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Public Counsel
GR-2014-0086

REBUTTAL TESTIMONY

OF

GEOFF MARKE

Submitted on Behalf of
the Office of the Public Counsel

SUMMIT NATURAL GAS

Case No. GR-2014-0086

July 11, 2014

**BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI**

In the Matter of Summit Natural Gas of)
Missouri Inc.'s Filing of Revised Tariffs)
To Increase its Annual Revenues For)
Natural Gas Service) Case No. GR-2014-0086

AFFIDAVIT OF GEOFF MARKE

STATE OF MISSOURI)
) ss
COUNTY OF COLE)

Geoff Marke, of lawful age and being first duly sworn, deposes and states:

1. My name is Geoff Marke. I am a Regulatory Economist for the Office of the Public Counsel.
2. Attached hereto and made a part hereof for all purposes is my rebuttal testimony.
3. I hereby swear and affirm that my statements contained in the attached testimony are true and correct to the best of my knowledge and belief.




Geoff Marke

Subscribed and sworn to me this 11th day of July 2014.



JERENE A. BUCKMAN
My Commission Expires
August 23, 2017
Cole County
Commission #13754037



Jerene A. Buckman
Notary Public

My commission expires August 23, 2017.

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REBUTTAL TESTIMONY

OF

GEOFF MARKE

SUMMIT NATURAL GAS OF MISSOURI, INC.

CASE NO. GR-2014-0086

1 **Q. PLEASE STATE YOUR NAME, TITLE AND BUSINESS ADDRESS.**

2 A. Dr. Geoff Marke, Economist, Office of the Public Counsel (OPC or Public Counsel), P.O.
3 Box 2230, Jefferson City, Missouri 65102.

4 **Q. PLEASE DESCRIBE YOUR EDUCATION AND EMPLOYMENT BACKGROUND.**

5 A. I received a Bachelor of Arts Degree in English from The Citadel, a Masters of Arts Degree
6 in English from The University of Missouri, St. Louis, and a Doctorate of Philosophy in
7 Public Policy Analysis from Saint Louis University (SLU). At SLU, I served as a graduate
8 assistant where I taught undergraduate and graduate course work in urban policy and public
9 finance. I also conducted mixed-method research in transportation, economic development
10 and emergency management.

11 I have been in my present position with OPC since April of 2014 where I have been
12 responsible for economic analysis and policy research in electric utility operations. Prior to
13 joining OPC, I was employed by the Missouri Public Service Commission as a Utility Policy
14 Analyst II in the Energy Resource Analysis Section, Energy Unit, Utility Operations
15 Department, Regulatory Review Division. My primary duties in that role involved
16 reviewing, analyzing and writing recommendations concerning electric utility resource
17 planning, fuel adjustment clauses, and demand-side management programs. I have also been

1 employed by the Missouri Department of Natural Resources (later transferred to the
2 Department of Economic Development), Energy Division where I served as a Planner III and
3 functioned as the lead policy analyst on electric cases. I have worked in the private sector,
4 most notably serving as the Lead Researcher for Funston Advisory based out of Detroit,
5 Michigan. My experience with Funston involved a variety of specialized consulting
6 engagements with both private and public entities; additionally, I have provided analysis on
7 independent compliance audits.

8 **Q. HAVE YOU TESTIFIED PREVIOUSLY BEFORE THE MISSOURI PUBLIC**
9 **SERVICE COMMISSION?**

10 A. Yes, I have submitted written testimony in Case No. EO-2014-0189.

11 **I. INTRODUCTION AND RECOMMENDATION**

12 **Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?**

13 A. This testimony responds to the request for approval of a residential natural gas energy
14 efficiency (EE) incentive program as proposed in the direct testimony of Summit Natural Gas
15 of Missouri (SNG) employee Martha Wankum. This rebuttal testimony also responds to the
16 direct testimony of the Missouri Division of Energy's (DE) witness John Buchanan and
17 Missouri Public Service Commission's Staff (Staff) witness Kory Boustead regarding both
18 their modified proposals to SNG's EE program and the recommendation to include a low-
19 income weatherization program.

1 **Q. PLEASE SUMMARIZE YOUR PRIMARY POSITIONS AND CONCLUSIONS.**

2 A. Public Counsel recommends that the Commission reject SNG's filed EE program and instead
3 direct the entirety of SNG's proposed EE expenditures towards supporting low-income
4 weatherization.

