

**BEFORE  
THE PUBLIC UTILITIES COMMISSION OF OHIO**

In the Matter of the Application of )  
Columbia Gas of Ohio, Inc. for Approval ) Case No. 16-2422-GA-ALT  
of an Alternative Form of Regulation. )

**DIRECT TESTIMONY  
OF  
MOHAMMAD HARUNUZZAMAN, Ph.D.**

**OPPOSING  
THE JOINT STIPULATION AND RECOMMENDATION**

**On Behalf of**  
**The Office of the Ohio Consumers' Counsel**  
*10 West Broad Street, Suite 1800*  
*Columbus, Ohio 43215-3485*

**September 28, 2017**

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1   **I.       INTRODUCTION**

2

3   ***Q1.   PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND POSITION.***

4   ***A1.***   My name is Mohammad Harunuzzaman. My business address is 10 West Broad  
5       Street, 18<sup>th</sup> Floor, Columbus, Ohio 43215-3485. I am employed by the Office of  
6       the Ohio Consumers' Counsel ("OCC") as a Principal Regulatory Analyst.

7

8   ***Q2.   PLEASE BRIEFLY SUMMARIZE YOUR EDUCATION AND***  
9       ***PROFESSIONAL EXPERIENCE.***

10   ***A2.***   I earned a Doctorate in Nuclear Engineering from the Ohio State University in  
11       1994. In the doctoral program, my fields of specialization were reliability and  
12       safety of nuclear power plants, and cost optimization. I also have a bachelor's  
13       degree in Physics from the University of Dhaka, Bangladesh.

14

15       My professional experience includes nearly 15 years of regulatory policy research  
16       at the National Regulatory Research Institute ("NRRI"), The Ohio State  
17       University, more than seven years in electric market analysis at Pepco Energy  
18       Services ("PES"), an unregulated affiliate of Potomac Electric Power Company  
19       ("PEPCO"), and one year in electric fuel price forecasting at the Florida Power  
20       and Light Company ("FPL").

21

22       At the NRRI, I performed regulatory policy analysis, supported by engineering  
23       and quantitative analysis, of issues that include cost-of-service and rate design,

*Direct Testimony of Mohammad Harunuzzaman, Ph.D.  
On Behalf of the Office of the Ohio Consumers' Counsel  
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1 deregulation of the natural gas industry and retail gas choice programs, separation  
2 of costs and services of regulated and unregulated parts of a utility company,  
3 incentive regulation as applied to gas acquisition practices of a local distribution  
4 company, energy efficiency, renewables and advanced electric generation  
5 technologies.

6  
7 At FPL, I worked on the forecasting of energy fuel prices including coal, gas, and  
8 oil. At PES, I performed computer modeling simulation and analysis of  
9 wholesale regional electricity markets, including the PJM,<sup>1</sup> NYISO,<sup>2</sup> NEISO<sup>3</sup> and  
10 ERCOT,<sup>4</sup> and forecasted electricity prices. At the same company, I also  
11 performed analysis to support financial risk management operations of the  
12 company.

13  
14 Since March 2016, I have been employed as Principal Regulatory Analyst at the  
15 OCC. At my current position, I am responsible for research, investigation, and  
16 analysis of regulatory filings at the state and federal levels, participation in special  
17 projects, and assisting in policy development and implementation. Also, I have  
18 been the assigned leader of the OCC industry group for gas, and have the  
19 responsibility for coordinating and managing all analytical work for gas cases.

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<sup>1</sup> Pennsylvania, Maryland and New Jersey Regional Transmission Operator.

<sup>2</sup> New York Independent System Operator

<sup>3</sup> New England Independent System Operator.

<sup>4</sup> Electricity Reliability Council of Texas.

1 A list of my professional publications is included in Attachment MH-1.

2

3 ***Q3. HAVE YOU PREVIOUSLY SUBMITTED TESTIMONY OR TESTIFIED***  
4 ***BEFORE THE PUBLIC UTILITIES COMMISSION OF OHIO?***

5 ***A3.*** No.

6

7 ***II. PURPOSE OF MY TESTIMONY***

8

9 ***Q4. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS***  
10 ***PROCEEDING?***

11 ***A4.*** The purpose of my testimony is to explain and support the OCC's position  
12 regarding the Joint Stipulation and Recommendation ("Settlement") reached in  
13 this case between Columbia Gas of Ohio ("Columbia" or "Utility"), the Public  
14 Utilities Commission of Ohio ("PUCO") Staff ("Staff"), and Ohio Partners for  
15 Affordable Energy ("OPAE").<sup>5</sup> My testimony will address the Hazardous  
16 Customer Service Line ("HCSL") program, which is part of the Columbia  
17 Infrastructure Replacement Program ("IRP"), and included in the Settlement. My  
18 testimony will also show that the Settlement does not meet the requirements of  
19 the three-pronged test with respect to the HCSL program, and should therefore be  
20 denied. Other OCC witnesses will address other aspects of OCC's positions  
21 regarding the Settlement and Columbia's Application such as those identified and

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<sup>5</sup> The Industrial Energy Users of Ohio ("IEU-Ohio") has agreed not to oppose the Settlement.

