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Date of Hearing: 4-3-19

Case No. 18-1701-GA-RDR

PUCO Case Caption: IMO the Annual
Application of Columbus Gas of OHIO,
The., for an adjustment to Rider
IRP and Rider DSM Rates

List of exhibits being filed:

ELPC Exhibits 1-3

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BEFORE THE PUBLIC UTILITIES COMMISSION OF OHIO

- - -

In the Matter of the :
Annual Application of :
Columbia Gas of Ohio, Inc., : Case No. 18-1701-GA-RDR
for an Adjustment to :
Rider IRP and Rider DSM :
Rates. :

- - -

PROCEEDINGS

Before Lauren Augostini and Sarah Parrot, Attorney
Examiners, at the Public Utilities Commission of
Ohio, 180 East Broad Street, Room D, Columbus, Ohio,
called at 10:00 a.m. on Wednesday, April 3, 2019.

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222 East Town Street, Second Floor
Columbus, Ohio 43215-4620
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- - -

BEFORE
THE PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Application of Co-)
lumbia Gas of Ohio, Inc. for Approval of)
Demand Side Management Program for) Case No. 16-1309-GA-UNC
its Residential and Commercial Custom-)
ers.)

In the Matter of the Application of Co-)
lumbia Gas of Ohio, Inc. for Approval to) Case No. 16-1310-GA-AAM
Change Accounting Methods.)

APPLICATION OF
COLUMBIA GAS OF OHIO, INC.
TO CONTINUE ITS
DEMAND SIDE MANAGEMENT PROGRAM

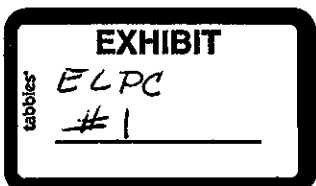
1. Introduction

In this application, Columbia Gas of Ohio, Inc. ("Columbia") seeks approval to continue its Demand Side Management ("DSM") Program approved by the Public Utilities Commission of Ohio ("Commission") in Case Nos. 08-833-GA-UNC, 11-5028-GA-UNC, and 11-5029-GA-AAM. Columbia is a national, regional, and state leader among natural gas utilities in the development and implementation of innovative energy efficiency and weatherization programs for its customers. Columbia seeks to continue this leadership through the continuation of its DSM Program. Columbia proposes to invest an average of approximately \$26.8 million annually in the proposed programs for calendar years 2017 through 2022.¹ Prior to filing this application to continue its DSM Program, Columbia presented the costs, savings and a description of the proposed DSM Program to Columbia's DSM Stakeholder Group.

¹ The budget will increase annually by approximately 3% to account for inflation and natural growth in successful programs. In addition to this amount, Columbia receives \$7.1 million for WarmChoice® through base rates.

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Columbia recovers the costs of its DSM Program through Columbia's Rider DSM. Columbia's Rider DSM is adjusted effective May each year to enable Columbia to recover the DSM costs incurred during the prior calendar year. Columbia proposes no changes to the currently approved procedures to review and adjust Rider DSM. Columbia is proposing, however, some modifications to the shared savings levels, which are detailed herein in Section 3.5.

Columbia is committed to helping its customers use natural gas more efficiently by effectively implementing its DSM Program. The key purposes of the DSM Program are to:

- Provide cost-effective, customer-oriented energy efficiency services for residential and commercial customers throughout Columbia's entire service territory
- Improve customer safety, comfort, and productivity
- Reduce wasteful and inefficient use of natural gas and other resources, such as water and electricity
- Increase customers' financial resources by reducing natural gas bills
- Lower customers' carbon dioxide emissions
- Support job creation and economic development
- Help the Commission comply with R.C. §§ 4929.02 and R.C. 4905.70
- Help the State of Ohio meet Pillar 7 of Ohio's 21st Century Energy Policy.

This DSM Program, Columbia's third since 2008, is based on third-party and internal energy efficiency analyses and results from the current DSM Program. The DSM Program term has been lengthened from five to six years in order to:

- Align the end date of the proposed DSM Program extension (December 31, 2021) with the expected end date of Columbia's next Infrastructure Replacement Program ("IRP") extension (December 31, 2022). Since 2012, Columbia has annually filed its application and testimony to adjust Rider DSM with its adjustment to Rider IRP. Ending and renewing both "programs" on the same schedule is ideal for stakeholders and the Commission.
- Reduce administrative burden and costs to customers, Columbia, stakeholders, and the Commission, while continuing to provide annual oversight through the Rider DSM application and review process, program evaluation, and input from the DSM Stakeholder Group.

- Provide stability for customers and businesses, and for the contractors that provide energy efficiency services to them, who expect utilities to offer and deliver energy efficiency as part of 21st century customer expectations for utility company operations.
- Maintain established and ongoing collaborative relationships with other utilities, units of local government, and other strategic partners in delivering energy efficiency services to customers and citizens of Ohio. This includes Columbia's key partnership with American Electric Power ("AEP Ohio") on programs that Columbia jointly delivers in shared service territories.

The DSM Program continues Columbia's current, successful programs and provides program enhancements to continue that success, serve additional market segments, and deliver more savings to customers.

2. Creating Value Through Demand Side Management

2.1. Long-Term Energy Reduction Benefits

Columbia has been providing energy-efficiency programs and services to its customers for over three decades, as described in Appendix C. The energy efficiency measures undertaken through Columbia's DSM programs since the inception of the WarmChoice® program in 1987, and the creation of the first DSM Program in 2008, will save customers over 60.7 Bcf of natural gas over the life of the measures. This equates to an estimated total savings of \$492 million. In addition to the natural gas savings created by Columbia's programs, several of the programs create electricity savings through reduced use of air conditioning after insulation and air sealing measures are installed, reduced run time of furnace fans through lower heating and cooling loads, and more efficient furnace motors in Energy Star® qualified furnaces.

Columbia continued its 33-year legacy of leadership in energy efficiency with the last extension and expansion of its DSM Program in 2011. Table 1 provides a brief description of the current programs and shows the results for the first four years of the DSM Program, 2012-2015. The programs continue to meet and exceed customer service and natural gas reduction targets through a network of talented energy efficiency professionals and contractors who are among the best in the nation at effectively meeting the challenges of program design and implementation. A summary of accomplishments to date for the current DSM Program is shown below in Table 1.

Table 1 Current DSM Program Accomplishments

Program	Description	2012-2015 Customers Served	2012-2015 Lifetime Mcf Savings
Home Performance Solutions	In home Energy Audit and Rebates	22,251	7,128,796
WarmChoice®	Free Weatherization to income-eligible customers	8,129	5,200,248
High Efficiency Furnace Rebates	Rebates on high efficiency furnaces and boilers	11,434	2,290,047
EfficiencyCrafted® Homes	Incentives to home builders for homes 30% better than energy code	7,565	5,752,709
Home Energy Reports	Energy Efficiency behavior modification reports to motivate customers to engage in energy efficiency actions	430,000	753,261
Simple Energy Solutions	Online e-store and rebates on programmable thermostats, energy efficient showerheads, and faucet aerators	27,830	1,206,309
Residential Energy Code	Training for code officials, homebuilders, and trade allies on residential energy codes	595*	-
e3 smart	Energy efficiency education delivered as part of school curriculum, with kit of energy efficiency measures for students to install in their homes	82,019	199,673
Home Energy Checkup	On-line energy audit that refers customers to other DSM programs that can help them save more	241**	-
Innovative Energy Solutions	Prescriptive rebates, and custom rebates for energy audits and energy conservation measures for nonprofits, houses of worship, schools, hospitals, government and businesses	166	3,031,892
Energy Design Solutions	Commercial energy code education for small commercial building design professionals and trade allies	121***	-
U.S. EPA Portfolio Manager	Link to U.S. EPA's building energy benchmarking tool to determine efficiency level and next steps	3****	-

Notes:

* Training for code officials, homebuilders, contractors and real estate agents.

** Pilot period participation for new on-line energy audit.

*** Building design professionals and trade allies trained.

**** Key partnerships with City of Columbus, Ohio Hospital Association, and Ohio Interfaith Power and Light.

2.2. Multiple Non-Energy Benefits and Impacts of the DSM Program

The DSM Program provides Columbia's customers, ratepayers, and society with multiple benefits beyond energy and utility bill savings. Extensive research has been conducted into the additional benefits of DSM in the areas of macroeconomic impacts, public budget impacts, health, and well-being impacts, among many others. For instance, lifetime carbon dioxide reduction for Columbia's DSM Program is estimated to be 3,643,817 tons, the equivalent of taking 677,878 automobiles off the road for one year or planting 2,639,278 acres of trees. A bibliography of reports on these non-energy benefits ("NEBs") is included in Appendix E.

Columbia's DSM Program creates numerous NEBs, including:

- Lower water and sewer bills
- Avoided CO₂ emissions
- Direct economic benefits from jobs created by DSM programs
- Lower customer arrearages and bad debt
- Increased tax revenue to state and local government
- Secondary economic (multiplier) benefits
- Improvements in health and safety

These NEBs can, and should, be used in DSM cost tests to account for the full value proposition that energy efficiency provides to its customers. In Iowa² and Minnesota, which use the societal cost test to determine which energy efficiency programs to implement, NEBs are used as a key input to calculate the value of energy efficiency programs and their impact in their states. An economic impact assessment of energy efficiency efforts in Minnesota found a total net benefit of more than \$5.9 billion in new economic output and nearly 55,000 job-years.³ This Commission, too, can factor in NEBs in the cost tests to obtain a broader perspec-

² Iowa Admin. Code r.199-35.8(1)e.(1).

³ Cadmus, *The Aggregate Economic Impact of the Conservation Improvement Program 2008-2013*, Prepared for the Minnesota Department of Commerce, Div. of Energy Resources (Oct. 2015) (available at <http://mn.gov/commerce-stat/pdfs/card-report-aggregate-eco-impact-cip-2008-2013.pdf>).

tive on the true value and impact that Columbia's DSM Program creates through ratepayer investments throughout Ohio.

2.3. Best Practice Awards and Recognition

Columbia's DSM programs and team members have been recognized for their leadership in the field of energy efficiency at the state, regional, and national levels. These awards and recognition are a testament to Columbia's focus on implementing best practices to market and deliver effective programs to customers.

The current portfolio of DSM programs has received 17 program awards, most of them in the past 3 to 4 years. Nationally, Columbia's largest programs, WarmChoice®, Home Performance Solutions, and EfficiencyCrafted® Homes, have received awards from the American Council for an Energy Efficient Economy and the United States Environmental Protection Agency ("U.S. EPA"), leading proponents of energy efficiency as a resource for helping Americans manage energy costs and greenhouse gas emissions. At the regional and state level, Columbia has been recognized by the Midwest Energy Efficiency Alliance and received the Ohio Governor's Award for Excellence in Energy Efficiency. Columbia's leadership, Commission Staff, and DSM Stakeholder Group members are to be credited for giving DSM Program staff the flexibility to develop and implement these peer-leading DSM programs in Ohio. A complete list of awards and recognition can be found in Appendix D.

2.4. Collaborative Partnerships and Community Engagement

Throughout its history in DSM, Columbia has worked collaboratively with many partners and stakeholders, from non-profit and governmental organizations to fellow natural gas and electric utilities, to determine the best ways to prudently use ratepayer funds to save energy and reduce bills for customers. The public-private partnerships enhance service delivery and customer satisfaction by reducing confusion about programs in the marketplace and offering streamlined, efficient service delivery methods to reach customers.

For instance, Columbia's partnership with AEP Ohio enabled the utilities to: 1) co-deliver the e³ smart program in schools in jointly served counties; 2) integrate Columbia's and AEP Ohio's new homes programs to save on program implementation and marketing costs; and 3) deliver and install high efficiency lighting products during Columbia's in-home energy audits. In addition, profes-

sional commercial building energy auditors are able to leverage both Columbia's and AEP Ohio's energy audit and rebate programs to maximize cost effective investments for each company's respective customers. Columbia also partnered with AEP Ohio in its Community Energy Savers program to ramp up energy efficiency upgrades in Athens County.

The low-income network that Columbia uses to implement its WarmChoice® program also acts as a one-stop-shop in delivering both utilities' income-eligible customer programs and link them to the many additional services for which they may be eligible. Since 1983, Columbia has used Ohio's exemplary community-based weatherization network to deliver Columbia's WarmChoice® program jointly with other services for income-eligible households, including the Home Energy Assistance Program ("HEAP") and the Percentage of Income Payment Plan ("PIPP Plus"), state and federally funded home repair programs, and other energy-efficiency services. Partnering with this network creates additional public value by linking income-eligible weatherization customers to other needed social programs such as Meals on Wheels, HeadStart, Health Services, Child Care, and other social services that can help improve customers' lives.

Another example of Columbia's effective partnerships is Columbia's relationship with Ohio Interfaith Power and Light and Ohio Hospital Association, which use U.S. EPA's Portfolio Manager Tool to benchmark energy usage in houses of worship and hospitals to help target those facilities for energy efficiency improvements.

3. Columbia's Proposed 2017-2022 DSM Program

Columbia believes it is in the continued best interest of its customers to continue to provide DSM services through programs that promote the installation and implementation of energy efficiency measures and technologies in a cost-effective manner. Over 500,000 homes and buildings in Columbia's service territory were built before energy codes were implemented in Ohio. For many of Columbia's customers, there are numerous barriers to the adoption of efficient technology, including higher incremental costs for high efficiency equipment, lack of customer education, lack of contractor trade ally training, lack of monetary resources, fear of change, and societal costs not being reflected in prices. Likewise, the default action for customers in regards to energy efficiency and reducing waste is no action, even when it is in their best interests to lower their energy bills. Accordingly, Columbia and the DSM Stakeholder Group believe that Columbia must continue to play a role in promoting and encouraging energy ef-

iciency, economic development, and job creation in Ohio. Utility companies in the nation are in a unique position to bring energy efficiency to scale, which would be absent without these investments.

Specifically, Columbia will continue to take a leadership role in promoting energy efficiency because of Columbia's existing relationship with its customers, who often view Columbia as their primary source of energy information. Columbia's unique relationship with customers and stakeholders will allow it to continue to meet customers' needs for DSM services through technology, education, and incentives to help remove market barriers and speed the adoption of more efficient technologies. Other DSM Stakeholder Group members, including consumer advocate groups, contractors, trade allies and numerous energy-related organizations, are also an integral part of creating and maintaining a successful program as these groups interact with Columbia and its customers.

Residential and small commercial customers will continue to benefit from these proposed energy efficiency programs by having ready access to energy-saving measures and services that will directly reduce natural gas usage throughout the life of the energy efficiency measures, improving the affordability of natural gas service. Additionally, customers will benefit through improved safety and reliability of their heating equipment, better efficiency and comfort, as well as electricity and water savings.

Non-participating customers will also benefit through the establishment of a network of trained providers and an enhanced marketplace, with better access and availability to state-of-the-art energy conservation techniques promoted by these DSM programs. Moreover, non-participating customers may benefit from the price-dampening effects of energy efficiency and from the positive environmental impacts of the programs, as well as other societal benefits.

3.1. DSM Program for 2017 – 2022

Columbia is proposing to continue and enhance its portfolio of DSM programs, which offers a wide range of services to its residential and commercial customers. Each program has been determined to be cost-effective, as shown in Appendix B. While Columbia will continue to effectively administer its DSM Program, the programs will be implemented primarily by third-party consultants (vendors). Columbia proposes to continue offering these programs from January 1, 2017, through December 31, 2022. Columbia has also proposed budgets for each program, based on estimated projections of potential customer participation

rates and activity within each program. Sources for costs of energy conservation measures included impact evaluation studies, engineering calculations, and industry sources. Based upon the results of Columbia's team and evaluation consultant's work, and discussions with the DSM Stakeholder Group, Columbia proposes that its DSM programs be continued and/or enhanced. These programs are described in Section 3.2, and are summarized in Table 2 below.

