

SPIRE Corp  
Form 11-K  
June 24, 2014

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, 2013 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

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Spire Corporation 401(k) Profit Sharing Plan  
Financial Statements and Supplemental Schedules  
As of December 31, 2013 and 2012 and for the Year Ended December 31, 2013

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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, 2013 and 2012, and the related statement of changes in net assets available for benefits for the year ended December 31, 2013. 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, 2013 and 2012 and the changes in net assets available for benefits for the year ended December 31, 2013 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, 2013 is presented for the purpose of additional analysis and is not a required part of the basic financial statements but is supplementary information required by the Department of Labor's Rules and Regulations for Reporting under the Employee Retirement Income Security Act of 1974. This supplemental schedule is the responsibility of the Plan's management. The supplemental schedule has been subjected to the auditing procedures applied in the audits of the basic financial statements and, in our opinion, is 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 24, 2014

Spire Corporation 401(k) Profit Sharing Plan  
 Statements of Net Assets Available for Benefits  
 As of December 31, 2013 and 2012

|   | 2013        | 2012        |
|---|-------------|-------------|
| Assets  |             |             |
| Investments, at fair value  | \$7,164,088 | \$7,883,468 |
| Notes receivable from participants  | 84,240      | 163,393     |
| Total assets  | 7,248,328   | 8,046,861   |
| Liabilities   |             |             |
| Excess contributions payable  | —           | 41,156      |
| Accrued expenses  | —           | 11,538      |
| Corrective distributions payable  | —           | 2,624       |
| Total liabilities   | —           | 55,318      |
| Net assets available for benefits, at fair value  | 7,248,328   | 7,991,543   |
| Adjustments from fair value to contract value for fully benefit-responsive investment contracts | (13,811     | ) (16,645   |
| Net assets available for benefits   | \$7,234,517 | \$7,974,898 |

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, 2013

|  |                       |
|--|-----------------------|
| Additions to net assets attributed to                  |                       |
| Investment income:                                     |                       |
| Net appreciation in fair value of investments          | \$902,860             |
| Interest, dividends and other income                   | 256,144               |
| Interest on notes receivable from participants         | 7,017                 |
| Total investment income                                | 1,166,021             |
| Contributions:   |                       |
| Participant  | 471,582               |
| Employer   | 172,904               |
| Total contributions                                    | 644,486               |
| Total additions  | 1,810,507             |
| Deductions from net assets                             |                       |
| Transfer of plan assets                                | 1,653,501             |
| Benefits paid to participants                          | 871,790               |
| Administrative expenses                                | 25,597                |
| Total deductions                                       | 2,550,888             |
| Net decrease in assets available for benefits          | (740,381            ) |
| Net assets available for benefits at beginning of year | 7,974,898             |
| Net assets available for benefits at end of year       | \$7,234,517           |

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

Spire Corporation 401(k) Profit Sharing Plan  
Notes to Financial Statements

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") and was established January 1, 1985. Effective May 1, 2012, the Plan was amended and restated using a prototype plan 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.

Great-West Life & Annuity Insurance Company serves as custodian (the "Custodian") of the Plan's assets. 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 January 1, 2013, the Plan was amended to:

- Add a Qualified Automatic Contribution Agreement to the Plan, including a Safe Harbor matching contribution equal to the sum of 100% of a participant's elective deferrals that do not exceed 1% of the participant's compensation, plus 50% of the participant's elective deferrals that exceeds 1% of the participant's compensation but do not exceed 6% of the participant's compensation;
- Include a feature that enables partial withdrawals or installments for required minimum distributions; and
- Institute a two year vesting period for the employer's Safe Harbor contributions.

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 three months 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 annual compensation allowed by the Internal Revenue Code as a pre-tax or Roth contribution. Participants can make catch-up contributions into the Plan up to the maximum amount 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 participant's investments in the Company's common stock, mutual funds and a fixed annuity.

All eligible participants who are subject to automatic deferrals at a rate of 6% of compensation unless otherwise elected by the participant. The automatic deferral percentage is fixed at 6%.

The Company may contribute a discretionary matching contribution to the Plan. The Company did not contribute any discretionary matching contributions during 2013. In 2013, the Company made Safe Harbor matching contributions of \$184,583, of which \$11,679 was allocated from the available forfeiture balance during the year.