1 explained in OCC's Objections to the Staff Report and Application filed on  
2 August 14, 2017.<sup>6</sup>  
3

4 **III. SUMMARY OF HAZARDOUS CUSTOMER SERVICE LINE**  
5 **REPLACEMENT ("HCSL") PROGRAM.**  
6

7 ***Q5. PLEASE SUMMARIZE THE HCSL PROGRAM THAT CUSTOMERS ARE***  
8 ***BEING ASKED TO PAY FOR.***

9 ***A5.*** The HCSL program is part of Columbia's IRP. The IRP was initially approved in  
10 Case No. 07-478-GA-UNC by the PUCO.<sup>7</sup> The PUCO approved a three-year  
11 plan to replace its prone-to-failure risers and authorized Columbia to "assume  
12 responsibility" for associated service lines and hazardous leaks. Thus, the HCSL  
13 is designed to reduce the risk to persons and property from allegedly hazardous  
14 customer service lines. The main alleged risk is from leaking service lines.  
15 Columbia's IRP, along with its HCSL program, was subsequently extended in  
16 Case Nos. 08-73-GA-ALT<sup>8</sup> and 11-5515-GA-ALT.<sup>9</sup> In Case No. 11-5515-GA-

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<sup>6</sup> See *In the Matter of the Application of Columbia Gas of Ohio, Inc. for Approval of an Alternative Form of Regulation to Extend and Increase Its Infrastructure Replacement Program*, PUCO Case No. 16-2422-GA-ALT, OCC Objections to the Staff Report and Application (August 14, 2017) ("OCC's Objections").

<sup>7</sup> *In the Matter of the Application of Columbia Gas of Ohio, Inc., for Approval of Tariffs to Recover, Through an Automatic Adjustment Clause, Costs Associated with the Establishment of an Infrastructure Replacement Program and for Approval of Certain Accounting Treatment*, Case No 07-0478-GA-UNC, Opinion and Order (April 9, 2008).

<sup>8</sup> *In the Matter of the Application of Columbia Gas of Ohio, Inc., for Approval of an Alternative Form of Regulation and for a Change in its Rates and Charges*, Case No 08-73-GA-ALT, Opinion and Order (December 3, 2008).

<sup>9</sup> *In the Matter of the Application of Columbia Gas of Ohio, Inc., for Approval of an Alternative Form of Regulation*, Case No. 11-5515-GA-ALT, Opinion and Order (November 28, 2012).

1 ALT, Columbia reported that it had repaired or replaced more than 55,000  
2 customer service lines under its IRP, and expected to continue repairing or  
3 replacing approximately 14,000 service lines a year, at an annual cost of \$21  
4 million per year.<sup>10</sup>

5  
6 In its current filing, Columbia reports that it has repaired or replaced 256,989  
7 customer lines under the IRP. Columbia also states that it has replaced  
8 approximately 70,000 service lines under the HCSL.<sup>11</sup> Columbia expects HCSL-  
9 related costs to be approximately \$25 million annually for the next five years  
10 starting in 2018.<sup>12</sup>

11

12 **IV. EVALUATION OF THE SETTLEMENT**

13

14 ***Q6. IF APPROVED BY THE PUCO, DOES THE SETTLEMENT INCLUDE THE***  
15 ***HCSL PROGRAM?***

16 ***A6.*** Yes, even though the Settlement does not explicitly address the HCSL program.  
17 In the absence of any provisions to the contrary, approval of the Settlement would  
18 imply the approval of continuation of the HCSL program as proposed in the  
19 Application.

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<sup>10</sup> *In the Matter of the Application of Columbia Gas of Ohio Inc. for Approval of an Alternative Form of Regulation*, Case No. 16-2422-GA-ALT, Application at 4 (February 27, 2017) (“Application”).

<sup>11</sup> See Staff DR 4 (Attachment MH-2).

<sup>12</sup> Application at 6.