5 Additionally, in this case, Public Counsel recommends that the Commission not support DE
6 or Staff's proposed annual target level of 0.5 percent of SNG's annual gross revenues to
7 implement EE programs.

8 An SNG ratepayer-funded EE program would need to be co-delivered with one or more other
9 electric utilities in order for it to be of a sufficient scale that it would be cost effective.

10 **II. KEY DIFFERENCES BETWEEN NATURAL GAS AND ELECTRIC**
11 **EE PROGRAMS**

12 **Q. WHY ARE GAS EE PROGRAMS SMALLER THAN ELECTRIC BOTH IN**
13 **MISSOURI AND NATIONALLY?**

14 A. Natural gas prices traditionally have been much more volatile compared to fuel sources for
15 electricity.¹ This volatility has made the payback from investments in energy efficiency much
16 less certain with natural gas compared to electric. Since 2008, natural gas has operated with
17 a consistently lower avoided cost of energy due to the combination of hydraulic fracturing,

¹ An Analysis of Price Volatility in Natural Gas Markets.
http://www.eia.gov/pub/oil_gas/natural_gas/feature_articles/2007/ngprivolatility/ngprivolatility.pdf

1 horizontal drilling, and sophisticated information technology—smart drilling—making
2 previously unreachable shale oil and natural gas fields accessible in the United States.² This
3 technological revolution in gas exploration and extraction above anything else, has
4 minimized cost, and thus, undermined the incentive structure for aggressive energy efficiency
5 gas programs.

6 Currently, and for the period of time likely relevant to this proposal, saving a therm of gas
7 does not justify the same investment in energy efficiency as saving an equivalent amount of
8 electricity. Lower gas prices translate into reduced program benefits, which in turn constrain
9 program design as benefit-cost ratios decrease.

10 This conclusion has been supported on a national level as seen in the 2013 report by
11 Lawrence Berkeley National Laboratory which forecasted the projected spending and savings
12 of utility-customer-funded EE programs in the United States:

13 Our analysis suggests a very different set of trajectories for gas efficiency programs
14 compared to electricity efficiency programs. . . . we currently see little evidence to
15 expect significant further spending growth at a national level beyond 2015.³

16

17

² Henry Hub Natural Gas Spot Price (Dollars per Million Btu) <http://www.eia.gov/dnav/ng/hist/rngwhhdm.htm>

³ Barbose, G.L., et al. (2013) Ernest Orlando Lawrence Berkeley National Laboratory: The Future of Utility Customer-Funded Energy Efficiency Programs in the United States: Projected Spending and Savings to 2025. <http://emp.lbl.gov/sites/all/files/lbnl-5803e.pdf>

1 **III. IDENTIFIED DEFICIENCIES IN SNG'S PROPOSED EE PROGRAM**

2 **Q. PLEASE EXPLAIN YOUR CONCERNS WITH SNG'S PROPOSED BUDGET AND**
3 **PROGRAM DELIVERY.**

4 A. SNG is proposing an EE rebate program that would cost \$15,000 annually and include two
5 rebate programs. SNG's proposal raises a number of questions unanswered by the supporting
6 direct testimony and attachments. Who would administer the program? How much of that
7 \$15,000 would pay for program administration costs? How much for program evaluation,
8 marketing and tracking? How much of the ratepayer dollars would actually be allocated for
9 rebates? SNG's testimony does not provide answers to these questions. Moreover, this is to
10 say nothing of the fact that SNG's ratepayers are largely rural, spread out, and not easily
11 targeted. This makes SNG's customers one of the most challenging target demographics in
12 the state to promote EE.

13 An additional concern centers on competition. Unlike their electric counterparts, natural gas
14 (particularly in rural parts of the state) is actively competing for customers with other fuels.
15 For some gas utilities (including SNG), energy efficiency can be an important customer
16 service tool because it allows them to differentiate themselves from their competitors. For
17 other gas utilities, energy efficiency can be seen as an imposed cost that competitors do not
18 bear.

1 In Missouri, the competition for natural gas comes primarily in the form of propane. SNG is
2 a regulated utility actively competing against propane. A strong case could be made that a
3 Commission approved EE program would be giving SNG an unfair advantage in the
4 marketplace in that SNG could offer programs to customers that propane competitors cannot.

