



**Review of the Natural Gas
Weather Normalization Adjustment for
South Carolina Electric & Gas Company**



SOUTH CAROLINA OFFICE OF REGULATORY STAFF

**Review of the Natural Gas Weather Normalization Adjustment
For
South Carolina Electric & Gas Company**

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Executive Summary

The South Carolina Office of Regulatory Staff (ORS) completed a review of the Natural Gas Weather Normalization Adjustment (gWNA) mechanism for South Carolina Electric & Gas Company (SCE&G or the Company) to ensure the gWNA does not result in overcharges to the customers and the gWNA remains reasonably necessary.

ORS found evidence customers were overcharged by SCE&G due to a data input error related to the Heating Degree Day (HDD) calculation which impacted the December 2016 billing cycle. The total of the overcharge is \$166,000 and the error impacted residential and commercial customers in 20 different billing cycles. Impacted residential and commercial customers will see a one-time credit on bills rendered in October 2017. On average, a residential customer will see a credit of approximately \$0.66 and impacted commercial customers will see a one-time credit of approximately \$2.18.

Of the alternatives ORS examined to improve or change the gWNA, ORS recommends the following:

- SCE&G engage in a customer education campaign targeted toward natural gas customers to clarify the purpose of gWNA, better explain how the Company implements gWNA during the winter heating season, and provide energy saving tips to natural gas customers;
- SCE&G include actual and HDD weather information from November through April on customer bills in a simplified manner that would provide the customer a reference for the gWNA credit or charge;
- SCE&G include in customer bills a more specific indicator of whether the gWNA is a credit or charge to the customer; and
- A community meeting be sponsored in Aiken County to review the ORS Report and allow SCE&G natural gas customers an opportunity to ask questions related to the gWNA mechanism.

ORS determined the gWNA mechanism benefits SCE&G customers and fulfills its primary functions to reduce the impact of extreme weather on customer bills and stabilize the impact of extreme weather on utility revenue. ORS recommends that SCE&G continue to apply the gWNA mechanism to natural gas customer bills during the months of November through April.

Purpose

On February 21, 2017, the Aiken County Legislative Delegation requested ORS review the gWNA methodology utilized by SCE&G to ensure that it does not result in overcharges to customers and that it remains reasonably necessary.

ORS prepared this Report in response to the request of the Aiken County Legislative Delegation.

Background

Natural Gas Weather Normalization Adjustment

The natural gas industry and regulators have focused on ways to accelerate the modernization, replacement and expansion of critical natural gas pipeline systems. Alternative rate recovery mechanism have been implemented in the majority of the United States to encourage the replacement of aging infrastructure and ensure the safe and reliable delivery of natural gas. South Carolina implemented the Natural Gas Rate Stabilization Act (RSA), S.C. Code Ann. § 58-5-400 (2015) and the gWNA to promote more timely rate recovery and investments in infrastructure, safety and reliability. According to the American Gas Association (AGA), South Carolina is one (1) of twenty-three (23) states that have implemented a gWNA mechanism.¹ In addition, South Carolina is one (1) of nine (9) states to implement the RSA as an alternative to traditional rate proceedings.² See Attachment A for the state-by-state overview of the implementation of gWNA and RSA as compiled by the AGA.

gWNA is a mechanism applied by many natural gas utilities to stabilize revenues and to reduce the impact of extreme weather on customer bills. Natural gas utilities recover the fixed cost to provide service through sales of natural gas which are sensitive to fluctuations in the weather. Since a significant portion of SCE&G's fixed costs are not recovered through a base facilities charge (BFC), changes in weather could cause significant swings in customer's bills, trigger frequent general rate proceedings, and impact the Company's earnings if the gWNA were not in place. For this reason, a charge is applied to the bill during warmer than normal bill cycles and a credit is applied during those that are colder. The gWNA mechanism used by SCE&G adjusts the per therm rate for deviations from normal weather during the winter heating season which extends from November 1 through April 30.

