ADR	BUD	98.24	-	1	-	1.05	110-135	(10-35%)	20.7	4.5	4.75	4.40	36	12/31	♦.63	.21	3/31	NIL	NIL	YES	
1739 ABB Ltd ADR	ABB	23.92	4	2	3	1.10	30-40	(25-65%)	19.9	3.5	1.26	.83	33	3/31	♦.27	.34	3/31	NIL	NIL	YES	
379 ABM Industries Inc.	ABM	30.42	4	2	3	.85	55-75	(80-145%)	15.9	2.3	1.91	.70	54	1/31	♦.26	.36	6/30	1.75	1.17	YES	
451 ACCO Brands	ACCO	11.90	1	3	2	1.30	18-30	(50-150%)	8.8	2.0	1.35	.24	75	3/31	♦.08	.04	6/30	.06	NIL	YES	
2611 ACI Worldwide	ACRW	23.50	▼	4	3	1.10	25-40	(5-70%)	23.5	NIL	1.00	NIL	8	12/31	♦.28	.56	3/31	NIL	NIL	YES	
1215 AES Corp.	AES	11.73	3	3	4	1.15	15-25	(35-115%)	10.7	4.4	1.10	.52	85	3/31	♦1.03	d.04	6/30	.13	.12	YES	
152 AGCO Corp.	AGCO	63.02	3	3	2	1.05	80-125	(25-100%)	16.8	1.0	3.75	.60	30	3/31	♦.35	d.02	6/30	.15	.14	YES	
2382 A.H. Belo	AHC	4.95	-	4	-	.90	8-13	(60-165%)	11.0	6.5	.45	.32	80	3/31	♦.19	d.20	6/30	♦.08	.08	YES	
742 AK Steel Holding	AKS	4.44	3	5	3	2.00	8-14	(80-215%)	8.1	NIL	NIL	.13	3/31	♦.09	.19	3/31	NIL	NIL	YES		
2302 AMC Entertainment Hldgs.	AMC	16.80	4	3	5	1.05	25-35	(50-110%)	84.0	4.8	.20	.80	23	3/31	♦1.14	.07	6/30	♦.20	.20	YES	
2327 AMC Networks	AMCX	52.78	2	3	4	1.15	145-220	(175-315%)	6.4	NIL	8.25	NIL	40	12/31	♦1.68	1.30	3/31	NIL	NIL	YES	
1635 AMN Healthcare	AMN	52.10	▲	3	3	1.05	60-90	(15-75%)	17.1	NIL	3.04	NIL	11	3/31	♦.87	.65	3/31	NIL	NIL	YES	
1564 ASA Gold & Precious	ASA	10.64	-	3	1	.90	16-25	(50-135%)	NMF	0.4	NMF	0.04-NIL	72	2/28	♦11.84(q)	13.73(q)	6/30	.02	.02	YES	
1644 ASGN Inc.	ASGN	83.06	2	3	2	1.40	60-90	(N-10%)	28.6	NIL	2.90	NIL	11	3/31	♦.55	.42	3/31	NIL	NIL	YES	
919 AT&T Inc.	T	31.70	3	1	3	.75	50-60	(60-90%)	9.3	6.3	3.42	2.01	76	3/31	♦.85	.74	6/30	.50	.49	YES	
940 A10 Networks	ATEN	6.32	3	4	4	1.65	8-12	(25-90%)	NMF	NIL	d.20	NIL	88	9/30	♦0.04	d.07	3/31	NIL	NIL	YES	
920 ATN International	ATNI	51.98	4	3	3	.80	60-90	(15-75%)	NMF	1.3	.05	.68	76	3/31	♦0.32	.53	6/30	.17	.34	YES	
1318 AVX Corp.	AVX	15.71	4	3	3	1.10	20-30	(25-90%)	17.5	3.0	.90	.47	50	3/31	♦.19	.20	3/31	.115	.11	YES	
2135 Aaron's Inc.	AAN	39.33	3	3	2	1.05	55-85	(40-115%)	12.0	0.3	3.29	.12	48	3/31	♦.81	.80	6/30	.03	.028	YES	
196 Abaxis, Inc.	ABAX	68.27	3	3	3	1.05	70-100	(5-45%)	47.4	1.1	1.44	.72	42	3/31	♦.42	.33	6/30	.18	.14	YES	
197 Abbott Labs.	ABT	58.71	2	1	2	1.10	65-75	(10-30%)	20.6	1.9	2.85	1.12	42	3/31	♦.59	.48	6/30	.28	.265	YES	
1419 1606 AbbVie Inc.	ABBV	99.40	1	3	3	1.15	125-185	(25-85%)	12.9	3.9	7.73	3.84	69	3/31	♦1.87	1.28	6/30	♦.96	.64	YES	
1036 2199 Abercrombie & Fitch	ANF	25.99	3	4	3	1.25	30-50	(15-90%)	43.3	3.1	.60	.80	52	1/31	♦1.33	.71	3/31	.20	.20	YES	
420 Aberdeen Australia Fd (ASE)	IAX	6.02	-	3	2	.95	9-13	(50-115%)	NMF	2.5	NMF	.15	-	4/30	♦6.18(q)	6.45(q)	3/31	.01	.067	YES	
1204 Aberdeen Asia-Pac. Fd (ASE)	FAX	4.47	-	4	2	.70	4-7	(N-55%)	NMF	9.4	NMF	.42	-	10/31	♦5.43(q)	5.69(q)	3/31	.14	.14	YES	
421 Aberdeen Japan Equity	JEQ	9.04	-	3	3	1.00	11-16	(20-75%)	NMF	0.6	NMF	.05	-	4/30	♦10.14(q)	9.13(q)	3/31	.059	.069	YES	
170 ABIOMED Inc.	ABMD	347.38	2	3	3	1.10	▲ 290-435	(N-25%)	NMF	NIL	3.31	NIL	51	3/31	♦.80	.33	3/31	NIL	NIL	YES	
2236 941 Acacia Communications(NDQ)	ACIA	30.97	-	3	-	NMF	70-110	(125-255%)	21.8	NIL	1.42	NIL	88	3/31	♦d.23	.86	3/31	NIL	NIL	YES	
2612 Accenture Plc	ACN	151.94	2	1	3	1.00	150-185	(N-20%)	20.9	1.9	7.28	2.90	8	2/28	♦1.58	1.33	6/30	1.33	1.21	YES	
2009 Actavision Blizzard (NDQ)	ATVI	69.61	3	3	3	1.10	45-65	(N-N%)	38.0	0.5	1.83	.34	90	3/31	♦.85	.56	6/30	.34	.30	YES	
153 Actuant Corp.	ATU	23.80	4	3	4	1.35	30-45	(25-90%)	21.4	0.2	1.11	.04	30	2/28	♦.13	.11	3/31	NIL	NIL	YES	
1843 1302 Acuity Brands	AYI	112.78	3	3	3	1.25	215-325	(90-190%)	11.9	0.5	9.50	.52	39	2/28	♦1.89	1.77	3/30	.13	.13	YES	
1205 Adams Divers. Equity Fd	ADX	15.00	-	2	3	.95	20-25	(35-65%)	NMF	1.5	NMF	.23	-	12/31	♦17.55(q)	15.22(q)	3/31	.04	.04	YES	
974 Adient plc	ADNT	56.62	-	3	-	NMF	80-120	(40-110%)	7.3	1.9	7.79	1.10	10	3/31	♦1.85	2.48	6/30	.275	NIL	YES	
2588 Adobe Systems (NDQ)	ADBE	234.56	2	2	3	1.10	270-360	(15-55%)	47.9	NIL	4.90	NIL	27	2/28	♦1.17	.80	3/31	NIL	NIL	YES	
2000 Adialem Global Educ.	ATGE	46.10	5	3	2	1.10	40-60	(N-30%)	14.9	NIL	3.09	NIL	63	3/31	♦.72	.70	3/31	NIL	NIL	YES	
942 ADTRAN, Inc. (NDQ)	ADTN	15.30	5	3	5	.90	25-35	(65-130%)	22.2	2.4	.69	.36	88	3/31	♦.19	.14	6/30	.09	.09	YES	
641 2119 Advance Auto Parts	AAP	116.80	4	3	3	1.05	180-270	(55-130%)	16.5	0.2	7.10	.24	14	12/31	♦.77	1.00	6/30	.06	.06	YES	
1348 Advanced Energy (NDQ)	AEIS	64.32	1	3	3	1.20	85-125	(30-95%)	12.4	NIL	5.20	NIL	9	3/31	♦1.34	1.04	3/31	NIL	NIL	YES	
2454 1349 Advanced Micro Dev. (NDQ)	AMD	11.61	3	5	4	1.55	8-15	(N-30%)	33.2	NIL	.35	NIL	9	3/31	♦.11	d.04	3/31	NIL	NIL	YES	
560 AdvanSix Inc.	ASIX	35.12	-	3	-	NMF	45-65	(30-85%)	13.3	NIL	2.65	NIL	15	3/31	♦.37	.88	3/31	NIL	NIL	YES	
1232 AECOM	ACM	35.40	▼	4	3	2	1.40	45-70	(25-100%)	13.5	NIL	2.63	NIL	82	3/31	♦.67	.89	3/31	NIL	NIL	YES
1102 Aegion Corp. (NDQ)	AEGN	24.50	5	3	3	1.35	35-50	(45-105%)	18.1	NIL	1.35	NIL	19	12/31	♦.20	.44	3/31	NIL	NIL	YES	
1552 AEGON	AEG	7.04	4	3	3	1.25	8-12	(15-70%)	7.0	4.3	1.00	.30	34	12/31	♦.55	.22	3/31	NIL	NIL	YES	
2536 AerCap Hldgs. NV	AER	54.74	3	3	3	1.35	65-100	(20-85%)	8.1	NIL	6.75	NIL	16	3/31	♦1.72	1.48	3/31	NIL	NIL	YES	
1740 Aerojet Rocketdyne	AJRD	27.41	2	3	2	1.10	30-45	(10-65%)	26.1	NIL	1.05	NIL	33	3/31	♦.18	.06	3/31	NIL	NIL	YES	
2033 703 AeroVironment (NDQ)	AVAV	60.97	3	3	3	1.15	35-55	(N-N%)	NMF	NIL	.34	NIL	43	1/31	♦.09	d.09	3/31	NIL	NIL	YES	
796 Aetna Inc.	AET	170.83	-	2	-	.95	190-260	(10-50%)	15.7	1.2	10.85	2.00	7	3/31	♦3.19	2.71	6/30	.50	.50	YES	
2537 Affiliated Managers	AMG	163.28	3	3	1	1.45	210-310	(30-90%)	17.7	0.9	9.20	1.40	16	3/31	♦2.77	2.13	6/30	.30	.20	YES	
1553 Altac Inc.	AFL	44.82	3	2	3	1.00	55-75	(25-65%)	13.0	2.4	3.45	1.05	34	3/31	♦1.05	.84	6/30	.26	.215	YES	
113 Agilent Technologies	A	67.37	3	3	3	1.10	75-115	(10-70%)	24.3	0.9	2.77	.60	47	1/31	♦.66	.53	6/30	.149	.132	YES	
1565 Agnico Eagle Mines	AEM	43.14	4	3	4	.60	65-95	(50-120%)	43.1	1.0	1.00	.44	72	3/31	♦.15	.28	6/30	.11	.10	YES	
2443 Air Products & Chem.	APD	163.51	3	1	2	1.05	185-225	(15-40%)	21.9	2.7	7.46	4.40	3	3/31	♦1.71	1.43	6/30	▲ 1.10	.85	YES	

▲ Supplementary Report in this week's issue.
▲ Arrow indicates the direction of a change. When it appears with the Latest Dividend, the arrow signals that a change in the regular payment rate has occurred in the latest quarter.
For Timeliness, 3-5 year Target Price Range, or Estimated Earnings 12 months to 12-31-18, the arrow indicates a change since the preceding week. When a diamond ♦ (indicating a new figure) appears alongside the latest quarterly earnings results, the rank change probably was primarily caused by the earnings report. In other cases, the change is due to the dynamics of the ranking system and could simply be the result of the improvement or weakening of other stocks.

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ROE and ROR Analysis Columbia Gas of PA
CAPM/ECAPM Analysis
Value Line Projected Growth Rate

Docket No. R-2018-2647577
Exhibit MFG-11, Schedule 3

May 18, 2018

SUMMARY AND INDEX • THE VALUE LINE INVESTMENT SURVEY

Page 3

AI-AP

PAGE NUMBERS

Bold type refers to Ratings and Reports

RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price			Technical			3-5 year Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings to 12-31-18	(f) Est'd Div'd next 12 mos.	LATEST RESULTS					
		Timeliness	Safety	Beta	Qtr. Ended	Earnings Per sh.	Year Ago						Qtr. Ended	Latest Div'd	Year Ago	Year Ago		
																	Qtr. Ended	Earnings Per sh.
2538 Aircastle Ltd.	AYR	21.58	2 3 4	1.35	35- 50	(60-130%)	8.8	5.2	2.45	1.12	16	3/31	♦.73	54	6/30	♦.26	26	YES
1815 Akamai Technologies (NDQ)	AKAM	73.68	4 3 3	1.20	110- 165	(50-125%)	37.8	NIL	1.95	NIL	29	3/31	.31	46	3/31	NIL	NIL	YES
1607 Akorn, Inc. (NDQ)	AKRX	12.65	- 3 -	1.20	16- 25	(25-100%)	84.3	NIL	1.15	NIL	69	12/31	d.52	26	3/31	NIL	NIL	YES
302 Alaska Air Group	ALK	61.63	3 3 4	1.15	85- 130	(40-110%)	10.3	2.1	6.00	1.28	41	3/31	.14	1.05	6/30	♦.32	.30	YES
1703 Albany Intl 'A'	AIN	60.80	4 3 1	1.15	60- 85	(N-40%)	29.7	1.1	2.05	68	22	3/31	♦.54	46	6/30	.17	.17	YES
2444 Albemarle Corp.	ALB	100.72	2 3 5	1.30	120- 180	(20-80%)	19.4	1.3	5.20	1.34	3	12/31	1.26	5.30	9/30	♦.335	.32	YES
1580 Alcoa Corp.	AA	53.76	- 3 -	NMF	55- 70	(N-30%)	12.3	NIL	4.37	NIL	65	3/31	.77	63	3/31	NIL	NIL	YES
1608 Alexion Pharm. (NDQ)	ALXN	114.95	3 3 4	1.20	135- 205	(15-80%)	24.2	NIL	4.75	NIL	69	3/31	1.11	75	3/31	NIL	NIL	YES
2633 Alibaba Group Hldg Ltd.	BABA	196.31	2 3 3	1.05	185- 280	(N-45%)	35.6	NIL	5.51	NIL	70	3/31	♦.91	63	3/31	NIL	NIL	YES
198 Align Techn. (NDQ)	ALGN	265.46	2 3 3	1.20	230- 345	(N-30%)	55.3	NIL	4.80	NIL	42	3/31	1.17	85	3/31	NIL	NIL	YES
1843 1946 All Couche-Tard (TSE)	ATDB.TO	54.50b	3 3 3	1.20	110- 165	(100-205%)	14.7	0.7	3.72	40	57	1/31	1.03(b)	69(b)	6/30	.09(b)	.09(b)	YES
831 Alkermes plc (NDQ)	ALKS	44.19	3 3 3	1.35	65- 95	(45-115%)	NMF	NIL	NIL	NIL	87	3/31	d.09	d.18	3/31	NIL	NIL	YES
757 Allegheny Corp.	Y	573.09	3 1 1	95	665- 810	(15-40%)	17.9	NIL	32.00	NIL	53	3/31	♦.814	9.67	3/31	NIL	NIL	YES
1581 Allegheny Techn. (NDQ)	ATI	28.42	3 3 3	1.95	35- 60	(25-110%)	20.7	NIL	1.37	NIL	65	3/31	.32	16	3/31	NIL	NIL	YES
303 Allegiant Travel (NDQ)	ALGT	162.40	3 3 1	85	200- 300	(25-100%)	14.6	1.7	11.10	2.80	41	3/31	3.42	2.50	6/30	70	70	YES
1319 Allergan plc	ALLE	75.89	3 3 1	1.10	95- 145	(25-90%)	17.4	1.1	4.35	84	50	3/31	.80	73	6/30	.21	.16	YES
1609 Allergan plc	AGN	143.80	3 3 3	1.05	230- 340	(60-135%)	9.2	2.0	15.70	2.88	69	3/31	3.74	3.73	6/30	♦.72	70	YES
902 ALLETE	ALE	76.96	3 2 3	.75	55- 75	(N- N%)	22.6	2.9	3.40	2.27	45	3/31	.99	97	6/30	56	535	YES
434 Alliance Data Sys.	ADS	201.75	3 3 3	1.15	360- 540	(80-170%)	8.8	1.1	22.95	2.28	24	3/31	4.44	3.90	6/30	.57	.52	YES
1582 Alliance Resource (NDQ)	ARLP	18.00	4 3 3	1.15	45- 65	(50-260%)	7.7	11.6	2.35	2.09	65	3/31	.55	1.10	6/30	♦.515	438	YES
2539 AllianceBernstein Hldg.	AB	26.90	3 3 2	1.20	30- 45	(10- 65%)	10.8	7.7	2.50	2.07	16	3/31	.60	46	6/30	♦.73	46	YES
903 Alliant Energy	LNT	41.72	3 2 3	.70	35- 45	(N-10%)	19.9	3.2	2.10	1.34	45	3/31	♦.52	44	6/30	♦.335	315	YES
975 Allison Transmission	ALSN	42.20	2 3 3	1.00	65- 95	(55-125%)	12.6	1.4	3.35	60	10	3/31	1.08	52	3/31	.15	.15	YES
643 823 Allscripts Healthcare (NDQ)	MDRX	12.25	3 3 3	1.00	17- 25	(40-105%)	15.9	NIL	.77	NIL	77	3/31	♦.16	13	3/31	NIL	NIL	YES
758 Allstate Corp.	ALL	95.71	2 1 3	85	150- 180	(55-90%)	10.3	1.9	9.26	1.84	53	3/31	2.96	1.64	6/30	♦.46	37	YES
2502 Ally Financial	ALLY	26.57	1 3 3	1.20	45- 65	(70-145%)	8.9	2.0	3.00	52	18	3/31	.68	48	6/30	.13	.12	YES
832 Alnylam Pharm. (NDQ)	ALNY	96.14	▼ 4 1	1.55	110- 180	(15- 55%)	NMF	NIL	64.95	NIL	87	3/31	♦d1.41	d1.25	3/31	NIL	NIL	YES
2634 Alphabet Inc. (NDQ)	GOOG	1053.91	2 1 3	1.10	1320-1615	(25- 55%)	27.2	NIL	38.60	NIL	70	3/31	9.09	7.73	3/31	NIL	NIL	YES
1036 1704 Altra Industrial Moton (NDQ)	AIMC	42.55	- 3 -	1.30	40- 60	(N-40%)	19.3	1.6	2.20	68	22	3/31	.31	36	9/30	.17	.17	YES
1993 Altria Group	MO	55.27	3 2 3	.70	80- 110	(45-100%)	13.8	5.1	4.00	2.80	95	3/31	.95	72	6/30	♦.70	61	YES
2635 Amazon.com (NDQ)	AMZN	1592.39	3 3 3	1.15	1210-1810	(N- 15%)	NMF	NIL	9.70	NIL	70	3/31	3.27	1.48	3/31	NIL	NIL	YES
1350 Ambarella, Inc. (NDQ)	AMBA	50.56	5 4 4	1.55	45- 75	(N- 50%)	36.1	NIL	1.40	NIL	9	1/31	.45	.53	3/31	NIL	NIL	YES
2613 Amdocs Inc. (NDQ)	DOX	67.66	3 1 3	80	65- 80	(N-20%)	21.3	1.5	3.17	1.00	8	12/31	.80	66	6/30	♦.25	22	YES
797 Amendsys, Inc. (NDQ)	AMED	71.01	3 3 3	95	60- 85	(N-20%)	23.3	NIL	3.05	NIL	7	3/31	♦.79	47	3/31	NIL	NIL	YES
319 AMERCO (NDQ)	UHAL	335.73	3 3 3	1.05	420- 630	(25-90%)	17.4	NIL	19.26	NIL	35	12/31	2.34	3.33	3/31	NIL	NIL	YES
904 Ameren Corp.	AEE	56.91	2 2 3	.65	45- 60	(N- 5%)	18.7	3.3	3.05	1.87	45	3/31	♦.62	42	6/30	♦.458	44	YES
921 America Movil	AMX	17.36	4 3 1	1.05	20- 30	(15- 75%)	18.5	2.0	.94	35	75	3/31	.29	.53	3/31	NIL	NIL	YES
304 Amer. Airlines (NDQ)	AAL	43.00	3 3 1	1.30	60- 90	(40-110%)	9.2	0.9	4.65	40	41	3/31	.39	.46	6/30	.10	.10	YES
976 Amer. Axle	AXL	15.00	3 4 4	1.30	30- 45	(100-200%)	4.1	NIL	3.70	NIL	50	1/31	♦.98	1.02	3/31	NIL	NIL	YES
2200 Amer. Eagle Outfitters	AEO	19.88	3 3 2	.95	25- 35	(25- 75%)	13.3	2.8	1.50	.55	12	3/31	.44	.39	6/30	♦.138	125	YES
905 Amer. Elec. Power	AEP	67.25	4 1 4	.65	65- 80	(N-20%)	17.2	3.8	3.90	2.54	45	3/31	.92	.94	6/30	.62	.59	YES
2540 Amer. Express	AXP	99.74	3 1 2	1.05	110- 135	(10- 35%)	13.7	1.5	7.26	1.49	16	3/31	1.86	1.34	9/30	♦.35	32	YES
759 Amer. Financial Group	AFG	110.85	▲ 2 2 3	90	100- 140	(N- 25%)	13.5	1.3	8.20	1.40	53	3/31	♦.242	1.69	6/30	♦.35	313	YES
2541 Amer. Intl Group	AIG	53.08	4 3 4	1.05	70- 105	(30-100%)	8.3	2.4	6.40	1.28	16	3/31	♦.104	1.18	6/30	♦.32	32	YES
2303 Amer. Outdoor Brands (NDQ)	AQBC	10.79	4 3 3	90	20- 30	(85-180%)	27.7	NIL	.39	NIL	23	1/31	.04	.57	3/31	NIL	NIL	YES
340 Amer. Railcar (NDQ)	ARII	37.80	▲ 3 3 3	1.45	45- 65	(20- 70%)	14.8	4.2	2.55	1.60	36	3/31	.68	.55	6/30	.40	.40	YES
1784 Amer. States Water	AWR	54.42	▼ 4 2 3	.80	45- 60	(N- 10%)	29.4	2.0	1.85	1.07	91	3/31	♦.29	.34	6/30	♦.255	242	YES
594 Amer. Tower 'A'	AMT	137.01	3 2 2	.95	165- 225	(20- 65%)	42.2	2.3	3.25	3.12	78	3/31	.63	.67	6/30	♦.75	.62	YES
561 Amer. Vanguard Corp.	AVD	21.60	3 3 3	1.15	18- 25	(N- 15%)	33.2	0.4	.65	.08	15	3/31	♦.16	.12	6/30	♦.02	015	YES
1785 Amer. Water Works	AWK	83.01	3 3 3	.65	75- 115	(N-40%)	25.5	2.2	3.25	1.84	91	3/31	♦.59	.52	6/30	♦.455	415	YES
1103 Amer. Woodmark (NDQ)	AMWD	85.45	3 3 1	1.15	125- 185	(45-115%)	14.4	NIL	5.94	NIL	19	1/31	.84	.89	3/31	NIL	NIL	YES
620 AmeriGas Partners	APU	42.21	3 3 5	80	20- 30	(20- 65%)	22.8	9.2	1.85	3.88	79	3/31	♦.144	1.14	6/30	♦.95	.95	YES
2542 Ameriprise Fin'l	AMP	134.31	1 3 2	1.35	215- 320	(60-140%)	9.3	2.7	14.45	3.60	16	3/31	3.91	2.52	6/30	♦.90	83	YES
199 AmerisourceBergen	ABC	84.69	3 3 2	1.00	105- 160	(25- 90%)	12.9	1.8	6.55	1.52	42	3/31	1.94	1.77	3/31	.38	365	YES
1741 AMETEK, Inc.	AME	73.45	2 2 1	1.15	65- 90	(N- 25%)	24.5	0.8	3.00	.56	33	3/31	.78	.60	6/30	♦.14	.09	YES
833 Amgen (NDQ)	AMGN	168.49	3 1 3	1.15	245- 300	(45- 80%)	12.7	3.2	13.22	5.31	87	3/31	3.47	3.15	6/30	1.32	1.15	YES
1381 Amkor Technology (NDQ)	AMKR	8.50	3 4 3	1.30	13- 20	(55-135%)	10.8	NIL	.79	NIL	1	3/31	.04	.04	3/31	NIL	NIL	YES
1320 Amphenol Corp.	APH	85.74	2 2 2	1.00	75- 105	(N- 20%)	24.6	1.1	3.49	.92	50	3/31	.84	.71	3/31	NIL	NIL	YES
760 AmTrust Financial Svcs (NDQ)	AFSI	13.25	- 3 -	95	25- 40	(90-200%)	5.6	5.1	2.35	.68	53	12/31	d1.50	1.0	6/30	♦.23	.16	YES
2399 Anadarko Petroleum	APC	67.04	3 3 3	1.55	60- 90	(N- 35%)	43.3	1.5	1.55	1.00	46	3/31						

ROE and ROR Analysis Columbia Gas of PA
CAPM/ECAPM Analysis
Value Line Projected Growth Rate

Docket No. R-2018-2647577
Exhibit MFG-11, Schedule 3

AP-BI

Page 4

SUMMARY AND INDEX • THE VALUE LINE INVESTMENT SURVEY

May 18, 2018

PAGE NUMBERS

Bold type refers to
Ratings and Reports

RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price		Safety		Technical		3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 12-31-18	(f) Est'd Div'd next 12 mos.	LATEST RESULTS							
		Timeliness	Beta	Timeliness	Beta	Qtr. Ended	Earnings Per sh.						Year Ago	Qtr. Ended	Latest Div'd	Year Ago				
																	Qtr. Ended	Earnings Per sh.	Year Ago	Qtr. Ended
977 Aptiv PLC	APT	93.64	- 3	- 1.20	85- 130	(N- 40%)	20.1	0.9	4.65	88	10	3/31	1.15	.82	6/30	22	.29	YES		
1786 Aqua America	WTR	34.63	▲ 4	2 3	75	40- 50	(N- 45%)	24.7	2.5	1.40	86	91	3/31	◆ 29	28	6/30	205	.19	YES	
1742 ARAMARK Holdings	ARMK	39.25	3	3 2	90	50- 75	(25- 90%)	26.9	1.1	1.46	42	33	3/31	◆ 11	28	6/30	◆ 105	.103	YES	
320 ArcBest Corp.	ARCB	35.40	3	3 3	1.65	60- 90	(70- 155%)	16.9	0.9	2.10	32	35	12/31	◆ 42	29	6/30	.08	.08	YES	
743 ArceclorMittal	MT	34.60	2	4 3	1.65	50- 80	(45- 130%)	8.2	NIL	4.20	NIL	13	12/31	1.01	39	3/31	NIL	NIL	YES	
761 Arch Capital Group	ACGL	79.99	3	1 3	70	95- 120	(20- 50%)	12.8	NIL	6.25	NIL	53	3/31	1.69	1.42	3/31	NIL	NIL	YES	
1902 Archer Daniels Mid'd	ADM	43.95	4	2 2	1.10	45	60	(N- 35%)	16.3	3.0	2.70	1.34	66	3/31	.70	.59	6/30	◆ 335	.32	YES
2667 1583 Arconic Inc.	ARNC	17.80	- 3	- NMF	40- 60	(125- 235%)	14.2	1.3	1.25	24	65	3/31	.34	33	6/30	.06	.06	YES		
2023 Argo Group Int'l	ARGO	61.55	▲ 4	2 3	.85	65- 85	(5- 40%)	12.1	1.8	5.10	1.08	96	3/31	◆ 71	1.03	6/30	▲ 27	.235	YES	
★ 1816 Arista Networks	ANET	259.29	2	3 3	1.00	235- 355	(N- 35%)	40.8	NIL	6.35	NIL	29	3/31	◆ 1.79	1.07	3/31	NIL	NIL	YES	
1105 Armstrong World Inds	AWI	58.25	3	3 3	1.25	65- 95	(10- 65%)	18.2	NIL	3.20	NIL	19	3/31	.76	.55	3/31	NIL	NIL	YES	
943 Aris Int'l plc	ARRS	26.92	2	3 4	1.25	40- 60	(50- 125%)	9.1	NIL	2.95	NIL	88	3/31	.73	.40	3/31	NIL	NIL	YES	
1322 Arrow Electronics	ARW	75.08	1	3 3	1.30	75- 110	(N- 45%)	8.9	NIL	8.40	NIL	50	3/31	◆ 1.88	1.46	3/31	NIL	NIL	YES	
2120 Asbury Automotive	ABG	69.65	1	3 3	1.30	80- 120	(15- 70%)	9.0	NIL	7.75	NIL	14	3/31	1.93	1.58	3/31	NIL	NIL	YES	
2201 Ascena Retail Group	ASNA	2.14	4	5 3	1.50	11- 20	(415- 835%)	NMF	NIL	0.21	NIL	52	1/31	d.12	d.18	3/31	NIL	NIL	YES	
562 Ashland Global Hldgs.	ASH	73.28	- 3	- NMF	70- 110	(N- 50%)	22.0	1.2	3.33	90	15	3/31	1.04	.46	3/31	225	.39	YES		
4224 Aspen Insurance Hldgs	AHL	43.20	4	2 3	.85	45- 60	(5- 40%)	10.4	2.2	4.15	96	96	3/31	◆ 38	1.36	6/30	◆ 24	.24	YES	
778 Assoc. Banc-Corp	ASB	26.75	2	3 3	1.10	30- 45	(10- 70%)	14.9	2.2	1.79	60	21	3/31	.40	.35	6/30	.15	.53	YES	
2544 Assurant Inc.	AIZ	86.51	3	2 4	.85	75- 100	(N- 15%)	11.5	2.6	7.50	2.24	16	3/31	◆ 96	2.53	3/31	56	12	YES	
2025 Assured Guaranty	AGO	35.00	3	3 3	1.25	35- 55	(N- 55%)	11.7	1.9	3.00	65	96	3/31	◆ 1.68	2.49	6/30	.16	143	YES	
154 Astec Inds.	ASTE	56.76	3	3 3	1.10	80- 125	(40- 120%)	16.7	0.7	3.40	40	30	3/31	.87	.65	6/30	◆ 10	.10	YES	
1610 AstraZeneca PLC (ADS)	AZN	35.66	5	3 3	1.00	35- 55	(N- 55%)	32.4	3.9	1.10	1.40	68	12/31	.26	.73	3/31	.95	.95	YES	
704 Astronics Corp.	ATRO	37.55	5	3 2	1.25	50- 75	(35- 100%)	19.8	NIL	1.90	NIL	43	3/31	◆ 1.1	.40	3/31	NIL	NIL	YES	
1636 Atento S.A.	ATTO	7.15	3	4 3	.60	10- 16	(40- 125%)	14.3	4.8	.50	.34	11	3/31	◆ 0.02	.12	3/31	NIL	NIL	YES	
★ 824 athenahealth	ATHN	152.76	- 3	- 1.15	235- 355	(55- 130%)	35.5	5.0	4.30	NIL	77	3/31	1.25	.32	3/31	NIL	NIL	YES		
641 305 Atlas Air Worldwide	AAWW	68.05	3	3 3	1.35	75- 110	(10- 60%)	14.2	NIL	4.80	NIL	41	3/31	◆ 37	d.03	3/31	NIL	NIL	YES	
548 Atmos Energy	ATO	87.75	3	3 3	.70	100- 120	(15- 35%)	21.5	2.3	4.08	2.01	17	3/31	◆ 1.57	1.52	6/30	◆ 485	.45	YES	
1036 2590 Autodesk, Inc.	ADSK	132.76	3	3 3	1.20	95- 145	(N- 10%)	NMF	NIL	d1.30	NIL	27	1/31	d.79	d.78	3/31	NIL	NIL	YES	
978 Autoliv, Inc.	ALV	139.35	4	3 3	1.00	140- 205	(N- 45%)	19.8	1.8	7.05	2.48	10	3/31	1.45	1.62	9/30	◆ 62	.60	YES	
2614 Automatic Data Proc.	ADP	125.77	3	1 4	1.00	135- 165	(5- 30%)	24.4	2.2	5.15	2.82	8	3/31	1.45	1.31	9/30	◆ 69	.57	YES	
2121 AutoNation, Inc.	AN	47.48	3	3 3	1.15	80- 120	(70- 155%)	9.7	NIL	4.90	NIL	14	3/31	1.01	.97	3/31	NIL	NIL	YES	
2122 AutoZone Inc.	AZO	655.17	3	3 3	.80	860- 1285	(30- 95%)	12.2	NIL	53.85	NIL	14	2/28	9.49	8.08	3/31	NIL	NIL	YES	
1513 AvalonBay Communities	AVB	164.47	3	2 4	.70	205- 275	(25- 65%)	26.8	3.6	6.13	5.97	93	3/31	1.03	1.72	6/30	▲ 1.47	1.42	YES	
113 AVANGRID, Inc.	AGR	52.62	3	2 3	.40	45- 65	(N- 15%)	22.9	3.3	2.30	1.75	73	3/31	.79	.77	9/30	▲ 432	432	YES	
563 Avery Dennison	AVY	105.50	2	2 3	.95	110- 150	(5- 40%)	16.5	2.0	6.39	2.08	15	3/31	1.44	1.11	6/30	▲ 52	.45	YES	
1323 Avigilon Corp.	AVO	TO	SEE FINAL REPORT																	
648 2165 Avis Budget Group	CAR	43.44	1	4 2	1.50	50- 80	(15- 85%)	13.0	NIL	3.35	NIL	55	3/31	◆ d.74	d.94	3/31	NIL	NIL	YES	
2223 Avista Corp.	AVA	51.96	- 2	- 70	35- 45	(N- 1%)	26.6	2.9	1.95	1.51	81	3/31	.83	.96	3/31	▲ 373	.357	YES		
1324 Avnet, Inc.	AVT	40.06	4	3 2	1.20	55- 80	(35- 100%)	10.1	1.9	3.97	.76	50	3/31	1.02	.88	3/31	▲ 19	.18	YES	
1009 Avon Products	AVP	2.06	▲ 3	2 2	1.70	4- 7	(95- 240%)	10.3	NIL	.20	NIL	58	3/31	◆ d.02	d.07	3/31	NIL	NIL	YES	
564 Axalta Coating	AXTA	31.67	4	3 3	1.05	35- 50	(10- 60%)	25.3	NIL	1.25	NIL	15	3/31	.28	.26	3/31	NIL	NIL	YES	
2026 2026 AXIS Capital Hldgs.	AXS	57.78	4	2 3	.75	70- 90	(20- 55%)	12.0	2.7	4.81	1.56	96	3/31	1.46	.59	9/30	◆ 39	.38	YES	
★ 705 Axon Enterprise	AAXN	44.65	3	4 3	1.20	35- 60	(N- 35%)	NMF	NIL	.40	NIL	43	3/31	◆ 24	.09	3/31	NIL	NIL	YES	
1903 B&G Foods	BGS	26.00	▼ 3	3 5	.65	45- 70	(75- 170%)	12.1	7.7	2.15	2.00	66	3/31	◆ 55	.58	6/30	465	465	YES	
2503 BB&T Corp.	BBT	54.22	2	2 3	1.00	55- 70	(N- 30%)	13.9	2.9	3.90	1.56	18	3/31	.94	.46	6/30	▲ 375	.30	YES	
1028 BCE Inc.	BCE	41.36	▼ 5	3 3	.75	45- 65	(10- 55%)	15.9	7.3	2.60	3.02	84	3/31	◆ 58	.59	9/30	▲ 755	.542	YES	
1794 BGC Partners	BGCP	12.29	- 3	- 1.20	12- 18	(N- 45%)	10.2	5.9	1.20	.72	20	3/31	◆ 32	.23	6/30	▲ 18	.18	YES		
1584 BHP Billiton Ltd. ADR	BHP	47.59	4	3 3	1.35	50- 70	(15- 45%)	19.8	4.6	2.40	2.20(h)	65	12/31	75(p)	1.20(p)	3/31	▲ 1.10	.80	YES	
352 BJ's Restaurants	BURI	55.70	3	3 3	.85	75- 110	(35- 95%)	27.6	0.8	2.02	.44	59	3/31	.70	.42	6/30	.11	NIL	YES	
779 BOK Financial	BOKF	102.18	2	3 3	1.10	95- 140	(N- 35%)	16.0	1.8	5.40	1.80	21	3/21	1.61	1.35	6/30	.45	.44	YES	
503 BP PLC ADR	BP	45.33	3	3 4	1.20	55- 85	(20- 90%)	17.1	5.3	2.65	2.40	56	3/31	.74	.44	6/30	.60	.60	YES	
★ 1029 BT Group ADR(g)	BT	16.16	3	3 4	1.00	25- 35	(55- 115%)	8.8	6.4	1.84	1.04	84	12/31	.43	.40	3/31	339	301	YES	
1218 BWX Technologies	BWXT	66.59	▲ 2	3 2	.90	70- 100	(5- 50%)	26.6	1.0	2.50	.64	85	3/31	◆ 66	.55	6/30	◆ 16	.11	YES	
115 Bagger Meter	BMI	42.85	4	3 2	1.05	45- 65	(5- 50%)	29.6	1.2	1.45	.52	47	3/31	.26	.30	6/30	.13	115	YES	
2636 Baidu, Inc.	BIDU	263.09	2	3 3	1.40	330- 495	(25- 90%)	29.0	NIL	9.08	NIL	70	3/31	2.14	.67	3/31	NIL	NIL	YES	
2419 Baker Hughes, a GE co.	BHGE	36.03	- 3	- NMF	45- 70	(25- 95%)	48.0	2.0	.75	.72	94	3/31	.17	NIL	3/31	.18	.17	YES		
565 Balcem Corp.	BCPC	95.03	▲ 3	3 4	1.10	90- 140	(N- 45%)	32.8	0.4	2.90	.42	15	3/31	◆ 60	.48	3/31	▲ 42	.38	YES	
1175 Ball Corp.	BLL	38.07	3	2 1	.95	30- 45	(N- 20%)	16.2	1.1	2.35	.40	32	3/31	◆ 35	.19	6/30	.10	.10	YES	
2504 BancorpSouth Bank	BXS	33.80	3	3 3	1.15	35- 55	(5- 65%)	17.5	1.8	1.93	.62	18	3/31	.54	.41	9/30	.14	125	YES	
2505 Bank of America	BAC	29.93	2	3 2	1.20</															

ROE and ROR Analysis Columbia Gas of PA
CAPM/ECAPM Analysis
Value Line Projected Growth Rate

Docket No. R-2018-2647577
Exhibit MFG-11, Schedule 3

May 18, 2018

SUMMARY AND INDEX • THE VALUE LINE INVESTMENT SURVEY

Page 5

BI-CA

PAGE NUMBERS

Bold type refers to Ratings and Reports

RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price			Safety	Technical	Beta	3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 12-31-18	(f) Est'd Div'd next 12 mos.	LATEST RESULTS					Do Options Trade?	
		Timeliness	Yield	Change									Qtr. Ended	Earnings Per sh.	Year Ago	Qtr. Ended	Latest Div'd		Year Ago
1243 2136 Big Lots Inc.	BIG	40.25	3	3	3	1.10	85-125 (110-210%)	8.4	3.1	4.80	1.23	48	1/31	2.57	1.99	6/30	30	25	YES
200 Bio-Rad Labs. 'A'	BIO	253.69	3	2	2	.90	230-310 (N-20%)	49.3	NIL	5.15	NIL	42	3/31	1.17	.41	3/31	NIL	NIL	YES
834 Bio-Techne Corp.	TECH	149.12	3	1	3	.90	150-180 (N-20%)	62.9	0.9	2.37	1.26	87	3/31	.52	.57	6/30	32	32	YES
1611 Biogen	BIIB	269.73	2	3	4	1.10	310-470 (15-75%)	11.9	NIL	22.70	NIL	69	3/31	5.54	3.46	3/31	NIL	NIL	YES
835 BioMarin Pharm.	BMRN	86.81	4	3	4	1.35	95-140 (10-60%)	NMF	NIL	d.41	NIL	87	3/31	d.26	d.09	3/31	NIL	NIL	YES
2224 Black Hills	BKH	58.31	3	2	5	.85	60-80 (5-35%)	16.9	3.3	3.45	1.93	81	3/31	1.63	1.42	6/30	475	445	YES
1817 Black Knight, Inc.	BKI	50.45	▲	1	3	.95	65-100 (30-100%)	28.8	NIL	1.75	NIL	29	3/31	▲.43	.30	3/31	NIL	NIL	YES
2401 Black Stone Minerals	BSM	18.05	4	3	3	.95	16-25 (N-40%)	19.0	6.9	.95	1.25	46	3/31	▲.23	.37	6/30	▲31.3	31	YES
595 BlackBerry	BB	11.12	3	4	2	1.40	12-15 (10-35%)	NMF	NIL	.11	NIL	78	2/28	.05	.04	3/31	NIL	NIL	YES
2545 BlackRock, Inc.	BLK	519.93	2	2	1	1.30	625-845 (20-65%)	17.9	2.2	29.00	11.52	16	3/31	6.70	5.23	3/31	▲2.86	2.50	YES
2660 Blackstone Group LP	BX	31.64	4	3	3	1.35	45-70 (40-120%)	10.0	4.4	3.15	1.40	92	3/31	.65	.82	6/30	.35	.87	YES
2546 Black (H&R)	HRB	27.82	4	3	3	.85	35-55 (25-100%)	16.6	3.5	1.68	.98	16	1/31	d1.16	d.49	6/30	24	22	YES
2553 Bloomin' Brands	BLMN	24.38	3	3	3	1.00	45-65 (85-165%)	15.0	1.5	1.62	.36	59	3/31	.71	.54	6/30	▲.09	.08	YES
2454 1904 Blue Buffalo Pet Prod	BUFF						SEE FINAL SUPPLEMENT												
623 Boardwalk Pipeline	BWP	9.26	4	4	4	1.00	25-40 (170-330%)	7.7	4.3	1.20	.40	79	3/31	.38	.47	6/30	▲10	10	YES
2669 706 Boeing	BA	338.37	2	1	2	1.10	350-425 (5-25%)	21.1	2.0	16.05	6.84	43	3/31	4.15	2.34	6/30	1.71	1.42	YES
596 Boeing Wireless	WIFI	21.38	3	3	1	1.15	25-35 (15-65%)	NMF	NIL	d.45	NIL	78	3/31	▲d.08	d.18	3/31	NIL	NIL	YES
1107 Boise Cascade	BCC	43.00	▲	2	3	1.40	40-60 (N-40%)	17.2	0.7	2.50	.28	19	3/31	▲.94	.26	6/30	▲.07	NIL	YES
707 Bombardier Inc. 'B'	BBB	42.0b	4	5	3	.85	8-15 (90-255%)	84.0	NIL	.05	NIL	43	3/31	▲.01(b)	NIL(b)	3/31	NIL	NIL	YES
2637 Booking Holdings	BKNG	2161.60	2	3	3	1.20	2455-3680 (15-70%)	25.0	NIL	86.55	NIL	70	12/31	16.86	14.21	3/31	NIL	NIL	YES
480 Booz Allen Hamilton	BAH	40.42	3	3	3	1.00	45-70 (10-75%)	17.6	1.9	2.30	.76	54	12/31	.47	.37	3/31	▲.19	.17	YES
979 BorgWarner	BWA	49.63	2	3	2	1.30	60-95 (20-90%)	11.0	1.4	4.50	.68	10	3/31	1.10	.91	6/30	▲.17	.14	YES
1967 Boston Beer 'A'	SAM	231.15	3	3	3	.95	215-320 (N-40%)	32.8	NIL	7.05	NIL	38	3/31	.78	.45	3/31	NIL	NIL	YES
2389 Boston Omaha	BOMN	24.74	-	4	-	NMF	20-35 (N-40%)	NMF	NIL	d.40	NIL	31	12/31	d.17	NA	3/31	NIL	NIL	YES
1514 Boston Properties	BXP	122.77	5	3	3	.90	135-200 (10-65%)	33.7	2.6	3.64	3.20	93	3/31	1.14	.63	6/30	.80	.75	YES
174 Boston Scientific	BSX	29.83	3	3	3	.95	35-55 (15-85%)	28.4	NIL	1.05	NIL	51	3/31	.26	.20	3/31	NIL	NIL	YES
2350 Boyd Gaming	BYD	33.96	2	4	3	1.35	30-55 (N-60%)	26.1	0.6	1.30	.20	25	3/31	.39	.32	6/30	.05	.05	YES
1744 Brady Corp.	BRC	37.50	3	3	3	1.20	40-60 (N-60%)	18.1	2.2	2.07	.83	33	1/31	.48	.49	6/30	.206	.205	YES
2001 Bridgepoint Education	BPI	5.89	4	4	3	1.15	15-25 (155-325%)	16.8	NIL	.35	NIL	63	3/31	.01	.23	3/31	NIL	NIL	YES
1706 Briggs & Stratton	BGG	18.58	4	3	3	1.10	30-40 (60-115%)	13.2	3.0	1.41	.56	22	3/31	.84	.83	6/30	14	14	YES
2002 Bright Horizons Family	BFAM	98.81	2	3	2	.85	115-175 (15-75%)	31.4	NIL	3.15	NIL	63	3/31	.72	.61	3/31	NIL	NIL	YES
354 Brinker Int'l	EAT	46.46	3	3	5	.80	65-100 (40-115%)	12.5	3.5	3.73	1.61	59	3/31	1.08	.94	6/30	.38	.34	YES
381 Brink's (The) Co.	BCO	74.95	3	3	3	1.20	85-125 (15-65%)	19.7	0.8	3.80	.60	54	3/31	.65	.58	6/30	▲.15	.15	YES
1612 Bristol-Myers Squibb	MYM	50.53	3	2	1	.90	70-90 (40-80%)	16.6	3.2	3.05	1.60	69	3/31	.91	.94	6/30	▲.40	.39	YES
306 Bristol Group	BRS	17.51	5	5	3	1.60	8-14 (N-N%)	NMF	NIL	d1.12	NIL	41	12/31	d.23	d.62	3/31	NIL	07	YES
1994 Brit. Am. Tobacco ADR	BTI	51.40	3	2	1	1.00	90-125 (75-145%)	12.0	4.5	4.30	2.30	95	12/31	2.03(p)	1.31(p)	3/31	607	NIL	YES
1243 1352 Broadcom Inc.	AVGO	238.85	2	3	3	1.10	210-320 (N-35%)	30.3	2.9	7.88	7.00	9	1/31	14.62	.57	3/31	1.75	1.02	YES
435 Broadridge Fin'l	BR	112.20	2	2	3	.95	105-140 (N-25%)	30.7	1.4	3.66	1.55	24	3/31	▲.90	.63	9/30	▲.365	.33	YES
641 799 Brookdale Senior Living	BKD	7.68	5	4	3	1.35	15-25 (95-225%)	NMF	NIL	d1.20	NIL	7	3/31	▲d2.45	d.68	3/31	NIL	NIL	YES
382 Brookfield Asset Mgmt	BAM	39.63	3	3	3	1.10	50-75 (25-90%)	24.0	1.5	1.65	.60	54	12/31	1.02	1.4	3/31	▲.15	.14	YES
1745 Brookfield Infrastruc.	BIP	38.90	3	2	1	.95	40-55 (5-40%)	32.4	4.8	1.20	1.88	33	3/31	.42	d.03	6/30	▲.47	.435	YES
1707 Brooks Automation	BRKS	28.90	2	3	3	1.20	30-45 (5-55%)	18.3	1.4	1.58	.40	22	3/31	.40	.28	6/30	10	10	YES
2547 Brown & Brown	BRO	27.40	2	1	3	.95	30-40 (10-45%)	21.9	1.1	1.25	.30	16	3/31	.32	.25	6/30	075	068	YES
1968 Brown-Forman 'B'	BFB	55.45	2	1	3	.90	75-90 (35-60%)	32.1	1.3	1.73	.70	38	1/31	.44	.38	6/30	158	146	YES
116 Bruker Corp.	BRKR	30.35	▲	2	3	1.10	▲ 40-60 (30-100%)	22.5	0.5	1.35	.16	47	3/31	▲.24	.19	3/31	04	04	YES
2304 Brunswick Corp.	BC	60.00	2	3	3	1.35	100-150 (65-150%)	13.0	1.3	4.60	.76	23	3/31	1.01	.84	6/30	▲.19	.165	YES
624 Buckeye Partners L.P.	BPL	39.80	▼	3	4	1.20	80-120 (100-200%)	10.9	12.9	3.65	5.15	79	3/31	▲.74	.88	6/30	▲.263	1.25	YES
2202 Buckle (The), Inc.	BKE	22.05	3	2	3	.90	20-35 (N-50%)	12.1	4.3	1.90	1.00	52	1/31	.87	.74	6/30	25	25	YES
1905 Bunge Ltd.	BG	69.52	4	3	1	.80	90-135 (30-95%)	18.5	2.8	3.75	1.96	66	3/31	d.20	31	6/30	46	42	YES
2137 Burlington Stores	BURL	137.77	2	4	3	1.05	130-215 (N-55%)	23.6	NIL	5.85	NIL	48	1/31	2.17	1.78	3/31	NIL	NIL	YES
2591 CA, Inc.	CA	34.56	3	2	3	1.10	35-50 (N-45%)	17.2	3.0	2.01	1.04	27	3/31	▲.49	.38	6/30	▲.255	.255	YES
1419 2615 CACI Int'l	CACI	160.10	2	3	3	.95	150-225 (N-40%)	19.6	NIL	6.18	NIL	8	3/31	▲2.56	1.61	3/31	NIL	NIL	YES
708 CAE Inc.	CAE	24.32b	3	3	3	.70	25-40 (5-65%)	20.3	1.5	1.20	.36	43	12/31	▲.28(b)	25(b)	3/31	09(b)	08(b)	YES
1795 Cboe Global Markets	CBOE	102.37	▲	2	2	1.75	130-175 (25-70%)	22.7	1.1	4.50	1.08	20	3/31	▲1.04	.16	3/31	27	25	YES
383 CBRE Group	CBRE	46.48	2	3	2	1.35	65-95 (40-105%)	14.6	NIL	3.19	NIL	54	3/31	.54	.43	3/31	NIL	NIL	YES
1845 2328 CBS Corp. 'B'	CBS	51.27	3	3	4	1.05	60-85 (15-65%)	10.1	1.4	5.10	.72	40	3/31	▲1.32	1.09	6/30	18	18	YES
2390 CDK Global Inc.	CDK	64.89	2	3	3	1.15	90-135 (40-110%)	22.1	1.0	2.94	.62	31	3/31	.71	.53	3/31	15	14	YES
2616 CDW Corp.	CDW	76.59	1	3	3	1.05	70-105 (N-35%)	20.7	1.1	3.70	.84	8	3/31	.82	.35	6/30	21	16	YES
1353 CEVA, Inc.	CEVA	34.25	4	4	4	1.20	45-70 (30-105%)	52.7	NIL	.65	NIL	9	3/31	▲d.10	.19	3/31	NIL	NIL	YES
1596 CF Industries	CF	37.79	3	3	2	1.35	30-50 (N-30%)	43.4	3.4	.87	1.30	64	3/31	▲.27	d.10	6/30	.30</		

ROE and ROR Analysis Columbia Gas of PA
CAPM/ECAPM Analysis
Value Line Projected Growth Rate

Docket No. R-2018-2647577
Exhibit MFG-11, Schedule 3

CA-CI

Page 6

SUMMARY AND INDEX • THE VALUE LINE INVESTMENT SURVEY

May 18, 2018

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RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price			Technical	Beta	3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 12-31-18	(f) Est'd Div'd next 12 mos.	LATEST RESULTS					Do Options Trade?	
		Timeliness	Safety	Beta								Qtr. Ended	Earnings Per sh.	Year Ago	Qtr. Ended	Latest Div'd		Year Ago
1243 2156 Caleres Inc.	CAL	33.57	2 3 1	1.10	40-65 (20-95%)	13.7	0.8	2.45	28	61	1/31	.48	.33	6/30	.07	.07	YES	
1243 410 Calgon Carbon	CCC				SEE FINAL SUPPLEMENT - PAGE 1243													
2460 1787 California Water	CWT	39.15	4 3 3	.80	35-50 (N-30%)	27.6	1.9	1.42	.75	91	3/31	d.05	.02	6/30	.188	.18	YES	
2305 Callaway Golf	ELY	17.73	3 3 3	1.05	18-30 (N-70%)	25.3	0.2	.70	.04	23	3/31	.65	.30	3/31	.01	.01	YES	
529 Callon Petroleum	CPE	14.18	2 4 3	2.00	18-30 (25-110%)	16.9	NIL	.84	NIL	67	3/31	♦.27	.22	3/31	NIL	NIL	YES	
1243 Calpine Corp.	CPN				SEE FINAL SUPPLEMENT - PAGE 1243													
836 Cambrex Corp.	CBM	48.90	3 3 3	1.10	60-90 (25-85%)	15.7	NIL	3.12	NIL	87	3/31	♦.72	.63	3/31	NIL	NIL	YES	
1515 Camden Property Trust	CPT	86.77	3 3 4	.75	70-105 (N-30%)	49.6	3.5	1.75	3.08	93	3/31	♦.41	.39	6/30	▲.77	.75	YES	
1585 Cameco Corp.	(ITSE) COO TO	14.61b	4 3 5	1.25	15-25 (5-70%)	56.2	0.5	.26	.08	65	3/31	.06(b)	d.07(b)	6/30	▲.10(b)	.10(b)	YES	
1908 Campbell Soup	CPB	41.30	3 2 3	.70	50-65 (20-55%)	13.0	3.4	3.18	1.40	66	3/31	1.00	.91	6/30	.35	.35	YES	
★ 2123 Camping World Holdings	CWH	23.02	- 3 -	NMF	45-65 (95-180%)	7.8	1.4	2.95	.32	14	3/31	♦.41	.38	3/31	.08	.08	YES	
2102 Canada Goose Hldgs.	(ITSE)GOOS TO	48.10	- 3 -	NMF	45-65 (N-35%)	55.9	NIL	.86	NIL	71	12/31	.58	.38	3/31	NIL	NIL	YES	
2510 Cen. Imperial Bank	(ITSE) CM TO	113.72b	3 1 3	.80	140-170 (25-50%)	9.6	4.8	11.90	5.44	18	1/31	3.15(b)	3.50(b)	6/30	▲1.33(b)	1.27(b)	YES	
342 Can. National Railway	CNI	78.82	4 2 3	1.05	90-125 (15-60%)	18.8	2.3	4.20	1.82	36	3/31	.80	.86	6/30	▲.455	.309	YES	
2402 Can. Natural Res.	(ITSE) CNQ TO	44.43b	3 3 3	1.35	55-85 (25-90%)	14.8	3.0	3.00	1.34	46	3/31	♦.71(b)	25(b)	9/30	♦.335(b)	275(b)	YES	
343 Can. Pacific Railway	CP	183.40	3 3 3	1.15	215-325 (15-75%)	17.7	1.2	10.36	2.25	36	3/31	2.16	1.88	6/30	▲.563	.375	YES	
2138 Canadian Tire 'A'	(ITSE)CTCA TO	174.64b	▼ 2 3 3	.75	170-235 (N-35%)	14.6	2.1	12.00	3.60	48	12/31	4.10(b)	3.46(b)	6/30	♦.90(b)	65(b)	YES	
1985 Canon Inc. ADP(g)	CAJ	34.72	4 1 2	.90	60-70 (75-100%)	14.8	3.5	2.35	1.22	28	3/31	.50	.45	6/30	♦.712	.596	YES	
201 Cantel Medical Corp.	CMD	118.77	2 3 3	.95	▲ 100-150 (N-25%)	46.2	0.2	2.57	.19	42	1/31	.58	.43	3/31	▲.085	.07	YES	
2549 Capital One Fin'l	COF	90.18	2 3 2	1.15	85-125 (N-40%)	9.3	1.8	9.65	1.60	16	3/31	2.61	1.51	6/30	♦.40	.40	YES	
1502 Capitol Fed. Fin'l	(INDQ) CFFN	12.82	4 2 4	.75	14-20 (10-55%)	17.8	2.7	.72	.34	83	3/31	.17	.16	6/30	.085	.085	YES	
2420 CARBO Ceramics	CRR	9.51	5 5 4	1.70	14-25 (45-165%)	NMF	NIL	d1.95	NIL	94	3/31	d.83	d1.22	3/31	NIL	NIL	YES	
2673 202 Cardinal Health	CAH	52.50	4 2 3	1.05	105-145 (100-175%)	14.2	3.6	3.70	1.91	42	3/31	♦.81	1.20	6/30	.462	.449	YES	
2003 Career Education	(INDQ) CECO	14.31	3 5 3	1.35	17-30 (20-110%)	15.9	NIL	.90	NIL	63	3/31	♦.25	.08	3/31	NIL	NIL	YES	
1746 Carlisle Cos.	CSL	107.59	4 2 3	1.05	140-195 (30-80%)	18.2	1.4	5.90	1.48	33	3/31	.92	1.04	6/30	.37	.35	YES	
2661 Carlyle Group L.P.	(INDQ) CG	21.60	3 3 3	1.30	25-40 (15-85%)	9.8	5.0	2.20	1.08	92	3/31	.30	.90	6/30	♦.27	.10	YES	
2124 CarMax Inc.	KMX	63.15	3 3 4	1.25	95-140 (50-120%)	15.3	NIL	4.12	NIL	14	2/28	.77	.81	3/31	NIL	NIL	YES	
2306 Carnival Corp.	CCL	63.15	1 3 2	.90	85-125 (35-100%)	14.0	3.2	4.50	2.00	23	2/28	.54	.48	6/30	▲.50	.40	YES	
744 Carpenter Technology	CAS	56.40	3 3 4	1.55	60-90 (5-60%)	23.9	1.3	2.36	.72	13	3/31	.60	.44	6/30	.16	.18	YES	
1838 Carriage Services	CSV	25.89	2 3 2	.90	35-50 (35-95%)	15.1	1.2	1.72	.30	4	3/31	.52	.39	6/30	.075	.05	YES	
2103 Carter's Inc.	CRI	103.95	3 3 2	.85	140-210 (35-100%)	21.0	1.7	4.94	1.80	71	3/31	.89	.95	3/31	▲.45	.37	YES	
1947 Casey's Gen'l Stores	(INDQ) CASY	98.69	4 3 3	.75	110-165 (10-65%)	20.9	1.1	4.73	1.10	57	1/31	.48	.58	6/30	.26	.24	YES	
175 Catalent, Inc.	CTLT	39.28	3 2 2	1.00	40-60 (N-55%)	41.8	NIL	.94	NIL	51	3/31	.14	.21	3/31	NIL	NIL	YES	
2455 155 Caterpillar Inc.	CAT	149.93	2 3 2	1.20	▲ 190-255 (25-70%)	13.9	2.1	10.75	3.12	30	3/31	2.82	1.28	6/30	.78	.77	YES	
2203 Cato Corp.	CATO	16.13	3 3 4	1.00	30-40 (85-150%)	20.2	8.2	.80	1.32-48	52	1/31	d.14	d.48	3/31	.66	.66	YES	
1254 Cavium Inc.	(INDQ) CAVM	74.85	- 3 -	1.25	135-200 (80-165%)	21.4	NIL	3.50	NIL	9	9/31	.83	.56	3/31	NIL	NIL	YES	
2307 Cedar Fair L.P.	FUN	65.62	3 3 3	.80	80-120 (20-85%)	18.4	5.4	3.56	3.56	23	3/31	d1.49	d1.16	6/30	♦.89	.855	YES	
2446 Celanese Corp.	CE	108.71	1 3 3	1.30	90-140 (N-30%)	12.0	2.0	9.05	2.16	3	3/31	2.70	1.61	6/30	▲.54	.46	YES	
1327 Celastica Inc.	CLS	11.80	4 3 5	1.00	14-20 (20-70%)	14.0	NIL	.84	NIL	50	3/31	.10	.16	3/31	NIL	NIL	YES	
1613 Celgene Corp.	(INDQ) CELG	83.13	3 3 4	1.25	130-190 (55-130%)	11.2	NIL	7.45	NIL	69	3/31	♦1.10	1.16	3/31	NIL	NIL	YES	
1108 CEMEX ADS	CX	5.94	3 4 3	1.55	10-17 (70-185%)	8.5	NIL	.70	NIL	19	3/31	.02	.14	3/31	NIL	NIL	YES	
506 Cenovus Energy	(ITSE) CVE TO	13.90b	4 3 4	1.15	20-30 (45-115%)	NMF	1.4	d.25	.20	56	3/31	d.74(b)	55(b)	6/30	.05(b)	.05(b)	YES	
800 Centene Corp.	CNC	113.41	2 3 3	1.05	100-155 (N-35%)	16.4	NIL	6.92	NIL	7	3/31	2.17	1.12	3/31	.12	.12	YES	
2464 907 CenterPoint Energy	CNP	26.55	▲ 2 3 3	.90	20-30 (N-35%)	17.1	4.2	1.55	1.12	45	3/31	♦.38	.44	6/30	.276	.267	YES	
422 Central Europe/Russia	CEE	23.85	- 4 2	1.05	30-45 (25-90%)	NMF	2.1	NMF	.50	-	4/30	♦27.73(q)	24.59(q)	3/31	.562	.321	YES	
1189 Central Garden & Pet	(INDQ) CENT	38.58	2 3 1	.85	60-95 (55-145%)	17.9	NIL	2.15	NIL	86	3/31	♦.86	.67	3/31	NIL	NIL	YES	
1586 Century Aluminum	(INDQ) CENX	15.39	3 5 2	2.15	19-35 (25-125%)	23.7	NIL	.65	NIL	65	3/31	NIL	d.17	3/31	NIL	NIL	YES	
1030 CenturyLink Inc.	CTL	18.13	4 3 4	1.05	16-24 (N-30%)	14.5	11.9	1.25	2.16	84	12/31	.18	.08	3/31	.54	.54	YES	
825 Cerber Corp.	(INDQ) CERN	58.76	4 2 4	.95	75-105 (30-80%)	23.5	NIL	2.50	NIL	77	3/31	♦.58	.59	3/31	NIL	NIL	YES	
203 Charles River	CRL	104.94	▼ 3 3 3	1.00	110-170 (5-60%)	21.6	NIL	4.85	NIL	42	12/31	.99	.93	3/31	NIL	NIL	YES	
731 Chart Industries	(INDQ) GTLS	61.22	3 3 3	1.75	55-85 (N-40%)	40.8	NIL	1.50	NIL	68	3/31	.18	d.09	3/31	NIL	NIL	YES	
1020 Charter Communc.	(INDQ) CHTR	271.01	3 3 3	1.00	245-365 (N-35%)	58.9	NIL	4.60	NIL	62	3/31	.70	.57	3/31	NIL	NIL	YES	
1818 Check Point Software	(INDQ) CHKP	99.93	3 1 4	.65	110-135 (10-35%)	18.8	NIL	5.31	NIL	29	3/31	1.16	1.08	3/31	NIL	NIL	YES	
355 Chesapeake Factory	(INDQ) CAKE	54.13	4 3 4	.75	55-85 (N-5%)	20.4	2.2	2.65	1.18	59	3/31	.56	.72	6/30	.29	.24	YES	
1747 Chemed Corp.	CHE	320.48	2 3 4	.80	220-330 (N-5%)	29.0	0.4	11.07	1.20	33	3/31	2.72	1.82	3/31	.28	.25	YES	
780 Chemical Financial	(INDQ) CHFC	55.96	2 3 3	1.00	60-95 (5-70%)	14.0	2.0	4.01	1.12	21	3/31	.97	.67	6/30	.28	.27	YES	
567 Chemours Co. (The)	CC	50.58	1 4 3	2.20	55-90 (10-80%)	9.6	1.3	5.26	.68	15	3/31	♦1.41	.75	6/30	.17	.03	YES	
610 Chemiere Energy	(ASE) LNG	62.60	3 3 4	1.45	95-145 (50-130%)	62.6	NIL	1.00	NIL	60	3/31	♦1.50	.23	3/31	NIL	NIL	YES	
530 Chesapeake Energy	CHK	3.13	3 3 5	2.15	8-15 (55-380%)	31.3	NIL	.10	NIL	67	3/31	.29	.08	3/31	NIL	NIL	YES	
549 Chesapeake Utilities	CPK	76.00	3 2 4	.70	80-110 (5-45%)	25.8	1.8	2.95	1.35	17	3/31	♦1.64	1.17	6/30	.325	.305	YES	
2667 507 Chevron Corp.	CVX	126.57	3 1 3	1.20	120-145 (N-15%)	20.3	3.5	6.25	4.48	56	3/31	1.90	1.41	6/30	1.12	1.08	YES	
2458 1233 Chicago Bridge & Iron	CBI	16.84	- 4 -	1.75	25-40 (50-140%)	7.6	NIL	2.23	NIL	82	3/31	.43	.24	3/31	NIL	.07	YES	
850 2204 Chico's FAS	CHS	9.60	3 3 4	1.05	17-25 (75-160%)	10.7	3.6	.90	.35	52</								