5 **Q. WHAT TYPE OF RATEPAYER WOULD UTILIZE A PROGRAM LIKE THIS?**

6 **A.** Given the aforementioned constraints in budget and program delivery, most ratepayers would
7 be unaware of the program due to the limited budget. Moreover, based on my experience
8 with electric EE programs and the present constraints with SNG's proposed program, those
9 ratepayers that would participate would largely be seen as "free riders," or customers who
10 would have bought the efficient furnace or programmable thermostat anyway. That would be
11 the very definition of bad policy and contrary to the spirit of all previous Commission
12 approved EE programs. Further, given SNG's competition with propane, a high degree of
13 risk exists that SNG would only market this program to new customers switching from
14 propane; thereby requiring existing SNG ratepayers to subsidize a customer acquisition
15 program with very little broader benefit.

16 **Q. PLEASE EXPLAIN YOUR CONCERNS WITH SNG'S PROPOSED REBATE**
17 **MEASURES.**

1 | A. SNG is proposing two rebated measures for their residential customers—a \$300.00 rebate for
2 | a furnace (AFUE 95%)⁴ and a \$25.00 rebate for a programmable thermostat.

3 | Public Counsel is concerned about the present cost effectiveness of both proposed measures.
4 | According to the direct testimony of SNG employee Martha Wankum, SNG contracted with
5 | Apex Solutions to perform both the Total Resource Cost (TRC) and Utility Cost
6 | Effectiveness Test (UCT) for which a table was provided and reproduced below. There are
7 | five cost effective tests that are typically used to screen EE programs across the country. The
8 | tests are designed to present multiple perspectives and therefore include different “costs” and
9 | “benefits” in their calculation. For electric utilities in Missouri the TRC test has been
10 | designated as the preferred test to be used, along with the UCT test to provide additional
11 | assurance. There are no formally designated tests selected for gas EE programs in Missouri
12 | or listed in the Utility Promotional Practices Rules in Chapter 14.⁵
13 | What has happened in the absence of any rule or guidance is that gas utilities have adopted
14 | the same process as their electric counterparts. If a measure has a score above 1.00 it is
15 | considered cost-effective. The higher the score the more value in offering it. SNG’s cost
16 | effective scores included the following table from Mrs. Wankum’s testimony:
17 |

⁴ A central furnace or boiler’s efficiency is measured by annual fuel utilization efficiency (AFUE). Specifically, AFUE is the ratio of annual heat output of the furnace or boiler compared to the total annual fossil fuel energy consumed by a furnace or boiler. An AFUE of 90% means that 90% of the energy in the fuel becomes heat for the home and the other 10% escapes up the chimney and elsewhere. <http://energy.gov/energysaver/articles/furnaces-and-boilers>

⁵ 4 CSR 240-14.010 (D) Cost-effective means that the present value of life-cycle benefits is greater than the present value of life-cycle costs to the provider of an energy service.

Table 1: Benefit/Cost Tests (Low Growth)

<u>Measures</u>	<u>Measure Level TRC</u>	<u>TRC+ Admin</u>	<u>UCT</u>
Furnace	1.29	1.04	1.62
Thermostat	1.69	1.30	1.69

1 Notably, Mrs. Wankum’s testimony is dated January 2, 2014. The cost effective tests would
2 have presumably taken place at some point in 2013. Both of these measures have undergone
3 changes since the first of the year that will likely impact their cost effectiveness in different
4 ways and thus require further scrutiny if they were to be offered moving forward.

5 Additionally, SNG is only proposing a residential EE program. There are no rebates being
6 offered to the Commercial, Small General Service and Industrial natural gas customers.
7 These are customers where historically, in Missouri’s other EE programs, the greatest
8 amounts of potential savings are likely to occur in both new EE programs and in programs
9 with a limited budget like SNG.

10 **Q. WHAT CHANGES HAVE TAKEN PLACE WITH FURNACES?**

11 A. The current standard for furnaces, set by the National Appliance Energy Conservation Act of
12 1987, requires natural-gas-based furnaces to burn at least 78% of the energy they use. In
13 2011 the United States Department of Energy (USDOE) issued a new standard under which
14 efficiency standards would vary regionally based on climate—Northern states were required
15 to have a 90% efficiency level, Southern states an 80% level. These standards were to go

1 into effect in January of 2015. In late December of 2013 lawsuits were brought forward by
2 furnace installers, distributors and some gas utilities that argued that the proposed standards
3 did not take into account different venting and installation costs which would be required
4 with more efficient furnaces. A settlement was reached on April 24, 2014. As part of that
5 settlement the USDOE agreed to spend the next two years working with industry advocates
6 on developing new standards.