## Vesting

Participants are vested immediately in their voluntary contributions to the Plan plus actual earnings thereon. Vesting in the Company's matching contribution plus actual earnings thereon is based on continuous years of service, each consisting of 1,000 hours of service. Participants vest after two years of credited service for Safe Harbor matching contribution balances, and ratably over four years of credited service for discretionary matching contribution balances. Participants become fully vested in all contributions upon death or total and permanent disability.

## Participant Accounts

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Spire Corporation 401(k) Profit Sharing Plan  
Notes to Financial Statements (Continued)

Each participant's account is credited with the participant's contributions and allocations of any Company's matching 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 fixed annuity or the 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 contributions, and to pay Plan expenses. Forfeitures used to reduce employer contributions and to pay prior year administrative expenses for the year ended December 31, 2013 were \$11,679 and \$11,900, respectively. The forfeited amounts available as of December 31, 2013 and 2012 amounted to \$2,648 and \$19,971, respectively.

Notes Receivable from Participants

The Plan permits participants to 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. The loans are administered by the custodian 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. Notes receivable from participants outstanding were \$84,240 and \$163,393 as of December 31, 2013 and 2012, respectively. As of December 31, 2013, interest rates on loans outstanding range between 4.25% and 9.25%. Interest earned on such loans for the year ended December 31, 2013 amounted to \$7,017.

Payments of Benefits

Employees are permitted to withdraw funds from their accounts upon attaining the age of 59-1/2 if fully vested, 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.

Hardship Withdrawals

Hardship withdrawals are permitted by the Plan as defined in Section (k) of the Internal Revenue Code. Participants may take a hardship withdrawal from their employee pre-tax, Roth, or rollover balances, but may not take a hardship withdrawal from their Company match balances.

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



Certain expenses of maintaining the Plan are paid directly by the Company and are excluded from these financial statements. In addition, certain distribution processing, loan administration and management fees are charged directly to the participant's account and are included in administrative expenses. Investment related expenses are charged to the forfeited account and are included in administrative expenses.

## 2. Summary of Significant Accounting Policies

### Basis of Accounting

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Spire Corporation 401(k) Profit Sharing Plan  
Notes to Financial Statements (Continued)

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").

Investment Valuation and Income Recognition

The Plan's investments are stated 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.

Mutual Funds and Common Stock - Shares of mutual funds and common stock are valued at quoted market prices, which represent the net asset value of shares held by the Plan at year-end.

Guaranteed Investment Contract - Guaranteed investment contracts are valued at fair value by the insurance company by discounting the related cash flows based on current yields of similar instruments with comparable durations considering the creditworthiness of the issuer (see Note 5). While investment contracts held by a defined contribution plan are required to be reported at fair value, contract value is the relevant measurement attribute for that portion of the net assets available for benefits of a defined contribution plan attributable to fully benefit-responsive investment contracts. The contract value is the relevant measurement since it represents the amount that the participant would receive if they were to initiate permitted transactions under the terms of the Plan. The Statements of Net Assets Available for Benefits present the fair value of the investment contract as well as the adjustment of the fully benefit-responsive investment contract from fair value to contract value. The Statement of Changes in Net Assets Available for Benefits is prepared on a contract value basis.

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.

The methods described above may produce a fair value calculation that may not be indicative of net realizable value or reflective of future fair values. Furthermore, while the Plan believes its valuation methods are appropriate and consistent with other market participants, the use of different methodologies or assumptions to determine fair value of certain financial instruments could result in a different fair value measurement at the reporting date.

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 paid. No allowance for credit losses was recorded as of December 31, 2013 or 2012. 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.

Corrective Distributions Payable

Corrective distributions payable as of December 31, 2012, include amounts payable to participants for distributions of Company matching contributions that were not properly paid out to employees prior to the end of Plan year 2012. The distributions are recorded as a liability in the Statements of 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.

Spire Corporation 401(k) Profit Sharing Plan  
Notes to Financial Statements (Continued)

### Risks and Uncertainties

The Plan provides to participants various investment options consisting primarily of mutual funds, Company common stock and a fixed annuity. 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. Transfer of Plan Assets

On September 18, 2013, the Company entered into an Asset Purchase Agreement with N2 Biomedical LLC ("N2 Bio") pursuant to which N2 Bio acquired substantially all of the assets and employees of the Company's biomedical business unit. On December 3, 2013, Plan assets for participants employed by N2 Bio in the amount of \$1,653,501 were transferred to a benefit plan of N2 Bio, including participant service terms.

