

SPIRE Corp
Form 11-K
June 22, 2012

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 11-K

S Annual Report Pursuant to Section 15(d) of the Securities Exchange Act of 1934
For the fiscal year ended December 31, 2011 or

o Transition Report Pursuant to Section 15(d) of the Securities Exchange Act of 1934
For the transition period from _____ to _____

Commission file number: 0-12742

A. Full title of the plan and the address of the plan, if different from that of the issuer named below:

Spire Corporation 401(k) Profit Sharing Plan

B. Name of issuer of the securities held pursuant to the plan and the address of its principal executive office:

Spire Corporation
One Patriots Park
Bedford, Massachusetts 01730-2396

Spire Corporation
401(k) Profit Sharing Plan
Financial Statements and Supplemental Schedules
As of December 31, 2011 and 2010 and for the Year Ended December 31, 2011

Table of Contents

	Page
<u>Report of Independent Registered Public Accounting Firm</u>	<u>1</u>
Financial Statements:	
<u>Statements of Net Assets Available for Benefits</u>	<u>2</u>
<u>Statement of Changes in Net Assets Available for Benefits</u>	<u>3</u>
<u>Notes to Financial Statements</u>	<u>4</u>
Supplemental Schedules:	
<u>Schedule H, Line 4a - Form 5500, Schedule of Delinquent Contributions for the Year Ended December 31, 2011</u>	<u>11</u>
<u>Schedule H, Line 4i - Form 5500, Schedule of Assets (Held at End of Year)</u>	<u>12</u>
<u>Signature</u>	<u>13</u>
<u>Index to Exhibits</u>	<u>14</u>
Exhibit 23.1	

Report of Independent Registered Public Accounting Firm

To the Plan Administrator and Participants of
Spire Corporation 401(k) Profit Sharing Plan
Bedford, Massachusetts

We have audited the accompanying statements of net assets available for benefits of Spire Corporation 401(k) Profit Sharing Plan (the Plan) as of December 31, 2011 and 2010, and the related statement of changes in net assets available for benefits for the year ended December 31, 2011. These financial statements are the responsibility of the Plan's management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the financial statements are free of material misstatement. The Plan is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. Our audits included consideration of internal control over financial reporting as a basis for designing audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Plan's internal control over financial reporting. Accordingly, we express no such opinion. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, and evaluating overall financial statement presentation. We believe that our audits provide a reasonable basis for opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the net assets available for benefits of the Plan as of December 31, 2011 and 2010 and the changes in net assets available for benefits for the year ended December 31, 2011 in conformity with accounting principles generally accepted in the United States of America.

Our audits were performed for the purpose of forming an opinion on the basic financial statements taken as a whole. The accompanying supplemental schedule of assets (held at end of year) as of December 31, 2011 and the schedule of delinquent contributions for the year ended December 31, 2011 are presented for the purpose of additional analysis and are not a required part of the basic financial statements but are supplementary information required by the Department of Labor's Rules and Regulations for Reporting under the Employee Retirement Income Security Act of 1974. These supplemental schedules are the responsibility of the Plan's management. The supplemental schedules have been subjected to the auditing procedures applied in the audits of the basic financial statements and, in our opinion, are fairly stated in all material respects in relation to the basic financial statements taken as a whole.

/s/ Moody, Famiglietti and Andronico, LLP

MOODY, FAMIGLIETTI AND ANDRONICO, LLP
Tewksbury, Massachusetts
June 21, 2012

Spire Corporation 401(k) Profit Sharing Plan
 Statements of Net Assets Available for Benefits
 As of December 31, 2011 and 2010

	2011	2010
Assets		
Investments, at fair value	\$7,496,934	\$8,277,314
Receivables:		
Employer contributions	300	39
Notes receivable from participants	128,678	206,930
Total receivables	128,978	206,969
Total assets	7,625,912	8,484,283
Liabilities		
Excess contributions payable	44,233	74,456
Corrective distributions payable	28,787	—
Total liabilities	73,020	74,456
Net assets available for benefits	\$7,552,892	\$8,409,827

The accompanying notes are an integral part of these financial statements.