1   ***Q7.   WHAT IS YOUR UNDERSTANDING OF THE STANDARD OF REVIEW***  
2                   ***THAT THE PUCO COMMONLY USES IN EVALUATING AND ADOPTING***  
3                   ***A SETTLEMENT?***

4   ***A7.***   I understand that the PUCO typically evaluates a proposed settlement using a  
5           three-prong test for approval.<sup>13</sup> Specifically, the PUCO will apply the following  
6           three criteria in deciding whether to adopt a proposed settlement:

- 7                   1.       Is the proposed settlement a product of serious bargaining  
8                           among capable, knowledgeable parties?
- 9                   2.       Does the proposed settlement, as a package, benefit  
10                          customers (ratepayers) and the public interest?
- 11                  3.       Does the proposed settlement package violate any  
12                          important regulatory principle or practice?

13  
14           Only when the PUCO determines that a proposed settlement, as a package,  
15           satisfies each individual prong identified above will the PUCO adopt the  
16           settlement or in many instances adopt it with significant modifications.

17  
18   ***Q8.   DOES THE SETTLEMENT PASS THE THREE PRONG TEST?***

19   ***A8.***   No. Based on my many years of utility experience and knowledge as an engineer  
20           and regulatory analyst, I conclude that the Settlement is not reasonable and should

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<sup>13</sup> See, e.g., *In the Matter of the Application of Columbus Southern Power Company and Ohio Power Company, Individually and, if Their Proposed Merger is Approved, as a Merged Company (collectively, AEP Ohio) for an Increase in Electric Distribution Rates*, PUCO Case No. 11-351-EL-AIR et al., Opinion and Order at 8-10 (December 14, 2011).



1 not be adopted by the PUCO. Specifically, the HCSL program proposed in the  
2 Application and recommended for approval in the Settlement is not in the public  
3 interest and violates regulatory principles and practices.

4  
5 ***Q9. BRIEFLY EXPLAIN WHY YOU BELIEVE THE HCSL PROGRAM***  
6 ***SHOULD NOT BE APPROVED.***

7 ***A9.*** The HCSL program should not be approved for the following reasons:

- 8 • The benefits of the HCSL do not outweigh the costs.  
9 Columbia did not indicate how the HCSL's benefits  
10 outweigh its costs, did not provide any evidence to quantify  
11 the costs and benefits, and did not perform a cost benefit  
12 analysis. The burden of proof for providing such evidence  
13 lies on Columbia;<sup>14</sup>
- 14 • Columbia failed to demonstrate that there is a risk to its  
15 service lines that needs to be mitigated and the evidence  
16 shows that any risk that does exist is de minimis. There is a  
17 one in more than 11.9 million chance of a service line  
18 incident occurring anywhere in the country due to  
19 corrosion, material/weld failure, or natural forces.

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<sup>14</sup> *In the Matter of the Application of Duke Energy, Inc., for Approval of An Alternative Rate Plan Pursuant to R.C. 4929.05 for An Accelerated Service Line Replacement Program*, Opinion and Order at 45. (October 26, 2016) ("Duke ASRP Case").

- Columbia provided inadequate evidence to support the proposed \$125 million expenditure on the HCSL program over the next five years.
- Columbia did not consider or evaluate any alternative method or programs to mitigate the alleged risks to service lines.
- Columbia did not demonstrate that it considered ways to improve its current service line replacement program.
- There are already sufficient programs and PUCO rules in place to mitigate any alleged risks that customer service lines pose.
- Columbia has not demonstrated that accelerated cost recovery is necessary or justified for this program.

***Q10. PLEASE ELABORATE ON THE PROBLEMS WITH THE PROJECTED COSTS OF THE HCSL PROGRAM.***

***A10.*** One way to determine whether a program is just and reasonable or beneficial to the public interest is to consider the costs and benefits of the program.<sup>15</sup> Under the HCSL program, Columbia proposes to charge customers \$25 million per year

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<sup>15</sup> See *Duke ASRP Case* at 34.

*Direct Testimony of Mohammad Harunuzzaman, Ph.D.  
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1 from 2018 through 2022, for a total of \$125 million. This is a \$4 million increase,  
2 per year, from what it spent last year on the HCSL.<sup>16</sup>

3 Yet, Columbia fails to present any information or evidence to support this level of  
4 cost and additional charges to consumers. No information is provided on how  
5 many service lines will be replaced over the next five years. In fact, Columbia  
6 states that it does not know how many service lines it will replace.<sup>17</sup> Columbia  
7 only states that it projects future annual expenditures on past annual  
8 expenditures.<sup>18</sup> Thus, Columbia's projection of future expenditures lacks any  
9 substantive support because it has not provided any data or analysis to show that  
10 last years' spending is representative of what it will spend next year. Without  
11 substantive support, Columbia cannot justify its request to increase the costs it  
12 will charge customers. It is not in the public interest for customers to pay charges  
13 without a showing that the costs are just and reasonable and necessary to provide  
14 safe and reliable service.