¹ American Gas Association, [Innovative Rates, Non-Volumetric Rates, And Tracking Mechanisms: Current List, December 2016](#), pg. 12

² American Gas Association, [Innovative Rates, Non-Volumetric Rates, And Tracking Mechanisms: Current List, December 2016](#), pg. 10

The Public Service Commission of South Carolina (PSC) approved the use of a gWNA for SCE&G on November 1, 1991 in Order No. 1991-971 and the Company was allowed to use the mechanism for three years subject to review on an annual basis. The following components were established by the PSC for gWNA implementation:

- Residential and Small General Service rate schedules are subject to the gWNA because usage by these classes is sensitive to weather conditions;
- gWNA applied only to the billing months of November through April;
- gWNA applied only to the portion of the rate which covers costs other than natural gas costs; and
- SCE&G was ordered to use the normal HDD published by the National Oceanic and Atmospheric Administration (NOAA). That information is based on a historic thirty-year period updated each decade.

The PSC further refined the gWNA in its Order No. 1992-821 by requiring SCE&G to improve the mechanism in the following ways:

- gWNA factors were ordered to better align with the customer's billing cycle;
- Base load volumes for each customer were ordered to be individually calculated as the average usage during June, July and August in order to give better recognition to non-temperature sensitive volumes of natural gas; and
- SCE&G was ordered to use a new bill form to show individual customer non-temperature sensitive bases, and also, the specific gWNA factor for the customer, but was not to reflect gWNA as a separate line item on customer bills.

The PSC issued three (3) additional Orders which affect the gWNA mechanism. They are as follows:

- PSC Order No. 1993-848 required the study of other time periods to determine the most appropriate normal HDD calculation.
- PSC Order No. 1994-875 allowed SCE&G to continue the gWNA on an indefinite basis, with the further provision that the Staff shall conduct annual examinations of the gWNA.
- PSC Order No. 2005-619, allowed the gWNA program to be applicable to Residential Rate Schedule 32S and 32V and Commercial Rate Schedule 31 and 33.

Electric Weather Normalization Adjustment

In Order No. 2010-471, the PSC authorized the establishment of an Electric Weather Normalization Adjustment (eWNA) for SCE&G as part of a settlement agreement approved in Docket No. 2009-489-E. Initially approved as a pilot program, the eWNA was developed to minimize the impact of extreme fluctuations in weather, both on the electric customers and the Company. The eWNA was modified by PSC Order No. 2011-864.

Under the eWNA, bills of certain residential and small commercial customers were adjusted to reflect average temperatures over the most recent fifteen (15) years for which data is available. More specifically, when summer temperatures were hotter than normal or winter temperatures are colder than normal and customers' electric usage spiked as a result, the eWNA decreased the rate customers were charged for electricity per kilowatt hour ("kWh"). Alternatively, when summer weather was abnormally cool or winter weather was abnormally warm and customers' electric usage was lower than expected, the eWNA increased the charge per kWh. Thus, the eWNA was designed to mitigate upward spikes in customers' monthly energy bills and protect SCE&G from recovering less than its operating costs due to weather fluctuations.

After two years of operation, the usefulness of the eWNA was called into question by the American Association of Retired Persons (AARP). AARP voiced concern that the eWNA discouraged conservation and made customer bills confusing and unpredictable. AARP and ORS proposed that SCE&G investigate the impact that changing certain aspects of the application of eWNA would have on customer billing by applying several scenarios to actual historical data. The study was filed with the PSC and ORS in 2013. ORS analyzed the findings of SCE&G's study and presented a report detailing its evaluation of the scenarios and its conclusions regarding the eWNA's administration and impact on consumers.

As a result of the ORS report and stakeholder concerns, the PSC approved the discontinuance of the eWNA mechanism in Order No. 2013-900 dated December 20, 2013.

gWNA Calculation

SCE&G natural gas customer's base rate is designed to partially recover the Company's fixed costs and return on its investment. Approximately 30% of SCE&G's fixed costs are collected through the BFC. The remaining fixed costs are recovered through a per therm charge based on customer natural gas usage. Therefore, if the weather during the winter heating season is warmer than normal, SCE&G customers would not consume as much natural gas. This causes the Company's sale of natural gas to decrease and the Company may not recover the full cost to provide service to its customers.

During the winter months of November through April, the gWNA is designed to stabilize customer bills and utility revenues by adjusting a customer's per therm rate to mimic normal temperature conditions. The rate a customer pays is adjusted for the difference between the actual and normal weather experienced during the billing cycle. This allows SCE&G to refund or collect abnormal sales revenue on a real-time basis. It is important to note the gWNA does not affect the cost of natural gas portion of the per therm rate. SCE&G is allowed to recover 100% of prudently incurred natural gas costs and no profit is added to the cost of natural gas.