Spire Corporation 401(k) Profit Sharing Plan
 Statement of Changes in Net Assets Available for Benefits
 For the Year Ended December 31, 2011

Additions to net assets attributed to	
Investment income:	
Interest, dividends and other income	\$128,562
Interest on notes receivable from participants	9,320
Total investment income	137,882
Contributions:	
Participant	634,663
Employer	180,150
Participant Rollovers	18,222
Total contributions	833,035
Total additions	970,917
Deductions from net assets	
Net depreciation in fair value of investments	1,084,284
Benefits paid to participants	712,464
Administrative expenses	31,104
Total deductions	1,827,852
Net decrease in assets available for benefits	(856,935)
Net assets available for benefits at beginning of year	8,409,827
Net assets available for benefits at end of year	\$7,552,892

The accompanying notes are an integral part of these financial statements.

Spire Corporation 401(k) Profit Sharing Plan
Notes to Financial Statements
For the Year Ended December 31, 2011

1. Plan Description

The following description of the Spire Corporation 401(k) Profit Sharing Plan (the "Plan") provides only general information. Participants should refer to the Plan agreement for a more complete description of the Plan's provisions.

General

The Plan is a defined contribution plan covering all eligible employees of Spire Corporation (the "Company"). The Plan was established January 1, 1985 and was restated using a prototype provided by American Funds when they assumed the position as plan services provider in 2009. Capital Bank and Trust Company serves as the trustee (the "Trustee") of the Plan's assets for the year ended December 31, 2011. The Plan is subject to the provisions of the Internal Revenue Code of 1986, as amended (the "Code"), and the provisions of the Employee Retirement Income Security Act of 1974 ("ERISA"), as amended.

Effective May 1, 2012, the Plan was amended using a prototype provided by Summit Financial Corporation to include features that enable:

- Automatic enrollment of eligible employees into the Plan;
- Plan participants to designate all or a portion of their elective deferrals as Roth elective deferrals;
- Employer matching contributions to vest based on years of service at a rate of twenty-five percent per year for the first four years of vesting service; and
- Hardship distributions to be permitted from the participants' pre-tax elective deferral account, the Roth elective deferral account and the rollover account.

Eligibility and Contributions

Employees of the Company become eligible to participate in the Plan with voluntary contributions to their 401(k) salary deferral account upon reaching the age of 21 and upon completion of ninety (90) days of service with the Company. The entry dates are the first of the month following eligibility. A participant may contribute up to the maximum amount of pre-tax annual compensation allowed by the Internal Revenue Code. Participants may contribute rollover distributions from other qualified plans. Participants direct the investment of their contributions into various investment funds offered by the Plan. Currently, the Plan offers to participants investments in the Company's common stock, mutual funds and a money market fund.

The Company may contribute a discretionary matching contribution on the first 15% of compensation that a participant contributes to the Plan. In 2011, the Company made a matching contribution amounting to \$206,066, of which \$25,916 was allocated from the available forfeiture balance during the year. In addition, the Company may make a nonelective contribution each plan year on behalf of each participant at the discretion of the Company. The Company made nonelective contributions during 2011 in the amount of \$34,126, which was made utilizing available forfeiture balances.

Vesting

Participants are vested immediately in their voluntary contributions to the Plan plus actual earnings thereon. Vesting in the Company's matching contribution is based on continuous years of service and a participant is 100 percent vested after six years of credited service.

Participant Accounts

Each participant's account is credited with the participant's contributions and allocations of any Company's matching contribution, Company's nonelective contribution and the Plan earnings. The benefit to which a participant is entitled is the benefit that can be provided from the participant's vested account. The participant directs the investment of his or her individual account by selecting among various mutual funds, a money market fund or Company's common stock. Each participant has the ability to change the investment percentage at any time.

Forfeited Accounts

Termination of a participant who is not fully vested results in forfeiture of the non-vested portion of the participant's account balance. Forfeitures may be used to reduce future employer contributions, including matching contributions and nonelective

Spire Corporation 401(k) Profit Sharing Plan
Notes to Financial Statements (Continued)
For the Year Ended December 31, 2011

contributions, and to pay Plan expenses. Forfeitures used to reduce employer contributions and pay plan expenses for the year ended December 31, 2011 were \$60,042 and \$30,642, respectively. The forfeited amounts available at December 31, 2011 and 2010 amounted to \$13,536 and \$68,943 respectively.

Notes Receivable from Participants

Participants may borrow from their fund accounts a minimum of \$1,000 up to a maximum equal to the lesser of \$50,000 or fifty percent of their vested account balance. The loan terms range from 1 to 5 years or up to 10 years for the purchase of a primary residence. The loans are secured by the balance in the participant's account and bear interest at a rate commensurate with local prevailing rates as determined by the plan administrator. The participant may have two outstanding loans at any given time. Interest rates are fixed at prime plus one percent on the loan origination date. Principal and interest are repaid ratably through payroll deductions. Notes receivable from participants outstanding were \$128,678 and \$206,930 at December 31, 2011 and 2010, respectively. As of December 31, 2011, interest rates on loans outstanding range between 4.25% and 9.25%.