15

16 The \$125 million cost for the HCSL program over five years is excessive. The  
17 PUCO recently rejected a similar request made by another Ohio utility proposing  
18 a similar program. In Case No. 14-1622-GA-ALT ("Duke ASRP Case"), Duke  
19 Energy Ohio, Inc. ("Duke") proposed a rider to repair or replace its allegedly  
20 hazardous service lines. Duke sought approval to charge customers

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<sup>16</sup> See Staff DR 4 (Attachment MH-2).

<sup>17</sup> See OCC INT 130 (Attachment MH-3).

<sup>18</sup> See OCC INT 130 (Attachment MH-3).

1 approximately \$320 million over ten years for the program. The PUCO found  
2 that \$320 million over ten years (or \$160 million per five-year period<sup>19</sup>) was  
3 unjust and unreasonable and denied Duke's application.<sup>20</sup> Columbia's request is  
4 similar in scale and purpose to Duke's request. The PUCO should deem  
5 Columbia's request unjust and unreasonable, as it did Duke's similar program.

6  
7 Finally, the excessive costs of the HCSL will make it more difficult for the PUCO  
8 to ensure that Columbia's customers are able to obtain reasonably priced gas  
9 services, which is a policy of the State of Ohio, consistent with R.C.  
10 4929.02(A)(1). A program which is not in compliance with the policies of the  
11 state is in violation of regulatory principles and practices.

12  
13 ***Q11. EXPLAIN WHY COLUMBIA'S FAILURE TO CONSIDER OTHER***  
14 ***FEASIBLE ALTERNATIVES TO THE HCSL IS UNJUST AND***  
15 ***UNREASONABLE.***

16 ***A11.*** Another way to determine whether a program is just and reasonable, beneficial to  
17 the public interest, and in compliance with the regulatory principles and practices  
18 is to compare it to other alternative methods or programs.<sup>21</sup> While the utility is  
19 not obligated to compare its program to every imaginable alternative, it should

---

<sup>19</sup> This is an estimation of amount of spend after five years (\$320 million/10 years=\$32 million a year x 5 years=\$160 million).

<sup>20</sup> See *Duke ASRP Case*.

<sup>21</sup> See *Duke ASRP Case* at 34-35.

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1 investigate other feasible options. This will allow the utility, the PUCO, and  
2 intervenors to compare the options and determine whether the proposed  
3 application is just and reasonable. Further, the PUCO has stated that before  
4 requesting a program like the HCSL, it expects local distribution companies will  
5 reevaluate historical solutions and ensure they are continuing to improve  
6 distribution systems and the strategies utilized to increase safety within the  
7 historical solution.<sup>22</sup>

8  
9 Columbia did not provide any information on whether it considered alternative,  
10 less expensive methods to mitigate the alleged safety risk on its customer service  
11 lines. In fact, Columbia admitted that it did not consider any other methods or  
12 programs to address the alleged risk that the HCSL is designed to mitigate.<sup>23</sup> In  
13 addition, Columbia did not provide any information on whether it reevaluated its  
14 historical solution, the HCSL, to ensure it is continuing to improve its strategies.  
15 Indeed, the only proposed change to the HCSL was the increase in cost. There  
16 were no explicit changes to the HCSL in the Settlement intended to improve the  
17 program based on the last ten years of its existence.

18  
19 Proposing a program without considering alternative methods or even  
20 reevaluating the current method is not in the public interest and harms customers.  
21 It is not in the public interest and harms customers because it deprives the public

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<sup>22</sup> Duke ASRP Case at 34-35.

<sup>23</sup> See OCC INT-123 (Attachment MH-4).

1 and customers of the opportunity for a better, yet feasible program to be reviewed  
2 and selected by the PUCO.

3  
4 Last, proposing a program without considering alternative methods or even  
5 reevaluating the current program is inconsistent with the regulatory practice that  
6 the PUCO unambiguously stated in the Duke ASRP Order.

7  
8 ***Q12. EXPLAIN WHY COLLECTING HCSL-RELATED COSTS ON AN***  
9 ***ACCELERATED BASIS IS UNJUST AND UNREASONABLE.***

10 ***A12.*** Given the fact that the probability of a service line incident is so low, there is no  
11 rational justification for the accelerated replacement of service lines. Further,  
12 there is no need to incentivize the replacement of service lines because Columbia  
13 is already repairing or replacing them through its AMRP<sup>24</sup> and through the  
14 PUCO's regular pipeline safety measures,<sup>25</sup> as will be explain in more detail later.