In general, SCE&G determines normal weather using the NOAA heating degree day 30-year average for the Company's service territory for each day of the month. The Company uses a system-average of the Columbia and Charleston Airport Weather data for both normal and actual weather. A HDD is the measurement of how cold the temperature was on a given day based on a daily average of high and low temperature which falls below 65 degrees Fahrenheit. Customers generally do not need to heat their homes when the outside temperature is at or above 65 degrees Fahrenheit. SCE&G compares actual temperatures during the billing cycle with the 30-year average HDD to determine if a gWNA credit or gWNA charge should be applied to a customer's bill. The customer will be impacted in the following way by the gWNA:

- If the weather is colder than normal during the billing cycle, SCE&G sells more natural gas than expected and a gWNA credit is applied to the customer's bill.
- If the weather is warmer than normal during the billing cycle, SCE&G sells less natural gas than expected and a gWNA charge is applied to the customer's bill.

See Figure 1 for the current Tariff calculation for SCE&G's gWNA.

Figure 1: SCE&G Weather Normalization Adjustment Tariff (10/24/16)

SOUTH CAROLINA ELECTRIC & GAS COMPANY					
WEATHER NORMALIZATION ADJUSTMENT					
APPLICABILITY					
<p>This Weather Normalization Adjustment (WNA) is applicable to and is a part of the Company's firm gas rate schedules 31, 32V, 32S, and 33. The commodity charges per therm for each customer account during the billing months of November through April will be increased or decreased in an amount to the nearest one-thousandth of a cent, as derived by the following formula:</p>					
WNA	= $\frac{WSL \times R}{ATH - BTH}$				
Where:	WSL = $\frac{ATH - BTH}{ADD}$ X (NDD - ADD)				
<p>WNA = Weather Normalization Adjustment factor for a particular account expressed in dollars per therm.</p> <p>WSL = Weather Sensitive Load which is the difference in the amount of therms that would have been consumed by the customer during normal weather and the amount of therms actually consumed.</p> <p>R = Approved rate less cost of gas for applicable rate schedule determined as follows:</p>					
<p style="text-align: center;"><u>Rate 32V</u> R= \$ 0.48829</p>	<p style="text-align: center;"><u>Rate 32S</u> R= \$ 0.54829</p>				
<p style="text-align: center;"><u>Rate 31</u> R= \$ 0.50283</p>	<p style="text-align: center;"><u>Rate 33</u> R= \$ 0.45283</p>				
<p>ATH = Actual therms consumed by customer during current billing period.</p> <p>BTH = Base load therms which is the average of the therms consumed by customer during the previous billing months of June, July and August. If BTH is greater than ATH, then BTH will equal to ATH. If base load therms cannot be determined, then base load therms will be as follows:</p> <table style="width: 100%; border: none;"> <tr> <td style="text-align: center;">Rate 32V = 18 therms</td> <td style="text-align: center;">Rate 32S = 4 therms</td> </tr> <tr> <td style="text-align: center;">Rate 31 = 19 therms</td> <td style="text-align: center;">Rate 33 = 739 therms</td> </tr> </table> <p>NDD = Normal heating degree days during customer's billing period authorized by the Commission.</p> <p>ADD = Actual heating degree days during customer's billing period.</p> <p>The appropriate revenue related tax factor is to be included in these calculations.</p>		Rate 32V = 18 therms	Rate 32S = 4 therms	Rate 31 = 19 therms	Rate 33 = 739 therms
Rate 32V = 18 therms	Rate 32S = 4 therms				
Rate 31 = 19 therms	Rate 33 = 739 therms				

Effective For Bills Rendered On and After the 1st Billing Cycle of November 2016

ORS Review

SCE&G has elected to have the terms of the RSA apply to the Company's rates and charges for natural gas distribution service. As such, SCE&G is required to file a Quarterly Monitoring Report with the PSC on an annual basis. ORS conducted the review of the gWNA in coordination with the annual RSA which analyzes the twelve-month period ending March 31, 2017 (review period).