### 4. Investments

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

|                                   | 2013         | 2012         |
|-----------------------------------|--------------|--------------|
| Mutual funds:                     |              |              |
| JPMorgan SmartRetirement 2020 A   | \$ 1,667,753 | \$ 1,816,040 |
| JPMorgan SmartRetirement 2030 A   | 1,398,248    | 1,291,786    |
| JPMorgan SmartRetirement Income A | 1,090,234    | 1,009,866    |
| JPMorgan SmartRetirement 2025 A   | 742,865      | 1,220,437    |
| JPMorgan SmartRetirement 2015 A   | 430,473      | 480,838      |

During 2013, the net appreciation in fair value of the Plan's investments (including investments bought, sold, and held during the year) were as follows:

|   |            |
|---|------------|
| Mutual funds                                  | \$ 893,495 |
| Common Stock                                  | 9,365      |
| Net appreciation in fair value of investments | \$ 902,860 |

### 5. Fair Value Measurements

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.

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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.

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Spire Corporation 401(k) Profit Sharing Plan  
Notes to Financial Statements (Continued)

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. 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, 2013 and 2012, 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, 2013 and 2012:

|                                  | Balance as of December 31, 2013 |  |         |            |
|----------------------------------|---------------------------------|--|---------|------------|
|                                  | Total Fair Value                | Fair Value Measurements Using Input Type |         |            |
|                                  |                                 | Level 1                                  | Level 2 | Level 3    |
| Mutual Funds:                    |                                 |  |         |            |
| Target retirement date funds     | \$ 5,998,033                    | \$ 5,998,033                             | \$—     | \$—        |
| Bond funds                       | 172,649                         | 172,649                                  | —       | —          |
| Large cap funds                  | 332,270                         | 332,270                                  | —       | —          |
| International funds              | 193,103                         | 193,103                                  | —       | —          |
| Small cap funds                  | 48,768                          | 48,768                                   | —       | —          |
| Mid cap funds                    | 72,542                          | 72,542                                   | —       | —          |
| Guaranteed investment contract   | 295,218                         | —  | —       | 295,218    |
| Common Stock - Spire Corporation | 51,505                          | 51,505                                   | —       | —          |
| Total investments, at fair value | \$ 7,164,088                    | \$ 6,868,870                             | \$—     | \$ 295,218 |

|                                  | Balance as of December 31, 2012 |  |         |            |
|----------------------------------|---------------------------------|--|---------|------------|
|                                  | Total Fair Value                | Fair Value Measurements Using Input Type |         |            |
|                                  |                                 | Level 1                                  | Level 2 | Level 3    |
| Mutual Funds:                    |                                 |  |         |            |
| Target retirement date funds     | \$ 6,435,720                    | \$ 6,435,720                             | \$—     | \$—        |
| Bond funds                       | 401,034                         | 401,034                                  | —       | —          |
| Large cap funds                  | 304,135                         | 304,135                                  | —       | —          |
| International funds              | 210,863                         | 210,863                                  | —       | —          |
| Small cap funds                  | 105,837                         | 105,837                                  | —       | —          |
| Mid cap funds                    | 63,497                          | 63,497                                   | —       | —          |
| Guaranteed investment contract   | 281,847                         | —  | —       | 281,847    |
| Common Stock - Spire Corporation | 80,535                          | 80,535                                   | —       | —          |
| Total investments, at fair value | \$ 7,883,468                    | \$ 7,601,621                             | \$—     | \$ 281,847 |

The following table summarizes changes in fair value of the Plan's Level 3 assets for the years ended December 31, 2013 and 2012:

Spire Corporation 401(k) Profit Sharing Plan  
Notes to Financial Statements (Continued)

|  |            |            |   |
|--|------------|------------|---|
|  | 2013       | 2012       |   |
| Balance, beginning of year   | \$ 281,847 | \$—        |   |
| Purchases  | 245,850    | 272,633    |   |
| Unrealized gains (loss) relating to investments still held at the reporting date | (2,834     | ) 16,645   |   |
| Interest credited  | 4,851      | 2,095      |   |
| Sales  | (222,525   | ) (9,520   | ) |
| Fees   | (11,971    | ) (6       | ) |
| Balance, end of year   | \$ 295,218 | \$ 281,847 |   |

The amount of total gains (losses) for the period attributable to the change in unrealized gains relating to assets still held at the reporting date

|  |           |             |
|--|-----------|-------------|
|  | \$ (2,834 | ) \$ 16,645 |
|--|-----------|-------------|

Unrealized gains from the guaranteed investment contract are not included in the Statement of Changes in Net Assets Available for Benefits as the contract is recorded at contract value for purposes of the net assets available for benefits at the reporting date.