ROE and ROR Analysis Columbia Gas of PA
CAPM/ECAPM Analysis
Value Line Projected Growth Rate

Docket No. R-2018-2647577
Exhibit MFG-11, Schedule 3

May 18, 2018

SUMMARY AND INDEX • THE VALUE LINE INVESTMENT SURVEY

Page 7

CI-D

PAGE NUMBERS

Bold type refers to
Ratings and Reports

RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price			Safety		Technical		3-5 year Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 12-31-18	Est'd Div'd next 12 mos.	(f) Est'd Div'd next 12 mos.	LATEST RESULTS				Do Options Trade?
		Timeliness	Beta	Target	3-5 year	3-5 year	Qtr. Ended	Earnings Per sh.							Year Ago	Qtr. Ended	Latest Div'd	Year Ago	
1419 2206 Citi Trends (IND)	CTRN	29.33	3	4	2	80	35-60 (20-105%)	17.8	1.1	1.65	33	52	1/31	.38	.38	3/31	.08	.06	YES
2511 Citigroup Inc.	C	71.00	3	3	2	1.25	80-125 (15-75%)	11.7	1.9	6.08	1.33	18	3/31	1.68	1.35	6/30	.32	.16	YES
2512 Citizens Fin'l Group	CFG	41.32	1	3	2	1.15	50-70 (20-70%)	13.2	2.2	3.12	90	18	3/31	.78	.97	6/30	.22	.14	YES
2593 Citrix Sys. (IND)	CTXS	107.29	3	3	4	1.15	105-160 (N-50%)	20.4	NIL	5.25	NIL	27	3/31	1.29	.97	3/31	NIL	NIL	YES
611 Clean Energy Fuels (IND)	CLNE	1.87	-	5	-	1.85	7-13 (275-595%)	12.5	NIL	1.15	NIL	60	12/31	d.19	d.03	3/31	NIL	NIL	YES
411 Clean Harbors	CLH	52.23	4	3	4	1.15	55-85 (5-65%)	47.5	NIL	1.10	NIL	49	3/31	d.22	d.37	3/31	NIL	NIL	YES
2391 Clear Channel Outdoor	CCO	4.45	-	5	-	NMF	5-10 (10-125%)	NMF	NIL	d.20	NIL	31	12/31	d1.50	.28	3/31	NIL	NIL	YES
745 Cleveland-Cliffs Inc.	CLF	7.79	4	5	3	1.95	10-15 (50-95%)	12.0	NIL	65	NIL	13	3/31	d.29	d.11	3/31	NIL	NIL	YES
1191 Clorox Co.	CLX	118.71	▲	4	3	.70	120-160 (N-35%)	19.7	3.2	6.03	3.84	86	3/31	1.37	1.31	6/30	▲.96	.80	YES
2457 1969 Coca-Cola	KO	41.81	▲	4	3	.75	50-60 (20-45%)	19.9	3.7	2.10	1.56	38	3/31	.47	.43	9/30	.39	.37	YES
1970 Coca-Cola Bottling (IND)	COKE	168.86	3	3	4	.85	185-280 (10-65%)	24.1	0.6	7.00	1.00	38	3/31	▲d.82	.45	6/30	.25	.25	YES
1971 Coca-Cola European Part.	CCE	38.16	-	3	-	NMF	45-70 (20-85%)	14.1	3.4	2.71	1.28	38	3/31	.41	.37	6/30	▲.309	5.04	YES
1021 Cogeco Commun. (TSE)	CCA.TO	68.90b	3	2	4	.55	65-90 (N-30%)	12.1	2.8	5.68	1.90	62	2/28	98(b)	1.55(b)	6/30	475(b)	43(b)	YES
117 Cognex Corp. (IND)	CGNX	47.02	3	3	2	1.20	▲ 40-60 (N-30%)	39.2	0.4	1.20	1.8	47	3/31	.18	.26	6/30	0.45	0.43	YES
★ 2618 Cognizant Technology (IND)	CTSH	75.55	▲	1	2	1.05	100-135 (30-80%)	16.8	1.1	4.50	8.0	8	3/31	▲1.06	.84	6/30	▲.20	.15	YES
118 Coherent, Inc. (IND)	COHR	170.53	2	3	3	1.20	260-390 (50-130%)	14.3	NIL	11.91	NIL	47	3/31	2.61	1.69	3/31	NIL	NIL	YES
1748 Colfax Corp.	CFX	32.04	3	3	4	1.35	50-75 (5-135%)	15.4	NIL	2.08	NIL	33	3/31	▲.48	.35	3/31	NIL	NIL	YES
1192 Colgate-Palmolive	CL	62.28	4	1	3	.85	75-90 (20-45%)	20.0	2.7	3.12	1.68	86	3/31	.72	.64	6/30	▲.42	.40	YES
2104 Columbia Sportswear (IND)	COLM	82.43	3	3	3	1.15	70-110 (N-35%)	25.4	1.1	3.25	89	71	3/31	.77	.52	6/30	.22	.18	YES
1708 Columbus McKinnon (IND)	CMCO	36.30	2	3	2	1.35	40-60 (10-65%)	15.6	0.6	2.33	2.0	22	12/31	.44	.22	6/30	▲.05	.04	YES
1022 Comcast Corp. (IND)	CMCSA	30.59	1	2	2	.90	55-75 (80-145%)	12.5	2.5	2.45	.76	62	3/31	.62	.53	9/30	▲.19	.158	YES
781 Comerica Inc.	CMA	95.77	2	3	2	1.20	105-155 (10-60%)	14.7	1.4	6.52	1.36	21	3/31	1.59	1.11	9/30	▲.34	.26	YES
782 Commerce Bancshs. (IND)	CBSH	64.83	2	1	3	.95	55-70 (N-10%)	19.8	1.4	3.27	.94	21	3/31	.92	.65	6/30	2.35	2.14	YES
746 Commercial Metals	CMC	22.05	3	3	3	1.45	30-40 (35-80%)	19.3	2.2	1.14	.48	13	2/28	.26	.25	6/30	.12	.12	YES
★ 981 Commercial Vehicle (IND)	CVGI	8.23	-	5	-	1.50	17-30 (105-265%)	8.2	NIL	1.06	NIL	10	3/31	▲.32	.06	3/31	NIL	NIL	YES
946 CommScope Holding (IND)	COMM	29.48	3	3	1	1.15	55-80 (85-170%)	12.3	NIL	2.40	NIL	88	3/31	.49	.52	3/31	NIL	NIL	YES
2668 802 Community Health	CYH	4.52	-	4	-	NMF	14-25 (210-455%)	NMF	NIL	d1.30	NIL	7	3/31	d.22	d1.79	3/31	NIL	NIL	YES
2662 Compass Diversified	COOI	16.00	4	3	4	.70	30-45 (90-180%)	10.0	9.0	1.60	1.44	92	3/31	▲d.09	d.61	6/30	▲.36	.36	YES
1598 Compass Minerals Int'l	CMP	69.05	4	3	4	.95	85-125 (25-80%)	24.5	4.3	2.82	3.00	64	3/31	.37	.63	3/31	.72	.72	YES
826 Computer Prog. & Sys. (IND)	CPSI	30.90	3	3	4	.60	45-125 (45-125%)	15.1	1.3	2.05	40	77	3/31	▲.59	.29	6/30	▲.10	.20	YES
947 Comtech Telecom. (IND)	CMTL	30.48	4	2	1.35	18-30 (N- N%)	46.9	1.4	65	42	88	1/31	.07	.01	6/30	.10	.10	YES	
1909 Conagra Brands	CAG	37.40	-	2	-	NMF	45-65 (20-75%)	16.8	2.3	2.23	.87	66	2/28	.61	.46	6/30	213	20	YES
532 Concho Resources	CXO	158.32	3	3	3	1.50	140-210 (N-35%)	55.6	NIL	2.85	NIL	67	3/31	1.00	.49	3/31	NIL	NIL	YES
176 CONMED Corp. (IND)	CNMD	67.64	3	3	3	1.00	60-90 (N-35%)	41.0	1.2	1.65	.80	51	3/31	.38	.26	6/30	.20	.20	YES
1845 2170 Cor'n, Inc. (IND)	CONN	25.55	3	4	1	1.65	30-50 (15-95%)	11.9	NIL	2.15	NIL	55	1/31	.10	NIL	3/31	NIL	NIL	YES
1244 1788 Conn. Water Services (IND)	CTWS	68.08	-	3	-	.65	45-65 (N- N%)	29.6	1.7	2.30	1.19	91	12/31	.14	.07	3/31	298	283	YES
2403 ConocoPhillips	COP	67.74	3	3	3	1.40	85-125 (25-85%)	17.4	1.7	3.90	1.14	46	3/31	.96	d.14	6/30	▲.285	.265	YES
1032 Consol. Communic. (IND)	CNSL	11.58	4	3	4	1.00	25-40 (115-245%)	NMF	13.4	0.50	1.55-78	84	3/31	▲d.16	d.07	9/30	387	387	YES
140 Consol. Edison	ED	76.23	3	1	4	.50	70-85 (N-10%)	17.9	3.8	4.25	2.91	73	3/31	▲1.37	1.27	6/30	715	69	YES
1789 Consolidated Water (IND)	CWCO	13.35	4	3	2	.85	25-35 (85-160%)	19.1	2.6	.70	.35	91	12/31	.04	.10	6/30	085	075	YES
1972 Constellation Brands	STZ	221.46	2	3	2	.80	220-330 (N-50%)	23.7	1.4	9.35	3.20	38	2/28	1.90	1.48	6/30	▲.74	.52	YES
2171 Container Store Group	TCS	6.48	-	5	-	1.30	7-13 (10-100%)	15.1	NIL	.43	NIL	55	12/31	.09	.11	3/31	NIL	NIL	YES
2404 Continental Resources	CLR	66.22	3	4	3	1.80	65-105 (N-60%)	30.1	NIL	2.20	NIL	46	3/31	▲.68	.02	3/31	NIL	NIL	YES
386 Convergys Corp.	CVG	23.25	3	3	4	1.19	25-40 (10-70%)	12.2	1.9	1.90	.44	54	3/31	▲.41	.52	9/30	▲.11	.10	YES
204 Cooper Cos.	COO	226.80	2	2	3	.90	255-345 (10-50%)	22.4	NIL	10.12	.06	42	3/31	1.33	1.33	3/31	.03	.03	YES
2667 982 Cooper Tire & Rubber	CTB	24.00	3	3	3	1.05	50-70 (110-190%)	7.3	1.8	3.30	4.2	10	3/31	.16	.57	6/30	▲105	105	YES
903 Cooper-Standard	CPS	123.19	1	3	3	1.00	145-215 (20-75%)	13.9	NIL	8.85	NIL	10	3/31	3.07	2.20	3/31	NIL	NIL	YES
307 Copa Holdings, S.A. (IND)	CPA	116.24	3	3	1	1.35	115-170 (N-45%)	11.6	3.0	10.00	3.48	41	12/31	2.38	2.26	3/31	▲.87	.51	YES
2125 Copart, Inc. (IND)	CPRT	53.20	2	2	3	1.00	40-50 (N- N%)	28.0	NIL	1.90	NIL	14	1/31	.47	.28	3/31	NIL	NIL	YES
1948 Core-Mark Holding (IND)	CORE	17.38	4	3	3	.80	25-40 (45-130%)	18.3	2.4	.95	42	57	3/31	▲d.03	.05	6/30	▲.10	.09	YES
1516 CoreCivic, Inc.	CXW	20.87	5	3	4	1.00	25-40 (20-90%)	14.4	8.2	1.45	1.72	93	3/31	▲.32	.43	6/30	▲.43	.42	YES
436 CoreLogic	CLGX	51.30	2	3	3	1.05	65-100 (25-95%)	19.0	NIL	2.70	NIL	24	3/31	.52	.37	3/31	NIL	NIL	YES
2421 Core Laboratories	CLB	123.88	4	3	3	1.20	140-210 (15-70%)	46.7	1.8	2.65	2.20	94	3/31	.54	.40	6/30	.55	.55	YES
1819 Cornerstone OnDemand (IND)	CSOD	45.52	3	4	3	1.35	45-75 (N-65%)	65.0	NIL	.70	NIL	29	3/31	▲.14	.08	3/31	NIL	NIL	YES
1304 Corning Inc.	GLW	26.80	3	3	2	1.25	30-50 (10-85%)	26.8	2.7	1.00	.72	39	3/31	d.72	.07	6/30	.18	1.55	YES
437 CoStar Group (IND)	CSGP	386.53	2	3	3	1.15	430-650 (10-70%)	54.1	NIL	7.15	NIL	24	3/31	1.65	1.05	3/31	NIL	NIL	YES
2139 Costco Wholesale (IND)	COST	194.48	3	1	3	.80	215-260 (10-35%)	27.7	1.2	7.02	2.28	48	2/28	1.42	1.17	6/30	▲.57	.50	YES
1973 Cott Corp.	COT	15.70	-	3	-	.90	12-17 (N-10%)	54.1	1.5	.29	.24	38	3/31	▲.03	d.06	6/30	.06	.06	YES
1010 Coty Inc.	COTY	15.90	▲	3	3	.80	25-35 (55-120%)	18.9	3.1	84	50	58	3/31	▲.13	.15	6/30	▲125	125	YES
1217 Covanta Holding Corp.	CVA	15.65	3																

ROE and ROR Analysis Columbia Gas of PA
CAPM/ECAPM Analysis
Value Line Projected Growth Rate

Docket No. R-2018-2647577
Exhibit MFG-11, Schedule 3

D - EL

Page 8

SUMMARY AND INDEX • THE VALUE LINE INVESTMENT SURVEY

May 18, 2018

PAGE NUMBERS

Bold type refers to Ratings and Reports

RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price			Technical	Beta	3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 12-31-18	(f) Est'd Div'd next 12 mos.	LATEST RESULTS					Do Options Trade?	
		Timeliness	Safety	Beta								Qtr. Ended	Earns. Per sh.	Year Ago	Qtr. Ended	Latest Div'd		Year Ago
732 DMC Global	(IND)	BOOM	39.05	- 4 -	1.20	14- 25 (N- N%)	55.8	0.2	70	08	68	3/31	.49	d.21	6/30	.02	.02	YES
1206 DNP Select Inc. Fund	(IND)	DNP	10.80	- 2 3	.65	10- 14 (N- 30%)	NMF	2.8	NMF	30	78	10/31	9.98(q)	9.40(q)	12/31	NIL	NIL	YES
599 DSP Group	(IND)	DSPG	12.05	4 3 3	80	13- 20 (10- 65%)	NMF	NIL	d.10	NIL	78	3/31	d.08	d.13	3/31	NIL	NIL	YES
2236 DST Systems		DST				SEE FINAL SUPPLEMENT												
1245 2207 DSW Inc.		DSW	23.86	3 3 3	.95	25- 40 (5- 70%)	14.9	4.2	1.60	1.00	52	1/31	.38	20	6/30	▲ 25	.20	YES
908 DTE Energy		DTE	101.10	2 2 3	.65	90- 125 (N- 25%)	17.4	3.6	5.80	3.66	45	3/31	2.00	2.23	9/30	◆ 883	.825	YES
2619 DXC Technology		DXC	102.73	- 3 -	NMF	85- 130 (N- 25%)	12.3	0.7	8.38	7.2	8	12/31	2.15	.81	6/30	18	.14	YES
102 Damier AG	(PNK)	DDAIF	79.50	3 3 1	1.15	105- 155 (30- 95%)	6.9	5.7	11.60	4.50	44	3/31	2.61	3.04	6/30	4.487	3.428	YES
2010 Daktronics Inc.	(IND)	DAKT	9.23	3 3 4	1.20	16- 25 (75- 170%)	22.0	3.3	42	30	90	1/31	d.04	d.12	3/31	.07	.07	YES
984 Dana Inc.		DAN	23.75	3 3 1	1.55	35- 55 (45- 130%)	8.2	1.7	2.90	40	10	3/31	.75	.63	6/30	10	.06	YES
1750 Danaher Corp.		DHR	99.18	- 2 -	NMF	130- 175 (30- 75%)	24.2	0.6	4.10	64	33	3/31	.80	.69	9/30	◆ 16	.14	YES
358 Darden Restaurants		DRI	92.27	2 3 3	.85	100- 150 (10- 65%)	17.1	2.8	5.39	2.54	59	2/28	1.71	1.32	6/30	63	.56	YES
412 Darling Ingredients		DAR	16.75	▲ 3 2	1.15	20- 30 (20- 80%)	25.8	NIL	.65	NIL	49	12/31	.10	.25	3/31	NIL	NIL	YES
359 Dave & Buster's Ent.	(IND)	PLAY	41.53	3 3 3	1.20	90- 135 (115- 225%)	14.8	NIL	2.80	NIL	59	1/31	.61	.63	3/31	NIL	NIL	YES
803 DaVita Inc.		DVA	64.16	- 3 -	.90	90- 135 (40- 110%)	15.8	NIL	4.05	NIL	7	3/31	◆ 1.05	.79	3/31	NIL	NIL	YES
850 1910 Dean Foods		DF	9.75	4 4 4	1.10	15- 25 (55- 155%)	13.9	3.7	70	36	66	3/31	◆ 1.14	.13	3/31	.09	.09	YES
2158 Deckers Outdoor		DECK	96.19	3 3 3	1.10	100- 155 (5- 60%)	16.5	NIL	5.82	NIL	61	12/31	4.97	4.11	3/31	NIL	NIL	YES
157 Deere & Co.		DE	142.07	2 1 1	.90	185- 230 (30- 60%)	14.5	1.7	9.79	2.40	30	1/31	1.31	.61	6/30	.60	.60	YES
508 Delek US Holdings		DK	49.47	3 3 3	1.50	40- 60 (N- 20%)	35.3	2.0	1.40	1.00	56	3/31	◆ 33	.18	6/30	▲ 25	15	YES
2620 Dell Technologies		DMVT	72.01	- 3 -	NMF	85- 130 (20- 80%)	17.4	NIL	4.15	NIL	8	1/31	d.12	.64	3/31	NIL	NIL	YES
308 Delta Air Lines		DAL	52.37	3 3 2	1.25	70- 105 (35- 100%)	8.4	2.3	6.24	1.22	41	3/31	.74	.77	6/30	305	203	YES
2376 Deluxe Corp.		DLX	68.82	3 3 2	1.20	90- 135 (30- 95%)	12.3	1.7	5.60	1.20	89	3/31	1.31	1.16	6/30	◆ 30	30	YES
2406 Denbury Resources		DNR	3.40	3 5 4	2.25	7- 13 (105- 280%)	6.2	NIL	.55	NIL	46	3/31	◆ 1.2	d.02	3/31	NIL	NIL	YES
360 Denny's Corp.	(IND)	DENN	15.93	2 3 3	.95	18- 25 (15- 55%)	22.8	NIL	.70	NIL	59	3/31	.15	.11	3/31	NIL	NIL	YES
178 Dentsply Sirona	(IND)	XRAY	44.47	4 2 2	.95	80- 105 (60- 135%)	16.8	0.8	2.65	35	51	3/31	◆ 45	.49	9/30	0.68	0.88	YES
1033 Deutsche Telekom ADR (PNK)		DTGY	17.23	2 2 4	1.00	19- 25 (10- 45%)	17.2	3.7	1.00	64	84	3/31	◆ 26	.17	3/31	NIL	NIL	YES
533 Devon Energy		DVN	39.02	4 3 5	1.75	65- 95 (65- 145%)	27.1	0.8	1.44	32	67	3/31	.20	.41	6/30	▲ 08	.06	YES
206 DexCom Inc.	(IND)	DXCM	85.21	3 4 4	.95	▲ 40- 65 (N- N%)	NMF	NIL	d.45	NIL	42	3/31	◆ 2.8	d.49	3/31	NIL	NIL	YES
1975 Diageo plc		DEO	143.90	3 1 3	1.00	130- 155 (N- 10%)	25.7	2.2	5.61	3.20	38	12/31	4.44(p)	2.59(p)	6/30	1.35	1.181	YES
2422 Diamond Offshore		DO	18.87	4 3 3	1.25	20- 30 (5- 60%)	NMF	NIL	d.20	NIL	94	3/31	.14	.17	3/31	NIL	NIL	YES
2407 Diamondback Energy	(IND)	FANG	134.72	1 3 3	1.50	140- 210 (5- 55%)	19.7	0.4	6.85	50	46	3/31	◆ 1.65	1.46	3/31	NIL	NIL	YES
331 Diana Shipping		DSX	3.85	- 5 -	1.60	5- 8 (30- 110%)	NMF	NIL	d.55	NIL	97	12/31	d.15	d.31	3/31	NIL	NIL	YES
2172 Dick's Sporting Goods		DKS	30.18	4 3 3	1.00	45- 65 (50- 115%)	10.1	3.0	3.00	90	55	1/31	1.22	1.32	3/31	▲ 225	.17	YES
1412 Diebold Nixdorf		DBD	12.50	4 3 4	1.35	30- 45 (140- 260%)	10.9	3.2	1.15	40	75	3/31	d.12	.08	3/31	10	.10	YES
1518 Digital Realty Trust		DLR	104.54	3 3 3	.85	115- 175 (10- 65%)	69.7	4.0	1.50	4.13	93	3/31	.42	.41	6/30	◆ 1.01	.93	YES
850 2140 Dillard's, Inc.		DDS	68.21	3 3 1	1.10	90- 135 (30- 100%)	12.4	0.6	5.50	40	48	3/31	2.82	1.72	6/30	10	.07	YES
642 361 Dine Brands Global DineEquity Inc.		DIN	78.02	5 3 3	.80	60- 95 (N- 20%)	17.1	3.2	4.55	2.52	59	3/31	.92	.79	6/30	▼ 63	.97	YES
967 Diplomat Pharmacy		DPLO	19.19	4 4 2	1.25	30- 50 (55- 160%)	25.6	NIL	.75	NIL	2	3/31	◆ d.01	.07	3/31	NIL	NIL	YES
2551 Discover Fin'l Svcs.		DFS	72.87	2 2 2	1.10	105- 140 (45- 90%)	9.4	1.9	7.75	1.40	16	3/31	1.82	1.43	6/30	.35	.30	YES
2329 Discovery, Inc.	(IND)	DISCA	23.05	▲ 3 3 5	1.20	60- 90 (150- 290%)	8.9	NIL	2.60	NIL	40	3/31	◆ 53	.37	3/31	NIL	NIL	YES
1023 Dish Network 'A'	(IND)	DISH	29.81	4 3 3	1.15	30- 50 (N- 70%)	12.4	NIL	2.40	NIL	62	3/31	◆ 70	.76	3/31	NIL	NIL	YES
★ 2330 Disney (Walt)		DIS	101.79	2 1 4	1.00	150- 180 (45- 70%)	15.4	1.7	6.61	1.68	40	3/31	◆ 1.95	1.50	3/31	▲ 84	.78	YES
2011 Dolby Labs.		DLB	61.79	4 3 2	.90	75- 100 (20- 60%)	25.6	1.0	2.41	64	90	3/31	1.66	.49	6/30	.16	.14	YES
2141 Dollar General		DG	93.88	3 3 2	.90	115- 175 (20- 85%)	15.6	1.2	6.00	1.16	48	1/31	1.48	1.49	6/30	▲ 29	26	YES
1037 2142 Dollar Tree, Inc.	(IND)	DLTR	93.68	2 3 2	.85	125- 185 (35- 95%)	16.6	NIL	5.65	NIL	46	1/31	1.89	1.36	3/31	NIL	NIL	YES
141 Dominion Energy		D	63.14	3 2 3	.65	85- 115 (35- 80%)	17.3	5.6	3.65	3.51	73	3/31	.77	1.01	6/30	◆ 835	755	YES
362 Domino's Pizza		DPSZ	250.41	2 3 3	.85	260- 390 (5- 55%)	30.7	0.9	8.15	2.20	59	3/31	2.00	1.26	6/30	◆ 55	46	YES
1164 Domtar Corp.		UFS	45.31	3 3 3	1.20	60- 85 (30- 90%)	13.9	3.8	3.25	1.74	12	3/31	.86	.32	9/30	◆ 435	415	YES
1710 Donaldson Co.		DCI	46.57	3 2 3	1.15	75- 55 (60- 20%)	21.7	1.5	2.15	72	22	1/31	.43	.35	3/31	.18	1.75	YES
2392 Donnelley (R.R.) & Sons(IND)		RRD	6.72	- 3 -	NMF	9- 13 (35- 95%)	6.1	8.3	1.10	.56	31	3/31	d.14	d.71	6/30	14	.14	YES
985 Dorman Products	(IND)	DORM	66.51	2 3 4	.85	90- 135 (35- 105%)	15.8	NIL	4.20	NIL	10	3/31	.96	.83	3/31	NIL	NIL	YES
158 Douglas Dynamics		PLOW	44.35	3 3 2	1.20	45- 70 (N- 60%)	23.3	2.4	1.90	1.06	30	3/31	◆ d.03	d.14	3/31	▲ 265	.24	YES
1711 Dover Corp.		DOV	93.74	- 2 -	1.25	110- 145 (15- 65%)	16.0	2.0	5.86	1.88	22	3/31	1.16	1.04	6/30	◆ 47	.44	YES
1599 DowDuPont Inc.		DWDP	64.23	- 2 -	NMF	65- 90 (N- 40%)	17.7	2.5	3.63	1.60	64	3/31	◆ 1.01	1.0A	6/30	.38	NIL	YES
1976 Dr Pepper Snapple		DPS	119.46	- 2 -	.75	90- 125 (N- 5%)	26.7	2.0	4.48	2.40	38	3/31	.88	1.01	6/30	58	.58	YES
2423 Dri-Quip, Inc.		DRQ	44.35	5 3 3	1.30	85- 125 (90- 180%)	NMF	NIL	d.25	NIL	94	3/31	d.20	NIL	3/31	NIL	NIL	YES
142 Duke Energy		DUK	77.88	3 2 4	.60	85- 110 (10- 40%)	16.2	4.7	4.80	3.68	73	12/31	.86	.53	6/30	◆ 89	855	YES
1519 Duke Realty Corp.		DRE	28.39	3 3 5	.90	30- 45 (5- 60%)	50.7	2.9	.56	.82	93	3/31	.20	.20	6/30	20	.19	YES
438 Dun & Bradstreet		DNB	115.97	3 3 2	1.10	120- 175 (5- 50%)	15.2	1.7	7.65	2.01	24	12/31	3.22	2.99	3/31	▲ 523	503	YES
363 Dunkin' Brands Group (IND)		DNK	64.76	3 3 4	.65	90- 135 (40- 110%)	22.0	2.2	2.95	1.41	59	3/31	.62	.54	6/30	348	323	YES
923 Dycem Inds		DY	108.95	3 3 3	1.30	155- 230 (40- 110%)	19.1	NIL	5.69	NIL	76	1/31	.12	.82	3			

ROE and ROR Analysis Columbia Gas of PA
CAPM/ECAPM Analysis
Value Line Projected Growth Rate

Docket No. R-2018-2647577
Exhibit MFG-11, Schedule 3

May 18, 2018

SUMMARY AND INDEX • THE VALUE LINE INVESTMENT SURVEY

Page 9

EL-FI

PAGE NUMBERS

Bold type refers to Ratings and Reports

RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price			Technical			3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 12-31-18	Est'd Div'd next 12 mos.	LATEST RESULTS				Year Ago	Qtr. Ended	Earnings Per sh.	Year Ago	Qtr. Ended	Latest Div'd	Year Ago	Do Options Trade?	
		Timeliness	Safety	Beta	Timeliness	Safety	Beta						Qtr. Ended	Qtr. Ended	Qtr. Ended	Qtr. Ended									
2353 Eldorado Resorts	(NDO) ERI	42.35	3	3	4	90	45-65	(5-55%)	23.5	NIL	1.80	NIL	25	3/31	♦.27	.02	3/31	NIL	NIL	NIL	NIL	NIL	NIL	NIL	YES
1383 Electro Scientific	(NDO) ESIO	18.09	▲1	3	2	1.05	40-60	(120-230%)	7.4	NIL	2.44	NIL	1	3/31	♦1.02	.09	3/31	NIL	NIL	NIL	NIL	NIL	NIL	NIL	YES
2012 Electronic Arts	(NDO) EA	123.89	▲3	3	3	.95	125-185	(N-50%)	30.7	NIL	4.04	NIL	90	3/31	♦1.95	1.81	3/31	NIL	NIL	NIL	NIL	NIL	NIL	NIL	YES
1413 Electr. for Imaging	(NDO) EFIL	32.39	4	3	5	1.15	55-80	(70-145%)	15.4	NIL	2.10	NIL	75	3/31	.38	.55	3/31	NIL	NIL	NIL	NIL	NIL	NIL	NIL	YES
710 Embraer SA	(NDO) ERJ	25.00	-	3	-	.95	30-50	(20-100%)	24.3	0.8	1.03	.20	43	3/31	d.07	.23	3/31	NIL	114	NIL	NIL	NIL	NIL	NIL	YES
387 EMCOR Group	(NDO) EME	78.21	3	3	3	1.10	70-110	(N-40%)	17.4	0.4	4.49	32	54	3/31	.94	.88	6/30	.08	.08	NIL	NIL	NIL	NIL	YES	
1218 Emera Inc.	(TSE) EMATO	40.87b	3	2	4	.65	65-85	(60-110%)	14.9	5.5	2.26	85	12/31	d1.06(b)	34(b)	6/30	.565(b)	523(b)	NIL	NIL	NIL	NIL	NIL	YES	
1305 Emerson Electric	(NDO) EMR	69.76	▲3	1	2	1.15	85-105	(20-50%)	22.5	2.8	3.10	1.95	39	3/31	.76	.58	6/30	.485	.48	NIL	NIL	NIL	NIL	YES	
1949 Empire Company Ltd.	(TSE) EMPA TO	24.94b	3	2	2	.60	25-40	(N-35%)	17.8	1.8	1.40	44	57	1/31	.21(b)	11(b)	6/30	.105(b)	103(b)	NIL	NIL	NIL	NIL	YES	
627 Enable Midstream Part.	(NDO) ENBL	14.28	4	4	4	1.25	25-45	(75-215%)	14.7	8.9	.97	1.27	79	3/31	.24	.25	6/30	♦318	.32	NIL	NIL	NIL	NIL	YES	
628 Enbridge Energy Part.	(NDO) EEP	9.03	3	3	4	1.40	18-30	(100-230%)	10.6	15.5	.85	1.40-84	79	12/31	.26	.08	6/30	♦.35	.35	NIL	NIL	NIL	NIL	YES	
612 Enbridge Inc.	(TSE) ENB TO	40.41b	3	3	4	1.00	55-80	(35-100%)	16.2	6.6	2.50	2.68	60	12/31	.61(b)	56(b)	6/30	.671(b)	61(b)	NIL	NIL	NIL	NIL	YES	
536 Encana Corp.	(NDO) ECA	13.45	3	5	4	1.75	18-35	(35-160%)	20.4	0.4	.66	.67	3/31	.16	.11	6/30	.015	.015	NIL	NIL	NIL	NIL	YES		
804 Encompass Health	(NDO) EHC	63.34	2	3	3	1.00	55-85	(N-35%)	19.5	1.6	3.25	1.00	7	3/31	.85	.70	9/30	♦.25	.24	NIL	NIL	NIL	NIL	YES	
1614 Endo Int'l plc	(NDO) ENDP	5.79	4	3	4	1.10	9-16	(55-175%)	2.5	NIL	2.35	NIL	69	3/31	♦.67	1.23	3/31	NIL	NIL	NIL	NIL	NIL	NIL	YES	
1820 Endurance Int'l Group	(NDO) EIGI	8.70	3	4	4	1.20	9-15	(5-70%)	NMF	NIL	4.35	NIL	29	3/31	d.05	d.26	3/31	NIL	NIL	NIL	NIL	NIL	NIL	YES	
2408 Energen Corp.	(NDO) EGN	65.98	3	2	1.60	70-105	(5-60%)	22.4	NIL	2.95	NIL	46	3/31	♦1.22	.34	3/31	NIL	NIL	NIL	NIL	NIL	NIL	NIL	YES	
1194 Energizer Holdings	(NDO) ENR	54.97	3	3	1.75	65-95	(20-75%)	16.2	2.1	3.40	1.16	86	3/31	.45	.50	6/30	.29	.275	NIL	NIL	NIL	NIL	NIL	YES	
629 Energy Transfer Equity	(NDO) ETE	16.69	▲2	4	5	2.05	25-40	(50-140%)	13.9	7.5	1.20	1.25	79	12/31	.22	.21	6/30	♦.305	.265	NIL	NIL	NIL	NIL	YES	
630 Energy Transfer Part.	(NDO) ETP	18.23	-	3	-	1.50	20-30	(10-65%)	19.2	12.4	.95	2.26	79	12/31	.58	.29	6/30	♦.565	.535	NIL	NIL	NIL	NIL	YES	
537 Enerplus Corp.	(TSE) ERFTO	15.92b	4	4	3	2.05	20-35	(25-120%)	12.7	0.8	1.25	12	67	3/31	♦.12(b)	31(b)	3/31	.03(b)	03(b)	NIL	NIL	NIL	NIL	YES	
1219 EnerSys	(NDO) ENS	73.96	3	3	4	1.35	70-110	(N-50%)	14.8	0.9	5.00	70	85	12/31	d.61	.82	3/31	.175	.175	NIL	NIL	NIL	NIL	YES	
631 EnLink Midstream Part.	(NDO) ENLK	15.75	3	4	5	1.70	20-35	(25-120%)	39.4	9.9	.40	1.56	79	3/31	.06	d.03	6/30	♦.39	.39	NIL	NIL	NIL	NIL	YES	
1752 EnPro Industries	(NDO) NPO	71.74	▲1	3	2	1.30	135-200	(90-180%)	18.9	1.3	3.60	.96	33	3/31	♦.58	.30	6/30	.24	.22	NIL	NIL	NIL	NIL	YES	
2424 Ensco plc	(NDO) ESV	6.02	5	4	5	1.65	7-11	(15-85%)	NMF	0.7	d1.10	04	94	3/31	d.32	d.09	3/31	.01	.01	NIL	NIL	NIL	NIL	YES	
1384 Entegris, Inc.	(NDO) ENTG	35.00	1	3	3	1.20	40-55	(15-55%)	19.4	0.8	1.80	.28	1	3/31	.47	.28	6/30	.07	.07	NIL	NIL	NIL	NIL	YES	
909 Entergy Corp.	(NDO) ETR	79.40	3	3	3	.65	65-100	(N-25%)	18.7	4.5	4.25	3.60	45	3/31	.73	.46	6/30	.89	.87	NIL	NIL	NIL	NIL	YES	
632 Enterprise Products	(NDO) EPD	26.75	3	3	5	1.30	40-60	(50-125%)	17.3	6.5	1.55	1.74	79	3/31	.41	.36	6/30	♦.428	.415	NIL	NIL	NIL	NIL	YES	
2331 Entranvision Communic.	(NDO) EVC	4.60	5	4	3	1.25	7-11	(50-140%)	23.0	4.3	.20	.20	40	3/31	♦d.02	.03	6/30	♦.05	.031	NIL	NIL	NIL	NIL	YES	
805 Envision Healthcare	(NDO) EVHC	38.88	-	3	-	NMF	70-105	(80-170%)	10.8	NIL	3.60	NIL	7	3/31	♦.71	.66	3/31	NIL	NIL	NIL	NIL	NIL	NIL	YES	
439 Equifax, Inc.	(NDO) EFX	111.26	3	3	4	.95	135-200	(20-80%)	18.7	1.4	5.95	1.56	24	3/31	1.43	1.44	6/30	♦.39	.39	NIL	NIL	NIL	NIL	YES	
1821 Equinix, Inc.	(NDO) EQIX	388.34	3	3	3	.95	245-370	(N- N%)	NMF	2.3	3.85	9.12	29	3/31	♦.79	.57	6/30	♦.28	2.00	NIL	NIL	NIL	NIL	YES	
1520 Equity Residential	(NDO) EQR	62.14	4	2	4	.75	70-95	(15-55%)	37.7	3.5	1.65	2.16	93	3/31	.57	.39	6/30	♦.54	.504	NIL	NIL	NIL	NIL	YES	
948 Ericsson AD(R)g	(NDO) ERIC	7.89	5	3	3	1.05	7-10	(N-25%)	52.6	1.6	.15	13	88	3/31	d.02	d.35	6/30	.119	.111	NIL	NIL	NIL	NIL	YES	
767 Ene Indemnity	(NDO) ERIE	114.39	3	2	3	80	115-155	(N-35%)	28.6	2.9	4.00	3.36	53	3/31	1.26	.91	9/30	♦.84	.783	NIL	NIL	NIL	NIL	YES	
1751 ESCO Technologies	(NDO) ESE	57.50	4	3	3	1.00	75-115	(30-100%)	20.0	0.6	2.87	.32	33	3/31	♦.48	.45	9/30	♦.08	.08	NIL	NIL	NIL	NIL	YES	
1414 Essendant Inc.	(NDO) ESND	9.88	-	3	-	1.20	18-25	(80-155%)	39.5	5.7	.25	.56	75	3/31	d.12	.25	6/30	.14	.14	NIL	NIL	NIL	NIL	YES	
1521 Essex Property Trust	(NDO) ESS	241.46	3	3	4	.75	240-360	(N-50%)	52.5	3.1	4.60	7.49	93	3/31	♦1.38	2.72	6/30	♦1.66	1.75	NIL	NIL	NIL	NIL	YES	
711 Esterline Technologies	(NDO) ESL	74.75	4	3	4	1.45	85-130	(15-75%)	19.1	NIL	3.91	NIL	43	3/31	♦.80	1.21	3/31	NIL	NIL	NIL	NIL	NIL	NIL	YES	
1150 Ethan Allen Interiors	(NDO) ETH	23.90	4	3	4	1.15	40-60	(65-150%)	16.0	3.2	1.49	.76	74	3/31	.11	.23	9/30	.19	.19	NIL	NIL	NIL	NIL	YES	
424 European Equity Fund	(NDO) EEA	9.76	-	3	3	.95	11-17	(15-75%)	NMF	1.0	NMF	.10	-	12/31	10.97(q)	8.76(q)	3/31	.035	.055	NIL	NIL	NIL	NIL	YES	
2027 Everest Re Group Ltd.	(NDO) RE	227.17	4	1	1	.75	290-355	(30-55%)	10.6	2.3	21.36	5.30	96	3/31	5.36	6.47	3/31	1.30	1.25	NIL	NIL	NIL	NIL	YES	
143 Eversource Energy	(NDO) ES	57.32	▼4	1	4	.65	60-75	(15-30%)	17.6	3.6	3.25	2.05	73	3/31	♦.85	.82	6/30	♦.505	.475	NIL	NIL	NIL	NIL	YES	
837 Exelixis, Inc.	(NDO) EXEL	21.67	3	4	3	1.25	30-55	(40-155%)	21.7	NIL	1.00	NIL	87	3/31	♦.37	.05	3/31	NIL	NIL	NIL	NIL	NIL	NIL	YES	
144 Exelon Corp.	(NDO) EXC	40.74	▼3	3	3	.70	35-55	(N-35%)	15.7	3.6	2.60	1.45	73	3/31	.60	.83	6/30	.345	.328	NIL	NIL	NIL	NIL	YES	
452 Expedia Group	(NDO) EXPE	110.54	4	3	4	1.20	145-215	(30-95%)	42.5	1.1	2.60	1.20	70	3/31	d.91	d.57	6/30	♦.30	.28	NIL	NIL	NIL	NIL	YES	
388 Expeditors Int'l	(NDO) EXPD	69.58	3	1	3	.90	105-125	(50-80%)	24.4	1.3	2.85	.90	54	3/31	♦.76	.51	6/30	.45	.42	NIL	NIL	NIL	NIL	YES	
2208 Express, Inc.	(NDO) EXPR	7.95	3	4	3	1.10	11-18	(40-125%)	19.9	NIL	.40	NIL	52	1/31	.34	.29	3/31	NIL	NIL	NIL	NIL	NIL	NIL	YES	
968 Express Scripts	(NDO) ESX	68.12	-	3	-	.95	120-180	(75-165%)	9.3	NIL	7.30	NIL	2	3/31	♦1.10	.90	3/31	NIL	NIL	NIL	NIL	NIL	NIL	YES	
2354 Extended Stay America	(NDO) STAY	19.74	3	3	3	1.15	30-50	(50-155%)	21.7	4.5	.91	.88	25	3/31	.19	.12	6/30	♦.2							

ROE and ROR Analysis Columbia Gas of PA
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Docket No. R-2018-2647577
Exhibit MFG-11, Schedule 3

FI-GO

Page 10

SUMMARY AND INDEX • THE VALUE LINE INVESTMENT SURVEY

May 18, 2018

PAGE NUMBERS

Bold type refers to Ratings and Reports

RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price			Technical			3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings to 12-31-18	(f) Est'd Div'd next 12 mos.	LATEST RESULTS					Year Ago	Do Options Trade?	
		Timeliness	Safety	Beta	Timeliness	Safety	Beta						Qtr. Ended	Earns. Per sh.	Year Ago	Qtr. Ended	Latest Div'd			Year Ago
784 First Horizon National	FHN	18.72	3	3	2	1.10	18-25 (N-35%)	16.3	2.6	1.15	48	21	3/31	.27	.23	9/30	.12	.09	YES	
785 First Midwest Bancorp (IND)	FMBI	25.03	3	3	3	1.10	25-40 (N-60%)	17.9	1.8	1.40	45	21	3/31	.33	.23	6/30	▲ .11	.09	YES	
2516 First Republic Bank	FRC	96.60	3	3	3	1.00	105-155 (10-60%)	19.4	0.7	4.98	72	18	3/31	1.13	1.01	6/30	▲ .18	.17	YES	
1220 First Solar, Inc.	FSLR	67.26	4	3	2	1.40	90-140 (35-110%)	27.5	NIL	2.45	NIL	85	3/31	.78	.09	3/31	NIL	NIL	YES	
2558 FirstCash, Inc.	FCFS	87.75	-	3	-	.85	70-105 (N-20%)	26.6	1.0	3.30	86	16	3/31	.90	.67	6/30	.22	.19	YES	
145 FirstEnergy Corp.	FE	33.24	4	3	2	1.25	30-50 (25-110%)	33.2	4.3	1.00	144	73	3/31	.04	.71	6/30	.36	.36	YES	
2623 Fiserv Inc.	FISV	70.41	2	2	3	.95	60-60 (N-15%)	13.0	NIL	5.40	NIL	8	3/31	.76	.63	3/31	NIL	NIL	YES	
854 Fisht Inc.	FIT	5.08	5	4	4	1.40	8-13 (55-155%)	NMF	NIL	d.40	NIL	50	3/31	d.17	d.15	3/31	NIL	NIL	YES	
2143 Five Below, Inc.	FIVE	71.32	2	3	1	.95	95-145 (35-105%)	29.7	NIL	2.40	NIL	48	1/31	1.21	.90	3/31	NIL	NIL	YES	
2559 FleetCor Technologies	FLT	203.25	2	3	3	1.25	260-390 (30-90%)	19.8	NIL	10.25	NIL	16	3/31	d.50	1.96	3/31	NIL	NIL	YES	
1330 Flex Ltd.	FLEX	14.27	3	3	3	1.20	18-30 (25-110%)	11.5	NIL	1.24	NIL	50	3/31	.28	.29	3/31	NIL	NIL	YES	
1139 Floor & Decor Hldgs	FND	45.62	-	3	-	NMF	60-90 (30-95%)	45.6	NIL	1.00	NIL	26	3/31	d.26	.13	3/31	NIL	NIL	YES	
1911 Flowers Foods	FLO	22.53	4	3	3	.90	25-35 (10-55%)	20.5	3.2	1.10	.73	66	12/31	.17	.16	3/31	.17	.16	YES	
1712 Flowersave Corp.	FLS	46.82	5	3	4	1.35	45-65 (N-40%)	26.8	1.6	1.75	.76	22	12/31	.50	.72	6/30	.19	.19	YES	
★ 1234 Fluor Corp.	FLR	44.67	5	3	2	1.35	70-100 (55-125%)	19.0	1.9	2.35	.84	82	3/31	d.13	.43	9/30	▲ .21	.21	YES	
1503 Flushing Financial (IND)	FFIC	25.90	4	3	3	1.00	30-40 (15-55%)	13.0	3.1	2.00	.80	83	3/31	.39	.42	3/31	▲ .20	.18	YES	
2210 Foot Locker	FL	41.93	4	3	3	.90	80-120 (50-185%)	9.2	3.3	4.55	1.38	52	1/31	1.14	1.37	6/30	▲ .345	.31	YES	
105 Ford Motor	F	11.27	3	3	4	1.20	15-25 (35-120%)	6.8	5.3	1.65	.60	44	3/31	.43	.40	6/30	.15	.15	YES	
1524 Forest City Realty	FCEA	19.76	4	3	3	1.10	25-35 (25-75%)	26.3	3.6	.75	.72	93	3/31	d.73	.16	3/31	▲ .18	.09	YES	
441 Forrester Research (IND)	FORR	42.50	5	3	3	.70	40-60 (N-40%)	30.6	1.9	1.39	.80	24	3/31	d.01	.17	6/30	▲ .20	.19	YES	
2595 Fortinet Inc. (IND)	FTNT	56.94	3	3	3	1.15	60-90 (5-60%)	67.0	NIL	.85	NIL	27	3/31	d.24	.06	3/31	NIL	NIL	YES	
910 Fortis Inc. (TSE)	FTS.TO	42.96	4	2	4	.70	40-55 (N-30%)	15.9	4.1	2.70	1.75	45	3/31	.69(b)	.72(b)	6/30	425(b)	40(b)	YES	
120 Fortive Corp.	FTV	74.25	-	2	-	1.05	80-110 (10-50%)	22.8	0.4	3.25	.28	47	3/31	.74	.57	6/30	.07	.07	YES	
1151 Fortune Brands Home	FBHS	55.42	2	3	3	1.30	90-130 (60-135%)	15.6	1.4	3.55	.80	74	3/31	.56	.53	6/30	.20	.18	YES	
321 Forward Air (IND)	FWRD	56.10	2	3	3	1.00	80-120 (45-115%)	18.4	1.1	3.05	.60	35	3/31	.60	.47	6/30	.15	.15	YES	
453 Fossil Group (IND)	FOSL	16.44	5	5	4	1.35	20-40 (20-145%)	65.8	NIL	.25	NIL	55	3/31	d.99	d1.00	3/31	NIL	NIL	YES	
2211 Francesca's Hldgs. (IND)	FRAN	5.16	4	4	3	.75	17-30 (200-460%)	9.4	NIL	.55	NIL	52	1/31	.20	.39	3/31	NIL	NIL	YES	
1569 Franco-Nevada Corp.	FNV	74.44	3	3	5	.60	70-110 (N-50%)	67.7	1.2	1.10	.92	72	12/31	.26	.19	3/31	.23	.22	YES	
1307 Franklin Electric (IND)	FELE	44.35	3	3	3	1.25	50-80 (15-80%)	19.7	1.1	2.25	.48	39	3/31	.45	.33	6/30	▲ .12	.106	YES	
2560 Franklin Resources	BEN	33.31	4	2	3	1.35	55-75 (65-125%)	9.9	2.9	3.35	.98	16	3/31	.79	.74	6/30	▲ .23	.20	YES	
2144 Fred's Inc. (IND)	FRED	1.60	-	5	-	1.15	9-18 (NMF)	NMF	NIL	d.30	NIL	48	1/31	d.62	d.60	3/31	NIL	.06	YES	
2456 Freeport-McMoRan Inc.	FCX	50.14	3	5	1	2.00	25-45 (65-195%)	6.5	1.3	2.35	.20	65	3/31	.46	.15	6/30	▲ .05	NIL	YES	
806 Fresenius Medical ADR	FMS	50.14	▲	2	2	.80	75-105 (50-110%)	17.6	1.2	2.85	.60	7	12/31	.77	.63	3/31	NIL	NIL	YES	
1912 Fresh Del Monte Prod.	FDP	47.33	4	3	5	.85	50-75 (5-60%)	16.9	1.3	2.80	.60	66	3/31	.85	.90	6/30	.15	.15	YES	
1037 1913 Freshpet, Inc.	FRPT	19.10	4	4	3	1.20	18-30 (N-55%)	NMF	NIL	.05	NIL	66	3/31	d.10	d.09	3/31	NIL	NIL	YES	
851 1034 Frontier Communic. (IND)	FTR	9.78	3	5	5	1.20	40-75 (310-665%)	NMF	NIL	d1.65	NIL	84	3/31	d.58	d1.20	3/31	▼ .11	1.574	YES	
332 Frontline Ltd.	FRO	4.50	4	5	3	1.25	9-18 (100-300%)	NMF	NIL	d.05	NIL	20	97	12/31	d.05	.12	3/31	NIL	.15	YES
2666 1986 FUJIFILM Hldgs. ADR(g)(P)(K)	FUJII	38.40	-	3	-	.95	50-75 (30-95%)	10.2	1.7	3.76	.67	28	12/31	1.09	.75	3/31	NIL	NIL	YES	
570 Fuller (H.B.)	FUL	51.45	4	3	3	1.35	60-90 (15-75%)	19.1	1.2	2.70	.62	15	2/28	.24	.29	6/30	▲ .155	.15	YES	
1422 2105 G-III Apparel Group (IND)	GHI	36.49	3	3	1	1.25	50-75 (35-105%)	19.2	NIL	1.90	NIL	71	1/31	.14	d.42	3/31	NIL	NIL	YES	
344 GATX Corp.	GATX	70.14	3	3	3	1.25	75-110 (5-55%)	12.7	2.5	5.53	1.76	36	3/31	1.98	1.44	6/30	.44	.42	YES	
924 GCI Liberty	GNCMA						SEE FINAL REPORT - PAGE 924													
571 GCP Applied Technologies	GCP	29.25	-	3	-	NMF	30-40 (5-35%)	29.3	NIL	1.00	NIL	15	3/31	d.01	d.06	3/31	NIL	NIL	YES	
1525 GEO Group (The)	GEO	24.42	4	3	5	1.15	30-45 (25-85%)	18.1	7.7	1.35	1.89	93	3/31	.29	.35	6/30	.47	.47	YES	
1526 GGP Inc.	GGP	20.05	-	3	-	.95	25-40 (25-100%)	40.1	4.8	5.0	.96	93	3/31	d.06	.11	9/30	▲ .22	.22	YES	
601 GTT Communications	GTI	52.70	4	3	1	1.20	50-70 (N-35%)	NMF	NIL	.10	NIL	78	3/31	d.69	d.32	3/31	NIL	NIL	YES	
1207 Gabbelli Equity	GAB	6.15	-	3	-	1.15	7-10 (15-65%)	NMF	0.8	NMF	.05	-	12/31	6.47(q)	5.84(q)	3/31	.01	.01	YES	
2561 Gallagher (Arthur J.)	AUG	68.71	3	1	2	1.00	105-130 (55-90%)	20.5	2.4	3.35	1.64	16	3/31	1.48	.31	6/30	.41	.39	YES	
2174 GameStop Corp.	GME	12.79	4	3	5	1.10	16-25 (25-95%)	4.4	11.9	2.90	1.52	55	1/31	d1.07	2.04	3/31	.38	.38	YES	
2383 Gannett Co.	GCI	10.84	3	3	3	1.05	30-40 (175-270%)	18.1	5.9	.60	.64	80	3/31	.81	d.02	6/30	▲ .16	.16	YES	
2212 Gap (The), Inc.	GPS	28.72	3	3	1	1.00	35-50 (20-75%)	10.8	3.4	2.65	.97	52	1/31	.51	.51	6/30	▲ .243	.23	YES	
1308 Garmin Ltd. (IND)	GRMN	59.58	3	3	3	1.00	55-85 (N-45%)	18.6	3.6	3.21	2.12	39	3/31	.68	.52	6/30	▲ .53	.51	YES	
442 Gardner Inc.	IT	130.53	2	2	4	.95	150-200 (15-55%)	34.4	NIL	3.80	NIL	24	3/31	d.72	.60	3/31	NIL	NIL	YES	
333 GasLog Ltd.	GLOG	17.90	5	4	3	1.75	25-45 (40-150%)	29.8	3.4	.60	.60	97	3/31	d.01	.06	6/30	▲ .15	.14	YES	
1221 Generac Holdings	GNRC	47.51	2	3	3	1.15	70-100 (45-110%)	17.3	NIL	2.75	NIL	85	3/31	.42	.21	3/31	NIL	NIL	YES	
1208 Gen'l Amer. Invest	GAM	33.88	-	3	-	1.00	45-65 (35-90%)	NMF	1.7	NMF	.56	-	12/31	40.47(q)	37.56(q)	3/31	NIL	NIL	YES	
1309 Gen'l Cable	BGC	29.70	-	4	-	1.65	20-35 (N-20%)	29.7	2.4	1.00	.72	39	3/31	d.20	.27	3/31	.18	.18	YES	
1419 712 Gen'l Commun. 'A'	GD	199.62	3	1	1	.90	110-255 (N-30%)	18.3	1.9	10.90	3.72	43	3/31	2.65	2.48	6/30	▲ .92	.84	YES	
2456 1753 Gen'l Electric	GE	14.27	5	4	4	1.00	30-45 (110-215%)	14.3	3.4	1.00	.48	33	3/31	.16	.21	6/30	▲ .12	.24	YES	
1914 Gen'l Mills	GIS	42.30	3	1	3	.80	55-70 (30-65%)	5.6	4.3	3.11	1.96	66	2/28	.79	.72	6/30	.49	.48	YES	
106 Gen'l Motors	GM	36.33	2	3	3	1.20</														

ROE and ROR Analysis Columbia Gas of PA
CAPM/ECAPM Analysis
Value Line Projected Growth Rate

Docket No. R-2018-2647577
Exhibit MFG-11, Schedule 3

May 18, 2018

SUMMARY AND INDEX • THE VALUE LINE INVESTMENT SURVEY

Page 11

GO-HO

PAGE NUMBERS

Bold type refers to Ratings and Reports

RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price			Technical			3-5 year Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings to 12-31-18	(f) Est'd Div'd next 12 mos.	LATEST RESULTS			Year Ago	Qtr. Ended	Earnings Per sh.	Year Ago	Qtr. Ended	Latest Div'd	Year Ago
		Timeliness	Safety	Beta	Timeliness	Safety	Beta						Qtr.	Year	Year							
		12 mos.	12 mos.	12 mos.	12 mos.	12 mos.	12 mos.						12 mos.	12 mos.	12 mos.							
925 Gogo Inc.	(NDO) GOGO	5.06	5	4	1.20	11-	18	(115-255%)	NMF	NIL	d1.85	NIL	76	3/31	d.58	d.52	3/31	NIL	NIL	YES		
334 Golar LNG Ltd.	(NDO) GLNG	34.44	4	4	1.95	35-	55	(N-60%)	NMF	0.6	d.35	20	97	12/31	.04	d.17	6/30	.05	.05	YES		
1570 Goldcorp Inc.	(NDO) GG	13.49	4	3	1.75	30-	45	(120-235%)	30.0	0.7	.45	10	72	3/31	.08	1.0	3/31	.02	.02	YES		
1807 Goldman Sachs	(NDO) GS	237.00	2	1	1.20	305-	375	(30-60%)	9.9	1.4	24.00	3.20	6	3/31	6.95	5.15	6/30	.80	.75	YES		
990 Goodyear Tire	(NDO) GT	24.92	3	3	1.40	55-	85	(120-240%)	6.6	2.5	3.80	6.2	10	3/31	.50	.74	6/30	.14	.10	YES		
1331 GoPro, Inc.	(NDO) GPRO	5.68	▲4	4	1.35	5-	8	(N-40%)	NMF	NIL	d.50	NIL	50	3/31	d.55	d.78	3/31	NIL	NIL	YES		
161 Gorman-Rupp Co.	(NDO) GRC	32.76	3	3	1.15	40-	60	(20-55%)	23.4	1.5	1.40	50	30	3/31	.38	.23	6/30	.125	.115	YES		
572 Grace (W.R.) & Co.	(NDO) GRA	70.23	-	3	NMF	95-	145	(35-105%)	18.1	1.4	3.87	98	15	3/31	.82	.68	6/30	.24	.21	YES		
1713 Graco Inc.	(NDO) GGC	45.14	2	3	1.15	45-	65	(N-45%)	24.9	1.2	1.81	53	22	3/31	.49	.35	6/30	.133	.12	YES		
1754 Graham Hldgs.	(NDO) GHC	599.05	3	3	1.90	785-	1180	(30-95%)	18.2	0.9	33.00	5.32	33	3/31	7.78	3.75	9/30	▲1.33	1.27	YES		
1310 Gramer (W.W.)	(NDO) GWW	290.07	3	1	2.90	310-	380	(5-30%)	20.2	1.9	14.38	5.44	39	3/31	4.18	2.88	6/30	▲1.36	1.28	YES		
2004 Grand Canyon Education	(NDO) LOPE	107.27	3	3	1.10	100-	150	(N-40%)	22.8	NIL	4.70	NIL	63	3/31	▲1.52	1.16	3/31	NIL	NIL	YES		
1235 Granite Construction	(NDO) GVA	57.39	2	3	1.30	65-	100	(15-75%)	17.1	0.9	3.35	52	82	3/31	d.13	d.60	6/30	.13	.13	YES		
1179 Graphic Packaging	(NDO) GPK	13.80	3	3	1.05	25-	35	(80-155%)	13.8	2.2	1.00	30	32	3/31	.10	.12	6/30	.075	.075	YES		
2332 Gray Television	(NDO) GTN	11.30	▲2	4	1.45	20-	35	(75-210%)	8.1	NIL	1.40	NIL	40	3/31	▲.22	14	3/31	NIL	NIL	YES		
911 G1 Plains Energy	(NDO) GXP	32.14	-	3	1.70	25-	40	(N-25%)	25.7	3.6	1.25	1.16	45	3/31	▲.16	d.11	6/30	.275	.275	YES		
1222 Green Plains Inc.	(NDO) GPPE	19.20	▼5	4	1.85	20-	35	(5-80%)	32.0	2.5	.60	48	85	3/31	▲d.60	d.09	3/31	12	.12	YES		
346 Greenbrier (The) Cos.	(NDO) GBX	46.00	3	4	1.80	60-	100	(30-115%)	10.5	2.2	4.39	1.00	36	2/28	1.02	1.09	6/30	▲.25	.22	YES		
1808 Greenhill & Co.	(NDO) GHL	25.45	▲4	4	1.35	40-	70	(55-175%)	21.4	0.8	1.19	20	6	3/31	▲.34	.04	6/30	▲.05	.45	YES		
2028 Greenlight Capital Re	(NDO) GLRE	15.55	5	3	1.10	25-	35	(60-125%)	NMF	NIL	d1.00	NIL	96	3/31	d3.85	.22	3/31	NIL	NIL	YES		
1180 Greif, Inc.	(NDO) GEF	59.83	3	3	1.35	70-	105	(15-75%)	18.1	2.8	3.31	1.68	32	1/31	.49	.45	6/30	.42	.42	YES		
1755 Griffin Corp.	(NDO) GFF	22.75	3	3	1.35	30-	50	(30-120%)	28.8	1.2	.79	28	33	3/31	▲.06	15	6/30	▲.07	.06	YES		
1420 Group 1 Automotive	(NDO) GPI	68.88	3	3	1.30	90-	130	(30-90%)	7.9	1.5	8.70	1.05	14	3/31	1.70	1.53	3/31	▲.26	.24	YES		
453 2642 Group, Inc.	(NDO) GRPN	4.84	4	5	1.50	5-	9	(5-65%)	48.4	NIL	NIL	10	70	3/31	▲d.01	d.04	3/31	NIL	NIL	YES		
1419 2107 Guess Inc.	(NDO) GES	23.21	4	3	1.95	25-	40	(10-70%)	23.2	3.9	1.00	90	71	1/31	.63	.41	6/30	.225	.45	YES		
807 HCA Holdings	(NDO) HCA	97.40	1	3	2.85	135-	200	(40-105%)	10.8	1.4	8.98	1.40	7	3/31	2.33	1.73	6/30	.35	.35	YES		
1527 HCP Inc.	(NDO) HCP	23.52	5	3	1.80	25-	40	(5-70%)	33.6	6.3	.70	1.49	93	3/31	▲.08	.97	6/30	.37	.37	YES		
1110 HD Supply Holdings	(NDO) HDS	38.96	-	3	1.40	50-	70	(30-80%)	13.7	NIL	2.85	NIL	19	1/31	.49	.44	3/31	.18	.18	YES		
1152 HNI Corp.	(NDO) HNI	35.32	4	3	1.35	70-	110	(100-210%)	14.4	3.3	2.45	1.18	74	3/31	.10	.26	6/30	▲.295	.285	YES		
1398 HP Inc.	(NDO) HPQ	21.96	-	4	NMF	25-	40	(15-60%)	12.1	2.6	1.61	.58	37	1/31	.48	.36	6/30	▲139	.133	YES		
2517 HSBC Holdings PLC	(NDO) HSBC	48.63	5	3	1.05	45-	65	(N-35%)	10.8	5.3	4.50	2.60	18	12/31	.10	d1.80	9/30	▲.50	.50	YES		
208 Haemonetics Corp.	(NDO) HAE	82.55	3	3	1.90	▲75-	115	(N-40%)	40.3	NIL	2.05	NIL	42	3/31	▲.43	.39	3/31	NIL	NIL	YES		
1915 Ham Celestial Group	(NDO) HAIN	27.45	3	3	1.05	45-	65	(65-135%)	15.6	NIL	1.76	NIL	66	3/31	▲.37	.33	3/31	.18	.18	YES		
2425 Halliburton Co.	(NDO) HAL	51.87	4	3	1.40	60-	90	(15-75%)	25.9	1.4	2.00	.72	94	3/31	.05	d.04	3/31	.18	.18	YES		
209 Halyard Health	(NDO) HYH	53.02	-	3	1.25	▲40-	60	(N-15%)	62.4	NIL	.85	NIL	42	3/31	d.24	d.32	3/31	NIL	NIL	YES		
786 Hancock Holding	(NDO) HBHC	50.92	3	3	1.20	55-	85	(10-65%)	13.6	1.9	3.75	96	21	3/31	.83	.57	6/30	.24	.24	YES		
2108 Hanesbrands, Inc.	(NDO) HBI	16.75	3	3	1.00	25-	35	(50-110%)	9.6	4.1	1.75	.68	71	3/31	.26	.29	6/30	.15	.15	YES		
768 Hanover Insurance	(NDO) THG	116.93	3	2	1.95	105-	145	(N-25%)	14.0	1.8	8.35	2.16	53	3/31	▲.95	.95	3/31	.54	.50	YES		
2309 Harley-Davidson	(NDO) HOG	40.31	3	3	1.10	85-	130	(110-225%)	12.0	3.7	3.35	1.48	23	3/31	1.24	1.05	3/31	▲.37	.365	YES		
950 Harmonic, Inc.	(NDO) HLT	3.55	-	4	1.25	6-	10	(70-180%)	23.7	NIL	.15	NIL	88	3/31	d.01	d.14	3/31	NIL	NIL	YES		
1332 Harris Corp.	(NDO) HRS	153.94	3	2	2.00	155-	210	(N-35%)	23.1	1.5	6.65	2.37	50	3/31	1.67	1.31	6/30	.57	.53	YES		
391 Harsco Corp.	(NDO) HSC	22.00	3	2	1.75	25-	40	(15-80%)	19.1	NIL	1.15	NIL	54	3/31	.21	.11	3/31	NIL	NIL	YES		
2563 Hartford Finl Svcs.	(NDO) HIG	52.56	3	2	1.00	55-	70	(5-35%)	10.4	1.9	5.04	1.00	16	3/31	1.27	1.00	6/30	.25	.23	YES		
2310 Hasbro, Inc.	(NDO) HAS	87.30	2	3	1.40	85-	120	(20-80%)	17.8	2.9	4.90	2.52	23	3/31	.10	.54	6/30	▲.63	.57	YES		
2175 Haverly Furniture	(NDO) HVT	19.35	3	3	1.00	30-	50	(55-160%)	13.8	3.8	1.40	.74	55	3/31	.29	.26	6/30	▲.18	.12	YES		
2227 Hawaiian Elec.	(NDO) HE	34.22	2	3	1.65	25-	35	(N-10%)	18.0	3.6	1.90	1.24	81	12/31	.42	.41	3/31	.31	.31	YES		
910 Hawaiian Hldgs.	(NDO) HA	36.60	3	4	1.20	45-	75	(25-105%)	8.8	1.3	4.15	.48	41	3/31	.56	.68	6/30	.12	.12	YES		
326 Hawaiian Telcom	(NDO) HCOM	28.28	-	3	1.80	25-	35	(N-25%)	NMF	NIL	d.70	NIL	76	12/31	d.17	d.02	3/31	NIL	NIL	YES		
734 Haynes International	(NDO) HAYN	39.09	5	3	1.30	55-	80	(40-105%)	47.7	2.3	.82	.88	68	3/31	▲d.17	d.15	6/30	▲.22	.22	YES		
1528 Healthcare Rftry Trust	(NDO) HR	27.72	5	3	1.70	35-	50	(25-60%)	69.3	4.3	.40	1.20	93	3/31	▲.07	.06	6/30	.30	.30	YES		
2241 392 Healthcare Svcs.	(NDO) HCSG	38.34	5	2	2.90	65-	85	(70-120%)	32.0	2.1	1.20	.80	54	3/31	NIL	.30	6/30	▲.193	.188	YES		
322 Heartland Express	(NDO) HTLD	17.65	5	3	1.40	25-	35	(40-100%)	23.5	0.5	.75	.06	35	3/31	.16	.17	6/30	.02	.02	YES		
713 HEICO Corp.	(NDO) HEI	91.32	2	3	1.90	75-	110	(N-20%)	42.3	0.2	2.16	.17	43	1/31	.49	.38	3/31	▲.07	.056	YES		
2457 1638 Heindck & Struggles	(NDO) HSII	37.55	3	3	1.90	35-	55	(N-45%)	18.8	1.4	2.00	.52	11	3/31	.53	.03	6/30	.13	.13	YES		
1012 Helen of Troy Ltd.	(NDO) HELE	91.45	3	3	1.05	90-	135	(N-50%)	12.6	NIL	7.24	NIL	58	2/28	1.69	1.78	3/31	NIL	NIL	YES		
2426 Helix Energy Solutions	(NDO) HLX	7.77	3	4	2.00	16-	25	(105-220%)	51.8	NIL	.15	NIL	94	3/31	d.02	d.11	3/31	NIL	NIL	YES		
2427 Helmerich & Payne	(NDO) HP	68.48	4	3	1.50	70-	105	(N-55%)	NMF	4.1	.52	2.80	94	3/31	d.05	d.45	6/30	▲.70	.70</			