Table 2 Summary of DSM Programs

Program	Program Description
WarmChoice®	Low-income customer home weatherization
Home Performance Solutions	Low-cost home energy audits and rebates/discounts
Simple Energy Solutions	Energy efficient thermostat, showerhead, and aerator rebates
High Efficiency Furnace Rebates	Rebates for energy efficient furnaces and boilers
Home Energy Reports	Energy usage comparison reports, recommendations
Home Energy Checkup	Online energy audit tool
e3 smart	Student education program and kit of materials
EfficiencyCrafted® Homes	Incentives for homes built 30% more efficient
Residential Code Training	Energy code training for officials, trade allies
Energy Design Solutions	New commercial building above energy code education and incentives
Innovative Energy Solutions	Rebates on energy audits and measures for non-profits and businesses
EPA Portfolio Manager	Online energy use benchmarking for commercial buildings

3.2. Summary of Key Programmatic Enhancements to the DSM Programs

Columbia believes that maintaining the success of its DSM Program requires it to adjust its programs. Accordingly, Columbia is proposing several changes to its DSM portfolio of programs. These changes will strengthen the programmatic reach for customers and enable Columbia to enhance customers' opportunities for implementing energy efficient measures. A summary of Columbia's proposed DSM Program enhancements is provided in Table 3. Each program, and Columbia's proposed enhancements to each program, are discussed below.

Table 3 Summary of DSM Program Enhancements

Program	Program Enhancements
WarmChoice®	Increase weatherization assistance to customers in rental properties.
Home Performance Solutions	Provide audits to multi-family, residential buildings, add an option for walk-through audit.
Simple Energy Solutions	Higher rebates for learning thermostats, direct install component, partner with AEP Ohio.
HE HVAC Rebates	Add energy-efficient water heater rebates to the program; Energy Star qualified.
Home Energy Reports	Optimize mail versus email reports, enhance customer segmentation.
Home Energy Checkup	Continue to optimize customer segmentation and DSM recommendations.
e ³ smart	School-to-school competitions to increase kit installation rates.
EfficiencyCrafted® Homes	Incorporate Residential Energy Code Training into the program, expand to more builders.
Residential Code Training	Remove as separate program, integrate into EfficiencyCrafted® Homes.
Energy Design Solutions	Expand square footage eligible based on market.
Innovative Energy Solutions	Include Preliminary Energy Audit (PEA) to increase audit to measure conversion rate.
EPA Portfolio Manager	Study/implement opportunity to automate uploading of customer energy data with customer permission.

3.2.1. Home Performance Solutions (Home Energy Audits)

Columbia proposes to both continue and enhance its highly successful Home Performance Solutions program, which currently provides low-cost, comprehensive, computerized and diagnostic in-home energy audits, combustion and gas leakage safety inspections, and cost-effective energy efficiency measure rebates to residential buildings with incomes above 150% of the federal poverty guidelines (“FPG”). Program enhancements include:

- Targeting more high-energy savings rental and multi-family properties for services

- Providing customers with an option for a quicker “walk through” energy analysis and safety inspection with a prescriptive list of rebate-eligible energy efficiency measures and lower rebate levels for those customers who don’t desire the highest level of service that a comprehensive energy audit provides

In addition, Columbia will work with its program implementer and trade allies to determine the potential value of aligning the program’s comprehensive energy audit with DOE/U.S. EPA Home Performance with Energy Star® requirements. Columbia is also evaluating potential inclusion of DOE’s Home Energy Score, U.S. EPA’s Home Energy Yardstick, or other rating tools that would provide value to the customer experience, increase the potential resale value of their property, or help market the program.

3.2.2. WarmChoice® Program (Income-eligible Weatherization Service)

The WarmChoice® program provides whole house weatherization services to natural gas heating customers with household incomes at or below 150% of the federal poverty guidelines. The program targets high-use homes and Percentage of Income Payment Program (“PIPP Plus”) customers. The program is delivered through the nation’s best community-based weatherization service delivery network and also delivers among the nation’s highest residential natural gas savings per home served. The network brings a one-stop-shop approach to the WarmChoice® program that combines it with electric utility DSM programs, home repair programs, and other critical social services in order to maximize efficiency and benefits to customers. From 2014-2016, Columbia worked with its WarmChoice® provider network to develop a 21st-century home energy inspection and reporting system software to improve program efficiency and accountability. Enhancements to the WarmChoice® program design include:

- Increased targeting of high natural gas use rental properties
- Strategic targeting of PIPP Plus customers in rental properties

3.2.3. EfficiencyCrafted® Homes (Energy Efficient New Homes)

Columbia will continue its EfficiencyCrafted® Homes program, which offers incentives to home builders to build homes that exceed state energy code minimum levels. Participating homebuilders will continue to provide Ohio homebuyers with Energy Star® certified homes or EfficiencyCrafted® Homes that

score 70 or lower on the Home Energy Rating System scale. Both standard market and affordable housing market homebuilders participate in the program. Columbia will also maintain its partnership with AEP Ohio in jointly served counties to match incentives to achieve high levels of energy efficiency in new homes. The program will also provide builders and home energy raters with training and technical assistance. Enhancements to the program include:

- Introduction of an additional per-home incentive to new builders in the program, to aid with recruitment of additional Ohio home builders
- Integration of energy code training for builders, code officials, and trade allies into this program from a previously separate program, in order to reduce administrative costs and take advantage of the natural synergies between the two programs

3.2.4. Simple Energy Solutions (Energy Efficient Products)

Columbia will continue and enhance its Simple Energy Solutions program and will offer rebates for standard and smart/wifi-enabled programmable thermostats, energy-efficient showerheads and faucet aerators. Eligible products will be available online through Columbia's e-store. Customers will also be able to use a mail-in rebate form with a receipt to support the direct purchase of qualifying products through local hardware or home improvement stores or other sources. Enhancements to the program include:

- A direct install component for some customers in multifamily buildings
- Partnerships with water/sewer utilities, where possible, to lower program implementation costs
- Increase in the availability and adoption of learning thermostats through Columbia's e-store and rebate forms
- Alignment of showerhead specifications with U.S. EPA's WaterSense program, where feasible

3.2.5. Home Energy Efficiency Reports (Behavior Modification)

The Home Energy Efficiency Report program will continue to provide customers with motivational information to help them take action to reduce their energy use. This is accomplished by comparing the participant's energy use with similar homes, and then using peer pressure and social norms to encourage customers to take action. This program approach has proven to be a successful way

to engage customers in the energy efficiency discussion in a way that results in them taking action to lower their energy use. Enhancements to the program include:

- Optimizing the best method of report delivery and their frequency to customers
- Continuing to enhance customer segmentation so that report recommendations are even more appropriate for their needs

3.2.6. High-Efficiency Appliance Rebate Program (Appliance Rebates)

The current High-Efficiency Heating System Rebate program provides rebates to landlords and customers to incentivize them to install high-efficiency natural gas furnaces and boilers, rather than the minimum low-efficiency products that are currently available. Enhancements to the program include:

- Rebates on Energy Star® qualified furnaces and boilers of 96% and 90% Annual Fuel Utilization Efficiency, respectively
- Rebates on Energy Star® natural gas water heaters with a .67 Energy Factor or greater for tank type heaters and a .91 Energy Factor or greater for tankless water heaters

3.2.7. e³smart Program (Student Education)

Teachers participating in the e³ smart program will continue to educate elementary, middle school, and high schools students about natural gas energy efficiency through energy education materials that Columbia provides as a formal part of the school's science curriculum, culminating with a kit of energy conservation materials that is provided to students to install at their home. The curriculum, which Columbia co-sponsors with AEP Ohio, complies with State of Ohio, Department of Education requirements. Proposed program enhancements include:

- School to School competitions to increase installation rates of energy efficiency kits

3.2.8. Home Energy Efficiency Checkup Program (Online Energy Efficiency Audit)

The Home Energy Efficiency Checkup program will continue to provide Columbia's customers with a web-based energy audit tool to enable them to evaluate their own home without an in-home visit. The tool will link customers to appropriate DSM programs that can provide them with opportunities to reduce their natural gas usage based on their energy usage level. This program is a good alternative for lower-use customers for whom a whole house audit may not be cost-effective, as well as those who want to make an initial foray into understanding how their home performs before committing to a more comprehensive energy audit. Enhancements include:

- Further optimization of appropriate, customer-focused energy efficiency messaging
- Potential integration of DOE/U.S. EPA home energy scoring tools into the energy audit tool.

3.2.9. Innovative Energy Solutions (Non-Profit and Business Energy Efficiency)

Columbia will continue its Innovative Energy Solutions program, which provides prescriptive rebates for certain energy efficiency measures as well as rebates for energy audits and custom energy efficiency measures for non-profits, schools, hospitals, houses of worship, municipal buildings and other commercial customers. All natural gas energy saving measures and technologies are eligible for consideration through the current energy audit or energy engineering estimation process used to determine cost effectiveness. Planned enhancements to the program include:

- Implementation of an American Society of Heating, Refrigeration and Air Conditioning Engineers ("ASHRAE")-compliant preliminary energy assessment ("PEA") tool to improved energy audit to completed work conversion ratios.

3.2.10. Energy Design Solutions (Energy Efficient New Buildings)

In order to move the commercial building market forward, Columbia proposes to continue its Energy Design Solutions program, an education program based on the ASHRAE Advanced Energy Design Guides. Educational seminars will be provided to architects, engineers, building developers and owners to help them understand the opportunities beyond first costs⁴ to life-cycle costs⁵ and energy use of new buildings over their life spans. Program enhancements include:

- Increasing the size of buildings eligible for incentives to help reduce first costs, in order to exceed current commercial energy code standards

3.2.11. U.S. EPA Portfolio Manager (Building Benchmarking)

Columbia will also continue to promote the use of the U.S. Environmental Protection Agency's Portfolio Manager, an interactive energy management tool that allows building owners to track and assess energy and water consumption in a secure on-line environment. U.S. EPA Portfolio Manager can help building owners set investment priorities, identify under-performing buildings, verify efficiency improvements, and receive U.S. EPA recognition for superior energy performance. Columbia will continue to partner with Ohio Hospital Association, Ohio Interfaith Power and Light, as well as the city of Columbus. Program enhancements include:

- Partnership with AEP Ohio to automate the uploading of utility energy usage data into the U.S. EPA Portfolio Manager tool.

3.3. DSM Stakeholder Group Process

Throughout the current DSM Program implementation period, Columbia met with its DSM Stakeholder Group annually. At these meetings, the DSM Stakeholder Group discussed DSM Program performance. At its February 23, 2016, stakeholder group meeting, Columbia informed the stakeholder group that it was working on its next DSM plan, and that it would provide details of the

⁴ First costs are generally defined as the costs to construct a facility and do not include long-term operations and maintenance costs.

⁵ Life cycle costs include the costs for operating and maintaining a facility over its useful life.

program plan at its next meeting. On May 13 and 25, 2016, Columbia presented its proposed 2017-2022 DSM Program plan and received positive feedback from the DSM Stakeholder Group. A complete list of DSM Stakeholders is included as Appendix A.

3.4. Proposed DSM Program Evaluation

Columbia has a long history of conducting program evaluations to determine how its energy efficiency programs are performing and how they might be improved. Columbia will continue to use multiple strategies to evaluate the effectiveness of the proposed DSM programs, including continuous tracking of, and feedback on, contractor program metrics and independent impact and process evaluations.

The program evaluation process includes impact evaluations using engineering savings estimates and process evaluations. For residential programs that install energy conservation measures, Columbia will continue to conduct an annual impact evaluation of estimated energy savings based on actual participation rates and engineering estimates, as well as the TRM, within three to six months of the end of the program year. Impact evaluations also will be conducted within 13 to 20 months of the end of the programs for which this type of analysis can be conducted.

In addition to independent evaluations, Columbia will provide quality assurance, technical assistance and training as part of its administration of the programs where applicable. In addition to quality assurance conducted by program implementers, Columbia will evaluate work completed by contractors for quality assurance purposes. Customer satisfaction surveys will also be implemented as part of some program implementation and evaluation processes. Training and orientation of contractors on program standards and acceptable installation methods also will be conducted. This will be the primary up-front strategy to ensure that quality work is performed for customers. Progressive and corrective improvement processes that can positively impact non-compliant work will be established on a program-by-program basis.

3.5. Shared Savings Performance Incentive

Columbia proposes to continue and amend its shared savings incentive mechanism. The mechanism gathers and tracks data for energy conservation measures installed through each DSM program. Columbia uses this data, with

limited exceptions, to calculate the projected natural gas savings using the formulas identified in the State of Ohio Energy Efficiency Technical Reference Manual ("TRM"). The exceptions are the WarmChoice® program, where historic billing analysis is used; the Home Energy Reports program, where guaranteed contract savings with adjustments for measured actual savings are used; and the Innovative Energy Solutions program, where the energy audit projected natural gas savings are used. Using the energy conservation measure lifetime identified in the TRM, Columbia calculates the projected lifetime natural gas savings and the value of the natural gas savings for all of its DSM programs.

The shared savings mechanism is based on Columbia earning a share of the net benefits as calculated under the Utility Cost Test ("UCT"). Shared savings are computed on the difference between the net present value of program lifetime energy savings and non-energy benefits minus the program costs calculated from the UCT. The non-energy benefits, newly proposed in this continuation of the DSM program, recognize the value of the DSM programs more holistically. Columbia proposes including the following non-energy benefits: the value of water savings; CO₂ reductions; and direct economic impacts. These non-energy benefits were selected from a larger pool of non-energy benefits because they are both quantifiable and have highly reliable calculations to support the amounts. The estimated values per year for 2017-2022 are:

- Water Savings: Average of \$2.2 million/year
- CO₂ reductions: Average of \$6.3 million/year
- Direct Economic Impacts: Average of \$2.8 million/year

The recovery of the shared savings performance incentive, grossed up for taxes, will be based on the following tiered levels of program achievement:

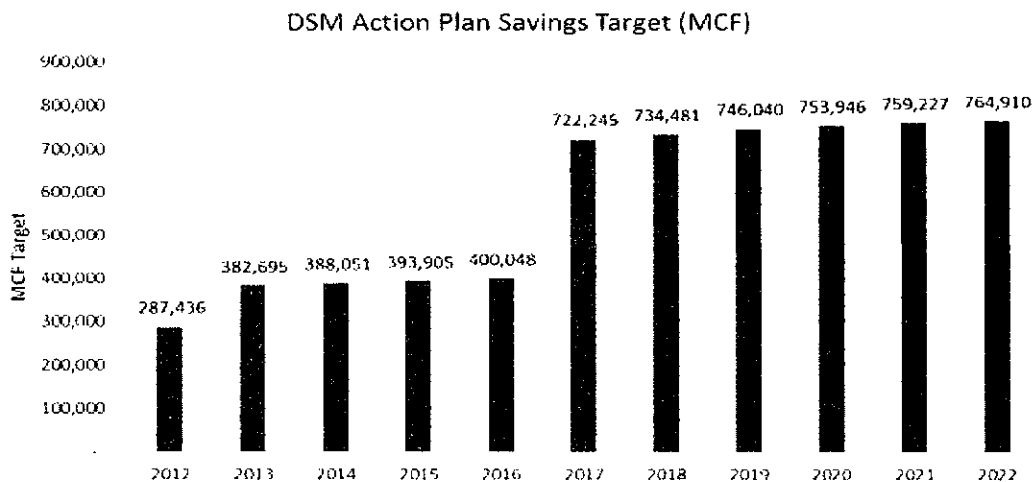
- No shared savings are earned for a program that does not meet 75% of the program impacts at its prorated budgeted cost level.
- 5% of the savings is earned once the program meets 75% of the projected program impacts at its prorated budgeted cost level up to 85% of budgeted expenditures.
- 5.5% of the savings is earned once the program meets 80% of the projected program impacts at its prorated budgeted cost level up to 90% of budgeted expenditures.
- 6% of the savings is earned once the program meets 85% of the projected program impacts at its prorated budgeted cost level up to 95% of budgeted expenditures.