Payments of Benefits

Employees are permitted to withdraw funds from their accounts upon attaining the age of 59-1/2, retirement, termination, financial hardship, disability or death. The participant or beneficiary may elect to receive lump-sum cash payments or installment payments over the participant's and beneficiary's assumed life expectancy determined at the time of distribution. Benefits are recorded when paid.

Plan Termination

Although management has not expressed any intent to do so, the Company has the right under the Plan to discontinue and terminate the Plan subject to the provisions of ERISA. In the event the Plan terminates, participants will become 100% vested in their accounts.

Administrative Expenses

The Company provides certain administrative and accounting services to the Plan at no cost. In addition, the Company pays for certain services provided to the Plan for distribution, transfer processing and the cost of services provided to the Plan by the independent registered public accounting firm. The costs are reimbursed to the Company for services provided to the Plan by the independent registered public accounting firm and are recorded within administrative expenses in the financial statements. In addition, certain distribution processing, loan administration and management fees are deducted from the respective participant account balances and are recorded within administrative expenses in the financial statements.

2. Summary of Significant Accounting Policies

Basis of Accounting

The financial statements of the Plan are prepared on the accrual basis of accounting in conformity with U.S. generally accepted accounting principles ("U.S. GAAP").

Recent Accounting Pronouncements

In May 2011, the FASB issued ASU No. 2011-04, Amendments to Achieve Common Fair Value Measurement and Disclosure Requirements in U.S. GAAP and International Financial Reporting Standards (Topic 820)—Fair Value Measurement ("ASU 2011-04"). The objective of this update is to provide a consistent definition of fair value and ensure that the fair value measurement and disclosure requirements are similar between U.S. GAAP and International Financial Reporting Standards. ASU 2011-04 changes certain fair value measurement principles and enhances the disclosure requirements particularly for level 3 fair value measurements. ASU 2011-04 is effective for the Plan prospectively for the year ending December 31, 2012. The Plan is currently evaluating the impact of pending adoption of ASU 2011-04 on its financial statements.

Investment Valuation and Income Recognition

The Plan's investments are valued at fair value. Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. Shares of mutual funds are valued at

Spire Corporation 401(k) Profit Sharing Plan
Notes to Financial Statements (Continued)
For the Year Ended December 31, 2011

published market prices, which represent the net asset value of shares held by the Plan at year end.

The Company's common stock is held by participants in a unitized fund, whereby participants do not own shares of the Company's common stock but rather own an interest in the unitized fund. The fund consists of common stock and cash equivalents to meet the fund's daily cash needs and allows for daily trades. The value of a unit reflects the combined value of the Company's common stock and cash held by the fund. The Plan owns the underlying assets of shares in common stock and the underlying cash.

Purchases and sales of investments and realized gains and losses are accounted for on the trade date. Interest income is recorded as earned and dividend income is recorded on the ex-dividend date. The Plan reports the net appreciation or decline in the fair value of its investments consisting of realized gains or losses and unrealized appreciation or depreciation on those investments in the statement of changes in net assets available for benefits.

Notes Receivable from Participants

Notes receivable from participants are measured at the unpaid principal balance plus any accrued but unpaid interest. Interest earned on notes receivable is accounted for in the statement of changes in net assets available for benefits. Related fees are recorded as administrative expenses and are expensed when they are incurred. No allowance for credit losses was recorded as of December 31, 2011 or 2010. If a participant ceases to make a note repayment and the plan administrator deems the note to be a distribution, the note balance is reduced and a benefit payment is recorded.

Excess Contributions Payable

Amounts payable to participants for contributions in excess of amounts allowed under the IRS regulations are recorded as a liability in the statements of net assets available for benefits with a corresponding reduction to contributions in the statement of changes in net assets available for benefits. The Plan distributed the excess contributions to the applicable participants.

Corrective Distributions Payable

Amounts payable to a participant for distributions that were not paid out to the employee prior to the end of Plan year as required by the Plan document upon the participant reaching age 70 1/2. The distributions are recorded as a liability in the statement of net assets available for benefits and as benefits paid to participants in the statements of changes in net assets available for benefits.

Use of Estimates

The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of net assets, liabilities and changes in net assets in the financial statements and accompanying notes. Actual results could differ from those estimates.