ROE and ROR Analysis Columbia Gas of PA
CAPM/ECAPM Analysis
Value Line Projected Growth Rate

Docket No. R-2018-2647577
Exhibit MFG-11, Schedule 3

HO-JA

Page 12

SUMMARY AND INDEX • THE VALUE LINE INVESTMENT SURVEY

May 18, 2018

PAGE NUMBERS

Bold type refers to Ratings and Reports

RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price			Technical			3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings to 12-31-18	Est'd Div'd next 12 mos.	LATEST RESULTS			Qtr. Ended	Earnings Per sh.	Year Ago	Qtr. Ended	Latest Div'd	Year Ago				
		Timeliness	Safety	Beta	Timeliness	Safety	Beta						Qtr. Ended	Earnings Per sh.	Year Ago								Qtr. Ended	Latest Div'd	Year Ago
1809 Houlihan Lokey	HLY	46.70	▼3	3	3	1.00	45-65	(N-40%)	19.5	1.7	2.40	80	6	12/31	.69	51	3/31	.20	.20	YES					
1126 Hovnanian Enterpr. 'A'	HOV	2.05	-	5	-	1.70	5-9	(145-340%)	18.6	NIL	1.11	NIL	5	1/31	d.21	NIL	3/31	NIL	NIL	YES					
393 Howard Hughes Corp.	HHC	132.95	▲4	3	2	1.25	135-205	(N-55%)	65.5	NIL	2.03	NIL	54	3/31	.03	14	3/31	NIL	NIL	YES					
323 Hub Group	HUBG	45.95	▲4	3	3	1.10	65-95	(40-105%)	19.6	NIL	2.35	NIL	35	3/31	.48	34	3/31	NIL	NIL	YES					
1311 Hubbell Inc.	HUBB	103.85	▲3	2	1	1.15	140-195	(35-90%)	14.6	3.0	7.09	3.15	39	3/31	1.39	1.23	6/30	.77	70	YES					
1844 1823 HubSpot, Inc.	HUBS	112.70	▲2	4	3	1.35	75-125	(N-10%)	NMF	NIL	d1.05	NIL	29	12/31	d.31	d.39	3/31	NIL	NIL	YES					
808 Humana Inc.	HUM	278.81	▲2	3	3	.85	265-400	(N-45%)	20.1	0.7	13.85	2.00	7	3/31	3.36	2.75	9/30	.50	40	YES					
324 Hunt (J.B.)	HJBT	118.81	▲3	2	3	1.00	140-185	(20-55%)	22.0	0.8	5.40	96	35	3/31	1.07	92	6/30	24	23	YES					
787 Huntington Bancshs.	HBAN	14.86	▲2	3	2	1.10	15-19	(N-30%)	11.9	3.1	1.25	46	21	3/31	.28	17	9/30	11	08	YES					
714 Huntington Ingalls	HII	221.81	▲2	3	2	1.10	200-295	(N-35%)	14.9	1.3	14.85	2.88	43	3/31	◆3.48	2.56	6/30	.72	60	YES					
2449 Huntsman Corp.	HUN	29.62	▲1	4	2	1.80	35-55	(20-85%)	10.2	2.2	2.90	.65	3	3/31	1.11	.31	3/31	▲163	125	YES					
852 394 Huron Consulting	HURN	34.55	▲4	3	3	1.00	75-115	(115-235%)	12.8	NIL	2.70	NIL	54	3/31	.19	55	3/31	NIL	NIL	YES					
512 Husky Energy	HSE.TO	18.10b	▲3	3	2	1.10	20-30	(10-65%)	60.3	1.7	.30	30	56	3/31	◆2.4(b)	0.6(b)	9/30	075	NIL(b)	YES					
2357 Hyatt Hotels	H	80.72	▲3	3	2	1.10	75-110	(N-35%)	44.8	0.7	1.80	60	25	3/31	◆.33	.73	3/31	▲.15	NIL	YES					
162 Hyster-Yale Materials	HY	67.11	▲4	3	2	1.35	95-140	(40-110%)	15.6	1.8	4.30	1.24	30	3/31	.90	1.10	6/30	▲.31	303	YES					
2643 IAC/InterActiveCorp	IAC	137.89	▲3	3	1	1.15	115-175	(N-25%)	46.0	NIL	3.00	NIL	70	12/31	.79	1.18	3/31	NIL	NIL	YES					
809 ICON plc	ICLR	121.82	▲3	3	3	.80	120-180	(N-50%)	20.1	NIL	6.05	NIL	7	3/31	◆1.42	1.29	3/31	NIL	NIL	YES					
1038 181 ICU Medical	ICUI	259.25	▲2	3	3	.85	▲275-415	(5-60%)	35.8	NIL	7.25	NIL	51	12/31	2.98	1.20	3/31	NIL	NIL	YES					
927 IDT Corp.	IDT	5.25	-	3	-	NMF	14-20	(165-280%)	15.9	6.9	.33	36	76	1/31	d.07	.04	3/31	▼.09	19	YES					
443 IHS Markit	INFO	50.55	-	3	-	1.05	60-90	(20-80%)	22.5	NIL	2.25	NIL	24	2/28	.53	.45	3/31	NIL	NIL	YES					
122 II-VI Inc.	IIVI	43.85	▲3	3	3	1.20	45-70	(5-60%)	24.6	NIL	1.78	NIL	47	3/31	.36	.35	3/31	NIL	NIL	YES					
2665 2311 ILG, Inc.	ILG	33.97	-	3	-	1.00	30-50	(N-45%)	27.2	2.1	1.25	70	23	3/31	◆.34	.35	6/30	◆175	15	YES					
642 1385 IPG Photonics	IPGP	233.97	▲2	3	3	1.15	230-340	(N-45%)	27.4	NIL	6.55	NIL	1	3/31	1.93	1.38	3/31	NIL	NIL	YES					
810 IQVIA Holdings	IQV	98.25	▲1	3	3	.90	140-210	(40-115%)	17.6	NIL	5.59	NIL	7	3/31	1.34	1.01	3/31	NIL	NIL	YES					
1757 iTT Inc.	ITT	51.60	▲2	3	3	1.40	60-90	(15-75%)	16.6	1.0	3.10	54	33	3/31	◆.77	.64	6/30	▲134	128	YES					
453 2109 Iconix Brand Group	ICGN						SEE FINAL REPORT																		
2228 IDACORP, Inc.	IDA	91.07	▼3	2	3	.65	65-90	(N-N%)	21.7	2.7	4.20	2.44	81	3/31	◆.72	.66	6/30	.59	.55	YES					
1714 IDEXX Corp.	IDEX	136.37	▲2	2	1	1.05	130-180	(N-30%)	26.7	1.3	5.10	1.72	22	3/31	1.27	.99	6/30	▲.43	.37	YES					
212 IDEXX Labs	IDXX	204.96	▲2	3	3	.90	▲200-300	(N-45%)	50.0	NIL	4.10	NIL	42	3/31	◆1.01	.77	3/31	NIL	NIL	YES					
735 Illinois Tool Works	ITW	144.49	▲2	1	2	1.10	190-230	(30-60%)	18.8	2.2	7.70	3.12	68	3/31	1.90	1.54	9/30	◆.78	.65	YES					
213 Illumina Inc.	ILMN	256.10	▲3	3	3	1.05	255-385	(N-50%)	56.9	NIL	4.50	NIL	42	3/31	1.41	2.48	3/31	NIL	NIL	YES					
2312 IMAX Corp.	IMAX	23.60	▲4	3	4	1.00	40-60	(70-155%)	27.8	NIL	.85	NIL	23	3/31	.13	NIL	3/31	NIL	NIL	YES					
2014 Immersion Corp.	IMMR	11.23	▲4	5	1	1.50	12-20	(5-80%)	NMF	NIL	d.20	NIL	90	12/31	d.42	d1.32	3/31	NIL	NIL	YES					
513 Imperial Oil Ltd.	IMO	31.46	▲4	3	5	1.20	40-60	(25-90%)	19.3	2.4	1.63	76	56	3/31	.49	.16	9/30	▲.19	116	YES					
2034 838 Incyte Corp.	INCY	62.87	▲4	4	3	1.35	130-220	(105-250%)	NMF	NIL	.26	NIL	87	3/31	d.19	d.96	3/31	NIL	NIL	YES					
425 India Fund (The)	IFN	24.95	-	3	3	.95	30-50	(20-100%)	NMF	0.5	NMF	12	-	12/31	29.50(q)	24.24(q)	6/30	.122	NIL	YES					
★ 951 Infinita Corp.	INFN	11.80	▲4	4	3	1.40	15-25	(25-110%)	NMF	NIL	d.40	NIL	88	12/31	d.26	d.25	3/31	NIL	NIL	YES					
2625 Infosys Ltd. ADR	INFY	17.32	▲2	1	1	.85	35-45	(100-160%)	14.9	3.2	1.16	56	8	3/31	.26	.24	3/31	NIL	NIL	YES					
1758 Ingersoll-Rand	IR	88.08	▲1	3	3	1.20	100-150	(15-70%)	16.8	2.0	5.25	1.80	33	3/31	.70	.57	6/30	.45	.40	YES					
573 Ingevity Corp.	INGV	80.44	-	3	-	NMF	80-120	(N-50%)	26.8	NIL	3.00	NIL	15	12/31	.45	.45	3/31	NIL	NIL	YES					
1950 Ingles Markets	IMKTA	30.95	▲3	3	3	.90	35-50	(15-60%)	10.8	2.1	2.86	.66	57	12/31	.80	.68	6/30	.165	.165	YES					
1920 Ingreon Inc.	INGR	111.01	▲3	3	1	.95	130-200	(15-80%)	13.7	2.3	8.10	2.55	66	3/31	◆1.90	1.83	6/30	.60	.50	YES					
574 Innospec Inc.	IOSP	73.25	▼2	3	3	1.05	75-115	(N-55%)	16.8	1.2	4.35	.88	15	3/31	◆.90	.70	6/30	.44	.38	YES					
2178 Insight Enterprises	INSI	45.37	▲1	3	5	1.30	60-90	(30-100%)	11.9	NIL	3.80	NIL	55	3/31	◆.90	.38	3/31	NIL	NIL	YES					
1639 Insperity Inc.	NSP	83.80	▲2	3	4	1.00	60-90	(N-5%)	33.5	1.0	2.50	.80	11	3/31	1.18	.85	3/31	▲.20	125	YES					
182 Insulet Corp.	PODD	83.27	▲3	3	2	1.20	80-120	(N-45%)	NMF	NIL	d.20	NIL	51	3/31	◆d.11	d.17	3/31	NIL	NIL	YES					
852 1333 Integer Holdings	ITGR	65.55	▲2	3	3	1.30	60-90	(N-35%)	19.6	NIL	3.35	NIL	50	3/31	◆.61	.41	3/31	NIL	NIL	YES					
1833 Integra LifeSciences	IART	64.79	▲3	3	3	.80	55-80	(N-25%)	86.4	NIL	.75	NIL	51	3/31	.14	.08	3/31	NIL	NIL	YES					
1358 Integrated Device	IDTI	29.69	▲2	3	2	1.25	40-60	(35-100%)	17.8	NIL	1.67	NIL	9	3/31	.44	.33	3/31	NIL	NIL	YES					
2669 1359 Intel Corp.	INTC	53.63	▲1	1	3	1.05	80-95	(50-75%)	15.1	2.2	3.55	1.20	9	3/31	.87	.66	6/30	.30	273	YES					
642 1013 Inter Parfums	IPAR	50.35	▲3	3	3	1.10	40-65	(N-30%)	34.7	1.7	1.45	.84	58	3/31	◆.51	.43	9/30	◆.21	.17	YES					
1798 Interactive Brokers	IBKR	77.81	▲3	3	3	1.15	65-95	(N-20%)	35.0	0.5	2.22	.40	20	3/31	.63	.34	6/30	.10	.10	YES					
839 Intercept Pharm.	ICPT	70.15	▲4	3	3	1.55	160-270	(130-285%)	NMF	NIL	d12.35	NIL	87	3/31	◆d3.22	d3.61	3/31	NIL	NIL	YES					
1799 Intercontinental Exch.	ICE	70.07	▲2	2	2	.80	90-120	(30-70%)	20.0	1.4	3.50	.96	20	3/31	◆.90	.74	5/30	◆.24	.20	YES					
602 InterDigital Inc.	IDCC	78.50	▲3	3	4	1.00	80-120	(N-55%)	24.5	1.8	3.20	1.40	78	3/31	.84	.93	6/30	◆.35	.30	YES					
1153 Interface Inc. 'A'	TILE	23.15	▲3	3	2	1.15	25-40	(10-75%)	16.5	1.1	1.40	.26	74	3/31	.25	.21	6/30	.065	.06	YES					
2237 1400 Int'l Business Mach.	IBM	143.00	▼5	1	4	.90	175-215	(20-50%)	12.4	4.4	11.50	6.30	37	3/31	1.81	1.85	6/30	▲1.57	1.50	YES					
575 Int'l Flavors & Frag.	IFF	126.49	▲3	1	3	.95	145-180	(15-40%)	20.1	2.3	6.30														

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Docket No. R-2018-2647577
Exhibit MFG-11, Schedule 3

May 18, 2018

SUMMARY AND INDEX • THE VALUE LINE INVESTMENT SURVEY

Page 13

JA-LI

PAGE NUMBERS

Bold type refers to
Ratings and Reports

RANKS

Industry Rank

Do Options Trade?

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		Timelessness	Beta									Qtr. Ended	Earns. Per sh.	Year Ago	Qtr. Ended	Latest Div'd	Year Ago			
841 Jazz Pharm. plc	(NDQ) JAZZ	147.56	3	3	2	1.30	210-315 (40-115%)	11.4	NIL	12.95	NIL	87	3/31	◆2.98	2.31	3/31	NIL	NIL	YES	
969 Jean Coudu Group	(TSE) PUCA.TO	2452b	-	2	-	55	25-30 (N-20%)	23.1	2.1	1.06	52	2	11/30	23(b)	28(b)	6/30	13(b)	13(b)	YES	
311 JetBlue Airways	(NDQ) JBLU	19.25	3	3	3	1.20	25-40 (30-110%)	9.4	NIL	2.05	NIL	41	3/31	◆27	25	3/31	NIL	NIL	YES	
2237 215 Johnson & Johnson	JNJ	122.61	3	1	2	90	170-210 (40-70%)	17.5	2.9	7.06	3.60	42	3/31	1.60	1.61	6/30	▲90	84	YES	
1759 Johnson Contrs. Int'l plc	JCI	36.29	4	3	4	1.30	40-60 (10-65%)	12.3	2.9	2.96	1.04	33	3/31	53	50	6/30	26	25	YES	
396 Jones Lang LaSalle	JLL	176.43	2	3	2	1.20	185-275 (5-55%)	16.9	0.5	10.45	.82	54	3/31	◆97	45	6/30	41	35	YES	
952 Juniper Networks	JNPR	25.93	4	3	5	1.15	30-45 (15-75%)	19.2	2.8	1.35	.72	88	3/31	◆10	.33	6/30	▲18	10	YES	
2127 KAR Auction Svcs.	KAR	53.77	1	3	2	1.00	65-95 (20-75%)	21.5	2.6	2.50	1.42	14	3/31	◆66	.50	9/30	◆35	32	YES	
1127 KB Home	KBH	27.55	2	3	2	1.55	35-50 (25-80%)	10.0	0.4	2.75	.11	5	2/28	40	15	6/30	025	025	YES	
1237 KBR, Inc.	KBR	16.85	3	3	3	1.50	19-30 (15-80%)	12.6	1.9	1.34	.32	82	3/31	34	26	6/30	08	08	YES	
2664 KKR & Co. L.P.	KKR	22.67	▼	4	3	1.40	40-65 (75-185%)	7.6	3.0	3.00	.68	92	3/31	◆42	.65	6/30	◆17	17	YES	
1422 123 KLA-Tencor	(NDQ) KLAC	106.90	1	3	3	1.15	120-180 (10-70%)	12.8	2.8	8.33	3.00	47	3/31	1.97	1.62	6/30	▲75	54	YES	
2669 715 KXL, Inc.	(NDQ) KXL	72.01	-	3	-	1.15	55-85 (N-20%)	30.0	NIL	2.40	NIL	43	1/31	79	.34	3/31	NIL	NIL	YES	
576 KMG Chemicals	KMG	64.23	2	3	3	1.05	60-90 (N-40%)	23.4	0.2	2.75	12	15	1/31	71	53	6/30	◆03	03	YES	
1760 Kadant Inc.	KAI	94.70	1	3	3	1.05	100-150 (5-60%)	18.5	0.9	5.12	.88	33	3/31	96	80	6/30	▲22	21	YES	
1761 Kaman Corp.	KAMN	67.13	3	2	3	90	60-80 (N-20%)	22.0	1.2	3.05	.80	33	3/31	◆50	22	6/30	20	20	YES	
347 Kansas City South'n	KSU	107.90	3	3	2	1.15	135-205 (25-90%)	17.4	1.3	6.20	1.44	36	3/31	1.30	1.17	6/30	36	33	YES	
1181 KapStone Paper	KS	34.25	-	3	-	1.40	30-45 (N-30%)	16.9	1.2	2.03	40	32	3/31	33	.06	6/30	10	10	YES	
1922 Kellogg	K	60.30	▲	3	1	75	85-100 (40-65%)	13.6	3.7	4.45	2.22	66	3/31	◆1.19	1.06	6/30	54	52	YES	
★ 1640 Kelly Services 'A'	(NDQ) KELYA	30.54	3	3	3	1.05	35-50 (15-65%)	13.0	1.0	2.35	.30	11	12/31	80	55	3/31	075	075	YES	
2566 Kemper Corp.	KMPR	73.70	3	3	4	1.10	45-70 (N- N%)	25.0	1.3	2.95	.96	16	3/31	1.02	d.08	6/30	◆24	24	YES	
736 Kennametal Inc.	KMT	39.52	3	3	2	1.40	60-90 (50-130%)	14.0	2.0	2.83	.80	68	3/31	◆70	.60	6/30	◆20	20	YES	
2519 KeyCorp	KEY	19.79	3	3	3	1.15	25-35 (25-75%)	12.0	2.4	1.65	.48	18	3/31	38	.27	3/31	105	085	YES	
124 Keysight Technologies	KEYS	52.73	3	3	2	1.00	50-70 (N-35%)	40.6	NIL	1.30	NIL	47	1/31	50	63	3/31	NIL	NIL	YES	
1641 Klorco Inc.	(NDQ) KFRC	33.10	3	3	3	1.15	30-50 (N-50%)	16.1	1.5	2.05	.48	11	3/31	37	23	6/30	12	12	YES	
1154 Kimball Int'l	(NDQ) KBAL	16.59	3	3	3	1.10	25-35 (50-110%)	14.3	1.7	1.16	.28	74	3/31	16	19	9/30	07	06	YES	
1196 Kimberly-Clark	KMB	101.85	3	1	3	.75	155-190 (50-85%)	14.8	3.9	6.90	4.00	86	3/31	1.71	1.57	6/30	▲100	97	YES	
1531 Kimco Realty	KIM	14.45	3	3	3	90	30-40 (110-175%)	14.5	7.9	1.00	1.14	93	3/31	30	15	9/30	28	27	YES	
613 Kinder Morgan Inc.	KMI	16.07	3	3	4	1.45	45-65 (180-305%)	19.6	5.0	.82	.80	60	3/31	22	18	6/30	▲20	125	YES	
1571 Kinross Gold	KGC	4.12	2	5	3	90	4-7 (N-70%)	22.9	NIL	.18	NIL	72	3/31	◆08	.02	3/31	NIL	NIL	YES	
335 Kirby Corp.	KEX	86.95	4	3	3	1.15	75-110 (N-25%)	31.5	NIL	2.76	NIL	97	3/31	67	51	3/31	NIL	NIL	YES	
325 Knight-Swift Trans.	KNX	39.48	-	3	-	NMF	60-85 (50-115%)	17.5	0.6	2.25	24	35	3/31	44	18	3/31	06	06	YES	
1415 Knic Inc.	KNL	20.10	3	3	4	1.15	30-50 (50-150%)	12.0	3.0	1.68	60	75	3/31	31	31	6/30	◆15	15	YES	
953 Knowles Corp.	KN	13.63	▼	3	4	1.60	20-30 (45-120%)	15.1	NIL	.90	NIL	88	3/31	11	11	3/31	NIL	NIL	YES	
2145 Kohi's Corp.	KSS	61.01	3	3	3	1.10	75-115 (25-90%)	11.6	4.0	5.25	2.44	48	1/31	1.87	1.44	3/31	▲61	55	YES	
427 Korea Fund	KOF	40.63	-	3	2	.90	50-80 (25-95%)	NMF	0.6	NMF	25	-	3/31	◆47.12(q)	41	53(q)	3/31	226	277	YES
1642 Korn/Ferry Int'l	KFY	55.07	▼	2	3	1.25	50-75 (N-35%)	19.1	0.7	2.88	40	11	1/31	70	53	6/30	10	10	YES	
1923 Kraft Heinz Co.	(NDQ) KHC	58.76	4	2	3	95	90-120 (55-105%)	15.3	4.4	3.65	2.58	66	3/31	89	84	6/30	◆625	60	YES	
716 Kratos Defense & Sec.	(NDQ) KTOS	10.66	3	4	3	1.55	12-20 (15-90%)	71.1	NIL	.15	NIL	43	12/31	09	d.07	3/31	NIL	NIL	YES	
1038 1591 Kroger Co.	KR	24.09	3	3	4	85	35-55 (45-130%)	11.8	2.5	2.05	60	57	1/31	63	53	6/30	125	12	YES	
★ 577 Kronos Worldwide	KRO	24.18	▲	2	4	1.60	25-45 (5-95%)	15.1	2.8	1.60	.68	15	3/31	◆61	32	2/31	▲17	15	YES	
1386 Kulicke & Soffa	(NDQ) KLIC	23.17	1	3	2	1.05	35-50 (50-115%)	11.5	NIL	2.01	NIL	1	12/31	d.98	22	3/31	NIL	NIL	YES	
1988 Kyocera Corp. ADR(g)	KYO		SEE FINAL REPORT																	
852 2213 L Brands	LB	33.94	4	3	2	95	50-85 (75-150%)	10.6	7.2	3.20	2.45	52	1/31	2.01	2.18	3/31	60	60	YES	
717 L3 Technologies	LLL	192.36	▲	3	2	1.00	180-245 (N-25%)	20.2	1.7	9.50	3.20	43	3/31	2.34	1.93	6/30	◆80	70	YES	
992 LCI Industries	LCII	89.65	▼	2	3	1.10	185-275 (105-205%)	11.5	2.5	7.80	2.20	10	3/31	◆1.86	1.71	3/31	55	50	YES	
2458 993 LKQ Corp.	(NDQ) LKQ	38.53	3	3	1	1.10	55-80 (60-160%)	13.6	NIL	2.25	NIL	10	3/31	55	49	3/31	NIL	NIL	YES	
1801 LPL Financial Hldgs.	(NDQ) LPLA	68.51	2	3	3	1.05	65-95 (N-40%)	24.5	1.5	2.80	1.00	20	3/31	◆1.01	53	6/30	◆25	25	YES	
852 1762 LSB Indts.	(NDQ) LDX	5.73	-	5	-	2.05	8-14 (40-145%)	NMF	NIL	d1.46	NIL	33	3/31	d.49	d.48	3/31	NIL	NIL	YES	
2359 La Quinta Hldgs.	LQ	19.62	-	3	-	1.20	12-18 (N- N%)	49.1	NIL	40	NIL	25	3/31	◆d.05	04	3/31	NIL	NIL	YES	
1155 La-Z-Boy Inc.	LZB	29.30	3	3	2	1.10	45-70 (55-140%)	14.0	1.6	2.10	48	74	1/31	51	46	6/30	12	11	YES	
811 Laboratory Corp.	LH	170.00	1	1	3	90	205-250 (20-45%)	14.8	NIL	11.50	NIL	7	3/31	2.78	2.22	3/31	NIL	NIL	YES	
1387 Lam Research	(NDQ) LRCX	194.86	1	3	2	1.20	220-330 (15-70%)	11.3	2.3	17.19	4.40	1	3/31	4.79	2.80	3/31	1.00	90	YES	
2394 Lamar Advertising	(NDQ) LAMR	65.55	3	3	4	95	80-120 (20-85%)	19.9	5.7	3.30	3.72	31	3/31	15	42	6/30	▲91	83	YES	
1924 Lamb Weston Holdings	LW	66.66	-	3	-	NMF	65-100 (N-50%)	24.5	1.2	2.72	.77	66	2/28	91	57	6/30	▲191	188	YES	
1925 Lancaster Colony	(NDQ) LANC	127.50	▲	4	2	85	120-160 (N-25%)	26.9	1.9	4.74	2.40	66	3/31	1.00	53	3/31	60	55	YES	
2409 Laredo Petroleum	LPI	10.01	▲	2	5	1.90	30-55 (200-450%)	9.1	NIL	1.10	NIL	46	3/31	◆24	10	3/31	NIL	NIL	YES	
2360 Las Vegas Sands	LVS	76.64	3	3	4	1.40	85-125 (10-65%)	21.9	3.9	3.50	3.00	25	3/31	1.04	60	6/30	75	73	YES	
1360 Lattice Semiconductor	(NDQ) LSOC	5.44	4	4	3	1.30	8-14 (45-155%)	18.1	NIL	.30	NIL	9	3/31	05	06	3/31	NIL	NIL	YES	
1014 L'Oréal (Estée)	EL	136.20	2	2	1	80	140-185 (5-35%)	29.0	1.1	4.69	1.56	58	3/31	99	80	6/30	38	34	YES	
2567 Lazard Ltd.	LAZ																			

ROE and ROR Analysis Columbia Gas of PA
CAPM/ECAPM Analysis
Value Line Projected Growth Rate

Docket No. R-2018-2647577
Exhibit MFG-11, Schedule 3

LO-ME

Page 14

SUMMARY AND INDEX • THE VALUE LINE INVESTMENT SURVEY

May 18, 2018

PAGE NUMBERS

Bold type refers to Ratings and Reports

RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price			Beta	3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings to 12-31-18	(f) Est'd Div'd next 12 mos.	LATEST RESULTS									
		Time	Safety	Technical							Qtr. Ended	Earns. Per sh.	Year Ago	Qtr. Ended	Latest Div'd	Year Ago				
1952 Loblaws Cos. Ltd.	(TSE) LTO	65.61b	3	2	4	70	75-100	(15-50%)	20.5	1.8	3.20	1.18	57	3/31	98(b)	.57(b)	9/30	▲.295(b)	27(b)	YES
718 Lockheed Martin	LMT	324.19	2	1	3	80	360-440	(10-35%)	21.3	2.5	15.20	8.20	43	3/31	4.02	2.61	6/30	2.00	1.82	YES
2569 Loews Corp.	L	51.23	3	2	3	95	85-115	(65-125%)	16.3	0.5	3.15	.25	16	3/31	87	81	6/30	◆.063	0.63	YES
1401 Logitech Int'l	(INDQ) LOGI	40.27	3	3	3	85	50-70	(25-75%)	28.8	1.5	1.40	.62	37	3/31	◆.20	.24	3/31	NIL	NIL	YES
1824 LogMein Inc.	(INDQ) LOGM	116.65	2	3	3	120	110-165	(N-40%)	63.1	1.0	1.85	1.20	29	3/31	◆.56	.10	6/30	30	25	YES
1167 Louisiana-Pacific	LPX	27.56	1	3	1	150	35-55	(25-100%)	9.2	1.9	3.00	.52	12	3/31	◆.63	.38	6/30	◆.13	41	YES
1649 1141 Lowe's Cos.	LOW	84.25	3	2	2	105	115-160	(35-90%)	15.3	2.1	5.50	1.76	26	1/31	◆.74	.86	6/30	▲.13	NIL	YES
2214 lululemon athletica	(INDQ) LULU	98.20	3	4	3	95	100-150	(N-55%)	31.7	NIL	3.10	NIL	52	1/31	1.33	1.00	3/31	NIL	NIL	YES
1142 Lumber Liquidators	LL	21.29	▲	3	4	3	35-55	(65-160%)	30.4	NIL	.70	NIL	26	3/31	d.07	d.93	3/31	NIL	NIL	YES
125 Lumentum Holdings	(INDQ) LITE	63.55	1	3	5	160	65-95	(N-50%)	26.3	NIL	2.42	NIL	47	3/31	◆.04	d.92	3/31	NIL	NIL	YES
2179 Luxottica Group ADR(g)	(INDQ) LUXTY	62.65	-	3	-	90	60-90	(N-45%)	26.7	2.0	2.35	1.23	56	12/31	1.00(p)	.77(p)	6/30	1.229	1.029	YES
455 578 LyondellBasell Inds.	LYB	104.54	▲	1	2	130	100-150	(N-45%)	10.7	3.8	9.80	4.00	15	3/31	3.11	1.98	3/31	▲.100	85	YES
2520 M&T Bank Corp.	MTB	181.06	3	2	2	90	200-270	(10-50%)	17.0	1.7	10.63	3.00	18	3/31	2.23	2.12	3/31	7.5	75	YES
788 MB Financial	(INDQ) MBFI	43.34	3	3	3	115	50-75	(15-75%)	14.3	2.2	3.03	.96	21	3/31	◆.81	.62	3/31	▲.24	19	YES
1129 M.D.C. Holdings	MDC	32.24	3	3	3	130	40-60	(25-85%)	19.9	3.7	2.95	1.20	5	3/31	◆.68	.39	6/30	30	231	YES
539 MDU Resources	MDU	28.73	3	2	3	105	40-55	(40-90%)	19.8	2.7	1.45	.79	67	3/31	◆.22	.19	6/30	198	193	YES
1210 MFS Multimarket	MMT	5.72	-	4	3	60	5-8	(N-40%)	NMF	8.4	NMF	48	-	10/31	6.67(q)	6.73(q)	3/31	131	134	YES
912 MGE Energy	(INDQ) MGEE	58.35	▼	4	1	70	50-60	(N-5%)	24.8	2.3	2.35	1.34	45	3/31	◆.58	.56	3/31	323	308	YES
2035 2570 MGIC Investment	MTG	10.65	2	4	1	130	20-35	(90-230%)	6.1	NIL	1.75	NIL	16	3/31	◆.38	.24	3/31	NIL	NIL	YES
2361 MGM Resorts Int'l	MGM	32.06	3	3	2	150	40-65	(25-105%)	24.7	1.5	1.30	.48	25	3/31	◆.25	.36	3/31	12	11	YES
1977 MGP Ingredients	(INDQ) MGPI	89.16	4	3	3	75	60-90	(N-15%)	41.5	0.4	2.15	.32	38	3/31	◆.52	.50	6/30	.08	.04	YES
1389 MKS Instruments	(INDQ) MKSI	110.80	1	3	3	105	100-150	(N-35%)	17.3	0.7	6.42	.80	1	3/31	1.90	1.18	3/31	18	175	YES
633 MPLX LP	MPLX	34.67	3	4	5	135	45-75	(30-115%)	19.3	7.1	1.80	2.47	79	3/31	◆.61	.20	6/30	▲.616	54	YES
2428 MRC Global	MRC	20.00	4	4	4	160	35-55	(75-175%)	22.2	NIL	.90	NIL	94	3/31	◆.13	NIL	3/31	NIL	NIL	YES
1718 MSA Safety	MSA	90.13	2	3	3	125	105-160	(15-80%)	22.4	1.7	4.03	1.52	22	3/31	◆.83	.37	6/30	▲.38	35	YES
1719 MSC Industrial Direct	MSM	91.42	3	2	2	90	140-190	(55-110%)	16.7	2.5	5.49	2.32	22	2/28	1.34	.90	6/30	.58	45	YES
444 MSCi Inc.	MSCI	155.31	2	3	3	100	180-270	(15-75%)	30.2	1.1	5.15	1.73	24	3/31	◆1.24	.80	6/30	◆.38	28	YES
2335 MSG Networks	MSGN	18.85	-	3	-	NMF	45-70	(140-270%)	7.3	NIL	2.59	NIL	40	3/31	◆.62	.58	3/31	NIL	NIL	YES
126 MTS Systems	(INDQ) MTSC	48.35	5	3	3	110	55-80	(15-65%)	19.0	2.5	2.54	1.20	47	3/31	◆.44	.38	6/30	30	30	YES
1533 Macerich Comp. (The)	MAC	57.72	5	3	3	85	80-120	(40-110%)	46.2	5.2	1.25	3.02	93	3/31	◆.24	.48	6/30	.74	.71	YES
1534 Mack-Cali R'ty	CLI	18.27	4	3	5	100	25-40	(35-120%)	NMF	4.4	.05	.80	93	3/31	◆.45	.11	6/30	20	15	YES
2035 1388 MACOM Tech. Solutions(INDQ)	MTSI	22.32	3	3	4	145	40-60	(80-170%)	31.9	NIL	.70	NIL	1	3/31	◆.13	.63	3/31	NIL	NIL	YES
643 398 Macquarie Infra.	MIC	38.54	▲	2	3	4	85-125	(120-225%)	14.3	10.4	2.70	4.00	54	3/31	◆.88	.44	6/30	1.00	1.32	YES
852 2146 Macy's Inc.	M	29.78	3	3	3	105	45-70	(50-135%)	8.3	5.1	3.60	1.51	48	1/31	2.82	2.02	6/30	378	378	YES
2160 Madden (Steven) Ltd. (INDQ)	SHOO	48.75	3	3	3	105	50-80	(15-65%)	18.8	1.6	2.60	.80	61	3/31	◆.50	.34	6/30	20	NIL	YES
2336 Madison Square Garden	MSG	249.38	-	2	-	NMF	300-400	(20-60%)	NMF	NIL	1.72	NIL	40	3/31	◆.39	d.74	3/31	NIL	NIL	YES
634 Magellan Midstream	MMP	68.33	▼	3	5	120	100-150	(45-120%)	16.9	5.6	4.05	3.82	79	3/31	◆.92	.98	6/30	▲.938	873	YES
996 Magna Int'l 'A'	MGA	60.58	1	3	3	130	95-145	(55-140%)	9.0	2.2	6.75	1.35(h)	10	12/31	1.57	1.31	3/31	◆.33	275	YES
853 2029 Maiden Hldgs. Ltd. (INDQ)	MHLD	7.90	5	4	5	115	8-13	(N-65%)	31.6	7.6	25	.60	96	12/31	d1.59	d.87	9/30	◆.15	15	YES
853 1619 Mallinckrodt pic	MNK	12.33	3	3	3	130	30-40	(145-225%)	6.2	NIL	2.00	NIL	69	3/31	◆d.21	.28	3/31	NIL	NIL	YES
2626 Manhattan Assoc. (INDQ)	MANH	44.17	4	3	4	120	50-75	(15-70%)	35.3	NIL	1.25	NIL	8	3/31	◆.32	.40	3/31	NIL	NIL	YES
163 Manitowoc Co.	MTW	24.40	-	5	-	165	▲ 40-65	(65-165%)	48.8	NIL	.50	NIL	30	3/31	◆d.12	d.68	3/31	NIL	NIL	YES
1643 ManpowerGroup Inc	MAN	95.98	1	3	2	145	110-165	(15-70%)	11.0	2.1	8.75	2.04	11	3/31	1.45	1.09	6/30	1.01	93	YES
2627 ManTech Int'l 'A' (INDQ)	MANT	53.15	3	3	3	100	50-75	(N-40%)	26.6	1.9	2.00	1.00	8	3/31	◆.51	.39	6/30	◆.25	21	YES
1556 Manulife Fin'l	MFC	18.87	▲	2	3	120	25-35	(30-85%)	9.7	4.7	1.95	.88	34	3/31	◆.64	.40	6/30	◆.22	205	YES
1926 Maple Leaf Foods (TSE)	MPF.TO	29.31	2	2	2	75	40-55	(35-90%)	17.2	1.8	1.70	.54	66	3/31	◆.22	.22	6/30	.13	11	YES
2665 2410 Marathon Oil Corp.	MRO	20.44	3	3	3	185	30-45	(45-120%)	27.3	1.0	.75	.20	46	3/31	◆.18	d.07	6/30	.05	.05	YES
514 Marathon Petroleum	MPC	75.31	3	3	3	135	90-135	(20-80%)	15.1	2.6	5.00	1.93	56	3/31	◆.08	.06	6/30	.46	36	YES
2362 Marcus Corp.	MCS	31.80	2	3	2	95	45-65	(40-105%)	18.2	1.9	1.75	.60	25	3/31	◆.35	.33	6/30	◆.15	125	YES
2465 2180 MarneMax	HZO	23.30	1	4	3	135	30-45	(30-95%)	14.9	NIL	1.56	NIL	55	3/31	◆.27	.11	3/31	NIL	NIL	YES
769 Market Corp.	MKL	1134.83	5	1	3	80	1015-1240	(N-10%)	54.7	NIL	20.75	NIL	53	3/31	d4.25	2.17	3/31	NIL	NIL	YES
1802 MarketAxess Holdings (INDQ)	MKTX	203.30	2	3	2	90	190-290	(N-45%)	43.3	0.8	4.70	1.68	20	3/31	1.27	1.11	6/30	42	33	YES
2363 Marriott Int'l	MAR	139.31	2	3	3	110	140-205	(N-45%)	26.3	1.2	5.30	1.64	25	3/31	◆1.34	.94	6/30	▲.41	33	YES
2665 2364 Marriott Vacations	VAC	119.28	3	3	2	120	155-230	(30-95%)	17.0	1.3	7.00	1.60	25	3/31	◆1.39	1.22	3/31	80	70	YES
2571 Marsh & McLennan	MMC	81.16	1	1	2	95	100-120	(25-50%)	18.1	1.8	4.49	1.50	16	3/31	1.34	1.09	6/30	375	34	YES
1111 Martin Marietta	MLM	213.48	▼	3	4	120	240-355	(10-65%)	24.8	0.8	8.60	1.76	19	3/31	◆.16	.67	3/31	44	42	YES
954 Marvell Technology (INDQ)	MRVL	21.08	3	3	2	110	35-55	(65-160%)	16.2	1.1	1.30	.24	86	1/31	◆.32	d.04	6/30	.06	.06	YES
1112 Masco Corp.	MAS	38.18	2	3	3	135	55-80</													

ROE and ROR Analysis Columbia Gas of PA
CAPM/ECAPM Analysis
Value Line Projected Growth Rate

Docket No. R-2018-2647577
Exhibit MFG-11, Schedule 3

May 18, 2018

SUMMARY AND INDEX • THE VALUE LINE INVESTMENT SURVEY

Page 15

ME-NE

PAGE NUMBERS

Bold type refers to Ratings and Reports

RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price				Technical				3-5 year Target Price and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 12-31-18	(f) Est'd Div'd next 12 mos.	LATEST RESULTS				Year Ago	Year Ago	Year Ago		
		Price	Change	Safety	Beta	Timeliness	Trend	Support	Resistance						Qtr. Ended	Earnings Per sh.	Year Ago	Qtr. Ended				Latest Div'd	Year Ago
2670 1621 Merck & Co.	MRK	56.76	3 1 4	90	70- 85 (25-50%)	13.7	3.4	4.15	1.92	69	3/31	1.05	88	6/30	48	47	YES						
770 Mercury General	MCY	45.14	5 2 4	85	55- 80 (20-75%)	17.7	5.5	2.55	2.50	53	3/31	0.7	20	6/30	625	623	YES						
2458 1402 Mercury Systems	MRCY	34.42	4 3 1	85	45- 65 (30-90%)	28.7	NIL	1.20	NIL	37	3/31	2.3	23	3/31	NIL	NIL	YES						
2377 Meredith Corp.	MDP	51.25	3 3 3	1.15	95- 145 (85-185%)	8.7	4.3	5.87	2.18	89	12/31	1.14	1.30	3/31	▲545	52	YES						
218 Meridian Bioscience	VIVO	14.10	5 3 3	85	25- 35 (75-150%)	19.6	3.5	72	59	42	3/31	2.1	22	6/30	▲125	125	YES						
997 Mentor, Inc.	MTOR	29.79	1 4 2	1.50	25- 45 (20-115%)	7.5	NIL	2.78	NIL	10	3/31	▲.75	35	3/31	NIL	NIL	YES						
1130 Meritage Homes	MTH	48.25	3 3 2	1.40	65- 95 (40-105%)	9.6	NIL	4.82	NIL	5	3/31	1.07	56	3/31	NIL	NIL	YES						
579 Methanex Corp.	MECH	64.30	▲1 3 3	1.55	65- 95 (N- 50%)	14.2	2.1	4.53	1.32	15	3/31	2.03	1.58	6/30	▲33	30	YES						
1336 Methode Electronics	MEI	40.80	1 3 4	1.40	45- 65 (10-90%)	14.0	1.1	2.92	4.4	50	1/31	87	63	6/30	▲11	09	YES						
1557 MetLife Inc.	MET	46.55	5 3 4	1.30	55- 80 (20-70%)	11.2	3.6	4.15	1.68	34	3/31	▲1.36	1.20	6/30	▲42	40	YES						
1953 Metro Inc.	MRU.TO	40.59b	2 2 4	60	45- 60 (10-50%)	15.9	1.8	2.56	72	57	3/31	▲.47(b)	56(b)	6/30	▲18(b)	162(b)	YES						
127 Mettler-Toledo Int'l	MTD	546.43	▼3 2 2	1.05	515- 695 (N- 25%)	28.3	NIL	19.30	NIL	47	3/31	▲3.58	3.48	3/31	NIL	NIL	YES						
428 Mexico Fund	MXF	15.32	- 4 2	1.10	20- 35 (30-130%)	NMF	0.9	NMF	1.4	-	4/30	▲18.78(q)	18.59(q)	3/31	NIL	NIL	YES						
2110 Michael Kors Hldgs.	KORS	61.39	3 3 2	95	75- 110 (20-80%)	14.1	NIL	4.36	NIL	71	12/31	1.42	1.64	3/31	NIL	NIL	YES						
2181 Michaels Cos. (The)	MIK	18.40	3 3 3	1.10	40- 65 (115-255%)	8.0	NIL	2.30	NIL	55	1/31	1.19	.96	3/31	NIL	NIL	YES						
1039 1363 Microchip Technology	MCHP	90.65	1 2 3	1.15	110- 145 (20-60%)	15.9	1.6	5.71	1.46	9	3/31	▲1.40	1.16	6/30	▲364	362	YES						
1364 Micron Technology	MU	48.57	1 3 2	1.55	60- 85 (25-75%)	5.0	NIL	9.76	NIL	9	2/28	2.67	.77	3/31	NIL	NIL	YES						
1039 1365 Microsemi Corp.	MSCC	67.43	- 3 -	1.25	85- 125 (25-85%)	15.3	NIL	4.41	NIL	9	12/31	1.01	.86	3/31	NIL	NIL	YES						
2597 Microsoft Corp.	MSFT	95.81	3 1 3	1.00	110- 135 (15-40%)	24.3	1.8	3.94	1.68	27	3/31	95	.73	6/30	▲2	39	YES						
1535 Mid-America Apartment	MAA	92.03	3 2 4	75	100- 155 (10-70%)	54.1	4.0	1.70	3.69	93	3/31	▲.42	.36	6/30	923	87	YES						
★ 1720 Middleby Corp. (The)	MIDD	131.63	4 3 3	1.20	170- 260 (30-100%)	19.2	NIL	6.85	NIL	22	3/31	▲1.18	1.26	3/31	NIL	NIL	YES						
1790 Middlesex Water	MSEX	41.36	3 2 4	80	35- 50 (N- 20%)	26.7	2.2	1.55	.90	91	3/31	▲.32	.27	6/30	224	211	YES						
1421 1158 Miller (Herman)	MLHR	32.15	3 3 3	1.20	50- 75 (55-135%)	12.4	2.2	2.60	.72	74	2/28	50	.39	6/30	▲18	17	YES						
580 Minerals Techn.	MTX	71.65	3 3 4	1.55	85- 130 (20-80%)	14.0	0.3	5.10	.20	15	3/31	▲1.13	1.07	3/31	.05	.05	YES						
400 Mobile Mini	MINI	44.90	3 3 2	1.30	65- 80 (20-80%)	27.5	2.2	1.65	1.00	54	3/31	.33	.25	6/30	25	227	YES						
998 Modine Mfg.	MOD	16.95	1 4 1	1.20	20- 35 (20-105%)	9.8	NIL	1.73	NIL	10	12/31	.35	.21	3/31	NIL	NIL	YES						
1159 Mohawk Inds.	MHK	213.43	3 3 2	1.25	290- 430 (35-100%)	13.8	NIL	15.50	NIL	74	3/31	3.01	2.72	3/31	NIL	NIL	YES						
2672 1978 Molson Coors Brewing	TAP	60.39	- 3 -	.95	80- 125 (30-105%)	11.7	3.1	5.15	1.85	38	3/31	1.28	.97	3/31	▲1	41	YES						
2366 Monarch Casino	MCR	43.89	3 3 3	1.10	50- 75 (15-70%)	24.9	NIL	1.76	NIL	25	3/31	.36	.27	3/31	NIL	NIL	YES						
1929 Mondelez Int'l	MDLZ	38.58	3 2 3	1.00	55- 75 (45-95%)	15.7	2.5	2.45	.97	66	3/31	.62	.52	6/30	22	19	YES						
1366 Monolithic Power Sys	MPWR	124.11	2 3 3	1.20	130- 195 (5-55%)	47.7	1.0	2.60	1.20	9	3/31	.49	.33	6/30	▲30	20	YES						
2129 Monro, Inc.	MNRO	57.15	5 3 3	85	70- 105 (20-85%)	23.7	1.3	2.41	.72	14	12/31	.45	.53	3/31	▲18	17	YES						
2450 Monsanto Co.	MON	124.93	- 1 -	.95	195- 235 (55-90%)	48.4	1.7	2.56	2.16	3	2/28	3.27	3.08	6/30	54	54	YES						
★ 1979 Monster Beverage	MNST	53.08	▲3 3 2	.85	65- 100 (20-90%)	32.0	NIL	1.66	NIL	38	3/31	▲.38	.31	3/31	NIL	NIL	YES						
445 Moody's Corp.	MCO	167.89	2 3 3	1.15	150- 230 (N- 35%)	21.8	1.0	7.70	1.76	24	3/31	2.02	1.50	6/30	44	38	YES						
720 Moog Inc. 'A'	MOGA	84.30	2 3 2	1.25	80- 120 (N- 40%)	18.2	1.2	4.64	1.06	43	3/31	1.16	.88	6/30	▲25	20	YES						
1810 Morgan Stanley	MS	53.38	2 3 2	1.35	75- 115 (40-115%)	10.9	1.9	4.90	1.00	6	3/31	1.45	1.01	6/30	25	20	YES						
1601 Mosaic Company	MOS	26.10	3 3 3	1.30	30- 45 (15-70%)	20.7	0.4	1.26	1.0	64	3/31	▲.11	NIL	3/31	025	275	YES						
999 Motorcar Parts Of Amer	MPAA	21.11	4 3 3	1.15	30- 45 (40-115%)	8.7	NIL	2.43	NIL	10	12/31	.34	.57	3/31	NIL	NIL	YES						
955 Motorola Solutions	MSI	107.84	▲2 3 3	.95	135- 205 (25-90%)	16.3	2.0	6.62	2.16	88	3/31	▲1.10	71	6/30	52	47	YES						
2182 Movado Group	MOV	39.25	3 3 2	1.20	50- 70 (25-80%)	17.4	2.0	2.25	.80	55	1/31	.52	.22	6/30	▲20	26	YES						
737 Mueller Inds.	MLI	29.02	5 3 5	1.25	45- 65 (55-125%)	12.9	1.4	2.25	.40	68	3/31	.42	.52	6/30	▲10	10	YES						
1721 Mueller Water Prod.	MWA	11.26	3 3 4	1.20	17- 25 (N- 120%)	21.2	1.8	.53	.20	22	3/31	▲.12	.03	6/30	05	04	YES						
515 Murphy Oil Corp.	MUR	29.69	3 3 3	1.65	65- 95 (120-220%)	39.6	3.4	75	1.00	56	3/31	▲.96	.33	6/30	25	25	YES						
2183 Murphy USA Inc.	MUSA	67.16	3 3 2	.90	95- 145 (40-115%)	13.4	NIL	5.00	NIL	55	3/31	.12	0.08	3/31	NIL	NIL	YES						
1765 Myers Inds.	MYE	22.45	3 3 2	1.25	17- 25 (N- 10%)	26.4	2.4	.85	.54	33	3/31	▲.25	.11	6/30	135	135	YES						
1622 Mylan N.V.	MYL	35.37	4 3 1	1.20	45- 65 (25-85%)	16.5	NIL	2.15	NIL	69	3/31	▲.17	.12	3/31	NIL	NIL	YES						
844 Myriad Genetics	MYGN	33.55	3 4 2	.85	40- 60 (20-80%)	22.8	NIL	1.47	NIL	87	3/31	▲.31	.27	3/31	NIL	NIL	YES						
1113 NCI Bldg. Sys.	NCS	18.35	3 4 3	1.35	25- 45 (35-145%)	15.2	NIL	1.21	NIL	19	1/31	.14	.03	3/31	NIL	NIL	YES						
1337 NCR Corp.	NCR	29.45	3 3 4	1.40	55- 80 (65-170%)	8.8	NIL	3.35	NIL	50	3/31	.56	.55	3/31	NIL	NIL	YES						
738 NN Inc.	NNBR	21.50	3 4 2	1.55	25- 40 (15-85%)	17.2	1.3	1.25	28	68	12/31	1.91	12	3/31	07	07	YES						
1223 NRG Energy	NRG	33.90	▲4 3 3	1.25	30- 40 (N- 20%)	15.8	0.4	2.15	.12	85	3/31	▲.87	d.52	6/30	03	03	YES						
1131 NVR, Inc.	NVR	3089.76	2 2 3	.85	2905-3935 (N- 25%)	16.5	NIL	186.84	NIL	5	3/31	39.34	25.12	3/31	NIL	NIL	YES						
1368 NXP Semiconductors NV	NXPI	98.79	- 3 -	1.20	145- 215 (45-120%)	13.4	NIL	7.35	NIL	9	3/31	▲1.55	1.40	3/31	NIL	NIL	YES						
2429 Nabors Inds.	NBR	7.99	4 4 4	1.85	25- 45 (215-465%)	NMF	3.0	d.30	24-NIL	94	3/31	d.46	d.52	6/30	.06	.06	YES						
1803 Nasdaq, Inc.	NDAQ	88.36	3 3 3	.90	85- 125 (N- 40%)	17.9	2.0	4.93	1.76	20	3/31	1.24	1.10	6/30	▲44	38	YES						
2521 Nat'l Bank of Canada	NA.TO	61.90b	3 2 3	.85	70- 95 (15-55%)	10.8	4.1	5.75	2.52	18	1/31	1.46(b)	1.34(b)	6/30	60(b)	56(b)	YES						
1980 National Beverage	FIZZ	87.74	2 3 2	.85	100- 155 (15-75%)	24.2	NIL	3.63	NIL	38	1/31	.88	.52	3/31	NIL	NIL	YES						
2395 National CineMedia	NCMI	6.80	3 3 5	.90	13- 20 (90-195%)	27.2	10.0	25	68- 34	31	3/31	▲d.03	d.08	6/30	▲17	22	YES						
540 National Fuel Gas	NFG	51.07	4 3 4	1.00	100- 150 (95-195%)	11.2	3.3	4.55	1.66	67	3/31	▲1.06	1.04	6/30	415	405	YES						
128 National Instruments	NATI	41.54	3 3 2	1.05	40- 60 (N- 45%)	35.1	2.2	1.15	.92	47	3/31	.18	.14	6/30	23	21	YES						
2430 National Oilwell Varco	NOV	39.12	4 3 3	1.15	50- 70 (30-80%)	NMF	0.5	.20	20														

ROE and ROR Analysis Columbia Gas of PA
CAPM/ECAPM Analysis
Value Line Projected Growth Rate

Docket No. R-2018-2647577
Exhibit MFG-11, Schedule 3

NE-P

Page 16

SUMMARY AND INDEX • THE VALUE LINE INVESTMENT SURVEY

May 18, 2018

PAGE NUMBERS

Bold type refers to
Ratings and Reports

RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price			Safety	Technical	Beta	3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings to 12-31-18	f) Est'd Div'd next 12 mos.	LATEST RESULTS					Do Options Trade?	
		Timeliness	Time	Price									Qtr. Ended	Earns. Per sh.	Year Ago	Qtr. Ended	Latest Div'd		Year Ago
2005 New Orient. Ed. ADS	EDU	92.25	2	3	3	1.05	105-155 (15-70%)	35.2	5.9	2.62	NIL	63	2/28	.57	48	3/31	NIL	NIL	YES
1505 New York Community	NYCB	11.55	5	3	3	90	17-25 (45-115%)	13.6	5.9	.55	.68	83	3/31	.20	21	6/30	17	17	YES
2385 New York Times	NYT	22.80	3	3	1	1.10	25-40 (10-75%)	45.6	0.7	.50	.16	80	3/31	♦.13	08	6/30	04	04	YES
1197 Newell Brands	NWL	27.31	3	3	5	1.10	65-95 (140-250%)	9.9	3.4	2.75	.92	66	3/31	♦.11	1.31	3/31	23	19	YES
541 Newfield Exploration	NFX	27.87	3	3	5	1.85	65-95 (135-240%)	9.3	NIL	3.01	NIL	67	3/31	.82	57	3/31	NIL	NIL	YES
581 NewMarket Corp.	NEU	379.77	5	2	3	1.00	425-575 (15-55%)	16.4	1.9	22.60	7.00	15	3/31	5.14	5.40	9/30	1.75	1.75	YES
1572 Newmont Mining	NEM	39.98	3	3	2	.90	35-55 (IN-40%)	25.8	1.4	1.55	.56	72	3/31	.35	25	6/30	14	05	YES
2386 News Corp. 'A'	NWSA	16.37	4	3	1	1.30	25-40 (65-145%)	28.7	1.2	.57	.20	80	12/31	d.14	d.50	6/30	10	10	YES
2338 Nexstar Media Group	NXST	62.35	1	3	2	1.20	145-220 (135-255%)	8.3	2.4	7.50	1.50	40	3/31	♦1.01	.13	6/30	375	30	YES
146 NextEra Energy	NEE	159.91	3	1	2	.65	▲ 160-195 (IN-20%)	20.6	2.9	7.75	4.58	73	3/31	2.09	1.90	3/31	▲ 1.11	.982	YES
1648 446 Nielsen Hldgs. plc	NLSN	29.88	4	2	4	.90	55-75 (85-150%)	19.9	4.7	1.50	1.40	24	3/31	.20	20	6/30	▲ .35	.34	YES
2161 NIKE, Inc. 'B'	NKE	68.46	4	1	2	.95	85-105 (25-55%)	27.2	1.2	2.52	.80	61	2/28	.68	68	6/30	20	18	YES
551 NISource Inc.	NI	25.10	3	3	5	.60	25-35 (IN-40%)	19.3	3.1	1.30	.78	17	3/31	.82	.65	6/30	♦.195	.175	YES
108 Nissan Motor ADRI(g)	NSANY	20.39	4	3	2	1.05	25-40 (25-95%)	7.5	5.4	2.72	1.10	44	12/31	.45	.60	3/31	NIL	NIL	YES
2431 Noble Corp. plc	NE	4.90	4	5	4	1.85	7-13 (45-165%)	NMF	NIL	d1.92	NIL	94	3/31	d.55	d.17	3/31	NIL	NIL	YES
2411 Noble Energy	NBL	33.44	3	3	4	1.50	40-60 (20-80%)	41.8	1.3	.80	.44	46	3/31	1.14	.08	6/30	▲ .11	.10	YES
957 Nokia Corp. ADR	NOK	6.27	4	3	5	1.10	7-11 (10-75%)	22.4	3.8	.28	.24	88	3/31	.02	.04	3/31	NIL	NIL	YES
1722 Nordson Corp.	NDSN	131.72	2	3	2	1.25	160-240 (20-80%)	20.6	1.0	6.40	1.32	22	1/31	1.35	.86	3/31	60	54	YES
2147 Nordstrom, Inc.	JWN	48.40	4	3	2	1.00	55-80 (15-65%)	14.0	3.1	3.45	1.48	48	1/31	1.20	1.37	6/30	♦.37	.37	YES
348 Norfolk Southern	NSC	146.09	2	3	2	1.15	160-240 (10-65%)	16.8	2.0	8.68	2.88	36	3/31	1.93	1.48	6/30	.72	.61	YES
789 Northern Trust Corp.	NTRS	105.45	3	3	2	1.10	115-175 (10-65%)	16.7	1.6	6.31	1.68	21	3/31	1.58	1.09	9/30	42	38	YES
1224 Northland Power	NPTO	23.35b	▲ 3	3	4	.70	30-50 (30-115%)	19.5	5.1	1.20	1.20	85	12/31	.25(b)	.94(b)	6/30	30(b)	27(b)	YES
721 Northrop Grumman	NOC	329.27	3	1	2	.85	305-370 (IN-10%)	21.3	1.3	15.46	4.40	43	3/31	4.21	3.63	3/31	▲ 1.10	.90	YES
1506 Northwest Bancshares	NWB1	16.65	▲ 2	2	2	.80	19-25 (15-50%)	16.7	4.1	1.00	.68	83	3/31	.24	.17	6/30	.17	.16	YES
552 Northwest Nat. Gas	NWN	61.40	▲ 1	5	7	.70	55-65 (IN-5%)	25.1	3.1	2.45	1.89	17	3/31	♦1.44	1.40	6/30	473	47	YES
2229 NorthWestern Corp.	NWE	53.66	4	3	4	.65	50-75 (IN-40%)	15.6	4.2	3.45	2.23	81	3/31	1.18	1.17	6/30	55	.525	YES
2315 Norwegian Cruise Line	NCLH	50.65	1	3	2	1.10	85-130 (70-155%)	10.4	NIL	4.85	NIL	23	3/31	.45	.27	3/31	NIL	NIL	YES
1624 Novartis AG ADR	NVS	77.14	3	1	2	.95	100-120 (30-55%)	21.9	3.8	3.52	2.94	69	3/31	.87	.70	6/30	2.936	2.718	YES
1625 Novo Nordisk ADRI(g)	NVO	48.36	3	2	2	1.00	60-80 (25-65%)	18.2	2.5	2.65	1.20	69	3/31	♦.71	.65	6/30	806	.67	YES
1015 Nu Skin Enterprises	NUS	74.98	3	3	3	1.15	70-105 (IN-40%)	20.8	2.0	3.60	1.51	58	3/31	.40	.51	6/30	365	.36	YES
2598 Nuance Communic.	NUAN	15.18	5	3	4	1.05	20-30 (30-100%)	NMF	NIL	d.03	NIL	27	12/31	d.09	d.08	3/31	NIL	NIL	YES
748 Nucor Corp.	NUE	62.62	3	3	3	1.30	90-135 (45-115%)	13.6	2.4	4.60	1.52	13	3/31	1.10	1.11	6/30	38	378	YES
1826 Nutanix, Inc.	NTNX	57.15	-	-	-	NMF	40-65 (IN-15%)	NMF	NIL	d.92	NIL	29	1/31	d.39	d.66	3/31	NIL	NIL	YES
1602 Nutrien Ltd.	NTR	47.65	-	-	-	NMF	60-90 (25-90%)	19.9	3.4	2.40	1.60	64	3/31	NIL	NA	6/30	40	NIL	YES
854 1931 NutrSystem Inc.	NTRI	32.55	3	3	5	1.00	50-75 (55-130%)	16.3	3.1	2.00	1.00	66	3/31	.09	.25	6/30	25	175	YES
187 NuVasive, Inc.	NUVA	49.30	4	3	3	.85	75-110 (50-125%)	65.7	NIL	.75	NIL	51	3/31	d.53	.22	3/31	NIL	NIL	YES
1211 Nuveen Muni Value Fund	NUV	9.54	-	1	3	.45	9-11 (IN-15%)	NMF	4.2	NMF	40	-	10/31	10.30(q)	10.39(q)	6/30	♦.093	.098	YES
454 1367 NVIDIA Corp.	NVDA	250.40	3	3	3	1.15	135-200 (IN-70%)	48.6	0.2	5.15	.60	9	1/31	1.78	.99	3/31	15	14	YES
913 OGE Energy	OGE	33.82	4	2	5	.95	35-50 (5-50%)	16.5	4.2	2.05	1.43	45	3/31	♦.27	.18	6/30	333	.302	YES
129 OSI Systems	OSIS	68.04	4	3	5	.85	85-125 (25-65%)	31.1	NIL	2.19	NIL	47	3/31	.13	.80	3/31	NIL	NIL	YES
2412 Oasis Petroleum	OAS	11.54	3	5	5	2.15	17-30 (45-160%)	28.9	NIL	.40	NIL	46	3/31	♦.10	d.05	3/31	NIL	NIL	YES
516 Occidental Petroleum	OXY	78.20	3	3	4	1.10	85-125 (10-60%)	52.1	4.0	1.50	3.12	56	3/31	♦.92	.15	9/30	♦.77	.76	YES
2432 Oceanenergy Int'l	OII	22.21	4	3	4	1.30	25-35 (15-60%)	NMF	NIL	d.95	NIL	94	3/31	d.50	d.08	3/31	NIL	15	YES
1416 Office Depot	ODP	2.37	4	5	4	1.35	3-6 (25-155%)	7.9	4.2	.30	10	75	3/31	♦.06	.14	6/30	♦.025	.025	YES
2433 Oil States Int'l	OIS	36.50	4	3	4	1.50	30-45 (IN-25%)	NMF	NIL	.19	NIL	94	3/31	d.01	d.34	3/31	NIL	NIL	YES
326 Old Dominion Freight	ODFL	141.42	2	3	2	1.05	120-175 (IN-25%)	24.2	0.4	5.85	54	35	3/31	1.33	.80	3/31	▲ .13	.10	YES
790 Old Nat'l Bancorp.	ONB	17.65	4	3	3	1.05	18-25 (IN-40%)	14.0	2.9	1.26	.52	21	3/31	.31	.27	6/30	▲ .13	.13	YES
771 Old Republic	ORI	20.45	4	3	2	1.05	35-55 (70-170%)	11.6	3.8	1.77	.78	53	3/31	.40	.36	3/31	▲ 195	19	YES
1603 Olin Corp.	OLN	32.25	3	3	3	1.30	35-50 (10-55%)	21.9	2.5	1.47	.80	64	3/31	.14	.17	6/30	20	20	YES
2418 Ollie's Bargain Outlet	OLLI	62.95	2	3	3	1.30	70-105 (10-65%)	37.0	NIL	1.70	NIL	48	1/31	.51	.39	3/31	NIL	NIL	YES
221 Omnicell, Inc.	OMCL	46.35	3	3	3	.95	50-75 (10-60%)	46.4	NIL	1.00	NIL	42	3/31	.07	d.29	3/31	NIL	NIL	YES
2396 Omnicom Group	OMC	73.87	3	2	4	.95	110-145 (50-95%)	13.0	3.2	5.70	2.40	31	3/31	1.14	1.02	6/30	.60	.55	YES
1369 ON Semiconductor	ON	22.92	1	3	2	1.40	30-40 (30-75%)	12.7	NIL	1.80	NIL	9	3/31	.40	.27	3/31	NIL	NIL	YES
553 ONE Gas, Inc.	OGS	72.55	1	2	5	.70	85-115 (15-60%)	22.9	2.6	3.17	1.88	17	3/31	1.72	1.34	6/30	.46	.42	YES
2645 1-800-FLOWERS.COM	FLWS	12.35	3	4	2	1.15	14-25 (15-100%)	16.9	NIL	.73	NIL	70	3/31	d.13	d.17	3/31	NIL	NIL	YES
614 ONEOK Inc.	OKE	63.94	3	3	4	1.55	70-110 (10-70%)	26.8	5.0	2.39	3.18	60	3/31	.64	.41	6/30	▲ .795	6.15	YES
1827 Open Text Corp.	OTEX	36.37	3	3	3	.85	45-65 (25-80%)	28.2	1.5	1.29	.53	29	12/31	.32	.18	3/31	▲ .132	.115	YES
1626 Opko Health	OPK	3.22	5	3	3	1.30	6-9 (85-180%)	NMF	NIL	d.50	NIL	69	3/31	♦.08	d.06	3/31	NIL	NIL	YES
1420 2599 Oracle Corp.	ORCL	45.94	2	1	3	1.05	60-70 (30-50%)	14.4	1.7	3.18	.76	27	2/28	.83	.69	6/30	19	19	YES
722 Orbital ATK	OA	133.38	-	3	-	NMF	110-170 (IN-25%)	18.9	1.0	7.05	1.28	43							