- 6.5% of the savings is earned once the program meets 90% of the projected program impacts at its prorated budgeted cost level.
- 7% of the savings is earned once the program meets 95% of the projected program impacts at its prorated budgeted cost level.
- 7.5% of the savings is earned once the program meets 100% of the projected program impacts at its prorated budgeted cost level.
- 8.0% of the savings is earned once the program meets 105% of the projected program impacts at its prorated budgeted cost level.
- 8.5% of the savings is earned once the program meets 110% of the projected program impacts at its prorated budgeted cost level.
- 9% of the savings is earned once the program meets 115% of the projected program impacts at its prorated budgeted cost level.
- 9.5% of the savings is earned once the program meets 120% of the projected program impacts at its prorated budgeted cost level.
- 10% of the savings is earned once the program meets 125% of the projected program impacts at its prorated budgeted cost level.

The shared savings incentive potential is the equivalent of a return of approximately 3.7% to 6.2% on the investment.⁶

This shared savings incentive mechanism is further supported by Columbia increasing the DSM program annual Mcf savings targets by almost 100%, as shown in Figure 1 below.

Figure 1 2012-2022 DSM Program Savings Targets



⁶ The 3.7% to 6.2% is based on \$5,984,402 (shared savings amount at 5%) divided by \$161,041,052 (total DSM budget) and \$10,000,000 (shared savings amount at proposed cap) divided by \$161,041,052 (total DSM budget).

Notwithstanding the proposed changes above, Columbia also proposes to cap the shared savings incentive, over the entire term of the DSM Program ending on December 31, 2022, at \$10 million and grossed up for taxes.

Taken together, Columbia proposes to recognize non-energy benefits that can be reliably calculated and amend its shared savings opportunity while also challenging itself by almost doubling the savings amounts that must happen for shared savings to occur. This shared savings approach provides Columbia incentives for effectively and efficiently managing the programs and for meeting the ambitious program participation and impact goals.

5. Recovery of Costs Related to DSM

Consistent with the Stipulation approved by the Commission in Case Nos. 11-5028-GA-UNC and 11-5029-GA-AAM (hereinafter “2011 Extension”), Columbia requests a continuation of the deferral treatment and recovery set forth therein. In the 2011 Extension, Columbia and other stakeholders agreed that Columbia would continue filing annually to adjust the Rider DSM rate to allow for the review and recovery of DSM costs incurred and shared savings realized during the prior calendar year. Columbia and stakeholders further agreed that Columbia was authorized to continue deferring the difference between actual DSM program expenses (including carrying costs) and Columbia’s portion of shared savings. Likewise, Columbia seeks authority to continue its accounting treatment to defer DSM program expenses resulting from the expansion and continuation of the programs approved by the Commission in the 2011 Extension, as described herein. Columbia also requests continuing the recovery mechanism approved by the Commission in the 2011 Extension.

R.C. § 4905.13 authorizes the Commission to establish systems of accounts to be kept by Ohio’s public utilities and to prescribe the manner in which these accounts shall be kept. Pursuant to Ohio Admin. Code 4901:1-13-13, the Commission adopted the Uniform System of Accounts (“USOA”) for gas utilities established by the Federal Energy Regulatory Commission (“FERC”) for use in Ohio. The Commission may modify the USOA prescribed by FERC as it applies to utilities within the state of Ohio.

Columbia will defer expenses in special sub-accounts of Account 182-Other Regulatory Assets for recovery through Rider DSM. DSM expenses eligible for deferral will include all expenses incurred through implementation of comprehensive, ratepayer-funded, cost-effective, energy efficiency programs made

available to all customers served under Columbia's Small General Service rate schedule. Consistent with its current program and the Commission's Opinion and Order in Case Nos. 08-0072-GA-AIR, *et al.*, Rider DSM will further include carrying costs to be computed at Columbia's current cost of long-term debt and any incentives approved by the Commission. Columbia's portion of shared savings during each calendar year will be calculated and supported through an annual filing based on actual data for the previous calendar year. This report will be filed by Columbia no later than June 30 of the subsequent calendar year with deferral authority assumed to be granted absent an objection by Staff within thirty days of the filing. Columbia will recognize its portion of shared savings upon receipt of authority to defer these amounts.⁷

The requested continuation and enhancement of Columbia's DSM Program and proposed change in accounting procedure does not result in any increase in rate or charge, and the Commission can therefore approve this application without a hearing.

6. Other DSM Considerations

6.1. DSM Program Funding Levels

Columbia will monitor and evaluate the level of success of all of its DSM programs. If, through program analysis, it is determined that a particular program design is not likely to invest all of the resources available to it, Columbia retains the flexibility to shift funding between and within programs without Commission approval in order to maximize program performance and customer benefits.

6.2. DSM Program Time Frames

The proposed time frame for DSM implementation is January 1, 2017, to December 31, 2022. Therefore, expedited treatment of this application is requested, with an approval date no later than September 28, 2016. Because Columbia has been working with the DSM Stakeholder Group both regarding its programmatic performance over the last term and in anticipation of this filing, Columbia does not anticipate that an expedited procedural schedule will impose any hardship. If, for any reason, a Commission decision on Columbia's application is not issued before December 31, 2016, Columbia requests that the program

⁷ The DSM Deferral-Account 182 will be debited and Revenue or Contra-Expense will be credited.

be extended, on a temporary basis, under the existing construct to ensure Columbia is able to continue providing valuable DSM services to Ohio consumers.

7. Proposed Procedural Schedule

Columbia's current DSM Program expires on December 31, 2016. Because the DSM Program is expiring in less than six months, and Columbia has been meeting with the DSM Stakeholder Group, Columbia requests an accelerated procedural schedule as follows:

August 1 – Comments
August 29 – Reply Comments
September 28 – Opinion and Order

8. Conclusion

Columbia seeks authority from the Commission to: (1) continue its DSM Program for an additional six years; (2) include additional benefits for customers; (3) maintain the total DSM funding level at approximately \$25 million for calendar year 2017; (4) increase the annual DSM funding level by approximately 3% each calendar year thereafter for the balance of the six-year period for inflation and natural growth in program demand; (5) continue its shared savings mechanism with increased Mcf targets, realization of non-energy benefits, and an overall shared savings incentive cap; (6) continue Rider DSM for the six-year period, as previously approved in Case No. 11-5028-GA-UNC; and (7) continue the accounting treatment of the DSM Program expenses as previously approved in the 2011 Extension.

Columbia hereby respectfully requests the Commission approve the Application to continue its DSM Program and change in accounting methods as described in the instant Application and establish an expedited procedural schedule to ensure implementation of the new programs by the date requested in this filing.

Respectfully submitted by,

COLUMBIA GAS OF OHIO, INC.

/s/ Joseph M. Clark

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Attorneys for

COLUMBIA GAS OF OHIO, INC.

APPENDIX A

Columbia DSM Stakeholder Group

LAST NAME	FIRST NAME	COMPANY
AIREY	JONATHAN	VORYS
ALLWEIN	CHRIS	OPAE
ANDERSON	SHAWN	COH
ANDREWS	ADRIAN	COH
ARNOLD	DALE	Ohio Farm Bureau
BALLA	HANNA	COH
BUSSARD	MARILYN	COH
CHILDS	KIMBERLY	PUCO
CLARK	JOE	COH
DAVENPORT	DAVE	GLS
HALL	RANDY	Cornerstone Energy Conservation Services
HEALEY	CHRISTOPHER	OCC
HEMINGER	NED	HAWA
JENKINS	BRANDON	PUCO
JOHNSON	JOHN	GLS
KERN	KYLE	OCC
KLAUS	KRIS	OHIO Home Builders Assoc
LAVERTY	JOHN	COH
MASON	ROB	COH
MATTHEWS	TONY	PUCO
MELBY	MEGAN	COH
METZ	ANDREW	COH
MILLER	ERIN	City of Columbus
NOWINSKY	KELLI	COH
OHLER	DEBBIE	Ohio Bd of Bldg Standards
O'KEEFFE	CHRISTINA	MORPC
OLIKER	JOE	IGS
PIGG	SCOTT	Seventhwave
POE	SARAH	COH
RACHER	PAUL	COH
REES	RON	COAD
RINEBOLT	DAVE	OPAE
RIPKE	JAMES	PUCO
SAUER	LARRY	OCC
SHUTRUMP	COLLEEN	OCC
SMITH	CRAIG	PUCO
STEWART	TONJA	PUCO
SWEPSTON	MARK	Atlas Butler
THARP	DORA	NHST
THOMPSON	MELISSA	COH
WILLIAMS	SUZANNE	PUCO

APPENDIX B

1. Columbia DSM Program Cost Effectiveness Test Results

	SCT	TRC	PCT	UCT	RIM
Home Performance Solutions	2.29	1.91	11.51	1.52	\$ 0.0059
WarmChoice	1.05	0.89		0.64	\$ 0.0054
HE HVAC Rebates	3.29	2.91	4.85	3.55	\$ 0.0020
Energy Efficient New Homes	2.36	1.90	3.76	3.31	\$ 0.0025
Home Energy Reports	1.91	1.92		1.56	\$ 0.0014
Simple Energy Solutions	4.31	3.88	9.50	5.47	\$ 0.0007
Student Education	5.24	5.06		4.72	\$ 0.0003
On Line Audit	-	-		-	\$ 0.0002
Innovative Energy Solutions	1.78	1.64	4.33	2.12	\$ 0.0012
Energy Design Solutions	-	-		-	\$ 0.0005
EPA Portfolio Manager	-	-		-	\$ 0.0001
Total	2.05	1.76	7.00	1.64	\$ 0.0206

2. Columbia DSM Program Natural Gas Savings Projections

Program	2017	2018	2019	2020	2021	2022	Total
Home Performance Solutions	87,582	87,582	87,582	87,582	87,582	87,582	525,493
WarmChoice	68,515	68,515	68,515	68,515	68,515	68,515	411,088
HE HVAC Rebates	81,431	81,431	81,431	81,431	81,431	81,431	488,584
Energy Efficient New Homes	55,553	59,789	64,347	69,254	74,535	80,218	403,695
Home Energy Reports	336,000	344,000	351,000	354,000	354,000	354,000	2,093,000
Simple Energy Solutions	40,277	40,277	40,277	40,277	40,277	40,277	241,663
Student Education	13,226	13,226	13,226	13,226	13,226	13,226	79,355
On Line Audit	-	-	-	-	-	-	-
Innovative Energy Solutions	39,662	39,662	39,662	39,662	39,662	39,662	237,972
Energy Design Solutions	-	-	-	-	-	-	-
EPA Portfolio Manager	-	-	-	-	-	-	-
Totals	722,245	734,481	746,040	753,946	759,227	764,910	4,480,849

3. Columbia DSM Program Projected Budgets

Program	2017	2018	2019	2020	2021	2022	Total
Home Performance Solutions	\$ 7,369,691	\$ 7,621,030	\$ 7,757,603	\$ 8,019,555	\$ 8,167,033	\$ 8,365,611	\$ 47,300,524
WarmChoice	\$ 6,682,051	\$ 6,882,513	\$ 7,088,988	\$ 7,301,658	\$ 7,520,707	\$ 7,746,329	\$ 43,222,246
HE HVAC Rebates	\$ 2,474,613	\$ 2,511,614	\$ 2,479,126	\$ 2,547,162	\$ 2,515,739	\$ 2,584,874	\$ 15,113,129
Energy Efficient New Homes	\$ 2,850,140	\$ 2,943,908	\$ 3,210,465	\$ 3,330,773	\$ 3,625,866	\$ 3,776,857	\$ 19,738,010
Home Energy Reports	\$ 1,654,422	\$ 1,741,492	\$ 1,713,136	\$ 1,755,902	\$ 1,826,691	\$ 1,757,503	\$ 10,449,145
Simple Energy Solutions	\$ 811,456	\$ 853,611	\$ 825,980	\$ 868,570	\$ 841,388	\$ 884,440	\$ 5,085,444
Student Education	\$ 325,771	\$ 385,244	\$ 345,001	\$ 405,051	\$ 365,403	\$ 426,065	\$ 2,252,535
On Line Audit	\$ 349,349	\$ 198,135	\$ 199,459	\$ 200,823	\$ 202,227	\$ 203,674	\$ 1,353,668
Subtotal: Residential DSM	\$ 22,517,494	\$ 23,137,547	\$ 23,619,758	\$ 24,429,493	\$ 25,065,055	\$ 25,745,354	\$ 144,514,701
Innovative Energy Solutions	\$ 1,308,250	\$ 1,335,798	\$ 1,348,722	\$ 1,362,033	\$ 1,375,744	\$ 1,389,866	\$ 8,120,413
Energy Design Solutions	\$ 538,178	\$ 553,723	\$ 569,735	\$ 586,227	\$ 603,214	\$ 620,710	\$ 3,471,786
EPA Portfolio Manager	\$ 208,000	\$ 140,300	\$ 140,909	\$ 141,536	\$ 142,182	\$ 142,848	\$ 915,775
Subtotal: Commercial DSM	\$ 2,054,428	\$ 2,029,821	\$ 2,059,365	\$ 2,089,796	\$ 2,121,140	\$ 2,153,424	\$ 12,507,975
DSMSG Support/DSM Planning	\$ 70,000	\$ 70,000	\$ 70,000	\$ 70,000	\$ 70,000	\$ 70,000	\$ 420,000
Admin (non-program specific)	\$ 556,300	\$ 572,989	\$ 590,179	\$ 607,884	\$ 626,121	\$ 644,904	\$ 3,598,377
Total : selected programs	\$ 25,198,222	\$ 25,810,356	\$ 26,339,302	\$ 27,197,174	\$ 27,882,316	\$ 28,613,682	\$ 161,041,052
Total Budget	\$ 25,198,222	\$ 25,810,356	\$ 26,339,302	\$ 27,197,174	\$ 27,882,316	\$ 28,613,682	\$ 161,041,052
WarmChoice Base Funding	\$ 7,100,000	\$ 7,100,000	\$ 7,100,000	\$ 7,100,000	\$ 7,100,000	\$ 7,100,000	\$ 42,600,000
Total Budget with WC Base	\$ 32,298,222	\$ 32,910,356	\$ 33,439,302	\$ 34,297,174	\$ 34,982,316	\$ 35,713,682	\$ 203,641,052

4. Columbia DSM Gas Cost Projections

Year Number	Year	Nominal Cost of Gas, \$/Mcf
1	2017	\$ 5.90
2	2018	\$ 6.45
3	2019	\$ 6.86
4	2020	\$ 7.33
5	2021	\$ 7.50
6	2022	\$ 7.67
7	2023	\$ 7.94
8	2024	\$ 8.15
9	2025	\$ 8.37
10	2026	\$ 8.73
11	2027	\$ 8.84
12	2028	\$ 8.96
13	2029	\$ 9.13
14	2030	\$ 9.23
15	2031	\$ 9.65
16	2032	\$ 10.03
17	2033	\$ 10.42
18	2034	\$ 10.82
19	2035	\$ 11.19
20	2036	\$ 11.58
21	2037	\$ 11.88
22	2038	\$ 12.34
23	2039	\$ 13.09
24	2040	\$ 14.04
25	2041	\$ 14.52
26	2042	\$ 15.02
27	2043	\$ 15.53
28	2044	\$ 16.07
29	2045	\$ 16.63
30	2046	\$ 17.21
31	2047	\$ 17.81
32	2048	\$ 18.43
33	2049	\$ 19.09
34	2050	\$ 19.76
35	2051	\$ 20.47
36	2052	\$ 21.20
37	2053	\$ 21.96
38	2054	\$ 22.75
39	2055	\$ 23.58

APPENDIX C

History of Columbia's DSM Program

Beginning with Operation HomeCheck, Columbia has been a leader among Ohio utilities in developing energy efficiency and weatherization programs over the past three decades. Established in 1983, Operation HomeCheck represented Columbia's first partnership with the Corporation for Ohio Appalachian Development ("COAD") and the Ohio Association of Community Action Agencies, or OACAA (community-based, non-profit organizations) and provided income-eligible customers with innovative, computerized in-home energy audits. Operation HomeCheck developed the capacity to perform more than 11,000 home energy audits annually in Columbia's service territory. Columbia and its partners further developed the energy audit program in 1986 by adding a low-cost weatherization component. The Columbia Gas of Ohio Weatherization Program provided both energy education and material installation services for eligible customers.

