Memorandum

To: Shaylyn Dean, Spire Energy

From: Joe Reilly, AEG

CC: Ralph Nigro, Zachary Froio

Date: August 21, 2019

**Re: Ameren Missouri – Spire Energy Co-Delivery of Programs 2019-2021**

## Introduction

Spire Missouri retained Applied Energy Group (AEG) to examine proposed natural gas energy efficiency programs that would be jointly implemented with Ameren Missouri. The primary objective of the analysis was to plan and examine the cost-effectiveness of the proposed jointly-delivered CommunitySavers Single Family Income Eligible Program in the service territories at the measure and program level.

## Approach

AEG’s approach included the following tasks:

1. Identification of program initiatives that would be good opportunities for joint delivery with Ameren Missouri.
2. Characterization of natural gas measures for the programs, including incremental costs, impacts (annual gas savings), and measure lives; relying on Spire Missouri program experience and the 2017 Missouri Technical Reference Manual.
3. Collection of Spire Missouri avoided costs, O&M costs, program costs, discount rates and other utility-specific data for the purpose of evaluating cost-effectiveness.
4. Estimation of participation rates for each measure based on customer market size, historical participation rates, and anticipated activity levels of joint Ameren Missouri electric programs.
5. Calculation of budgets, energy savings, and cost-effectiveness metrics at the measure, program and portfolio levels.

All of the above tasks were intended to guide the development of comprehensive, cost-effective programs and portfolios over the 2019-2021 timeframe within acceptable budget ranges. The 2019 program year represents a partial year from June 1, 2019 through December 31, 2019. The 2020 and 2021 program years run from January through December.

AEG performed the industry standard cost-effectiveness tests in order to gauge the economic merits of the measures and programs. Each test compares the benefits of a measure or program to its costs using its own unique perspectives and definitions. The TRC at the program level was used as the primary indicator of cost-effectiveness. Explanations of the tests can be found in the California Standard Practice Manual but are summarized below.

* **Total Resource Cost Test (TRC).** The benefits include the lifetime avoided energy costs and avoided capacity costs while the costs include the participant and utility administrative costs associated with the program. The TRC test represents the combination of the effects of a program on both participating and non-participating customers.
* **Utility Cost Test (UCT).** The benefits include the lifetime avoided energy costs and avoided capacity costs while the costs include the utility’s incentive and administrative costs.
* **Participant Cost Test (PCT).** The benefits include lost utility revenues (i.e. the lifetime value of retail rate savings). The costs include the participant incremental measure costs minus the value of incentives.
* **Rate Impact Measure Test (RIM).** The test measures what happens to customer’s rates due to changes in utility revenues and operating costs. Therefore, if the benefits are greater than the costs, rates will decrease on average and subsidies will be minimized or avoided. The benefits are the same as the TRC benefits and the costs include all utility costs associated with the program, including lost utility revenue as well as incentive and administrative costs.

AEG used BenCost, a proprietary, Microsoft Excel®-based model, to perform benefit-cost modeling consistent with the California Standard Practice Manual. The input data gathered for the model included:

Table 1. Natural Gas Cost-Effectiveness Model Inputs

|  |  |
| --- | --- |
| General Inputs | Specific-Project Inputs |
| Retail Rate ($/therm) | Utility Project Costs (Administrative & Incentives) |
| Commodity Avoided Cost ($/therm) | Direct Participant Project Costs ($/Participant) |
| Environmental Damage Cost ($/therm) | Project Life (Years) |
| Discount Rate (%) | Therms/Participant Saved (Net and Gross) |
| Growth Rate (%) | Number of Participants |
| Line Losses (%) |  |

## Description of Proposed Programs and Measures

The Single Family Income Eligible Program is proposed to be jointly implemented with Ameren Missouri. Only those measures that provided natural gas savings were screened for inclusion in the Spire DSM portfolio.

### Single Family Income Eligible Program

The objective of this program is to deliver long-term natural gas savings and bill reductions to low income customers who occupy single family dwelling units within the Spire Missouri East service territory. The program is available to income qualifying single family low-income customers at or below 80% of area median income (AMI) or 200% of the federal poverty level, residing in single family detached housing, duplexes, and mobile homes.

The program includes the direct installation of low-cost measures for income-eligible homeowners and renters in single family housing, at no cost to the participant. The measures that Spire will jointly deliver include programmable thermostats, smart thermostats, low-flow faucet aerators, low-flow showerheads, insulating water-heater pipe wrap, shower starts, air sealing, ceiling insulation, and furnace clean & checks. The cost of direct install measures are included in the delivery costs to administer the program, and although there is no cash transfer of incentive funds to the customer, this delivery can be considered a type of customer incentive.

The measures will be delivered jointly with Ameren Missouri’s Single Family Income Eligible Program to the subset of participants with natural gas heating & water heating.

Table 2. Single Family Income Eligible Program Measures

|  |  |  |
| --- | --- | --- |
| Measure | Annual Therm Savings per Measure | Incentive |
| Low Flow Faucet Aerator | 2.82 | Direct Install at no cost to customer |
| Low Flow Faucet Aerator (Swivel) | 4.97 | Direct Install at no cost to customer |
| Low Flow Showerhead | 5.62 | Direct Install at no cost to customer |
| Low Flow Showerhead (Handheld) | 5.62 | Direct Install at no cost to customer |
| ShowerStart | 2.51 | Direct Install at no cost to customer |
| Pipe Wrap | 0.18 | Direct Install at no cost to customer |
| Furnace Clean and Check (Gas) | 170.88 | Direct Install at no cost to customer |
| Smart Thermostat (Electric/Gas) | 57.57 | Direct Install at no cost to customer |
| Programmable Thermostat (Electric/Gas) | 26.45 | Direct Install at no cost to customer |
| Air Sealing | 27.87 | Direct Install at no cost to customer |
| Ceiling Insulation | 163.11 | Direct Install at no cost to customer |

Table 3. Single Family Income Eligible Program Cost-Effectiveness

|  |  |  |  |
| --- | --- | --- | --- |
| Cost Effectiveness B/C Ratio | 2019 | 2020 | 2021 |
| Total Resource Cost Test (TRC) |  2.03  |  2.11  |  2.16  |
| Utility Cost Test (UCT) |  1.55  |  1.69  |  1.73  |
| Participant Cost Test (PCT) |  n/a  |  n/a  |  n/a  |
| Ratepayer Impact Measure (RIM) |  0.41  |  0.41  |  0.42  |

## Program Summary

The proposed Single-Family Income Eligible Program meets cost-effectiveness requirements, provides synergies with Ameren Missouri’s electric DSM efforts, targets important customer segments, and will enhance Spire’s current DSM portfolio. Over the 2019-2021 implementation cycle, the programs will install measures with annual savings of 102,019 to 168,954 therms. With an first year savings weighted average measure lifetime of 7.5 years, this will result in 3.2 million therms saved over the life cycle of all measures. Total 3-year spending will amount to $1.05 million dollars. Details on energy savings and program budgets are shown in the tables below.

Table 4. SFLI Program Summary

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 2019 | 2020 | 2021 | Total |
| Net Incremental Therm Savings |  102,019  |  150,181  |  168,954  |  421,154  |
| Program Budget | $280,030  | $360,554  | $405,624  |  $1,046,208  |