ROE and ROR Analysis Columbia Gas of PA
CAPM/ECAPM Analysis
Value Line Projected Growth Rate

Docket No. R-2018-2647577
Exhibit MFG-11, Schedule 3

May 18, 2018

SUMMARY AND INDEX • THE VALUE LINE INVESTMENT SURVEY

Page 17

PA-PU

PAGE NUMBERS

Bold type refers to
Ratings and Reports

RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price			Technical			3-5 year Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings to 12-31-18	(f) Est'd Div'd next 12 mos.	LATEST RESULTS					
		Timeliness	Safety	Beta	Qtr. Ended	Earnings Per sh.	Year Ago						Qtr. Ended	Latest Div'd	Year Ago			
166 PACCAR Inc.	PCAR	64.25	2 2 2	1.15	85-115	(30-80%)	11.3	3.6	5.70	2.29	30	3/31	1.45	.88	6/30	▲ 28	25	YES
1183 Packaging Corp	PKG	113.76	1 3 3	1.15	125-185	(10-65%)	17.7	2.2	6.41	2.52	32	3/31	1.48	1.24	6/30	▲ 63	63	YES
2601 Palo Alto Networks	PANW	201.80	3 3 3	1.10	190-290	(N-45%)	NMFM	NIL	d.12	NIL	27	1/31	d.38	d.67	3/31	NIL	NIL	YES
★ 1573 Pan Amer. Silver	PAAS	16.40	▲ 3 4 4	1.05	19-30	(15-85%)	23.1	0.9	71	14	72	12/31	.13	.18	3/31	▲ .035	0.25	YES
1989 Panasonic Corp.(g)	PCRFY	14.60	2 3 2	1.25	20-30	(35-105%)	15.7	1.8	93	27	28	12/31	.31	.14	3/31	NIL	NIL	YES
2647 Pandora Media	P	7.17	5 5 5	1.20	5-10	(N-40%)	NMFM	NIL	d.125	NIL	70	3/31	♦ d.55	d.56	3/31	NIL	NIL	YES
367 Papa John's Int'l	PZZA	58.73	4 3 4	90	95-140	(65-140%)	19.6	1.7	3.00	.98	59	3/31	♦ .50	.77	6/30	♦ 225	20	YES
518 Par Pacific Holdings	PARR	17.75	3 3 4	1.05	35-55	(95-210%)	43.0	NIL	1.50	NIL	56	3/31	♦ .33	.58	3/31	NIL	NIL	YES
582 Park Electrochemical	PKE	19.76	5 3 4	1.10	20-30	(N-50%)	43.0	2.0	46	40	15	2/28	♦ .10	.12	6/30	▲ 10	10	YES
791 Park National	PRK	113.20	3 2 3	1.95	110-145	(N-30%)	15.5	3.4	7.29	3.84	21	3/31	2.02	1.31	6/30	▲ .96	.94	YES
1767 Park-Ohio	PKOH	35.20	3 4 2	1.60	60-105	(70-200%)	9.5	1.4	3.70	.50	33	3/31	♦ .78	.79	6/30	▲ 125	125	YES
1768 Parker-Hannifin	PH	171.11	2 2 3	1.30	220-295	(30-70%)	16.1	1.8	10.61	3.04	33	3/31	2.80	2.11	6/30	▲ 76	86	YES
2413 Parsley Energy	PE	32.51	3 3 4	1.65	45-55	(40-70%)	27.1	NIL	1.20	NIL	46	3/31	♦ .32	.13	3/31	NIL	NIL	YES
1246 Parry City Holdco	PRTY	14.90	3 4 2	1.30	20-35	(35-135%)	8.1	NIL	1.65	NIL	55	3/31	♦ .07	.05	3/31	NIL	NIL	YES
1228 Pattern Energy Group	PEGI	17.98	4 3 5	1.25	25-35	(40-95%)	40.0	9.9	45	1.78	85	12/31	d.08	.16	6/30	▲ 422	414	YES
855 223 Patterson Cos.	POCO	22.09	5 3 4	1.95	60-95	(170-330%)	11.0	4.7	2.01	1.04	42	1/31	4.3	.29	6/30	26	26	YES
2434 Patterson-UTI Energy	PTEN	22.45	3 4 5	1.75	35-50	(55-125%)	NMFM	0.7	d.15	.16	94	3/31	d.16	d.42	6/30	▲ .04	.02	YES
2628 Paychex, Inc.	PAYX	61.59	3 1 2	1.00	80-100	(30-60%)	23.0	3.6	2.68	2.24	8	2/28	.63	.56	6/30	▲ 56	46	YES
1828 Paylocity Holding	PCTY	56.85	2 4 3	1.25	60-100	(5-75%)	68.5	NIL	.83	NIL	29	3/31	♦ .71	.27	3/31	NIL	NIL	YES
2574 PayPal Holdings	PYPL	75.72	2 3 2	1.20	70-110	(N-45%)	43.3	NIL	1.75	NIL	16	3/31	4.2	.32	3/31	NIL	NIL	YES
615 Pembina Pipeline	PPLTO	44.27b	3 3 5	1.10	60-90	(35-105%)	26.0	5.0	1.70	2.20	60	3/31	♦ .59(b)	.49(b)	6/30	▲ 55(b)	50(b)	YES
2367 Penn Nat'l Gaming	PENN	31.77	2 3 3	1.20	35-50	(10-55%)	19.9	NIL	1.60	NIL	25	3/31	.48	.06	3/31	NIL	NIL	YES
2149 Penney (J.C.)	JCP	2.77	4 5 3	1.50	7-12	(155-335%)	18.5	NIL	.15	NIL	48	1/31	.57	.64	3/31	NIL	NIL	YES
1536 Penn. R.E.I.T.	PEI	10.12	5 3 4	1.10	17-25	(70-145%)	33.7	8.4	3.00	.85	93	3/31	d.15	d.10	6/30	▲ 21	21	YES
2131 Penske Auto	PAG	46.88	2 3 3	1.30	55-80	(15-70%)	9.2	3.0	5.11	1.42	14	3/31	1.26	.97	3/31	▲ 34	30	YES
1769 Pentair plc	PNR	44.44	3 3 3	1.25	95-145	(115-225%)	11.1	1.6	4.00	.70	33	3/31	.88	.65	9/30	▲ 175	345	YES
188 Penumbra Inc.	PEN	135.90	3 3 3	1.05	95-145	(N-5%)	NMFM	NIL	.15	NIL	51	3/31	♦ .06	d.10	3/31	NIL	NIL	YES
1507 People's United Fin'l	PBCT	18.47	3 2 3	1.95	20-30	(10-60%)	14.8	3.8	1.25	.70	83	3/31	.30	.22	6/30	▲ 175	173	YES
1981 PepsiCo, Inc.	PEP	96.79	5 1 2	80	135-165	(40-70%)	17.3	3.8	5.60	3.71	38	3/31	.96	.94	6/30	▲ 928	805	YES
1954 Performance Food	PFGC	32.55	1 3 3	1.05	35-50	(10-55%)	24.3	NIL	1.34	NIL	57	3/31	♦ .32	.20	3/31	NIL	NIL	YES
131 PerkinElmer Inc.	PKI	73.55	3 3 2	1.10	▲ 90-130	(20-75%)	20.4	0.4	3.60	.28	47	3/31	.63	.55	9/30	♦ 07	07	YES
1628 Perrigo Co. plc	PRGO	74.50	3 3 3	1.85	105-155	(40-110%)	13.9	1.1	5.35	.79	69	3/31	♦ 1.26	1.05	6/30	♦ 19	16	YES
2113 Perry Ellis Int'l	PERY	25.71	3 3 3	1.05	25-40	(N-55%)	13.9	NIL	1.85	NIL	71	1/31	.88	.66	3/31	NIL	NIL	YES
970 PetMed Express	PETS	33.99	2 3 1	1.00	40-60	(20-75%)	16.7	2.9	2.03	1.00	2	3/31	♦ .50	.37	6/30	♦ 25	20	YES
519 Petroleo Brasileiro ADR	PBR	13.87	3 5 1	1.85	17-30	(25-115%)	17.3	NIL	.80	NIL	56	3/31	♦ .32	.22	3/31	NIL	NIL	YES
2671 Pfizer, Inc.	PFE	34.98	3 1 2	90	45-55	(30-55%)	17.5	3.9	2.00	1.36	69	3/31	.59	.51	6/30	▲ 34	32	YES
1932 Phibro Animal Health	PAHC	44.25	3 3 3	1.75	40-60	(N-35%)	22.2	0.9	1.99	.40	66	3/31	♦ .49	.59	6/30	♦ 10	10	YES
1990 Philips Electronics NV(g)	PHG	42.00	4 3 4	1.10	45-65	(5-55%)	35.9	2.3	1.17	.95	28	1/31	.12	.21	3/31	NIL	NIL	YES
2239 1990 Philip Morris Int'l	PM	80.81	▲ 5 2 3	80	115-155	(40-90%)	15.2	5.3	5.30	4.28	95	3/31	1.00	1.02	6/30	1.07	1.04	YES
520 Phillips 66	PSX	116.25	3 2 4	1.20	95-130	(N-10%)	22.5	2.8	5.17	3.20	56	3/31	1.07	1.02	6/30	▲ 80	70	YES
635 Phillips 66 Partners	PSXP	48.79	2 3 5	1.15	80-120	(65-145%)	14.4	5.9	3.39	2.86	79	3/31	.87	.60	6/30	▲ 714	586	YES
1390 Photonics Inc.	PLAB	8.15	3 3 4	1.70	11-16	(35-95%)	24.0	NIL	.34	NIL	1	1/31	.09	.03	3/31	NIL	NIL	YES
2188 Pier 1 Imports	PIR	2.23	4 4 1	1.50	5-8	(125-260%)	NMFM	NIL	d.04	NIL	55	2/28	.21	.34	6/30	▲ 107	07	YES
1933 Pilgrim's Pride Corp.	PPC	21.16	3 2 3	1.95	30-45	(40-115%)	6.4	NIL	3.30	NIL	66	12/31	.54	.28	3/31	NIL	NIL	YES
2368 Pinnacle Entertain.	PNK	32.67	4 4 1	NMFM	25-40	(N-20%)	29.7	NIL	1.10	NIL	25	3/31	♦ .35	.28	3/31	NIL	NIL	YES
2460 1934 Pinnacle Foods	PF	62.88	2 3 3	1.80	55-85	(N-35%)	21.7	2.3	2.90	1.42	66	3/31	♦ .57	.50	6/30	325	285	YES
2232 Pinnacle West Capital	PNW	78.30	4 1 4	1.55	75-90	(N-15%)	17.4	3.7	4.50	2.86	81	3/31	.03	.21	6/30	695	655	YES
2414 Pioneer Natural Res.	PXD	197.65	3 3 3	1.40	270-405	(35-105%)	30.9	0.2	6.40	32	46	3/31	♦ 1.66	.25	6/30	▲ 16	04	YES
1811 Piper Jaffray Cos.	PJC	73.60	3 3 2	1.25	105-155	(45-110%)	10.5	2.0	6.98	1.50	6	3/31	1.38	1.32	6/30	375	313	YES
1417 Pitney Bowes	PBI	8.86	4 3 3	1.15	17-25	(90-160%)	6.1	8.5	1.45	.75	75	3/31	.30	.36	6/30	♦ 168	186	YES
855 636 Plains All Amer. Pipe	PAA	24.54	5 3 4	1.50	40-60	(65-145%)	16.9	4.9	1.45	1.20	79	3/31	♦ .33	.58	6/30	30	55	YES
2316 Planet Fitness	PLNT	40.65	2 3 3	1.05	45-70	(10-70%)	33.9	NIL	1.20	NIL	23	3/31	♦ .27	.19	3/31	NIL	NIL	YES
1398 Plantronics Inc.	PLT	66.75	3 3 4	1.05	55-85	(N-25%)	25.2	0.9	2.65	.60	50	3/31	.29	.59	6/30	.15	15	YES
583 Platform Specialty	PAH	10.50	▲ 3 4 5	2.00	12-20	(15-90%)	13.1	NIL	.80	NIL	15	3/31	♦ .21	.16	3/31	NIL	NIL	YES
1339 Plexus Corp.	PLXS	58.34	4 3 3	1.10	60-90	(5-55%)	17.5	NIL	3.34	NIL	50	3/31	.74	.84	3/31	NIL	NIL	YES
2317 Polaris Inds.	PH	107.31	3 3 2	1.25	150-225	(40-110%)	17.2	2.2	6.25	2.40	23	3/31	1.06	.75	6/30	60	58	YES
584 PolyOne Corp.	POL	42.44	3 3 3	1.35	50-70	(20-65%)	16.6	1.6	2.55	.70	15	3/31	.88	.59	6/30	175	135	YES
2318 Pool Corp.	POOL	143.93	2 2 3	.95	100-135	(N-N%)	32.7	1.3	4.40	1.80	23	3/31	.53	.52	9/30	▲ 45	37	YES
2523 Popular Inc.	BPOP	46.90	4 3 3	1.20	65-100	(40-115%)	11.2	2.1	4.19	1.00	18	3/31	.89	.89	9/30	♦ 25	25	YES
2233 Portland General	POR	41.34	4 2 4	.65	35-50	(N-20%)	18.8	3.5	2.20	1.45	81	3/31	.72	.82	9/30	▲ 363	34	YES
749 POSCO ADR(g)	PKX	83.62	3 3 3	1.15	75-115	(N-40%)	20.9	2.6	4.00	2.20	13	6/30	1.34(p)					

ROE and ROR Analysis Columbia Gas of PA
CAPM/ECAPM Analysis
Value Line Projected Growth Rate

Docket No. R-2018-2647577
Exhibit MFG-11, Schedule 3

PU-S

Page 18

SUMMARY AND INDEX • THE VALUE LINE INVESTMENT SURVEY

May 18, 2018

PAGE NUMBERS

Bold type refers to Ratings and Reports

RANKS

Industry Rank

Do Options Trade?

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		Timeliness	Qtr. Ended	Earnings Per sh.									Year Ago	Qtr. Ended	Latest Div'd		Year Ago				
																		Qtr. Ended	Earnings Per sh.	Year Ago	Qtr. Ended
1132 PulteGroup, Inc	PHM	31.17	3	3	3	1.30	40- 55 (30- 75%)	9.6	1.2	3.25	37	5	3/31	.59	31	6/30	.09	.09	YES		
1404 Pure Storage	PSTG	22.33	3	4	3	.75	20- 35 (15- 55%)	NMF	NIL	d.50	NIL	37	3/31	d.05	d.20	3/31	NIL	NIL	YES		
857 543 QEP Resources	QEP	12.19	4	4	4	1.80	19- 30 (55-145%)	NMF	NIL	d.34	NIL	67	3/31	d.20	d.14	3/31	NIL	NIL	YES		
843 OIAGEN N.V.	OGEN	34.71	3	3	3	1.10	35- 55 (N- 60%)	46.3	NIL	.75	NIL	87	12/31	d.18	.04	3/31	NIL	NIL	YES		
1370 Corvo Inc.	ORVO	79.89	▼	3	3	1.15	55- 80 (N- N%)	74.0	NIL	1.06	NIL	9	3/31	d.10	.43	3/31	NIL	NIL	YES		
644 2378 Quad/Graphics Inc	QUAD	18.70	3	4	1	1.40	20- 35 (5- 85%)	9.0	6.4	2.08	1.20	89	3/31	.58	.52	6/30	.30	.30	YES		
586 Quaker Chemical	KWR	149.53	3	3	3	1.15	175- 265 (15- 75%)	26.0	1.0	5.75	1.48	15	3/31	.95	.52	9/30	▲	37	355	YES	
1243 958 Qualcomm Inc.	QCOM	52.86	-	2	-	.95	80- 105 (50-100%)	16.5	4.7	3.20	2.48	88	3/31	.80	1.34	6/30	▲	62	57	YES	
828 Quality Systems	QSII	14.42	4	3	4	.85	25- 35 (75-145%)	20.0	NIL	.72	NIL	77	12/31	.15	.17	3/31	NIL	NIL	YES		
1115 Qualex Bldg. Prod.	NX	18.15	3	3	4	1.35	25- 40 (40-120%)	17.1	0.9	1.06	.16	19	1/31	.14	d.11	3/31	.04	.04	YES		
1240 Quanta Services	PWR	35.53	4	3	3	1.35	50- 75 (40-110%)	15.4	NIL	2.30	NIL	82	3/31	▲	.40	.39	3/31	NIL	NIL	YES	
815 Quest Diagnostics	DGX	99.87	3	2	3	.90	105- 145 (5- 45%)	15.1	2.0	6.60	2.00	7	3/31	1.52	1.33	6/30	▲	50	45	YES	
2189 Qurate Retail	QRTA	24.11	3	3	2	1.10	45- 65 (85-170%)	13.4	NIL	1.80	NIL	55	12/31	.40	.40	3/31	NIL	NIL	YES		
1723 RBC Bearings	ROLL	120.43	2	3	2	1.05	95- 145 (N- 20%)	26.6	NIL	4.52	NIL	22	12/31	1.05	.73	3/31	NIL	NIL	YES		
1160 RH	RH	101.25	2	4	2	1.10	100- 150 (N- 50%)	21.3	NIL	4.75	NIL	74	1/31	1.69	.68	3/31	NIL	NIL	YES		
773 RLI Corp.	RLI	66.19	3	3	3	.95	70- 105 (5- 60%)	29.2	1.3	2.27	.88	53	3/31	.60	.44	6/30	▲	22	21	YES	
2435 RPC Inc.	RES	18.87	2	3	4	1.50	45- 70 (140-270%)	14.5	2.6	1.30	50	94	3/31	.24	.02	6/30	.10	NIL	YES		
587 RPM Int'l	RPM	49.31	2	3	4	1.20	55- 80 (10- 60%)	15.0	2.6	3.28	1.28	15	2/28	.30	.09	6/30	.32	.30	YES		
1649 2415 RSP Permian	RSP	50.26	-	4	-	1.80	50- 80 (N- 60%)	22.3	NIL	2.25	NIL	46	3/31	▲	.57	.26	3/31	NIL	NIL	YES	
2114 Ralph Lauren	RL	106.58	3	3	1	1.15	115- 170 (10- 60%)	17.1	1.9	6.22	2.00	71	12/31	2.03	1.86	6/30	.50	.50	YES		
1371 Rambus Inc.	RMBS	13.26	3	3	3	1.00	17- 25 (30- 90%)	15.6	NIL	.85	NIL	9	3/31	▲	.21	.16	3/31	NIL	NIL	YES	
2416 Range Resources	RRC	14.36	3	3	4	1.15	40- 60 (180-320%)	13.7	0.6	1.05	.08	46	3/31	.46	.25	3/31	.02	.02	YES		
1039 1770 Raven Inds.	RAVN	38.85	3	3	3	1.25	50- 70 (25- 75%)	27.5	1.3	1.45	52	33	1/31	.23	1.2	6/30	.13	.13	YES		
1812 Raymond James Fin'l	RJF	91.25	1	3	3	1.25	110- 160 (20- 75%)	13.0	1.1	7.02	1.00	6	3/31	1.63	1.28	6/30	.25	.22	YES		
588 Rayonier Advanced Mat	RYAM	18.49	▲	2	4	2.15	40- 65 (115-250%)	9.2	1.5	2.00	.28	15	3/31	▲	.38	.15	3/31	.07	.07	YES	
1170 Rayonier Inc.	RYN	37.65	3	3	3	1.00	30- 40 (N- 5%)	54.6	2.7	.69	1.00	12	3/31	▲	.31	.27	3/31	.25	.25	YES	
723 Raytheon Co.	RTN	210.40	3	1	3	.80	190- 235 (N- 10%)	21.5	1.6	9.79	3.47	43	3/31	2.19	1.73	6/30	▲	868	798	YES	
1771 Realogy Holdings	RLGY	25.93	4	3	3	1.10	50- 75 (95-190%)	14.4	1.4	1.80	.36	33	3/31	▲	d.51	d.20	6/30	▲	.09	.09	YES
1539 Realty Income Corp.	RI	52.46	4	2	3	.70	65- 85 (25- 60%)	43.7	5.1	1.20	2.67	93	3/31	▲	.29	.27	3/31	▲	638	624	YES
2602 Red Hat, Inc.	RHT	168.60	2	3	4	1.15	155- 230 (N- 35%)	73.9	NIL	2.28	NIL	27	2/28	.60	.36	3/31	NIL	NIL	YES		
369 Red Robin Gourmet	RRGB	61.15	3	3	3	.90	105- 160 (70-160%)	22.6	NIL	2.70	NIL	59	12/31	.78	.27	3/31	NIL	NIL	YES		
2369 Red Rock Resorts	RRR	33.20	-	3	-	NMF	35- 50 (5- 30%)	27.7	1.2	1.20	.40	25	3/31	.65	.30	6/30	.10	.10	YES		
1724 Regal Beloit	RBC	76.90	3	3	4	1.20	85- 130 (10- 70%)	14.0	1.5	5.50	1.12	22	3/31	▲	1.31	1.02	9/30	▲	.28	.26	YES
849 Regal Entertainment	RGC	58.09	4	3	3	.85	80- 120 (40-105%)	38.7	3.8	1.50	2.22	93	3/31	.31	d.26	6/30	555	53	YES		
1540 Regency Centers Corp.	REG	58.09	4	3	3	.85	80- 120 (40-105%)	38.7	3.8	1.50	2.22	93	3/31	.31	d.26	6/30	555	53	YES		
844 Regeneron Pharmac.	REGN	285.86	3	3	3	1.25	545- 820 (90-185%)	20.2	NIL	14.15	NIL	87	3/31	▲	4.16	2.16	3/31	NIL	NIL	YES	
2524 Regions Financial	RF	18.97	2	3	3	1.20	20- 30 (5- 60%)	13.6	2.1	1.40	40	18	3/31	.35	.23	9/30	.09	.09	YES		
1016 Regis Corp.	RGS	15.79	3	3	3	1.05	14- 20 (N- 25%)	43.9	NIL	.36	NIL	58	3/31	d.12	d.40	3/31	NIL	NIL	YES		
1560 Reinsurance Group	RGA	153.74	3	2	3	1.00	155- 210 (N- 35%)	13.9	1.4	11.10	2.15	34	3/31	1.61	1.86	6/30	.50	.41	YES		
750 Reliance Steel	RS	91.74	2	3	3	1.30	105- 155 (15- 70%)	15.0	2.2	6.10	2.00	13	3/31	2.30	1.52	6/30	.50	.45	YES		
2030 RenaissanceRe Hldgs	RNR	127.45	4	2	3	.70	125- 170 (N- 35%)	12.6	1.0	10.10	1.32	96	3/31	3.40	1.18	3/31	▲	.33	.32	YES	
2151 Rent-A-Center	RCII	9.40	-	4	-	1.15	14- 25 (50-185%)	NMF	NIL	.02	NIL	48	3/31	d.08	.04	3/31	NIL	.08	YES		
413 Republic Services	RSG	67.73	▲	2	2	.80	85- 115 (25- 70%)	22.2	2.1	3.05	1.43	49	9/30	▲	.74	.55	9/30	▲	345	32	YES
224 ResMed Inc.	RMD	97.83	3	3	3	.90	80- 120 (N- 25%)	28.0	1.5	3.50	1.44	42	3/31	.76	.66	6/30	.35	.33	YES		
402 Resources Connection	RECN	15.70	4	3	2	1.25	25- 35 (60-125%)	16.2	3.1	.97	.46	54	2/28	.21	.09	6/30	.12	.11	YES		
370 Restaurant Brands Int'l	QSR	55.48	2	3	3	1.05	75- 115 (35-105%)	19.5	3.2	2.85	1.80	59	3/31	.63	.36	9/30	.45	.19	YES		
1017 Revlon Inc.	REV	20.00	5	3	3	.95	25- 35 (25- 75%)	NMF	NIL	d.10	NIL	58	12/31	d.86	.48	3/31	NIL	NIL	YES		
1725 Rexord Corp.	RFXN	28.71	3	3	1	1.30	45- 65 (15-125%)	23.3	NIL	1.23	NIL	22	12/31	.22	.02	3/31	NIL	NIL	YES		
959 Ribbon Communications	RBBN	5.82	4	4	5	1.25	7- 11 (20- 90%)	NMF	NIL	d.70	NIL	88	3/31	d.44	d.22	3/31	NIL	NIL	YES		
1590 Rite Tinto plc	RIO	55.41	3	3	3	1.25	60- 95 (10- 70%)	11.1	4.7	5.00	2.62	65	12/31	2.64(p)	1.97(p)	6/30	1.812	1.256	YES		
644 971 Rite Aid Corp.	RAD	1.63	-	5	-	1.00	3- 6 (85-270%)	NMF	NIL	.01	NIL	2	2/28	d.01	d.02	3/31	NIL	NIL	YES		
1645 Robert Half Int'l	RHI	62.76	3	2	3	1.20	65- 90 (5- 45%)	19.3	1.8	3.25	1.14	11	3/31	.78	.62	6/30	.28	.24	YES		
1313 Rockwell Automation	ROK	175.09	3	2	3	1.20	170- 230 (N- 30%)	21.9	2.1	8.00	3.68	39	3/31	1.89	1.45	6/30	▲	92	.76	YES	
724 Rockwell Collins	COL	133.30	-	1	-	.95	160- 195 (20- 45%)	18.5	1.0	7.21	1.32	43	3/31	1.43	1.27	6/30	.33	.33	YES		
1772 Rogers Communications	RCIB	60.20b	1	3	4	.55	60- 90 (N- 50%)	16.1	3.2	3.74	1.92	33	3/31	.80(b)	1.57(b)	9/30	48(b)	48(b)	YES		
855 1340 Rogers Corp.	ROG	114.36	3	3	3	1.15	125- 190 (16- 65%)	18.4	NIL	6.20	NIL	50	3/31	1.48	1.68	3/31	NIL	NIL	YES		
403 Rollins, Inc.	ROL	49.91	2	2	3	.90	40- 55 (N- 10%)	45.4	1.1	1.10	.56	54	3/31	.22	.16	6/30	.14	.115	YES		
1726 Roper Tech.	RST	271.70	2	1	2	1.00	260- 315 (N- 15%)	29.8	0.6	9.13	1.65	22	3/31	2.03	1.53	6/30	413	.35	YES		
2006 Rosetta Stone	RSP	14.63	▼	4	3	.60	16- 25 (10- 70%)	NMF	NIL</												

ROE and ROR Analysis Columbia Gas of PA
CAPM/ECAPM Analysis
Value Line Projected Growth Rate

Docket No. R-2018-2647577
Exhibit MFG-11, Schedule 3

May 18, 2018

SUMMARY AND INDEX • THE VALUE LINE INVESTMENT SURVEY

Page 19

SA-SP

PAGE NUMBERS

Bold type refers to Ratings and Reports

RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price			Technical			3-5 year Target and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings to 12-31-18	(f) Est'd Div'd next 12 mos.	LATEST RESULTS					Do Options Trade?		
		Timeliness	Safety	Beta	Timeliness	Safety	Beta						Qtr. Ended	Earnings Per sh.	Year Ago	Qtr. Ended	Latest Div'd		Year Ago	
1829 Sabre Corp.	(NOC) SABR	22.67	3	3	4	1.00	60-85 (165-275%)	15.6	2.5	1.45	56	29	3/31	.44	.42	3/31	.14	.14	YES	
1133 St. Joe Corp.	JOE	18.05	4	3	2	.85	19-30 (5-65%)	90.3	NIL	.20	NIL	5	3/31	.01	.06	3/31	NIL	NIL	YES	
1830 salesforce.com	CRM	128.75	3	3	3	1.10	125-190 (N-50%)	NMF	NIL	.60	NIL	29	1/31	.09	d.07	3/31	NIL	NIL	YES	
1018 SALLY Beauty	SBH	14.97	2	3	4	.70	45-65 (200-335%)	7.3	NIL	2.04	NIL	58	3/31	♦.49	.40	3/31	NIL	NIL	YES	
1936 Sanderson Farms	(NOC) SAFM	113.72	3	3	3	.75	120-180 (5-60%)	10.2	1.1	11.19	1.28	66	1/31	.61	1.06	6/30	.32	.24	YES	
2460 1341 Sanmina Corp.	(NOC) SANM	30.25	3	3	5	1.25	40-60 (30-100%)	12.6	NIL	2.40	NIL	50	3/31	.50	.76	3/31	NIL	NIL	YES	
1630 Sanofi ADR	SNY	38.66	5	1	3	.95	50-60 (30-55%)	16.6	4.7	2.33	1.80	69	3/31	.50	.60	3/31	NIL	NIL	YES	
1937 Saputo Inc.	(TSE) SAPTO	42.05b	4	1	4	.65	40-50 (N-20%)	19.9	1.5	2.11	.64	66	12/31	♦.47(b)	.49(b)	3/31	16(b)	.15(b)	YES	
149 SCANA Corp.	SCG	35.24	4	3	3	.70	35-45 (N-30%)	9.7	NIL	3.65	NIL-2.45	73	3/31	1.18	1.19	6/30	613	.612	YES	
1405 ScanSource	(NOC) SCSO	36.45	▼	4	3	4	45-60 (16-65%)	15.7	NIL	2.32	NIL	37	3/31	♦.42	.49	3/31	NIL	NIL	YES	
453 225 Schein (Henry)	(NOC) HSIC	71.08	3	3	5	.95	90-135 (25-90%)	16.0	NIL	3.95	NIL	42	3/31	♦.91	.88	3/31	NIL	NIL	YES	
2437 Schlumberger Ltd.	SLB	69.54	4	2	4	1.20	110-150 (60-115%)	34.8	2.9	2.00	2.00	94	3/31	.38	.25	9/30	.50	.50	YES	
752 Schmitzer Steel	(NOC) SCHN	29.75	2	3	1	1.45	40-60 (35-100%)	9.4	2.5	3.16	.75	13	2/28	1.42	.40	6/30	188	188	YES	
2378 Scholastic Corp.	(NOC) SCHL	42.48	4	3	5	.95	40-60 (N-40%)	23.6	1.4	1.80	.60	89	2/28	d.30	d.36	6/30	.15	.15	YES	
589 Schulman (A.)	(NOC) SHLM	43.05	-	3	3	1.45	45-65 (5-50%)	21.9	1.9	1.97	.82	15	2/28	.12	.11	6/30	205	205	YES	
1804 Schwab (Charles)	(NOC) SCHW	57.30	2	3	3	1.30	60-85 (5-50%)	25.5	0.7	2.25	.40	20	3/31	.55	.39	6/30	.10	.08	YES	
1996 Schwanitz-Mauduit Int'l	(NOC) SWM	43.95	4	3	3	.80	40-60 (N-35%)	15.2	3.9	2.90	1.72	95	3/31	♦.68	.45	6/30	♦.43	.42	YES	
404 Science Applications	(NOC) SAIC	87.86	3	3	3	.95	75-110 (N-25%)	21.7	1.4	4.05	1.24	54	1/31	1.16	.79	6/30	.31	.31	YES	
2370 Scientific Games	(NOC) SGMS	51.20	▼	2	5	4	50-95 (N-85%)	NMF	NIL	d.10	NIL	25	3/31	♦d.24	d.14	3/31	NIL	NIL	YES	
1199 Scotts Miracle-Gro	SMG	80.85	3	3	4	.95	80-120 (N-50%)	20.2	2.6	4.00	2.12	86	3/31	2.66	2.55	6/30	53	.50	YES	
2339 Scripps (E.W.) 'A'	(NOC) SSP	12.22	5	3	4	1.15	30-50 (145-310%)	17.5	1.6	.70	.20	40	3/31	♦d.10	d.03	3/31	▲.05	NIL	YES	
1036 Scripps Networks	(NOC) SNI	3.24	SEE FINAL SUPPLEMENT	SEE FINAL SUPPLEMENT	SEE FINAL SUPPLEMENT	SEE FINAL SUPPLEMENT	SEE FINAL SUPPLEMENT	SEE FINAL SUPPLEMENT	SEE FINAL SUPPLEMENT	SEE FINAL SUPPLEMENT	SEE FINAL SUPPLEMENT	SEE FINAL SUPPLEMENT	SEE FINAL SUPPLEMENT	SEE FINAL SUPPLEMENT	SEE FINAL SUPPLEMENT					
2015 SeaChange Int'l	(NOC) SEAC	3.24	-	4	-	75	5-8 (55-145%)	NMF	NIL	NIL	NIL	90	1/31	.04	d.78	3/31	NIL	NIL	YES	
1406 Seagate Technology	(NOC) STX	56.49	2	3	1	1.35	45-65 (N-15%)	13.3	4.5	4.26	2.52	37	3/31	1.46	d.78	3/31	NIL	NIL	YES	
1184 Sealed Air	SEE	44.09	-	3	-	1.10	60-90 (35-105%)	22.0	1.5	2.00	.64	32	3/31	♦d.21	d.27	3/31	.16	.16	YES	
2152 Sears Holdings	(NOC) SHLD	2.76	-	5	-	1.45	4-8 (45-190%)	NMF	NIL	d11.00	NIL	48	1/31	d1.41	d1.28	3/31	NIL	NIL	YES	
845 Seattle Genetics	(NOC) SGEN	54.08	5	4	4	1.40	75-130 (40-140%)	NMF	NIL	d1.68	NIL	87	3/31	d.73	d.42	3/31	NIL	NIL	YES	
2320 SeaWorld Entertainment	(NOC) SEAS	16.99	▲	4	3	4	13-19 (N-10%)	28.3	NIL	.60	NIL	23	3/31	♦d.73	d.71	3/31	NIL	NIL	YES	
816 Select Med. Hldgs.	(NOC) SEM	18.15	2	3	3	1.25	18-25 (N-40%)	17.3	NIL	1.05	NIL	7	3/31	♦.24	.21	3/31	NIL	NIL	YES	
774 Selective Ins. Group	(NOC) SIGI	56.25	3	3	1	.95	50-75 (N-35%)	14.8	1.3	3.80	.72	53	3/31	♦.46	.86	6/30	♦.18	.16	YES	
2234 Sempra Energy	(NOC) SRE	106.44	4	2	4	1.75	120-160 (15-50%)	19.4	3.4	5.50	3.65	81	3/31	♦1.33	1.75	6/30	▲.895	823	YES	
1372 Semtech Corp.	(NOC) SMTC	42.20	3	3	3	1.25	50-70 (20-65%)	19.2	NIL	2.20	NIL	9	1/31	.42	.37	3/31	NIL	NIL	YES	
132 Sensata Techn. plc	ST	51.29	2	2	1	1.20	70-100 (35-95%)	14.1	NIL	3.65	NIL	47	3/31	.85	.71	3/31	NIL	NIL	YES	
1938 Sensient Techn.	(NOC) SXT	69.95	3	2	4	1.10	65-90 (N-30%)	18.3	2.0	3.79	1.40	66	3/31	.89	.82	6/30	.33	.30	YES	
1841 Service Corp. Int'l	(NOC) SCI	36.31	2	3	3	1.00	45-70 (25-95%)	20.0	1.9	1.82	.68	4	3/31	.47	.38	6/30	♦.17	.15	YES	
405 ServiceMaster Global	(NOC) SERV	54.78	3	3	3	.90	50-80 (N-45%)	23.8	NIL	2.90	NIL	54	3/31	.30	.29	3/31	NIL	NIL	YES	
2630 ServiceNow, Inc.	(NOC) NOW	176.03	3	4	3	1.15	100-165 (N-N%)	NMF	NIL	.30	NIL	8	3/31	.06	d.24	3/31	NIL	NIL	YES	
371 Shake Shack	(NOC) SHAK	59.36	3	4	3	1.40	65-110 (10-85%)	62.5	NIL	.95	NIL	59	3/31	♦.13	.10	3/31	NIL	NIL	YES	
1026 Shaw Commun. 'B'	(TSE) SJRBO	25.88b	4	2	4	.65	25-35 (N-35%)	38.9	4.7	.66	1.20	62	2/28	29(b)	30(b)	6/30	295(b)	296(b)	YES	
930 Shenandoah Telecom.	(NOC) SHEN	31.85	3	3	2	1.00	35-50 (10-55%)	53.1	0.8	.60	.27	76	3/31	♦.09	.13	3/31	NIL	NIL	YES	
1143 Sherwin-Williams	(NOC) SHW	377.94	1	2	2	1.10	475-645 (25-70%)	20.1	0.9	18.80	3.44	26	3/31	3.57	2.61	6/30	.86	.85	YES	
337 Ship Finance Int'l	(NOC) SFL	14.45	5	4	3	1.20	11-19 (N-30%)	13.8	9.7	1.05	1.40	97	12/31	.20	.31	3/31	.35	.45	YES	
1831 Shopify Inc.	(NOC) SHOP	143.31	3	2	3	1.50	175-290 (20-100%)	NMF	NIL	.20	NIL	29	3/31	.04	d.04	3/31	NIL	NIL	YES	
1774 Siemens AG (ADS)	(NOC) SIEGY	65.45	3	2	3	1.15	90-125 (40-90%)	14.0	3.4	4.67	2.22	33	3/31	♦1.40	1.02	3/31	2.297	2.17	YES	
455 605 Sierra Wireless	(NOC) SWIR	17.65	4	4	5	1.50	30-50 (70-185%)	NMF	NIL	.10	NIL	78	3/31	♦d.23	d.01	3/31	NIL	NIL	YES	
2016 Sigma Designs	(NOC) SIGM	6.28	-	4	-	1.20	6-10 (N-60%)	NMF	NIL	d.80	NIL	90	1/31	d1.91	d.23	3/31	NIL	NIL	YES	
2527 Signature Bank	(NOC) SBNY	129.03	4	3	1	1.05	175-260 (35-100%)	14.1	NIL	9.13	NIL	18	3/31	.63	2.48	3/31	NIL	NIL	YES	
2190 Signet Jewelers Ltd.	(NOC) SIG	37.20	4	3	3	1.05	65-100 (75-170%)	9.4	4.0	3.95	1.48	55	1/31	4.28	4.03	6/30	♦.37	.31	YES	
1165 Silicon Holdings	(NOC) SLGN	27.05	3	3	2	.90	35-50 (30-85%)	12.8	1.5	2.11	.40	32	3/31	.40	.21	6/30	▲.10	.09	YES	
1373 Silicon Labs	(NOC) SLAB	101.20	3	3	3	1.15	65-100 (N-N%)	44.2	NIL	2.29	NIL	9	3/31	.60	.36	3/31	NIL	NIL	YES	
1543 Simon Property Group	(NOC) SPG	158.75	3	2	4	.85	220-300 (40-90%)	22.6	5.1	7.03	8.05	93	3/31	2.00	1.53	6/30	1.95	1.75	YES	
1116 Simpson Manufacturing	(NOC) SSD	60.55	▲	3	3	1.05	60-95 (N-55%)	22.8	1.5	2.65	.88	19	3/31	.54	.48	9/30	▲.22	.21	YES	
2340 Sinclair Broadcast	(NOC) SBGI	27.30	4	3	2	1.25	50-70 (85-155%)	8.5	2.6	3.20	.72	40	3/31	♦.42	.61	6/30	♦.18	.18	YES	
2341 Sirius XM Holdings	(NOC) SIRI	6.63	2	4	3	1.05	15-25 (125-275%)	26.5	0.7	.25	.04	40	3/31	.06	.04	6/30	▲d11	.01	YES	
2191 SiteOne Landscape	(NOC) SITE	73.70	-	3	-	NMF	95-140 (30-90%)	38.8	NIL	1.90	NIL	55	3/31	d.43	d.26	3/31	NIL	NIL	YES	
2321 Six Flags Entertainment	(NOC) SIX	62.04	3	3	1	.90	85-130 (35-110%)	22.2	5.1	2.79	3.15	23	3/31	d.74	d.63	6/30	♦.78	.64	YES	
2162 Skechers U.S.A.	(NOC) SKX	29.79	3	3	1	1.35	40-60 (35-100%)	13.2	NIL	2.25	NIL	61	3/31	.75	.60	3/31	NIL	NIL	YES	
312 SkyWest	(NOC) SKYW	56.25	1	3	3	1.55	55-80 (N-40%)	12.8	0.7	4.40	.40	41	3/31	1.03	.65	9/30	♦.10	.08	YES	
1374 Skyworks Solutions	(NOC) SKWS	96.62	▼	2	3	1.15	130-195 (35-100%)	12.8	1.3	7.54	1.28	9	3/31	♦1.64	1.45	6/30	♦.32	.28	YES	
1955 Smart & Final Stores	(NOC) SFS	4.95	4	4																

ROE and ROR Analysis Columbia Gas of PA
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Value Line Projected Growth Rate

Docket No. R-2018-2647577
Exhibit MFG-11, Schedule 3

SP-TE

Page 20

SUMMARY AND INDEX • THE VALUE LINE INVESTMENT SURVEY

May 18, 2018

PAGE NUMBERS

Bold type refers to
Ratings and Reports

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		Timeliness	Safety	Technical							Qtr. Ended	Earns. Per sh.	Year Ago	Qtr. Ended	Latest Div'd	Year Ago				
556 Spire Inc	SPR	69.50	2	2	3	70	75-100	(10-45%)	18.7	3.2	3.71	2.25	17	3/31	2.03	2.36	9/30	563	525	YES
725 Spirit AeroSystems	SPR	84.96	2	3	2	1.05	90-135	(5-60%)	13.4	0.6	6.35	.48	43	3/31	1.10	1.17	9/30	▲12	.10	YES
314 Spirit Airlines	SAVE	36.77	4	3	3	1.40	50-70	(35-90%)	10.7	NIL	3.45	NIL	41	3/31	d.06	4.6	3/31	NIL	NIL	YES
1832 Splunk Inc	(NDQ) SPLK	113.14	3	3	3	1.60	135-200	(20-75%)	NMF	NIL	d1.55	NIL	29	1/31	d.18	d.54	3/31	NIL	NIL	YES
2673 931 Sprint Corp.	S	5.15	-	4	-	1.20	13-20	(150-250%)	85.8	NIL	0.06	NIL	76	3/31	▲0.02	d.07	3/31	NIL	NIL	YES
1957 Sprouts Farmers Market(NDQ)	SFM	32.65b	3	3	2	1.00	30-45	(40-110%)	17.3	NIL	1.25	NIL	57	3/31	▲0.50	0.04	3/31	NIL	NIL	YES
2605 Square, Inc.	SQ	53.32	2	4	2	1.45	40-65	(N-20%)	NMF	NIL	d.05	NIL	27	3/31	▲d.06	0.04	3/31	NIL	NIL	YES
1000 Standard Motor Prod.	SMP	44.10	3	3	1	1.05	65-95	(45-115%)	13.8	2.0	3.20	.87	10	3/31	▲0.37	.70	6/30	▲21	.19	YES
1775 Standex Int'l	SXI	95.60	3	3	3	1.00	105-180	(10-65%)	17.6	0.8	5.44	.72	33	3/31	1.11	.99	6/30	▲18	.16	YES
1730 Stanley Black & Decker	SWK	140.85	▲3	2	2	1.00	140-190	(N-35%)	16.8	1.8	8.39	2.52	22	3/31	1.39	1.29	6/30	63	58	YES
1242 Starline Inc.	(TSE) STN.TO	32.65b	4	3	4	.80	35-55	(5-70%)	19.8	1.7	1.65	.55	82	12/31	▲.32(b)	35(b)	6/30	▲138(b)	125(b)	YES
373 Starbucks Corp.	(NDQ) SBUX	57.67	3	1	3	.95	95-115	(65-100%)	22.3	2.3	2.59	1.30	59	3/31	.53	.45	6/30	.30	.25	YES
2528 State Street Corp.	STT	99.30	3	3	2	1.25	100-150	(N-50%)	14.4	1.8	6.90	1.80	18	3/31	1.62	1.15	6/30	.42	.38	YES
753 Steel Dynamics	(NDQ) STLD	46.50	1	3	3	1.40	45-65	(N-40%)	13.7	1.6	3.40	.75	13	3/31	.96	.82	6/30	▲188	155	YES
1161 Steelcase, Inc. 'A'	SCS	13.65	4	3	3	1.15	20-30	(45-120%)	14.2	4.0	.96	.54	74	2/28	.19	.27	6/30	▲135	128	YES
2460 590 Stepan Company	SCL	69.08	2	3	2	1.15	90-130	(30-90%)	16.0	1.4	4.31	.94	15	3/31	1.31	1.37	6/30	225	205	YES
645 414 Stencyle Inc.	(NDQ) SRCL	63.72	4	3	4	.90	125-190	(95-200%)	13.9	NIL	4.60	NIL	49	3/31	▲1.21	1.09	3/31	NIL	NIL	YES
189 STERIS plc	STE	98.10	▲3	2	3	1.05	100-140	(N-45%)	21.5	1.3	4.56	1.24	51	3/31	▲1.24	1.11	6/30	▲31	.28	YES
1813 Stifel Financial Corp.	SF	59.89	2	3	3	1.35	75-115	(25-90%)	12.0	0.8	5.00	.48	6	3/31	1.15	.74	3/31	▲12	NIL	YES
1375 STMicroelectronics	STM	23.26	1	3	3	1.15	35-50	(50-115%)	18.5	1.0	1.26	.24	9	3/31	.26	.12	3/31	▲06	.06	YES
592 StoneMor Partners L.P.(NDQ)	STON	5.92	-	5	-	.70	5-9	(N-50%)	NMF	NIL	d.45	NIL	4	9/30	d.25	d.29	3/31	NIL	.33	YES
1342 Stratusys Ltd.	(NDQ) SSYS	19.51	5	3	4	1.45	20-35	(5-80%)	NMF	NIL	d.65	NIL	50	3/31	d.24	d.26	3/31	NIL	NIL	YES
2007 Strayer Education	(NDQ) STRA	102.78	-	4	-	1.05	100-165	(N-60%)	26.4	1.0	3.90	1.00	63	3/31	1.23	.95	6/30	.25	.25	YES
190 Strkyer Corp.	SYK	166.62	3	1	3	.90	180-220	(10-30%)	31.7	1.1	5.25	1.88	51	3/31	1.16	1.17	9/30	.47	4.25	YES
2323 Sturm, Ruger & Co.	RGR	57.70	4	3	4	.85	55-85	(N-45%)	14.4	2.8	4.00	1.60	23	3/31	▲.81	1.21	6/30	▲.32	.48	YES
638 Suburban Propane	SPH	22.44	3	3	4	1.00	35-50	(55-125%)	13.9	10.7	1.62	2.40	79	12/31	.60	.56	6/30	▲.60	888	YES
1117 Summit Materials	SUM	29.86	▲2	3	2	1.65	35-55	(15-85%)	18.7	NIL	1.60	NIL	19	3/31	▲d.49	d.49	3/31	NIL	NIL	YES
2578 Sun Life Finl Svcs.	(TSE) SLF.TO	52.86b	3	2	3	.90	50-65	(N-25%)	11.9	3.6	4.45	1.90	16	3/31	▲1.09(b)	89(b)	6/30	▲475(b)	435(b)	YES
522 Sunco Energy	(TSE) SU.TO	49.70	2	3	4	1.05	60-85	(20-70%)	18.8	2.9	2.65	1.44	56	3/31	▲.48(b)	81(b)	6/30	36(b)	32(b)	YES
1227 SunPower Corp.	(NDQ) SPWR	8.47	4	5	3	1.80	16-30	(90-255%)	NMF	NIL	d1.35	NIL	85	3/31	▲d.83	d.98	3/31	NIL	NIL	YES
2529 SunTrust Banks	STI	67.25	2	3	3	1.15	80-120	(20-80%)	13.1	2.5	5.15	1.65	18	3/31	1.31	.92	6/30	.40	.26	YES
2438 Superior Energy Svcs.	SPN	11.15	3	4	5	1.85	19-30	(70-170%)	NMF	NIL	d.80	NIL	94	3/31	d.34	d.59	3/31	NIL	NIL	YES
1001 Superior Inds. Int'l	SUP	13.30	▲4	3	4	1.15	35-50	(165-275%)	7.4	2.7	1.80	.36	10	3/31	▲.15	.12	6/30	.09	.18	YES
1958 SUPERVALU INC.	SUVU	15.59	4	5	3	1.50	40-80	(155-415%)	6.5	NIL	2.41	NIL	57	2/28	.61	.91	3/31	NIL	NIL	YES
856 191 SurModics, Inc.	(NDQ) SRDX	43.45	4	3	2	.80	35-55	(N-25%)	NMF	NIL	d.08	NIL	51	3/31	.11	.04	3/31	NIL	NIL	YES
430 Swiss Helvetia Fund	SWZ	12.27	-	3	3	.90	14-20	(15-65%)	NMF	1.2	NMF	.15	-	3/31	▲13.55(q)	12.67(q)	3/31	NIL	NIL	YES
1844 960 Switch, Inc.	SWCH	15.23	-	3	-	NMF	15-20	(N-30%)	60.9	0.4	.25	.06	88	12/31	d2.09	NA	6/30	.015	NIL	YES
2606 Symantec Corp.	(NDQ) SYMC	28.60	3	3	5	.90	30-50	(5-75%)	16.3	1.0	1.75	.30	27	12/31	.49	.32	3/31	.075	.075	YES
961 Synaptics	(NDQ) SYNA	45.64	4	3	3	1.30	60-90	(30-95%)	18.6	NIL	2.45	NIL	88	12/31	.46	1.05	3/31	NIL	NIL	YES
★ 2017 Synchronoss Techn.	SNCR						SEE FINAL SUPPLEMENT													
2579 Synchrony Financial	SYF	33.08	3	3	2	1.10	50-75	(50-125%)	9.9	1.8	3.35	.60	16	3/31	.83	.61	6/30	.15	.13	YES
406 SYNnex Corp	SNX	108.36	2	3	4	1.15	140-205	(30-90%)	10.4	1.3	10.39	1.40	54	2/28	2.14	1.82	6/30	.35	.25	YES
2607 Synopsys, Inc.	(NDQ) SNPS	89.05	2	1	3	1.05	90-110	(N-25%)	23.7	NIL	3.75	NIL	27	1/31	1.10	.94	3/31	NIL	NIL	YES
2530 Synovus Financial	SNV	53.37	3	3	3	1.10	65-95	(20-80%)	20.2	1.9	2.64	1.00	16	3/31	.84	.56	6/30	▲.25	.15	YES
1959 Sysco Corp.	SYF	62.74	2	1	3	.80	80-95	(50-50%)	18.8	2.3	3.33	1.44	57	3/31	▲.67	.51	6/30	.36	.33	YES
2673 T-Mobile US	(NDQ) TMUS	55.58	-	3	-	1.00	85-130	(55-135%)	16.3	NIL	3.40	NIL	76	3/31	.78	.45	3/31	NIL	NIL	YES
792 TCF Financial	TCF	25.44	3	3	3	1.15	25-35	(N-40%)	15.3	2.4	1.66	.60	21	3/31	.39	.25	6/30	.15	.075	YES
1805 TD Ameritrade Holding(NDQ)	AMTD	60.62	3	3	3	1.20	70-105	(15-75%)	25.5	1.4	2.38	.84	20	3/31	.48	.40	6/30	.21	.18	YES
1343 TE Connectivity	TEL	92.92	1	2	1	1.20	115-155	(25-65%)	16.2	1.9	5.72	1.76	50	3/31	1.42	1.19	6/30	▲.44	.37	YES
2216 TJX Companies	TJX	82.58	2	1	2	.90	120-150	(45-80%)	17.0	1.9	4.85	1.56	52	1/31	1.20	1.03	6/30	▲.39	.313	YES
1228 TPI Composites	(NDQ) TPIC	27.54	-	4	-	NMF	30-45	(10-65%)	78.7	NIL	.35	NIL	85	3/31	▲.24	.10	3/31	NIL	NIL	YES
1134 TRI Pointe Group	TPH	17.65	2	3	2	1.35	30-45	(70-165%)	9.3	NIL	1.90	NIL	5	3/31	.28	.05	3/31	NIL	NIL	YES
407 TTEC Holdings	(NDQ) TTEC	32.45	▲3	3	5	1.05	40-55	(25-70%)	15.8	1.7	2.05	.54	54	3/31	▲.42	.38	6/30	▲.27	.22	YES
1576 Tahoe Resources	TAHO	4.92	4	5	4	1.20	15-30	(205-510%)	19.7	NIL	.25	NIL	72	3/31	▲d.02	.24	3/31	NIL	.05	YES
2217 Tailored Brands	TLRD	31.44	3	4	3	1.65	30-55	(N-75%)	13.1	2.4	2.40	.76	52	1/31	d1.01	d.19	6/30	.18	.18	YES
431 Taiwan Fund	TWN	19.97	-	4	3	.85	25-40	(25-100%)	NMF	NIL	NMF	NIL	-	2/28	▲23.87(q)	20.24(q)	3/31	.66	NIL	YES
1376 Taiwan Semic. ADR	TSM	39.18	3	2	1	1.00	50-65	(30-65%)	16.3	3.2	2.41	1.24	9	3/31	.59	.54	3/31	NIL	NIL	YES
2018 Take-Two Interactive	(NDQ) TTWO	111.30	3	3	4	1.05	70-110	(N-4%)	95.9	NIL	1.16	NIL	90	12/31	.21	d.33	3/31	NIL	NIL	YES
2193 Tapestry Inc.	TPR	45.54	3	2	2	1.00	60-90	(30-100%)	16.3	3.0	2.79	1								

ROE and ROR Analysis Columbia Gas of PA
CAPM/ECAPM Analysis
Value Line Projected Growth Rate

Docket No. R-2018-2647577
Exhibit MFG-11, Schedule 3

May 18, 2018

SUMMARY AND INDEX • THE VALUE LINE INVESTMENT SURVEY

Page 21

TE-UN

PAGE NUMBERS

Bold type refers to
Ratings and Reports

RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price			Technical			3-5 year Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 12-31-18	Est'd Div'd next 12 mos.	LATEST RESULTS					Do Options Trade?		
		Timeliness	Safety	Beta	Timeliness	Safety	Beta						Qtr. Ended	Earnings Per sh.	Year Ago	Qtr. Ended	Latest Div'd		Year Ago	
1604 Terra Nitrogen	(NDQ) TNH						SEE FINAL REPORT													
846 TESARO, Inc.	(NDQ) TSRO	46.39	5	4	3	1.70	125- 210 (170-555%)	NMF	NIL	d6.95	NIL	87	3/31	d2.98	d2.55	3/31	NIL	NIL	NIL	YES
110 Tesla, Inc.	(NDQ) TSLA	301.97	5	4	3	1.25	255- 425 (N- 40%)	NMF	NIL	d7.00	NIL	44	3/31	d4.19	d2.04	3/31	NIL	NIL	NIL	YES
415 Tetra Tech	(NDQ) TTEK	52.40	3	3	3	1.15	65- 100 (25- 90%)	20.2	0.9	2.60	48	49	3/31	▲ 54	48	6/30	▲ 12	09	09	YES
2439 TETRA Technologies	(NDQ) TTTI	4.29	3	5	4	1.50	14- 25 (225-485%)	28.6	NIL	15	NIL	94	3/31	▲ d.06	d.10	3/31	NIL	NIL	NIL	YES
456 1631 Teva Pharm. ADR	(NDQ) TEVA	18.90	4	3	5	1.00	20- 35 (5- 85%)	8.0	NIL	2.35	NIL	69	3/31	▲ 94	1.06	3/31	▼ NIL	34	34	YES
1377 Texas Instruments	(NDQ) TXN	105.46	2	1	3	1.10	105- 125 (N- 20%)	20.8	2.4	5.06	2.46	9	3/31	1.35	97	6/30	62	50	50	YES
374 Texas Roadhouse	(NDQ) TXRH	63.84	2	3	3	85	75- 115 (15- 80%)	23.6	1.6	2.70	1.00	59	3/31	▲ 76	61	3/31	▲ 25	21	21	YES
1776 Texttron, Inc.	(NDQ) TXT	64.90	3	3	3	1.30	75- 115 (15- 75%)	20.2	0.1	3.21	08	33	3/31	▲ 72	37	9/30	02	02	02	YES
133 Thermo Fisher Sci.	(NDQ) TMO	206.07	3	2	2	1.00	185- 250 (N- 20%)	32.5	0.3	6.40	68	47	3/31	1.43	1.40	6/30	▲ 17	15	15	YES
2031 Third Point Reinsurance	(NDQ) TPRE	13.40	▼ 4	3	3	90	19- 30 (40-125%)	10.3	NIL	1.30	NIL	96	12/31	▲ 42	d.45	3/31	▲ NIL	NIL	NIL	YES
448 Thomson Reuters	(NYSE) TRI.TO	50.20b	3	2	4	80	60- 85 (20- 70%)	19.0	2.7	2.65	1.38	24	12/31	▲ 60(b)	31(b)	6/30	▲ 345(b)	345(b)	345(b)	YES
2324 Thor Inds.	(NDQ) THO	97.88	1	3	1	1.20	140- 210 (45-115%)	9.6	1.6	10.20	1.56	23	1/31	1.92	1.23	6/30	37	33	33	YES
850 1344 SD Systems	(NDQ) DDD	11.03	5	4	4	1.50	11- 18 (N- 65%)	NMF	NIL	d.50	NIL	50	3/31	▲ d.19	d.09	3/31	NIL	NIL	NIL	YES
2458 1777 3M Company	(NYSE) MMM	201.74	3	1	2	95	265- 325 (30- 60%)	19.3	2.7	10.45	5.44	33	3/31	▲ 2.50	2.16	6/30	▲ 1.36	1.175	1.175	YES
2194 Tiffany & Co.	(NDQ) TIF	102.41	3	2	3	1.10	130- 160 (25- 75%)	23.0	2.1	4.45	2.12	55	1/31	1.67	1.45	6/30	50	45	45	YES
645 1144 Tile Shop Hldgs	(NDQ) TTS	6.80	4	5	4	1.00	12- 20 (75-195%)	34.0	2.9	20	20	26	3/31	▲ 08	▲ 16	6/30	05	05	05	YES
1247 2218 Tilly's, Inc.	(NDQ) TLYS	11.14	3	3	2	1.05	16- 25 (45-125%)	13.9	NIL	80	NIL	52	1/31	▲ 23	22	3/31	NIL	NIL	NIL	YES
2343 Time Warner	(NYSE) TWX	92.45	3	3	3	1.00	115- 175 (25- 90%)	12.7	1.7	7.30	1.61	40	3/31	▲ 2.07	1.80	6/30	403	403	403	YES
740 Timken Co.	(NYSE) TKR	48.15	2	3	3	1.40	55- 80 (15- 65%)	12.0	2.3	4.00	1.12	68	3/31	1.01	55	6/30	▲ 28	27	27	YES
1003 Titan Int'l	(NDQ) TWI	11.67	3	4	1	1.70	16- 25 (35-115%)	33.3	0.2	35	02	10	3/31	▲ 23	d.18	6/30	005	005	005	YES
818 Tivity Health	(NDQ) TVTY	36.05	3	3	1	60	45- 70 (25- 95%)	16.8	NIL	2.15	NIL	7	3/31	▲ 49	▲ 38	3/31	NIL	NIL	NIL	YES
856 2019 TIVO Corp.	(NDQ) TIVO	13.70	5	4	4	1.45	25- 40 (60-190%)	22.8	5.3	66	72	90	12/31	15	08	3/31	18	18	18	YES
1136 Toll Brothers	(NYSE) TOL	43.61	1	3	2	1.30	55- 80 (25- 85%)	10.0	1.0	4.34	44	5	1/31	63	42	6/30	▲ 11	08	08	YES
1940 Tootsie Roll	(NYSE) TR	28.25	5	1	3	90	35- 40 (25- 40%)	28.3	1.2	1.00	35	66	3/31	▲ 13	15	3/31	175	169	169	YES
1118 TopBuild Corp.	(NYSE) BLD	78.34	3	3	3	1.00	65- 95 (N- 20%)	22.7	NIL	3.45	NIL	19	3/31	▲ 74	d.05	3/31	NIL	NIL	NIL	YES
1561 Torchmark Corp.	(NYSE) TMK	85.04	2	1	3	95	95- 115 (10- 35%)	14.1	0.8	6.04	64	34	3/31	1.49	1.11	6/30	▲ 16	15	15	YES
1732 Toro Co.	(NYSE) TTC	59.66	2	2	2	95	55- 80 (N- 35%)	21.8	1.3	2.74	80	22	1/31	▲ 48	41	6/30	20	175	175	YES
2531 Toronto-Dominion	(NYSE) TD.TO	73.53b	1	1	3	75	95- 140 (25- 90%)	12.4	3.7	5.95	2.73	18	1/31	1.48(b)	1.32(b)	6/30	▲ 67(b)	60(b)	60(b)	YES
523 Total ADR	(NYSE) TOT	61.67	3	1	3	1.25	80- 95 (30- 55%)	13.7	4.8	4.49	2.93	56	3/31	1.09	1.13	6/30	▲ 762	649	649	YES
2580 Total System Svcs.	(NYSE) TSS	87.31	2	3	3	1.00	60- 90 (N- 5%)	29.6	0.6	2.95	52	16	3/31	▲ 77	57	6/30	13	10	10	YES
1004 Tower International	(NYSE) TOWR	28.15	▼ 2	3	3	1.70	35- 55 (25- 95%)	7.2	1.7	3.90	49	10	3/31	▲ 83	77	6/30	12	11	11	YES
1111 Toyota Motor ADR(g)	(NYSE) TM	130.90	2	2	3	1.05	170- 230 (30- 75%)	9.3	3.5	14.06	4.55	44	12/31	4.10	2.85	3/31	NIL	NIL	NIL	YES
1145 Tractor Supply	(NDQ) TSCO	66.48	3	4	4	1.15	95- 140 (45-110%)	16.4	1.9	4.05	1.24	26	3/31	▲ 57	46	3/31	27	24	24	YES
1229 TransAlta Corp.	(NYSE) TA.TO	6.75b	4	4	3	95	9- 16 (35-135%)	45.0	2.4	15	16	85	3/31	▲ 23(b)	15(b)	9/30	04(b)	04(b)	04(b)	YES
6116 TransCanada Corp.	(NYSE) TRP	43.11	3	3	5	1.10	65- 95 (50-120%)	20.1	6.4	2.15	2.76	60	3/31	83	56	9/30	69	625	625	YES
727 TransDigm Group	(NYSE) TDG	331.89	3	3	3	90	290- 435 (N- 30%)	33.9	NIL	9.80	NIL	43	3/31	3.53	2.78	3/31	NIL	NIL	NIL	YES
2440 Transocean Ltd.	(NYSE) RIG	12.41	5	5	4	1.65	14- 25 (15-100%)	NMF	NIL	d.80	NIL	94	3/31	▲ d.48	01	3/31	NIL	NIL	NIL	YES
2461 449 TransUnion	(NYSE) TRU	68.56	2	3	4	95	65- 100 (N- 45%)	27.2	0.4	2.52	30	24	3/31	57	33	6/30	▲ 075	NIL	NIL	YES
2461 775 Travelers Cos.	(NYSE) TRV	128.66	3	1	1	90	115- 125 (35- 65%)	12.1	2.4	10.65	3.08	53	3/31	2.46	2.16	6/30	▲ 77	72	72	YES
591 Tredgar Corp.	(NYSE) TG	20.00	3	3	4	1.55	25- 40 (25-100%)	20.0	2.4	1.00	48	15	3/31	55	11	9/30	▲ 11	11	11	YES
1941 TreeHouse Foods	(NYSE) THS	45.04	4	3	4	85	60- 95 (35-110%)	20.9	NIL	2.15	NIL	66	3/31	▲ 18	61	3/31	NIL	NIL	NIL	YES
1119 Trex Co.	(NYSE) TREX	117.52	2	3	2	1.35	90- 135 (N- 15%)	29.4	NIL	4.00	NIL	19	3/31	▲ 125	95	3/31	NIL	NIL	NIL	YES
1213 Tri-Continental	(NYSE) TY	26.71	2	3	3	90	35- 45 (30- 70%)	NMF	4.0	NMF	1.08	12/31	25.83(q)	25.83(q)	3/31	23	25	25	25	YES
2344 Tribune Media Co.	(NYSE) TRCO	36.00	3	3	3	1.15	65- 100 (60-180%)	17.6	2.8	2.05	1.00	40	12/31	▲ 81	85	3/31	25	25	25	YES
1778 TruMas Corp.	(NDQ) TRS	28.20	3	3	2	1.30	30- 45 (5- 60%)	16.6	NIL	1.70	NIL	33	3/31	▲ 41	30	3/31	NIL	NIL	NIL	YES
1314 Trimble Inc.	(NDQ) TRMB	35.03	3	3	3	1.25	50- 70 (45-100%)	36.9	NIL	95	NIL	39	3/31	▲ 23	20	3/31	NIL	NIL	NIL	YES
856 1646 TrinNet Group	(NDQ) TNET	52.56	2	4	1	1.10	50- 70 (N- 35%)	20.2	NIL	2.60	NIL	11	3/31	75	41	3/31	NIL	NIL	NIL	YES
349 Trinity Inds.	(NYSE) TRN	33.06	4	3	2	1.50	30- 50 (N- 50%)	24.5	1.6	1.35	52	36	3/31	▲ 30	26	9/30	▲ 13	13	13	YES
2452 Trinseo S.A.	(NYSE) TSE	74.50	▼ 2	3	3	1.55	120- 185 (60-150%)	8.7	1.9	8.60	1.44	3	3/31	▲ 2.71	2.59	6/30	36	30	30	YES
2650 TripAdvisor, Inc.	(NDQ) TRIP	38.78	▲ 4	3	4	1.15	35- 55 (N- 40%)	86.2	NIL	45	NIL	70	3/31	▲ 04	09	3/31	NIL	NIL	NIL	YES
728 Triumph Group	(NYSE) TGT	25.00	4	3	3	1.30	30- 45 (20- 80%)	8.1	0.6	3.08	16	43	12/31	76	01	6/30	04	04	04	YES
2240 2387 Tronc, Inc.	(NDQ) TRNC	18.36	3	4	2	1.35	19- 30 (5- 65%)	18.4	NIL	1.00	NIL	80	12/31	▲ d.01	53	3/31	NIL	NIL	NIL	YES
1647 TrueBlue, Inc.	(NYSE) TBI	24.55	3	3	1	1.45	25- 35 (N- 45%)	15.3	NIL	1.60	NIL	11	3/31	22	11	3/31	NIL	NIL	NIL	YES
2036 1201 Tupperware Brands	(NYSE) TUP	43.43	5	3	3	1.30	75- 115 (75-165%)	9.4	6.3	4.60	2.72	86	3/31	70	93	9/30	▲ 68	68	68	YES
1997 Turning Point Brands	(NYSE) TPB	21.61	4	4	4	1.00	20- 30 (N- 40%)	16.0	0.7	1.35	16	95	3/31	▲ 15	10	9/30	▲ 04	NIL	NIL	YES
2345																				