Columbia continued its energy efficiency partnership with the community action network in Ohio (the operators of USDOE's Home Weatherization Assistance program) by continuing to collaborate with COAD and OACAA, while adding Mid-Ohio Regional Planning Commission ("MORPC"), Neighborhood Housing Services of Toledo ("NHST"), and Lorain County Community Action Agency ("LCCAA"), as well as the State of Ohio's Department of Development, Office of Energy Efficiency, in a major effort that resulted in the creation of the innovative WarmChoice® program in 1987. WarmChoice® is Columbia's whole-house weatherization program for income-eligible customers. The goal of the program is to provide eligible customers with a complete set of weatherization measures, including attic, wall, floor, duct and pipe insulation, air sealing, water heater repairs and replacements, and furnace repairs and replacements, to help this segment of its customers manage their energy use, and consequently, save on utility bills. Additionally, the program focuses on health and safety to help ensure that low-income residents within Columbia's service territory are insulated from the dangers of antiquated, unsafe heating equipment despite income limitations. Since its inception in 1987, WarmChoice® has served over 63,000 households. In order to achieve these results, Columbia contracts with four community-based organizations to manage and operate the program.

2009-2011 DSM Program

Columbia expanded its weatherization efforts with its DSM Pilot Program. On January 23, 2008, the Commission issued an Opinion and Order in Case No. 05-221-GA-GCR, *et al.*, adopting the December 28, 2007 Joint Stipulation and Recommendation ("Stipulation"). Pursuant to the stipulation, the parties agreed that by July 1, 2008, Columbia would file a DSM application cooperatively developed by Columbia, the OCC, Staff and other stakeholders for approval of comprehensive energy efficiency programs for residential and commercial customers. The Stipulation allowed a DSM Program funding increase of \$1 million in 2010 and 2011, provided energy efficiency targets were met.

On July 3, 2008, Columbia filed an application in Case No. 08-833-GA-UNC requesting approval of a Demand Side Management Program for residential and commercial customers. In partnership with the DSM Stakeholder Group, Columbia developed an innovative and comprehensive portfolio of energy efficiency programs. The programs included:

- WarmChoice®, the company's whole house weatherization program for income-eligible customers.
- Home Performance Solutions, which provides low-cost diagnostic energy audits and rebates to customers to help offset the cost of energy efficiency upgrades.
- Simple Energy Solutions, which provides instant discounts on energy efficient programmable thermostats and showerheads through Columbia's on-line, e-store, or a rebate available through a mail-in form for items purchased at local hardware or home improvement stores.
- New Home Solutions which, in coordination with AEP Ohio, provides incentives for Ohio homebuilders to exceed the state minimum energy code.
- The Ohio Small Business Energy Saver program, which provided on-line energy audits to commercial customers through a collaboration with the Ohio Department of Development and other investor-owned utilities.
- Energy Design Solutions, through which Columbia provided continuing education seminars on how to exceed the minimum commercial building energy efficiency code.
- Innovative Energy Solutions, which provided rebates to non-profits, houses of worship, schools, and other commercial customers for energy audits and energy conservation measures.

APPENDIX D

Recent DSM Awards

2016 Energy Star Certified Homes Market Leader Award, EfficiencyCrafted® Homes

2016 EPA Partner of the Year - Sustained Excellence in Energy Efficiency Program Delivery, EfficiencyCrafted® Homes

2015 Energy Star Certified Homes Market Leader Award, EfficiencyCrafted® Homes

2015 EPA Partner of the Year - Sustained Excellence in Energy Efficiency Program Delivery, EfficiencyCrafted® Homes

2015 Building Industry Association (BIA) of Central Ohio Marketing and Merchandising Excellence - Exceptional Digital Media Campaign, Efficiency Crafted Homes

2015 BIA of Central Ohio Marketing and Merchandising Excellence - Most Successful One-Time Event, EfficiencyCrafted® Homes

2015 SIA (Service Industry Advertising Association) Silver Award for Total Ad Campaign, EfficiencyCrafted® Homes

2014 National Local Media Association's Best New Local Contest, 3rd Place Nationally, Home Makeover Contest, Home Performance Solutions

2014 EPA Partner of the Year - Sustained Excellence Partner of the Year, Efficiency Crafted Homes

2014 BIA of Central Ohio, 27th Annual Marketing and Merchandising Excellence Awards, Best Environmental Marketing Award, EfficiencyCrafted® Homes ECH won a 2014 Platinum MarCom award in the Website/Informational category for the program's website

2014 Gold MarCom Award, Marketing/Promo Campaign/Branding Refresh Category, EfficiencyCrafted® Homes

2014 Midwest Energy Efficiency Alliance, Inspiring Efficiency Impact Award WarmChoice®

2013 American Council for an Energy Efficient Economy, Exemplary Program Award, Home Performance Solutions

2013 American Council for an Energy Efficient Economy, Exemplary Program Award, WarmChoice®

2013 EPA Partner of the Year Award, EfficiencyCrafted® Homes

2012 EPA Energy Star Partner of the Year Award, EfficiencyCrafted® Homes

2012 BIA of Central Ohio Association, Best On-site Outdoor Signage and Best Green Environmental Marketing, EfficiencyCrafted® Homes

2012 Alliance to Save Energy's "Stars of Energy Efficiency" for COAD's "Weatherize Murray City" project sponsored by Columbia Gas of Ohio, WarmChoice® and Home Performance Solutions

2011 Affordable Comfort, Inc. (ACI) recognized Jack Lavery as one of 25 people in the nation who have been instrumental in building the weatherization and energy efficiency industry and community.

Other Awards:

2004 Governor's Award for Excellence in Energy Efficiency, WarmChoice®

2004 American Council for an Energy Efficient Economy, Exemplary Low-income Program Award, WarmChoice®

APPENDIX E

Non-Energy Benefits Bibliography

- 1) National Resources Defense Council (NRDC) report from April, 2015 (R:15-01-B), "Bridging the Clean Energy Divide: Affordable Clean Energy Solutions for Today and Tomorrow."
- 2) "LET'S DO BETTER COST-EFFECTIVENESS ANALYSIS" Midwest Energy Solutions Conference, January 17, 2013, Rebecca Stanfield, NRDC.
- 3) CPUC Presentation, "California's Experience in Incorporating Non-Energy Benefits into Cost-Effectiveness Tests" presented by Joy Morgenstern - Senior Regulatory Analyst, International Energy Agency (IEA). Conference, October 16, 2013. (Includes range estimates for many individual NEBs and a roll-up value for all NEBs.)
- 4) American Council for an Energy Efficient Economy (ACEEE) report entitled, 'Recognizing the Multiple Benefits of Energy Efficiency', Christopher Russell, Brendon Baatz, Rachel Cluett, and Jennifer Amann, December, 2015 (Report IE1502). (Includes NEB estimates for building owners, expressed as % of bill savings, with range estimates.)
- 5) Job Multipliers from DSM appear in the following references:
 - i) Zabin and Scott (2013), estimate employment impacts from California's Proposition 39, from previous IO studies that 6.2 direct and 2.3 indirect and induced jobs are created per \$1 million in DSM investment.
 - ii) District of Columbia Sustainable Energy Utility (DCSEU D. Nichols and J. Supp) estimates jobs created under the ARRA uses a rule-of-thumb estimate of 5 jobs per \$1 million of investment, or total direct incentives paid divided by \$200,000.
 - iii) TVA commissioned Deloitte Consulting to conduct a predictive analysis of economic and job creation impacts from its DSM Program using the IMPLAN model, from which it determined a multiplier of 8 jobs per \$1 million of DSM spending.
 - iv) Pinnacle Economics calculated total gross job impacts for the Energy Trust of Oregon as being approximately 8.4 jobs per \$1 million (2014).
 - v) An OECD/IEA report – Capturing the Multiple Benefits of Energy Efficiency (2014) provided range estimates of between 7 and 22 jobs per

\$1m euro-dollars invested in DSM resources , or about 6-19 jobs when converted into \$US.

- 6) Some of the best summaries of NEBs appearing in the literature can be found in papers and studies authored (or co-authored) by Lisa Skumatz, including an article published in the Electricity Journal entitled, "Efficiency Programs Non-Energy Benefits: How States Are Finally Making Progress in Reducing Bias in Cost-Effectiveness Tests", Electricity Journal, October 2015.
- 7) Another paper co-authored by Skumatz (and Karen Imbierowicz) is entitled, "The Most Volatile Non-Energy Benefits (NEBs): New Research Results Homing In. on Environmental and Economic Impacts", w/, Skumatz Economic Research Associates, Inc., Skumatz Economic Research Associates, Inc. (SERA).
- 8) Publications by Synapse Energy Economics, Inc. including, "Benefit-Cost Analysis for Distributed Energy Resources A framework for Accounting for All Relevant Costs and Benefits", prepared for the Advanced Energy Economy Institute, September 22, 2014.
- 9) "Unleashing Energy Efficiency" co-authored by Tim Woolf, Erin Malone, Chris Neme and Robin LeBaron in Public Utilities Fortnightly, October, 2014. (This article presents a reporting template for an expanded Resource Value Framework (RVF) for B/C screening studies of DSM that includes NEBs reporting.)
- 10) "Capturing the Multiple Benefits of Energy Efficiency", released by the International Energy Agency (IEA), serving as a handbook (of sorts) for the estimation of NEBs, published in 2014. (This publication gives a more European perspective on NEBs than what is found in the U.S. publications.)

This foregoing document was electronically filed with the Public Utilities

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Case No(s). 16-1309-GA-UNC, 16-1310-GA-AAM

Summary: Application to Continue its Demand Side Management Program electronically filed by Cheryl A MacDonald on behalf of Columbia Gas of Ohio, Inc.



ENERGY STAR® Program Requirements For Connected Thermostat Products

Partner Commitments

Following are the terms of the ENERGY STAR Partnership Agreement as it pertains to the provision and labeling of ENERGY STAR connected thermostat (CT) products. The ENERGY STAR Partner must adhere to the following partner commitments:

Providing Certified Connected Thermostat Products

1. Partner must be a connected thermostat service provider.
2. Comply with current ENERGY STAR Connected Thermostat Products Eligibility Criteria, which define performance requirements and test procedures. A list of eligible products and their corresponding Eligibility Criteria can be found at www.energystar.gov/specifications.
3. Prior to associating the ENERGY STAR name or mark with any product, obtain written certification of ENERGY STAR certification from a Certification Body recognized by EPA for Connected Thermostat products. As part of this certification process, products must be tested in a laboratory recognized by EPA to perform CT device testing. A list of EPA-recognized laboratories and Certification Bodies can be found at www.energystar.gov/testingandverification.
4. A new CT product is defined as having either significantly different hardware or software features relative to an existing CT product. CT products receiving software updates are not considered new CT products.

Using the ENERGY STAR Name and Marks

5. Comply with current ENERGY STAR Identity Guidelines, which define how the ENERGY STAR name and marks may be used. Partner is responsible for adhering to these guidelines and ensuring that its authorized representatives, such as advertising agencies, dealers, and distributors, are also in compliance. The ENERGY STAR Identity Guidelines are available at www.energystar.gov/logouse.
6. Use the ENERGY STAR name and marks only in association with certified CT products, where the CT service and CT device have been certified together. The Partner may not refer to itself as an ENERGY STAR Partner unless at least one product is certified and offered for sale in the U.S. and/or ENERGY STAR partner countries.
7. Provide clear and consistent labeling of ENERGY STAR CT products.
 - 7.1. Electronic ENERGY STAR certification marks of at least 76x78 pixels in cyan, black or white shall be on the home screen, the main menu screen, or another place where users would be expected to come across it in routine use of the mobile app or web portal (if they exist).
 - 7.2. The ENERGY STAR mark shall be clearly displayed in CT service provider product literature (i.e., user manuals, spec sheets, etc.) and on the partner's Internet site where information about ENERGY STAR certified products is displayed.
 - 7.3. The ENERGY STAR mark shall not be physically applied to the CT device packaging unless the CT device brand owner also brands a CT service that is certified with the CT

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EXHIBIT

R Product Specification for Connected Thermostats: Partner Commitments

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device as ENERGY STAR, or the CT device is co-branded with a default CT service that is ENERGY STAR certified, and the installer/user is guided towards the use of that CT service.

7.4. ENERGY STAR marks shall not be applied to the CT device including physical marks on the CT device and electronic marks in the CT Device user interface.

8. ENERGY STAR Labeling of CT products that are associated with a broader product, such as a home security system, shall clearly indicate that only the CT product is certified. Neither physical nor electronic labels shall be associated with the broader product, and product literature shall state: *"This [insert product type (e.g., security system, home automation system)] includes an ENERGY STAR Certified Connected Thermostat. Only the Connected Thermostat is certified as ENERGY STAR."*

Providing Information to EPA

9. Provide aggregate savings data and associated statistics to EPA every 6 months in accordance with the ENERGY STAR Method to Demonstrate Connected Thermostat Field Savings. Submitted data shall be representative of savings for the CT product's U.S. installed base and must demonstrate continued compliance with the requirements of the specification. This data will also be used for program evaluation purposes:
- 9.1. Every February 1, submit the ENERGY STAR CT Field Savings software tool output file for the previous January 1 through December 31 reporting period.
- 9.2. Every July 1, submit the ENERGY STAR CT Field Savings software tool output file for the previous June 1 through May 31 reporting period.
10. Participate in verification of CT device hardware through a Certification Body recognized by EPA for Connected Thermostats, providing full cooperation and timely responses. EPA may also, at its discretion, conduct tests on CT products that are referred to as ENERGY STAR certified. These products may be obtained on the open market, or voluntarily supplied by Partner at the government's request.
11. Provide unit shipment data or other market indicators to EPA or an EPA-authorized third party annually to assist with creation of ENERGY STAR market penetration estimates, as follows:
- 11.1. Partner must submit the total number of units newly subscribing to the CT service portion of ENERGY STAR certified CT products within the calendar year or an equivalent measurement as agreed to in advance by EPA and Partner.
- 11.2. Partner must provide subscription data segmented by meaningful product characteristics (e.g., controlled system types, presence of additional functions) as prescribed by EPA.
- 11.3. Partner must submit subscription data for each calendar year to EPA or an EPA-authorized third party, preferably in electronic format, no later than March 1 of the following year.
- Submitted unit shipment data will be used by EPA only for program evaluation purposes and will be closely controlled. If requested under the Freedom of Information Act (FOIA), EPA will argue that the data is exempt. Any information used will be masked by EPA so as to protect the confidentiality of the Partner.
12. Report to EPA any attempts by recognized laboratories or Certification Bodies (CBs) to influence testing or certification results or to engage in discriminatory practices.
13. Notify EPA of a change in the designated responsible parties or contacts within 30 days using the My ENERGY STAR Account tool (MESA) available at www.energystar.gov/mesa.

Training and Consumer Education

14. Partner shall train distributors, sales staff and installation contractors on the value of the ENERGY STAR program. This training shall include, at a minimum, identification of ENERGY STAR certified products within the Partner's offerings and on the Partner's web site.
15. All consumer information documents – operating manuals, installation instructions, etc.—must be easily accessible to consumers on a public website.