15  
16 Approving a rider that accelerates the collection of \$125 million from customers  
17 when the utility has presented no evidence that it requires accelerated cost  
18 collection to allow or incentivize it to implement the specified program is not in  
19 the public interest. Approving accelerated recovery for a program that has such  
20 small potential benefit to customers is also not in the public interest. Such a rider  
21 will only unreasonably increase customers' rates. If Columbia believes its current

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<sup>24</sup> See Application at 6-7.

<sup>25</sup> See Ohio Admin. Code Chapter 4901:1-16, et al.

1 local distribution charges are insufficient to provide reliable and safe service to its  
2 customers, the Utility should file an application for a rate increase, which would  
3 be subject to a full rate review.

4  
5 ***Q13. EXPLAIN WHAT OTHER PUCO RULES ARE ALREADY IN PLACE TO***  
6 ***MITIGATE ANY ALLEGED RISKS RELATED TO SERVICE LINES.***

7 ***A13.*** The HCSL does not benefit customers or the public interest because Columbia is  
8 already obligated to repair or replace hazardous customer service lines under the  
9 PUCO's current pipeline safety measures.<sup>26</sup>

10

11 Under PUCO rules, a utility is required to address each and every leaking natural  
12 gas pipeline according to the severity of the leak. The requirements range from  
13 the immediate repair of a grade one leak to no action for a grade three leak. These  
14 requirements are sufficient to mitigate any risk to persons or property as a result  
15 of a service lines leak because, as more fully explained later, the risk of a service  
16 line leak resulting in an incident is virtually non-existent.

17

18 Notably, Columbia has provided no evidence to show why these traditional safety  
19 measures, required by the Ohio Administrative Code, are insufficient to ensure  
20 against any safety risk that customer service lines could pose. Thus, spending  
21 \$125 million of customers' money on a program to accomplish what Columbia is

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<sup>26</sup> See Ohio Admin. Code Chapter 4901:1-16, et al.

1 already required to do is not in the public interest because it would unjustly and  
2 unreasonably increase customers' bills.

3

4 ***Q14. DID COLUMBIA QUANTIFY ANY OF THE RISKS OR BENEFITS TO***  
5 ***CUSTOMERS OF THE HCSL PROGRAM?***

6 ***A14.*** No. Columbia's Application, testimony, and proposed Settlement in this case are  
7 largely devoid of any information regarding the HCSL program. Columbia does  
8 claim that the benefits of the HCSL program are the promotion of safety and  
9 reliability through a reduction in the amount of allegedly hazardous service lines  
10 on its system.<sup>27</sup> Yet, Columbia failed to quantify the safety risks posed by  
11 customer service lines, the expected decrease in this risk to be achieved by the  
12 HCSL program, and the expected increase in reliability to be achieved by the  
13 HCSL program. Without such quantification, it is difficult to find that the  
14 program benefits customers or is in the public interest.

15

16 ***Q15. IS THERE ANY OTHER INFORMATION THAT THE APPLICATION***  
17 ***FAILED TO INCLUDE REGARDING THE HCSL PROGRAM?***

18 ***A15.*** Yes. The HCSL program is intended to replace hazardous customer service lines,  
19 and yet fails to specify any criteria for what constitutes "hazardous." The

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<sup>27</sup> *In the Matter of the Application of Columbia Gas of Ohio, Inc. for Approval of an Alternative Form of Regulation to Extend and Increase Its Infrastructure Replacement Program*, PUCO Case No. 16-2422-GA-ALT, Supplemental Testimony of Melissa Thompson at 4 (September 8, 2017).



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1 decision to replace a hazardous line is left up to a Columbia employee with no  
2 opportunity for objective verification of the decision criteria.<sup>28</sup>

3  
4 In the absence of such criteria, there are no requirements explaining what  
5 Columbia is and isn't allowed to do under the HCSL program. Approving such a  
6 rider would not be in the public interest because there is no way to determine if  
7 the program is being implemented efficiently or effectively. And, there is no way  
8 to determine whether the Columbia is making prudent expenditures under the  
9 rider.

10  
11 What little information Columbia did provide regarding what it deems to be  
12 "hazardous" is noteworthy. First, it is notable that Columbia states that it did not  
13 consistently track information regarding its HCSL until 2011.<sup>29</sup> Thus, there are  
14 three years where Columbia has no detailed information regarding what occurred  
15 under its HCSL program.<sup>30</sup> In addition, Columbia states that it does not replace  
16 abandoned lines under the HCSL.<sup>31</sup> From 2011 to 2016, the vast majority (30,859  
17 of the 43,036 records provided) of service lines that Columbia replaced were  
18 leaking due to corrosion.<sup>32</sup> However, Columbia has also apparently replaced

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<sup>28</sup> See OCC INT-36 (Attachment MH-5).