As part of the review of SCE&G's gWNA mechanism, ORS verified the following:

- The actual weather and HDD data for the November 2016 through April 2017 across Columbia, Charleston, and Aiken regions;
- The NOAA average weather and HDD for the most recent 30-year census period (1980 – 2010) for the Columbia, Charleston, and Aiken regions;
- The gWNA billing calculations for a representative sample of residential and commercial customers billed on Rate Schedules 31, 33, 32S and 32V; and
- The gWNA billing calculations for all customers who contacted ORS in 2017 with concerns about the impact of gWNA on their winter bills.

ORS Review Results

During its review, ORS detected one instance in which SCE&G transposed a number when entering the high and low temperature for December 17, 2016, into its records. This error caused SCE&G to conclude that the number of actual HDD was lower than the actual number of HDD experienced by its customers. The impact of the error resulted in SCE&G overcharging certain residential customers an average of approximately \$0.66 during the Billing Period and certain small/medium general service customers an average of approximately \$2.18 during the Billing Period. The total of the error was approximately \$166,000.

In accordance with 10 S.C. Code Regs. 103-440 (2015), SCE&G will credit those customers impacted by this error in an upcoming billing cycle. No other discrepancies were discovered during ORS's review of each billing cycle during the review period. With the exception of the error detailed above, ORS confirmed the calculations used by SCE&G for the gWNA are in compliance with the PSC Orders and the most current Tariff filed with the PSC.

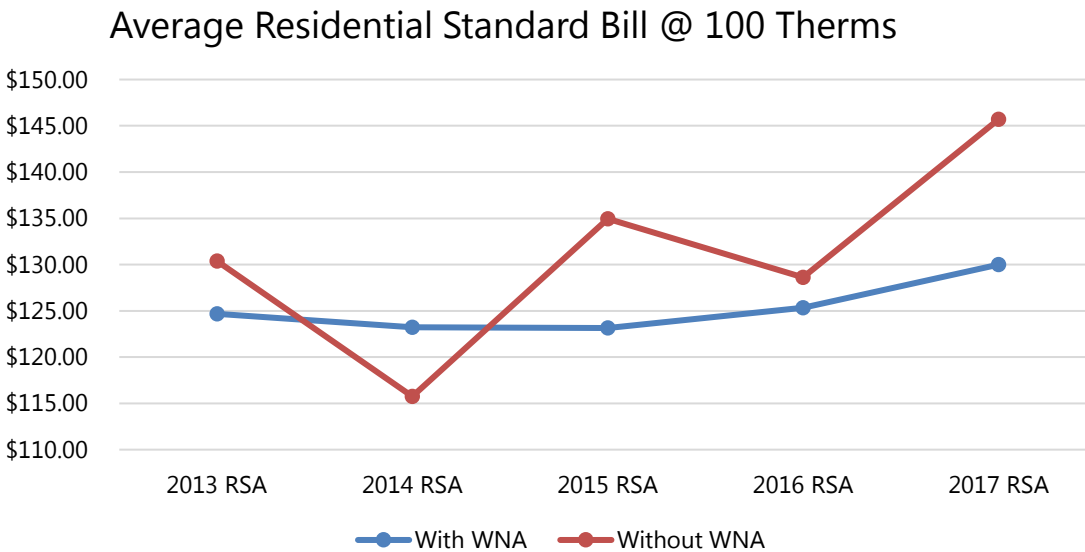
Reasonable and Necessary

The Aiken County Legislative Delegation requested ORS review the gWNA to ensure that it continues to be reasonably necessary. As discussed earlier in this Report, the gWNA serves two (2) primary functions: 1) to reduce the impact of extreme weather on customer bills and 2) to stabilize the impact of extreme weather on utility revenue. SCE&G elected to be regulated in accordance with the RSA in 2005 and the PSC approved a range for the rate of return on equity between 9.75% and 10.75% for the Company.

Under RSA election, if, during the annual review period, the rate of return for SCE&G falls outside of the range approved by the PSC, the Company must make an adjustment to return to the midpoint of the approved rate of return. The RSA election stabilizes the Company's revenue by allowing annual adjustments to recover the revenue necessary for it to earn a return within the approved range approved by the PSC. However, the RSA does not mitigate or reduce the impact extreme weather may have on customer's bills. gWNA ensures customer's bills do not spike as a result of abnormal winter weather.