ROE and ROR Analysis Columbia Gas of PA
CAPM/ECAPM Analysis
Value Line Projected Growth Rate

Docket No. R-2018-2647577
Exhibit MFG-11, Schedule 3

UN-WE

Page 22

SUMMARY AND INDEX • THE VALUE LINE INVESTMENT SURVEY

May 18, 2018

PAGE NUMBERS

Bold type refers to
Ratings and Reports

RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price			Technical			3-5 year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings 12 mos. to 12-31-18	(f) Est'd Div'd next 12 mos.		LATEST RESULTS			Do Options Trade?		
		Timeliness	Safety	Beta	Qtr. Ended	Earnings Per sh.	Year Ago					Qtr. Ended	Latest Div'd	Year Ago					
															Qtr. Ended	Earnings Per sh.		Year Ago	Qtr. Ended
644 1593 U.S. Silica Holdings	SLCA	32.05	3	4	5	2.15	55- 90 (70-100%)	10.5	1.0	3.05	32	65	3/31	.54	.09	6/30	.063	.063	YES
2668 754 U.S. Steel Corp	X	34.60	2	4	3	1.90	60-100 (75-100%)	8.9	0.6	3.90	20	13	3/31	.10	d1.03	6/30	.05	.05	YES
2462 1779 United Technologies	UTX	121.79	3	1	2	1.00	150-180 (25-50%)	16.9	2.3	7.21	2.80	33	3/31	1.77	1.48	6/30	.70	.66	YES
847 United Therapeutics	(NDG) UTHR	101.93	3	3	3	1.05	230-340 (125-225%)	5.8	NIL	17.65	NIL	87	3/31	3.76	3.19	3/31	NIL	NIL	YES
2240 819 UnitedHealth Group	UNH	232.03	1	1	3	.95	225-275 (N-20%)	18.2	1.3	12.75	3.00	7	3/31	3.04	2.37	3/31	.75	.625	YES
2453 Univar Inc	UNVR	27.36	1	3	2	1.20	50- 75 (85-175%)	16.6	NIL	1.65	NIL	3	12/31	.45	d.43	3/31	NIL	NIL	YES
1998 Universal Corp	UNVV	47.65	▼	3	4	.90	60- 65 (25-80%)	10.6	4.6	4.50	2.20	95	12/31	1.37	1.92	6/30	.55	.54	YES
855 1315 Universal Display	(NDG) ULED	98.50	▼	3	2	1.25	120-160 (20-85%)	40.5	0.3	2.43	.26	39	3/31	◆.13	.22	6/30	◆.06	.03	YES
2020 Universal Electronics	(NDG) UEIC	28.15	▼	3	3	1.05	65- 85 (25-225%)	29.2	NIL	1.00	NIL	90	3/31	◆d.04	.01	3/31	NIL	NIL	YES
1121 Universal Forest	(NDG) UFPI	33.76	1	3	3	1.30	40- 60 (20-90%)	14.8	1.1	2.28	.36	19	3/31	.53	.34	6/30	▲.18	.15	YES
820 Universal Health Sv. B	UHS	115.95	2	3	2	.90	160-240 (40-105%)	12.1	0.3	9.60	40	7	3/31	2.36	2.12	3/31	▲.10	.10	YES
1562 Unum Corp	UNM	38.25	1	3	2	1.15	55- 80 (45-110%)	7.4	2.4	5.15	.92	34	3/31	1.24	1.02	6/30	.23	.20	YES
2219 Urban Outfitters	(NDG) URBN	39.01	3	3	2	.95	40- 60 (5-55%)	17.3	NIL	2.25	NIL	52	1/31	.60	.55	3/31	NIL	NIL	YES
2117 V.F. Corp.	VFC	77.28	3	2	3	1.05	70- 95 (N-25%)	22.1	2.4	3.50	1.88	71	3/31	◆.65	.52	6/30	◆.46	.42	YES
2371 Vail Resorts	MTN	228.55	2	3	3	.85	230-345 (N-50%)	29.0	2.6	7.89	5.88	25	1/31	4.12	3.63	6/30	▲.147	1.053	YES
1594 Vale S.A. ADR	VALE	13.74	3	4	3	1.60	15- 25 (10-80%)	9.8	2.2	1.40	30	65	12/31	.24	.33	3/31	NIL	NIL	YES
1632 Valeant Pharm. Int'l	VRX	19.77	4	5	1	1.10	20- 40 (N-100%)	6.6	NIL	3.00	NIL	69	3/31	◆.88	.78	3/31	NIL	NIL	YES
524 Valero Energy	VLO	113.19	3	3	4	1.15	85-125 (N-10%)	15.9	2.8	7.10	3.20	56	3/31	1.00	.68	6/30	◆.80	.70	YES
2032 Validus Holdings	VR	67.61	-	3	-	.80	45- 65 (N- N%)	15.0	2.2	4.50	1.52	96	3/31	d.05	1.17	6/30	◆.38	.38	YES
1780 Valmont Inds.	VMI	143.85	3	3	3	1.00	180-275 (25-90%)	18.6	1.0	7.72	1.50	33	3/31	1.87	1.72	6/30	.375	.375	YES
1005 Valvoline Inc.	VVV	21.30	-	3	-	NMF	25- 40 (15-90%)	15.3	1.5	1.39	33	10	3/31	◆.34	.37	6/30	.075	.049	YES
193 Varian Medical Sys.	VAR	116.97	1	3	3	.90	120-145 (5-25%)	27.8	NIL	4.21	NIL	51	3/31	.86	.74	3/31	NIL	NIL	YES
915 Vectren Corp.	VVC	70.12	-	2	-	.70	50- 65 (N- N%)	24.8	2.6	2.83	1.85	45	3/31	.76	.67	6/30	.45	.42	YES
134 Veeco Instruments	(NDG) VEEO	16.70	3	4	4	1.15	▲ 25- 45 (50-170%)	NMF	NIL	d1.10	NIL	47	3/31	◆.20	.09	3/31	NIL	NIL	YES
829 Veeva Systems	VEEV	73.77	3	3	3	1.30	70-110 (N-50%)	56.7	NIL	1.30	NIL	77	1/31	.23	.22	3/31	NIL	NIL	YES
1545 Ventas, Inc.	VTR	52.84	4	3	4	.75	65-100 (25-90%)	37.7	6.0	1.40	3.19	93	3/31	.22	.44	6/30	.79	.775	YES
2220 Vera Bradley Inc.	(NDG) VRA	10.26	4	3	3	1.10	13- 19 (25-85%)	25.7	NIL	40	NIL	52	1/31	.30	.09	3/31	NIL	NIL	YES
962 Verifone Systems	PAY	23.00	-	4	-	1.55	25- 45 (10-95%)	14.8	NIL	1.55	NIL	88	1/31	.23	.21	3/31	NIL	NIL	YES
2652 VeriSign Inc.	(NDG) VRSN	122.67	3	3	3	.90	125-165 (N-50%)	29.2	NIL	4.20	NIL	70	3/31	1.09	.94	3/31	NIL	NIL	YES
450 Versk Analytics	(NDG) VRSK	103.62	3	2	3	.90	110-150 (5-45%)	24.6	NIL	4.22	NIL	24	3/31	.79	.64	3/31	NIL	NIL	YES
936 Verizon Commun.	VZ	47.02	3	1	3	.80	80- 95 (70-100%)	10.2	5.0	4.60	2.36	76	3/31	1.17	.95	6/30	.59	.578	YES
1393 Versum Materials	VSM	37.15	-	3	-	NMF	50- 75 (35-100%)	16.7	0.6	2.23	.24	1	3/31	◆.59	.44	6/30	▲.06	.05	YES
848 Vertex Pharm.	(NDG) VRTX	148.27	2	3	1	1.35	190-265 (30-90%)	63.1	NIL	2.35	NIL	87	3/31	.81	.99	3/31	NIL	NIL	YES
2346 Viacom Inc. B	(NDG) VIAB	29.79	-	3	-	1.20	65-100 (20-235%)	7.0	2.7	4.27	.80	40	3/31	.92	.79	6/30	.20	.20	YES
1781 Viad Corp.	VVI	50.75	3	3	3	.85	55- 80 (N-60%)	20.5	0.8	2.48	40	33	3/31	d.49	.33	6/30	.10	.10	YES
607 ViaSat, Inc.	(NDG) VSAT	64.29	5	3	3	1.10	60- 90 (N-40%)	NMF	NIL	d.69	NIL	78	12/31	d.21	.08	3/31	NIL	NIL	YES
1345 Viavi Solutions	(NDG) VIAV	10.09	-	3	-	NMF	11- 17 (10-70%)	22.4	NIL	.45	NIL	50	3/31	◆.13	.09	3/31	NIL	NIL	YES
1962 Village Super Market	(NDG) VLGEA	27.70	3	3	4	.75	35- 55 (25-100%)	14.9	3.6	1.86	1.00	57	1/31	.48	.42	6/30	.25	.25	YES
2581 Visa Inc.	V	129.90	2	1	3	1.00	155-185 (20-40%)	28.2	0.7	4.60	.90	16	3/31	1.11	.86	6/30	.21	.165	YES
1346 Vishay Intertechnology	VSH	20.25	1	3	3	1.40	25- 35 (25-75%)	12.7	1.7	1.60	.34	50	3/31	◆.40	.28	6/30	▲.085	.063	YES
1006 Visteon Corp.	VC	125.34	-	3	-	NMF	135-205 (10-65%)	20.2	NIL	6.20	NIL	10	3/31	2.14	1.67	3/31	NIL	NIL	YES
1230 Vistra Energy	VST	23.17	-	3	-	NMF	19- 30 (N-30%)	42.1	NIL	.55	NIL	85	3/31	◆.71	.18	3/31	NIL	NIL	YES
2609 VMware, Inc.	VMW	136.50	2	3	3	1.05	135-200 (N-45%)	22.8	NIL	6.00	NIL	27	1/31	1.68	NA	3/31	NIL	NIL	YES
963 Vocera Communications	VCRA	26.22	3	4	3	1.00	30- 50 (15-90%)	NMF	NIL	d.25	NIL	88	3/31	d.16	d.24	3/31	NIL	NIL	YES
937 Vodafone Group ADR(g)(NDG)	VOD	28.56	2	3	3	1.10	35- 55 (25-95%)	19.0	6.4	1.50	1.82	76	9/30	.75(p)	.34(p)	3/31	599	508	YES
938 Vonage Holdings	VG	11.50	3	4	4	.85	7- 12 (N-5%)	32.9	NIL	.35	NIL	76	3/31	◆.12	.06	3/31	NIL	NIL	YES
1546 Vornado Realty Trust	VNO	69.45	-	3	-	.95	75-110 (10-60%)	55.6	3.6	1.25	2.52	93	3/31	d.08	.25	6/30	.63	.71	YES
2582 Voya Financial	VOYA	52.09	4	3	3	1.25	60- 90 (15-75%)	15.8	0.1	3.30	.04	16	3/31	.77	d.75	6/30	.01	.01	YES
1122 Vulcan Materials	VBC	126.73	3	3	4	1.20	135-190 (15-50%)	32.9	0.9	3.85	1.12	19	3/31	◆.40	.32	3/31	▲.28	.25	YES
1007 WABCO Hldgs.	WMC	130.53	2	3	2	1.25	125-190 (N-45%)	18.6	NIL	7.00	NIL	10	3/31	1.87	1.48	3/31	NIL	NIL	YES
1202 WD-40 Co.	(NDG) WDFC	132.15	3	2	2	.85	80- 110 (N- N%)	31.1	1.6	4.25	2.16	86	2/28	1.05	.87	6/30	.54	.49	YES
916 WEC Energy Group	WEC	62.13	2	1	3	.60	60- 70 (N-15%)	18.8	3.6	3.30	2.24	45	3/31	1.23	1.12	6/30	.553	.52	YES
558 WGL Holdings Inc.	WGL	87.65	-	1	-	.75	85-100 (N-15%)	21.6	2.4	4.06	2.06	17	3/31	◆2.12	1.87	6/30	▲.515	.51	YES
1547 W.P. Carey Inc.	WPC	65.54	3	3	5	.85	80- 115 (20-75%)	26.2	6.2	2.50	4.06	93	3/31	.60	.53	6/30	▲1.015	.945	YES
2397 WPP PLC ADR	WPP	84.85	3	2	4	1.10	140-190 (65-125%)	10.6	3.7	8.00	3.15	31	12/31	7.13(p)	5.50(p)	3/31	NIL	NIL	YES
546 WPX Energy	WPX	18.58	3	5	4	2.05	17- 30 (N-60%)	NMF	NIL	NIL	NIL	67	3/31	◆d.30	.22	3/31	NIL	NIL	YES
168 Wabash National	WNC	20.00	3	3	2	1.40	30- 50 (50-150%)	9.8	1.5	2.05	30	3/31	.28	.31	6/30	.075	.06	YES	
1734 Wabtec Corp.	WAB	92.08	3	3	3	1.20	95-145 (5-55%)	23.5	0.5	3.92	.48	22	3/31	.92	.77	6/30	.12	.10	YES
972 Walgreens Boots	(NDG) WBA	62.36	1	2	4	.95	100-135 (60-115%)	10.0	2.6	6.23	1.60	2	2/28	1.73	1.36	6/30	.40	.375	YES
2154 Walmart Inc.																			

ROE and ROR Analysis Columbia Gas of PA
CAPM/ECAPM Analysis
Value Line Projected Growth Rate

Docket No. R-2018-2647577
Exhibit MFG-11, Schedule 3

May 18, 2018

SUMMARY AND INDEX • THE VALUE LINE INVESTMENT SURVEY

Page 23

WE-ZY

PAGE NUMBERS

Bold type refers to
Ratings and Reports

RANKS

Industry Rank

Do Options Trade?

NAME OF STOCK	Ticker Symbol	Recent Price			Technical			3-year Target Price Range and % appreciation potential	Current P/E Ratio	% Est'd Yield next 12 mos.	Est'd Earnings to 12-31-18	(f) Est'd Div'd next 12 mos.	LATEST RESULTS						Do Options Trade?
		Timeliness	Safety	Beta	Qtr. Ended	Earns. Per sh.	Year Ago						Qtr. Ended	Latest Div'd	Year Ago				
226 West Pharm. Svcs	WST	87.62	3	2	3	90	100-135 (15-55%)	31.3	0.7	2.80	.61	42	3/31	.58	81	12/31	▲15	14	YES
917 Westar Energy	WR	53.19	-	2	-	65	45-60 (N-15%)	20.5	3.0	2.60	1.00	45	3/31	▲42	42	6/30	▲40	40	YES
1409 Western Digital (INDQ)	WDC	77.73	1	3	2	130	95-145 (20-85%)	5.5	2.6	14.20	2.00	37	9/30	3.63	2.39	9/30	◆50	50	YES
639 Western Gas Part.	WES	49.88	3	3	5	140	60-90 (20-80%)	24.9	7.7	2.00	3.83	79	3/31	.38	.33	6/30	▲935	875	YES
2583 Western Union	WU	19.72	3	3	4	105	25-35 (25-75%)	11.0	3.9	1.80	.76	16	3/31	▲46	.33	3/31	▲19	175	YES
317 WestJet Airlines Ltd. (TSE)	WJA.TO	19.94b	3	3	2	80	30-50 (50-150%)	8.0	2.8	2.50	.56	41	3/31	◆32(b)	41(b)	6/30	◆14(b)	14(b)	YES
592 Westlake Chemical	WLK	108.50	1	3	2	140	135-200 (25-65%)	14.5	0.8	7.50	.90	15	3/31	▲2.20	1.06	3/31	▲21	191	YES
1964 Weston (George)	WN.TO	103.83b	▼3	2	4	65	115-155 (10-50%)	13.8	1.9	7.50	1.96	57	3/31	▲1.38(b)	1.42(b)	9/30	▲49(b)	455(b)	YES
1187 WestRock Co.	WRK	60.11	3	3	2	145	60-90 (N-50%)	14.8	2.9	4.06	1.72	32	3/31	.83	.54	6/30	▲43	40	YES
2584 WEX Inc.	WEX	170.23	2	3	3	135	155-230 (N-35%)	29.9	NIL	5.70	NIL	16	3/31	▲1.81	1.23	3/31	NIL	NIL	YES
1172 Weyerhaeuser Co.	WY	36.39	3	3	3	115	45-70 (25-90%)	26.0	3.5	1.40	1.28	12	3/31	.35	.21	3/31	▲32	31	YES
1577 Wheaton Precious Met.	WPM	21.44	4	3	3	100	25-35 (15-65%)	35.1	1.8	.61	.38	72	12/31	.19	.19	6/30	▲09	14	YES
1792 Whirlpool Corp.	WHR	153.98	3	3	4	130	200-300 (30-95%)	10.1	3.0	15.20	4.60	33	3/31	2.81	2.50	6/30	▲1.15	1.10	YES
647 2417 Whiting Petroleum	WLL	46.34	3	5	5	240	80-145 (75-215%)	46.3	NIL	1.00	NIL	46	3/31	.16	d.96	3/31	NIL	NIL	YES
2380 Wiley (John) & Sons	JWA	66.85	5	3	3	110	70-105 (15-55%)	21.5	1.9	3.11	1.28	89	1/31	.87	.92	6/30	▲32	31	YES
617 Williams Cos.	WMB	26.12	3	3	5	190	30-50 (15-90%)	26.1	5.2	1.00	1.36	60	3/31	▲19	14	3/31	▲34	30	YES
640 Williams Partners L.P.	WPZ	36.67	4	4	5	155	50-85 (35-130%)	19.8	6.7	1.85	2.46	79	3/31	▲37	.60	6/30	▲614	60	YES
2197 Williams-Sonoma	WSM	48.95	3	2	2	95	65-90 (35-85%)	11.8	3.5	4.15	1.72	55	1/31	1.63	1.63	6/30	▲43	39	YES
2585 Willis Towers Watson plc(INDQ)	WLTV	153.34	-	2	-	NMF	180-240 (15-55%)	25.6	1.6	6.00	2.40	16	3/31	▲1.61	2.50	6/30	▲60	53	YES
376 Wingstop Inc. (INDQ)	WING	54.34	▼3	3	3	120	45-65 (N-20%)	60.4	0.5	.90	.28	59	3/31	▲21	.22	6/30	◆07	NIL	YES
2325 Winnebago	WGO	35.00	1	3	2	130	55-80 (55-130%)	10.7	1.1	3.28	.40	23	2/28	.62	.48	6/30	▲10	10	YES
794 Wintrust Financial (INDQ)	WTFC	92.74	2	3	3	110	90-135 (N-15%)	16.5	0.8	5.63	.76	21	3/31	1.40	1.00	6/30	▲19	14	YES
2163 Wolverine World Wide	WWW	29.80	3	3	3	115	35-55 (15-85%)	14.9	1.1	2.00	.32	61	3/31	▲50	.37	9/30	◆08	06	YES
136 Woodward, Inc. (INDQ)	WWD	73.61	3	3	3	115	80-120 (10-65%)	20.9	0.8	3.53	.57	47	3/31	.60	.60	6/30	▲143	125	YES
1835 Workday, Inc.	WDAY	134.79	3	3	3	125	155-230 (15-70%)	NMF	NIL	d1.50	NIL	29	1/31	d.43	d.52	3/31	NIL	NIL	YES
618 World Fuel Services	INT	22.63	4	3	5	110	40-65 (75-185%)	11.3	1.1	2.00	.24	60	3/31	.46	.45	6/30	▲06	06	YES
2586 Worldpay, Inc.	WP	83.76	2	3	3	100	90-135 (5-60%)	45.3	NIL	1.85	NIL	16	12/31	d.37	.28	3/31	NIL	NIL	YES
2347 World Wrestling Ent.	WWE	42.06	3	4	3	110	35-55 (N-30%)	52.6	1.1	.80	.48	40	3/31	▲18	.01	6/30	▲12	12	YES
755 Worthington Inds.	WOR	45.18	3	3	4	125	60-90 (35-100%)	13.6	1.9	3.33	.84	13	2/28	.61	.55	6/30	▲21	20	YES
2372 Wyndham Worldwide	WYN	108.46	-	3	-	110	105-160 (N-50%)	15.3	2.4	7.08	2.64	25	3/31	1.33	1.03	3/31	▲66	58	YES
2373 Wynn Resorts (INDQ)	WYNN	191.75	3	3	3	150	210-315 (10-65%)	22.6	1.6	8.50	3.00	25	3/31	2.30	.99	6/30	▲75	50	YES
1040 776 XL Group Ltd.	XL	55.13	-	2	-	80	40-55 (N-N%)	13.8	1.6	4.00	.88	53	3/31	▲82	.50	6/30	▲22	22	YES
2654 XO Group	XOXO	28.32	3	3	3	85	25-35 (N-25%)	56.6	NIL	.50	NIL	70	3/31	.14	.01	3/31	NIL	NIL	YES
329 XPO Logistics	XPO	105.46	1	4	2	165	135-225 (30-115%)	32.4	NIL	3.25	NIL	35	3/31	▲50	.16	3/31	NIL	NIL	YES
2235 Xcel Energy Inc. (INDQ)	XEL	45.00	3	1	4	60	45-50 (N-10%)	18.4	3.4	2.45	1.54	81	3/31	.57	.47	6/30	▲38	36	YES
857 137 Xcerra Corp. (INDQ)	XCRA	13.24	-	4	-	115	20-35 (50-165%)	12.4	NIL	1.07	NIL	47	1/31	.14	.05	3/31	▲25	25	YES
2666 1418 Xerox Corp.	XRX	28.38	-	3	-	NMF	40-60 (40-110%)	11.6	3.5	2.45	1.00	75	3/31	▲08	.08	6/30	▲36	35	YES
1378 Xilinx Inc. (INDQ)	XLNX	67.65	3	3	3	105	65-100 (N-50%)	24.2	2.1	2.79	1.44	9	3/31	.64	.57	6/30	▲20	20	YES
1379 Xperi Corp. (INDQ)	XPER	19.85	▼3	3	4	100	30-45 (50-125%)	8.1	4.0	2.45	.80	9	3/31	▲14	d.06	6/30	▲20	20	YES
1737 Xylem Inc.	XYL	70.85	2	3	2	105	70-100 (N-40%)	23.6	1.2	3.00	.84	22	3/31	.51	.39	3/31	▲21	16	YES
1578 Yamana Gold	ALY	2.95	3	5	3	110	4-8 (35-170%)	29.5	0.7	1.0	.02	72	3/31	▲01	d.01	9/30	◆005	005	YES
2655 Yelp, Inc.	YELP	47.59	4	4	3	150	40-60 (N-25%)	NMF	NIL	1.05	.67	91	3/31	▲20	.20	6/30	▲167	.16	YES
1792 York Water Co. (The) (INDQ)	YORW	32.30	▼4	3	5	80	30-45 (N-40%)	30.8	2.1	1.7	3.45	59	3/31	.90	.65	6/30	▲36	.30	YES
377 Yum! Brands	YUM	83.51	-	3	-	NMF	90-135 (10-60%)	24.2	1.7	3.45	1.44	59	3/31	.90	.65	6/30	▲36	.30	YES
964 Zayo Group Holdings	ZAYO	34.56	3	3	3	95	40-60 (15-75%)	69.1	NIL	.50	NIL	88	3/31	▲09	.11	3/31	NIL	NIL	YES
608 Zebra Techn. 'A' (INDQ)	ZBRA	153.24	1	3	3	130	145-215 (N-40%)	15.6	NIL	9.85	NIL	78	3/31	▲2.56	1.37	3/31	NIL	NIL	YES
1836 Zendesk Inc. (INDQ)	ZEN	54.18	3	4	3	110	40-65 (N-20%)	NMF	NIL	.05	NIL	29	3/31	d.28	d.28	3/31	NIL	NIL	YES
2241 2656 Zillow Group 'C' (INDQ)	Z	55.10	▼4	4	3	115	35-55 (N-N%)	NMF	NIL	.05	NIL	70	3/31	▲d.10	d.03	3/31	NIL	NIL	YES
194 Zimmer Biomet Hldgs	ZBH	115.99	3	2	5	95	130-175 (10-50%)	14.9	0.9	7.80	1.00	51	3/31	1.91	2.13	6/30	▲24	24	YES
2534 Zions Bancorp. (INDQ)	ZION	55.95	2	3	3	120	55-80 (N-45%)	14.5	1.7	3.85	.96	18	3/31	1.09	.61	6/30	▲24	.08	YES
1633 Zoetis Inc.	ZTS	82.00	2	3	2	95	65-125 (5-50%)	26.9	0.6	3.05	.50	69	3/31	.75	.53	6/30	▲126	105	YES
2221 Zumiez Inc. (INDQ)	ZUMZ	24.55	3	3	2	100	30-50 (20-105%)	15.8	NIL	1.55	NIL	52	1/31	.82	.74	3/31	NIL	NIL	YES
2021 Zynga Inc. (INDQ)	ZNGA	3.87	3	4	4	115	6-9 (55-135%)	64.5	NIL	.06	NIL	90	3/31	▲01	d.01	3/31	NIL	NIL	YES

(*) All data adjusted for announced stock split or stock dividend. See back page of Ratings & Reports.

◆ New figure this week.
(b) Canadian Dollars.
(d) Deficit.

(f) The estimate may reflect a probable increase or decrease. If a dividend boost or cut is possible but not probable, two figures are shown, the first is the more likely.
(g) Dividends subject to foreign withholding tax for U.S. residents.

(h) Est'd Earnings & Est'd Dividends after conversion to U.S. dollars at Value Line estimated translation rate.

(i) All Index data expressed in hundreds.
(j) 6 months
(k) Asset Value
(l) Negative figure NA=Not available NMF=No meaningful figure

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INDUSTRIES, IN ORDER OF TIMELINESS RANK*

Arrow (▲▼) before name indicates that a significant change in Rank has occurred since the preceding week.

1 Semiconductor Equip	26 Retail Building Supply	51▼Med Supp Invasive	76 Telecom. Services
2 Pharmacy Services	27 Computer Software	52 Retail (Softlines)	77 Healthcare Information
3 Chemical (Diversified)	28 Foreign Electronics	53 Insurance (Prop/Cas.)	78 Wireless Networking
4 Funeral Services	29 E-Commerce	54 Industrial Services	79 Pipeline MLPs
5 Homebuilding	30 Heavy Truck & Equip	55 Retail (Hardlines)	80▼Newspaper
6 Investment Banking	31 Advertising	56 Petroleum (Integrated)	81 Electric Utility (West)
7 Medical Services	32 Packaging & Container	57 Retail/Wholesale Food	82 Engineering & Const
8 IT Services	33 Diversified Co.	58 Toiletries/Cosmetics	83 Thrift
9 Semiconductor	34 Insurance (Life)	59▼Restaurant	84 Telecom. Utility
10 Auto Parts	35 Trucking	60 Oil/Gas Distribution	85 Power
11 Human Resources	36▲Railroad	61 Shoe	86 Household Products
12 Paper/Forest Products	37▼Computers/Peripherals	62 Cable TV	87 Biotechnology
13 Steel	38 Beverage	63 Educational Services	88 Telecom. Equipment
14 Retail Automotive	39 Electrical Equipment	64 Chemical (Basic)	89 Publishing
15 Chemical (Specialty)	40 Entertainment	65 Metals & Mining (Div.)	90 Entertainment Tech
16 Financial Svcs. (Div.)	41 Air Transport	66 Food Processing	91▼Water Utility
17 Natural Gas Utility	42 Med Supp Non-Invasive	67 Natural Gas (Div.)	92 Public/Private Equity
18 Bank	43▲Aerospace/Defense	68 Metal Fabricating	93 R.E.I.T.
19 Building Materials	44 Automotive	69 Drug	94 Oilfield Svcs/Equip.
20 Brokers & Exchanges	45 Electric Util. (Central)	70 Internet	95 Tobacco
21 Bank (Midwest)	46 Petroleum (Producing)	71 Apparel	96 Reinsurance
22 Machinery	47 Precision Instrument	72 Precious Metals	97 Maritime
23 Recreation	48 Retail Store	73 Electric Utility (East)	
24 Information Services	49 Environmental	74 Furn/Home Furnishings	
25 Hotel/Gaming	50 Electronics	75 Office Equip/Supplies	

*Based on the Timeliness™ ranks of the stocks in the industry

Noteworthy Rank Changes

Listed below are some of the stocks whose Timeliness ranks have changed this week. We include mostly rank changes caused by fundamentals such as new earnings reports. Even when a significant change in earnings momentum has been forecast, the stock's rank will not be affected until the actual results, confirming that forecast, are reported. In most cases, we omit stocks that have been bumped up or down in rank by the dynamism of the ranking system.

STOCKS MOVING UP IN TIMELINESS RANK

Stock Name	Old Rank	New Rank	Reason for Change	Earnings Est. 12 months to 12-31-18
BWX Technologies	3	2	Surprise factor, greater than average gain. Mar. quarter 66c vs. year ago 55c. Our estimate was 60c.	Under Review
Berkshire Hathaway B'	4	3	Surprise factor, earnings turnaround. Mar. quarter \$2.15 vs. year ago \$1.65. Our estimate was \$1.45.	Under Review
Boise Cascade	3	2	Higher than expected earnings. Mar. quarter 94c vs. year ago 26c. Our estimate was 45c.	Under Review
Discovery, Inc.	4	3	Greater than average gain. Mar. quarter 53c vs. year ago 37c. Our estimate was 50c.	\$2.60
Electro Scientific	2	1	Higher than expected earnings. Mar. period \$1.02 vs. year ago 9c. Our estimate was 84c.	Under Review
Infinera Corp. (B)	5	4	Improving profit growth. Mar. period d17c vs. year ago d28c. Our estimate was d20c.	d.40
Inter Parfums	4	3	Surprise factor, greater than average gain. Mar. quarter 51c vs. year ago 43c. Our estimate was 45c.	Under Review
Jacobs Engineering	4	3	Greater than average gain. Mar. period \$1.00 vs. year ago 78c. Our estimate was 95c.	4.28
LifePoint Health	4	3	Surprise factor, earnings turnaround. Mar. quarter \$1.22 vs. year ago \$1.07. Our estimate was \$1.10.	Under Review
Monster Beverage (B)	4	3	Greater than average gain. Mar. quarter 38c vs. year ago 31c. Our estimate was 36c.	1.66
Northland Power	4	3	Surprise factor, greater than average gain. Mar. quarter 61c vs. year ago 29c. Our estimate was 30c.	Under Review
Pan Amer. Silver (B)	4	3	Surprise factor, greater than average gain. Mar. quarter 20c vs. year ago 6c. Our estimate was 15c.	.71

STOCKS MOVING DOWN IN TIMELINESS RANK

Stock Name	Old Rank	New Rank	Reason for Change	Earnings Est. 12 months to 12-31-18
ACI Worldwide	3	4	Lower than expected earnings. Mar. quarter d17c vs. year ago d1c. Our estimate was 10c.	Under Review
AECOM	3	4	Earnings reversal, as forecast. Mar. quarter 67c vs. year ago 89c. Our estimate was 65c.	\$2.63
Amer. States Water	3	4	Surprise factor, earnings reversal. Mar. quarter 29c vs. year ago 34c. Our estimate was 35c.	1.85
B&G Foods	2	3	Earnings reversal. Mar. period 55c vs. year ago 58c. Our estimate was 52c.	2.15

STOCKS MOVING DOWN IN TIMELINESS RANK

Stock Name	Old Rank	New Rank	Reason for Change	Earnings Est. 12 months to 12-31-18
Canadian Tire 'A'	1	2	Decreasing profit growth, as forecast. Mar. period \$1.37 vs. year ago \$1.24. Our estimate was \$1.35.	12.00
Coty Inc.	3	4	Surprise factor, earnings reversal. Mar. quarter 13c vs. year ago 15c. Our estimate was 16c.	.84
Extreme Networks	1	2	Lower than expected earnings. Mar. period 16c vs. year ago 10c. Our estimate was 21c.	1.00
Green Plains Inc.	4	5	Surprise factor, earnings reversal. Mar. quarter d60c vs. year ago d9c. Our estimate was d20c.	Under Review
Herbalife Nutrition	3	4	Earnings reversal. Mar. quarter \$1.13 vs. year ago \$1.24. Our estimate was \$1.10.	2.50
Innospec Inc.	1	2	Dynamism of the ranking system.	
j2 Global	3	4	Lower than expected earnings. Mar. quarter 38c vs. year ago 52c. Our estimate was 62c.	Under Review
Korn/Ferry Int'l	1	2	Dynamism of the ranking system.	
LCT Industries	1	2	Dynamism of the ranking system.	
Martin Marietta	2	3	Surprise factor, earnings reversal. Mar. quarter 16c vs. year ago 67c. Our estimate was 52c.	Under Review
Nevro Corp.	3	4	Surprise factor, earnings reversal. Mar. quarter d59c vs. year ago d50c. Our estimate was d18c.	(A)
Overstock.com	3	4	Lower than expected earnings. Mar. quarter d\$1.74 vs. year ago d23c. Our estimate was d15c.	Under Review
PDL BioPharma	3	4	Surprise factor, earnings reversal. Mar. quarter 1c vs. year ago 4c. Our estimate was 5c.	.30
Scientific Games	1	2	Dynamism of the ranking system.	
Skyworks Solutions	1	2	Dynamism of the ranking system.	
Summit Materials	1	2	Surprise factor, flat year-to-year comparison. Mar. period d49c vs. year ago d49c. Our estimate was d25c.	Under Review
Superior Inds. Int'l	3	4	Surprise factor, earnings reversal. Mar. period 15c vs. year ago 31c. Our estimate was 35c.	Under Review
TTEC Holdings	2	3	Surprise factor, flat year-to-year comparison. Mar. quarter 42c vs. year ago 42c. Our estimate was 50c.	Under Review
Tower International	1	2	Dynamism of the ranking system.	
Trinseo S.A.	1	2	Dynamism of the ranking system.	
Weston (George)	2	3	Surprise factor, earnings reversal. Mar. period \$1.38 vs. year ago \$1.42. Our estimate was \$1.55.	Under Review
Xperi Corp.	2	3	Lower than expected earnings. Mar. quarter 14c vs. year ago d6c. Our estimate was 50c.	Under Review
York Water Co. (The)	3	4	Flat year-to-year comparison. Mar. quarter 20c vs. year ago 20c. Our estimate was 22c.	1.05
Zillow Group 'C'	3	4	Surprise factor, earnings reversal. Mar. quarter d10c vs. year ago d3c. Our estimate was d5c.	.05

(A) New full-page report in this week's Ratings & Reports.
(B) Supplementary report in this week's Ratings & Reports.

TIMELY STOCKS IN TIMELY INDUSTRIES

Page No.	Industry (Industry Rank)	RANKS					Est'd. 3-5 Year Price Apprec.	Page No.	Industry (Industry Rank)	RANKS					Est'd. 3-5 Year Price Apprec.				
		Recent Price	Technical Safety	Beta	Current P/E Ratio	% Est'd Yield				Recent Price	Technical Safety	Beta	Current P/E Ratio	% Est'd Yield					
Semiconductor Equip (INDUSTRY RANK 1)							Homebuilding (INDUSTRY RANK 5)												
1382	Applied Materials	53.45	1	3	3	1.20	11.7	1.5	50-115%	1125	Horton D.R.	44.92	1	3	2	1.30	11.6	1.1	N- 55%
1383	Electro Scientific	18.09	1	3	2	1.05	7.4	NIL	120-230%	1127	KB Home	27.55	2	3	2	1.55	10.0	0.4	25- 80%
1384	Entegris, Inc.	35.00	1	3	3	1.20	19.4	0.8	15- 55%	1128	Lennar Corp.	54.43	2	3	1	1.30	10.2	0.3	40-100%
1385	IPG Photonics	233.97	2	3	3	1.15	27.4	NIL	N- 45%	1131	NVR, Inc.	3089.76	2	2	3	0.85	16.5	NIL	N- 25%
1386	Kulicke & Soffa	23.17	1	3	2	1.05	11.5	NIL	50-115%	1132	PulteGroup, Inc.	31.17	1	3	3	1.30	9.6	1.2	30- 75%
1387	Lam Research	194.86	1	3	2	1.20	11.3	2.3	15- 70%	1134	TRI Pointe Group	17.65	2	3	2	1.35	9.3	NIL	70-155%
1389	MKS Instruments	110.80	1	3	3	1.05	17.3	0.7	N- 35%	1135	Taylor Morrison Home	23.15	2	3	3	1.45	9.3	NIL	30-115%
Pharmacy Services (INDUSTRY RANK 2)							Investment Banking (INDUSTRY RANK 6)												
966	CVS Health	60.71	1	1	4	0.90	9.6	3.3	99-130%	1807	Goldman Sachs	237.00	2	1	1	1.20	9.9	1.4	30- 60%
970	PetMed Express	33.99	2	3	1	1.00	16.7	2.9	20- 75%	1810	Morgan Stanley	53.38	2	3	2	1.35	10.9	1.9	40-115%
972	Walgreens Boots	62.36	1	2	4	0.95	10.0	2.6	60-115%	1812	Raymond James Fin'l	91.25	1	3	3	1.25	13.0	1.1	20- 75%
Chemical (Diversified) (INDUSTRY RANK 3)							Medical Services (INDUSTRY RANK 7)												
2444	Albemarle Corp.	100.72	2	3	5	1.30	19.4	1.3	20- 80%	800	Centene Corp.	113.41	2	3	3	1.05	16.4	NIL	N- 35%
2445	Cabot Corp.	60.00	2	3	3	1.30	14.6	2.2	N- 50%	801	Cigna Corp.	170.70	2	2	3	0.85	13.3	NIL	25- 75%
2446	Celanese Corp.	108.71	1	3	3	1.30	12.0	2.0	N- 30%	804	Encompass Health	63.34	2	3	3	1.00	19.5	1.6	N- 35%
2447	Eastman Chemical	105.53	2	3	2	1.20	12.5	2.1	N- 45%	807	HCA Holdings	97.40	1	3	2	0.85	10.8	1.4	40-105%
2449	Huntsman Corp.	29.62	1	4	2	1.80	10.2	2.2	20- 85%	808	Humana Inc.	278.81	2	3	3	0.85	20.1	0.7	N- 45%
2452	Trinseo S.A.	74.50	2	3	3	1.55	8.7	1.9	60-150%	810	IQVIA Holdings	98.25	1	3	3	0.90	17.6	NIL	40-115%
2453	Univar Inc.	27.36	1	3	2	1.20	16.6	NIL	85-175%	811	Laboratory Corp.	170.00	1	1	3	0.90	14.8	NIL	20- 45%
Funeral Services (INDUSTRY RANK 4)							Mediata Solutions												
1838	Carriage Services	25.89	2	3	2	0.90	15.1	1.2	35- 95%	813	Mediata Solutions	76.93	2	3	4	1.15	44.0	NIL	30- 95%
1839	Hillenbrand, Inc.	45.90	2	3	3	1.15	21.2	1.8	10- 55%	816	Select Med. Hldgs.	18.15	2	3	3	1.25	17.3	NIL	N- 40%
1841	Service Corp. Intl	36.31	2	3	3	1.00	20.0	1.9	25- 95%	819	UnitedHealth Group	232.03	1	1	3	0.95	18.2	1.3	N- 20%
										820	Universal Health Sv 'B'	115.95	2	3	2	0.80	12.1	0.3	40-105%
										821	WellCare Health Plans	214.94	2	3	3	1.15	21.9	NIL	15- 70%

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TIMELY STOCKS IN TIMELY INDUSTRIES

Page No.	Industry (Industry Rank)	Recent Price	RANKS			Current P/E Ratio	% Est'd Yield	3-5 Year Price Apprec.	Page No.	Industry (Industry Rank)	Recent Price	RANKS			Current P/E Ratio	% Est'd Yield	3-5 Year Price Apprec.
			Timeliness	Safety	Technical							Timeliness	Safety	Technical			
IT Services (INDUSTRY RANK 8)																	
2612	Accenture Plc	151.94	2	1	3	1.00	20.9	1.9	N-	20%							
2615	CACI Int'l	160.10	2	3	3	0.95	19.6	NIL	N-	40%							
2616	CDW Corp.	76.59	1	3	3	1.05	20.7	1.1	N-	35%							
2618	Cognizant Technology	75.55	1	2	2	1.05	16.8	1.1	30-	80%							
2621	EPAM Systems	116.90	2	3	2	1.10	34.4	NIL	N-	45%							
2622	Fair Isaac	176.09	2	3	3	1.15	32.2	NIL	N-	30%							
2623	Fiserv Inc.	70.41	2	2	3	0.95	13.0	NIL	N-	15%							
2629	SEI Investments	62.98	2	2	1	1.20	20.3	1.0	25-	65%							
2631	Tyler Technologies	223.88	2	3	3	0.95	46.7	NIL	5-	55%							
Semiconductor (INDUSTRY RANK 9)																	
1348	Advanced Energy	64.32	1	3	3	1.20	12.4	NIL	30-	95%							
1351	Analog Devices	91.42	1	2	3	1.15	16.2	2.1	25-	70%							
1352	Broadcom Inc.	238.85	2	3	3	1.10	30.3	2.9	N-	35%							
1357	Cypress Semic.	15.67	2	3	2	1.45	13.1	2.8	60-	155%							
1358	Integrated Device	29.69	2	3	2	1.25	17.8	NIL	35-	100%							
1359	Intel Corp.	53.63	1	1	3	1.05	15.1	2.2	50-	30%							
1361	Maxim Integrated	56.45	2	3	3	1.00	20.2	3.0	5-	60%							
1363	Microchip Technology	90.65	1	2	3	1.15	15.9	1.6	20-	60%							
1364	Micron Technology	48.57	1	3	2	1.55	5.0	NIL	25-	75%							
1366	Monolithic Power Sys.	124.11	2	3	3	1.20	47.7	1.0	5-	55%							
1369	ON Semiconductor	22.92	1	3	2	1.40	12.7	NIL	30-	75%							
1374	Skyworks Solutions	96.62	2	3	3	1.15	12.8	1.3	35-	100%							
1375	STMicroelectronics	23.26	1	3	3	1.15	18.5	1.0	50-	115%							
1377	Texas Instruments	105.46	2	1	3	1.10	20.8	2.4	N-	20%							
Auto Parts (INDUSTRY RANK 10)																	
975	Allison Transmission	42.20	2	3	3	1.00	12.6	1.4	55-	125%							
979	BorgWarner	49.63	2	3	2	1.30	11.0	1.4	20-	90%							
983	Cooper-Standard	123.19	1	3	3	1.00	13.9	NIL	20-	75%							
985	Dorman Products	66.51	2	3	4	0.85	15.8	NIL	35-	105%							
987	Gentex Corp.	22.75	2	3	2	1.15	13.8	1.9	30-	100%							
992	LCI Industries	89.65	2	3	1	1.10	11.5	2.5	105-	205%							
994	Lear Corp.	191.39	1	3	3	1.20	9.9	1.5	10-	70%							
996	Magna Int'l A'	60.58	1	3	3	1.30	9.0	2.2	55-	140%							
997	Meritor, Inc.	20.79	1	4	2	1.50	7.5	NIL	20-	115%							
998	Modine Mfg.	16.95	1	4	1	1.20	9.8	NIL	20-	105%							
1002	Tenneco Inc.	45.89	2	3	3	1.45	6.1	2.2	120-	225%							
1004	Tower International	28.15	2	3	3	1.70	7.2	1.7	25-	95%							
1007	WABCO Hldgs.	130.53	2	3	2	1.25	18.6	NIL	N-	45%							
Human Resources (INDUSTRY RANK 11)																	
1635	AMN Healthcare	52.10	2	3	3	1.05	17.1	NIL	15-	75%							
1644	ASGN Inc.	83.06	2	3	2	1.40	28.6	NIL	N-	10%							
1638	Inspenty Inc.	83.80	2	3	4	1.00	33.5	1.0	N-	5%							
1642	KornFerry Int'l	55.07	2	3	3	1.25	19.1	0.7	N-	35%							
1643	ManpowerGroup Inc.	95.98	1	3	2	1.45	11.0	2.1	15-	70%							
1646	TriNet Group	52.56	2	3	4	1.10	20.2	NIL	N-	35%							
Paper/Forest Products (INDUSTRY RANK 12)																	
1166	Intl Paper	51.71	1	3	2	1.15	11.2	3.7	65-	140%							
1167	Louisiana-Pacific	27.56	1	3	1	1.50	9.2	1.9	25-	100%							
1171	West Fraser Timber	91.25	1	3	3	1.20	13.0	0.7	10-	65%							
Steel (INDUSTRY RANK 13)																	
743	ArcelorMittal	34.60	2	4	3	1.65	8.2	NIL	45-	130%							
747	Gibraltar Inds	36.90	2	3	3	1.35	22.4	NIL	20-	75%							
750	Reliance Steel	91.74	2	3	3	1.30	15.0	2.2	15-	70%							
752	Schmitzer Steel	29.75	2	3	1	1.45	9.4	2.5	35-	100%							
753	Steel Dynamics	46.50	1	3	3	1.40	13.7	1.6	N-	40%							
754	U.S. Steel Corp.	34.60	2	4	3	1.90	8.9	0.6	75-	190%							
Retail Automotive (INDUSTRY RANK 14)																	
2120	Asbury Automotive	69.65	1	3	3	1.30	9.0	NIL	15-	70%							
2125	Copart, Inc.	53.20	2	2	3	1.00	28.0	NIL	N-	N%							
2127	KAR Auction Svcs.	53.77	1	3	2	1.00	21.5	2.6	20-	75%							
2128	Lithia Motors	96.09	1	3	2	1.30	9.1	1.2	40-	115%							
2130	O'Reilly Automotive	265.74	2	2	2	0.95	17.3	NIL	30-	75%							
2131	Penske Auto	46.88	2	3	3	1.30	9.2	3.0	15-	70%							
2132	Rush Enterprises A'	41.49	2	3	3	1.20	14.5	NIL	20-	80%							
Chemical (Specialty) (INDUSTRY RANK 15)																	
563	Avery Dennison	105.50	2	2	3	0.95	16.5	2.0	5-	40%							
566	Cabot Microelectr's	108.57	2	3	3	1.10	24.1	1.5	15-	70%							
567	Chemours Co. (The)	50.58	1	4	3	2.20	9.6	1.3	10-	80%							
569	Ferro Corp.	21.80	2	3	1	1.30	36.3	NIL	15-	60%							
574	Innospec Inc.	73.25	2	3	3	1.05	16.8	1.2	N-	55%							
576	KMG Chemicals	64.23	2	3	3	1.05	23.4	0.2	N-	40%							
577	Kronos Worldwide	24.18	2	4	3	1.60	15.1	2.8	5-	85%							
578	LyondellBasell Inds.	104.54	1	3	2	1.30	10.7	3.8	N-	45%							
579	Methanex Corp	64.30	1	3	3	1.55	14.2	2.1	N-	50%							
587	RPM Intl	49.31	2	3	4	1.20	15.0	2.6	10-	60%							
588	Rayonier Advanced Mat.	18.49	2	4	2	2.15	9.2	1.5	115-	250%							
590	Stapan Company	69.08	2	3	2	1.15	16.0	1.4	30-	90%							
592	Westlake Chemical	108.50	1	3	2	1.40	14.5	0.8	25-	85%							
Financial Svcs. (Div.) (INDUSTRY RANK 16)																	
2538	Aircastle Ltd	21.58	2	3	4	1.35	8.8	5.2	60-	130%							
2542	Ameriprise Fin'l	134.31	1	3	2	1.35	9.3	2.7	60-	140%							
2543	Aon plc	140.91	1	1	3	0.95	17.6	1.1	15-	40%							
2545	BlackRock, Inc.	519.93	2	2	1	1.30	17.9	2.2	20-	65%							
2547	Brown & Brown	27.40	2	1	3	0.95	21.9	1.1	10-	45%							
2549	Capital One Fin'l	90.18	2	3	2	1.15	9.3	1.8	N-	40%							
2551	Discover Fin'l Svcs.	72.87	2	2	2	1.10	9.4	1.9	45-	90%							
2556	Fidelity Nat'l Info.	103.19	2	2	3	0.95	31.8	1.2	N-	25%							
2559	FleetCor Technologies	203.25	2	3	3	1.25	19.8	NIL	30-	90%							
2570	MGIC Investment	10.65	2	4	1	1.30	6.1	NIL	90-	230%							
2571	Marsh & McLennan	81.16	1	1	2	0.95	18.1	1.8	25-	50%							
2572	MasterCard Inc.	190.53	2	1	3	1.05	33.1	0.5	N-	20%							
2574	PayPal Holdings	75.72	2	3	2	1.20	43.3	NIL	N-	45%							
2575	Price (T. Rowe) Group	114.17	1	1	3	1.15	15.7	2.5	20-	45%							
2577	SLM Corporation	11.52	2	3	3	1.15	11.5	NIL	115-	245%							
2580	Total System Svcs.	87.31	2	3	3	1.00	29.6	0.6	N-	5%							

Timely Stocks

Stocks Ranked 1 (Highest) for Relative Price Performance (Next 12 Months)

Page No.	Stock Name	Recent Price Ticker	Rank 1 Technical Safety	Current P/E Ratio	% Est'd Yield	Industry Group	Industry Rank	Page No.	Stock Name	Recent Price Ticker	Rank 1 Technical Safety	Current P/E Ratio	% Est'd Yield	Industry Group	Industry Rank				
1411	ACCO Brands	ACCO	11.90	3	2	8.8	2.0	Office Equip/Supplies	75	2128	Lithia Motors	LAD	96.09	3	2	9.1	1.2	Retail Automotive	14
1606	AbbVie Inc.	ABBV	99.40	3	3	12.9	3.9	Drug	69	1167	Louisiana-Pacific	LPX	27.56	3	1	9.2	1.9	Paper/Forest Products	12
1348	Advanced Energy	AEIS	64.32	3	3	12.4	NIL	Semiconductor	9	125	Lumentum Holdings	LITE	63.55	3	5	26.3	NIL	Precision Instrument	47
2502	Ally Financial	ALLY	26.57	3	3	8.9	2.0	Bank	18	578	LyondellBasell Inds.	LYB	104.54	3	2	10.7	3.8	Chemical (Specialty)	15
2542	Ameriprise Fin'l	AMP	134.31	3	2	9.3	2.7	Financial Svcs. (Div.)	16	1389	MKS Instruments	MKSI	110.80	3	3	17.3	0.7	Semiconductor Equip	1
1351	Analog Devices	ADI	91.42	2	3	16.2	2.1	Semiconductor	9	996	Magna Int'l 'A'	MGA	60.58	3	3	9.0	2.2	Auto Parts	10
2543	Aon plc	AON	140.91	1	3	17.6	1.1	Financial Svcs (Div.)	16	1643	ManpowerGroup Inc.	MAN	95.98	3	2	11.0	2.1	Human Resources	11
1395	Apple Inc.	AAPL	186.05	2	3	15.6	1.6	Computers/Peripherals	37	2180	ManneMax	HZO	23.30	4	3	14.9	NIL	Retail (Hardlines)	55
1382	Applied Materials	AMAT	53.45	3	3	11.7	1.5	Semiconductor Equip	1	2571	Marsh & McLennan	MMC	81.16	1	2	18.1	1.8	Financial Svcs. (Div.)	16
1322	Arrow Electronics	ARW	75.08	3	3	8.9	NIL	Electronics	50	997	Meritor Inc.	MTOR	20.79	4	2	7.5	NIL	Auto Parts	10
2120	Asbury Automotive	ABG	69.65	3	3	9.0	NIL	Retail Automotive	14	579	Methanex Corp.	MEOH	64.30	3	3	14.2	2.1	Chemical (Specialty)	15
2165	Avis Budget Group	CAR	43.44	4	2	13.0	NIL	Retail (Hardlines)	55	1336	Methode Electronics	MEI	40.80	3	4	14.0	1.1	Electronics	50
172	Baxter Int'l Inc.	BAX	69.45	1	3	23.9	1.1	Med Supp Invasive	51	1363	Microchip Technology	MCHP	90.65	2	3	15.9	1.6	Semiconductor	9
1817	Black Knight, Inc.	BKI	50.45	3	3	28.8	NIL	E-Commerce	29	2571	Marsh & McLennan	MMC	81.16	1	2	18.1	1.8	Financial Svcs. (Div.)	16
2616	CDW Corp.	CDW	76.59	3	3	20.7	1.1	IT Services	8	998	Modine Mfg.	MOD	16.95	4	1	9.8	NIL	Auto Parts	10
341	CSX Corp.	CSX	60.57	3	3	19.0	1.5	Railroad	36	550	New Jersey Res.	NJR	43.00	1	4	16.0	2.5	Natural Gas Utility	17
966	CVS Health	CVS	60.71	1	4	9.6	3.3	Pharmacy Services	2	2338	Nexstar Media Group	NXST	62.35	3	2	8.3	2.4	Entertainment	40
2306	Carnival Corp.	CCL	63.15	3	2	14.0	3.2	Recreation	23	2315	Norwegian Cruise Line	NCLH	50.65	3	2	10.4	NIL	Recreation	23
2446	Celanese Corp.	CE	108.71	3	3	12.0	2.0	Chemical (Diversified)	3	1369	ON Semiconductor	ON	22.92	3	2	12.7	NIL	Semiconductor	9
567	Chemours Co. (The)	CC	50.58	4	3	9.6	1.3	Chemical (Specialty)	15	553	ONE Gas, Inc.	OGS	72.55	2	5	22.9	2.6	Natural Gas Utility	17
2205	Children's Place	PLCE	124.75	3	1	15.2	1.6	Retail (Softlines)	52	165	Oshkosh Corp.	OSK	73.48	3	2	12.6	1.3	Heavy Truck & Equip	30
2512	Citizens Fin'l Group	CFG	41.32	3	2	13.2	2.2	Bank	18	1183	Packaging Corp	PKG	113.76	3	3	17.7	2.2	Packaging & Container	32
2618	Cognizant Technology	CTSH	75.55	2	2	16.8	1.1	IT Services	8	1954	Performance Food	PFGC	32.55	3	3	24.3	NIL	Retail/Wholesale Food	57
1022	Comcast Corp.	CMCSA	30.59	2	2	12.5	2.5	Cable TV	62	1935	Post Holdings	POST	76.94	3	4	16.8	NIL	Food Processing	66
983	Cooper-Standard	CPS	123.19	3	3	13.9	NIL	Auto Parts	10	2575	Price (T. Rowe) Group	TROW	114.17	1	3	15.7	2.5	Financial Svcs. (Div.)	16
2407	Diamondback Energy	FANG	134.72	3	3	19.7	0.4	Petroleum (Producing)	46	1132	PulteGroup, Inc.	PHM	31.17	3	3	9.6	1.2	Homebuilding	5
1109	Eagle Materials	EXP	103.67	3	3	17.1	0.4	Building Materials	19	1812	Raymond James Fin'l	RJF	91.25	3	3	13.0	1.1	Investment Banking	6
2514	East West Bancorp	EWBC	68.38	3	3	15.5	1.2	Bank	18	1772	Rogers Communications	RCIB.TO	60.20	3	4	16.1	3.2	Diversified Co.	33
1383	Electro Scientific	ESIO	18.09	3	2	7.4	NIL	Semiconductor Equip	1	1143	Sherwin-Williams	SHW	377.94	2	2	20.1	0.9	Retail Building Supply	26
1752	EnPro Industries	NPO	71.74	3	2	18.9	1.3	Diversified Co	33	312	SkyWest	SKYW	56.25	3	3	12.8	0.7	Air Transport	41
1384	Entegris, Inc.	ENTG	35.00	3	3	19.4	0.8	Semiconductor Equip	1	753	Steel Dynamics	STLD	46.50	3	3	13.7	1.6	Steel	13
1600	FMC Corp.	FMC	87.39	3	3	15.2	0.8	Chemical (Basic)	64	1375	STMicroelectronics	STM	23.26	3	3	18.5	1.0	Semiconductor	9
309	FedEx Corp.	FDX	241.95	1	3	13.5	1.0	Air Transport	41	1343	TE Connectivity	TEL	92.92	2	1	16.2	1.9	Electronics	50
807	HCA Holdings	HCA	97.40	3	2	10.8	1.4	Medical Services	7	2324	Thor Inds.	THO	97.88	3	1	9.6	1.6	Recreation	23
210	Hill-Rom Hldgs.	HRC	86.52	3	2	18.1	0.9	Med Supp Non-Invasive	42	1136	Toll Brothers	TOL	43.61	3	2	10.0	1.0	Homebuilding	5
1125	Horton D.R.	DHI	44.92	3	2	11.6	1.1	Homebuilding	5	2531	Toronto-Dominion	TD.TO	73.53	1	3	12.4	3.7	Bank	18
2449	Huntsman Corp.	HUN	29.62	4	2	10.2	2.2	Chemical (Diversified)	3	1942	Tyson Foods 'A'	TSN	66.66	3	2	10.4	1.9	Food Processing	66
810	IQVIA Holdings	IQV	98.25	3	3	17.6	NIL	Medical Services	7	1733	United Rentals	URI	159.33	3	2	10.8	NIL	Machinery	22
1758	Ingersoll-Rand	IR	88.08	3	3	16.8	2.0	Diversified Co.	33	819	UnitedHealth Group	UNH	232.03	1	3	18.2	1.3	Medical Services	7
2178	Insight Enterprises	NSIT	45.37	3	5	11.9	NIL	Retail (Hardlines)	55	2453	Univar Inc.	UNVR	27.36	3	2	16.6	NIL	Chemical (Diversified)	3
1359	Intel Corp.	INTC	53.63	1	3	15.1	2.2	Semiconductor	9	1121	Universal Forest	UFPI	33.76	3	3	14.8	1.1	Building Materials	19
1166	Int'l Paper	IP	51.71	3	2	11.2	3.7	Paper/Forest Products	12	1562	Unum Group	UNM	38.25	3	2	7.4	2.4	Insurance (Life)	34
1335	Jabil Inc.	JBL	27.42	3	3	10.2	1.2	Electronics	50	1346	Vishay Intertechnology	VSH	20.25	3	3	12.7	1.7	Electronics	50
2127	KAR Auction Svcs.	KAR	53.77	3	2	21.5	2.6	Retail Automotive	14	972	Walgreens Boots	WBA	62.36	2	4	10.0	2.6	Pharmacy Services	2
123	KLA-Tencor	KLAC	106.90	3	3	12.8	2.8	Precision Instrument	47	1171	West Fraser Timber	WFT.TO	91.25	3	3	13.0	0.7	Paper/Forest Products	12
1760	Kadant Inc.	KAI	94.70	3	3	18.5	0.9	Diversified Co.	33	1409	Western Digital	WDC	77.73	3	2	5.5	2.6	Computers/Peripherals	37
1386	Kulicke & Soffa	KLIC	23.17	3	2	11.5	NIL	Semiconductor Equip	1	592	Westlake Chemical	WLK	108.50	3	2	14.5	0.8	Chemical (Specialty)	15
811	Laboratory Corp.	LH	170.00	1	3	14.8	NIL	Medical Services	7	2325	Winn-Dixie	WGO	35.00	3	2	10.7	1.1	Recreation	23
1387	Lam Research	LRCX	194.86	3	2	11.3	2.3	Semiconductor Equip	1	329	XPO Logistics	XPO	105.46	4	2	32.4	NIL	Trucking	35
994	Lear Corp.	LEA	191.39	3	3	9.9	1.5	Auto Parts	10	608	Zebra Techn. 'A'	ZBRA	153.24	3	3	15.6	NIL	Wireless Networking	78

■ Newly added this week.

Rank 1 Deletions:

Canadian Tire 'A'; Extreme Networks; Innospec Inc.; Korn/Ferry Int'l; LCI Industries; Scientific Games; Skyworks Solutions; Summit Materials; Tower International; Trinseo S.A.

Rank removed—see supplement or report:

None.