<sup>29</sup> See OCC INT-106 (Attachment MH-6).

<sup>30</sup> To OCC's knowledge, the only information Columbia has regarding the HCSL from 2008 to 2011 is the amount of HCSL lines that were replaced and the cost of those expenditures. See Staff DR 4 (Attachment MH-2).

<sup>31</sup> See OCC Set 6, INT 106(g) (Attachment MH-6).

<sup>32</sup> See OCC Set 6, INT 106, [http://www.occ.ohio.gov/gas/OCC\\_INT\\_Set\\_6-105\\_Attachment\\_A.XLSX](http://www.occ.ohio.gov/gas/OCC_INT_Set_6-105_Attachment_A.XLSX) (Attachment MH-6).

1        8,741 service lines that were not leaking at all.<sup>33</sup> Thus, about 39,600<sup>34</sup> of the  
2        43,036 service lines that Columbia has replaced in that past were either not  
3        leaking at all or were leaking as a result of corrosion. As explained later, the  
4        safety risk associated with a service line that is leaking as a result of corrosion is  
5        basically non-existent. Columbia should certainly not be allowed to collect \$125  
6        million on an accelerated basis in order to mitigate any minimal risk that does  
7        exist.

8

9        ***Q16. YOU STATED EARLIER THAT THE HCSL IS DESIGNED TO REDUCE***  
10       ***ALLEGED RISK FROM “HAZARDOUS” SERVICE LINES BY, FOR***  
11       ***EXAMPLE, REPLACING LEAKING SERVICE LINES. WHY DO SERVICE***  
12       ***LINES GENERALLY LEAK?***

13       ***A16.*** The reasons that service lines usually develop leaks include corrosion, excavation  
14       damage, natural causes such as earthquake, frost, lightning and storms,  
15       temperature fluctuations, weld or joint failure, and construction/operation errors.

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<sup>33</sup> See OCC-INT 106(e) (Attachment MH-6). OCC asked “In reference to the HCSL program as proposed in the Stipulation, for each HCSL line that has been replaced from 2008 to 2016, identify ... The amount of non-leaking lines that were replaced.” Columbia responded “There were 8,741 services that did not have a DPI associated with them.” “DPI” stands for “Distribution Plant Investigation.” “Distribution Plant Inspection” refers to the investigation, classification and further action processes that are related to monitoring and repairing **leaking** mains and service lines. See OCC INT-118, Attachment MH-7.

<sup>34</sup> 30,859 + 8,741 = 39,600.

***Q17. WHAT IS THE LEAK CAUSE OF MOST OF THE SERVICE LINES THAT  
COLUMBIA REPLACES UNDER THE HCSL?***

***Q17.*** Approximately 30,859 of the 43,036 service lines (or 72 percent) that were replaced under the HCSL were replaced due to corrosion.<sup>35</sup>

***Q18. PLEASE DESCRIBE WHAT GENERALLY HAPPENS WHEN A  
CUSTOMER SERVICE LINE LEAKS DUE TO CORROSION.***

***A18.*** Generally, when a small-diameter, curb-to-meter steel service line develops a leak from corrosion, a small amount of gas escapes through a pin prick sized hole into a diffused area into the ground. The general consequence of such a leak is the grass above the leak turning yellow and dying. The utility will then repair the line.

***Q19. ARE LEAKS IN A CUSTOMER SERVICE LINE AS HAZARDOUS AS A  
LEAK IN A DISTRIBUTION OR TRANSMISSION MAIN LINE?***

***A19.*** No, generally they are not. The pressures at which service lines operate are much lower than those at the transmission or distribution mains, and, therefore, create less of a hazard. Moreover, gas moving through leaks in a service line can usually diffuse into the ground. For these reasons, leaks developing in a customer service line generally do not present an imminent safety threat.<sup>36</sup> Therefore, such

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<sup>35</sup> See OCC-INT 106, [http://www.occ.ohio.gov/gas/OCC\\_INT\\_Set\\_6-105\\_Attachment\\_A.XLSX](http://www.occ.ohio.gov/gas/OCC_INT_Set_6-105_Attachment_A.XLSX) (Attachment MH-6).

<sup>36</sup> See *Duke ASRP Case*, Direct Testimony of OCC Witness Bruce Hayes at 12 (November 6, 2015).

1        replacements can be done on as-needed basis, without an accelerated program,  
2        and can be financed through a base rate proceeding.