Performance for Special Distinction

In order to receive additional recognition and/or support from EPA for its efforts within the Partnership, the ENERGY STAR Partner may consider the following voluntary measures, and should keep EPA informed on the progress of these efforts:

- Provide quarterly, written updates to EPA as to the efforts undertaken by Partner to increase availability of ENERGY STAR certified products, and to promote awareness of ENERGY STAR and its message.
- Consider energy efficiency improvements in company facilities and pursue benchmarking buildings through the ENERGY STAR Buildings program.
- Purchase ENERGY STAR certified products. Revise the company purchasing or procurement specifications to include ENERGY STAR. Provide procurement officials' contact information to EPA for periodic updates and coordination. Circulate general ENERGY STAR certified product information to employees for use when purchasing products for their homes.
- Feature the ENERGY STAR mark(s) on Partner website and other promotional materials. If information concerning ENERGY STAR is provided on the Partner website as specified by the ENERGY STAR Web Linking Policy (available in the Partner Resources section of the ENERGY STAR website), EPA may provide links where appropriate to the Partner website.
- Ensure the power management feature is enabled on all ENERGY STAR certified displays and computers in use in company facilities, particularly upon installation and after service is performed.
- Provide general information about the ENERGY STAR program to employees whose jobs are relevant to the development, marketing, sales, and service of current ENERGY STAR certified products.
- Provide a simple plan to EPA outlining specific measures Partner plans to undertake beyond the program requirements listed above. By doing so, EPA may be able to coordinate, and communicate Partner's activities, provide an EPA representative, or include news about the event in the ENERGY STAR newsletter, on the ENERGY STAR website, etc. The plan may be as simple as providing a list of planned activities or milestones of which Partner would like EPA to be aware. For example, activities may include: (1) increasing the availability of ENERGY STAR certified products by converting the entire product line within two years to meet ENERGY STAR guidelines; (2) demonstrating the economic and environmental benefits of energy efficiency through special in-store displays twice a year; (3) providing information to users (via the website and user's manual) about energy-saving features and operating characteristics of ENERGY STAR certified products; and (4) building awareness of the ENERGY STAR Partnership and brand identity by collaborating with EPA on one print advertorial and one live press event.
- Join EPA's SmartWay Transport Partnership to improve the environmental performance of the company's shipping operations. The SmartWay Transport Partnership works with freight carriers, shippers, and other stakeholders in the goods movement industry to reduce fuel consumption, greenhouse gases, and air pollution. For more information on SmartWay, visit www.epa.gov/smartway.
- Join EPA's Green Power Partnership. EPA's Green Power Partnership encourages organizations to buy green power as a way to reduce the environmental impacts associated with traditional fossil fuel-based electricity use. The partnership includes a diverse set of organizations including Fortune

500 companies, small and medium businesses, government institutions as well as a growing number of colleges and universities. For more information on Green Power, visit www.epa.gov/greenpower.



ENERGY STAR Program Requirements Product Specification for Connected Thermostat Products

Eligibility Criteria Version 1.0 Rev. Jan 2017

Following are the eligibility requirements for the Version 1.0 ENERGY STAR Connected Thermostats program. Connected Thermostat (CT) products shall meet all of the identified criteria to earn the ENERGY STAR.

1) Definitions:

- A. Communication Link: The mechanism for bi-directional data transfers between the CT device and one or more external applications, devices or systems.
- B. Connected Thermostat Device: A device that controls heating, ventilation, and air-conditioning (HVAC) equipment to regulate the temperature of the room or space in which it is installed, and has the ability to communicate with sources external to the HVAC system. For connection, the CT device may rely on a Wi-Fi home area network and an internet connection that is independent of and not part of the CT Device. Where the CT device relies upon other devices that are not reasonably expected to be in the home, e.g. Zigbee gateway, these devices are part of the CT device.
- C. Connected Thermostat Product: For the purposes of this specification, the CT product includes the CT device in the home with associated firmware, which is assumed to be updated during the time the CT device is used in the home, as well as a CT service supported by hardware and software outside of the home. The CT service would typically provide web and smart phone based thermostat control. See Figure 1 for a pictorial representation. Functions in the left-most group must be physically located in the home. Functions in the middle group commonly operate using a combination of hardware that is physically located within the home and services that rely fully or partially on communication with the cloud. The functions on the right typically reside in the cloud.

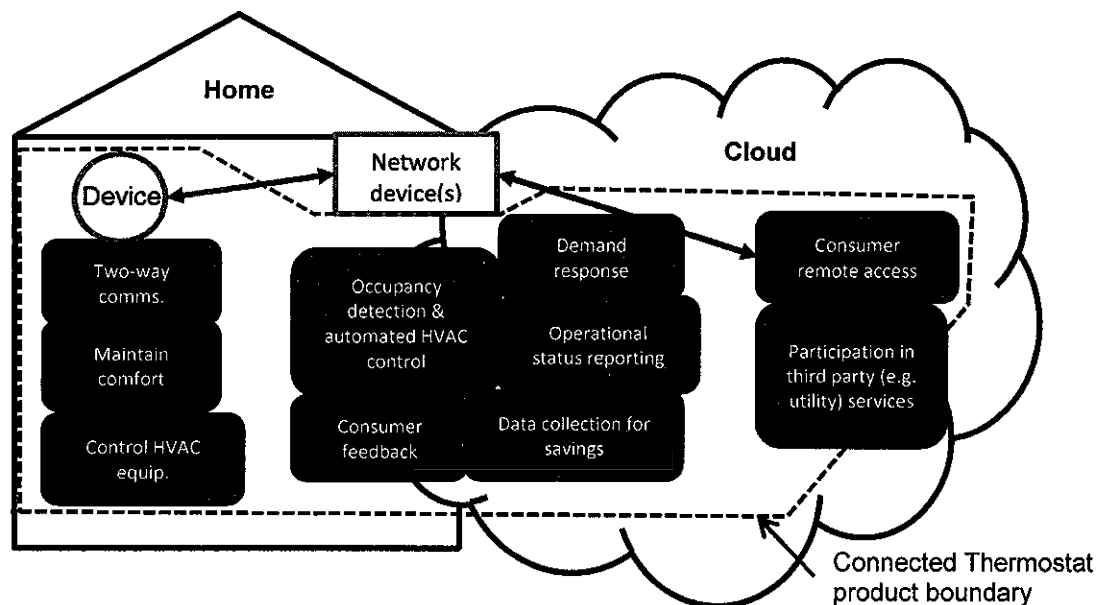


Figure 1: Connected Thermostat Product

- D. **Connected Thermostat Service Provider:** The organization that brands the CT service. CT services typically include smart phone and web control applications, messaging relevant to energy consumption, and application programming interfaces (API) that enable consumer-authorized interconnection with utilities and other 3rd parties.
- E. **Core Heating Day/Core Cooling Day:** A core heating day has more than 30 minutes of heating equipment run time and no cooling equipment run time. Similarly, a core cooling day has more than 30 minutes of cooling equipment run time and no heating equipment run time.
- F. **Demand Response (DR):** Changes in electric usage by demand-side resources from their normal consumption patterns in response to changes in the price of electricity over time, or to incentive payments designed to induce lower electricity use at times of high wholesale market prices or when system reliability is jeopardized¹.
- G. **Demand Response Management System (DRMS):** The system operated by a program administrator, such as the utility or third party, which dispatches signals with DR instructions and/or price signals to the ENERGY STAR CT products and receives messages from the CT product.
- H. **Interface Specification:** A document or collection of documents that contains detailed technical information to facilitate access to relevant data and product capabilities over a communications interface
- I. **Line Voltage Thermostat:** Thermostat that is powered by and/or switches > 30 Vac.
- J. **Load Management Entity:** DRMS, home energy management system, and the like.
- K. **Network Standby:** A state where the CT device is:
 1. installed and interconnected in accordance with provided instructions,
 2. with no direct or remote user interaction (e.g., smart phone app, web interface, occupancy detection), and
 3. sufficient time has elapsed to allow the CT device to enter a low power state, as applicable.

¹ Federal Energy Regulatory Commission, <https://www.ferc.gov/industries/electric/indus-act/demand-response/dr-potential.asp>

For example, the screen has dimmed or turned off automatically.

- L. **Open Standards:** Communication with entities outside the connected thermostat that use, for all communication layers, standards:
- included in the Smart Grid Interoperability Panel (SGIP) Catalog of Standards,² and/or
 - included in the NIST Smart Grid Framework Tables 4.1 and 4.2, and/or
 - adopted by the American National Standards Institute (ANSI) or another well-established international standards organization such as the International Organization for Standardization (ISO), International Electrotechnical Commission (IEC), International Telecommunication Union (ITU), Institute of Electrical and Electronics Engineers (IEEE) or Internet Engineering Task Force (IETF).
- M. **Product Family:** A group of closely related CT products sharing a primary strategy for delivering savings, and using similar CT devices. All members of a product family shall share one score on the field savings metrics for heating and cooling. CT products using different strategies to produce savings shall be in different product families.
- N. **Static Temperature Accuracy:** The deviation in the room temperature displayed and/or communicated by the CT device from 70°F (21°C); after one hour in a calibrated temperature chamber set to 70°F (21°C).³

2) Scope:

- A. **Included Products:** Only products that meet the definition of a CT product, as specified herein, are eligible for ENERGY STAR certification. CT products provided as part of a larger product offering, such as a home security system, may be certified but will be subject to specific labeling requirements.
- B. **Excluded Products:**
- 1 CT products that are unable to collect the required data for the energy savings metric as required by Section 3) B.4.
 - 2 Line voltage thermostats.

3) Eligibility Criteria:

A. Connected Thermostat Device Requirements:

Each CT device in a product family shall fulfill these requirements:

1. In the absence of connectivity to the CT service provider, retain the ability for residents to locally:
 - a. view the room temperature,
 - b. view and adjust the set temperature, and
 - c. switch between off, heating and cooling.
2. Meet requirements set out in Table 1, below:

Table 1: Connected Thermostat Device Criteria

Parameter	Performance Requirement	Applicable Products
Static temperature accuracy	$\leq \pm 2.0$ °F	All

² http://collaborate.nist.gov/twiki-sggrid/bin/view/SmartGrid/PMO#Catalog_of_Standards_Processes

³ The static temperature accuracy definition is based on requirements in National Electrical Manufacturers Association (NEMA) DC 3, Annex A 2013 Energy-Efficiency Requirements for Programmable Thermostats.

Network standby average power consumption ⁱ	≤ 3.0 W average	
Time to enter network standby after user interaction (on device, remote or occupancy detection)	≤ 5.0 minutes	

- i Includes all equipment necessary to establish connectivity to the CT service provider's cloud, except those that can reasonably be expected to be present in the home, such as Wi-Fi routers and smart phones.

B. Connected Thermostat Product Requirements: The following capabilities may be enabled through the CT device, CT service or any combination of the two. The CT product shall maintain these capabilities through subsequent firmware and software changes. The CT service provider shall maintain documentation that demonstrates compliance to these requirements. Initial certification of these requirements will be based on a review of product literature.

1. Ability for consumers to set and modify a schedule.
2. Provision of feedback to occupants about the energy impact of their choice of settings.
3. Ability for consumers to access information relevant to their HVAC energy consumption, e.g., HVAC run time.
4. The CT product shall be capable of collecting the following data, including where noted, to the indicated resolution and accuracy:
 - a. Unique thermostat ID
 - b. ZIP code (installed location)
 - c. Controlled HVAC equipment type to the extent it can be determined by the CT product:
 - Single-stage heat pump with electric resistance auxiliary and/or emergency heat (i.e. strip heat)
 - Single-stage heat pump without additional and/or supplemental heating sources
 - Single-stage non heat pump with single-stage central air conditioning
 - Single-stage non heat pump without central air conditioning
 - Single-stage central air conditioning without central heating
 - Other – e.g. multi-zone multi-stage, modulating
 - d. Daily cooling equipment run time (reported to the nearest minute)
 - e. Daily heating equipment run time (reported to the nearest minute)
 - f. Hourly auxiliary heat run time (reported to the nearest minute)
 - g. Hourly emergency heat run time (reported to the nearest minute)
 - h. Hourly average conditioned space temperature (reported to nearest 0.5°F)
 - i. Hourly average heating set point temperature (reported to nearest 1.0°F)
 - j. Hourly average cooling set point temperature (reported to nearest 1.0°F)

5. Demand Response

- a. Grid Communications – The CT product shall include a communication link that facilitates the use of open standards, as defined in this specification, for all communication layers to enable DR functionality.

Note: CT products that enable direct, on-premises, open-standards based interconnection are preferred, but alternative approaches, where open-standards connectivity is enabled only with use of off-premise services, are also acceptable.

- b. Open Access – To enable interconnection with the CT product over the communication link, an interface specification, application programming interface (API) or similar documentation shall be made available that, at a minimum, enables DR functionality.

Note: While EPA encourages broad availability of the interface spec or API, CT service providers may elect to limit dissemination of these documents to certified/qualified developers, integration partners and the like.

- c. **Consumer Override** – Consumers shall be able to override their CT product's response to any DR signal.
- d. **Capabilities Summary** – A ≤ 250-word summary description of the CT product's and/or associated CT service provider's DR capabilities/services shall be submitted. In this summary, EPA recommends noting the following, as applicable:
 - DR services that the CT product has the capability to participate in such as load dispatch, ancillary services, price notification and price response.
 - Whether the CT device can be directly addressed via the interface specification, API or similar documentation.
 - Support for locational DR, e.g. to ZIP code(s), feeder(s), or to CT device endpoints specified by the Load Management Entity.
 - List open communications supported by the CT device and/or CT service, including applicable certifications.
 - Feedback to Load Management Entity, e.g. verification/M&V, override notification.
 - Measures to limit consumer comfort impacts, if any.
 - DR response configurability/flexibility by the consumer and/or Load Management Entity.
 - Whether the CT device and/or the CT product comply with the 2016 California Energy Commission Title 24, Part 6 Joint Appendix 5.

C. **Field Savings:** CT products shall demonstrate typical product performance in the field by one of two methods. To be certified, CT products must have at least 12 months of interval data. These requirements refer to reported performance of the CT product.

1. **Metric Performance:**

Table 2: Connected Thermostat Energy Savings Criteria

Metric	Statistical measure	Performance Requirement
Annual % run time reduction, heating (HS)	Lower 95% confidence limit of weighted national average	≥ 8%
	Weighted national average of 20 th percentiles	≥ 4%
Annual % run time reduction, cooling (CS)	Lower 95% confidence limit of weighted national average	≥ 10%
	Weighted national average of 20 th percentiles	≥ 5%
Average resistance heat utilization for heat pump installations (RU)	National mean in 5°F outdoor temperature bins from 0 to 60°F	Reporting requirement

2. **A/B Study:** In lieu of meeting metric performance requirements outlined in Table 2, partner may propose an A/B study which demonstrates the mean reduction of run time (or mean reduction in energy use) for homes using their CT product as compared to a typical thermostat. To earn the ENERGY STAR, field savings studies shall show that the lower 95% confidence limit of run time reduction for heating is at least 6% and for cooling is at least 7%. In addition, studies shall show that no more than 20% of homes in the study showed savings of 1% or lower in heating or in cooling. Partners using this allowance shall also apply the ENERGY STAR Method to Demonstrate Connected Thermostat Field Savings and submit the output at time of certification and periodically as required for all CT products. All studies must be pre-approved and shall meet the following requirements:
- a. Two groups of consumers shall have products present in their home that they use as the thermostat(s) for their homes during the study period. The test group shall have capabilities available equivalent to the CT products the study covers. The control group shall have capabilities available to them that represent a typical thermostat and provide a reasonable baseline for comparison.
 - b. Both groups of consumers shall be large enough, and will use the products for a sufficient length of time, to estimate savings on core heating and cooling days with statistically significant results.
 - c. Results of the study will be lower 95% confidence limit of the mean % run time reduction or mean % energy savings in the test group compared to the control group, for both heating and cooling as required by the specification. The confidence limit may be calculated with the simplifying assumption that the relative energy or run time reduction has a Gaussian distribution around the mean.
 - d. If only a smaller sample of homes is available, a study design using a pre-study matching period in which test and control groups have access to the same capabilities may be proposed. Application of a correction factor derived from the comparison of groups in the pre-test period may be used to account for fluctuations in home properties between groups. In this case, the pre-test and test periods shall be as close together in time as possible, and the uncertainty shall be estimated as half what it would have been without the correction from the pre-test period.
 - e. Results of the study shall be representative of mean savings across the U.S.
 - f. The study shall provide a method for ongoing monitoring of results, equivalent to semi-annual reporting of metric scores. This may involve periodically re-running the study on a smaller set of consumers, for instance.