During the 2017 RSA Review Period of April 1, 2016 through March 31, 2017, SCE&G recognized \$26,195,784 in revenue associated with the gWNA. After review and audit, ORS proposed an adjustment to increase SCE&G's revenue by \$8,632,641 in order to bring SCE&G to a 10.25% rate of return required by the RSA election. For comparison, if SCE&G did not have the gWNA mechanism in place during the review period, the increase in revenue for the RSA review period would have been approximately \$34,827,772.

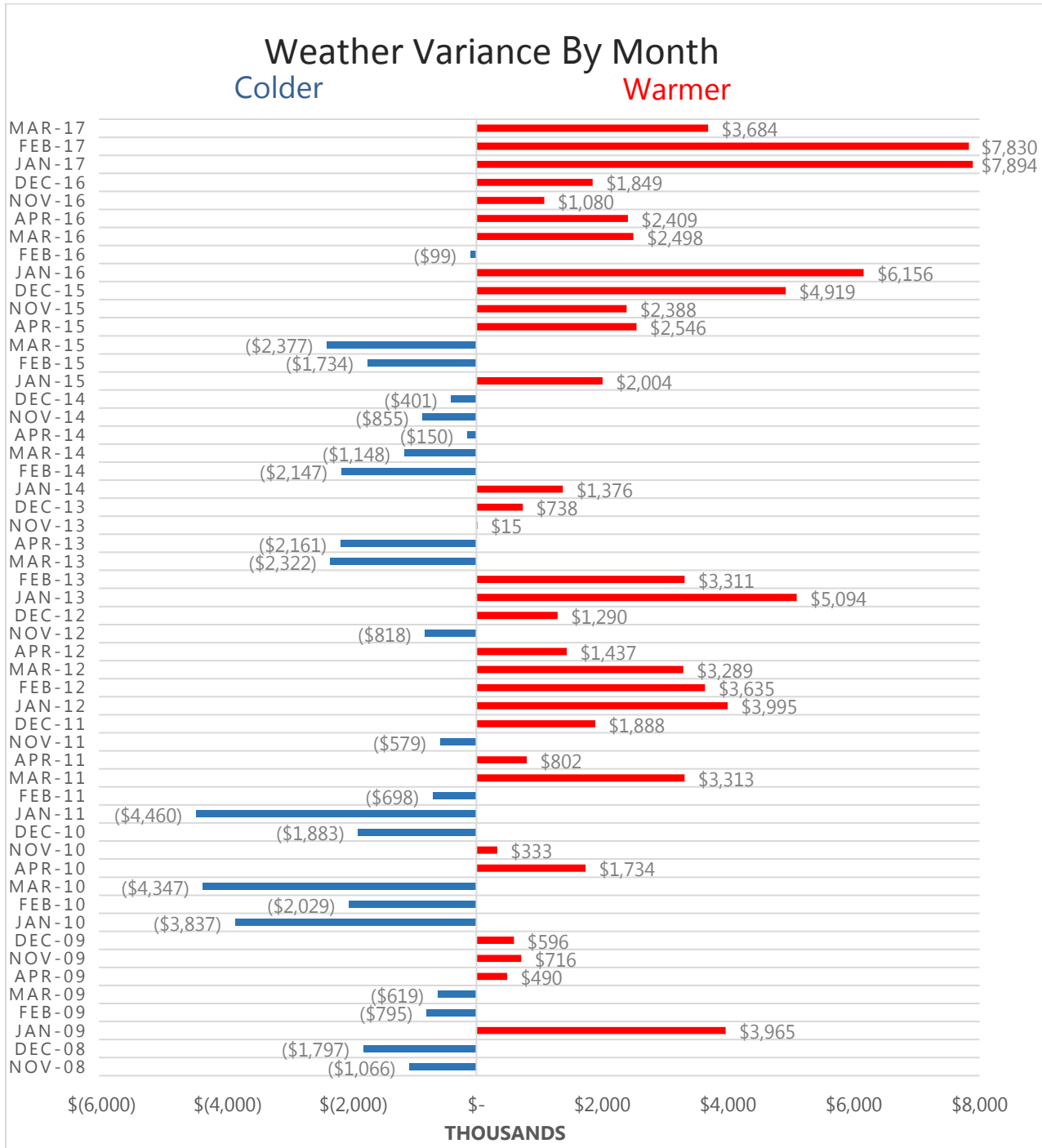
Figure 2 illustrates the impact to a residential customer using 100 therms of natural gas if SCE&G had ceased using the gWNA mechanism in 2013 and recovered its fixed costs through the RSA.