Risks and Uncertainties

The Plan provides to participants various investment options consisting primarily of mutual funds, Company common stock and a money market fund. Mutual funds invest in securities, such as, stocks, bonds, and fixed rate income securities. Investment securities are exposed to risks including changing interest rates, market fluctuations and credit risks. Due to the level of risk associated with investment securities, it is reasonable to assume that changes in the

values of the investment securities will occur and that such changes could materially affect participants' account balances and the amounts reported in the statements of net assets available for benefits.

3. Investments

Investments that represent five percent (5%) or more of the Plan's net assets are as follows at December 31:

6

Spire Corporation 401(k) Profit Sharing Plan
Notes to Financial Statements (Continued)
For the Year Ended December 31, 2011

	2011	2010
Mutual funds:		
American Funds Investment Co of America R3	\$ 1,378,662	\$ 1,459,037
American Funds Money Market Fund R3	1,347,306	1,349,191
American Funds Growth Fund of America R3	1,206,329	1,250,833
American Funds Capital World Gr & Inc R3	730,144	915,015
Pimco Real Return Fund R	405,417	—
American Funds 2020 Target Date Fund R3	384,941	—
Common stock:		
Spire Corporation	—	828,541

During 2011, the Plan's investments (including investments bought, sold, and held during the year) depreciated in value by \$1,084,284 as follows:

Mutual funds	\$ 349,115
Common Stock	735,169
Net depreciation in fair value of investments	\$ 1,084,284

4. Fair Value Measurements

To determine fair value, a three-level hierarchy is used. The fair value hierarchy established under Accounting Standards Codification 820-10, Fair Value Measurements and Disclosures (“ASC 820-10”) gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (Level 1) and the lowest priority to unobservable inputs (Level 3). As required by ASC 820-10, the Plan's financial assets are classified within the fair value hierarchy based on the lowest level of input that is significant to the fair value measurement. The three levels of the fair value hierarchy under ASC 820-10, and its applicability to the Plan's financial assets or liabilities, are described below:

Level 1 - Pricing inputs represent quoted prices available in active markets for identical investments as of the reporting date. As required by ASC 820-10, the Company does not adjust the quoted price for these investments, even in situations where the Company holds a large position and a sale could reasonably impact the quoted price.

Level 2 - Pricing inputs represent quoted prices for similar investments, or inputs that are observable, either directly or indirectly, for substantially the full term through corroboration with observable market data. Level 2 includes investments valued at quoted prices adjusted for legal or contractual restrictions specific to these investments.

Level 3 - Pricing inputs are unobservable for the investment; that is, inputs reflect the reporting entity's own assumptions about the assumptions market participants would use in pricing the asset or liability. Level 3 includes investments that are supported by little or no market activity.

Valuation Techniques

Fair value is a market-based measure considered from the perspective of a market participant who would buy the asset or assume the liability rather than the Plan's own specific measure. The Plan's valuation methodology used to measure the fair values of mutual funds, money market funds and common stock were derived from quoted market prices as substantially all of these instruments have active markets. In periods of market inactivity, the observability of prices and inputs may be reduced for certain instruments. This condition could cause an instrument to be reclassified from

Level 1 to Level 2 or from Level 2 to Level 3. During the twelve months ended December 31, 2011 and 2010, none of the Plan's instruments were reclassified between Level 1, Level 2 or Level 3.

The following tables summarizes the Plan's fair value hierarchy for its financial assets measured at fair value on a recurring basis as of December 31, 2011 and 2010:

7

Spire Corporation 401(k) Profit Sharing Plan
Notes to Financial Statements (Continued)
For the Year Ended December 31, 2011

	Balance as of December 31, 2011		
	Total	Fair Value Measurements Using	
		Level 1	Level 2
Mutual Funds:			
Growth and income funds	\$ 2,222,952	\$ 2,222,952	\$ —
Growth funds	2,067,233	2,067,233	—
Bond funds	939,801	939,801	—
Growth, income and bond funds	807,937	807,937	—
Money Market Fund	1,347,991	1,347,991	—
Common Stock - Spire Corporation	111,020	—	111,020
Total investments measured at fair value	\$ 7,496,934	\$ 7,385,914	\$ 111,020