Process

- a. Partner shall submit a proposal for the study to EPA, demonstrating compliance with the study requirements. This is expected to be an iterative process involving conversation between the Partner and EPA. EPA will post proposed studies to a publically accessible web page during the period they are under consideration.
- b. Once the study design is approved, the Partner will execute the study and report the results to EPA. Results shall include at minimum the mean percent HVAC run time or HVAC energy use reduction from the control group to the test group, the associated 95% confidence limits of the mean, and the 20th percentile of these quantities across homes.
- c. EPA will confirm whether results meet the requirements of the specification and will publish successful studies.

D. Significant Digits and Rounding:

- 1. All calculations shall be carried out with directly measured (unrounded) values.

2. Unless otherwise specified below, compliance with specification limits shall be evaluated using directly measured or calculated values rounded to the nearest 0.1°F.
3. Directly measured or calculated values that are submitted for reporting on the ENERGY STAR website shall be rounded to the nearest significant digit as expressed in the corresponding specification limit.

4) Test Requirements:

A. Product Families: A product family may be established under the following circumstances:

1. Each CT device that is part of a CT product within the product family is separately tested to ensure it meets the requirements in section 3) A.
2. Each CT service/CT device combination shall comply with section 3) B.
3. All members of the product family use the same primary savings strategy or strategies.
4. All installations within a product family shall be considered as a single population for determining field savings, and the metric performance scores shall apply to all members of the product family.

Examples of allowable variations within a product family:

- *For CT products that derive savings from automatic temperature changes without prompting users, the user interface differences of CT devices would be irrelevant.*
- *For CT products that rely on occupancy detection to deliver savings, including motion sensing by the CT device and CT services that track occupants via mobile device location services:*
 - *CT products with similar occupancy detection can be in the same product family.*
 - *CT products with dissimilar occupancy detection would fall into different product families, unless the occupancy detection is not part of a primary savings strategy.*
- *For CT products that can provide different services in different utility service territories based on utility program offerings, (e.g. precooling is available in areas with time-of-use rates); these variations can be in a single product family, as long as they do not impact primary savings strategies.*
- *For CT products that include the capability to add services that may increase energy savings, all variations may be in the same product family.*

B. Software updates: Software updates are expected to not affect product savings, or to increase savings, and do not require recertification. Software changes that alter the principle that savings rest upon, or which are expected to reduce savings, would define a new product and would require a new certification.

C. Test Methods:

The following methods shall be used to demonstrate ENERGY STAR certification:

Table 3: Test Methods for ENERGY STAR Certification

ENERGY STAR Requirement	Test Method Reference
Functionality in the absence of connectivity	As per section 4) D. and 4) E. below
Static temperature accuracy	As per section 4) D. and 4) F. below
Network standby power consumption	IEC 62301, Ed. 2.0, 2011-01, Household electrical appliances – Measurement of standby power, subject to clarifications in section 4) D. and 4) G. below
Time to standby	
Reduction in average annual % run time, heating (HS)	ENERGY STAR Method to Demonstrate Connected Thermostat Field Savings, V1.0
Reduction in average annual % run time cooling (CS)	
Average resistance heat utilization for heat pump installations (RU)	

D. Connected Thermostat Device Configuration for Testing

1. Configure and provision the Unit Under Test's (UUT) connected functionality, including enrollment of applicable services and updating to latest version of firmware.

E. Functionality in the Absence of Connectivity

1. Install and configure the CT device either into a test environment or to control compatible HVAC heating and cooling source equipment. Ensure that the test setup enables observation of the UUT's HVAC control signals or actions, e.g. monitoring the UUTs wiring terminals for state changes or observing switching of HVAC equipment.
2. Disable connectivity, for example by shutting down the Wireless LAN.
3. Verify (pass/fail) the capability for a user to interact with the CT device to:
 - a. Observe the room temperature,
 - b. Observe and adjust the setpoint, and
 - c. Switch between off, heating and cooling

F. Static Temperature Accuracy

1. Install and configure four CT devices and four temperature sensors with a calibrated temperature logger onto a ½" wallboard panel with at least 3" separation between each UUT and temperature sensor or logger. The temperature sensors/logger shall have minimum $\pm 0.1^{\circ}\text{F}$ accuracy.
2. Suspend the wallboard panel in the center of a thermal chamber ensuring at least 12" of separation from chamber walls, ceiling and floor.

Mounting the UUTs in this manner approximates typical mounting in homes. Keeping the mounting panel and the CT devices at least a foot from the chamber minimizes the effect of any heat radiating off of these surfaces. CT devices generate a small amount of heat. Maintaining a 3" or greater separation between adjacent CT devices and temperature loggers will minimize the effects of adjacent CT devices on measured temperatures.

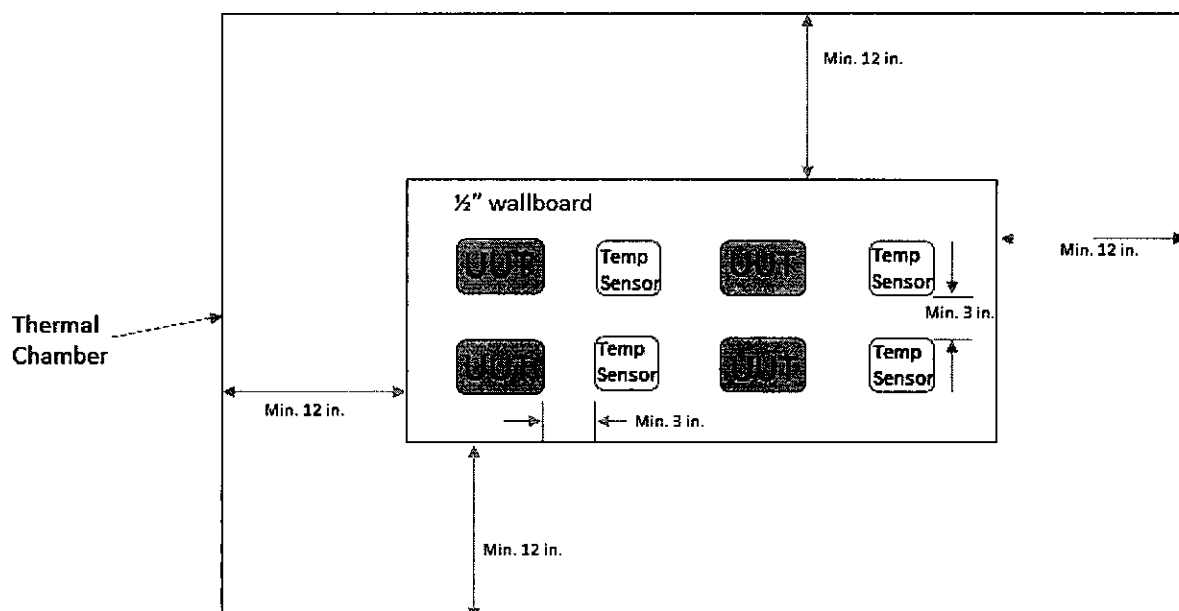


Figure 2: Typical Test Setup

3. Provide power to each UUT. It is unnecessary to connect to HVAC heating and cooling source equipment or to monitor the UUTs wiring terminals. Ensure that the test setup enables observation of the UUTs indoor temperature reading.
4. Configure the CT communications, connect to the default CT service and ensure the CT devices are able to maintain a connectivity with the chamber door closed.

While attempting to re-establish communications, certain CTs are known to generate additional internal heat that can impact temperature accuracy. By ensuring a stable link status, CTs will be tested in their normal operational mode.

5. Configure the UUTs so that they will not be calling for heating, fan, or cooling at the test temperature of 70°.
6. Test Conduct
 - a. Close the chamber door and set it to 70°F. Once this temperature is reached, chamber temperature shall be maintained at $70 \pm 0.5^\circ\text{F}$ for at least one hour.
 - b. Deactivate all thermal chamber fans. After deactivation, all temperatures recorded by each temperature sensor shall be within $70 \pm 2^\circ\text{F}$ for the remainder of this test.

For many temperature chambers, fans can only be deactivated by shutting down the chamber. In this scenario, the rate of temperature change will be dependent upon the ambient temperature in the lab. An ambient lab temperature of approximately 70°F should minimize the rate of change.

Fan-forced air flow in a thermal chamber is not representative of typical convection currents in a home and can impact the accuracy of temperatures displayed by the CT device.

- c. Record the difference between the room temperature displayed by each UUT and recorded by its adjacent temperature sensor at 30, 45 and 60 minutes after deactivating the fan. If a higher resolution temperature is reported over the communications link, use this as the UUT "displayed" temperature. (Test labs must generally work with CT service providers in order to obtain this data.)

- d. Calculate static temperature accuracy as the average of these 12 values.

G. Implementation of IEC 62301 for Connected Thermostat Testing

Note: This test is not applicable to UUTs or parts of UUTs (e.g. remote sensors) that are powered solely by batteries. Where the CT device relies upon other devices that are not reasonably expected to be in the home, e.g. Zigbee gateway, these devices are part of the CT device and shall be included in this test.

1. Assure that the CT device is appropriately configured as per section 4) B.
 - a. This test need not be performed in a temperature chamber.
 - b. Configure the UUT in accordance with the requirements of IEC 62301, Ed. 2.0, 2011-01, "Measurement of Household Appliance Standby Power," Section 4, "General Conditions for Measurements," unless otherwise noted in this document. In the event of conflicting requirements, this ENERGY STAR test method shall take precedence.
2. Test Conduct – Measure power consumption at the power input to the UUT using the sampling method, section 5.3.2 of IEC 62301, Edition 2.0 2011-01.
 - a. Verify ability to control the UUT over the communication link, then close all apps and web interfaces.
 - b. Increase the setpoint using the CT device controls.
 - c. Wait five minutes, while taking appropriate measures to allow the UUT to enter into and remain in network standby mode for the duration of the test, e.g.
 - No additional UUT user interactions,
 - Ensure occupancy sensing UUTs do not detect occupancy,
 - Ensure apps and/or web remote interfaces remain closed.
 - d. Separately measure and record average energy consumption over a five-minute period.
 - e. Check measurement stability in accordance with IEC 62301, Edition 2.0 2011-01, and section 5.3.2.
 - f. If stability criteria are not satisfied, repeat the test, starting from step 2. b, with the test period extended in five-minute increments (i.e. 10m, 15m, 20m...) as necessary to establish requisite measurement stability.
 - g. Once stable, repeat the test over two additional test periods, starting from step 2. b.
 - h. Record power consumption as the average over the second and third test periods.

5) Effective Date:

The ENERGY STAR Connected Thermostat specification shall take effect on December 23, 2016. To certify for ENERGY STAR, a Connected Thermostat Product shall meet the ENERGY STAR specification in effect on the date of connection. The date of connection is specific to each unit and is the date on which a unit is considered to be a Connected Thermostat Product.

6) Future Criteria Revisions:

EPA reserves the right to change the specification should technological and/or market changes affect its usefulness to consumers, industry, or the environment. In keeping with current policy, revisions to the specification are arrived at through industry discussions. In the event of a specification revision, please note that the ENERGY STAR certification is not automatically granted for the life of a CT product model.

Several topics that are likely to be examined in ongoing work and/or in future revisions have been identified. Some pertain only to the specification and others to the metric. They include:

- A. Reduction of CT device standby power to better reflect best practice.

- B. Refinement of the CT device static temperature accuracy test, to enable a more stringent performance requirement.
- C. If resistance heat utilization data indicates substantial variance among certified CT products, EPA may consider including requirements to ensure ENERGY STAR CT products effectively minimize the use of supplemental electric-resistance heat,
- D. For the Method to Demonstrate CT Field Savings, and associated software:
 - a. Exploring the potential to use average comfort temperature baselines that vary geographically. Such baselines are expected to capture a wider variety of primary savings strategies.
 - b. Exploring the potential to include CTs that control variable capacity equipment.
 - c. Incorporating weather normalization, to enable comparison of savings from different calendar years.
 - d. Further refining procedures to handle missing data.

JOINT EXHIBIT 1

BEFORE
THE PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Annual Applica-)
tion of Columbia Gas of Ohio, Inc. for) Case No. 12-2923-GA-RDR
an Adjustment to Rider IRP and Rider)
DSM Rates)

JOINT STIPULATION AND RECOMMENDATION

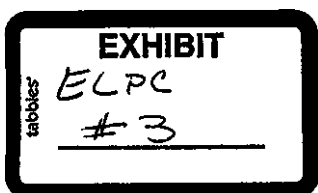
Rule 4901-1-30, Ohio Administrative Code ("O.A.C.") provides that any two or more parties to a proceeding may enter into a written stipulation covering the issues presented in such proceeding. The purpose of this document is to set forth the understanding of Columbia Gas of Ohio, Inc. ("Columbia") and the Staff of the Public Utilities Commission of Ohio ("Staff") (which for the purpose of entering into this Joint Stipulation and Recommendation, will be considered a party by virtue of O.A.C. Section 4901-1-10(C))(collectively, the "Signatory Parties" or "Parties"), and to recommend that the Public Utilities Commission of Ohio ("Commission") approve and adopt this Joint Stipulation and Recommendation ("Stipulation"), resolving all of the issues in the above-captioned proceeding. The Office of the Ohio Consumers' Counsel ("OCC") is also a party to this proceeding; however, the OCC neither supports nor opposes this Stipulation. This Stipulation, which shall be designated as Joint Exhibit 1, is supported by adequate data and information, represents a just and reasonable resolution of the issues in this proceeding; violates no regulatory principle or precedent; and is the product of serious bargaining among knowledgeable and capable parties. Although this Stipulation is not binding on the Commission, it is entitled to careful consideration by the Commission, where, as here, it is sponsored by Parties representing a wide range of interests, including Staff.

Except for enforcement purposes, neither this Stipulation nor the information and data contained herein or attached, nor the Commission Order approving the Stipulation shall be cited as precedent in any future proceedings for or against any Signatory Party, or the Commission itself. The Signatory Parties'

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agreement to this Stipulation, in its entirety, shall not be interpreted in a future proceeding before this Commission as their agreement to only an isolated provision of this Stipulation. More specifically, no specific element or item contained in or supporting this Stipulation shall be construed or applied to attribute the results set forth in this Stipulation as the results that any Signatory Party might support or seek, but for this Stipulation in these proceedings or in any other proceeding.

For purposes of resolving certain issues raised by this proceeding, the Signatory Parties stipulate and recommend as follows:

1. This Stipulation is entered into as an overall compromise and resolution of all of the issues presented in this proceeding and does not necessarily represent the position any Signatory Party would have taken absent the execution of this Stipulation. The Signatory Parties hereby enter into this Stipulation notwithstanding the Comments filed on March 28, 2013 in this matter. Such Comments may be reinstituted by the respective Parties if the Commission rejects or modifies this Stipulation in whole or part.

2. This Stipulation resolves all issues in the case. Columbia agrees with Staff's recommendation to utilize the latest known property tax rate for purposes of calculating the Rider IRP rate. The Stipulation adjusts the revenue requirement to include Staff's recommended adjustment for the use of an actual property tax rate for determination of property taxes. The property tax adjustment has been reflected with updated monthly rates for General Service and Large General Service customers and are listed below. The Signatory Parties agree to the Rider IRP rates listed on the tariff sheets attached hereto as Stipulation Attachment 1. The development of these Rider IRP rates is illustrated on Stipulation Attachment 2.