Figure 2: Impact to a Residential Customer with gWNA and without gWNA

The absence of the gWNA would be revenue neutral for SCE&G; however, the natural gas customer may see dramatic changes in their natural gas rates from one year to another due to abnormal weather. The real-time nature of the gWNA has the effect of stabilizing the Company's rate of return to within the approved range which prevents dramatic RSA rate adjustments. The gWNA also limits socialization of winter heating costs across all natural gas customer classes.

Figure 3 demonstrates a month-by-month comparison of the revenue returned to customers via a credit amount of the gWNA due to colder than normal weather. In addition, Figure 3 reflects the same monthly comparison of the gWNA charges to customers when the weather was warmer than normal. The month with the total highest gWNA credit to customers occurred in January 2011. The month with the total highest gWNA charge to customers occurred in January 2017.

Figure 3: Total Monthly gWNA Credit or Charge to all gWNA customers



Therefore, while the gWNA and RSA both work towards ensuring SCE&G receives the return the PSC has approved, it is the gWNA alone that prevents the customer's natural gas bills from varying a great degree during the winter. In that sense, the gWNA is still reasonable and necessary.

Options

ORS examined several other options to improve or change the gWNA in light of the concerns raised by customers and the Aiken County Legislative Delegation. Those options included:

- Use of regional weather station data instead of consolidated weather station data and its effect on gWNA for the Aiken service territory;
- Verify SCE&G's 2016 Cost of Service Study to identify if any deviations from the 2005 RSA election baseline data were detected;
- Change the billing period for gWNA and the impact on customer bills;
- Identify customer education opportunities and increase transparency in communication related to gWNA; and
- Sponsor a community meeting in Aiken County to review the ORS Report and allow SCE&G natural gas customers an opportunity to ask questions related to the gWNA mechanism.

Regional Weather Station Data

ORS reviewed the actual and normal HDD weather station data for the Columbia, Charleston and Aiken service territories. System wide, using the average of the consolidated Columbia and Charleston weather stations, the 2016-2017 winter was approximately 34.48% warmer than normal. Since 2010, South Carolina has experienced colder than normal weather in four of the eight RSA Review Periods and warmer than normal weather in the other four RSA Review periods. By comparison, the analysis of the weather station data at a regional level indicates:

- Columbia - 33.42% warmer than normal
- Charleston - 35.88% warmer than normal
- Aiken - 39.76% warmer than normal

If SCE&G used regional actual and normal HDD weather station data to calculate the gWNA the impact on customer bills would have been:

- Columbia customers - lower gWNA impact
- Charleston customers - higher gWNA impact
- Aiken customers - higher gWNA impact

ORS determined customers in the Aiken service territory benefit from SCE&G using consolidated actual and normal HDD weather station data for Columbia and Charleston. ORS does not believe

updating the gWNA calculation to use regional weather station data will provide consistent or beneficial results to SCE&G's natural gas customers in the Aiken service territory.

Verification of the Cost of Service Study

ORS requested SCE&G provide a 2016 Cost of Service Study (COSS) to confirm the allocation of operating revenues, operating expenses and rate base items to each customer class. A COSS allocates – or directly assigns – the operating revenues, operating expenses and rate base items to each customer class, which are then used to determine the rate of return from each class. Specifically, the COSS identifies the cost responsibility for expenses and rate base items that should be allocated to the customer class(es) causing the cost to be incurred. This allocation methodology is referred to as “cost causation.”

The major components utilized in the development of a COSS are functionalization, classification and allocation. Functionalization is the process of categorizing investments and operating costs according to their function which is either, production, gathering, transmission or distribution. Classification further groups these costs based on the service being provided and related causation of the costs, namely demand—related, commodity-related or customer-related. These costs are then allocated based upon cost causation principles.

ORS concluded the methodology applied in the SCE&G's COSS provided a reasonable assessment and allocation of the revenues, operating expense and rate base items, which produced a reasonable rate of return by customer class.