ROE and ROR Analysis Columbia Gas of PA
CAPM/ECAPM Analysis
Value Line Projected Growth Rate

Docket No. R-2018-2647577
Exhibit MFG-11, Schedule 3

Page 28

SUMMARY AND INDEX • THE VALUE LINE INVESTMENT SURVEY

May 18, 2018

Continued from preceding page

TIMELY STOCKS

Stocks Ranked 2 (Above Average) for Relative Price Performance in the Next 12 Months

Page No.	Stock Name	Recent Price	Technical Safety	R a n k s	Current %	P/E	Est'd Yield	Industry Group	Industry Rank	Page No.	Stock Name	Recent Price	Technical Safety	R a n k s	Current %	P/E	Est'd Yield	Industry Group	Industry Rank		
2327	AMC Networks	AMCX		52.78	3	4	6.4	NIL	Entertainment	40	1974	Craft Brew Alliance	BREW		19.25	4	3	55.0	NIL	Beverage	38
1635	AMN Healthcare ▲	AMN		52.10	3	3	17.1	NIL	Human Resources	11	1178	Crown Holdings	CCK		44.18	3	3	9.7	NIL	Packaging & Container	32
1644	ASGN Inc.	ASGN		83.06	3	2	28.6	NIL	Human Resources	11	1709	Curtiss-Wright ▲	CW		128.74	3	2	22.6	0.5	Machinery	22
197	Abbott Labs	ABT		58.71	1	2	20.6	1.9	Med Supp Non-Invasive	42	205	Cutura, Inc.	CUTR		55.85	3	3	69.8	NIL	Med Supp Non-Invasive	42
170	ABIOMED Inc.	ABMD		347.38	3	3	NMF	NIL	Med Supp Invasive	51	1357	Cypress Semic.	CY		15.67	3	2	13.1	2.8	Semiconductor	9
2612	Accutest Pic	ACN		151.94	1	3	20.9	1.9	IT Services	8	908	DTE Energy	DTE		101.10	2	3	17.4	3.6	Electric Util. (Central)	45
2588	Adobe Systems	ADBE		234.56	2	3	47.9	NIL	Computer Software	27	358	Darden Restaurants	DRI		92.27	3	3	17.1	2.8	Restaurant	59
1740	Aerotec Rocketdyne	AJRD		27.41	3	2	26.1	NIL	Diversified Co.	33	157	Deere & Co.	DE		142.07	1	1	14.5	1.7	Heavy Truck & Equip	30
2538	Aircastle Ltd.	AYR		21.58	3	4	8.8	5.2	Financial Svcs. (Div.)	16	360	Denny's Corp.	DENN		15.93	3	3	22.8	NIL	Restaurant	59
2444	Albermarle Corp.	ALB		100.72	3	5	19.4	1.3	Chemical (Diversified)	3	1033	Deutsche Telekom ADP	DTEGY		17.23	2	4	17.2	3.7	Telecom. Utility	84
2633	Alibaba Group Hldg Ltd.	BABA		196.31	3	3	35.6	NIL	Internet	70	2551	Discover Finl Svcs.	DFS		72.87	2	2	9.4	1.9	Financial Svcs. (Div.)	16
198	Align Techn.	ALGN		265.46	3	3	55.3	NIL	Med Supp Non-Invasive	42	2330	Disney (Walt)	DIS		101.79	1	4	15.4	1.7	Entertainment	40
975	Allison Transmission	ALSN		42.20	3	3	12.6	1.4	Auto Parts	10	2142	Dollar Tree, Inc.	DLTR		93.68	3	2	16.6	NIL	Retail Store	48
758	Allstate Corp.	ALL		95.71	1	3	10.3	1.9	Insurance (Prop/Cas.)	53	362	Domino's Pizza	DPZ		250.41	3	3	30.7	0.9	Restaurant	59
2634	Alphabet Inc.	GOOG		1053.91	1	3	27.2	NIL	Internet	70	985	Dorman Products	DORM		66.51	3	4	15.8	NIL	Auto Parts	10
904	Ameren Corp.	AEE		56.91	2	3	18.7	3.3	Electric Util. (Central)	45	2621	EPAM Systems	EPAM		116.90	3	2	34.4	NIL	IT Services	8
759	Amer. Financial Group ▲	AFG		110.85	2	3	13.5	1.3	Insurance (Prop/Cas.)	53	2447	Eastman Chemical	EMN		105.53	3	2	12.5	2.1	Chemical (Diversified)	3
1741	AMETEK, Inc.	AME		73.45	2	1	24.5	0.8	Diversified Co.	33	179	Edwards Lifesciences	EW		134.83	3	2	29.0	NIL	Med Supp Invasive	51
1320	Amphenol Corp.	APH		85.74	2	2	24.6	1.1	Electronics	50	804	Encompass Health	EHC		63.34	3	3	19.5	1.6	Medical Svcs.	7
622	Antero Midstream Part.	AM		26.74	3	4	14.9	6.4	Pipeline MLPs	79	629	Energy Transfer Equity ▲	ETE		16.69	4	5	13.9	7.5	Pipeline MLPs	79
1705	Applied Indl Techn.	AIT		68.60	3	3	18.6	1.7	Machinery	22	1397	Extreme Networks ▼	EXTR		11.75	4	3	11.8	NIL	Computers/Peripherals	37
743	ArcelorMittal	MT		34.60	4	3	8.2	NIL	Steel	13	2641	Facebook Inc.	FB		178.92	3	3	22.4	NIL	Internet	70
1816	Anista Networks	ANET		259.29	3	3	40.8	NIL	E-Commerce	29	2622	Fair Isaac	FICO		176.09	3	3	32.2	NIL	IT Services	8
943	Arns Int'l pic	ARRS		26.92	3	4	9.1	NIL	Telecom. Equipment	88	103	Ferrari N.V.	RACE		136.77	3	3	34.6	0.6	Automotive	44
778	Assoc. Banc-Corp	ASB		26.75	3	3	14.9	2.2	Bank (Midwest)	21	569	Ferro Corp.	FOE		21.80	3	1	36.3	NIL	Chemical (Specialty)	15
563	Avery Dennison	AVY		105.50	2	3	16.5	2.0	Chemical (Specialty)	15	2556	Fidelity Nat'l Info.	FIS		103.19	2	3	31.8	1.2	Financial Svcs. (Div.)	16
2503	BB&T Corp.	BBT		54.22	2	3	13.9	2.9	Bank	18	2623	Fiserv Inc.	FISV		70.41	2	3	13.0	NIL	IT Services	8
779	BOK Financial	BOKF		102.18	3	3	16.0	1.8	Bank (Midwest)	21	2143	Five Below, Inc.	FIVE		71.32	3	1	29.7	NIL	Retail Store	48
1216	BWX Technologies ▲	BWXT		66.59	3	2	26.6	1.0	Power	85	2559	FleetCor Technologies	FLT		203.25	3	3	19.8	NIL	Financial Svcs. (Div.)	16
2636	Baidu, Inc.	BIDU		263.09	3	3	29.0	NIL	Internet	70	321	Forward Air	FWRD		56.10	3	3	18.4	1.1	Trucking	35
2505	Bank of America	BAC		29.93	3	2	12.2	1.8	Bank	18	442	Gartner Inc.	IT		130.53	2	4	34.4	NIL	Information Services	24
2508	Bank of New York Mellon	BK		56.08	2	3	13.4	1.7	Bank	18	1221	Generac Holdings	GNRC		47.51	3	3	17.3	NIL	Power	65
1177	Berry Global Group	BERY		48.59	3	2	12.9	NIL	Packaging & Container	32	106	Gen'l Motors	GM		36.33	3	3	5.6	4.3	Automotive	44
2168	Best Buy Co.	BBY		75.63	3	3	15.1	2.4	Retail (Hardlines)	55	987	Genlex Corp.	GNTX		22.75	3	2	13.8	1.9	Auto Parts	10
1611	Biogen	BIIB		269.73	3	4	11.9	NIL	Drug	69	747	Gibraltar Inds.	ROCK		36.90	3	3	22.4	NIL	Steel	13
2545	BlackRock, Inc.	BLK		519.93	2	1	17.9	2.2	Financial Svcs. (Div.)	16	1807	Goldman Sachs	GS		237.00	1	1	9.9	1.4	Investment Banking	6
706	Boeing	BA		338.37	1	2	21.1	2.0	Aerospace/Defense	43	1713	Graco Inc.	GGG		45.14	3	2	24.9	1.2	Machinery	22
1107	Boise Cascade ▲	BCC		43.00	3	3	17.2	0.7	Building Materials	19	1235	Granite Construction	GVA		57.39	3	3	17.1	0.9	Engineering & Const	82
2637	Booking Holdings	BKNG		2161.60	3	3	25.0	NIL	Internet	70	2332	Gray Television ▲	GTN		11.30	4	3	8.1	NIL	Entertainment	40
979	BorgWarner	BWA		49.63	3	2	11.0	1.4	Auto Parts	10	2310	Hasbro, Inc.	HAS		87.30	3	4	17.6	2.9	Recreation	23
2350	Boyd Gaming	BYD		33.96	4	3	26.1	0.6	Hotel/Gaming	25	713	HEICO Corp.	HEI		91.32	3	3	42.3	0.2	Aerospace/Defense	43
2002	Bright Horizons Family	BFAM		98.81	3	2	31.4	NIL	Educational Services	63	1839	Hillenbrand, Inc.	HI		45.90	3	3	21.2	1.8	Funeral Services	4
1352	Broadcom Inc.	AVGO		238.85	3	3	30.3	2.9	Semiconductor	9	1987	Hitachi, Ltd. ADP	HTHIY		78.73	3	3	11.0	1.7	Foreign Electronics	28
435	Broadridge Fin'l	BR		112.20	2	3	30.7	1.4	Information Services	24	1140	Home Depot	HD		185.04	1	3	19.8	2.2	Retail Building Supply	26
1707	Brooks Automation	BRKS		28.90	3	3	18.3	1.4	Machinery	22	1756	Honeywell Int'l	HON		144.23	1	2	18.0	2.1	Diversified Co.	33
2547	Brown & Brown	BRO		27.40	1	3	21.9	1.1	Financial Svcs. (Div.)	16	1823	HubSpot, Inc.	HUBS		112.70	4	3	NMF	NIL	E-Commerce	29
1968	Brown-Forman 'B'	BFB		55.45	1	3	32.1	1.3	Beverage	36	808	Humana Inc.	HUM		278.81	3	3	20.1	0.7	Medical Services	7
116	Bruker Corp. ▲	BRKR		30.35	3	3	22.5	0.5	Precision Instrument	47	787	Huntington Bancshs.	HBAN		14.86	3	2	11.9	3.1	Bank (Midwest)	21
2304	Brunswick Corp.	BC		60.00	3	3	13.0	1.3	Recreation	23	714	Huntington Ingalls	HI		221.81	3	2	14.9	1.3	Aerospace/Defense	43
2137	Burlington Stores	BURL		137.77	4	3	23.6	NIL	Retail Store	48	181	ICU Medical	ICU		259.25	3	3	35.8	NIL	Med Supp Invasive	51
2615	CACI Int'l	CACI		160.10	3	3	19.6	NIL	IT Services	8	1385	IPG Photonics	IPGP		233.97	3	3	27.4	NIL	Semiconductor Equip	1
1795	Cboe Global Markets ▲	CBOE		102.37	2	1	22.7	1.1	Brokers & Exchanges	20	1757	ITT Int'l	ITT		51.60	3	3	16.6	1.0	Diversified Co.	33
383	CBRE Group	CBRE		46.48	3	2	14.6	NIL	Industrial Services	54	1714	IDEX Corp.	IDEX		136.37	2	1	26.7	1.3	Machinery	22
2390	CDK Global Inc.	CDK		64.89	3	3	22.1	1.0	Advertising	31	212	IDEXX Labs.	IDXX		204.96	3	3	50.0	NIL	Med Supp Non-Invasive	42
764	CNA Fin'l	CNA		48.64	2	3	12.2	2.5	Insurance (Prop/Cas.)	53	735	Illinois Tool Works	ITW		144.49	1	2	18.8	2.2	Metal Fabricating	68
1326	CTS Corp.	CTS		31.10	3	4	22.2	0.5	Electronics	50	574	Innospec Inc. ▼	IOSP		73.25	3	3	16.8	1.2	Chemical (Specialty)	15
2445	Cabot Corp. ▲	CBT		60.00	3	3	14.6	2.2	Chemical (Diversified)	3	1639	Inspenly Inc.	NSP		83.80	3	4	33.5	1.0	Human Resources	11
566	Cabot Microelectr's	CMCP		108.57	3	3	24.1	1.5	Chemical (Specialty)	15	1333	Integer Holdings ▲	ITGR		65.55	3	3	19.6	NIL	Electronics	50
2592	Cadence Design Sys.	CDNS		40.90	3	4	24.9	NIL	Computer Software	27	1358	Integrated Device	IDTI		29.69	3	2	17.8	NIL	Semiconductor	9
1907	Caiaivo Growers	CVGW		94.45	3	3	31.0	1.0	Food Processing	66	1799	Intercontinental Exch. ▲	ICE		70.07	2	2	20.0	1.4	Brokers & Exchanges	20
2156	Caleres Inc.	CAL		33.57	3	1	13.7	0.8	Shoe	61	2596	Intuit Inc.	INTU		190.17	2	3	35.0	0.8	Computer Software	27
529	Callon Petroleum	CPE		14.18	4	3	16.9	NIL	N												

ROE and ROR Analysis Columbia Gas of PA
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Value Line Projected Growth Rate

Docket No. R-2018-2647577
Exhibit MFG-11, Schedule 3

May 18, 2018

SUMMARY AND INDEX • THE VALUE LINE INVESTMENT SURVEY

Page 29

Continued from preceding page

TIMELY STOCKS

Stocks Ranked 2 (Above Average) for Relative Price Performance in the Next 12 Months

Page No.	Stock Name	Recent Price	Technical	P/E	Est'd	Current %	Industry Group	Industry Rank	Page No.	Stock Name	Recent Price	Technical	P/E	Est'd	Current %	Industry Group	Industry Rank		
2362	Marcus Corp.	MCS	31.80	3	2	18.2	1.9	Hotel/Gaming	25	2370	Scientific Games ▼	SGMS	51.20	5	4	NMF	NIL	Hotel/Gaming	25
1802	MarketAxess Holdings	MKTX	203.30	3	2	43.3	0.8	Brokers & Exchanges	20	1406	Seagate Technology	STX	56.49	3	1	13.3	4.5	Computers/Peripherals	37
2363	Marnott Int'l	MAR	139.31	3	3	26.3	1.2	Hotel/Gaming	25	816	Select Med. Hldgs.	SEM	18.15	3	3	17.3	NIL	Medical Services	7
1112	Masco Corp.	MAS	38.18	3	3	15.6	1.1	Building Materials	19	132	Sensata Techn. pic	ST	51.29	3	1	14.1	NIL	Precision Instrument	47
2572	MasterCard Inc.	MA	196.53	1	3	33.1	0.5	Financial Svcs. (Div.)	16	1841	Service Corp. Int'l	SCI	36.31	3	3	20.0	1.9	Funeral Services	4
1361	Maxim Integrated	MXIM	56.45	3	3	20.2	3.0	Semiconductor	9	1831	Shopify Inc.	SHOP	143.31	4	3	NMF	NIL	E-Commerce	29
813	Medidata Solutions	MDSO	76.93	3	4	44.0	NIL	Medical Services	7	2341	Sinus XM Holdings	SIRI	6.63	4	3	26.5	0.7	Entertainment	40
1928	Medfast, Inc.	MED	118.50	3	3	37.0	1.6	Food Processing	56	1374	Skyworks Solutions ▼	SWKS	96.62	3	3	12.8	1.3	Semiconductor	9
1953	Metro Inc.	MRU.TO	40.59	2	4	15.9	1.8	Retail/Wholesale Food	57	1728	Smith (A.O.)	ACS	62.98	3	2	24.2	1.1	Machinery	22
1366	Monolithic Power Sys.	MPWR	124.11	3	3	47.7	1.0	Semiconductor	9	1729	Snap-on Inc.	SNA	147.90	2	4	12.8	2.2	Machinery	22
445	Moody's Corp.	MCO	167.89	3	3	21.8	1.0	Information Services	24	1983	SodaStream Int'l	SODA	91.89	3	2	25.8	NIL	Beverage	38
720	Moog Inc. 'A'	MOGA	84.30	3	2	18.2	1.2	Aerospace/Defense	43	1991	Sony Corp. ADR	SNE	47.39	3	3	21.8	0.5	Foreign Electronics	28
1810	Morgan Stanley	MS	53.38	3	2	10.9	1.9	Investment Banking	6	556	Spire Inc.	SR	69.50	2	3	18.7	3.2	Natural Gas Utility	17
955	Motorola Solutions ▲	MSI	107.84	3	3	16.3	2.0	Telecom. Equipment	88	725	Spirit AeroSystems	SPR	84.96	3	2	13.4	0.6	Aerospace/Defense	43
1131	NVR, Inc.	NVR	3089.76	2	3	16.5	NIL	Homebuilding	5	2605	Square, Inc.	SQ	53.32	4	2	NMF	NIL	Computer Software	27
1980	National Beverage	FIZZ	87.74	3	2	24.2	NIL	Beverage	38	590	Staple Company	SCL	69.08	3	2	16.0	1.4	Chemical (Specialty)	15
220	Neogen Corp.	NEOG	71.83	3	3	63.0	NIL	Med Supp Non-Invasive	42	1813	Stifel Financial Corp.	SF	59.89	3	3	12.0	0.8	Investment Banking	6
2337	Netflix, Inc.	NFLX	326.89	3	3	NMF	NIL	Entertainment	40	1117	Summit Materials ▼	SUM	29.86	3	2	18.7	NIL	Building Materials	19
2005	New Orient. Ed. ADS	EDU	92.25	3	3	35.2	NIL	Educational Services	63	522	Suncor Energy	SU.TO	49.79	3	4	18.8	2.9	Petroleum (Integrated)	56
1722	Nordson Corp.	NDSN	131.72	3	2	20.6	1.0	Machinery	22	2529	SunTrust Banks	STI	67.25	3	3	13.1	2.5	Bank	18
348	Norfolk Southern	NSC	146.09	3	2	16.8	2.0	Railroad	36	406	SYNNEX Corp.	SNX	108.36	3	4	10.4	1.3	Industrial Services	54
326	Old Dominion Freight	ODFL	141.42	3	2	24.2	0.4	Trucking	35	2607	Synopsys, Inc.	SNPS	89.05	1	3	23.7	NIL	Computer Software	27
2148	Ollie's Bargain Outlet	OLLI	62.95	3	3	17.0	NIL	Retail Store	48	1959	Sysco Corp.	SY	62.74	1	3	18.8	2.3	Retail/Wholesale Food	57
2599	Oracle Corp.	ORCL	45.94	1	3	34.4	1.7	Computer Software	27	2216	TJX Companies	TJX	82.58	1	2	19.0	1.9	Retail (Softlines)	52
2130	O'Reilly Automotive	ORLY	265.74	2	2	17.3	NIL	Retail Automotive	14	1134	TRI Pointe Group	TPH	17.65	3	2	9.3	NIL	Homebuilding	5
914	Otter Tail Corp.	OTTR	43.90	2	3	23.1	3.1	Electric Util. (Central)	45	1135	Taylor Morrison Home	TMHC	23.15	3	3	9.3	NIL	Homebuilding	5
1114	Owens Corning	OC	66.21	3	1	11.9	1.3	Building Materials	19	1592	Teck Resources 'B' ▲	TECKB.TO	32.97	4	2	6.3	0.6	Metals & Mining (Div.)	65
2522	PNC Financial Serv.	PNC	147.53	2	2	14.1	2.0	Bank	18	726	Teledyne Technologies ▲	TDY	197.01	3	2	25.6	NIL	Aerospace/Defense	43
166	PACCAR Inc.	PCAR	64.25	2	2	11.3	3.6	Heavy Truck & Equip	30	1002	Tenneco Inc.	TEN	45.89	3	3	6.1	2.2	Auto Parts	10
1989	Panasonic Corp.	PCRFY	14.60	3	2	15.7	1.8	Foreign Electronics	28	1377	Texas Instruments	TXN	105.46	1	3	20.8	2.4	Semiconductor	9
1768	Parker-Hannifin	PH	171.11	2	3	16.1	1.8	Diversified Co.	33	374	Texas Roadhouse	TXRH	63.84	3	3	23.6	1.6	Restaurant	59
1828	Paylocity Holding	PCTY	56.85	4	3	68.5	NIL	E-Commerce	29	740	Timken Co.	TKR	48.15	3	3	12.0	2.3	Metal Fabricating	38
2574	PayPal Holdings	PYPL	75.72	3	2	43.3	NIL	Financial Svcs. (Div.)	16	1561	Torchmark Corp.	TMK	85.04	1	3	14.1	0.8	Insurance (Life)	64
2367	Penn Nat'l Gaming	PENN	31.77	3	3	19.9	NIL	Hotel/Gaming	25	1732	Toro Co.	TTC	59.66	2	2	21.8	1.3	Machinery	22
2131	Penske Auto	PAG	46.88	3	3	9.2	3.0	Retail Automotive	14	2580	Total System Svcs.	TSS	87.31	3	3	29.6	0.6	Financial Svcs. (Div.)	16
970	PetMed Express	PETS	33.99	3	1	16.7	2.9	Pharmacy Services	2	1004	Tower International ▼	TOWR	28.15	3	3	7.2	1.7	Auto Parts	10
635	Phillips 66 Partners	PSXP	48.79	3	5	14.4	5.9	Pipeline MLPs	79	111	Toyota Motor ADR	TM	130.90	2	3	9.3	3.5	Automotive	44
1934	Pinnacle Foods	PF	62.88	3	3	21.7	2.3	Food Processing	66	449	TransUnion	TRU	68.56	3	4	27.2	0.4	Information Services	24
2316	Planet Fitness	PLNT	40.65	3	3	33.9	NIL	Recreation	23	1119	Trex Co.	TREX	117.52	3	2	29.4	NIL	Building Materials	19
2318	Pool Corp.	POOL	143.93	2	3	32.7	1.3	Recreation	23	1646	TriNet Group	TNET	52.56	3	4	20.2	NIL	Human Resources	11
772	Progressive Corp.	PGR	61.16	2	3	15.4	1.8	Insurance (Prop/Cas)	53	2452	Trnseo S.A. ▼	TSE	74.50	3	3	8.7	1.9	Chemical (Diversified)	3
1723	RBC Bearings	ROLL	120.43	3	2	26.6	NIL	Machinery	22	2631	Tyler Technologies	TYL	223.88	3	3	46.7	NIL	IT Services	8
1160	RH	RH	101.25	4	2	21.3	NIL	Furn/Home Furnishings	74	416	US Ecology	ECOL	59.10	3	3	26.9	1.2	Environmental	49
2435	RPC Inc.	RES	18.87	3	4	14.5	2.6	Oilfield Svcs/Equip	94	2195	Ultra Beauty	ULTA	249.23	3	5	23.2	NIL	Retail (Hardlines)	55
587	RPM Int'l	RPM	49.31	3	4	15.0	2.6	Chemical (Specialty)	15	350	Union Pacific	UNP	137.09	1	3	18.0	2.1	Railroad	36
588	Rayonier Advanced Mat. ▲	RYAM	18.49	4	2	9.2	1.5	Chemical (Specialty)	15	754	U.S. Steel Corp.	X	34.60	4	3	8.9	0.6	Steel	13
2602	Red Hat, Inc.	RHT	168.60	3	4	73.9	NIL	Computer Software	27	820	Universal Health Sv 'B'	UHS	115.95	3	2	12.1	0.3	Medical Services	7
2524	Regions Financial	RF	18.97	3	3	13.6	2.1	Bank	18	2371	Vail Resorts	MTN	228.55	3	3	29.0	2.6	Hotel/Gaming	25
750	Reliance Steel	RS	91.74	3	3	15.0	2.2	Steel	13	848	Vertex Pharmac.	VRTX	148.27	3	1	63.1	NIL	Biotechnology	67
413	Republic Services ▲	RSG	67.73	2	2	22.2	2.1	Environmental	49	2581	Visa Inc.	V	129.90	1	3	28.2	0.7	Financial Svcs. (Div.)	16
370	Restaurant Brands Int'l	OSR	55.48	3	3	19.5	3.2	Restaurant	59	2609	VMware, Inc.	VMW	136.50	3	3	28.8	NIL	Computer Software	27
403	Rollins, Inc.	ROL	49.91	2	3	45.4	1.1	Industrial Services	54	937	Vodafone Group ADR	VOD	28.56	3	3	19.0	6.4	Telecom. Services	76
1726	Roper Tech.	ROP	271.70	1	2	29.8	0.6	Machinery	22	1007	WABCO Hldgs.	WBC	130.53	3	2	18.6	NIL	Auto Parts	10
2215	Ross Stores	ROST	80.84	2	2	20.2	1.1	Retail (Softlines)	52	916	WEC Energy Group	WEC	62.13	1	3	18.8	3.6	Electric Util. (Central)	45
2525	Royal Bank of Canada	RY.TO	98.88	1	3	11.4	3.9	Bank	18	1509	Washington Federal	WAFD	32.00	3	2	13.2	2.1	Thrift	83
2132	Rush Enterprises 'A'	RUSA	41.49	3	3	14.5	NIL	Retail Automotive	14	418	Waste Management	WM	83.07	1	2	20.2	2.2	Environmental	49
447	S&P Global	SPGI	194.83	2	3	22.8	1.0	Information Services	24	1735	Watts Water Techn.	WTS	76.80	3	3	21.0	1.1	Machinery	22
2629	SEI Investments	SEIC	62.98	2	1	20.3	1.0	IT Services	8	2532	Webster Fin'l	WBS	62.66	3	3	18.3	2.1	Bank	18
2577	SLM Corporation	SLM	11.52	3	3	11.5	NIL	Financial Svcs. (Div.)	16	821	WellCare Health Plans	WCG	214.94	3	3	21.9	NIL	Medical Services	7
1727	SPX FLOW, Inc.	FLOW	43.04	3	2	17.6	NIL	Machinery	22	2584	WEX Inc.	WEX	170.23	3	3	29.9	NIL	Financial Svcs. (Div.)	16
2604	SS&C Techn. Hldgs	SSNC	49.21	3	2	21.4	0.6	Computer Software	27	794	Wintrust Financial	WTFX	92.74	3	3	16.5	0.8	Bank (Midwest)	21
2526	SVB Fin'l Group	SIVB	312.73	3	4	20.2	NIL	Bank	18	2586	Worldpay, Inc.	WP	83.76	3	3	45.3	NIL	Financial Svcs. (Div.)	16
1018	Sally Beauty	SBH	14.97	3	4	7.3	NIL	Toiletries/Cosmetics	58	1737	Xylem Inc.	XYL	70.85	3	2	23.6	1.2	Machinery	22
752	Schnitzer Steel	SCHN	29.75	3	1	9.4	2.5	Steel	13	2534	Zions Bancorp.	ZION	55.95	3	3	14.5	1.7	Bank	18
1804	Schwab (Charles)	SCHW	57.30	3	3	25.5	0.7	Brokers & Exchanges	20	1633	Zoetis Inc.	ZTS	82.00	2	2	26.9	0.6	Drug	69

ROE and ROR Analysis Columbia Gas of PA
CAPM/ECAPM Analysis
Value Line Projected Growth Rate

Docket No. R-2018-2647577
Exhibit MFG-11, Schedule 3

Page 30

SUMMARY AND INDEX - THE VALUE LINE INVESTMENT SURVEY

May 18, 2018

Stocks Ranked 1 (Highest) for Relative Safety

Page No.	Stock Name	Recent Price	Time-liness	Rank	Current P/E Ratio	% Est'd Yield	Industry Group	Industry Rank	Page No.	Stock Name	Recent Price	Time-liness	Rank	Current P/E Ratio	% Est'd Yield	Industry Group	Industry Rank	
1966	AB InBev ADR	98.24	-	-	20.7	4.5	Beverage	38	718	Lockheed Martin	324.19	2	3	21.3	2.5	Aerospace/Defense	43	
919	AT&T Inc.	31.70	3	3	9.3	6.3	Telecom. Services	76	912	MGE Energy	(NDQ)	5	5	24.8	2.3	Electric Util. (Central)	45	
197	Abbott Labs	58.71	2	2	20.6	1.9	Med Supp Non-Invasive	42	769	Market Corp.	1134.83	5	3	54.7	NIL	Insurance (Prop/Cas.)	53	
2612	Accenture Plc	151.94	2	3	20.9	1.9	IT Services	8	2571	Marsh & McLennan	81.16	2	2	18.1	1.6	Financial Svcs. (Div.)	16	
2443	Air Products & Chem	163.51	3	2	21.9	2.7	Chemical (Diversified)	3	2572	MasterCard Inc.	190.53	2	3	33.1	0.5	Financial Svcs. (Div.)	16	
757	Allegheny Corp	573.09	3	1	17.9	NIL	Insurance (Prop/Cas.)	53	1927	McCormick & Co.	104.39	3	3	21.3	2.0	Food Processing	66	
758	Allstate Corp	95.71	2	3	10.3	1.9	Insurance (Prop/Cas.)	70	366	McDonald's Corp.	164.77	3	3	21.7	2.5	Restaurant	59	
2634	Alphabet Inc	(NDQ)	1053.91	2	27.2	NIL	Internet	53	185	Medtronic plc	83.20	3	4	16.5	2.3	Med Supp Invasive	51	
2613	Amdocs Ltd	(NDQ)	67.66	3	21.3	1.5	IT Services	6	1621	Merck & Co.	56.76	3	4	13.7	3.4	Drug	69	
905	Amer. Elec. Power	67.25	4	4	17.2	3.8	Electric Util. (Central)	45	2597	Microsoft Corp.	(NDQ)	3	3	24.3	1.8	Computer Software	27	
2540	Amer. Express	99.74	3	2	13.7	1.5	Financial Svcs. (Div.)	16	2450	Monsanto Co	124.93	-	-	48.4	1.7	Chemical (Diversified)	3	
833	Amgen	(NDQ)	168.49	3	12.7	3.2	Biotechnology	57	1930	Nestle SA ADS	76.67	5	3	24.3	3.1	Food Processing	66	
2543	Aon plc	(NDQ)	140.91	3	17.6	1.1	Financial Svcs. (Div.)	16	550	New Jersey Res.	43.00	1	4	16.0	2.5	Natural Gas Utility	77	
761	Arch Capital Group	(NDQ)	79.99	3	12.8	NIL	Insurance (Prop/Cas.)	53	146	NextEra Energy	159.91	3	2	20.6	2.9	Electric Utility (East)	13	
548	Atmos Energy	87.75	3	3	21.5	2.3	Natural Gas Utility	17	211	NIKE, Inc. B'	68.46	4	2	27.2	1.2	Shoe	61	
2614	Automatic Data Proc.	(NDQ)	125.77	3	24.4	2.2	IT Services	8	721	Northrop Grumman	329.27	3	2	21.3	1.3	Aerospace/Defense	43	
2509	Bank of Nova Scotia	(TSE)	79.55	3	11.2	4.2	Bank	18	552	Northwest Nat. Gas	61.40	5	5	25.1	3.1	Natural Gas Utility	17	
172	Baxter Int'l Inc.	69.45	1	3	23.9	1.1	Med Supp Invasive	51	1624	Novartis AG ADR	77.14	3	2	21.9	3.8	Drug	69	
173	Becton, Dickinson	221.35	3	3	19.3	1.4	Med Supp Invasive	51	1211	Nuveen Muni Value Fund	9.54	-	3	NMF	4.2	Investment Co.	51	
1176	Bemis Co.	42.38	4	3	15.6	2.9	Packaging & Container	32	2599	Oracle Corp.	45.94	2	3	14.4	1.7	Computer Software	27	
762	Berkley (W.R.)	75.33	3	3	20.1	0.7	Insurance (Prop/Cas.)	53	2451	PPG Inds.	106.68	4	2	16.3	1.7	Chemical (Diversified)	3	
763	Berkshire Hathaway B'	196.24	3	1	32.2	NIL	Insurance (Prop/Cas.)	53	2628	Paychex, Inc.	(NDQ)	61.59	3	2	23.0	3.6	IT Services	38
634	Bio-Techne Corp	(NDQ)	149.12	3	62.9	0.9	Biotechnology	87	1981	PepsiCo, Inc.	96.79	5	2	17.3	3.8	Beverage	8	
706	Boeing	338.37	2	2	21.1	2.0	Aerospace/Defense	43	1629	Pfizer, Inc.	34.98	3	2	17.5	3.9	Drug	69	
2547	Brown & Brown	27.40	2	3	21.9	1.1	Financial Svcs. (Div.)	16	2232	Pinnacle West Capital	78.30	4	4	17.4	3.7	Electric Utility (West)	81	
1968	Brown-Forman B'	55.45	2	3	32.1	1.3	Beverage	38	585	Praxair Inc.	154.00	-	-	23.2	2.2	Chemical (Specialty)	15	
966	CVS Health	60.71	1	4	9.6	3.3	Pharmacy Services	2	2575	Price (T. Rowe) Group	(NDQ)	114.17	1	3	15.7	2.5	Financial Svcs. (Div.)	16
2510	Can. Imperial Bank	(TSE)	113.72	3	9.6	4.8	Bank	18	1198	Procter & Gamble	71.44	5	3	16.2	4.0	Household Products	66	
1985	Canon Inc. ADR	34.72	4	2	14.8	3.5	Foreign Electronics	28	148	Public Serv. Enterprise	51.08	3	3	16.5	3.6	Electric Utility (East)	73	
1818	Check Point Software	(NDQ)	99.93	3	4	18.8	NIL	E-Commerce	29	1538	Public Storage	210.03	5	4	29.0	4.0	R.E.I.T.	93
507	Chevron Corp.	126.57	3	3	20.3	3.5	Petroleum (Integrated)	56	723	Raytheon Co.	210.40	3	3	21.5	1.6	Aerospace/Defense	43	
765	Chubb Ltd.	132.84	4	3	12.5	2.1	Insurance (Prop/Cas.)	53	724	Rockwell Collins	133.30	-	-	18.5	1.0	Aerospace/Defense	43	
1190	Church & Dwight	47.73	3	3	21.2	1.8	Household Products	66	1726	Roper Tech.	271.70	2	2	29.8	0.6	Machinery	22	
945	Cisco Systems	(NDQ)	45.71	3	16.7	2.9	Telecom. Equipment	88	2525	Royal Bank of Canada	(TSE)	98.88	2	3	11.4	3.9	Bank	18
1969	Coca-Cola	41.81	4	3	19.9	3.7	Beverage	38	1630	Sanofi ADR	38.66	5	3	16.6	4.7	Drug	69	
1192	Colgate-Palmolive	62.28	4	3	20.0	2.7	Household Products	86	1937	Saputo Inc.	(TSE)	42.05	4	4	19.9	1.5	Food Processing	66
782	Commerce Bancshs.	(NDQ)	64.83	2	19.8	1.4	Bank (Midwest)	21	1939	Smucker (J.M.)	112.85	3	1	14.2	2.8	Food Processing	66	
140	Consol. Edison	76.23	3	4	17.9	3.8	Electric Utility (East)	73	2173	Stamps.com	57.67	3	3	22.3	2.3	Restaurant	57	
2139	Costco Wholesale	(NDQ)	194.48	3	27.7	1.2	Retail Store	48	190	Stryker Corp.	166.62	3	3	31.7	1.1	Med Supp Invasive	51	
157	Deere & Co.	142.07	2	1	14.5	1.7	Heavy Truck & Equip	30	2607	Synopsys, Inc.	(NDQ)	89.05	2	3	23.7	NIL	Computer Software	27
1975	Diageo plc	143.90	3	3	25.7	2.2	Beverage	38	1959	Sysco Corp.	62.74	2	3	18.8	2.3	Retail/Wholesale Food	57	
2330	Disney (Walt)	101.79	2	4	15.4	1.7	Entertainment	40	2216	TJX Companies	82.58	2	2	17.0	1.9	Retail (Softlines)	52	
568	Ecotab Inc.	145.49	3	3	26.9	1.1	Chemical (Specialty)	15	1777	Texas Instruments	(NDQ)	105.46	2	3	20.8	2.4	Semiconductor	57
1305	Emerson Electric	69.76	3	2	22.5	2.8	Electrical Equipment	39	1377	3M Company	201.74	3	2	19.3	2.7	Diversified Co.	33	
2027	Everest Re Group Ltd.	227.17	4	1	10.6	2.3	Reinsurance	96	1940	Tootsie Roll	28.25	5	3	28.3	1.2	Food Processing	66	
143	Eversource Energy	57.32	4	4	17.6	3.6	Electric Utility (East)	73	1561	Torchmark Corp.	85.04	2	3	14.1	0.8	Insurance (Life)	34	
388	Expeditors Intl	(NDQ)	69.58	3	24.4	1.3	Industrial Services	54	2531	Toronto-Dominion	(TSE)	73.53	1	3	12.4	3.7	Bank	18
509	Exxon Mobil Corp.	78.09	4	5	16.6	4.2	Petroleum (Integrated)	56	202	Total ADR	61.67	3	3	13.7	4.8	Petroleum (Integrated)	56	
1523	Federal Rty. Inv. Trust	117.78	5	4	37.4	3.4	R.E.I.T.	91	775	Travelers Cos.	128.66	3	1	12.1	2.4	Insurance (Prop/Cas.)	53	
309	FedEx Corp.	241.95	1	3	13.5	1.0	Air Transport	43	1944	Unilever PLC ADR	54.73	3	2	19.9	3.5	Food Processing	66	
2561	Gallagher (Arthur J.)	68.71	3	2	20.5	2.4	Financial Svcs. (Div.)	16	350	Union Pacific	137.09	2	3	18.0	2.1	Railroad	46	
712	Gen'l Dynamics	199.62	1	1	18.3	1.9	Aerospace/Defense	43	316	United Parcel Serv.	111.27	3	5	15.3	3.3	Air Transport	31	
1914	Gen'l Mills	42.30	3	3	13.6	4.8	Food Processing	66	793	U.S. Bancorp	50.33	3	3	12.6	2.5	Bank (Midwest)	21	
989	Genuine Parts	88.78	-	-	15.9	3.2	Auto Parts	10	1779	United Technologies	121.79	2	2	16.9	2.3	Diversified Co.	33	
1616	GlaxoSmithKline ADR	39.61	4	4	20.7	6.4	Drug	69	819	UnitedHealth Group	232.03	1	3	18.2	1.3	Medical Services	7	
1807	Goldman Sachs	237.00	2	1	9.9	1.4	Investment Banking	6	183	Vanan Medical Sys.	116.97	3	3	27.8	NIL	Med Supp Invasive	51	
1310	Granger (W.W.)	290.07	3	2	20.2	1.9	Electrical Equipment	39	936	Verizon Commun.	47.02	3	3	10.2	5.0	Telecom. Services	76	
2624	Henry (Jack) & Assoc.	(NDQ)	122.13	3	33.2	1.2	IT Services	8	2581	Vesa Inc.	129.90	2	3	28.2	0.7	Financial Svcs. (Div.)	16	
1140	Home Depot	185.04	2	3	19.8	2.2	Retail Building Supply	26	2158	Wegman Group	62.12	2	3	18.8	3.6	Electric Util. (Central)	45	
1756	Honeywell Intl	144.23	2	2	18.0	2.1	Diversified Co.	33	2558	WGL Holdings Inc.	87.65	-	-	21.6	2.4	Natural Gas Utility	17	
735	Illinois Tool Works	144.49	2	2	18.8	2.2	Metal Fabricating	68	514	Walmart Inc.	85.74	4	2	17.3	2.4	Retail Store	48	
1359	Intel Corp.	(NDQ)	53.63	1	15.1	2.2	Semiconductor	9	418	Waste Management	83.07	2	2	20.2	2.2	Environmental	49	
1400	Intl Business Mach.	143.00	5	4	12.4	4.4	Computers/Peripherals	37	2235	Xcel Energy Inc.	(NDQ)	45.00	3	4	18.4	3.4	Electric Utility (West)	81
575	Intl Flavors & Frag.	126.49	3	3	20.1	2.3	Chemical (Specialty)	15										
1921	J&J Snack Foods	(NDQ)	135.50	3	27.3	1.3	Food Processing	66										
215	Johnson & Johnson	122.61	3	2	17.5	2.9	Med Supp Non-Invasive	42										
1922	Kellogg	60.30	3	3	13.6	3.7	Food Processing	66										
1196	Kimberly-Clark	101.85	3	3	14.8	3.9	Household Products	86										
811	Laboratory Corp.	170.00	1	3	14.8	NIL	Medical Services	7										
1618	Lilly (Eli)	78.86	3	4	15.4	2.9	Drug	69										

Stocks Ranked 2 (Above Average) for Relative Safety

Page No.	Stock Name	Recent Price	Time-liness	Rank	Current P/E Ratio	% Est'd Yield	Industry Group	Industry Rank	Page No.	Stock Name	Recent Price	Time-liness	Rank
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ROE and ROR Analysis Columbia Gas of PA
CAPM/ECAPM Analysis
Value Line Projected Growth Rate

Docket No. R-2018-2647577
Exhibit MFG-11, Schedule 3

May 18, 2018

SUMMARY AND INDEX • THE VALUE LINE INVESTMENT SURVEY

Page 31

Continued from preceding page

Stocks Ranked 2 (Above Average) for Relative Safety

Page No.	Stock Name	Recent Price	Rank	Current	Time-liness	Technical	P/E	% Est'd	Industry Group	Industry Rank	Page No.	Stock Name	Recent Price	Rank	Current	Time-liness	Technical	P/E	% Est'd	Industry Group	Industry Rank
2138	Canadian Tire A' (TSE)	174.64	2	3	14.6	2.1			Retail Store	48	2522	PNC Financial Serv	147.53	2	14.1	2.0			Bank	18	
1502	Capitol Fed. Fin'l (NDO)	12.82	4	3	17.8	2.7			Thrift	83	147	PPL Corp.	27.45	4	12.2	6.0			Electric Utility (East)	73	
202	Cardinal Health	52.50	4	3	14.2	3.6			Med Supp Non-Invasive	42	166	PACCAR Inc. (NDO)	64.25	2	11.3	3.6			Heavy Truck & Equip	30	
1746	Carlisle Cos.	107.59	4	3	18.2	1.4			Diversified Co.	33	791	Park National (ASE)	113.20	3	15.5	3.4			Bank (Midwest)	21	
155	Caterpillar Inc.	149.93	2	2	13.9	2.1			Heavy Truck & Equip	30	1768	Parker-Hannifin	171.11	2	16.1	1.8			Diversified Co.	33	
825	Cerner Corp. (NDO)	58.76	4	4	23.5	NIL			Healthcare Information	77	1507	People's United Fin'l (NDO)	18.47	3	14.8	3.8			Thrift	83	
549	Chesapeake Utilities	76.00	3	4	25.8	1.8			Natural Gas Utility	77	1995	Philip Morris Int'l	80.81	5	15.2	5.3			Tobacco	95	
801	Cigna Corp.	170.70	2	3	13.3	NIL			Medical Services	53	520	Phillips 66	116.25	3	22.5	2.8			Petroleum (Integrated)	56	
766	Cincinnati Financial (NDO)	70.18	3	2	22.5	3.0			Insurance (Prop/Cas.)	53	2318	Pool Corp. (NDO)	143.93	2	3	32.7	1.3			Recreation	23
385	Cintas Corp.	176.64	2	3	27.6	1.0			Industrial Services	54	2233	Portland General	41.34	4	18.8	3.5			Electric Utility (West)	81	
1191	Clorox Co.	118.71	4	3	19.7	3.2			Household Products	86	1558	Power Financial (TSE)	32.72	3	4	10.4	5.3			Insurance (Life)	34
1021	Cogeco Communic. (TSE)	68.93	3	4	12.1	2.8			Cable TV	62	772	Progressive Corp.	61.16	2	3	15.4	1.8			Insurance (Prop/Cas.)	53
2618	Cognizant Technology (NDO)	75.55	1	2	16.8	1.1			IT Services	8	958	Qualcomm Inc. (NDO)	52.86	3	3	16.5	4.7			Telecom. Equipment	88
1022	Comcast Corp. (NDO)	30.59	1	2	12.5	2.5			Cable TV	62	815	Quest Diagnostics	99.87	3	3	15.1	2.0			Medical Services	7
1909	Conagra Brands	37.40	2	2	16.8	2.3			Food Processing	66	1539	Realty Income Corp.	52.46	3	3	43.7	5.1			R.E.I.T.	93
204	Cooper Cos.	228.80	2	3	22.4	NIL			Med Supp Non-Invasive	42	1560	Reinsurance Group	153.74	3	3	13.9	1.4			Insurance (Life)	34
2125	Copart, Inc. (NDO)	53.20	2	3	28.0	NIL			Retail Automotive	59	2030	RenaissanceRe Hldgs.	127.45	4	3	12.6	1.0			Renaissance	96
357	Cracker Barrel (NDO)	166.58	2	2	16.9	3.0			Restaurant	14	413	Republic Services	67.73	2	2	22.2	2.1			Environmental	49
156	Cummins Inc.	145.99	3	2	12.1	3.0			Heavy Truck & Equip	30	1645	Robert Half Int'l	62.76	3	3	19.3	1.8			Human Resources	11
1206	DNP Select Inc. Fund	10.80	2	3	NMF	2.8			Investment Co.	-	1313	Rockwell Automation	175.09	3	3	21.9	2.1			Electrical Equipment	39
908	DTE Energy	101.10	2	3	17.4	3.6			Electric Util. (Central)	45	403	Rollins, Inc.	49.91	2	3	45.4	1.1			Industrial Services	54
1750	Danaher Corp.	99.18	2	2	24.2	0.6			Diversified Co.	33	2215	Ross Stores (NDO)	80.84	2	2	20.2	1.1			Retail (Softlines)	52
178	Dentistry Strong (NDO)	44.47	4	2	16.8	0.8			Med Supp Invasive	51	521	Royal Dutch Shell 'B'	73.01	3	4	17.3	5.1			Petroleum (Integrated)	56
1033	Deutsche Telekom ADR(PNK)	17.23	2	4	17.2	3.7			Telecom. Utility	84	447	S&P Global	194.83	2	3	22.6	1.0			Information Services	24
2551	Discover Fin'l Svcs. (NDO)	72.87	2	2	9.4	1.9			Financial Svcs. (Div.)	16	2603	SAP SE	114.80	3	4	26.4	1.4			Computer Software	27
2011	Dobly Labs	61.79	4	3	25.6	1.0			Entertainment Tech	90	2629	SEI Investments (NDO)	62.98	2	1	20.3	1.0			IT Services	8
141	Dominion Energy	63.14	3	3	17.3	5.6			Electric Utility (East)	73	2437	Schlumberger Ltd.	69.54	4	4	34.8	2.9			Oilfield Svcs/Equip	94
1710	Donaldson Co.	46.57	3	3	21.7	1.5			Machinery	22	2234	Sempra Energy	106.44	4	4	19.4	3.4			Electric Utility (West)	81
1711	Dover Corp.	93.74	2	2	16.0	2.0			Machinery	22	1938	Sensient Techn.	69.35	4	4	18.3	2.0			Food Processing	66
1599	DowDuPont Inc.	64.23	2	2	17.7	2.5			Chemical (Basic)	64	1028	Shaw Comm'n. 'B' (TSE)	25.68	4	4	38.9	4.7			Cable TV	62
1976	Dr Pepper Snapple	119.46	2	2	26.7	2.0			Beverage	38	1143	Sherwin-Williams	377.94	1	2	20.1	0.9			Retail Building Supply	36
142	Duke Energy	77.88	3	4	16.2	4.7			Electric Utility (East)	73	1774	Siemens AG (ADS) (PNK)	65.45	3	3	14.0	3.4			Diversified Co.	23
986	Eaton Corp. plc	74.82	3	2	14.5	3.5			Auto Parts	10	1543	Simon Property Group	158.75	3	4	22.6	5.1			R.E.I.T.	93
2225	Edison Int'l	61.11	3	4	13.4	4.1			Electric Utility (West)	81	1729	Snap-on Inc.	147.90	2	4	12.8	2.2			Machinery	22
2226	El Paso Electric	55.10	3	5	22.5	2.6			Electric Utility (West)	81	1186	Sonoco Products	52.29	3	5	16.2	3.1			Packaging & Container	32
1218	Emera Inc. (TSE)	40.87	3	4	14.9	5.5			Power	95	554	South Jersey Inds	31.67	3	5	15.8	3.6			Natural Gas Utility	17
1520	Equity Residential	62.14	4	4	37.7	3.5			R.E.I.T.	83	150	Southern Co.	44.15	3	4	15.2	5.5			Electric Utility (East)	73
767	Erie Indemnity (NDO)	114.39	3	3	28.6	2.9			Insurance (Prop/Cas.)	53	556	Spire Inc.	69.50	2	3	18.7	3.2			Natural Gas Utility	17
440	FactSet Research	194.11	1	1	27.2	1.3			Information Services	24	1730	Stanley Black & Decker	140.85	3	2	16.8	1.8			Machinery	22
1138	Fastenal Co. (NDO)	51.31	3	1	20.5	2.9			Retail Building Supply	26	189	STERIS plc	98.10	3	3	21.5	1.3			Med Supp Invasive	51
2555	Fidelity Nat'l Fin'l	37.64	2	2	14.2	3.2			Financial Svcs. (Div.)	16	2578	Sun Life Fin'l Svcs. (TSE)	52.88	3	3	11.9	3.6			Financial Svcs. (Div.)	16
2556	Fidelity Nat'l Info.	103.19	2	3	31.8	1.2			Financial Svcs. (Div.)	16	1343	TE Connectivity	92.92	1	1	16.2	1.9			Electronics	50
2823	Fiserv Inc. (NDO)	70.41	2	3	13.0	NIL			IT Services	8	1376	Taiwan Semic. ADR	39.18	1	1	16.3	3.2			Semiconductor	9
910	Fonix Inc. (TSE)	42.99	4	4	15.9	4.1			Electric Util. (Central)	45	2153	Target Corp.	69.42	4	2	13.1	3.6			Retail Store	48
120	Fortive Corp.	74.25	2	2	22.8	0.4			Precision Instrument	47	192	Teleflex Inc.	267.71	3	3	48.7	0.5			Med Supp Invasive	51
2560	Franklin Resources	33.31	4	3	9.9	2.9			Financial Svcs. (Div.)	16	934	TELUS Corporation (TSE)	45.95	3	3	17.3	4.6			Telecom. Services	76
806	Fresenius Medical ADR	50.14	4	2	17.6	1.2			Medical Services	7	133	Thermo Fisher Sc.	208.07	2	2	32.5	0.3			Precision Instrument	47
442	Gartner Inc.	130.53	2	4	34.4	1.8			Information Services	24	448	Thomson Reuters (TSE)	50.23	3	4	19.0	2.7			Information Services	24
768	Hanover Insurance	116.93	3	3	14.0	1.8			Insurance (Prop/Cas.)	53	2194	Tiffany & Co.	102.41	3	3	23.0	2.1			Retail (Hardlines)	55
1332	Harris Corp.	153.94	2	2	23.1	1.5			Electronics	50	1732	Toro Co.	59.86	2	2	21.8	1.3			Machinery	22
2563	Hartford Fin'l Svcs.	52.56	3	3	10.4	1.9			Financial Svcs. (Div.)	16	111	Toyota Motor ADR	130.90	2	3	9.3	3.5			Automotive	44
2227	Hawaiian Elec.	34.22	3	3	18.0	3.6			Electric Utility (West)	81	1213	Tri-Continental	26.71	3	3	NMF	4.0			Investment Co.	-
392	Healthcare Svcs. (NDO)	38.34	5	2	32.0	2.1			Industrial Services	66	48	UnFirst Corp.	48.35	3	5	19.0	2.2			Natural Gas Utility	17
1917	Hershey Co.	92.15	3	3	17.2	2.8			Food Processing	66	408	UnFirst Corp.	169.30	3	3	26.7	0.3			Industrial Services	54
1918	Hormel Foods	35.51	3	4	18.3	2.1			Food Processing	66	2117	V.F. Corp.	77.28	3	3	22.1	2.4			Apparel	71
1311	Hubbell Inc.	103.85	3	1	14.6	3.0			Electrical Equipment	39	915	Vectren Corp.	70.12	2	2	24.8	2.6			Electric Util. (Central)	45
324	Hunt (J.B.) (NDO)	118.81	3	3	22.0	0.8			Trucking	35	450	Versk Analytics (NDO)	103.62	3	3	24.6	NIL			Information Services	24
2228	IDACORP, Inc.	91.07	3	3	21.7	2.7			Electric Utility (West)	81	1202	WPP PLC ADR (NDO)	132.15	2	2	31.1	1.6			Household Products	86
1714	IDEX Corp.	136.37	2	1	26.7	1.3			Machinery	22	2977	WPP PLC ADR	84.85	3	4	10.6	3.7			Advertising	31
2625	Infosys Ltd. ADR	17.32	3	1	14.9	3.2			IT Services	8	2372	Walgreens Boots (NDO)	62.36	1	4	10.0	2.6			Pharmacy Services	2
1799	Intercontinental Exch.	70.07	2	2	20.0	1.4			Brokers & Exchanges	20	417	Waste Connections	74.80	3	3	31.8	0.8			Environmental	49
2596	Intuit Inc. (NDO)	190.17	2	3	35.0	0.8			Computer Software	27	135	Waters Corp.	192.27	3	3	23.4	NIL			Precision Instrument	47
2518	JPMorgan Chase	110.99	2	2	12.7	2.1			Bank	18	1146										

HIGHEST DIVIDEND YIELDING STOCKS (Based upon estimated year-ahead dividends per share)

Page No.	Stock Name	Recent Price	Time-liness	Safety Rank	Current P/E Ratio	Est'd Yield	Industry Group	Industry Rank	Page No.	Stock Name	Recent Price	Time-liness	Safety Rank	Current P/E Ratio	Est'd Yield	Industry Group	Industry Rank
624	Buckeye Partners LP	39.80	5	3	10.9	12.9	Pipeline MLPs	79	622	Antero Midstream Part.	26.74	2	3	14.9	6.4	Pipeline MLPs	79
630	Energy Transfer Part.	18.23	-	3	19.2	12.4	Pipeline MLPs	79	1029	BT Group ADR	16.16	3	3	8.8	6.4	Telecom. Utility	84
1030	CenturyLink Inc.	18.13	4	3	14.5	11.9	Telecom. Utility	79	1217	Covanta Holding Corp	15.65	3	3	NMF	6.4	Power	65
2174	GameStop Corp	12.79	4	3	4.4	11.9	Retail (Hardlines)	55	1616	GlaxoSmithKline ADR	39.61	4	1	20.7	6.4	Drug	69
1511	Annaly Capital Mgmt.	10.20	4	3	6.7	11.8	R.E.I.T.	93	2378	Quad/Graphics Inc.	18.70	3	4	9.0	6.4	Publishing	69
1582	Alliance Resource	18.00	4	3	7.7	11.6	Metals & Mining (Div.)	65	616	TransCanada Corp.	43.11	3	3	20.1	6.4	Oil/Gas Distribution	60
2659	Apollo Investment	5.42	5	3	7.9	11.1	Public/Private Equity	92	937	Vodafone Group ADR	28.56	2	3	19.0	6.4	Telecom. Services	76
638	Suburban Propane	22.44	3	3	13.9	10.7	Pipeline MLPs	79	1550	Welltower Inc.	55.14	5	3	23.0	6.4	R.E.I.T.	93
1517	DDR Corp	7.29	-	4	NMF	10.4	R.E.I.T.	93	919	AT&T Inc.	31.70	3	1	9.3	6.3	Telecom. Services	76
398	Macquarie Infra.	38.54	2	3	14.3	10.4	Industrial Services	54	1527	HCP Inc.	23.52	5	3	33.6	6.3	R.E.I.T.	93
631	EnLink Midstream Part.	15.75	3	4	39.4	9.9	Pipeline MLPs	79	1201	Tupperware Brands	43.43	5	3	9.4	6.3	Household Products	66
1226	Pattern Energy Group	17.98	4	3	40.0	9.9	Power	85	1766	National Presto Ind.	98.90	4	3	26.2	6.2	Diversified Co.	33
337	Sho Finance Int'l	14.45	5	4	13.8	9.7	Martime	97	1547	W.P. Carey Inc.	65.54	3	3	26.2	6.2	Electric Utility (East)	73
1204	Aberdeen Asia-Pac. Fd.	4.47	-	4	NMF	9.4	Investment Co.	97	147	PPL Corp.	27.45	4	2	12.2	6.0	R.E.I.T.	93
2663	Gladstone Capital	8.93	3	3	9.9	9.4	Public/Private Equity	92	1545	Ventas, Inc.	52.84	4	3	37.7	6.0	R.E.I.T.	93
620	AmeriGas Partners	42.21	3	3	22.8	9.2	Pipeline MLPs	79	1794	BGC Partners	12.29	-	3	10.2	5.9	Brokers & Exchanges	20
637	Spectra Energy Part.	32.13	-	3	9.1	9.2	Pipeline MLPs	79	2383	Gannett Co.	10.84	3	3	18.1	5.9	Newspaper	80
621	Andeavor Logistics LP	45.30	3	3	14.4	9.2	Pipeline MLPs	79	1505	New York Community	11.55	5	3	13.6	5.9	Thrift	83
2662	Compass Diversified	16.00	4	3	10.0	9.0	Public/Private Equity	92	635	Phillips 66 Partners	48.79	2	3	14.4	5.9	Pipeline MLPs	79
1209	Liberty All-Star	6.22	-	2	NMF	9.0	Investment Co.	92	1549	Wingarden Realty	27.41	3	3	14.8	5.8	R.E.I.T.	93
627	Enable Midstream Part.	14.28	4	4	14.7	8.9	Pipeline MLPs	79	102	Damier AG	79.50	3	3	6.9	5.7	Automotive	44
1417	Pitney Bowes	8.86	4	3	6.1	8.5	Office Equip/Supplies	75	1414	Essendant Inc.	9.88	-	3	39.5	5.7	Office Equip/Supplies	75
625	DCP Midstream LP	37.24	5	3	41.4	8.4	Pipeline MLPs	79	2394	Lamar Advertising	65.55	3	3	19.9	5.7	Advertising	31
626	EQT Midstream Part.	52.00	3	3	6.7	8.4	Pipeline MLPs	79	141	Dominion Energy	63.14	3	2	17.3	5.6	Electric Utility (East)	73
1210	MFS MultiMarket	5.72	-	4	NMF	8.4	Investment Co.	92	634	Mackay Midstream	68.33	3	3	16.9	5.6	Pipeline MLPs	79
1536	Fern. R.E.I.T.	10.12	5	3	33.7	8.4	R.E.I.T.	93	1218	Emera Inc.	40.87	3	2	14.9	5.5	Power	65
2392	Donnelley (R.R.) & Sons	6.28	5	3	6.1	8.3	Advertising	31	1770	Mercury General	45.14	5	2	17.7	5.5	Insurance (Prop/Cas.)	53
1516	CoreCivic, Inc.	20.87	5	3	14.4	8.2	R.E.I.T.	93	150	Southern Co.	44.15	3	2	15.2	5.5	Electric Utility (East)	73
1529	Hospitality Properties	26.21	4	3	17.8	8.1	R.E.I.T.	93	2307	Cedar Fair L.P.	65.62	3	3	18.4	5.4	Recreation	23
1531	Kimco Realty	14.45	3	3	14.5	7.9	R.E.I.T.	93	108	Nissin Motor ADR	20.39	4	3	7.5	5.4	Automotive	44
2169	Big 5 Sporting Goods	7.65	5	4	12.8	7.8	Retail (Hardlines)	55	653	PLC ADR	45.33	3	3	17.1	5.3	Petroleum (Integrated)	56
2539	AllianceBernstein Hldg	26.90	3	3	10.8	7.7	Financial Svcs. (Div.)	16	105	CVR Energy	11.27	3	3	6.8	5.3	Automotive	44
1903	B&G Foods	26.00	3	3	12.1	7.7	Food Processing	66	2517	HSBC Holdings PLC	48.53	4	3	10.8	5.3	Bank	16
1525	GEO Group (The)	24.42	4	3	18.1	7.7	R.E.I.T.	93	1995	Philip Morris Int'l	80.81	5	2	15.2	5.3	Tobacco	96
545	Targa Resources	47.40	4	4	NMF	7.7	Natural Gas (Div.)	67	1558	Power Financial	32.72	3	2	10.4	5.3	Insurance (Life)	54
639	Western Gas Part.	49.88	3	3	24.9	7.7	Pipeline MLPs	79	2019	TiVo Corp.	13.70	5	4	22.8	5.3	Entertainment Tech	66
2028	Madden Hgts. Ltd.	7.90	5	4	31.6	7.6	Reinsurance	96	2538	Aircastle Ltd.	21.58	2	3	8.8	5.2	Financial Svcs. (Div.)	16
629	Energy Transfer Equity	16.69	2	4	13.9	7.5	Pipeline MLPs	79	1533	Machenramp Corp. (The)	57.72	5	3	46.2	5.2	R.E.I.T.	93
1028	BCE Inc.	41.36	5	3	10.9	7.3	Telecom. Utility	84	617	Williams Cos.	26.12	3	3	26.1	5.2	Oil/Gas Distribution	60
2213	L Brands	33.94	4	3	10.9	7.2	Retail (Softlines)	52	1993	Altra Group	55.27	3	2	13.8	5.1	Tobacco	96
633	MPLX LP	34.67	3	4	19.3	7.1	Pipeline MLPs	79	760	AmTrust Financial Svcs.	13.25	-	3	5.6	5.1	Insurance (Prop/Cas.)	53
395	Iron Mountain	33.49	4	3	25.0	7.0	Industrial Services	79	504	CVR Energy	38.95	3	4	36.4	5.1	Petroleum (Integrated)	56
2401	Black Stone Minerals	18.05	4	3	19.0	6.9	Petroleum (Producing)	46	2146	Macy's Inc.	29.78	3	3	8.3	5.1	Retail Store	48
927	IDT Corp.	5.25	-	3	15.9	6.9	Telecom. Services	76	1224	Northland Power	52.46	4	2	43.7	5.1	Power	95
222	Owens & Minor	15.03	4	3	9.4	6.9	Med Supp Non-Invasive	42	1539	Genzyme Corp.	22.35	3	2	43.7	5.1	R.E.I.T.	93
640	Williams Partners L.P.	36.67	4	4	19.8	6.7	Pipeline MLPs	79	521	Royal Dutch Shell 'B'	73.01	3	2	17.3	5.1	Petroleum (Integrated)	56
905	CVR Refining LP	18.85	3	3	10.2	6.6	Petroleum (Integrated)	56	1543	Simon Property Group	158.75	3	2	22.6	5.1	R.E.I.T.	93
612	Embridge Inc.	40.41	3	3	16.2	6.6	Oil/Gas Distribution	60	2321	Six Flags Entertainment	62.04	3	3	22.2	5.1	Recreation	23
2382	A.H. Belo	4.95	-	4	11.0	6.5	Newspaper	80	2661	Carlyle Group L.P.	21.60	3	3	9.8	5.0	Public/Private Equity	92
632	Enterprise Products	26.75	3	3	17.3	6.5	Pipeline MLPs	79	613	Kinder Morgan Inc.	16.07	3	3	19.6	5.0	Oil/Gas Distribution	60

STOCKS WITH HIGH 3- TO 5-YEAR PRICE APPRECIATION POTENTIAL

Some of the stocks tabulated below are very risky and appreciation potentialities tentative. Please read the full-page reports in Ratings & Reports to gain an understanding of the risks entailed. Some of these stocks may not be timely investment commitments. (See the Performance Ranks below.)