	Balance as of December 31, 2010		
	Total	Fair Value Measurements Using	
		Level 1	Level 2
Mutual Funds:			
Growth and income funds	\$ 2,456,113	\$ 2,456,113	\$ —
Growth funds	2,145,653	2,145,653	—
Bond funds	1,062,467	1,062,467	—
Growth, income and bond funds	435,349	435,349	—
Money Market Fund	1,349,191	1,349,191	—
Common Stock - Spire Corporation	828,541	—	828,541
Total investments measured at fair value	\$ 8,277,314	\$ 7,448,773	\$ 828,541

5. Income Tax Status

The Plan adopted a prototype plan on September 16, 2009. The prototype plan received a letter from the Internal Revenue Service (the "IRS") dated March 31, 2008 that indicated the plan and related trust are designed in accordance with the applicable sections of the Internal Revenue Code (the "Code"). Prior to adopting the prototype plan, the Plan had received a determination letter dated May 23, 1995 from the IRS that the Plan and related trust were designed in compliance with the applicable requirements of the Code. Although the Plan has been amended since receiving the March 31, 2008 letter, the plan administrator believes that the Plan is designed and is currently being operated in compliance with the applicable requirements of the Code. Therefore, no provision for income taxes has been included in the Plan's financial statements.

U.S. GAAP requires the Plan to assess the recording of uncertain tax positions by evaluating the minimum recognition threshold and measurement requirements a tax position must meet before being recognized as a benefit in the financial statements. As of December 31, 2011 and 2010, the Plan has not recognized any liabilities for uncertain tax positions or unrecognized benefits. The Plan does not expect any material change in uncertain tax benefits within the next twelve months. The Plan is subject to routine audits by taxing jurisdictions; however, there are currently no audits for any tax periods in progress. The plan administrator believes the Plan is no longer subject to income tax examinations for years prior to 2008.

6. Excess Contributions

Contributions received from participants for the years ended December 31, 2011 and 2010 include \$44,233 and \$74,456, respectively, of excess contributions (net of corresponding gains and losses) that were remitted to certain active participants. The excess contributions are included in the Plan's statement of net assets available for benefits as excess contributions payable. The excess deferral contributions, originally deducted in the year ended December 31, 2011 and 2010, were subsequently returned to comply with the participants' applicable maximum annual contributions permitted under the Code.

7. Notes Receivable from Participants

The Plan permits participants to obtain loans against their account balance. The loans are administered by the trustee and are measured at the unpaid principal balance plus any accrued but unpaid interest thereon. Under certain circumstances, delinquent loans may be treated as distributions from the Plan. As of December 31, 2011 and 2010, total loans outstanding were \$128,678 and \$206,930 respectively. Interest earned on such loans for the year ended December 31, 2011 amounted to \$9,320.

8. Related Party Transactions

Capital Bank and Trust is the custodian of the Plan's assets and record keeper. Certain participant investments are in American Funds investment vehicles, which are managed by Capital Bank and Trust and these transactions are considered as party-in-interest transactions. Certain participant investments are in common stock of the Company and these transactions are considered as party-in-interest transactions.

Participant loans granted in accordance with the Plan are secured by the balances in the participants' accounts. These transactions are considered as party-in-interest transactions.

Administrative fees paid by the Plan for the year ended December 31, 2011 amounted to \$31,104. During the year ended December 31, 2011, administrative fees included approximately \$30,600 that was paid to the Company by the Plan to reimburse for audit fees paid by the Company on the Plan's behalf for the plan years ending December 31, 2011 and 2010.

9. Reconciliation of Financial Statements to Form 5500

The following is a reconciliation of the net assets available for benefits per the financial statements to the corresponding amounts shown in the Plan's Form 5500 as of December 31:

	2011	2010
Net assets available for benefits per the financial statements	\$ 7,552,892	\$ 8,409,827
(Less) contributions receivable	(300) (39
Excess contributions payable	44,233	74,456
Distributions payable	28,787	—
Net assets available for benefits per the Form 5500	\$ 7,625,612	\$ 8,484,244

The following is a reconciliation of the net decrease in assets available for benefits per the financial statements to the net loss shown in the Plan's Form 5500 for the year ended December 31, 2011:

Net decrease in assets available for benefits per the financial statements	\$ (856,935)
(Less) prior year excess contributions payable	(74,456)
Current year excess contributions payable	44,233	
(Less) current year contributions receivable	(300)
Prior year contributions receivable	39	
Current year corrective distributions payable	28,787	
Net loss per the Form 5500	\$ (858,632)

10. Untimely Remittances

As reported on Form 5500, Schedule H, Line 4a - Schedule of Delinquent Participant Contributions, certain participant contributions were not remitted to the Plan within the time frame specified by the Department of Labor's Regulation 29 CFR 2510.3-102, thus constituting nonexempt transactions between the Plan and the Company during the 2011 and 2010 Plan year. Late remittances amounted to \$40,100 and \$49,143 for Plan years ended December 31, 2011 and 2010, respectively. The Company has corrected contributions outside the Department of Labor's Voluntary Fiduciary Corrective Program and has made employer contributions in 2011 to the Plan in the amounts of \$35 and \$39 representing estimated lost earnings for Plan years ended December 31, 2011 and 2010, respectively.