7 Originally, the rules were issued in 2011, but they were not set to be enforced until 2015.
8 This was to give vendors time to prepare and move their inventory accordingly in
9 anticipation of the standard change. There has now been more than three years for vendors to
10 prepare for and adapt to changes that ultimately were not enforced. It is unclear what impact
11 that has had, if any, on the current market of available qualifying furnaces, and consequently,
12 on the program's cost effectiveness moving forward.

13 **Q. ARE THERE ANY ADDITIONAL CONCERNS WITH THE PROPOSED**
14 **FURNACE REBATE?**

15 A. As it stands right now, a rebate of \$300 for furnaces with an AFUE of 95% or greater would
16 be the most expensive furnace and the largest rebate available out of any of the currently
17 approved Missouri natural gas IOU EE furnace rebate programs. Additionally, a furnace's
18 ability to operate efficiently is highly dependent on a long chain of other factors that require
19 subtle balance for optimal results. Unlike a refrigerator, a furnace is not its own independent
20 system that you simply plug in and get effective operation. There are many soft variables

1 involved including appropriate duct work, piping and insulation. Not to mention that both
2 cost and therm savings will vary considerably depending on whether the furnace is
3 professionally installed or not. A poorly installed, top-rated gas furnace is more likely to fail,
4 than a professionally installed, lower rated furnace.⁶ A greater examination of Apex
5 Solutions inputs and assumptions in determining the calculations of their cost effectiveness
6 would need to be considered.

7 **Q. WHAT CHANGES HAVE TAKEN PLACE WITH PROGRAMMABLE**
8 **THERMOSTATES?**

9 A. There are numerous evaluations that suggest that actual energy savings for programmable
10 thermostats often fall short of expected savings. Indeed, ENERGY STAR, the Environmental
11 Protection Agency's (EPA) own program to identify and promote energy efficiency
12 measures, elected to suspend labeling programmable thermostats with their designation in
13 2009 and have since not revisited it due to their overstated performance.

14 For programmable thermostats to manifest expected realization rates, attention needs to be
15 allocated to defining accurate assumptions about consumer behavior. What recent
16 evaluations have shown is that, especially in territories where the avoided energy costs are
17 low, customer's value comfort more than energy efficiency savings. That conclusion is
18 drawn from evaluation, measurement and verification (EM&V) reports that measure, in part,
19 the realization rate, which shows the difference between the evaluated savings against the

⁶ENERGY STAR. A Guide to Energy-Efficient Heating and Cooling
http://www.energystar.gov/ia/partners/publications/pubdocs/HeatingCoolingGuide%20FINAL_9-4-09.pdf

1 estimated savings. In Missouri, this was most recently seen with the results of Ameren
2 Missouri's EM&V of their programmable thermostat.⁷ In that study 56.10% of the
3 participants were estimated to be "free riders" and the realization rates of actual energy
4 savings were so poor that the measure was dropped entirely as a stand-alone item in the first
5 year of a three-year cycle.⁸

6 **IV. WHY A BRIGHT LINE LEVEL OF 0.5% OR GREATER OF GROSS**
7 **REVENUES FOR EE PROGRAMS WILL NOT ANSWER THE**
8 **PROBLEM IN THIS CASE**

9 **Q. HAVE OTHER STAKEHOLDERS SUGGESTED A DIFFERENT OPERATING**
10 **BUDGET?**

11 A. Both DE and Staff are supporting authorizing a funding target level of 0.5% of the utility's
12 annual operating revenue. The 0.5% level is consistent with similar agreed upon target levels
13 established for other natural gas EE programs administered in Missouri.

14 Moreover, DE is recommending that an additional amount of funds, separate from the
15 proposed 0.5% be directed to low-income weatherization. Staff has not specified an exact
16 amount for low-income weatherization, but proposes that the funds for the low-income

⁷ See EO-2012-0142: Revised Evaluation, Measurement and Verification (EM&V) Reports 6/12/2014

⁸ Realization rates of only 15% were seen in Ameren's CoolSavers Program and only 19% as a standalone measure in their RebateSavers Program.

1 weatherization program be administered by DE. I will address the proposal for the increased
2 0.5% now and the funding for low-income weatherization in the next section.