Page No.	Stock Name	Recent Price	3-to 5-year Potential	Time-liness	Safety Rank	Industry Group	Industry Rank	Page No.	Stock Name	Recent Price	3-to 5-year Potential	Time-liness	Safety Rank	Industry Group	Industry Rank
1034	Frontier Commun.	9.78	490%	3	5	Telecom. Utility	84	981	Commercial Vehicle	8.23	185%	-	5	Auto Parts	10
1195	FTD Companies	5.07	475%	5	5	Household Products	86	925	Gogo Inc.	5.06	185%	5	4	Telecom. Services	69
544	Southwestern Energy	4.16	475%	3	4	Natural Gas (Div.)	67	1619	Malinckrodt plc	12.33	185%	3	3	Drug	66
611	Clean Energy Fuels	1.87	435%	-	5	Oil/Gas Distribution	60	2181	Michaels Cos. (The)	18.40	185%	3	3	Retail (Hardlines)	55
2211	Francesca's Hldgs.	5.16	355%	4	4	Retail (Softlines)	52	541	Newfield Exploration	27.87	185%	3	3	Natural Gas (Div.)	67
1576	Tahoe Resources	4.82	355%	4	5	Precious Metals	72	588	Rayonier Advanced Mat.	18.49	185%	2	4	Chemical (Specialty)	15
2439	TETRA Technologies	4.29	355%	3	5	Oilfield Svcs/Equip	94	1583	Arconic Inc.	17.80	180%	-	3	Metals & Mining (Div.)	65
2429	Nabors Inds.	7.99	340%	4	4	Oilfield Svcs/Equip	94	1032	Consol. Commun.	11.58	180%	4	3	Telecom. Utility	84
802	Community Health	4.52	330%	-	4	Medical Services	7	1570	Goldcorp Inc.	13.49	180%	4	3	Precious Metals	72
2409	Laredo Petroleum	10.01	325%	3	5	Petroleum (Producing)	46	990	Goodyear Tire	24.92	180%	3	3	Auto Parts	10
991	Horizon Global Corp.	5.69	320%	4	4	Auto Parts	10	838	Incyte Corp.	62.67	180%	4	4	Biotechnology	87
222	Owens & Minor	15.03	300%	4	3	Med Supp Non-Invasive	42	2577	SLM Corporation	11.57	180%	2	3	Financial Svcs. (Div.)	16
1958	SUPERVALU INC.	15.59	285%	4	5	Retail/Wholesale Food	57	847	United Therapeutics	101.93	180%	3	4	Biotechnology	87
1517	DDR Corp	7.29	275%	-	4	R.E.I.T.	93	707	Bombardier Inc. 'B'	4.20	175%	4	5	Aerospace/Defense	43
620	Antero Resources	18.53	265%	3	3	Natural Gas (Div.)	67	1383	Electro Scientific	18.09	175%	1	3	Semiconductor Equip	7
530	Chesapeake Energy	3.13	265%	3	5	Natural Gas (Div.)	67	994	Huron Consulting	34.55	175%	4	3	Industrial Services	54
1018	Sally Beauty	14.97	265%	2	3	Toiletries/Cosmetics	58	1763	Leucadia National	24.44	175%	4	3	Diversified Co.	33
846	TESARO, Inc.	46.39	260%	4	4	Biotechnology	87	971	Rite Aid Corp.	1.63	175%	-	5	Pharmacy Services	2
623	Boardwalk Pipeline	9.26	250%	4	4	Pipeline MLPs	79	2020	Universal Electronics	29.15	175%	5	3	Entertainment Tech	90
223	Paterson Cos.	22.09	250%	5	3	Med Supp Non-Invasive	42	2246	Vacum Inc. 'B'	29.79	175%	-	3	Entertainment	40
1574	Pretium Resources	6.68	250%	3	5	Precious Metals	72	359	Dave & Buster's Ent.	41.53	170%	3	3	Restaurant	59
2416	Range Resources	14.36</													

ROE and ROR Analysis Columbia Gas of PA
CAPM/ECAPM Analysis
Value Line Projected Growth Rate

Docket No. R-2018-2647577
Exhibit MFG-11, Schedule 3

May 18, 2018

SUMMARY AND INDEX • THE VALUE LINE INVESTMENT SURVEY

Page 33

BIGGEST "FREE FLOW" CASH GENERATORS

Stocks of companies that have earned more "cash flow" in the last 5 years than was required to build plant and pay dividends

Page No.	Stock Name	Recent Price	Ratio "Cash Flow" To Cash Out	Time-ness	Safety Rank	Industry Group	Industry Rank	Page No.	Stock Name	Recent Price	Ratio "Cash Flow" To Cash Out	Time-ness	Safety Rank	Industry Group	Industry Rank
1135	Taylor Morrison Home	23.15	56.46	2	3	Homebuilding	5	2196	Weight Watchers	69.53	7.43	3	4	Retail (Hardlines)	55
1818	Check Point Software	99.93	47.15	2	3	E-Commerce	29	943	Arns Int'l plc	26.92	7.31	2	3	Telecom. Equipment	88
1134	TRI Pointe Group	17.65	45.63	2	3	Homebuilding	5	1371	Rambus Inc.	13.26	7.23	3	3	Semiconductor	9
2337	Netlix, Inc.	326.89	33.18	2	3	Entertainment	40	1368	XPP Semiconductors NV	98.79	7.22	-	3	Semiconductor	9
1350	Amarella, Inc.	50.56	25.18	5	4	Semiconductor	9	1405	ScanSource	36.45	7.10	4	3	Computers/Peripherals	37
841	Jazz Pharmac. plc	147.56	24.07	3	3	Biotechnology	87	2608	Teradata Corp.	39.25	6.96	5	3	Computer Software	27
1609	Allergan plc	143.80	18.08	3	3	Drug	69	184	Intuitive Surgical	462.60	6.87	2	3	Med Supp Invasive	51
606	Ubiquiti Networks	73.50	17.98	3	3	Wireless Networking	78	437	CoStar Group	386.53	6.85	2	3	Information Services	24
1131	NVR, Inc.	3089.76	17.84	2	2	Homebuilding	5	2607	Synopsys, Inc.	89.05	6.85	2	1	Computer Software	27
2637	Booking Holdings	2161.60	17.55	2	3	Internet	70	938	Vonage Holdings	11.50	6.84	3	4	Telecom. Services	76
2589	ANSYS, Inc.	167.48	16.70	3	2	Computer Software	27	2609	VMware, Inc.	136.50	6.78	2	3	Computer Software	27
1632	Valeant Pharm. Int'l	19.77	16.37	4	5	Drug	69	2185	Nautlius Inc.	16.90	6.63	4	4	Retail (Hardlines)	56
2654	XO Group	28.32	16.15	3	3	Internet	70	1355	Cirrus Logic	38.91	6.61	3	3	Semiconductor	9
2559	FleetCor Technologies	203.25	14.92	2	3	Financial Svcs. (Div.)	16	829	Veeva Systems	73.77	6.43	3	3	Healthcare Information	77
2626	Manhattan Assoc.	44.17	13.86	4	3	IT Services	7	1358	Integrated Device	29.69	6.42	2	3	Semiconductor	9
946	CommScope Holding	29.48	13.42	3	3	Telecom. Equipment	68	1728	Roper Tech.	271.70	6.42	2	1	Machinery	22
1316	WESCO Int'l	60.15	13.18	3	3	Electrical Equipment	39	1315	Universal Display	98.50	6.31	3	3	Electrical Equipment	39
814	MEDNAX, Inc.	45.20	13.11	3	2	Medical Services	7	2618	Cognizant Technology	75.65	6.30	1	2	IT Services	27
968	Express Scripts	68.12	13.10	-	3	Pharmacy Services	2	2588	Adobe Systems	234.56	6.29	2	2	Computer Software	27
1136	Toff Brothers	43.61	13.01	1	3	Homebuilding	5	956	NETGEAR	58.15	6.21	5	3	Telecom. Equipment	18
2329	Discovery, Inc.	23.05	12.43	3	3	Entertainment	40	1386	Kulicke & Soffa	23.17	6.20	1	3	Semiconductor Equip	78
1348	Advanced Energy	64.32	11.98	1	3	Semiconductor	9	608	Zebra Techn. 'A'	153.24	6.11	1	3	Wireless Networking	76
727	TransDigm Group	331.89	11.79	3	3	Aerospace/Defense	43	131	PerkinElmer Inc.	73.55	6.09	3	3	Precision Instrument	47
849	Mynar Genetics	33.55	11.72	4	3	Biotechnology	87	713	HEICO Corp.	91.32	6.06	2	3	Aerospace/Defense	43
2165	Avig Budget Group	43.44	11.53	1	4	Retail (Hardlines)	55	1980	National Beverage	87.74	6.05	2	3	Beverage	38
1720	Middleby Corp. (The)	131.63	11.00	4	3	Machinery	22	1628	Perrigo Co. plc	74.50	6.03	3	3	Drug	69
1979	Monster Beverage	83.00	10.89	3	3	Beverage	38	602	InterDigital Inc.	78.50	6.01	3	3	Wireless Networking	78
847	United Therapeutics	101.83	10.47	3	3	Biotechnology	87	1321	Anxioter Int'l	60.45	5.98	4	3	Electronics	50
2652	VenSign Inc.	122.67	10.36	3	3	Internet	70	1797	E*Trade Fin'l	62.94	5.95	3	3	Brokers & Exchanges	20
1613	Celgene Corp.	83.13	9.99	3	3	Drug	69	809	ICON plc	121.82	5.92	3	3	Medical Services	7
1407	Tech Data	79.47	9.84	3	3	Computers/Peripherals	37	2622	Fair Isaac	176.08	5.87	2	3	IT Services	27
949	F5 Networks	169.63	9.43	3	3	Telecom. Equipment	68	2593	Citrix Sys.	107.29	5.84	2	3	Computer Software	8
1012	Healen of Troy Ltd.	91.45	9.37	3	3	Toiletries/Cosmetics	58	383	CBRE Group	46.48	5.82	2	3	Industrial Services	54
219	Natus Medical	33.70	9.31	5	3	Med Supp Non-Invasive	42	174	Boston Scientific	29.83	5.75	3	3	Med Supp Invasive	51
2615	CACI Int'l	160.10	9.28	2	3	IT Services	8	2001	Bridgepoint Education	5.89	5.72	4	4	Educational Services	63
728	Wesco Aircraft	10.25	9.09	5	3	Aerospace/Defense	43	1233	Chicago Bridge & Iron	16.84	5.67	-	4	Engineering & Const	82
2012	Electronic Arts	123.89	9.08	3	3	Entertainment Tech	90	961	Synaptics	45.64	5.65	4	3	Telecom. Equipment	88
225	Schein (Henry)	71.08	8.96	3	3	Med Supp Non-Invasive	42	2611	ACI Worldwide	23.50	5.60	4	3	IT Services	8
1130	Meritage Homes	46.25	8.66	3	3	Homebuilding	5	1221	Genac Holdings	47.51	5.58	2	3	Power	8
1365	Microsem Corp.	67.43	8.63	-	3	Semiconductor	9	2604	SS&C Techn. Hlgs	49.21	5.57	2	3	Computer Software	27
1128	Lennar Corp.	54.43	8.30	2	3	Homebuilding	5	193	Vanon Medical Sys	116.97	5.57	3	1	Med Supp Invasive	51
2178	Insight Enterprises	45.37	8.28	1	3	Retail (Hardlines)	55	1232	AECOM	35.40	5.56	4	3	Engineering & Const	82
1314	Timble Inc.	35.03	8.07	3	3	Electrical Equipment	39	135	Waters Corp.	192.27	5.55	3	2	Precision Instrument	47
1611	Biogen	269.73	7.96	2	3	Drug	69	436	CoreLogic	51.30	5.52	2	3	Information Services	24
2592	Cadence Design Sys.	40.90	7.90	2	3	Computer Software	27	2600	PTC Inc.	86.79	5.52	3	3	Computer Software	27
2160	Madden (Steven) Ltd.	48.75	7.70	3	3	Shoe	61	1133	St. Joe Corp.	18.05	5.48	4	3	Homebuilding	5
2327	AMC Networks	52.78	7.65	2	3	Entertainment	40	130	Orbotech Ltd.	58.89	5.42	-	3	Precision Instrument	47
1615	Oleag Sciences	65.22	7.65	3	3	Drug	69	1644	ASGN Inc.	83.06	5.38	2	3	Human Resources	11
1614	Endo Int'l plc	5.79	7.48	4	5	Drug	69	133	Thermo Fisher Sci.	208.07	5.38	3	2	Precision Instrument	47
1127	KB Home	27.55	7.46	2	3	Homebuilding	5	1622	Mylan N.V.	35.37	5.34	4	3	Drug	69

BEST PERFORMING STOCKS

(Measured by Price Change in the Last 13 Weeks)

Page No.	Stock Name	Ticker	Recent Price	Percent Change In Price	Time-ness	Safety Rank
2173	Fossil Group	FOSL	16.44	100.2%	5	5
732	DMC Global	BOOM	39.05	84.6%	-	4
1826	Nutanix, Inc.	NTNX	57.15	83.0%	-	4
1833	Twilio Inc.	TWLO	44.35	80.0%	-	4
1928	Medifast, Inc.	MED	118.50	78.4%	2	3
2417	Whiting Petroleum	WLL	46.34	77.8%	3	5
705	Axon Enterprise	AAXN	44.65	77.5%	3	4
951	Infinera Corp.	INFN	11.80	72.8%	4	4
817	Tenet Healthcare	THC	31.31	71.3%	3	4
2406	Denbury Resources	DNR	3.40	63.5%	3	5
729	Wesco Aircraft	WAIR	10.25	62.7%	5	3
1943	USANA Health Sciences	USNA	111.65	57.8%	3	3
191	SurModics, Inc.	SRDX	43.45	54.6%	4	3
206	DexCom Inc.	DXCM	85.21	53.2%	3	4
2654	XO Group	XOXO	28.32	52.3%	3	3
1808	Greenhill & Co.	GHL	25.45	51.5%	4	4
1638	Heidrick & Struggles	HSII	37.55	51.4%	3	3
1228	TPI Composites	TPIC	27.54	50.1%	3	4
352	BJ's Restaurants	BJRI	55.70	49.9%	2	3
170	ABIOMED Inc.	ABMD	347.38	49.7%	2	3
508	Delek US Holdings	DK	49.47	49.5%	3	3
2647	Pandora Media	PA	7.17	48.4%	5	3
2013	Glu Mobile	GLUU	5.26	48.2%	4	3
2107	Guess Inc.	GES	23.21	47.9%	-	4
776	XL Group Ltd.	XL	55.13	47.6%	-	4
371	Shake Shack	SHAK	59.36	47.0%	3	4
447	CryoLife Inc.	CRY	25.85	46.9%	5	3
543	QEP Resources	QEP	12.19	44.6%	4	4
511	HollyFrontier Corp.	HFC	57.10	44.4%	3	3
186	Penumbra, Inc.	PEN	135.90	44.3%	3	3
1639	Insperty Inc.	NSP	83.80	43.7%	2	3
361	Dine Brands Global	DIN	78.02	43.3%	2	3
1408	Unisys Corp.	UIS	11.90	42.5%	3	3
389	FTI Consulting	FCN	59.04	42.2%	3	3
2185	Nautlius Inc.	NLS	16.90	42.0%	4	4
1836	Zendesk Inc.	ZEN	54.18	41.0%	3	4
2203	Cato Corp.	CATO	16.13	40.5%	3	3
1333	Integer Holdings	ITGR	65.55	40.5%	2	3
2169	Big 5 Sporting Goods	BGFV	7.65	40.4%	5	4
2217	Talored Brands	TLRD	31.44	40.4%	3	4
2115	Under Armour 'A'	UA	18.32	39.8%	4	4

WORST PERFORMING STOCKS

(Measured by Price Change in the Last 13 Weeks)

Page No.	Stock Name	Ticker	Recent Price	Percent Change In Price	Time-ness	Safety Rank
1607	Akorn, Inc.	AKRX	12.65	-60.4%	-	3
2144	Fred's Inc.	FRED	1.60	-49.2%	-	3
2123	Camping World Holdings	CWH	23.02	-44.9%	-	3
925	Gogo Inc.	GOGO	5.06	-43.4%	5	4
1955	Smart & Final Stores	SFS	4.95	-42.8%	4	4
398	Macquarie Infra	MIC	38.54	-40.0%	2	3
1315	Universal Display	OLED	98.50	-36.6%	3	3
223	Patterson Cos.	PDCO	22.09	-35.7%	5	3
1200	Spectrum Brands	SFB	71.70	-35.6%	-	3
628	Enbridge Energy Part.	EEP	9.93	-35.5%	3	3
982	Cooper Tire & Rubber	CTB	24.00	-35.2%	3	3
1769	Pentair plc	PNR	44.44	-35.1%	-	3
2020	Universal Electronics	UEIC	29.15	-34.7%	5	3
118	Coherent, Inc.	COHR	170.53	-32.6%	2	3
163	Manitowoc Co.	MTW	24.40	-32.3%	-	5
1103	Amer. Woodmark	AMWD	85.45	-31.2%	3	3
1023	Dish Network '					

ROE and ROR Analysis Columbia Gas of PA
CAPM/ECAPM Analysis
Value Line Projected Growth Rate

Docket No. R-2018-2647577
Exhibit MFG-11, Schedule 3

Page 34

SUMMARY AND INDEX • THE VALUE LINE INVESTMENT SURVEY

May 18, 2018

WIDEST DISCOUNTS FROM BOOK VALUE
Stocks whose ratios of recent price to book value are lowest

Page No.	Stock Name	Ticker	Recent Price	Book Value Per sh.*	Percent Price-to-Book Value	Time-liness	Safety Rank	Beta	P/E Ratio	% Est'd Yield	Industry Group	Industry Rank
1554	Genworth Fin'l	GNW	3.14	31.00	10%	-	5	1.85	3.1	NIL	Insurance (Life)	34
1619	Mallinckrodt plc	MNK	12.33	78.25	16%	3	3	1.30	6.2	NIL	Drug	69
338	Teekay Corp	TK	9.04	44.55	20%	3	5	2.10	NMF	2.4	Maritime	97
1782	LSB Inds	NE	5.73	22.40	26%	-	5	2.05	NMF	NIL	Diversified Co.	33
2431	Noble Corp. plc	LXU	4.90	18.75	26%	4	5	1.85	NMF	NIL	Oilfield Svcs/Equip.	94
2424	Enesco plc	ESV	6.02	18.60	32%	5	4	1.65	NMF	0.7	Oilfield Svcs/Equip.	94
2144	Fred's Inc.	FRED	1.60	4.60	35%	-	5	1.15	NMF	NIL	Retail Store	48
2436	Rowan Cos. plc	RDC	14.59	41.75	35%	-	5	1.50	NMF	NIL	Oilfield Svcs/Equip.	94
980	China Auto. Sys.	CAAS	4.20	11.25	37%	-	5	1.35	4.7	NIL	Auto Parts	10
2440	Transocean Ltd.	RIG	12.41	28.70	43%	5	5	1.65	NMF	NIL	Oilfield Svcs/Equip.	94
331	Diana Shipping	DSX	3.85	8.45	46%	-	5	1.60	NMF	NIL	Maritime	97
623	Boardwalk Pipeline	BWP	9.26	19.70	47%	4	4	1.00	7.7	NIL	Pipeline MLPs	43
1552	AEGON	AEG	7.04	14.65	48%	4	3	1.25	7.0	4.3	Insurance (Life)	34
306	Bristow Group	BRS	17.51	34.45	51%	5	5	1.60	NMF	NIL	Air Transport	41
1034	Frontier Communic.	FTTR	9.78	18.75	52%	3	5	1.20	NMF	NIL	Telecom. Utility	84
611	Clean Energy Fuels	CLNE	1.87	3.50	53%	-	5	1.85	12.5	NIL	Oil/Gas Distribution	60
1627	PDL BioPharma	PDLI	3.03	5.70	53%	4	4	1.20	10.1	NIL	Drug	69
2025	Assured Guaranty	AGO	35.00	63.40	55%	3	3	1.25	11.7	1.9	Reinsurance	96
1195	FTD Companies	FTD	6.07	11.10	55%	5	5	1.20	NMF	NIL	Household Products	86
2201	Ascena Retail Group	ASNA	2.14	3.85	56%	4	5	1.60	NMF	NIL	Retail (Softlines)	52
332	Frontline Ltd.	FRO	4.50	8.05	56%	4	5	1.25	NMF	NIL	Maritime	97
2174	GameStop Corp.	GME	12.79	22.55	57%	4	3	1.10	4.4	11.9	Retail (Hardlines)	55
2405	Crescent Point Energy	CPG.TO	10.31	17.90	58%	4	4	1.65	11.5	3.5	Petroleum (Producing)	46
1576	Tahoe Resources	TAHO	4.92	8.45	58%	4	5	1.20	19.7	NIL	Petroleum Metals	72
2416	Range Resources	RRC	14.36	24.15	59%	3	3	1.15	13.7	0.6	Petroleum (Producing)	46
2149	Pennney (J.C.)	JCP	2.77	4.60	60%	4	5	1.50	18.5	NIL	Retail Store	48
1416	Office Depot	ODP	2.37	3.80	62%	4	5	1.35	7.9	4.2	Office Equip/Supplies	75
1578	Yamana Gold	AUY	2.95	4.60	64%	3	5	1.10	29.5	0.7	Precious Metals	45
933	Telephone & Data	TDS	25.98	39.25	66%	3	3	1.20	74.2	2.5	Telecom. Services	76
618	World Fuel Services	INT	22.63	33.60	67%	4	3	1.10	11.3	1.1	Oil/Gas Distribution	60
526	Antero Resources	AR	18.53	27.15	68%	3	3	1.30	13.3	NIL	Natural Gas (Div.)	67
1597	CVR Partners, LP	UAN	3.02	4.45	68%	5	4	1.35	NMF	0.7	Chemical (Basic)	64
2188	Pier 1 Imports	PIR	2.23	3.30	68%	-	4	1.50	NMF	NIL	Retail (Hardlines)	55
2541	Amer. Int'l Group	AIG	53.08	77.45	69%	4	3	1.05	8.3	2.4	Financial Svcs. (Div.)	16
2422	Diamond Offshore	DO	18.87	27.30	69%	4	3	1.25	NMF	NIL	Oilfield Svcs/Equip.	94
928	Indium Communic	IRDM	11.60	16.60	70%	4	4	1.05	33.1	NIL	Telecom. Services	76
1390	Photronics Inc.	PLAB	8.15	11.60	70%	3	3	0.70	24.0	NIL	Semiconductor Equip	1
2420	CARBO Ceramics	CRR	9.51	13.35	71%	5	5	1.70	NMF	11.7	Oilfield Svcs/Equip.	94
2166	Barnes & Noble	BKS	5.15	7.15	72%	3	4	1.45	15.1	1.7	Retail (Hardlines)	55
1414	Essendant Inc.	ESND	9.88	13.80	72%	-	3	1.20	39.5	5.7	Office Equip/Supplies	75
2426	Helix Energy Solutions	HLX	7.77	10.75	72%	3	4	2.00	51.8	NIL	Oilfield Svcs/Equip.	94
1222	Green Plains Inc.	GPPE	19.20	26.40	73%	5	4	1.85	32.0	2.5	Power	85
2028	Greenlight Capital Re	GLRE	15.55	21.40	73%	5	3	1.10	NMF	NIL	Reinsurance	96
625	DCP Midstream LP	DCP	37.24	50.30	74%	5	3	1.55	41.4	8.4	Pipeline MLPs	79
2659	Apollo Investment	AINV	5.42	7.20	75%	5	3	0.90	7.9	11.1	Public/Private Equity	92
2322	Speedway Motorsports	TRK	17.62	22.95	77%	4	3	0.90	16.8	3.4	Recreation	23
1001	Superior Inds. Int'l	SUP	13.30	17.25	77%	4	3	1.15	7.4	2.7	Auto Parts	10
2031	Third Point Reinsurance	TPRE	13.40	17.50	77%	4	3	0.90	10.3	NIL	Reinsurance	96
1229	TransAlta Corp.	TA.TO	6.75	8.75	77%	4	4	0.95	45.0	2.4	Power	85
2167	Bed Bath & Beyond	BBBY	16.84	21.50	78%	4	3	1.00	6.6	3.8	Retail (Hardlines)	55
107	Honda Motor ADR	HMC	33.14	42.25	78%	3	3	1.05	8.7	3.0	Automotive	44
931	Sprint Corp.	S	5.15	6.60	78%	-	4	1.20	85.8	NIL	Telecom. Services	76
1555	Lincoln Nat'l Corp.	LMC	68.40	86.65	79%	3	3	1.40	8.6	0.1	Insurance (Life)	34
2582	Voya Financial	VOYA	52.09	65.75	79%	4	3	1.25	15.8	8.1	Financial Svcs. (Div.)	16
2502	Ally Financial	ALLY	26.57	33.25	80%	1	3	1.20	8.9	2.0	Bank	18
743	ArcoelorMittal	MT	34.60	43.20	80%	2	4	1.65	8.2	NIL	Steel	13
2169	Big 5 Sporting Goods	BGFV	7.65	9.55	80%	5	4	0.90	12.8	7.8	Retail (Hardlines)	55
2661	Carlyle Group L.P.	CG	21.60	26.95	80%	3	3	1.30	9.8	5.0	Public/Private Equity	92
1030	CenturyLink Inc.	CTL	18.13	22.60	80%	4	3	1.05	14.5	11.9	Telecom. Utility	84
108	Nissan Motor ADR	NSANY	20.39	25.45	80%	4	3	1.05	7.5	5.4	Automotive	44
149	SCANA Corp	SCG	35.24	44.30	80%	4	3	0.70	9.7	NIL	Electric Utility (East)	73
637	Spectra Energy Part.	SEP	32.13	40.30	80%	-	3	0.90	9.1	9.2	Pipeline MLPs	79
1570	AmTrust Financial Svcs.	AFSI	13.25	16.35	81%	3	3	0.95	5.6	5.1	Insurance (Prop/Cas.)	53
1763	Leucadia National	LUK	13.49	16.70	81%	4	3	0.75	30.0	0.7	Precious Metals	72
222	Owens & Minor	OMI	15.03	18.35	82%	4	3	1.25	14.0	1.6	Diversified Co.	33
1956	SpartanNash Co.	SPTN	17.21	21.10	82%	4	3	1.10	9.4	6.9	Med Supp Non-invasive	42
1842	StoneMor Partners L.P.	STON	5.92	7.25	82%	-	5	0.70	NMF	NIL	Retail/Wholesale Food	57
2568	Legg Mason	LM	38.32	45.90	83%	3	3	1.45	10.8	3.5	Financial Svcs. (Div.)	16
2029	Maiden Hldgs. Ltd	MHLD	7.90	9.50	83%	5	4	1.15	31.6	7.6	Reinsurance	96
543	QEP Resources	QEP	12.19	14.60	83%	4	4	1.80	NMF	NIL	Natural Gas (Div.)	67
1955	Smart & Final Stores	SFS	4.95	5.95	83%	4	4	1.10	9.9	NIL	Retail/Wholesale Food	57
2538	Aircastle Ltd.	AYR	21.58	25.55	84%	2	3	1.35	8.8	5.2	Financial Svcs. (Div.)	16
506	Genovus Energy	CVET	13.90	16.60	84%	4	3	1.15	NMF	1.4	Petroleum (Integrated)	56
627	Enable Midstream Part.	ENBL	14.28	17.10	84%	4	4	1.25	14.7	8.9	Pipeline MLPs	79
2569	Loews Corp.	L	51.23	60.75	84%	3	2	0.95	16.3	0.5	Financial Svcs. (Div.)	16
2386	News Corp. 'A'	NWSA	18.37	19.40	84%	4	3	1.30	28.7	1.2	Newspaper	80
1589	Natural Resource	NRP	39.00	38.85	85%	-	5	1.55	6.1	5.5	Metals & Mining (Div.)	65
935	U.S. Cellular	USM	37.01	43.50	85%	3	3	1.10	61.7	NIL	Telecom. Services	76
2536	AerCap Hldgs. NV	AER	54.74	63.35	86%	3	3	1.35	6.1	NIL	Financial Svcs. (Div.)	16
976	Amer. Axle	AXL	15.00	17.50	86%	3	4	1.30	4.1	NIL	Auto Parts	10
1986	FUJIFILM Hldgs. ADR	FUJUY	38.40	44.70	86%	-	3	0.95	4.1	1.7	Foreign Electronics	28
991	Horizon Global Corp.	HZN	5.69	6.65	86%	4	4	1.25	5.4	NIL	Auto Parts	10
2019	TiVo Corp.	TIVO	13.70	15.95	86%	5	4	1.45	22.8	5.3	Entertainment Tech	90
1562	Unum Group	UNM	36.25	44.60	86%	1	3	1.15	7.4	2.4	Insurance (Life)	34
2302	AMC Entertainment Hldgs.	AMC	16.80	19.20	87%	4	3	1.05	84.0	4.8	Recreation	23
1511	Armory Capital Mgmt	NLY	10.20	11.75	87%	4	3	0.65	8.7	11.8	R.E.I.T.	93
814	LifePoint Health	LPNT	52.55	60.35	87%	3	3	0.90	11.9	NIL	Medical Services	7
1324	Avnet, Inc.	AVT	40.06	45.35	88%	4	3	1.20	10.1	1.9	Electronics	50
2208	Express, Inc.	EXPR	7.95	9.05	88%	3	4	1.10	19.9	NIL	Retail (Softlines)	52
121	Geospace Technologies	GTOS	11.12	12.60	88%	5	4	1.60	NMF	NIL	Precision Instrument	47
799	Brookdale Senior Living	BKO	7.68	8.60	89%	5	4	1.35	NMF	NIL	Medical Services	7
1557	MetLife Inc.	MET	46.55	52.10	89%	5	3	1.30	11.2	3.6	Insurance (Life)	34
1505	New York Community	NYCB	11.55	13.05	89%	5	3	0.90	13.6	5.9	Thrift	83
2523	Popular Inc.	BPOP	46.90	52.45	89%	4	3	1.20	11.2	2.1	Bank	18
1998	Universal Corp.	UVV	47.65	53.80	89%	5	3	0.90	10.6	4.6	Tobacco	95
2512	Citizens Fin'l Group	CFG	41.32	45.80	90%	1	3	1.15	13.2	2.2	Bank	15
2573	Navigent Corp.	NAVI	12.99	14.45	90%	3	3	1.35	7.0	4.9	Financial Svcs. (Div.)	18
959	Ribbon Communications	RBBN	5.82	6.45	90%	4	4	1.25	NMF	NIL	Telecom. Equip	88
2190	Signet Jewelers Ltd.	SIG	37.20	41.30	90%	4	3	1.05	9.4	4.0	Retail (Hardlines)	55

*If fiscal 2018 Book Value not available, estimate used.

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LOWEST P/E's

Stocks with the lowest estimated current P/E ratios

Page No.	Stock Name	Recent Price	Current P/E Ratio	Time-liness	Safety Rank	Industry Group	Industry Rank	Page No.	Stock Name	Recent Price	Current P/E Ratio	Time-liness	Safety Rank	Industry Group	Industry Rank
1614	Endo Int'l plc	5.79	2.5	4	5	Drug	69	623	Boardwalk Pipeline	9.26	7.7	4	4	Pipeline MLPs	79
1554	Genworth Fin'l	3.14	3.1	-	5	Insurance (Life)	34	1407	Tech Data	79.47	7.7	3	3	Computers/Peripherals	623
976	Amer. Axle	15.00	4.1	3	4	Auto Parts	10	2123	Camping World Holdings	23.02	7.8	-	3	Retail Automotive	37
2174	GameStop Corp	12.79	4.4	4	3	Retail (Hardlines)	55	2659	Apollo Investment	5.42	7.9	5	3	Public/Private Equity	92
980	China Auto. Sys	4.20	4.7	-	5	Auto Parts	10	2126	Group 1 Automotive	68.88	7.9	3	3	Retail Automotive	14
1364	Micron Technology	48.57	5.0	1	3	Semiconductor	9	1416	Office Depot	2.37	7.9	4	5	Office Equip/Supplies	75
544	Southwestern Energy	4.16	5.1	3	4	Natural Gas (Div.)	67	2181	Michaels Cos. (The)	18.40	8.0	3	3	Retail (Hardlines)	55
991	Horizon Global Corp.	5.69	5.4	4	4	Auto Parts	10	1956	SpartanNash Co.	17.21	8.0	4	3	Retail/Wholesale Food	57
1409	Western Digital	77.73	5.5	1	3	Computers/Peripherals	37	1831	Teva Pharm. ADR	18.90	8.0	4	3	Drug	69
760	AmTrust Financial Svcs.	13.25	5.6	-	3	Insurance (Prop/Cas.)	53	317	WestJet Airlines Ltd.	19.94	8.0	3	3	Air Transport	41
106	Gen'l Motors	36.33	5.6	2	3	Automotive	44	742	AK Steel Holding	4.44	8.1	3	3	Steel	13
847	United Therapeutics	101.93	5.8	3	3	Biotechnology	87	2536	AerCap Hldgs. NV	54.74	8.1	3	3	Financial Svcs. (Div.)	16
104	Fiat Chrysler	22.69	6.0	-	3	Automotive	44	2332	Gray Television	11.30	8.1	2	4	Entertainment	40
2392	Donnelley (R.R.) & Sons	6.72	6.1	-	3	Advertising	31	2187	Party City Holdco	14.90	8.1	3	4	Retail (Hardlines)	55
2570	MGIC Investment	10.65	6.1	2	4	Financial Svcs. (Div.)	16	728	Triumph Group	25.00	8.1	4	3	Aerospace/Defense	43
1417	Pitney Bowes	33.00	6.1	-	5	Metals & Mining (Div.)	65	1379	Xpen Corp.	19.85	8.1	3	3	Semiconductor	9
1002	Tenneco Inc.	45.89	6.1	2	3	Auto Parts	75	743	Arceor/Mittal	34.60	8.2	2	4	Steel	13
2406	Denbury Resources	3.40	6.2	3	5	Petroleum (Producing)	46	981	Commercial Vehicle	8.23	8.2	-	5	Auto Parts	10
1619	Mallico/rooft plc	12.33	6.2	3	3	Drug	69	984	Fifth Third Bancorp.	23.75	8.2	3	3	Auto Parts	10
109	Tata Motors ADR	24.71	6.2	3	3	Automotive	44	1559	Prudential Fin'l	100.10	8.2	3	3	Bank (Midwest)	21
1592	Teck Resources 'B'	32.97	6.3	2	4	Metals & Mining (Div.)	65	2541	Amer. Intl Group	53.08	8.3	4	3	Insurance (Life)	34
2327	AMC Networks	52.78	6.4	2	3	Entertainment	40	2146	Macy's Inc.	29.78	8.3	3	3	Retail Store	46
1933	Pilgrim's Pride Corp.	21.16	6.4	3	3	Food Processing	66	2338	Nexstar Media Group	62.35	8.3	1	3	Entertainment	40
1587	Fraxip/McMoran Inc.	15.30	6.5	3	5	Metals & Mining (Div.)	65	2136	Big Lots Inc.	40.25	8.4	3	3	Retail Store	48
1956	SUPERVALU INC.	15.59	6.5	4	5	Retail/Wholesale Food	57	308	Delta Air Lines	52.37	8.4	3	3	Air Transport	41
990	Goodyear Tire	22.87	6.6	3	3	Auto Parts	10	315	United Cont'l Hldgs.	67.72	8.4	3	4	Air Transport	41
1632	Valeant Pharm. Intl	19.77	6.6	4	3	Drug	69	1108	CEMEX ADS	5.94	8.5	3	4	Building Materials	19
2167	Bed Bath & Beyond	16.84	6.8	4	3	Retail (Hardlines)	55	2248	Sinclair Broadcast	27.30	8.5	4	3	Entertainment	44
105	Ford Motor	11.27	6.8	3	3	Automotive	44	1555	Lincoln Nat'l Corp.	68.40	8.6	3	3	Insurance (Life)	34
1182	Owens-Illinois	19.04	6.8	4	3	Packaging & Container	32	1511	Annaly Capital Mgmt	16.40	8.7	4	3	R.E.I.T.	93
102	Daimler AG	79.50	6.9	3	3	Automotive	44	626	EQT Midstream Part.	52.00	8.7	3	3	Pipeline MLPs	79
1552	AEGON	7.04	7.0	4	3	Insurance (Life)	34	107	Honda Motor ADR	33.14	8.7	3	3	Automotive	50
2573	Navient Corp.	12.99	7.0	3	3	Financial Svcs. (Div.)	16	2377	Meredith Corp.	51.25	8.7	3	3	Publishing	89
2346	Vicom Inc. 'B'	29.79	7.0	-	3	Entertainment	40	999	Motorcar Parts Of Amer.	21.11	8.7	4	3	Auto Parts	10
1044	Tower International	28.15	7.2	2	3	Auto Parts	10	2452	Trinseo S.A.	74.50	8.7	2	3	Chemical (Diversified)	3
974	Kidient plc	56.62	7.3	-	3	Auto Parts	10	1411	ACCO Brands	11.90	8.8	1	3	Office Equip/Supplies	75
982	Cooper Tire & Rubber	24.00	7.3	3	3	Auto Parts	10	2538	Arcastite Ltd.	21.58	8.8	2	3	Financial Svcs. (Div.)	16
2335	MSG Networks	18.85	7.3	-	3	Entertainment	40	1039	Entertainment Data Sys.	201.75	8.8	3	3	Information Services	24
1018	Sally Beauty	14.97	7.3	2	3	Toiletries/Cosmetics	58	2528	BT Group ADR	16.16	8.8	3	3	Telecom Utility	84
1383	Electro Scientific	18.09	7.4	1	3	Semiconductor Equip	11	310	Hawaiian Hldgs.	36.60	8.8	3	4	Air Transport	41
1001	Superior Inds. Intl	13.30	7.4	4	3	Auto Parts	10	1337	NCR Corp.	29.45	8.8	1	3	Electronics	50
1562	Unum Group	38.25	7.4	1	3	Insurance (Life)	34	2502	Ally Financial	26.57	8.9	1	3	Bank	50
997	Mentor, Inc.	20.79	7.5	1	4	Auto Parts	10	1322	Arroyo Electronics	75.08	8.9	1	3	Electronics	50
1098	Nissan Motor ADR	20.39	7.5	4	3	Automotive	44	2329	Discovery, Inc.	23.05	8.9	3	3	Entertainment	40
2342	YEGNA Inc.	10.54	7.5	-	3	Entertainment	40	754	U.S. Steel Corp.	34.60	8.9	2	4	Steel	13
1233	Chicago Bridge & Iron	16.84	7.6	-	4	Engineering & Const	82	2120	Asbury Automotive	69.65	9.0	1	3	Retail Automotive	14
2664	KKR & Co. L.P.	24.00	7.6	4	3	Public/Private Equity	92	996	Magna Intl 'A'	60.58	9.0	1	3	Auto Parts	10
995	Linamar Corp.	73.41	7.6	3	3	Auto Parts	10	2378	Quad/Graphics Inc.	18.70	9.0	3	4	Publishing	89
1582	Alliance Resource	18.00	7.7	4	3	Metals & Mining (Div.)	65	943	Arms Intl plc	26.92	9.1	2	3	Telecom Equipment	68

HIGHEST P/E's

Stocks with the highest estimated current P/E ratios

Page No.	Stock Name	Recent Price	Current P/E Ratio	Time-liness	Safety Rank	Industry Group	Industry Rank	Page No.	Stock Name	Recent Price	Current P/E Ratio	Time-liness	Safety Rank	Industry Group	Industry Rank
1031	Cincinnati Bell	15.50	96.9	4	4	Telecom Utility	84	119	FARO Technologies	52.20	58.0	4	3	Precision Instrument	47
2018	Take-Two Interactive	111.30	95.9	3	3	Entertainment Tech	96	194	EchoStar Corp.	51.27	57.0	3	3	Cable TV	62
365	Jack in the Box	90.78	95.6	3	3	Restaurant	59	913	Illiumina Inc.	258.10	56.9	3	3	Med Supp Non-Invasive	42
1133	St. Joe Corp.	18.05	90.3	4	3	Homebuilding	5	829	Veeva Systems	73.77	56.7	3	3	Healthcare Information	77
183	Integra LifeSciences	64.79	86.4	3	3	Med Supp Invasive	51	2654	XO Group	28.32	56.6	3	3	Internet	70
598	Crown Castle Intl	102.74	86.3	3	3	Wireless Networking	76	1585	Cameco Corp.	14.61	56.2	4	3	Metals & Mining (Div.)	55
177	CryoLife Inc.	25.85	86.2	5	3	Med Supp Invasive	51	2608	Teradata Corp.	39.25	56.1	5	3	Computer Software	27
2650	TripAdvisor, Inc.	38.78	86.2	4	3	Internet	70	2102	Canada Goose Hldgs.	48.10	55.9	-	3	Apparel	71
931	Sprint Corp.	5.15	85.8	-	4	Telecom Services	76	732	DMC Global	39.05	55.8	-	4	Metal Fabricating	68
1607	Akorn, Inc.	12.65	85.8	-	3	Drug	69	532	Concho Resources	158.32	55.6	3	3	Natural Gas (Div.)	67
2302	AMC Entertainment Hldgs.	16.80	84.0	4	3	Recreation	23	1546	Vornado Rty Trust	69.45	55.6	-	3	R.E.I.T.	93
707	Bombardier Inc. 'B'	4.20	84.0	4	5	Aerospace/Defense	69	198	Algon Tech	265.46	55.3	2	3	Med Supp Non-Invasive	42
600	Finisar Corp.	16.70	83.5	5	4	Wireless Networking	78	1974	Craft Brew Alliance	19.25	55.0	2	4	Beverage	36
2651	Twitter Inc.	31.85	79.6	3	4	Internet	70	2349	Beimond Ltd.	10.95	54.8	2	3	Hotel/Gaming	25
1228	TPI Composites	27.54	78.7	-	4	Power	85	769	Market Corp.	1134.83	54.7	5	1	Insurance (Prop/Cas.)	52
1025	Liberty Global plc	31.15	77.9	4	3	Cable TV	62	1170	Rayonier Inc.	37.65	54.6	3	3	Paper/Forest Products	52
833	Telephone & Data	25.98	74.2	3	3	Telecom Services	76	437	CoStar Group	386.53	54.1	2	3	Information Services	24
1370	Qorvo Inc.	78.88	74.0	3	3	Semiconductor	9	1973	Cott Corp.	15.70	54.1	-	3	Beverage	36
2602	Red Hat, Inc.	168.80	73.9	-	3	Computer Software	27	1535	Mid-America Apartment	92.03	54.1	3	2	R.E.I.T.	93
538	Extraction Oil & Gas	14.73	73.7	-	3	Natural Gas (Div.)	67	930	Shenandoah Telecom.	31.85	53.1	3	3	Telecom Services	76
1548	Washington R.E.I.T.	29.25	71.3	4	3	R.E.I.T.	93	597	CalAmp Corp.	21.11	52.8	3	4	Wireless Networking	76
716	Kratos Defense & Sec.	10.66	71.1	3	4	Aerospace/Defense	43	1353	CEVA, Inc.	34.25	52.7	4	4	Semiconductor	9
2375	Cimpress N.V.	136.81	70.2	4	3	Publishing	89	948	Encoson ADR	7.89	52.6	5	3	Telecom Equipment	88
205	Cutera, Inc.	55.85	69.8	2	3	Med Supp Non-Invasive	42	2347	World Wrestling Ent.	42.06	52.6	3	4	Entertainment	40
1518	Digital Realty Trust	104.54	69.7	3	3	R.E.I.T.	93	1521	Essex Property Trust	241.46	52.5	3	3	R.E.I.T.	93
1526	Healthcare Rty Trust	27.72	69.3	5	3	R.E.I.T.	93	516	Occidental Petroleum	78.20	52.1	3	3	Petroleum (Integrated)	56
964	Zayo Group Holdings	34.56	69.1	3	3	Telecom Equipment	88	2426	Helix Energy Solutions	7.77	51.8	3	4	Oilfield Svcs/Equip.	94
1828	Paxivity Holding	56.85	68.5	2	4	E-Commerce	29	1519	Duke Realty Corp.	28.39	50.7	3	3	R.E.I.T.	93
1569	Franco-Nevada Corp.	74.44	67.7	3	3	Precious Metals	27	212	Gardien Property Trust	204.96					

STOCKS WITH HIGHEST ANNUAL TOTAL RETURNS (NEXT 3 TO 5 YEARS)
(Estimated compound annual stock price appreciation plus estimated annual dividend income.)

Page No.	Stock Name	Recent Price	Est'd Total Return	Time-liness	Safety Rank	Industry Group	Industry Rank	Page No.	Stock Name	Recent Price	Est'd Total Return	Time-liness	Safety Rank	Industry Group	Industry Rank
2144	Fred's Inc.	1.60	70%	-	5	Retail Store	48	2338	Nexstar Media Group	62.35	32%	1	3	Entertainment	40
2201	Ascena Retail Group	2.14	64%	4	5	Retail (Softlines)	52	2241	Sinus XM Holdings	6.63	32%	2	4	Entertainment	94
1034	Frontier Commun.	9.78	56%	3	5	Telecom. Utility	84	2441	Weatherford Int'l p/c	3.27	32%	4	5	Oilfield Svcs/Equip	40
1195	FTD Companies	6.07	55%	5	5	Household Products	86	941	Acacia Communications	30.97	31%	-	3	Telecom. Equipment	86
544	Southwestern Energy	4.16	55%	3	4	Natural Gas (Div.)	67	2406	Denbury Resources	3.40	31%	3	5	Petroleum (Producing)	46
611	Clean Energy Fuels	1.87	52%	-	5	Oil/Gas Distribution	60	900	Goodyear Tire	24.92	31%	3	3	Auto Parts	10
2211	Francesca's Hldgs.	5.16	46%	4	4	Retail (Softlines)	52	2188	Pier 1 Imports	2.23	31%	-	4	Retail (Hardlines)	55
2422	Nabors Inds.	7.99	46%	4	4	Oilfield Svcs/Equip	94	588	Rayonier Advanced Mat	18.49	31%	2	4	Chemical (Specialty)	15
1576	Tahoe Resources	4.92	46%	4	5	Precious Metals	72	338	Teekay Corp.	9.04	31%	3	5	Maritime	97
2429	TETRA Technologies	4.29	46%	3	5	Oilfield Svcs/Equip	94	2346	Viacom Inc. 'B'	29.79	31%	-	3	Entertainment	40
802	Community Health	4.52	44%	-	4	Medical Services	7	1563	Arconic Inc.	17.80	30%	-	3	Metals & Mining (Div.)	65
1517	DDR Corp.	7.29	44%	-	4	R.E.I.T.	93	2169	Big 5 Sporting Goods	7.65	30%	5	4	Retail (Hardlines)	55
2409	Laredo Petroleum	10.01	44%	3	5	Petroleum (Producing)	46	981	Commercial Vehicle	8.23	30%	4	5	Auto Parts	10
222	Owens & Minor	15.03	44%	4	3	Med Supp Non-Invasive	42	627	Enable Midstream Part.	14.28	30%	4	4	Pipeline MLPs	79
991	Honzon Global Corp.	5.69	43%	4	4	Auto Parts	10	1753	Gen'l Electric	14.27	30%	5	4	Diversified Co.	33
623	Boardwalk Pipeline	9.26	40%	4	4	Pipeline MLPs	79	1165	Glatfelter	16.77	30%	5	3	Paper/Forest Products	72
1528	SUPERVALU Inc.	15.59	40%	4	5	Retail/Wholesale Food	57	925	Gogo Inc.	5.06	30%	5	4	Telecom. Services	16
613	Kinder Morgan Inc.	16.07	39%	3	3	Oil/Gas Distribution	60	1570	Goldcorp Inc.	13.49	30%	4	3	Precious Metals	72
223	Patterson Cos.	22.09	39%	5	3	Med Supp Non-Invasive	42	2309	Harley-Davidson	40.31	30%	3	3	Recreation	23
526	Antero Resources	18.53	39%	3	3	Natural Gas (Div.)	67	1763	Leucadia National	24.44	30%	4	3	Diversified Co.	33
530	Chesapeake Energy	3.13	38%	3	5	Natural Gas (Div.)	67	1619	Mallinckrodt plc	12.33	30%	3	3	Drug	69
1018	Sally Beauty	14.97	38%	2	3	Toiletries/Cosmetics	58	2181	Michael's Cos. (The)	18.40	30%	3	3	Retail (Hardlines)	55
846	TESARO, Inc.	46.39	38%	5	4	Biotechnology	87	515	Murphy Oil Corp.	29.69	30%	3	3	Petroleum (Integrated)	51
1582	Alliance Resource	18.00	37%	4	3	Metals & Mining (Div.)	65	2309	Alliance Resource	6.80	30%	3	3	Advertising	36
332	Frontline Ltd.	4.50	37%	4	5	Maritime	97	541	Newfield Exploration	27.87	30%	3	3	Natural Gas (Div.)	67
2383	Gannett Co.	10.84	37%	3	3	Newspaper	80	1769	Pentair plc	44.44	30%	-	3	Diversified Co.	33
927	IDT Corp.	5.25	37%	-	3	Telecom. Services	76	2577	SLM Corporation	11.52	30%	2	3	Financial Svcs. (Div.)	16
119	Maxar Technologies	43.78	37%	3	2	Aerospace/Defense	43	1021	Tenneco Inc.	45.89	30%	2	3	Auto Parts	10
1574	Petrium Resources	6.68	37%	3	3	Precious Metals	72	2166	Barnes & Noble	5.15	29%	3	4	Retail (Hardlines)	55
2416	Range Resources	14.36	37%	3	3	Petroleum (Producing)	40	2136	Big Lots Inc.	40.25	29%	3	3	Retail Store	48
2327	AMC Networks	52.78	36%	2	3	Entertainment	40	707	Bombardier Inc. 'B'	4.20	29%	4	5	Aerospace/Defense	43
2001	Bridgepoint Educ.	5.89	36%	4	4	Educational Services	63	626	EOT Midstream Part.	52.00	29%	3	3	Pipeline MLPs	79
1126	Hovnanian Enterpr. 'A'	2.05	36%	-	5	Homebuilding	5	1383	Electro Scientific	18.09	29%	1	3	Semiconductor Equip	60
2149	Pennny (J.C.)	2.77	36%	4	5	Retail Store	48	394	Huron Consulting	34.55	29%	4	3	Industrial Services	54
2339	Scrgpps (E.W.) 'A'	12.22	36%	5	3	Entertainment	40	838	Incyte Corp.	62.87	29%	4	4	Biotechnology	87
1032	Consol. Commun.	11.58	35%	4	3	Telecom. Utility	84	1531	Kimco Realty	14.45	29%	3	3	R.E.I.T.	93
628	Enbridge Energy Part.	9.03	35%	3	3	Pipeline MLPs	79	971	Rite Aid Corp.	1.63	29%	-	5	Pharmacy Services	2
398	Macquarie Infra.	38.54	35%	3	3	Industrial Services	54	847	United Therapeutics	101.93	29%	3	3	Biotechnology	87
1829	Sabre Corp.	22.67	35%	3	3	E-Commerce	10	2020	Universal Electronics	29.15	29%	5	3	Entertainment Tech	90
1001	Superior Inds. Int'l	13.30	35%	4	3	Auto Parts	10	1750	AmTrust Financial Svcs.	13.25	28%	3	3	Insurance (Prop/Cas.)	53
2329	Discovery, Inc.	23.05	34%	3	3	Entertainment	40	1009	Avon Products	4.20	28%	3	5	Toiletries/Cosmetics	58
1955	Smart & Final Stores	4.95	34%	4	4	Retail/Wholesale Food	57	2662	Compass Diversified	16.00	28%	4	3	Public/Private Equity	92
931	Sprint Corp.	5.15	34%	-	4	Telecom. Services	76	359	Dave & Buster's Ent.	41.53	28%	3	3	Restaurant	59
2342	TEGNA Inc.	10.54	34%	-	3	Entertainment	40	1152	HNI Corp.	35.32	28%	4	3	Furn/Home Furnishings	54
1412	Diabold Nixdorf	12.50	33%	4	3	Office Equip/Supplies	75	1800	Investment Tech	21.85	28%	4	3	Brokers & Exchanges	20
2406	RFC Inc.	18.87	33%	2	3	Oilfield Svcs/Equip.	94	992	LCI Industries	89.65	28%	2	3	Auto Parts	10
624	Buckeye Partners LP	32.90	32%	5	3	Pipeline MLPs	79	1417	Pitney Bowes	8.86	28%	4	3	Office Equip/Supplies	75
839	Intercept Pharm.	70.15	32%	-	3	Biotechnology	87	1956	SpartanNash Co.	17.21	28%	4	3	Retail/Wholesale Food	57
2335	MSG Networks	18.85	32%	-	3	Entertainment	40	1127	SunPower Corp.	8.47	28%	4	5	Power	85
1197	Newell Brands	27.31	32%	3	3	Household Products	86	1582	Teck Resources 'B'	32.97	28%	2	4	Metals & Mining (Div.)	65

STOCKS WITH HIGHEST PROJECTED 3- TO 5-YEAR DIVIDEND YIELD
Based upon the projected dividend per share 3 to 5 years hence divided by the recent price

Page No.	Stock Name	Recent Price	Est'd Future Yield	Time-liness	Safety Rank	Industry Group	Industry Rank	Page No.	Stock Name	Recent Price	Est'd Future Yield	Time-liness	Safety Rank	Industry Group	Industry Rank
398	Macquarie Infra	38.54	18%	2	3	Industrial Services	54	2307	Cedar Fair L.P.	65.62	8%	3	3	Recreation	23
1511	Annaly Capital Mgmt.	10.20	16%	4	3	R.E.I.T.	93	102	Daimler AG	79.50	8%	3	3	Automotive	44
624	Buckeye Partners L.P.	39.80	15%	5	3	Pipeline MLPs	79	202	DeWetley (R.R.) & Sons	5.72	8%	-	3	Advertising	31
338	Teekay Corp.	9.04	15%	3	5	Maritime	97	1526	GEO Group (The)	24.42	8%	4	3	R.E.I.T.	93
1582	Alliance Resource	18.00	14%	4	3	Metals & Mining (Div.)	65	2383	Gannett Co.	10.84	8%	3	3	Newspaper	80
1517	DDR Corp.	7.29	14%	-	4	R.E.I.T.	93	395	Iron Mountain	33.49	8%	4	3	Industrial Services	54
621	Andeavor Logistics LP	45.30	13%	3	3	Pipeline MLPs	79	2213	L Brands	33.94	8%	3	3	Retail (Softlines)	52
2660	Blackstone Group LP	31.64	13%	4	3	Public/Private Equity	92	633	MPX LP	34.67	8%	3	4	Pipeline MLPs	79
626	EOT Midstream Part.	52.00	13%	3	3	Pipeline MLPs	79	634	Magellan Midstream	68.33	8%	3	3	Pipeline MLPs	79
630	Energy Transfer Part.	18.23	13%	-	3	Pipeline MLPs	79	218	Meridian Bioscience	14.10	8%	5	3	Med Supp Non-Invasive	42
635	Phillips 66 Partners	49.79	12%	2	3	Pipeline MLPs	79	222	Owens & Minor	15.03	8%	4	3	Med Supp Non-Invasive	42
2658	Apollo Global Mgmt	30.73	12%	2	3	Public/Private Equity	92	2160	Sigmet Jewelers Ltd.	37.20	8%	4	3	Retail (Hardlines)	55
505	CVR Refining LP	18.85	12%	3	3	Petroleum (Integrated)	56	1547	Ventas, Inc.	52.84	8%	4	3	R.E.I.T.	93
1030	CenturyLink Inc.	18.13	12%	4	3	Telecom. Utility	84	937	Wendy's Group ADR	28.56	8%	2	3	Telecom. Services	75
627	Enable Midstream Part.	14.28	12%	4	4	Pipeline MLPs	79	2397	WPP PLC ADR	84.85	8%	3	2	Advertising	31
2174	GameStop Corp.	12.79	12%	4	3	Retail (Hardlines)	55	1550	Welltower Inc.	55.14	8%	5	3	R.E.I.T.	93
2659	Apollo Investment	5.42	11%	5	3	Public/Private Equity	92	617	Williams Cos.	26.12	8%	3	3	Oil/Gas Distribution	93
623	Boardwalk Pipeline	9.26	11%	4	4	Pipeline MLPs	79	640	Williams Partners L.P.	36.67	8%	4	4	Pipeline MLPs	79
631	EnLink Midstream Part.	15.75	11%	3	4	Pipeline MLPs	79	1993	Altria Group	55.27	7%	3	2	Tobacco	95
1226	Patterson Energy Group	17.98	11%	4	3	Power	85	1028	BCE Inc.	41.36	7%	5	3	Telecom. Utility	84
637	Spectra Energy Part.	32.13	11%	-	3	Pipeline MLPs	79	1029	BT Group ADR	16.16	7%	3	3	Telecom. Utility	84
638	Suburban Propane	22.44	11%	3	3	Pipeline MLPs	79	2405	Crescent Point Energy	10.31	7%	4	4	Petroleum (Producing)	46
620	AmerGas Partners	42.21	10%	3	3	Pipeline MLPs	79	141	Dominion Energy	63.14	7%	3	2	Electric Utility (East)	73
622	Antero Midstream Part.	26.74	10%	2	3	Pipeline MLPs	79	1218	Emera Inc.	40.87	7%	3	2	Power	85
2401	Black Stone Minerals	18.05	10%	4	3	Petroleum (Producing)	46	612	Enbridge Inc.	40.41	7%	3	3	Oil/Gas Distribution	60
629	Energy Transfer Equity	16.69	10%	2	4	Pipeline MLPs	79	2331	Entertainment Commun.	4.60	7%	5	4	Entertainment	40
632	Enterprise Products	26.75	10%	3	3	Pipeline MLPs	79	105	Ford Motor	11.27	7%	3	3	Automotive	44
1531	Kimco Realty	14.45	10%	3	3	R.E.I.T.	93	93	Gen'l Electric	14.27	7%	5	4	Diversified Co.	33
1536	Penn. R.E.I.T.	10.12	10%	3	3	R.E.I.T.	93	1527	HCP Inc.	23.52	7%	5	3	R.E.I.T.	93
636	Plans All Amer. Pipe.	24.54	10%	3	3	Pipeline MLPs	79	2517							

HIGH RETURNS EARNED ON TOTAL CAPITAL

Stocks with high average returns on capital in last 5 years ranked by earnings retained to common equity

Page No.	Stock Name	Ticker	Recent Price	Avg. Retained to Com. Eq.	Avg. Return On Cap.	Time-ness	Safety Rank	Beta	Current P/E Ratio	% Est'd Yield	Industry Group	Industry Rank
1715	Lennox Int'l	LII	203.86	640%	36%	2	3	1.10	20.4	1.0	Machinery	22
706	Boeing	BA	338.37	333%	46%	2	1	1.10	21.1	2.0	Aerospace/Defense	43
447	S&P Global	SPGI	194.83	198%	51%	2	2	1.10	22.8	1.0	Information Services	24
445	Moody's Corp.	MCO	167.89	177%	38%	2	3	1.15	21.8	1.0	Information Services	24
316	United Parcel Serv.	UPS	111.27	176%	34%	3	1	0.90	15.3	3.3	Air Transport	41
442	Garner Inc.	IT	130.53	153%	31%	2	2	0.95	34.4	NIL	Information Services	24
1916	Herbalife Nutrition	HLF	55.21	146%	35%	4	4	1.30	22.1	NIL	Food Processing	66
1191	Citroex Co.	CLX	118.71	123%	34%	4	2	0.70	19.7	3.2	Household Products	86
1140	Home Depot	HD	185.04	109%	28%	2	1	1.00	19.8	2.2	Retail Building Supply	26
212	IDEXX Labs	IDXX	204.96	73%	37%	2	3	0.90	50.0	NIL	Med Supp Non-Invasive	42
2130	O'Reilly Automotive	ORLY	265.74	72%	27%	2	2	0.95	17.3	NIL	Retail Automotive	14
2421	Core Laboratories	CLB	123.88	69%	38%	4	3	1.20	46.7	1.8	Oilfield Svcs/Equip	94
718	Lockheed Martin	LMT	324.19	63%	30%	2	1	0.80	21.3	2.5	Aerospace/Defense	43
997	Mentor, Inc.	MTOR	20.79	63%	34%	1	4	1.50	7.5	NIL	Auto Parts	47
127	Mettler-Toledo Int'l	MTD	546.43	62%	30%	3	2	1.05	28.3	NIL	Precision Instrument	47
1196	Kimberly-Clark	KMB	101.85	58%	27%	3	1	0.75	14.8	3.9	Household Products	86
1400	Int'l Business Mach.	IBM	143.00	56%	27%	5	1	0.90	12.4	4.4	Computers/Peripherals	37
2826	Manhattan Assoc.	MANH	44.17	56%	56%	4	3	1.20	35.3	NIL	IT Services	8
1815	Gilead Sciences	GILD	65.22	55%	32%	3	3	1.05	10.1	3.5	Drug	69
2572	MasterCard Inc.	MA	190.53	53%	42%	2	1	1.05	33.1	0.5	Financial Svcs. (Div.)	16
1143	Sherwin-Williams	SHW	377.94	53%	32%	1	2	1.10	20.1	0.9	Retail Building Supply	26
1980	National Beverage	FIZZ	87.74	52%	35%	2	3	0.85	24.2	NIL	Beverage	38
1192	Colgate-Palmolive	CL	62.28	51%	34%	4	4	1.20	20.0	2.7	Household Products	86
1627	PDL BioPharma	PDLI	3.03	51%	33%	4	4	1.20	10.1	NIL	Drug	69
606	Ubiquiti Networks	UBNT	73.50	47%	35%	3	3	0.90	18.3	NIL	Wireless Networking	78
1917	Hershey Co.	HSY	92.15	43%	32%	3	2	0.80	17.2	2.6	Food Processing	66
1119	Trex Co.	TREX	117.52	43%	43%	2	3	1.35	29.4	NIL	Building Materials	19
1933	Pilgrim's Pride Corp.	PPC	21.16	42%	27%	3	3	0.95	6.4	NIL	Food Processing	66
2216	TJX Companies	TJX	82.58	40%	38%	2	1	0.90	17.0	1.9	Retail (Softlines)	86
1201	Tipperware Brands	TUP	43.43	40%	28%	5	3	1.30	9.4	6.3	Household Products	86
2110	Michael Kors Hldgs.	KORS	61.39	38%	38%	3	3	0.95	14.1	NIL	Apparel	71
1795	Cboe Global Markets	CBOE	102.37	37%	57%	2	2	0.75	22.7	1.1	Brokers & Exchanges	20
2598	Intuit	INTU	190.17	37%	41%	2	2	1.15	35.0	0.8	Computer Software	27
1625	Novo Nordisk ADR	NVO	48.36	37%	67%	3	2	1.00	18.2	2.5	Drug	69
581	NewMarket Corp.	NEU	370.77	36%	27%	5	2	1.00	16.4	1.9	Chemical (Specialty)	15
578	LyondellBasell Inds	LYB	104.54	35%	28%	1	3	1.30	10.7	3.8	Chemical (Specialty)	15
2211	Francesca's Hldgs.	FRAN	5.16	34%	31%	4	4	0.75	9.4	NIL	Retail (Softlines)	52
2215	Ross Stores	ROST	80.84	34%	37%	2	2	0.95	20.2	1.1	Retail (Softlines)	52
1732	Toro Co.	TTC	59.66	32%	27%	2	2	0.95	21.8	1.3	Machinery	22
440	FactSet Research	FDS	194.11	31%	35%	3	2	0.95	27.2	1.3	Information Services	24
1943	USANA Health Sciences	USNA	111.65	31%	31%	3	3	1.00	24.8	NIL	Food Processing	66
2612	Accenture Plc	ACN	151.94	30%	51%	2	1	1.00	20.9	1.9	IT Services	8
847	United Therapeutics	UTHR	101.93	30%	29%	3	3	1.05	5.8	NIL	Biotechnology	87
2317	Polaris Inds.	PII	107.31	29%	30%	3	3	1.25	17.2	2.2	Recreation	23
949	F5 Networks	FFIV	169.63	27%	30%	3	3	1.00	23.7	NIL	Telecom. Equipment	88
373	Starbucks Corp.	SBUX	57.67	25%	29%	3	1	0.95	22.3	2.3	Restaurant	59
1993	Atrna Group	MCO	55.27	24%	29%	3	2	0.70	13.8	5.1	Tobacco	95
2363	Marriott Int'l	MAR	139.31	24%	113%	2	3	1.10	26.3	1.2	Hotel/Gaming	25
2202	Buckle (The), Inc.	BKE	23.05	23%	34%	3	3	0.90	12.1	4.3	Retail (Softlines)	52
2323	Sturm, Ruger & Co.	RGR	57.70	22%	36%	4	3	0.85	14.4	2.8	Recreation	23

BARGAIN BASEMENT STOCKS

Stocks with current price-earnings multiples and price-to-"net" working capital ratios that are in the bottom quartile of the Value Line universe
("Net" working capital equals current assets less all liabilities including long-term debt and preferred)

Page No.	Stock Name	Ticker	Recent Price	Percent Price-to-Net Wkg. Capital	Current P/E Ratio	Percent Price-to-Book Value	Time-ness	Safety Rank	Beta	% Est'd Yield	Industry Group	Industry Rank
980	China Auto. Sys.	CAAS	4.20	86%	4.7	37%	-	5	1.35	NIL	Auto Parts	10
1130	Meritage Homes	MTH	46.25	133%	9.6	113%	3	3	1.40	NIL	Homebuilding	5
1998	Universal Corp.	UVV	47.65	150%	10.6	89%	5	3	0.90	4.6	Tobacco	95
1124	Beazer Homes USA	BZH	15.87	154%	12.8	91%	3	5	1.75	NIL	Homebuilding	5
1134	TRI Pointe Group	TPH	17.65	156%	9.3	122%	2	3	1.35	NIL	Homebuilding	5
1129	M.D.C. Holdings	MDC	32.24	161%	10.9	123%	3	3	1.30	3.7	Homebuilding	5
1324	Avnet, Inc.	AVT	40.06	163%	10.1	88%	4	3	1.20	1.9	Electronics	50
2382	A.H. Belo	AHC	4.95	173%	11.0	94%	-	4	0.90	6.5	Newspaper	80
2169	Big 5 Sporting Goods	BGFV	7.65	176%	12.8	80%	-	4	0.90	7.8	Retail (Hardlines)	55
1407	Tech Data	TECD	79.47	183%	7.7	91%	3	3	1.10	NIL	Computers/Peripherals	37
2560	Franklin Resources	BEN	33.31	191%	9.9	138%	4	2	1.35	2.9	Financial Svcs. (Div.)	16
1627	PDL BioPharma	PDLI	3.03	192%	10.1	53%	4	4	1.20	NIL	Drug	69
1136	Toff Brothers	TOL	43.61	195%	10.0	135%	1	3	1.30	1.0	Homebuilding	5
1327	Celestica Inc.	CLS	11.80	196%	14.0	117%	4	3	1.00	NIL	Electronics	50
1127	KB Home	KBH	27.55	213%	10.0	115%	2	3	1.55	0.4	Homebuilding	5
1807	Goldman Sachs	GS	237.00	214%	9.9	94%	2	1	1.20	1.4	Investment Banking	6
1786	National Presto Ind.	NPK	96.90	230%	12.3	177%	4	3	0.95	6.2	Diversified Co.	33
1386	Kulicke & Soffa	KLIC	23.17	234%	11.5	156%	1	3	1.05	NIL	Semiconductor Equip	1
2186	PC Connection	CXNX	29.74	256%	13.8	149%	3	3	1.05	NIL	Retail (Hardlines)	55
2177	Hibbett Sports	HIBB	27.05	275%	13.2	169%	5	3	0.95	NIL	Retail (Hardlines)	55
1135	Taylor Morrison Home	TMHC	23.15	278%	9.3	158%	2	3	1.45	NIL	Homebuilding	5
1125	Horton D.R.	DHI	44.92	287%	11.6	188%	1	3	1.30	1.1	Homebuilding	5
2113	Perry Ellis Int'l	PERY	25.71	303%	13.9	102%	-	3	0.95	NIL	Apparel	71
137	Xcerra Corp.	XCRA	13.24	312%	12.4	196%	-	4	1.15	NIL	Precision Instrument	47
982	Cooper Tire & Rubber	CTB	24.00	318%	7.3	102%	3	3	1.05	1.8	Auto Parts	10
1986	FUJIFILM Hldgs. ADR	FUJIFY	38.40	345%	10.2	86%	-	3	0.95	1.7	Foreign Electronics	28
2178	Insight Enterprises	NSIT	45.37	352%	11.9	162%	1	3	1.30	NIL	Retail (Hardlines)	55
1132	PulteGroup, Inc.	PHM	31.17	374%	9.6	184%	1	3	1.30	1.2	Homebuilding	5
751	Russel Metals	RUS TO	30.49	377%	13.3	213%	3	3	1.10	5.0	Steel	13
1128	Lennar Corp.	LEN	54.43	380%	10.2	123%	2	3	1.30	0.3	Homebuilding	5
2159	Genesco Inc.	GCO	42.15	398%	13.0	93%	4	3	1.05	NIL	Shoe	61
1336	Methode Electronics	MEI	40.80	409%	14.0	210%	1	3	1.40	1.1	Electronics	50
737	Mueller Inds.	MLI	29.02	442%	13.0	271%	5	3	1.25	1.4	Metal Fabricating	68
2218	Tilly's, Inc.	TLYS	11.14	442%	13.9	173%	3	3	1.05	NIL	Retail (Softlines)	52
2162	Skechers U.S.A.	SKX	29.79	445%	13.2	204%	3	3	1.35	NIL	Shoe	61

UNTIMELY STOCKS

Stocks ranked 5 (Lowest) for Relative Price Performance in the next 12 months

Page No.	Stock Name	Recent Price	Time-Safety	Rank	Current P/E Ratio	% Est'd Yield	Industry Group	Industry Rank	Page No.	Stock Name	Recent Price	Time-Safety	Rank	Current P/E Ratio	% Est'd Yield	Industry Group	Industry Rank
2000	Adialtem Global Educ.	46.10	3	2	14.9	NIL	Educational Services	63	126	MTS Systems	48.35	3	3	19.0	2.5	Precision Instrument	47
942	ADTRAN, Inc.	15.30	3	5	22.2	2.4	Telecom. Equipment	88	1533	Macerch Comp. (The)	57.72	3	4	46.2	5.2	R.E.I.T.	96
1102	Aegion Corp.	24.50	3	3	18.1	NIL	Building Materials	87	2029	Maiden Hldgs. Ltd.	7.90	4	4	31.6	7.6	Reinsurance	93
832	Ainylam Pharmac. ■	96.14	4	1	NMF	NIL	Biotechnology	87	769	Marvel Corp.	1134.83	1	4	54.7	NIL	Insurance (Prop/Cas.)	53
1350	Ambarella, Inc.	50.56	4	4	36.1	NIL	Semiconductor	9	770	Mercury General	45.14	2	4	17.7	3.5	Insurance (Prop/Cas.)	53
2659	Apollo Investment	5.42	3	4	7.9	11.1	Public/Private Equity	92	1118	Meridian Bioscience	14.10	3	3	19.6	3.5	Med Supp Non-Invasive	42
1610	AstraZeneca PLC (ADS)	35.66	3	3	32.4	3.9	Drug	69	1557	MetLife Inc.	46.55	3	4	11.2	3.6	Insurance (Life)	14
704	Astronics Corp.	37.55	3	3	19.8	NIL	Aerospace/Defense	43	2129	Monro, Inc.	57.15	3	3	23.7	1.3	Retail Automotive	42
1028	BCE Inc. ■	41.36	3	3	15.9	7.3	Telecom. Utility	84	737	Mueller Inds.	29.02	3	6	12.9	1.4	Metal Fabricating	62
2349	Belmond Ltd.	10.95	3	3	54.8	NIL	Hotel/Gaming	25	219	Natus Medical	33.70	4	4	46.1	NIL	Med Supp Non-Invasive	48
2169	Big 5 Sporting Goods	7.65	4	5	12.6	7.6	Retail (Hardlines)	55	1930	Nestle SA ADS	76.67	1	3	24.3	3.1	Food Processing	66
1514	Boston Properties	122.77	3	3	33.7	2.6	R.E.I.T.	55	956	NETGEAR	58.15	3	3	25.8	NIL	Telecom. Equipment	88
306	Bristow Group	17.51	5	3	NMF	NIL	Air Transport	41	1505	New York Community	11.55	3	3	13.6	5.9	Thrift	83
799	Brookdale Senior Living	7.68	4	3	NMF	NIL	Medical Services	7	581	NextMarket Corp.	37.07	3	4	16.4	1.9	Chemical (Specialty)	15
624	Buckeye Partners L.P. ■	39.80	3	4	10.9	12.9	Pipeline MLPs	79	2598	Nuance Commun.	15.18	3	4	NMF	NIL	Computer Software	27
1597	CVR Partners LP	3.02	4	2	NMF	0.7	Chemical (Basic)	64	1626	Opko Health	3.22	3	3	NMF	NIL	Drug	69
2420	CARBO Ceramics	9.51	5	4	NMF	NIL	Oilfield Svcs/Equip.	94	2647	Pandora Media	7.17	5	5	NMF	NIL	Internet	70
1516	CoreCivic, Inc.	20.87	3	4	14.4	6.2	R.E.I.T.	93	582	Park Electrochemical	19.76	3	4	43.0	2.0	Chemical (Specialty)	15
1356	Cree, Inc.	41.06	3	4	NMF	NIL	Semiconductor	9	223	Patterson Cos.	22.09	3	4	11.0	4.7	Med Supp Non-Invasive	42
177	CryoLife Inc. ■	25.85	3	4	86.2	NIL	Med Supp Invasive	91	1536	Penn. R.E.I.T.	10.12	3	4	33.7	8.4	R.E.I.T.	93
1328	Cubic Corp.	71.00	3	2	59.2	0.4	Electronics	51	1198	PepsiCo, Inc.	96.79	1	2	17.3	3.8	Beverage	38
625	DCP Midstream LP	37.24	3	3	41.4	8.4	Pipeline MLPs	79	1981	Philip Morris Int'l ■	80.81	4	3	15.2	5.3	Tobacco	97
361	Dine Brands Global	78.02	3	3	17.1	3.2	Restaurant	59	636	Plains All Amer. Pipe	24.58	4	3	16.9	4.9	Pipeline MLPs	95
2423	Dri-Quip, Inc.	44.35	3	3	NMF	NIL	Oilfield Svcs/Equip.	94	368	Potbelly Corp.	11.65	4	3	46.6	NIL	Restaurant	79
2424	Enscoc pic	6.02	4	5	NMF	0.7	Oilfield Svcs/Equip.	94	2150	PriceSmart	82.55	3	3	24.9	0.8	Retail Store	48
2331	Entertainment Commun.	4.60	4	3	23.0	4.3	Entertainment	40	1198	Procter & Gamble ■	71.44	1	3	16.2	4.0	Household Products	86
948	Ericsson ADR	7.89	3	3	52.6	1.6	Telecom. Equipment	88	1538	Public Storage	210.03	1	4	29.0	4.0	R.E.I.T.	93
1195	FTD Companies	6.07	3	3	NMF	NIL	Household Products	86	1017	Revlon Inc.	20.00	3	3	NMF	NIL	Toiletries/Cosmetics	58
1523	Federal Rty. Inv. Trust	117.78	1	4	37.4	2.4	R.E.I.T.	93	2436	Rowan Cos. pic	14.59	3	4	NMF	NIL	Oilfield Svcs/Equip.	94
364	Fiesta Restaurant ■	24.65	4	5	22.4	NIL	Restaurant	59	2339	Sanofi ADR	38.66	1	3	16.6	4.7	Drug	69
600	Finisar Corp.	16.70	4	4	83.5	NIL	Wireless Networking	78	845	Seppis (E.W.) 'A'	12.22	3	4	17.5	1.6	Entertainment	40
1329	Fitbit Inc.	5.08	4	4	NMF	NIL	Electronics	50	337	Ship Finance Int'l	14.45	4	4	NMF	NIL	Maritime	87
1712	Flowserve Corp.	46.82	3	4	26.6	1.6	Machinery	22	2649	Sohu.com Inc.	35.61	4	4	NMF	NIL	Internet	70
1234	Fluor Corp.	44.67	3	2	19.0	1.9	Engineering & Const	82	1342	Stratusys Ltd.	19.51	3	4	NMF	NIL	Electronics	50
441	Forrester Research	42.50	3	3	30.6	1.9	Information Services	24	1731	Tennant Co.	72.50	3	3	37.2	1.2	Machinery	22
2173	Fossil Group	16.44	4	4	65.8	NIL	Retail (Hardlines)	55	2608	Teradata Corp.	39.25	3	2	56.1	NIL	Computer Software	27
333	Gaslog Ltd.	17.90	4	3	29.8	3.4	Maritime	97	846	TESARO, Inc.	46.39	4	3	NMF	NIL	Biotechnology	87
1753	Genl Electric	14.27	4	4	14.4	3.4	Diversified Co.	33	110	Tesla, Inc.	301.97	4	3	NMF	NIL	Automotive	44
1165	Glatfelter	16.77	3	2	33.5	3.1	Paper/Forest Products	75	1344	3D Systems	11.03	4	4	NMF	NIL	Electronics	50
925	Gogo Inc.	5.06	4	4	NMF	NIL	Telecom. Services	76	1919	TiVo Corp.	13.70	4	4	22.8	5.3	Entertainment Tech	90
1222	Green Plains Inc. ■	19.20	4	4	32.0	2.5	Power	85	2040	Tootsie Roll	28.25	1	3	28.3	1.2	Food Processing	86
2028	Greenlight Capital Re	15.55	3	3	NMF	NIL	Reinsurance	96	2240	Transocean Ltd.	12.41	5	4	NMF	NIL	Oilfield Svcs/Equip.	94
1527	HCP Inc.	23.52	3	4	33.6	6.3	R.E.I.T.	93	1101	Tupperware Brands	43.43	3	3	9.4	6.3	Household Products	66
2517	HSBC Holdings PLC	48.63	3	3	10.8	5.3	Bank	18	1998	Universal Corp. ■	47.65	3	4	10.6	4.6	Tobacco	95
734	Havens International	39.09	3	3	47.7	2.3	Metal Fabricating	68	903	Universal Electronics ■	29.15	3	3	29.2	NIL	Entertainment Tech	90
1528	Healthcare Rty. Trust	27.72	3	3	69.3	4.3	R.E.I.T.	93	607	ViaSat, Inc.	64.29	3	3	NMF	NIL	Wireless Networking	78
392	Healthcare Svcs	32.03	3	2	32.0	2.1	Industrial Services	54	1505	Welltower Inc.	55.14	3	4	23.0	6.4	R.E.I.T.	93
2322	Heartland Express	17.65	3	3	13.2	NIL	Retail (Hardlines)	35	729	Wesco Aircraft	10.25	3	4	15.1	NIL	Aerospace/Defense	43
3177	Hibbett Sports	27.06	3	3	13.2	NIL	Retail (Hardlines)	35	2380	Wiley (John) & Sons	66.85	3	3	21.5	1.9	Publishing	89
1400	Int'l Business Mach. ■	143.00	1	4	12.4	4.4	Computers/Peripherals	37									

■ Newly added this week.