11. Subsequent Events

The Plan evaluated subsequent events through the date of this filing. Except as disclosed below, there were no other subsequent events to report.

Effective May 1, 2012, the Plan was amended using a prototype provided by Summit Financial Corporation to include features that enable:

- Automatic enrollment of eligible employees into the Plan;
- Plan participants to designate all or a portion of their elective deferrals as Roth elective deferrals;
- Employer matching contributions to vest based on years of service at a rate of twenty-five percent per year for the first four years of vesting service; and
- Hardship distributions to be permitted from the participants' pre-tax elective deferral account, the Roth elective deferral account and the rollover account.

Spire Corporation 401(k) Profit Sharing Plan
 EIN 04-2457335, Plan Number 002
 Schedule H, Line 4a - Schedule of Delinquent Participant Contributions
 Year Ended December 31, 2011

Participant Contributions Transferred Late to Plan	Total that Constitute Nonexempt Prohibited Transactions			Total Fully Corrected Under VFCP and PTE 2002-51
	Contributions Not Corrected	Contributions Corrected Outside VFCP	Contributions Pending Correction in VFCP	
Check here if late participant loan repayments are included: <input checked="" type="checkbox"/> x	\$—	\$89,317	\$—	\$—

Spire Corporation 401(k) Profit Sharing Plan
 EIN 04-2457335, Plan Number 002
 Schedule H, Line 4i - Schedule of Assets (Held at End of Year)
 December 31, 2011

(a) Identity of Issue, Borrower, Lessor or Similar Party	(c) Description of Investment Including Maturity Date, Rate of Interest, Collateral, Par or Maturity Value	(e) Current Value
* American Funds	Investment Co of America R3	\$ 1,378,662
* American Funds	Money Market Fund R3	1,347,306
* American Funds	Growth Fund of America R3	1,206,329
* American Funds	Capital World Gr & Inc R3	730,144
Pimco	Real Return Fund R	405,417
* American Funds	2020 Target Date Fund R3	384,941
Oppenheimer	Developing Markets R	317,799
* American Funds	Small Cap World Fund R3	226,598
Victory	Victory Small Company Opportunity	215,402
* American Funds	Bond Fund of America R3	200,731
* American Funds	2030 Target Date Fund R3	150,973
* American Funds	High Income Trust R3	135,731
Victory	Fund for Income	135,617
Investco	Real Estate Fund	114,146
* Spire Corporation	179,064 shares of common stock	111,020
* American Funds	2025 Target Date Fund R3	103,067
Victory	Established Value Fund	101,105
* American Funds	2035 Target Date Fund R3	83,914
* American Funds	Capital World Bond R3	62,305
* American Funds	2040 Target Date Fund R3	40,946
* American Funds	2015 Target Date Fund R3	28,706
* American Funds	2045 Target Date Fund R3	14,371
* American Funds	2055 Target Date Fund R3	910
* Employer Stock Awaiting Purchase Fund	Employer Stock Awaiting Purchase Fund	685
* American Funds	2010 Target Date Fund R3	109
Total investments, at fair value		\$ 7,496,934
* Participant loans	Interest Rates 4.25% - 9.25%	\$ 128,678

* Represents party-in-interest

Column (d), cost, has been omitted, as all investments are participant directed.

SIGNATURE

Pursuant to the requirements of the Securities Exchange Act of 1934, the Investment Committee of the Spire Corporation 401(k) Profit Sharing Plan have duly caused this annual report to be signed on their behalf by the undersigned hereunto duly authorized.

Spire Corporation 401(k) Profit Sharing Plan

Date: June 21, 2012

By: /s/ Robert S. Lieberman
Robert S. Lieberman
Chief Financial Officer and Treasurer

INDEX TO EXHIBITS

Exhibit Number	Description
23.1	Consent of Independent Registered Public Accounting Firm (Moody, Famiglietti and Andronico, LLP)

14