Effective May 1, 2012, the Guaranteed Investment Contract serves as the fixed income investment option, through which all of the Plan's cash transfers flow.

The following table represents the Plan's Level 3 financial assets, the valuation techniques used to measure the fair value of those financial assets and the significant unobservable inputs and the ranges of values for those inputs for the year ended December 31, 2013 and 2012.

| Year | Financial Asset                | Fair Value | Principal Valuation Technique | Unobservable Inputs                            | Significant Input Values | Weighted Average |
|------|--------------------------------|------------|-------------------------------|--|--------------------------|------------------|
| 2013 | Guaranteed investment contract | \$ 295,218 | Discounted cash flow          | Swap yield rates<br>Duration Payout percentage | 1.32% 5 years<br>1.26%   | Yes              |
| 2012 | Guaranteed investment contract | \$ 281,847 | Discounted cash flow          | Swap yield rates<br>Duration Payout percentage | .98% 5 years<br>1.45%    | Yes              |

#### 6. Guaranteed Investment Contract

In 2012, the Plan entered into a fully benefit-responsive guaranteed investment contract with Great-West Life & Annuity Insurance Company "Great-West". Great-West maintains the contributions in a general account. The account is credited with earnings on the underlying investments and charged for participant withdrawals and administrative expenses. The contract is included in the financial statements at contract value as reported to the Plan by Great-West. Contract value represents contributions made under the contract, plus earnings, less participant withdrawals and administrative expenses. Participants may ordinarily direct the withdrawal or transfer of all or a portion of their investment at contract value. The guaranteed investment contract issuer is contractually obligated to repay the principal and a specified interest rate that is guaranteed to the Plan.

As described in Note 2, because the guaranteed investment contract is fully benefit-responsive, contract value is the relevant measurement attribute for that portion of the net assets available for benefits attributable to the guaranteed investment contract. There are no reserves against contract value for credit risk of the contract issuer or otherwise. The

fair value of the investment contract was \$295,218 and \$281,847 as of December 31, 2013 and 2012, respectively. The average crediting interest rate is based on the earnings of the underlying assets in the entire medium-long term new portfolio compared to the minimum interest crediting rate, as stated in the contract, and prevailing market conditions. The interest crediting rate is reset quarterly. The guaranteed investment contract does not allow a crediting interest rate below zero percent.

Certain events limit the ability of the Plan to transact at contract value with the issuer. Such events include the following: (1) amendments to the Plan documents (including complete or partial Plan termination or merger with another plan), (2) changes to the Plan's prohibition on competing investment options or deletion of equity wash provisions, (3) bankruptcy of the Plan sponsor



or other Plan sponsor events (for example, divestitures or spin-offs of a subsidiary) that cause a significant withdrawal from the Plan, or (4) the failure of the trust to qualify for exemption from federal income taxes or any required prohibited transaction exemption under ERISA. The Plan administrator does not believe that any events which would limit the Plan's ability to transact at contract value with participants are probable of occurring.

The guaranteed investment contract does not permit the insurance company to terminate the agreement unless the Plan is not in compliance with the investment agreement. The following table summarizes the average yields for the years ended December 31, 2013 and 2012.

|   | 2013 | 2012   |   |
|---|------|--------|---|
| Average Yields:                                 |      |        |   |
| Based on actual earnings                        | 1.26 | % 1.45 | % |
| Based on interest rate credited to participants | 1.26 | % 1.45 | % |

#### 7. Income Tax Status

The Plan adopted a prototype plan on May 1, 2012. 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, 2013 and 2012, 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 2010.

#### 8. Excess Contributions

Contributions received from participants for the year ended December 31, 2012 include \$41,156 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, 2012, were subsequently returned to comply with the participants' applicable maximum annual contributions permitted under the Code.

#### 9. Party-In-Interest Transactions

Great-West Trust Company, LLC is the custodian of the Plan's assets. Certain participant investments are in Great-West Life & Annuity Insurance Company investment vehicles, which are managed by Great-West Trust Company, LLC 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 incurred by the Plan and paid to the custodians for the year ended December 31, 2013 amounted to \$608 and are considered as party-in-interest transactions.