HIGHEST DIVIDEND YIELDING NON-UTILITY STOCKS

Based upon estimated year-ahead dividends per share

Page No.	Stock Name	Recent Price	Time-Safety	Rank	Current P/E Ratio	% Est'd Yield	Industry Group	Industry Rank	Page No.	Stock Name	Recent Price	Time-Safety	Rank	Current P/E Ratio	% Est'd Yield	Industry Group	Industry Rank
628	Enbridge Energy Part	9.03	3	3	10.6	15.5†	Pipeline MLPs	79	612	Enbridge Inc.	40.41	3	3	16.2	6.6	Oil/Gas Distribution	60
624	Buckeye Partners L.P.	39.80	5	3	10.9	12.9	Pipeline MLPs	79	2382	A.H. Belo	4.95	-	4	11.0	6.5	Newspaper	80
630	Energy Transfer Part.	18.23	4	3	19.2	12.4	Pipeline MLPs	79	632	Enterprise Products	26.75	3	3	17.3	6.5	Pipeline MLPs	79
2174	GameStop Corp.	12.79	4	3	4.4	11.9	Retail (Hardlines)	55	1217	Covanta Holding Corp.	26.74	2	3	14.9	6.4	Pipeline MLPs	79
1511	Annaly Capital Mgmt.	10.20	4	3	8.7	11.8	R.E.I.T.	93	1616	GlaxoSmithKline ADR	39.61	4	1	20.7	6.4	Power	85
2166	Barnes & Noble	5.15	3	4	15.1	11.7†	Retail (Hardlines)	55	2378	Quad/Graphics Inc.	18.70	3	4	9.0	6.4	Drug	69
1582	Alliance Resource	18.00	4	3	7.7	11.6	Metals & Mining (Div.)	65	616	TransCanada Corp.	43.11	3	3	20.1	6.4	Oil/Gas Distribution	60
2659	Apollo Investment	5.42	3	3	7.9	11.1	Public/Private Equity	92	937	Vodafone Group ADR	28.56	2	3	19.0	6.4	Telecom. Services	76
638	Suburban Propane	72.24	3	3	13.9	10.7	Pipeline MLPs	79	930	Welltower Inc.	55.14	3	3	23.0	6.4	R.E.I.T.	93
1517	DDR Corp.	7.29	4	4	NMF	10.4	R.E.I.T.	93	919	AT&T Inc.	31.70	3	1	9.3	6.3	Telecom. Services	76
398	Macquarie Infra.	38.54	2	3	14.3	10.4	Industrial Services	54	1527	HCP Inc.	23.52	3	3	33.6	6.3	R.E.I.T.	93
2395	National CineMedia	6.80	3	3	27.2	10.0†	Advertising	79	1201	Tupperware Brands	43.43	5	3	9.4	6.3	Household Products	86
631	EnLink Midstream Part.	15.75	3	4	39.4	9.9	Pipeline MLPs	79	1766	National Presto Ind.	96.90	4	3	12.3	6.2	Diversified Co.	33
1226	Pattern Energy Group	17.98	4	3	40.0	9.9	Power	85	1547	W.P. Carey Inc.	65.94	3	3	26.2	6.2	R.E.I.T.	93
337	Ship Finance Int'l	14.45	5	4	13.8	9.7	Maritime	97	1545	Ventas, Inc.	52.84	4	3	37.7	6.0	R.E.I.T.	93
1204	Aberdeen Asia-Pac. Fd	4.47	-	4	NMF	9.4	Investment Co.	-	1794	BGC Partners	12.29	-	3	10.2	5.9	Brokers & Exchanges	80
2663	Gladstone Capital	8.93	3	3	9.9	9.4	Public/Private Equity	92	2383	Gannett Co.	10.84	3	3	18.1	5.9	Newspaper	80
620	AmeriGas Partners	42.21	3	3	22.8	9.2	Pipeline MLPs	79	1505	New York Community	11.55	5	3	13.6	5.9	Thrift	83
637	Spectra Energy Part.	32.13	3	3	9.1	9.2	Pipeline MLPs	79	635	Phillips 66 Partners	48.79	2	3	14.4	5.9	Pipeline MLPs	79
621	Andeavor Logistics LP	45.30	3	3	10.0	9.0	Pipeline MLPs										

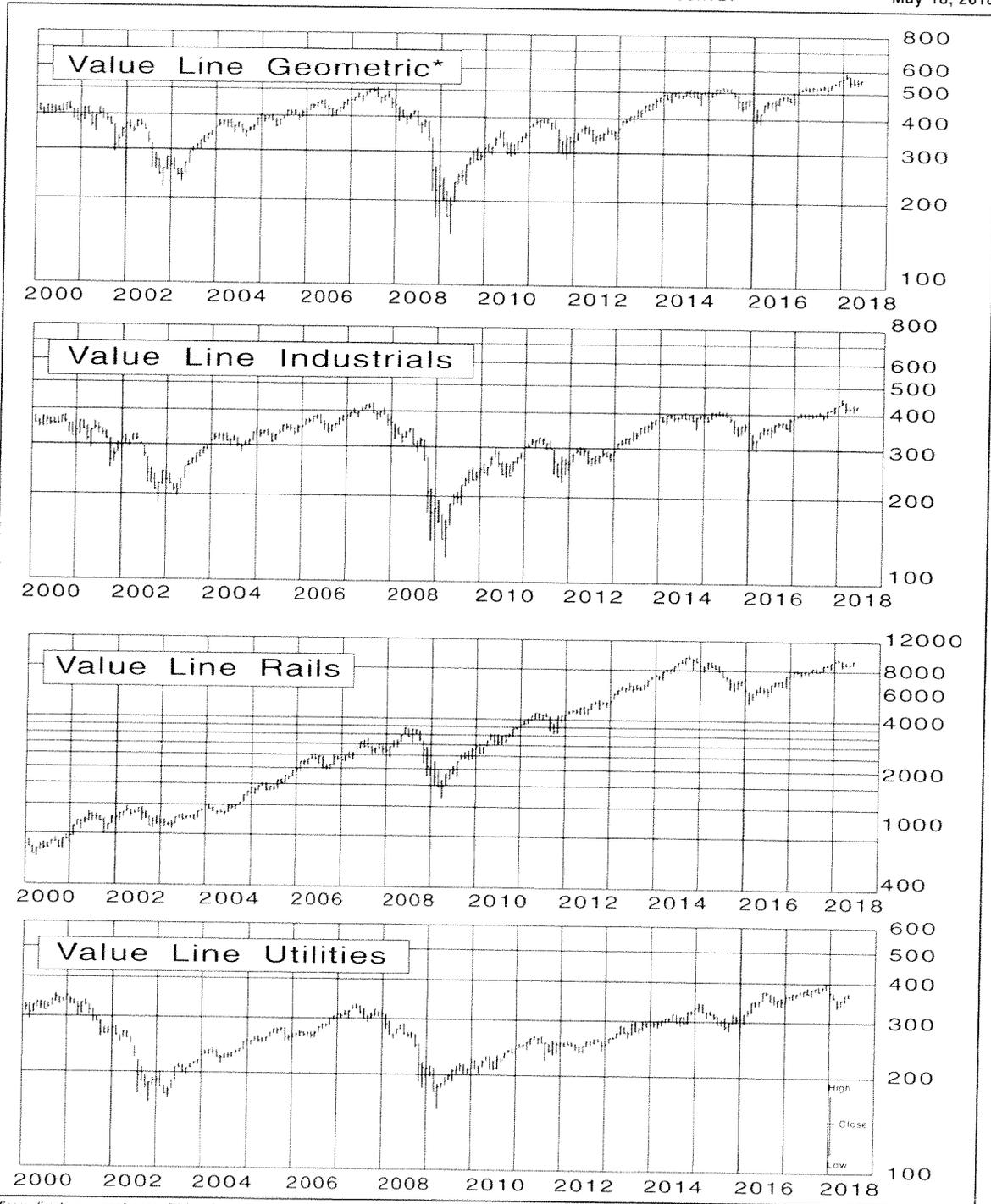
HIGHEST GROWTH STOCKS

(To be included, a company's annual growth of sales, cash flow, earnings, dividends and book value must together have averaged 10% or more over the past 10 years and be expected to average at least 10% in the coming 3-5 years.)

Page No.	Stock Name	Ticker	Recent Price	Growth Past 10 Years	Est'd Growth 3-5 Years	Time-liness	Safety Rank	Beta	Current P/E Ratio	Est'd Yield	Estimated 3-5 Year Price Appreciation	Industry Group	Industry Rank
1702	AAON, Inc.	AAON	30.50	12%	14%	4	3	1.30	22.6	0.9	30-95%	Machinery	22
196	Abaxis, Inc.	ABAX	68.27	12%	10%	3	3	1.05	47.4	1.1	5-45%	Med Supp Non-Invasive	42
2119	Advance Auto Parts	AAP	116.80	12%	12%	4	3	1.05	16.5	0.2	55-130%	Retail Automotive	14
1815	Akamai Technologies	AKAM	73.68	15%	12%	4	3	1.20	37.8	NIL	55-125%	E-Commerce	29
1946	Alf. Couche-Tard	ATOB.TO	54.50	21%	15%	3	3	0.80	14.7	0.7	100-205%	Retail/Wholesale Food	57
434	Alliance Data Sys.	ADS	201.75	17%	17%	3	3	1.15	8.8	1.1	80-170%	Information Services	24
2634	Alphabet Inc.	GOOG	1053.91	22%	13%	2	1	1.10	27.2	NIL	25-55%	Internet	5
2635	Amazon.com	AMZN	1592.39	30%	24%	3	3	1.15	NMF	NIL	N-15%	Internet	70
1395	Apple Inc.	AAPL	186.05	34%	12%	1	2	0.95	15.6	1.6	25-70%	Computers/Peripherals	37
352	Bu's Restaurants	BURI	55.70	16%	12%	3	3	0.85	27.6	0.8	35-95%	Restaurant	59
2636	Baidu, Inc.	BIDU	263.09	48%	18%	2	3	1.40	29.0	NIL	25-90%	Internet	70
565	Baichem Corp.	BPCP	95.03	18%	12%	3	3	1.10	32.8	0.4	N-45%	Chemical (Specialty)	15
2136	Big Lots, Inc.	BIG	40.25	11%	12%	3	3	1.10	8.4	3.1	110-210%	Retail Store	48
2545	BlackRock, Inc.	BLK	519.93	14%	12%	2	2	1.30	17.9	2.2	20-65%	Financial Svcs. (Div.)	16
2637	Booking Holdings	BKNG	2161.60	35%	14%	2	3	1.20	25.0	NIL	15-70%	Internet	70
116	Brüker Corp.	BRKR	30.35	15%	14%	2	3	1.10	22.5	0.5	30-100%	Precision Instrument	47
1353	CEVA, Inc.	CEVA	34.25	13%	12%	4	4	1.20	52.7	NIL	30-105%	Semiconductor	9
1907	Calavo Growers	CVGW	94.45	13%	12%	2	3	0.65	31.0	1.0	N-20%	Food Processing	66
201	Cartel Medical Corp.	CMD	118.77	13%	20%	2	3	0.95	46.2	0.2	N-25%	Med Supp Non-Invasive	42
2124	CarMax, Inc.	KMX	63.15	14%	12%	3	3	1.25	15.3	NIL	50-120%	Retail Automotive	14
2103	Carter's Inc.	CRI	103.95	14%	11%	3	3	0.85	21.0	1.7	35-100%	Apparel	71
1813	Celgene Corp.	CELG	83.13	33%	11%	3	3	1.25	11.2	NIL	55-130%	Drug	6
800	Centene Corp.	CNC	113.41	22%	12%	2	3	1.05	16.4	NIL	N-35%	Medical Services	69
1747	Chemed Corp.	CHE	320.48	12%	12%	2	3	0.80	29.0	0.4	N-5%	Diversified Co.	33
2352	Churchill Downs	CHDN	278.85	10%	11%	3	3	0.95	47.3	0.6	N-25%	Hotel/Gaming	25
117	Cognex Corp.	CGNX	47.02	12%	13%	3	3	1.20	39.2	0.4	N-30%	Precision Instrument	47
2618	Cognizant Technology	CTSH	75.55	24%	11%	1	2	1.05	16.8	1.1	30-80%	IT Services	8
118	Coherent, Inc.	COHR	170.53	12%	18%	2	3	1.20	14.3	NIL	50-130%	Precision Instrument	47
1022	Comcast Corp.	CMCSA	30.59	15%	11%	1	2	0.90	12.5	2.5	80-145%	Cable TV	62
1972	Constellation Brands	STZ	221.46	11%	11%	2	3	0.80	29.7	1.4	N-50%	Beverage	38
307	Copa Holdings, S.A.	CPA	116.24	12%	11%	3	3	1.35	11.6	3.0	N-45%	Air Transport	41
2125	Copart, Inc.	CPRT	53.20	13%	11%	2	2	1.00	28.0	NIL	N-70%	Retail Automotive	14
437	CoStar Group	CSGP	386.53	17%	14%	2	3	1.15	54.1	NIL	10-70%	Information Services	24
2638	Ctrip.com Int'l ADR	CTRP	42.67	22%	20%	4	3	1.25	47.4	NIL	30-100%	Internet	70
2142	Dollar Tree, Inc.	DLTR	93.68	17%	15%	2	3	0.85	16.6	NIL	35-95%	Retail Store	48
923	Dycor Inds.	DY	108.95	14%	13%	3	3	1.30	19.1	NIL	40-110%	Telecom Services	76
179	Edwards Lifesciences	EW	134.83	15%	12%	2	3	0.85	29.0	NIL	25-85%	Med Supp Invasive	51
968	Express Scripts	ESRX	68.12	21%	11%	-	3	0.95	9.3	NIL	75-165%	Pharmacy Services	2
440	FactSet Research	FDS	194.11	13%	11%	3	2	0.95	27.2	1.3	15-55%	Information Services	24
2558	FirstCash, Inc.	FCFS	87.75	10%	14%	-	3	0.85	26.6	1.0	N-20%	Financial Svcs. (Div.)	16
442	Gartner Inc.	IT	130.53	16%	14%	2	2	0.95	34.4	NIL	15-55%	Information Services	24
2562	Global Payments	GPNI	113.96	12%	10%	3	3	1.15	44.7	NIL	N-50%	Financial Svcs. (Div.)	16
392	Healthcare Svcs.	HCSG	38.34	11%	12%	2	3	0.90	32.0	2.1	70-120%	Industrial Services	54
713	HEICO Corp.	HEI	91.32	16%	10%	2	3	0.80	42.3	0.2	N-20%	Aerospace/Defense IT Services	43
2624	Henry (Jack) & Assoc.	JKHY	122.13	11%	11%	3	1	0.85	33.2	1.2	N-N%	Medical Services	7
808	Humana Inc.	HUM	278.81	14%	12%	2	3	0.85	20.1	0.7	N-45%	Med Supp Invasive	51
181	ICU Medical	ICUI	259.25	12%	10%	2	3	0.85	35.8	NIL	5-60%	Information Services	24
443	IHS Markit	INFO	50.55	16%	-	3	1	1.05	22.5	NIL	20-80%	Precision Instrument	47
122	II-VI Inc.	IVI	43.85	13%	12%	3	3	1.20	24.6	NIL	5-60%	Precision Instrument	47
2625	Infosys Ltd. ADR	INFY	17.32	14%	11%	2	3	0.85	14.9	3.2	100-160%	IT Services	8
1799	Intercontinental Exch.	ICE	70.07	22%	11%	2	2	0.80	20.0	1.4	30-70%	Brokers & Exchanges	20
2596	Intuit Inc.	INTU	190.17	11%	13%	2	2	1.15	35.0	0.8	N-25%	Computer Software	27
184	Intuitive Surgical	ISRG	462.60	25%	14%	2	3	0.85	45.4	NIL	N-40%	Med Supp Invasive	51
1334	Robot Corp.	IRBT	82.27	18%	15%	2	3	1.05	25.9	NIL	75-155%	Electronics	50
576	KMG Chemicals	KMG	64.23	11%	12%	2	3	1.05	23.4	0.2	N-40%	Chemical (Specialty)	15
1014	Lauder (Estee)	EL	136.20	12%	10%	2	2	0.80	29.0	1.1	5-35%	Toiletries/Cosmetics	58
2333	Luons Gate 'A'	LGFA	22.91	14%	15%	3	3	1.15	18.9	1.6	75-160%	Entertainment	40
1312	Littelfuse Inc.	LFUS	211.79	11%	11%	2	3	1.05	24.9	0.7	N-45%	Electrical Equipment	39
2160	Madden (Steven) Ltd.	SHOO	48.75	15%	12%	3	3	1.05	18.8	1.6	5-65%	Shoe	61
1802	MarketAxess Holdings	MKTX	203.30	19%	16%	2	3	0.90	43.3	0.6	N-45%	Brokers & Exchanges	20
1238	MasTec	MTZ	47.65	17%	12%	3	3	1.80	14.2	NIL	45-120%	Engineering & Const	82
2572	MasterCard Inc.	MA	190.53	21%	14%	2	1	1.05	33.1	0.5	N-20%	Financial Svcs. (Div.)	16
399	MAXIMUS Inc.	MMS	68.33	17%	11%	3	3	1.10	20.0	0.3	30-100%	Industrial Services	54
1928	Mediast Inc.	MED	118.50	17%	16%	2	3	0.85	37.0	1.6	N-5%	Food Processing	66
1365	Microsemi Corp.	MSCC	67.43	16%	11%	-	3	1.25	15.3	NIL	25-85%	Semiconductor	9
1720	Middleby Corp. (The)	MIDD	131.63	19%	12%	4	3	1.20	19.2	NIL	30-100%	Machinery	22
1366	Monolithic Power Sys.	MPWR	124.11	18%	16%	2	3	1.20	47.7	1.0	5-55%	Semiconductor	9
1979	Monster Beverage	MNST	53.08	21%	14%	3	3	0.85	32.0	NIL	20-90%	Beverage	38
220	Neogen Corp.	NEOG	71.83	15%	12%	2	3	1.00	63.0	NIL	N-25%	Med Supp Non-Invasive	42
2337	Netflix, Inc.	NFLX	326.89	25%	13%	2	3	1.05	NMF	NIL	N-35%	Entertainment	40
2005	New Orient Ed. ADS	EDU	92.25	25%	16%	2	3	1.05	35.2	NIL	15-70%	Educational Services	63
2161	NIKE, Inc. 'B'	NKE	68.46	12%	11%	4	1	0.95	27.2	1.2	25-55%	Shoe	61
1722	Nordson Corp.	NDSN	131.72	12%	12%	2	3	1.25	20.6	0.2	N-10%	Machinery	22
1367	NVIDIA Corp.	NVDA	250.40	11%	20%	3	3	1.15	48.6	0.2	N-10%	Semiconductor	9
326	Old Dominion Freight	ODFL	141.42	16%	11%	2	3	1.05	24.2	0.4	N-25%	Trucking	35
221	Omniceil, Inc.	OMCL	46.35	13%	11%	3	3	0.95	46.4	NIL	10-60%	Med Supp Non-Invasive	42
1827	Open Text Corp.	OTEX	36.37	17%	12%	3	3	0.85	28.2	1.5	25-80%	E-Commerce	29
367	Papa John's Int'l	PZZA	58.73	12%	13%	4	3	0.90	19.6	1.7	60-140%	Restaurant	59
2317	Polars Inds.	PII	107.31	13%	12%	3	3	1.25	17.2	2.2	40-110%	Recreation	59
4802	Red Hat, Inc.	RHT	168.60	14%	17%	2	3	1.15	73.9	NIL	N-35%	Computer Software	27
403	Rollins, Inc.	ROL	49.91	11%	11%	2	2	0.90	45.4	1.1	N-10%	Industrial Services	54
2215	Ross Stores	ROST	80.84	19%	12%	2	2	0.95	20.2	1.1	5-35%	Retail (Softlines)	52
1143	Sherwin-Williams	SHW	371.94	11%	10%	1	2	1.10	20.1	0.9	25-70%	Retail Building Supply	26
2162	Skechers U.S.A.	SKX	29.79	12%	13%	3	3	1.35	13.2	NIL	35-100%	Shoe	61
1374	Skyworks Solutions	SKWS	96.62	26%	13%	2	3	1.15	12.6	1.3	35-100%	Semiconductor	9
1728	Smith (A.O.)	AOS	62.98	13%	11%	2	3	1.30	24.2	1.1	N-50%	Machinery	22
313	Southwest Airlines	LUV	52.33	15%	12%	3	3	1.15	11.3	1.0	55-120%	Air Transport	41
373	Starbucks Corp.	SBUX	57.67	13%	15%	3	1	0.95	22.3	2.3	65-100%	Restaurant	59
406	SYNNEX Corp.	SNX	108.36	14%	11%	2	3	1.15	16.4	1.3	30-90%	Industrial Services	54
2216	TJX Companies	TJX	82.58	15%	13%	2	1	0.90	17.0	1.9	45-80%	Retail (Softlines)	52
2631	Tyler Technologies	TYL	223.88	22%	13%	2	3	0.95	46.7	NIL	5-55%	IT Services	8
1834	Ultimate Software	ULTI	257.62	20%	19%	3	3	1.10	46.8	NIL	10-65%	E-Commerce	29
819	UnitedHealth Group	UNH	232.03	12%	12%	1	1	0.95	18.2	1.3	N-20%	Medical Services	6
1734	Waste Corp.	WAB	92.08	16%	11%	3	3	1.20	23.5	0.5	5-55%	Machinery	22
417	Waste Connections	WCN	74.80	11%	12%	3	2	0.90	31.8	0.8	N-35%	Environmental	49
821	WellCare Health Plans	WGS	214.94	12%	15%	2	3	1.15	21.9	NIL	15-70%	Medical Services	7
592	Westlake Chemical	WLK	108.50	12%	15%	1	3	1.40	14.5	0.8	25-85%	Chemical (Specialty)	15
2584	WEX Inc.	WEX	170.23	17%	11%	2	3	1.35	29.9	NIL	N-35%	Financial Svcs. (Div.)	16
2373	Wynn Resorts	WYNN	191.75	12%	18%	3	3	1.50	22.6	1.6	10-65%	Hotel/Gaming	25
608	Zebra Techn. 'A'	ZBRA	153.24	14%	11%	1	3	1.30	15.6	NIL	N-40%	Wireless Networking	78

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ROE and ROR Analysis for Columbia Gas Pennsylvania
 Capital Asset Pricing Model (CAPM) Analysis
 Calculation of ROE

Docket No. R-2018-2647577
 Exhibit MFG-11, Schedule 4

CAPM calculation

$$k = r + \beta (k_m - r)$$

4-Year Annualized Growth Rate for Value Line Data

Where: k = required rate of return for the specific stock

Value Line May 18, 2018 forecast data*

β = beta, the systematic or stock-specific risk

Dividend yield 2.10%

r = rate of return on a riskless asset

45 percent market appreciation potential, 3-5 years

k_m = required rate of return in the market portfolio

4-year growth rate $(1.45^{0.25} - 1.00)$ 9.73%

Value Line forecast result $(2.1\% + 9.73\%)$ 11.83%

Market risk premium $(11.83\% - 3.15\%)$ 8.68%

*-Exhibit MFG-11, Schedule 3

	$r =$	3.15%	30-Year Treasury Bill April 23, 2018-May 18, 2018 average, Exhibit MFG-11, Schedule 1
	$(k_m - r) =$	8.68%	Market risk premium
	$\beta =$	0.73	Value Line mean beta for Comparison Group, Exhibit MFG-11, Schedule 2
	$\beta (k_m - r) =$	6.30%	
CAPM ROE	$k =$	9.45%	w/ NiSource
	$\beta =$	0.74	
	$\beta (k_m - r) =$	6.45%	
CAPM ROE	$k =$	9.60%	w/o NiSource
	$\beta =$	0.71	
	$\beta (k_m - r) =$	6.20%	
CAPM ROE	$k =$	9.35%	w/o South Jersey Industries

Empirical CAPM (ECAPM) calculations**

$$k = r + x (k_m - r) + (1 - x) \beta (k_m - r)$$

Where: $x =$ 0.25

ECAPM ROE $\beta =$ 0.73 w/ NiSource
 $k =$ 10.04%

ECAPM ROE $\beta =$ 0.74 w/o NiSource
 $k =$ 10.16%

ECAPM ROE $\beta =$ 0.71 w/o South Jersey Industries
 $k =$ 9.97%

** - See Pages 190-191, Morin, Roger, *New Regulatory Finance* (2006), Public Utilities Reports, Inc., Vienna, Virginia, Exhibit MFG-13, Schedule 5

TABLE 6-2
 EMPIRICAL EVIDENCE ON THE ALPHA FACTOR

Author	Range of alpha
Fischer (1983)	-3.6% to 3.6%
Fischer, Jensen and Scholes (1972)	-9.61% to 12.24%
Fama and French (1972)	4.08% to 9.36%
Fama and French (1992)	10.08% to 13.56%
Litzenberger and Ramaswamy (1979)	5.32% to 8.17%
Litzenberger, Ramaswamy and Sosin (1980)	1.63% to 5.04%
Pettengill, Sundaram and Mathur (1995)	4.6%
Morin (1989)	2.0%

For an alpha in the range of 1%-2% and for reasonable values of the market risk premium and the risk-free rate, Equation 6-5 reduces to the following more pragmatic form:

$$K = R_f + 0.25 (R_w - R_f) + 0.75 \beta (R_w - R_f) \quad (6-6)$$

Over reasonable values of the risk-free rate and the market risk premium, Equation 6-6 produces results that are indistinguishable from the ECAPM of Equation 6-5.¹²

An alpha range of 1%-2% is somewhat lower than that estimated empirically. The use of a lower value for alpha leads to a lower estimate of the cost of capital for low-beta stocks such as regulated utilities. This is because the use of a long-term risk-free rate rather than a short-term risk-free rate already incorporates some of the desired effect of using the ECAPM. That is, the

¹² Typical of the empirical evidence on the validity of the CAPM is a study by Morin (1989) who found that the relationship between the expected return on a security and beta over the period 1926-1984 was given by:

$$\text{Return} = 0.0829 + 0.0520 \beta$$

Given that the risk free rate over the estimation period was approximately 6% and that the market risk premium was 8% during the period of study, the intercept of the observed relationship between R_w and β exceeds the risk-free rate by about 2%, or 1/4 of 8%, and that the slope of the relationship is close to 3/4 of 8%. Therefore, the empirical evidence suggests that the expected return on a security is related to its risk by the following approximation:

$$K = R_f + x(R_w - R_f) + (1 - x)\beta(R_w - R_f)$$

where x is a fraction to be determined empirically. The value of x that best explains the observed relationship $\text{Return} = 0.0829 + 0.0520 \beta$ is between 0.25 and 0.30. If $x = 0.25$, the equation becomes:

$$K = R_f + 0.25\beta(R_w - R_f) + 0.75\beta(R_w - R_f)$$

long-term risk free rate version of the CAPM has a higher intercept and a flatter slope than the short-term risk-free version which has been tested. Thus, it is reasonable to apply a conservative alpha adjustment. Moreover, the lowering of the tax burden on capital gains and dividend income enacted in 2002 may have decreased the required return for taxable investors, steepening the slope of the ECAPM risk-return trade-off and bringing it closer to the CAPM predicted return.¹³

To illustrate the application of the ECAPM, assume a risk-free rate of 5%, a market risk premium of 7%, and a beta of 0.80. The Empirical CAPM equation (6-6) above yields a cost of equity estimate of 11.0% as follows:

$$\begin{aligned} K &= 5\% + 0.25(12\% - 5\%) + 0.75 \times 0.80(12\% - 5\%) \\ &= 5.0\% + 1.8\% + 4.2\% \\ &= 11.0\% \end{aligned}$$

As an alternative to specifying alpha, see Example 6-1.

Some have argued that the use of the ECAPM is inconsistent with the use of adjusted betas, such as those supplied by Value Line and Bloomberg. This is because the reason for using the ECAPM is to allow for the tendency of betas to regress toward the mean value of 1.00 over time, and, since Value Line betas are already adjusted for such trend, an ECAPM analysis results in double-counting. This argument is erroneous. Fundamentally, the ECAPM is not an adjustment, increase or decrease, in beta. This is obvious from the fact that the expected return on high beta securities is actually lower than that produced by the CAPM estimate. The ECAPM is a formal recognition that the observed risk-return tradeoff is flatter than predicted by the CAPM based on myriad empirical evidence. The ECAPM and the use of adjusted betas comprised two separate features of asset pricing. Even if a company's beta is estimated accurately, the CAPM still understates the return for low-beta stocks. Even if the ECAPM is used, the return for low-beta securities is understated if the betas are understated. Referring back to Figure 6-1, the ECAPM is a return (vertical axis) adjustment and not a beta (horizontal axis) adjustment. Both adjustments are necessary. Moreover, recall from Chapter 3 that the use of adjusted betas compensates for interest rate sensitivity of utility stocks not captured by unadjusted betas.

¹³ The lowering of the tax burden on capital gains and dividend income has no impact as far as taxable institutional investors (pension funds, 401K, and mutual funds) are concerned. In such investors engage in very large amounts of trading on security markets, it is quite plausible that taxable retail investors are relatively inactive traders and that large non-taxable investors have a substantial influence on capital markets.

ROE and ROR Analysis for Columbia Gas Pennsylvania
 Summary of Authorized ROEs in Fully Litigated Natural Gas Rate Cases, January 1, 2016-May 3, 2018
 Source: S&P Global Market Intelligence Regulatory Research Associates Rate Case History

Docket No. R-2018-2647577
 Exhibit MFG-12

State	Company	Docket	Rate Case Service Type	Case Type	Date Filed	Date of Decision	Decision Type	Return on Original Cost Rate (%)	Return on Equity (%)	Rate Case Test Year End Date
2018										
Kentucky	Atmos Energy Corp.	C-2017-00349	Natural Gas	Distribution	9/28/2017	5/3/2018	Fully Litigate	7.41	9.70	03/2019
Illinois	Northern Illinois Gas Co.	D-17-0124	Natural Gas	Distribution	3/10/2017	5/2/2018	Fully Litigate	7.26	9.60	12/2018
New Hampshire	Liberty Utilities EnergyNorth	D-DG-17-048	Natural Gas	Distribution	4/28/2017	4/27/2018	Fully Litigate	6.80	9.30	12/2016
Washington	Avista Corp.	D-UG-170486	Natural Gas	Distribution	5/26/2017	4/26/2018	Fully Litigate	7.50	9.50	12/2016
Maine	Northern Utilities Inc.	D-2017-00065	Natural Gas	Distribution	5/31/2017	2/28/2018	Fully Litigate	7.53	9.50	12/2016
Kansas	Atmos Energy Corp.	18-ATMG-218-T	Natural Gas	Limited Issue	11/21/2017	2/27/2018	Fully Litigate	NA	NA	09/2017
Missouri	Missouri Gas Energy	C-GR-2017-0216	Natural Gas	Distribution	4/11/2017	2/21/2018	Fully Litigate	7.20	9.80	12/2016
Missouri	Spire Missouri Inc.	C-GR-2017-0215	Natural Gas	Distribution	4/11/2017	2/21/2018	Fully Litigate	7.20	9.80	12/2016
								Mean	9.63	
								Range	9.30-9.80	
								Median	9.70	
2017										
Wisconsin	Northern States Power Co - WI	D-4220-UR-123	Natural Gas	Distribution	5/4/2017	12/7/2017	Fully Litigate	NA	9.80	12/2018
Virginia	Washington Gas Light Co.	C-PUR-2017-001	Natural Gas	Distribution	7/26/2017	#####	Fully Litigate	7.35	9.50	12/2018
Oklahoma	CenterPoint Energy Resources	Ca-PUD201700X	Natural Gas	Distribution	3/15/2017	10/19/2017	Fully Litigate	NA	NA	12/2016
South Carolina	South Carolina Electric & Gas	D-2017-6-G	Natural Gas	Distribution	6/15/2017	9/27/2017	Fully Litigate	8.15	NA	03/2017
Alaska	ENSTAR Natural Gas Co.	D-U-16-066	Natural Gas	Distribution	6/1/2016	9/22/2017	Fully Litigate	8.59	11.88	12/2015
Michigan	Consumers Energy Co.	C-U-18124	Natural Gas	Distribution	8/1/2016	7/31/2017	Fully Litigate	5.97	10.10	12/2017
Idaho	Intermountain Gas Co.	C-INT-G-16-2	Natural Gas	Distribution	8/12/2016	4/28/2017	Fully Litigate	7.30	9.50	12/2016
New York	National Fuel Gas Dist Corp.	C-16-G-0257	Natural Gas	Distribution	4/28/2016	4/20/2017	Fully Litigate	6.92	8.70	03/2018
District of Columbia	Washington Gas Light Co.	FC-1137	Natural Gas	Distribution	2/26/2016	3/1/2017	Fully Litigate	7.57	9.25	09/2015
								Mean	9.82	
								Range	8.70-11.88	
								Median	9.50	
								Mean w/o Alaska	9.48	
2016										
Washington	Avista Corp.	D-UG-160229	Natural Gas	Distribution	2/19/2016	#####	Fully Litigate	NA	NA	NA
Michigan	DTE Gas Co.	C-U-17999	Natural Gas	Distribution	12/18/2015	12/9/2016	Fully Litigate	5.76	10.10	10/2017
Wisconsin	Madison Gas and Electric Co.	D-3270-UR-121	Natural Gas	Distribution	4/8/2016	11/9/2016	Fully Litigate	7.88	9.80	12/2017
Wisconsin	Northern States Power Co - WI	D-4220-UR-122	Natural Gas	Distribution	4/1/2016	#####	Fully Litigate	NA	NA	12/2017
South Carolina	South Carolina Electric & Gas	D-2016-6-G	Natural Gas	Distribution	6/15/2016	10/13/2016	Fully Litigate	8.11	NA	03/2016
Minnesota	Minnesota Energy Resources	D-G-011/GR-15	Natural Gas	Distribution	9/30/2015	9/29/2016	Fully Litigate	6.88	9.11	12/2016
Texas	Texas Gas Service Co.	D-GUD-10506	Natural Gas	Distribution	3/31/2016	9/27/2016	Fully Litigate	7.28	9.50	09/2015
Maryland	Baltimore Gas and Electric Co.	C-9406 (gas)	Natural Gas	Distribution	11/6/2015	6/3/2016	Fully Litigate	7.23	9.65	11/2015
Minnesota	CenterPoint Energy Resources	D-G-008/GR-15	Natural Gas	Distribution	8/3/2015	5/5/2016	Fully Litigate	7.07	9.49	09/2016
Massachusetts	Fitchburg Gas & Electric Light	DPU 15-81	Natural Gas	Distribution	6/16/2015	4/29/2016	Fully Litigate	8.46	9.80	12/2014
Oregon	Avista Corp.	D-UG 288	Natural Gas	Distribution	5/1/2015	2/29/2016	Fully Litigate	7.46	9.40	12/2016
Kansas	Black Hills Kansas Gas Utility	D-16-BHCG-277	Natural Gas	Distribution	12/19/2015	2/25/2016	Fully Litigate	NA	NA	10/2015
Colorado	Public Service Co. of CO	D-15AL-0135G	Natural Gas	Distribution	3/3/2015	2/16/2016	Fully Litigate	7.33	9.50	12/2014
								Mean	9.59	
								Range	9.11-10.10	
								Median	9.50	

Sources: 30-year Treasuries--<http://www.treasury.gov/resource-center/data-chart-center/interest-rates/Pages/TextView.aspx?data=yieldYear&year=2014>
 Federal funds rate--<https://www.federalreserve.gov/monetarypolicy/openmarket.htm>

Bold type indicates days the Federal Reserve's Open Market Committee meetings and federal finds rate actions.

Date	30-year Treasury rate	Federal Funds rate	Date	30-year Treasury rate	Federal Funds rate
1/3/2017	3.04	0.50-0.75	4/3/2017	2.98	0.75-1.00
1/4/2017	3.05	0.50-0.75	4/4/2017	2.99	0.75-1.00
1/5/2017	2.96	0.50-0.75	4/5/2017	2.98	0.75-1.00
1/6/2017	3.00	0.50-0.75	4/6/2017	2.99	0.75-1.00
1/9/2017	2.97	0.50-0.75	4/7/2017	3.00	0.75-1.00
1/10/2017	2.97	0.50-0.75	4/10/2017	2.99	0.75-1.00
1/11/2017	2.96	0.50-0.75	4/11/2017	2.93	0.75-1.00
1/12/2017	3.01	0.50-0.75	4/12/2017	2.92	0.75-1.00
1/13/2017	2.99	0.50-0.75	4/13/2017	2.89	0.75-1.00
1/17/2017	2.93	0.50-0.75	4/17/2017	2.92	0.75-1.00
1/18/2017	3.00	0.50-0.75	4/18/2017	2.84	0.75-1.00
1/19/2017	3.04	0.50-0.75	4/19/2017	2.87	0.75-1.00
1/20/2017	3.05	0.50-0.75	4/20/2017	2.89	0.75-1.00
1/23/2017	2.99	0.50-0.75	4/21/2017	2.89	0.75-1.00
1/24/2017	3.05	0.50-0.75	4/24/2017	2.93	0.75-1.00
1/25/2017	3.10	0.50-0.75	4/25/2017	2.99	0.75-1.00
1/26/2017	3.08	0.50-0.75	4/26/2017	2.97	0.75-1.00
1/27/2017	3.06	0.50-0.75	4/27/2017	2.96	0.75-1.00
1/30/2017	3.08	0.50-0.75	4/28/2017	2.96	0.75-1.00
1/31/2017	3.05	0.50-0.75	5/1/2017	3.00	0.75-1.00
2/1/2017	3.08	0.50-0.75	5/2/2017	2.97	0.75-1.00
2/2/2017	3.09	0.50-0.75	5/3/2017	2.97	0.75-1.00
2/3/2017	3.11	0.50-0.75	5/4/2017	3.00	0.75-1.00
2/6/2017	3.05	0.50-0.75	5/5/2017	2.99	0.75-1.00
2/7/2017	3.02	0.50-0.75	5/8/2017	3.02	0.75-1.00
2/8/2017	2.96	0.50-0.75	5/9/2017	3.04	0.75-1.00
2/9/2017	3.02	0.50-0.75	5/10/2017	3.03	0.75-1.00
2/10/2017	3.01	0.50-0.75	5/11/2017	3.03	0.75-1.00
2/13/2017	3.03	0.50-0.75	5/12/2017	2.98	0.75-1.00
2/14/2017	3.07	0.50-0.75	5/15/2017	3.00	0.75-1.00
2/15/2017	3.09	0.50-0.75	5/16/2017	2.99	0.75-1.00
2/16/2017	3.05	0.50-0.75	5/17/2017	2.91	0.75-1.00
2/17/2017	3.03	0.50-0.75	5/18/2017	2.90	0.75-1.00
2/21/2017	3.04	0.50-0.75	5/19/2017	2.90	0.75-1.00
2/22/2017	3.04	0.50-0.75	5/22/2017	2.91	0.75-1.00
2/23/2017	3.02	0.50-0.75	5/23/2017	2.95	0.75-1.00
2/24/2017	2.95	0.50-0.75	5/24/2017	2.92	0.75-1.00
2/27/2017	2.98	0.50-0.75	5/25/2017	2.92	0.75-1.00
2/28/2017	2.97	0.50-0.75	5/26/2017	2.92	0.75-1.00
3/1/2017	3.06	0.50-0.75	5/30/2017	2.88	0.75-1.00
3/2/2017	3.09	0.50-0.75	5/31/2017	2.87	0.75-1.00
3/3/2017	3.08	0.50-0.75	6/1/2017	2.87	0.75-1.00
3/6/2017	3.10	0.50-0.75	6/2/2017	2.80	0.75-1.00
3/7/2017	3.11	0.50-0.75	6/5/2017	2.84	0.75-1.00
3/8/2017	3.15	0.50-0.75	6/6/2017	2.81	0.75-1.00
3/9/2017	3.19	0.50-0.75	6/7/2017	2.84	0.75-1.00
3/10/2017	3.16	0.50-0.75	6/8/2017	2.85	0.75-1.00
3/13/2017	3.20	0.50-0.75	6/9/2017	2.86	0.75-1.00
3/14/2017	3.17	0.50-0.75	6/12/2017	2.86	0.75-1.00
3/15/2017	3.11	0.50-0.75	6/13/2017	2.87	0.75-1.00
3/16/2017	3.14	0.75-1.00	6/14/2017	2.79	0.75-1.00
3/17/2017	3.11	0.75-1.00	6/15/2017	2.78	1.00-1.25
3/20/2017	3.08	0.75-1.00	6/16/2017	2.78	1.00-1.25
3/21/2017	3.04	0.75-1.00	6/19/2017	2.79	1.00-1.25
3/22/2017	3.02	0.75-1.00	6/20/2017	2.74	1.00-1.25
3/23/2017	3.02	0.75-1.00	6/21/2017	2.73	1.00-1.25
3/24/2017	3.00	0.75-1.00	6/22/2017	2.72	1.00-1.25
3/27/2017	2.98	0.75-1.00	6/23/2017	2.71	1.00-1.25
3/28/2017	3.02	0.75-1.00	6/26/2017	2.70	1.00-1.25
3/29/2017	2.99	0.75-1.00	6/27/2017	2.75	1.00-1.25
3/30/2017	3.03	0.75-1.00	6/28/2017	2.77	1.00-1.25
3/31/2017	3.02	0.75-1.00	6/29/2017	2.82	1.00-1.25
			6/30/2017	2.84	1.00-1.25
2017Q1 Mean	3.05	March 2017 Mean	3.08	2017Q2 Mean	2.90

Date	30-year Treasury	Federal Funds rate	Date	30-year Treasury	Federal Funds rate
7/3/2017	2.86	1.00-1.25	10/2/2017	2.87	1.00-1.25
7/5/2017	2.85	1.00-1.25	10/3/2017	2.87	1.00-1.25
7/6/2017	2.90	1.00-1.25	10/4/2017	2.87	1.00-1.25
7/7/2017	2.93	1.00-1.25	10/5/2017	2.89	1.00-1.25
7/10/2017	2.93	1.00-1.25	10/6/2017	2.91	1.00-1.25
7/11/2017	2.92	1.00-1.25	10/10/2017	2.88	1.00-1.25
7/12/2017	2.89	1.00-1.25	10/11/2017	2.88	1.00-1.25
7/13/2017	2.92	1.00-1.25	10/12/2017	2.86	1.00-1.25
7/14/2017	2.91	1.00-1.25	10/13/2017	2.81	1.00-1.25
7/17/2017	2.89	1.00-1.25	10/16/2017	2.82	1.00-1.25
7/18/2017	2.85	1.00-1.25	10/17/2017	2.80	1.00-1.25
7/19/2017	2.85	1.00-1.25	10/18/2017	2.85	1.00-1.25
7/20/2017	2.83	1.00-1.25	10/19/2017	2.83	1.00-1.25
7/21/2017	2.81	1.00-1.25	10/20/2017	2.89	1.00-1.25
7/24/2017	2.83	1.00-1.25	10/23/2017	2.89	1.00-1.25
7/25/2017	2.91	FOMC	10/24/2017	2.92	1.00-1.25
7/26/2017	2.89	Hold	10/25/2017	2.95	1.00-1.25
7/27/2017	2.93	1.00-1.25	10/26/2017	2.96	1.00-1.25
7/28/2017	2.89	1.00-1.25	10/27/2017	2.93	1.00-1.25
7/31/2017	2.89	1.00-1.25	10/30/2017	2.88	1.00-1.25
8/1/2017	2.86	1.00-1.25	10/31/2017	2.88	FOMC
8/2/2017	2.85	1.00-1.25	11/1/2017	2.85	Hold
8/3/2017	2.81	1.00-1.25	11/2/2017	2.83	1.00-1.25
8/4/2017	2.84	1.00-1.25	11/3/2017	2.82	1.00-1.25
8/7/2017	2.84	1.00-1.25	11/6/2017	2.80	1.00-1.25
8/8/2017	2.86	1.00-1.25	11/7/2017	2.77	1.00-1.25
8/9/2017	2.82	1.00-1.25	11/8/2017	2.79	1.00-1.25
8/10/2017	2.79	1.00-1.25	11/9/2017	2.81	1.00-1.25
8/11/2017	2.79	1.00-1.25	11/10/2017	2.88	1.00-1.25
8/14/2017	2.81	1.00-1.25	11/13/2017	2.87	1.00-1.25
8/15/2017	2.84	1.00-1.25	11/14/2017	2.84	1.00-1.25
8/16/2017	2.81	1.00-1.25	11/15/2017	2.77	1.00-1.25
8/17/2017	2.78	1.00-1.25	11/16/2017	2.81	1.00-1.25
8/18/2017	2.78	1.00-1.25	11/17/2017	2.78	1.00-1.25
8/21/2017	2.77	1.00-1.25	11/20/2017	2.78	1.00-1.25
8/22/2017	2.79	1.00-1.25	11/21/2017	2.76	1.00-1.25
8/23/2017	2.75	1.00-1.25	11/22/2017	2.75	1.00-1.25
8/24/2017	2.77	1.00-1.25	11/24/2017	2.76	1.00-1.25
8/25/2017	2.75	1.00-1.25	11/27/2017	2.76	1.00-1.25
8/28/2017	2.76	1.00-1.25	11/28/2017	2.77	1.00-1.25
8/29/2017	2.74	1.00-1.25	11/29/2017	2.81	1.00-1.25
8/30/2017	2.75	1.00-1.25	11/30/2017	2.83	1.00-1.25
8/31/2017	2.73	1.00-1.25	12/1/2017	2.76	1.00-1.25
9/1/2017	2.77	1.00-1.25	12/4/2017	2.77	1.00-1.25
9/5/2017	2.69	1.00-1.25	12/5/2017	2.73	1.00-1.25
9/6/2017	2.72	1.00-1.25	12/6/2017	2.71	1.00-1.25
9/7/2017	2.66	1.00-1.25	12/7/2017	2.76	1.00-1.25
9/8/2017	2.67	1.00-1.25	12/8/2017	2.77	1.00-1.25
9/11/2017	2.75	1.00-1.25	12/11/2017	2.77	1.00-1.25
9/12/2017	2.78	1.00-1.25	12/12/2017	2.79	FOMC
9/13/2017	2.79	1.00-1.25	12/13/2017	2.74	Raise
9/14/2017	2.77	1.00-1.25	12/14/2017	2.71	1.25-1.50
9/15/2017	2.77	1.00-1.25	12/15/2017	2.68	1.25-1.50
9/18/2017	2.80	1.00-1.25	12/18/2017	2.74	1.25-1.50
9/19/2017	2.81	FOMC	12/19/2017	2.82	1.25-1.50
9/20/2017	2.82	Hold	12/20/2017	2.88	1.25-1.50
9/21/2017	2.80	1.00-1.25	12/21/2017	2.84	1.25-1.50
9/22/2017	2.80	1.00-1.25	12/22/2017	2.83	1.25-1.50
9/25/2017	2.76	1.00-1.25	12/24/2017	2.83	1.25-1.50
9/26/2017	2.78	1.00-1.25	12/25/2017	2.83	1.25-1.50
9/27/2017	2.86	1.00-1.25	12/26/2017	2.82	1.25-1.50
9/28/2017	2.87	1.00-1.25	12/27/2017	2.75	1.25-1.50
9/29/2017	2.86	1.00-1.25	12/28/2017	2.76	1.25-1.50
			12/29/2017	2.74	1.25-1.50
			12/31/2017	2.74	1.25-1.50
2017Q3 Mean	2.82		2017Q4 Mean	2.82	2017 Mean
					2.89

Date	30-year Treasury	Federal Funds rate	Date	30-year Treasury	Federal Funds rate
1/2/2018	2.81	1.25-1.50	4/2/2018	2.97	1.50-1.75
1/3/2018	2.78	1.25-1.50	4/3/2018	3.02	1.50-1.75
1/4/2018	2.79	1.25-1.50	4/4/2018	3.03	1.50-1.75
1/5/2018	2.81	1.25-1.50	4/5/2018	3.07	1.50-1.75
1/8/2018	2.81	1.25-1.50	4/6/2018	3.01	1.50-1.75
1/9/2018	2.88	1.25-1.50	4/9/2018	3.02	1.50-1.75
1/10/2018	2.88	1.25-1.50	4/10/2018	3.02	1.50-1.75
1/11/2018	2.91	1.25-1.50	4/11/2018	2.99	1.50-1.75
1/12/2018	2.85	1.25-1.50	4/12/2018	3.05	1.50-1.75
1/16/2018	2.83	1.25-1.50	4/13/2018	3.03	1.50-1.75
1/17/2018	2.84	1.25-1.50	4/16/2018	3.03	1.50-1.75
1/18/2018	2.90	1.25-1.50	4/17/2018	3.00	1.50-1.75
1/19/2018	2.91	1.25-1.50	4/18/2018	3.06	1.50-1.75
1/22/2018	2.93	1.25-1.50	4/19/2018	3.11	1.50-1.75
1/23/2018	2.90	1.25-1.50	4/20/2018	3.14	1.50-1.75
1/24/2018	2.93	1.25-1.50	4/23/2018	3.15	1.50-1.75
1/25/2018	2.89	1.25-1.50	4/24/2018	3.18	1.50-1.75
1/26/2018	2.91	1.25-1.50	4/25/2018	3.21	1.50-1.75
1/29/2018	2.94	1.25-1.50	4/26/2018	3.18	1.50-1.75
1/30/2018	2.98	FOMC 1.25-1.50	4/27/2018	3.13	1.50-1.75
1/31/2018	2.95	Hold 1.25-1.50	4/30/2018	3.11	1.50-1.75
2/1/2018	3.01	1.25-1.50	5/1/2018	3.13	FOMC 1.50-1.75
2/2/2018	3.08	1.25-1.50	5/2/2018	3.14	Hold 1.50-1.75
2/5/2018	3.04	1.25-1.50	5/3/2018	3.12	1.50-1.75
2/6/2018	3.06	1.25-1.50	5/4/2018	3.12	1.50-1.75
2/7/2018	3.12	1.25-1.50	5/7/2018	3.12	1.50-1.75
2/8/2018	3.14	1.25-1.50	5/8/2018	3.13	1.50-1.75
2/9/2018	3.14	1.25-1.50	5/9/2018	3.16	1.50-1.75
2/12/2018	3.14	1.25-1.50	5/10/2018	3.12	1.50-1.75
2/13/2018	3.11	1.25-1.50	5/11/2018	3.10	1.50-1.75
2/14/2018	3.18	1.25-1.50	5/14/2018	3.13	1.50-1.75
2/15/2018	3.15	1.25-1.50	5/15/2018	3.20	1.50-1.75
2/16/2018	3.13	1.25-1.50	5/16/2018	3.21	1.50-1.75
2/20/2018	3.15	1.25-1.50	5/17/2018	3.25	1.50-1.75
2/21/2018	3.22	1.25-1.50	5/18/2018	3.20	1.50-1.75
2/22/2018	3.21	1.25-1.50			
2/23/2018	3.16	1.25-1.50			
2/26/2018	3.15	1.25-1.50			
2/27/2018	3.17	1.25-1.50			
2/28/2018	3.13	1.25-1.50			
3/1/2018	3.09	1.25-1.50			
3/2/2018	3.14	1.25-1.50			
3/5/2018	3.16	1.25-1.50			
3/6/2018	3.14	1.25-1.50			
3/7/2018	3.15	1.25-1.50			
3/8/2018	3.13	1.25-1.50			
3/9/2018	3.16	1.25-1.50			
3/12/2018	3.13	1.25-1.50			
3/13/2018	3.10	1.25-1.50			
3/14/2018	3.05	1.25-1.50			
3/15/2018	3.05	1.25-1.50			
3/16/2018	3.08	1.25-1.50			
3/19/2018	3.09	1.25-1.50			
3/20/2018	3.12	FOMC 1.25-1.50			
3/21/2018	3.12	Raise 1.25-1.50			
3/22/2018	3.06	1.50-1.75			
3/23/2018	3.06	1.50-1.75			
3/26/2018	3.08	1.50-1.75			
3/27/2018	3.03	1.50-1.75			
3/28/2018	3.01	1.50-1.75			
3/29/2018	2.97	1.50-1.75			

2018Q1 Mean 3.03

2018Q2 Mean (Through May 18)

3.10

April 2018 Mean 3.07

Comparable Earnings Approach

Five -Year Average Historical Earned Returns
for Years 2012-2016 and
Projected 3-5 Year Returns

Company	2012	2013	2014	2015	2016	Average	Projected 2019-21
ABM Industries Inc	9.0%	9.3%	9.1%	9.2%	10.2%	9.4%	17.5%
Allstate Corporation	10.4%	12.8%	10.7%	10.6%	9.0%	10.7%	12.0%
Brown Forman Corp (Class B)	35.4%	32.4%	35.9%	45.3%	48.8%	39.6%	49.5%
CBOE Holdings Inc	65.8%	61.9%	75.9%	79.0%	58.4%	68.2%	12.5%
Colgate Palmolive Co	NMF	NMF	NMF	NMF	NMF	-	NMF
Costco Wholesale Corporation	14.1%	18.2%	16.7%	22.0%	19.5%	18.1%	22.0%
Campbell Soup Co	87.2%	64.6%	49.5%	60.2%	59.9%	64.3%	29.5%
Dr Pepper Snapple Group Inc	26.9%	26.5%	30.6%	35.0%	40.1%	31.8%	32.0%
Darden Restaurants Inc	25.9%	20.0%	8.5%	14.7%	23.4%	18.5%	26.0%
Estee Lauder Companies Inc	33.0%	31.0%	31.2%	29.9%	31.2%	31.3%	45.5%
Erie Indemnity Company	-	-	23.8%	22.7%	25.9%	24.1%	26.5%
Hormel Foods Corporation	17.7%	15.9%	16.7%	17.9%	20.0%	17.6%	18.5%
Hershey Company	71.4%	52.6%	61.6%	91.2%	120.7%	79.5%	48.5%
J and J Snack Foods Corp	11.4%	12.5%	12.8%	11.7%	11.9%	12.1%	12.0%
Jack Henry and Associates Inc	15.8%	16.5%	19.4%	21.3%	25.0%	19.6%	21.0%
Lancaster Colony Corporation	17.0%	21.8%	19.1%	17.5%	23.7%	19.8%	25.5%
McCormick and Co	24.0%	21.5%	24.4%	26.9%	29.7%	25.3%	22.5%
Progressive Corp.	11.7%	14.8%	16.5%	15.2%	11.8%	14.0%	18.0%
Philip Morris International Inc	NMF	NMF	NMF	NMF	NMF	-	NMF
Republic Services Inc	8.6%	9.0%	9.0%	9.3%	9.9%	9.2%	10.5%
Sysco Corp	23.9%	19.1%	17.7%	20.9%	34.9%	23.3%	83.0%
Teleflex Inc	7.4%	7.9%	10.0%	11.8%	11.1%	9.6%	13.0%
United Parcel Service	67.5%	NMF	NMF	NMF	NMF	67.5%	NMF
VeriSign Inc	-	-	-	-	-	-	NMF
WD 40 Co	19.1%	22.2%	25.8%	28.4%	37.5%	26.6%	32.0%
Waste Management	15.2%	17.7%	19.7%	21.6%	24.5%	19.7%	28.0%
WR Berkley Corp	8.8%	9.7%	10.6%	9.7%	8.9%	9.5%	10.0%
West Pharmaceutical Services Inc	13.3%	12.4%	13.3%	9.3%	12.9%	12.2%	15.0%
Average (n = 28)						27.3%	26.3%
Average (excluding companies with values >20%) (2012-2016 average, n = 8; Projected 2019-2021, n = 9)						10.8%	14.1%
Average (excluding companies with values >15%) (2012-2016 average, n = 8; Projected 2019-2021, n = 6)						10.8%	11.7%

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Pennsylvania Public Utility Commission :
 :
 v. : Docket No. R-2018-2647577
 :
 Columbia Gas of Pennsylvania, Inc. :

VERIFICATION

I, MARLON GRIFFING, hereby state that the facts set forth in my Direct Testimony, OCA Statement No. 2, are true and correct (or are true and correct to the best of my knowledge, information, and belief) and that I expect to be able to prove the same at a hearing held in this matter. I understand that the statements herein are made subject to the penalties of 18 Pa.C.S. § 4904 (relating to unsworn falsification to authorities).

June 7, 2018
Date

Signed: Marlon Griffing
Marlon Griffing