3 **Q. WOULD PUBLIC COUNSEL FAVOR INCREASING EE PROGRAM FUNDING**
4 **TO 0.5% OF THE ANNUAL OPERATING REVENUE?**

5 A. Public Counsel favors EE programs when cost effective and a benefit to all ratepayers.
6 However, adding an additional \$100,000+ to this budget will not be cost effective as
7 presently designed, and so, would not accrue appreciable benefit to ratepayers.

8 **Q. PLEASE EXPLAIN WHY ADDING THE PROPOSED AMOUNT OF MONEY**
9 **WILL NOT BE COST-EFFECTIVE.**

10 A. It is a matter of scale and coordination.

- 11 • Lower avoided costs of energy means it's harder to gain participant interest;
12 subsequently a program would largely attract free riders (those who would have taken
13 the action separate the rebate anyway), thus raising the rates and costs for
14 nonparticipants.
- 15 • Proposed measures have either overstated savings (thermostat) or are subject to
16 changing energy standards (furnace).
- 17 • SNG's service territory includes largely rural customers which makes targeting
18 substantially more difficult.

- 1 • Program administration, delivery and evaluation costs would consume the majority of
2 the new proposed budget if the program hopes to attract non-free rider participants.
- 3 • Additional costs for EE programs would be borne by ratepayers while at the same
4 time SNG seeks large rate increases.
- 5 • There are no EE program designs proposed for Commercial, Small General Service
6 and Industrial natural gas customers, where the greatest potential savings are likely to
7 occur.

8 Public Counsel does not believe the 0.5% standard is appropriate for all gas EE utilities.
9 Each utility operates under different conditions and restraints and needs to be evaluated
10 individually. One-half percent of annual revenues may be appropriate for one utility, but
11 may over or underestimate the proper level of EE investments in another. The 0.5% also
12 should be seen within an appropriate context. As outlined in the direct testimony of DE
13 witness John Buchanan:

14 The National Action Plan for Energy Efficiency sponsored by USDOE and the EPA
15 and prepared by 50 leading organizations, including a variety of natural gas
16 companies, noted the most effective energy efficiency projects were funded at a level
17 equal to a minimum range of 0.5 to 1.5 percent of a natural gas utility's annual
18 operating revenue.

1 USDOE and the EPA published that joint publication in July of 2006. The historic fall of
2 natural gas spot prices from 2008 to present calls into substantial doubt the continued validity
3 of this recommendation.

4 **V. HOW EE PROGRAMS COULD BE MADE TO WORK FOR BOTH**
5 **SNG AND RATEPAYERS**

6 **Q. IS THERE AN APPROPRIATE AMOUNT OF FUNDING OR OTHER SCENARIO**
7 **WHERE EE MAKES SENSE FOR SNG RATEPAYERS?**

8 **A.** A ratepayer-funded EE program administered solely by SNG does not make sense from a
9 cost-effectiveness perspective under present constraints. This is not to say it no program
10 would ever make sense. The simplest way to create a cost-effective program for a gas utility
11 like SNG is to deliver EE programs coordinated with the respective electric utilities in their
12 service territory in order to take advantage of economies of scale. This approach would bring
13 the costs of delivering the program, as well as the cost-effectiveness screening of measures,
14 down considerably. An example of the type of program that would be an obvious candidate
15 for this type of cooperation is a home audit program that includes incentives covering a
16 portion of the cost for the installation of energy conservation measures. A similarly
17 administered program executed just by the electric or gas utility would likely not be cost
18 effective on its own.

1 Another useful model for consideration can be found in Massachusetts in which EE programs
2 are branded as a state-wide initiative (MASS SAVE) where costs of marketing,
3 administering, tracking and verifying are shared by all the utilities (IOU's, co-ops, and
4 municipals) collectively.

5 **Q. SHOULD THE COMMISSION APPROVE FUNDING FOR A LOW INCOME**
6 **WEATHERIZATION PROGRAM?**

7 **A** Yes. Public Counsel is in agreement with the argument presented in the direct testimony of
8 DE witness John Buchanan regarding the numerous benefits that low-income weatherization
9 can provide. Public Counsel would be in favor of redirecting the funds (\$15,000) that SNG
10 had proposed to allocate towards EE to low-income weatherization instead.

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

12 **A.** Yes, it does.

13