10. 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:

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|  | 2013        | 2012        |
|--|-------------|-------------|
| Net assets available for benefits per the financial statements | \$7,234,517 | \$7,974,898 |
| Excess contributions payable                                   | —           | 41,156      |
| Administrative fees payable                                    | —           | 11,538      |
| Corrective distributions payable                               | —           | 2,624       |
| Net assets available for benefits per the Form 5500            | \$7,234,517 | \$8,030,216 |

The following is a reconciliation of the net increase in assets available for benefits per the financial statements to the net income shown in the Plan's Form 5500 for the year ended December 31, 2013:

|  |             |   |
|--|-------------|---|
| Net increase in assets available for benefits per the financial statements | \$ (740,381 | ) |
| Current year transfer of plan assets                                       | 1,653,501   |   |
| (Less) prior year excess contributions payable                             | (41,156     | ) |
| (Less) prior year administrative fees payable                              | (11,538     | ) |
| (Less) prior year corrective distributions payable                         | (2,624      | ) |
| Net income per the Form 5500   | \$ 857,802  |   |

#### 11. Subsequent Events

The Plan evaluated subsequent events through the date of this filing and had no other subsequent events to report.

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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, 2013

| (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 |
|--|--|-------------------|
| JPMorgan   | SmartRetirement 2020 A   | \$ 1,667,753      |
| JPMorgan   | SmartRetirement 2030 A   | 1,398,248         |
| JPMorgan   | SmartRetirement Income A   | 1,090,234         |
| JPMorgan   | SmartRetirement 2025 A   | 742,865           |
| JPMorgan   | SmartRetirement 2015 A   | 430,473           |
| JPMorgan   | SmartRetirement 2035 A   | 305,763           |
| * Great-West   | Key Guaranteed Portfolio Fund (at contract value)  | 281,407           |
| Wells Fargo  | Advantage Growth A   | 242,647           |
| JPMorgan   | SmartRetirement 2040 A   | 197,654           |
| American Funds   | Capital World G/I R4   | 154,845           |
| JPMorgan   | SmartRetirement 2010 A   | 132,417           |
| * Spire Corporation Employer Stock                       | 95,379 shares of common stock  | 51,505            |
| Loomis Sayles  | Bond Fund Admin  | 50,610            |
| Victory  | Fund for Income R  | 48,841            |
| Franklin   | US Government Securities Fund  | 32,581            |
| Vanguard   | 500 Index Investor   | 29,200            |
| Ivy  | Mid Cap Growth Y   | 25,976            |
| JPMorgan   | SmartRetirement 2050 A   | 25,415            |
| RidgeWorth   | Mid Cap Value Equity A   | 24,307            |
| MFS  | Value A  | 22,153            |
| Fidelity   | Advisor New Insights A   | 20,684            |
| Oppenheimer  | International Growth A   | 18,787            |
| AllianceBernstein  | Small Cap Growth Adv   | 16,916            |
| Oppenheimer  | Developing Markets A   | 16,203            |
| Vanguard   | Small Cap Index Fund   | 16,060            |
| Dodge & Cox  | Income   | 15,216            |
| JPMorgan   | High Yield Select  | 12,073            |
| Principal  | MixCap Blend R4  | 11,078            |
| Vanguard   | Total Bond Market Index  | 11,034            |
| Victory  | Small Company Opportunity R  | 9,437             |
| American Funds   | Fundamental Investors R4   | 8,173             |
| Columbia   | Dividend Income A  | 7,349             |
| JPMorgan   | SmartRetirement 2045 A   | 7,211             |
| Baron  | Opportunity Retail   | 5,574             |
| Neuberger Berman   | Genesis Trust Fund   | 4,894             |
| Virtus   | Real Estate Securities A   | 3,599             |
| PIMCO  | Real Return Admin  | 2,294             |

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|                     |                                |             |
|---------------------|--------------------------------|-------------|
| Neuberger Berman    | Socially Resp A                | 2,064       |
| Eagle               | Small Cap Growth A             | 1,461       |
| Templeton           | Foreign Adv                    | 1,446       |
| Columbia            | Mid Cap Index Fund Z           | 1,251       |
| American Funds      | EuroPacific Gr R4              | 1,081       |
| Victory             | Established Value Fund - R     | 757         |
| MFS                 | International New Discovery R4 | 741         |
| Total investments   |                                | \$7,150,277 |
| * Participant loans | Interest Rates 4.25% - 9.25%   | \$84,240    |

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\* Represents party-in-interest

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

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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 24, 2014

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

INDEX TO EXHIBITS

| Exhibit<br>Number | Description  |
|-------------------|--|
| 23.1              | Consent of Independent Registered Public Accounting Firm (Moody, Famiglietti and Andronico, LLP) |

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