3. The Parties agree that there are no adjustments to the proposed Rider demand side management ("DSM") rates included in Columbia's Application filed in this docket, also reflected in Stipulation Attachment 1. Columbia agrees with Staff's recommendation to hold at least one DSM stakeholder group meeting in 2013 and subsequent calendar years, and will implement Staff's recommendation.

4. The Parties believe that this Stipulation represents a reasonable compromise of varying interests. This Stipulation is expressly conditioned upon

adoption in its entirety by the Commission without material modification.¹ Should the Commission reject or materially modify all or any part of this Stipulation, the Parties shall have the right, within thirty (30) days of issuance of the Commission's order, to file an application for rehearing or to terminate and withdraw from the Stipulation by filing a notice with the Commission in this proceeding, including service to all the Parties. The Parties agree that they will not oppose or argue against any other Party's application for rehearing that seeks to uphold the original unmodified Stipulation. Upon the Commission's issuance of any entry on rehearing that does not adopt the Stipulation without material modification, any party may terminate and withdraw from the Stipulation by filing a notice with the Commission within thirty (30) days of the Commission's entry on rehearing. Upon notice of termination or withdrawal by any party, pursuant to the above provisions, the Stipulation shall immediately become null and void. In such event, the Signatory Parties agree that a hearing shall go forward, and the Signatory Parties should be afforded the opportunity to present evidence through any witnesses for whom pre-filed direct testimony was filed,² to cross-examine all witnesses, to present rebuttal testimony, and to brief all issues which shall be decided based upon the record and briefs as if this Stipulation had never been executed.

5. This Stipulation is submitted for purposes of this proceeding only, and is not deemed binding in any other proceeding, nor is the Stipulation, or the Order approving the Stipulation, to be offered for or against any Signatory Party, except as necessary to enforce the terms of this Stipulation.

6. The Signatory Parties agree that all pre-filed testimony and filed comments in this matter shall be deemed admitted into the record and all cross-examination of such witnesses will be waived, unless this Stipulation becomes null and void due to a material modification by the Commission.

7. The Signatory Parties stipulate, agree and recommend that the Commission issue a final Opinion and Order in this proceeding, ordering as follows:

¹ Any Signatory Party has the right, in its sole discretion, to determine what constitutes a "material" change for purposes of that Party withdrawing from the Stipulation.

² In the event the Stipulation becomes null and void, the Signatory Parties agree to modify the procedural schedule to provide each Signatory Party with the opportunity to file testimony in support of issues raised in Comments that were filed prior to the execution of this Stipulation.

- A. The rates, terms and conditions agreed to in this Stipulation by all Signatory Parties are approved in accordance with Sections 4909.15, 4909.18, 4909.19 and 4929.11 Ohio Revised Code;
- B. The rates, terms and conditions provided in this Stipulation and agreed to by all Signatory Parties are ordered to become effective with bills rendered on and after the filing of compliance tariffs with the Commission;
- C. The monthly rates for Rider IRP as agreed to and contained in Attachment 1 are as follows:

Small General Service:	\$4.71/account
General Service	\$33.34/account
Large General Service	\$533.23/account
- D. The monthly rate for Rider DSM for the applicable rate schedules is \$.1360/mcf.
- E. Columbia is authorized to cancel and withdraw, as of the effective date of the new rates and tariffs, the superseded rate schedules and tariff sheets presently in effect; and,
- F. The Application in this matter is adopted in accordance with the recommendations of the Signatory Parties, subject to the modifications set forth in the Stipulation.

WHEREFORE, the undersigned respectfully request that the Commission issue its Opinion and Order approving and adopting this Joint Stipulation and Recommendation in accordance with the terms set forth above.

AGREED THIS 9th DAY OF APRIL, 2013.

/s/ Stephen B. Seiple

Columbia Gas of Ohio, Inc.

By its attorney Stephen B. Seiple

/s/ Stephen Reilly

(per email authorization 4/8/13)

Staff of the Public Utilities Commission
of Ohio

By its attorney Stephen Reilly

STIPULATION ATTACHMENT 1

**RULES AND REGULATIONS GOVERNING THE DISTRIBUTION
AND SALE OF GAS**

RIDER IRP –
INFRASTRUCTURE REPLACEMENT PROGRAM RIDER

APPLICABILITY

Applicable to all customer accounts served under rate schedules SGS, GS and LGS.

DESCRIPTION

An additional charge per account per month, regardless of gas consumed, to recover costs associated with:

- a) **Riser and Hazardous Customer Service Line Replacement Program** - The replacement of customer-owned Natural Gas Risers identified in the November 24, 2006 Report by the Staff of the Public Utilities Commission of Ohio in Case No. 05-463-GA-COI as prone to failure and the maintenance, repair and replacement of hazardous customer-owned service lines.
- b) **Accelerated Mains Replacement Program** – The replacement of bare steel and cast iron or wrought iron main lines, and associated company and customer-owned metallic service lines.
- c) **Automated Meter Reading Devices Program** – The installation of automated meter reading devices on meters located at customer premises.

This Rider shall be calculated annually pursuant to a Notice filed no later than November 30 of each year based on nine months of actual data and three months of estimated data for the calendar year. The filing shall be updated by no later than February 28 of the following year to reflect the use of actual calendar year data. Such adjustments to the Rider will become effective with bills rendered on and after the first billing unit of May of each year.

RATE

Rate SGS, Small General Service	\$3.57 / 4.71 Month
Rate GS, General Service	\$17.67 / 33.348 Month
Rate LGS, Large General Service	\$314.15 / 533.2384 Month

Filed in accordance with Public Utilities Commission of Ohio.

Issued: April 26, 2012

Effective: April 30, 2012

Issued By
J. W. Partridge Jr., President

**RULES AND REGULATIONS GOVERNING THE DISTRIBUTION
AND SALE OF GAS**

DEMAND SIDE MANAGEMENT RIDER

APPLICABILITY

Applicable to all volumes delivered under the Company's SGS rate schedule.

DESCRIPTION

An additional charge, for all gas consumed, to recover costs associated with the implementation of comprehensive, cost-effective energy efficiency programs made available to residential and commercial customers.

RATE

All gas consumed per account per month \$0.1240 /0.1360 Mcf

Filed in accordance with Public Utilities Commission of Ohio.

Issued: April 26, 2012

Effective: April 30, 2012

Issued By
J. W. Partridge Jr., President

COLUMBIA GAS OF OHIO, INC.

**RULES AND REGULATIONS GOVERNING THE DISTRIBUTION
AND SALE OF GAS**

**RIDER IRP –
INFRASTRUCTURE REPLACEMENT PROGRAM RIDER**

APPLICABILITY

Applicable to all customer accounts served under rate schedules SGTS, GTS and LGTS.

DESCRIPTION

An additional charge per account per month, regardless of gas consumed, to recover costs associated with:

- a) **Riser and Hazardous Customer Service Line Replacement Program** - The replacement of customer-owned Natural Gas Risers identified in the November 24, 2006 Report by the Staff of the Public Utilities Commission of Ohio in Case No. 05-463-GA-COI as prone to failure and the maintenance, repair and replacement of hazardous customer-owned service lines.
- b) **Accelerated Mains Replacement Program** – The replacement of bare steel and cast iron or wrought iron main lines, and associated company and customer-owned metallic service lines.
- c) **Automated Meter Reading Devices Program** – The installation of automated meter reading devices on meters located inside customer's premises.

This Rider shall be calculated annually pursuant to a Notice filed no later than November 30 of each year based on nine months of actual data and three months of estimated data for the calendar year. The filing shall be updated by no later than February 28 of the following year to reflect the use of actual calendar year data. Such adjustments to the Rider will become effective with bills rendered on and after the first billing unit of May of each year.

RATE

Rate SGTS, Small General Transportation Service	\$3.57/ 4.71 Month
Rate GTS, General Transportation Service	\$17.67/ 33.348 Month
Rate LGTS, Large General Transportation Service	\$314.15/ 533.2384 Month

Filed in accordance with Public Utilities Commission of Ohio.

Issued: ~~April 26, 2012~~

Effective: ~~April 30, 2012~~

Issued By
J. W. Partridge Jr., President

**RULES AND REGULATIONS GOVERNING THE DISTRIBUTION
AND SALE OF GAS**

DEMAND SIDE MANAGEMENT RIDER

APPLICABILITY

Applicable to all volumes delivered under the Company's SGTS rate schedule.

DESCRIPTION

An additional charge, for all gas consumed, to recover costs associated with the implementation of comprehensive, cost-effective energy efficiency programs made available to residential and commercial customers.

RATE

All gas consumed per account per month \$0.1240 / 0.1360 Mcf

Filed in accordance with Public Utilities Commission of Ohio.

Issued: ~~April 26, 2012~~

Effective: ~~April 30, 2012~~

Issued By
J. W. Partridge Jr., President

SECTION VII
PART 29 - BILLING ADJUSTMENTS

RIDER IRP –
INFRASTRUCTURE REPLACEMENT PROGRAM RIDER

29.3 APPLICABILITY

Applicable to all customer accounts served under rate schedules FRSGTS, FRGTS, FRLGTS.

29.4 DESCRIPTION

An additional charge per account per month, regardless of gas consumed, to recover costs associated with:

- a) **Riser and Hazardous Customer Service Line Replacement Program** - The replacement of customer-owned Natural Gas Risers identified in the November 24, 2006 Report by the Staff of the Public Utilities Commission of Ohio in Case No. 05-463-GA-COI as prone to failure and the maintenance, repair and replacement of hazardous customer-owned service lines.
- b) **Accelerated Mains Replacement Program** – The replacement of bare steel and cast iron or wrought iron main lines, and associated company and customer-owned metallic service lines.
- c) **Automated Meter Reading Devices Program** – The installation of automated meter reading devices on meters located inside customer's premises.

This Rider shall be calculated annually pursuant to a Notice filed no later than November 30 of each year based on nine months of actual data and three months of estimated data for the calendar year. The filing shall be updated by no later than February 28 of the following year to reflect the use of actual calendar year data. Such adjustments to the Rider will become effective with bills rendered on and after the first billing unit of May of each year.

29.5 RATE

Rate FRSGTS, Full Requirements Small General Transportation Service	\$3.57 ^{4.71} / Month
Rate FRGTS Full Requirements General Transportation Service	\$17.67 ^{33.348} / Month
Rate FRLGTS, Full Requirements Large General Transportation Service	\$344.15 /
533.2384 / Month	

Filed in accordance with Public Utilities Commission of Ohio.

Issued: April 26, 2012

Effective: April 30, 2012

Issued By
J. W. Partridge Jr., President

Columbia Gas of Ohio, Inc.

SECTION VII
PART 29 - BILLING ADJUSTMENTS

DEMAND SIDE MANAGEMENT RIDER

29.6 APPLICABILITY

Applicable to all volumes delivered under the Company's Full Requirements Small General Transportation Service schedule.

29.7 DESCRIPTION

An additional charge, for all gas consumed, to recover costs associated with the implementation of comprehensive, cost-effective energy efficiency programs made available to residential and commercial customers.

29.8 RATE

All gas consumed per account per month \$0.1240/ 0.1360Mcf

Filed in accordance with Public Utilities Commission of Ohio.

Issued: April 26, 2012

Effective: April 30, 2012

Issued By
J. W. Partridge Jr., President

STIPULATION ATTACHMENT 2

Columbia Gas of Ohio, Inc.
Case No. 12-2923-GA-RDR
Summary of Rates by Class
Effective May 2013

Attachment 2

Infrastructure Replacement Program

	Riser Sch R-11	AMRP Sch AMRP-11	AMRD Sch AMRD-11	Total Monthly Rate
Small General Service	\$2.08	\$2.15	\$0.48	\$4.71
<u>Includes:</u>				
Small General Sales Service				
Small General Sales Service-Schools				
Small General Transportation Service				
Full Requirements Small General Transportation Service				
General Service	\$2.59	\$25.03	\$5.72	\$33.34
<u>Includes:</u>				
General Service				
General Service - Schools				
General Transportation Service				
General Transportation Service - Schools				
Full Requirement General Transportation Service				
Full Requirement General Transportation Service - Schools				
Large General Service	\$0.00	\$533.23	\$0.00	\$533.23
<u>Includes:</u>				
Large General Sales Service				
Large General Transportation Service				
Full Requirements Large General Transportation Service				
Full Requirements Large General Transportation Service				
Large General Transportation Service - Mainline				

	<u>Revenue Requirement by Rate Schedule</u>			
	Riser	AMRP	AMRD	Total
Small General Service	\$34,534,728	\$35,738,117	\$8,033,985	\$78,306,829
General Service	1,130,675	10,908,742	2,490,476	14,529,892
Large General Service	0	2,740,249	0	2,740,249
	<u>\$35,665,403</u>	<u>\$49,387,107</u>	<u>\$10,524,461</u>	<u>\$95,576,971</u>

Demand Side Management Program

Total Revenue Requirement	\$15,811,572
Small General Service Rate per MCF	\$0.1360
<u>Includes:</u>	
Small General Sales Service	
Small General Sales Service-Schools	
Small General Transportation Service	
Full Requirements Small General Transportation Service	

Columbia Gas of Ohio, Inc.
Infrastructure Tracking Mechanism-Accelerated Mains Replacement Program
Case No. 12-2923-GA-RDR
Calculation of Revenue Requirement

Data: 2012 - 12 Months Actual

Schedule AMRP-1

Line No.		Actual Through December 31, 2011	Activity Through December 31, 2012	Total As Of December 31, 2012	Reference
Return on Investment					
1	Plant In-Service				
2	Additions	\$210,342,127	\$154,996,474	\$365,338,601	Schedule 2
3	Retirements	(26,869,271)	(19,220,978)	(46,090,249)	Schedule 4
4	Total Plant In-Service	<u>\$183,472,856</u>	<u>\$135,775,496</u>	<u>\$319,248,352</u>	Line 2 + Line 3
Less: Accumulated Provision for Depreciation					
5	Depreciation Expense	\$6,675,284	\$6,786,800	\$13,462,084	Schedule 5
6	Cost of Removal	(7,272,622)	(6,441,258)	(13,713,880)	Schedule 3
7	Retirements	(26,869,271)	(19,220,978)	(46,090,249)	Schedule 4
8	Total Accumulated Provision for Depreciation	<u>(\$27,466,609)</u>	<u>(\$18,875,436)</u>	<u>(\$46,342,045)</u>	Lines 5 + 6 + 7
9	Net Deferred Depreciation	2,132,333	2,242,814	4,375,147	Schedule 5
10	Net Deferred PISCC	6,077,032	6,305,574	12,382,606	Schedule 6
11	Net Deferred Property Taxes	618,507	686,434	1,304,941	Schedule 7
12	Deferred Taxes on PISCC	(2,126,961)	(2,206,951)	(4,333,912)	(Line 10 * 35%)
13	Deferred Taxes on Deferred Property Taxes	(216,477)	(240,252)	(456,729)	(Line 11 * 35%)
14	Deferred Taxes on Liberalized Depreciation	<u>(38,137,813)</u>	<u>(21,901,525)</u>	<u>(60,039,338)</u>	Schedule 8
15	Net Rate Base	\$179,286,085	\$139,537,026	\$318,823,111	Line 4 - Line 8 + Lines 9 through 14
16	Approved Pre-tax Rate of Return	10.95%	10.95%	10.95%	Joint Stipulation & Recommendation Case No. 08-0072-GA-AIR
17	Annualized Return on Rate Base	\$19,631,826	\$15,279,304	\$34,911,131	Line 15 * Line 16
Operating Expenses					
18	Annualized Depreciation	4,295,837	3,146,396	7,442,233	Schedule 5
19	Annualized Deferred Depreciation Amortization	54,841	58,922	113,763	Schedule 5
20	Annualized PISCC Amortization	148,036	157,543	305,579	Schedule 6
21	Annualized Property Tax Expense	3,912,285	3,129,416	7,041,701	Schedule 7
22	Deferred Property Tax Expense Amortization	14,681	16,045	30,726	Schedule 7
23	Operation & Maintenance Expense	124,322	25,007	149,329	Schedule 9A
24	Operation & Maintenance Savings	<u>(164,854)</u>	<u>(585,146)</u>	<u>(750,000)</u>	Schedule 9B
25	Revenue Requirement - To be collected beginning May 2013	<u>\$28,016,974</u>	<u>\$21,227,488</u>	<u>\$49,244,462</u>	Lines 17 through 24
26	Prior Year's (Over)/Under Recovered Balance	189,724	(47,079)	142,645	Schedule 10
27	Stipulated Reduction to Revenue Requirement	<u>(830,564)</u>	<u>830,564</u>	<u>-</u>	
28	TOTAL Amount to be collected beginning May 2013	<u>\$27,376,134</u>	<u>\$22,010,973</u>	<u>\$49,387,107</u>	Lines 25 through 27