As stated earlier in the Report, SCE&G recovers approximately 30% of its fixed costs through the BFC. Should SCE&G chose to recover 100% of the operating revenues reported in the COSS through a BFC and the per therm charge was designed to specifically recover the cost of natural gas, a residential customer would be billed a BFC of approximately \$30 each month. This change would increase the BFC by 275% from the current monthly BFC of \$10.90. A change to the rate design would not be beneficial to customers and may hinder future residential natural gas customer growth in the state.

Change in Billing Period

The gWNA is reflected on customer bills issued in November through April of each year. ORS analyzed if a change to the gWNA billing period would have an impact on customer winter heating bills. Because weather patterns have shifted in recent years, an adjustment made to the gWNA

billing period to add October and drop April could affect the HDD calculation and may benefit the customer.

ORS's review of the Normal HDD data from November through April indicates the total Normal HDD is 2,153.50. If the billing period were adjusted to October to March the Normal HDD would be reduced to 2,137.50. This represents a decrease of 0.743% to Normal HDD data. The change in the gWNA billing period does not result in a material change to the gWNA calculation to benefit the customers or the Company.

Customer Education and Transparency

During 2017, ORS received 128 customer inquiries and complaints related to the SCE&G gWNA mechanism. The majority of customers that contacted ORS were located in the Aiken County area. Written comments submitted to ORS by customers indicate SCE&G customers would benefit from educational outreach initiatives to explain the purpose of the gWNA mechanism, how the gWNA is calculated, and during which billing months the gWNA is applicable.

A large percentage of customer complaints indicate customer's believe the gWNA charge is based on the volume of natural gas used by the customer and not related to the abnormal weather patterns (i.e. warmer than average winter). In general, customers indicated they used less natural gas; however, they paid more per therm during the November through April timeframe due to the gWNA. In many cases, customers expressed a concern that "...they were being punished for conserving energy." Many customers indicate they invested in energy efficiency initiatives only to see their natural gas bills increase. According to the American Gas Association, fifty-one percent of all heated American households feature natural gas heat, and 60 percent of all new single-family homes heat with natural gas. ORS encourages customers to continue to invest in ways to keep their homes warm and save money.

ORS recommends SCE&G engage in a customer education campaign targeted at natural gas customers to clarify the purpose of gWNA, explain how the Company implements gWNA during the winter heating season and provide energy saving tips to natural gas customers.

PSC Order No. 1992-821 does not allow SCE&G to reflect the gWNA as a separate charge on customer bills. Based on customer complaints received by ORS, customer bill information could be improved and provide more transparency. ORS recommends SCE&G include actual and HDD weather information from November through April on customer bills in a simplified manner that

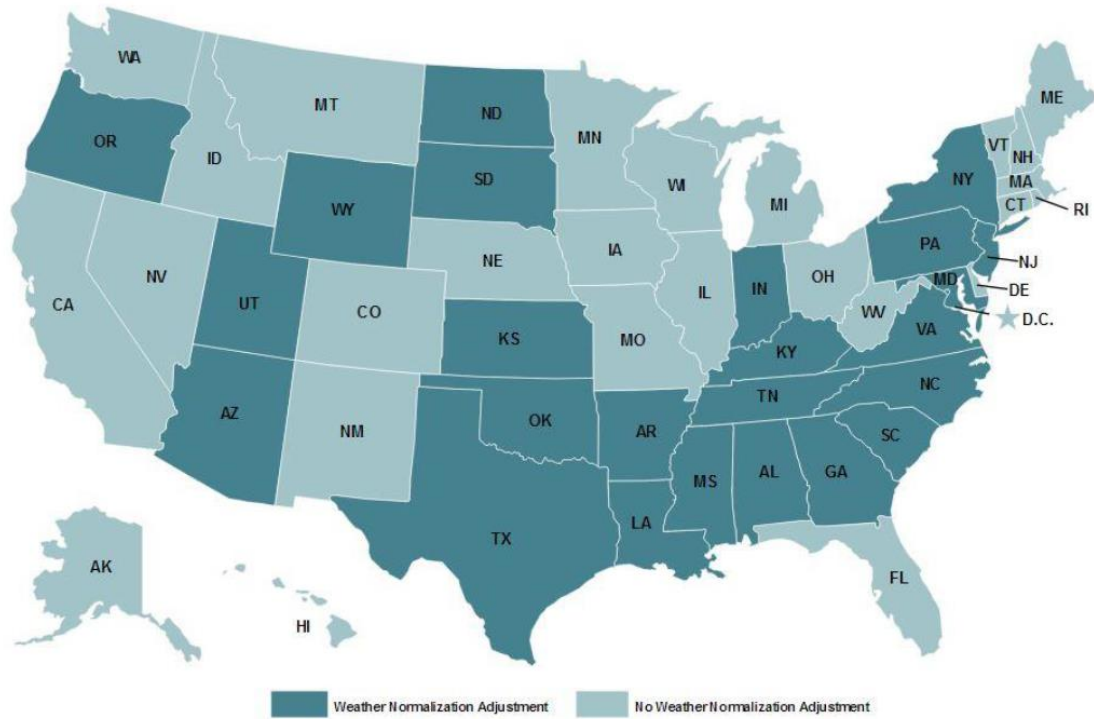
would provide the customer a reference for the gWNA credit or charge they experience on their bill. For example, the SCE&G natural gas bill could be formatted to provide the customer with average weather data to demonstrate if the weather experienced during the bill period was warmer or colder by a specific percentage. The bill could also include a more specific indicator of whether the gWNA is a credit or charge to the customer.