3

4        ***Q20. WHAT IS THE PROBABILITY THAT A SERVICE LINE LEAK WILL***  
5        ***RESULT IN AN INCIDENT?***

6        ***A20.*** In the 2014 Duke ASRP Case, Staff determined that the odds of any single service  
7        line failing as a result of one of the three leak causes<sup>37</sup> that the Duke ASRP was  
8        designed to eliminate and causing a reportable incident anywhere in the country in  
9        a given year was more than 1 in 11.9 million.<sup>38</sup> It appears that of the 43,036  
10       service lines that Columbia has replaced under the HCSL since 2011, 31,861 of  
11       them were replaced due to the same three leak causes as the Duke ASRP was  
12       designed to eliminate.<sup>39</sup> Therefore, the service line incident probability in the  
13       Duke ASRP Case is also applicable to this case.

14

15       ***Q21. DID COLUMBIA QUANTIFY THE INCREASE IN SAFETY THAT***  
16       ***CUSTOMERS WILL RECEIVE AS A RESULT OF THE HCSL?***

17       ***A21.*** No.

---

<sup>37</sup> *Duke ASRP Order* at 24. The three leak causes are corrosion, material and welds, and natural forces.

<sup>38</sup> See *Duke ASRP Order* at 24.

<sup>39</sup> OCC Set 6, INT 106, [http://www.occ.ohio.gov/gas/OCC\\_INT\\_Set\\_6-105\\_Attachment\\_A.XLSX](http://www.occ.ohio.gov/gas/OCC_INT_Set_6-105_Attachment_A.XLSX)  
(Attachment MH-6).

1 ***Q22. CAN THE RELIABILITY OF A CUSTOMER SERVICE LINE BE***  
2 ***QUANTIFIED?***

3 ***A22.*** Yes. One can measure or calculate the probability of a service disruption  
4 or outage. The reliability of the line can be defined as one minus the outage  
5 probability. For example, if the outage probability is four percent, the reliability  
6 would be 96 percent. The outage probability can be calculated using actual data  
7 on outages. For example, if gas distribution service was disrupted (with or  
8 without causing a safety issue) to five customers out of one million customers,  
9 that represents an outage probability of five in a million.

10

11 ***Q23. CAN THE INCREASE IN RELIABILITY OF A CUSTOMER SERVICE LINE***  
12 ***DUE TO A SERVICE LINE REPLACEMENT OR REPAIR BE***  
13 ***QUANTIFIED?***

14 ***A23.*** Yes. Once the reliability is quantified, the increase in reliability is the difference  
15 in reliability before and after a service line replacement or repair.

16

17 ***Q24. DID COLUMBIA QUANTIFY THE INCREASE IN RELIABILITY THAT***  
18 ***CUSTOMERS WILL RECEIVE AS A RESULT OF THE HCSL?***

19 ***A24.*** No.

20

21 ***Q25. DO THE BENEFITS OF THE HCSL PROGRAM OUTWEIGH ITS COSTS?***

22 ***A25.*** No. After reviewing the information regarding the costs and benefits that is  
23 available, it is my opinion that the benefits do not outweigh the costs. If the

1 safety measures in the HCSL to improve Columbia's system safety can be thought  
2 of as adding measurable increments of safety, then in my opinion Columbia's  
3 proposed HCSL will not move the safety needle very much. Moreover, the  
4 marginal safety gain as a result of the HCSL should also be considered in light of  
5 its large price tag to customers --\$125 million over five years. In my opinion, the  
6 HCSL's purported benefits do not outweigh its costs.

7

8 ***Q26. DID COLUMBIA CONDUCT A COST-BENEFIT ANALYSIS OF THE HCSL***  
9 ***PROGRAM BEFORE FILING THE SETTLEMENT?***

10 ***A26.*** No. Columbia admitted that it did not conduct a cost-benefit analysis for the  
11 HCSL in this proceeding.<sup>40</sup>

12

13 ***Q27. WHY IS IT IMPORTANT THAT THE BENEFITS OF THE HCSL DO NOT***  
14 ***OUTWEIGH THE COSTS?***

15 ***A27.*** Another way to determine whether an alternative rate plan is just and reasonable,  
16 and therefore in the public interest, is to consider the costs and benefits of the  
17 program.<sup>41</sup> For example, in the Duke ASRP Order, the PUCO observed that:

18 "As a final matter, this Commission emphasizes the fact that R.C.  
19 4929.05 provides that the local distribution company holds the  
20 burden of proof to meet the statutory requirements for an  
21 alternative rate plan. In this proceeding, by omitting an adequate

---

<sup>40</sup> See OCC INT 107 (Attachment MH-8).