Columbia Gas of Ohio, Inc.
Case No. 12-2923-GA-RDR
Computation of Projected Impact per Customer - AMRP
For Rates Effective May 2013

Schedule AMRP-11

Line No.	Description	Reference	Amount
1	Revenue Requirement Plus Over/Under from Case No. 11-5803-GA-RDR	Sch. AMRP-1 Line 28	\$49,387,107
<u>Allocated Plant in Service per Case No. 08-0072-GA-AIR ⁽¹⁾</u>			
2	SGS Class		\$613,479
3	GS Class		\$187,259
4	LGS Class		\$47,039
5	TOTAL		<u>\$847,777</u>
<u>Percent by Class</u>			
6	SGS Class	Line 2/Line 5	72.36%
7	GS Class	Line 3/Line 5	22.09%
8	LGS Class	Line 4/Line 5	5.55%
9	TOTAL		<u>100.00%</u>
<u>Revenue Requirement Allocated to Each Class</u>			
10	SGS Class	Line 6 * Line 1	\$35,738,117
11	GS Class	Line 7 * Line 1	\$10,908,742
12	LGS Class	Line 8 * Line 1	\$2,740,249
13	TOTAL Revenue Requirement		<u>\$49,387,107</u>
<u>Number of Actual Bills TME December 2012</u>			
14	SGS Class		16,625,523
15	GS Class		435,747
16	LGS Class		5,139
17	TOTAL number Actual Annual Bills		<u>17,066,409</u>
18	PROJECTED IMPACT PER MONTH - SGS CLASS		\$2.15
19	PROJECTED IMPACT PER MONTH - GS CLASS		\$25.03
20	PROJECTED IMPACT PER MONTH - LGS CLASS		\$533.23

(1) Source: Schedule E-3.2-1 per Case No. 08-0072-GA-AIR, Allocated Plant in Service for Distribution Plant Account 376, Mains

Columbia Gas of Ohio, Inc.
Infrastructure Tracking Mechanism - Automated Meter Reading Devices
Case No. 12-2923-GA-RDR
Revenue Requirement Calculation

Data: 2012 - 12 Months Actual

Schedule AMRD-1

Line No.		Actual Through December 31, 2011	Activity Through December 31, 2012	Total As Of December 31, 2012	Reference
Return on Investment					
1	Plant In-Service				
2	Additions	\$54,894,657	\$22,746,196	\$77,640,853	Schedule 2
3	Retirements	0	0	0	Schedule 4
4	Total Plant In-Service	<u>\$54,894,657</u>	<u>\$22,746,196</u>	<u>\$77,640,853</u>	Line 2 + Line 3
Less: Accumulated Provision for Depreciation					
5	Depreciation Expense	\$4,288,403	\$4,483,618	\$8,772,021	Schedule 5
6	Cost of Removal	0	0	0	Schedule 3
7	Retirements	0	0	0	Schedule 4
8	Total Accumulated Provision for Depreciation	<u>\$4,288,403</u>	<u>\$4,483,618</u>	<u>\$8,772,021</u>	Lines 5 + 6 + 7
9	Net Deferred Plant Depreciation	\$2,078,361	\$1,195,020	\$3,273,380	Schedule 5
10	Net Deferred PISCC	1,830,742	1,089,848	2,920,591	Schedule 6
11	Net Deferred Property Taxes	230,150	149,444	379,593	Schedule 7
12	Deferred Taxes on PISCC	(640,760)	(381,447)	(1,022,207)	(Line 10 * 35%)
13	Deferred Taxes on Property Taxes	(80,552)	(52,305)	(132,858)	(Line 11 * 35%)
14	Deferred Taxes on Liberalized Depreciation	<u>(10,025,811)</u>	<u>(2,341,062)</u>	<u>(12,366,873)</u>	Schedule 8
15	Net Rate Base	\$43,998,384	\$17,922,075	\$61,920,459	Line 4 - Line 8 + Lines 9 Through 14
16	Approved Pre-tax Rate of Return	10.95%	10.95%	10.95%	Joint Stipulation & Recommendation Case No. 08-0072-GA-AIR
17	Annualized Return on Rate Base	\$4,817,823	\$1,962,467	\$6,780,290	Line 15 * Line 16
Operating Expenses					
18	Annualized Depreciation	\$3,661,474	\$1,517,171	\$5,178,645	Schedule 5
19	Annualized Deferred Depreciation Amortization	142,376	87,542	229,918	Schedule 5
20	Annualized PISCC Amortization	125,151	79,514	204,665	Schedule 6
21	Annualized Property Tax Expense	1,161,865	479,043	1,640,908	Schedule 7
22	Deferred Property Tax Expense Amortization	15,567	10,660	26,227	Schedule 7
23	Operation & Maintenance Expense	0	0	0	Schedule 9A
24	Operation & Maintenance Savings	<u>(2,295,268)</u>	<u>(1,206,821)</u>	<u>(3,502,089)</u>	Schedule 9B
25	Revenue Requirement	<u>\$7,628,988</u>	<u>\$2,929,577</u>	<u>\$10,558,565</u>	Lines 17 through 24
26	(Over)/Under Recovered 2012 Revenue Requirement	91,454	(125,558)	(34,104)	Schedule 10
27	Stipulated Reduction to Revenue Requirement	0	0	0	
28	TOTAL Amount to be collected beginning May 2013	<u>\$7,720,442</u>	<u>\$2,804,019</u>	<u>\$10,524,461</u>	Lines 25 through 27

Columbia Gas of Ohio, Inc.
Case No. 12-2923-GA-RDR
Computation of Projected Impact per Customer - Automated Meter Reading Devices
For Rates Effective May 2013

Schedule AMRD-11

Line No.	Description	Reference	Amount
1	Revenue Requirement Plus Over/Under from Case No. 11-5803-GA-RDR	Sch AMRD-1 Line 28	\$10,524,461
<u>Allocated Plant in Service per Case No. 08-0072-GA-AIR ⁽¹⁾</u>			
2	SGS Class		\$77,247
3	GS Class		\$23,946
4	TOTAL		\$101,193
<u>Percent by Class</u>			
5	SGS Class	Line 2/Line 4	76.34%
6	GS Class	Line 3/Line 4	23.66%
7	TOTAL		100.00%
<u>Revenue Requirement Allocated to Each Class</u>			
8	SGS Class	Line 5 * Line 1	\$8,033,985
9	GS Class	Line 6 * Line 1	\$2,490,476
10	TOTAL Revenue Requirement		\$10,524,461
<u>Number of Actual Bills TME December 2012</u>			
11	SGS Class		16,625,523
12	GS Class		435,747
13	TOTAL number Actual Annual Bills		17,061,270
14	PROJECTED IMPACT PER MONTH - SGS CLASS		\$0.48
15	PROJECTED IMPACT PER MONTH - GS CLASS		\$5.72

(1) Source: Schedule E-3.2-1 per Case No. 08-0072-GA-AIR, Allocated Plant in Service for Distribution Plant Account 381, Meters

Data: 2012 - 12 Months Actual

Columbia Gas of Ohio, Inc.
Infrastructure Tracking Mechanism - Riser Program
Case No. 12-2923-GA-RDR
Revenue Requirement Calculation

Schedule R-1

Line No.		Actual Through December 31, 2011	Activity Through December 31, 2012	Total As Of December 31, 2012	Reference
	Return on Investment				
1	Plant In-Service				
2	Additions	\$223,740,523	\$22,420,702	\$246,161,225	Schedule 2
3	Retirements	0	0	0	Schedule 4
4	Total Plant In-Service	<u>\$223,740,523</u>	<u>\$22,420,702</u>	<u>\$246,161,225</u>	Line 2 + Line 3
	Less: Accumulated Provision for Depreciation				
5	Depreciation Expense	\$13,954,210	\$7,518,771	\$21,472,981	Schedule 5
6	Cost of Removal	0	0	0	Schedule 3
7	Retirements	0	0	0	Schedule 4
8	Total Accumulated Provision for Depreciation	<u>\$13,954,210</u>	<u>\$7,518,771</u>	<u>\$21,472,981</u>	Lines 5 + 6 + 7
9	Net Deferred Plant Depreciation	\$4,823,746	\$607,406	\$5,431,152	Schedule 5
10	Net Deferred PISCC	9,094,723	1,215,281	10,310,004	Schedule 6
11	Net Deferred Property Taxes	1,298,636	493,058	1,791,693	Schedule 7
12	Deferred Taxes on PISCC	(3,183,153)	(425,348)	(3,608,502)	(Line 10 * 35%)
13	Deferred Taxes on Property Taxes	(454,522)	(172,570)	(627,093)	(Line 11 * 35%)
14	Deferred Taxes on Liberalized Depreciation	<u>(32,320,908)</u>	<u>(3,405,861)</u>	<u>(35,726,769)</u>	Schedule 8
15	Net Rate Base	\$189,044,834	\$13,213,896	\$202,258,730	Line 4 - Line 8 + Lines 9 through 14
16	Approved Pre-tax Rate of Return	10.95%	10.95%	10.95%	Joint Stipulation & Recommendation Case No. 08-0072-GA-AIR
17	Annualized Return on Rate Base	\$20,700,409	\$1,446,922	\$22,147,331	Line 15 * Line 16
	Operating Expenses				
18	Annualized Depreciation	7,159,697	717,462	7,877,159	Schedule 5
19	Annualized Deferred Depreciation Amortization	159,039	24,045	183,084	Schedule 5
20	Annualized PISCC Amortization	299,435	47,504	346,939	Schedule 6
21	Annualized Property Tax Expense	4,676,382	397,057	5,073,439	Schedule 7
22	Deferred Property Tax Expense Amortization	42,418	16,950	59,368	Schedule 7
23	Operation & Maintenance Expense	123,830	(19,692)	104,138	Schedule 9
24	Revenue Requirement	<u>\$33,161,210</u>	<u>\$2,630,248</u>	<u>\$35,791,459</u>	Lines 17 through 23
25	Prior Year's (Over)/Under Recovered Balance	197,252	(323,308)	(126,056)	Schedule 10
26	TOTAL Amount to be collected beginning May 2013	<u>\$33,358,462</u>	<u>\$2,306,940</u>	<u>\$35,665,403</u>	Line 24 + Line 25

Columbia Gas of Ohio, Inc.
Case No. 12-2923-GA-RDR
Computation of Projected Impact per Customer - Riser Program
For Rates Effective May 2013

Schedule R-11

Line No.	Description	Reference	Amount
1	Revenue Requirement Plus Over/Under from Case No. 11-5803-GA-RDR	Sch R-1 Line 26	\$35,665,403
<u>Allocated Plant in Service per Case No. 08-0072-GA-AIR ⁽¹⁾</u>			
2	SGS Class		\$473,882
3	GS Class		\$15,515
4	TOTAL		\$489,397
<u>Percent by Class</u>			
5	SGS Class	Line 2/Line 4	96.83%
6	GS Class	Line 3/Line 4	3.17%
7	TOTAL		100.00%
<u>Revenue Requirement Allocated to Each Class</u>			
8	SGS Class	Line 5 * Line 1	\$34,534,728
9	GS Class	Line 6 * Line 1	\$1,130,675
10	TOTAL Revenue Requirement		\$35,665,403
<u>Number of Actual Bills TME December 2012</u>			
11	SGS Class		16,625,523
12	GS Class		435,747
13	TOTAL number Actual Annual Bills		17,061,270
14	PROJECTED IMPACT PER MONTH - SGS CLASS		\$2.08
15	PROJECTED IMPACT PER MONTH - GS CLASS		\$2.59

(1) Source: Schedule E-3.2-1 per Case No. 08-0072-GA-AIR, Allocated Plant in Service for Distribution Plant Account 380, Services

Columbia Gas of Ohio, Inc.
Demand Side Management Program
Case No. 12-2923-GA-RDR
Revenue Requirement Calculation

Schedule DSM-1

Data: 2012 - 12 Months Actual

Line No.	Actual Thru December 31, 2008	Actual Thru December 31, 2009	Actual Thru December 31, 2010	Actual Thru December 31, 2011	Actual Thru December 31, 2012	Total As Of December 31, 2012	Reference
DSM Expenditures							
1	\$0	\$606,870	\$5,094,514	\$11,076,753	\$8,042,078	\$24,820,215	DSM-2
2	\$0	\$387,692	\$256,293	\$433,001	\$344,365	\$1,421,342	DSM-2
3	\$0	\$0	\$401,353	\$1,519,893	\$2,186,540	\$4,107,787	DSM-2
4	\$0	\$0	\$56,489	\$23,168	\$0	\$79,657	DSM-2
5	\$0	\$118,016	\$286,691	(\$32,179)	\$0	\$372,528	DSM-2
6	\$0	\$7,700	\$7,700	\$977	\$298,315	\$314,692	DSM-2
7	\$0	\$0	\$89,867	\$130,280	\$250	\$220,396	DSM-2
8	\$0	\$0	\$0	\$149,566	\$256,111	\$405,677	DSM-2
9	\$0	\$0	\$0	\$0	\$19,063	\$19,063	DSM-2
10	\$0	\$315,443	\$278,030	\$278,172	\$272,771	\$1,144,416	DSM-2
11	\$84,443	\$20,764	\$35,231	\$16,845	\$5,470	\$162,754	DSM-2
12	\$0	\$0	\$0	\$0	\$2,672,017	\$2,672,017	DSM-2
13	\$84,443	\$1,456,475	\$6,506,169	\$13,596,477	\$14,096,980	\$35,740,544	Sum of Lines 1 through 12
14	\$1,719	\$21,915	\$189,189	\$654,539	\$1,071,002	\$1,938,364	DSM-4
15			(\$1,497,816)	(\$6,769,419)	(\$14,473,920)	(\$22,741,155)	DSM-3
16			(\$84,803)	\$858,043	\$0	\$773,240	DSM-3
17					\$100,579	\$100,579	DSM-5
18	\$86,162	\$1,478,390	\$5,112,739	\$8,339,640	\$794,642	\$15,811,572	Sum of Lines 13 through 17

Projected Recoveries

Adjustment based on Actual Recoveries

Shared Savings Incentive

Total Revenue Requirement

Columbia Gas of Ohio, Inc.
Demand Side Management Program
Case No. 12-2923-GA-RDR
Computation of Rate Per Customer
For Rates Effective May 2013

Schedule DSM-6		
Line No.	Description	Amount
1	TOTAL REVENUE REQUIREMENT	\$15,811,572
2	SGS Projected Annual Throughput, MCF ⁽¹⁾	116,222,662
3	SGS Rate per MCF	Line 1 divided by Line 2 \$0.1360

Notes:

(1) Includes SGS, SGTS, and FRSGTS throughput.

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in

Case No(s). 12-2923-GA-RDR

Summary: Stipulation Joint Stipulation and Recommendation electronically filed by Cheryl A MacDonald on behalf of Columbia Gas of Ohio, Inc.