Public Participation

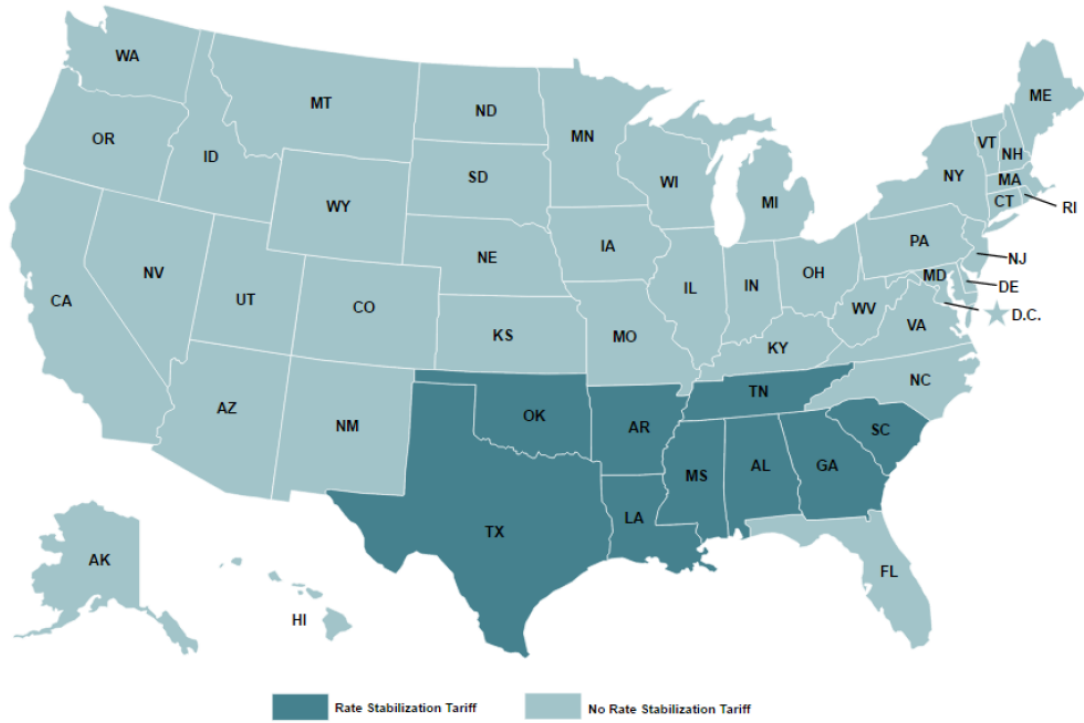
ORS recommends a community meeting be sponsored in Aiken County to review the ORS Report and allow SCE&G natural gas customers an opportunity to discuss their concerns related to the gWNA mechanism.

Attachment A

Current Status of Weather Normalization Adjustments



Current Status of Rate Stabilization Tariffs





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