<sup>41</sup> Duke ASRP Order at 34, 41, 45.

1 cost-benefit analysis of the proposed ASRP with its application,  
2 Duke did not meet this burden.”<sup>42</sup>  
3

4 Here, Columbia admits that it did not even conduct a cost-benefit analysis of the  
5 HCSL. And as explained above, the cost of \$125 million is not outweighed by  
6 the ability to mitigate such a small risk to service lines. Thus, approving the  
7 HCSL program, which is analogous to Duke’s ASRP, would be a violation of the  
8 regulatory practice and principle of approving such alternative rate plans on the  
9 basis of a cost-benefit analysis. It would also harm customers and the public  
10 interest by forcing customers to pay a high cost for such a small benefit. That is,  
11 customer utility bills would be unjustly and unreasonably increased.  
12

13 ***Q28. WHAT WOULD BE THE IMPACT OF EXCLUDING THE HCSL***  
14 ***PROGRAM ON THE RATES PROPOSED IN THE STIPULATION?***

15 ***A28.*** The proposed settlement specifies a monthly rate cap for residential  
16 customers for the years 2018-2022. The following chart shows the impact  
17 on the rate cap of removing the HCSL program from the Columbia IRP.

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<sup>42</sup> *Duke ASRP Case* at 45.

*Direct Testimony of Mohammad Harunuzzaman, Ph.D.  
On Behalf of the Office of the Ohio Consumers' Counsel  
PUCO Case. No. 16-2422-GA-ALT*

<u>Investment Year</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>
Rate Cap With					
HCSL	\$11.35	\$12.50	\$13.70	\$14.95	\$16.20
Est. HCSL Charge	\$2.79	\$2.70	\$2.61	\$2.53	\$2.45
Rate Cap Without					
HCSL	\$8.56	\$9.80	\$11.09	\$12.42	\$13.75

7

8 ***Q29. DOES THE PROPOSED SETTLEMENT, AS A PACKAGE,***  
9 ***HARM CUSTOMERS AND THE PUBLIC INTEREST?***

10 ***A29.*** Yes, it does. Specifically, as explained above, any minimal benefits that the  
11 HCSL program provides to customers and the public interest are greatly  
12 outweighed by the costs. Columbia provided no evidence quantifying the benefits  
13 that customers can expect to receive in exchange for their \$125 million paid to  
14 Columbia for this program. The evidence shows that the risk the HCSL is  
15 designed to mitigate is essentially non-existent. And, Columbia did not conduct,  
16 or include in its Application, a cost-benefit analysis. Approving a program with  
17 such little support and with large costs to consumers that far outweigh its  
18 advantages (in terms of risk mitigation), does not benefit customers or the public  
19 interest and is inconsistent with regulatory principles and practices.

20

21 Further, Columbia did not consider any other alternative methods or programs to  
22 mitigate the alleged risk that the HCSL is designed to mitigate. Columbia did not  
23 explain why the current PUCO pipeline safety requirements are not adequate to



1 mitigate any alleged safety risk on its service lines. Columbia did not  
2 demonstrate why it needs accelerated cost collection from consumers through a  
3 rider in order to mitigate any alleged safety concerns with its service lines.

4  
5 For all of these reasons, the HCSL proposal is not in the public interest and does  
6 not benefit customers.

7  
8 ***Q30. DOES THE PROPOSED SETTLEMENT PACKAGE VIOLATE ANY***  
9 ***REGULATORY PRINCIPLE OR PRACTICE?***

10 ***A30.*** Yes. As explained above, the excessive costs of the HCSL will make it more  
11 difficult for the PUCO to ensure that Columbia's customers are able to obtain  
12 reasonably priced gas services, consistent with R.C. 4929.02(A)(1). Requesting  
13 approval of a program without considering alternatives or attempting to improve  
14 the program violates the regulatory principles explained in the Duke ASRP Order.  
15 In addition, approving a program that has costs which outweigh the benefits (and  
16 where the utility did not even conduct a cost-benefit analysis) violates the  
17 regulatory principles explained in the Duke ASRP Order.

18

19 ***Q31. IS THE PROPOSED STIPULATION A PRODUCT OF SERIOUS***  
20 ***BARGAINING AMONG CAPABLE AND KNOWLEDGEABLE PARTIES?***

21 ***A31.*** No, it is not. OCC witness Daniel J. Duann addresses this in his testimony.

1    **V.      CONCLUSION AND RECOMMENDATION**

2

3    ***Q32.    WHAT ARE YOUR CONCLUSIONS?***

4    **A32.**    Based on the information, evidence, and arguments presented above, I conclude  
5            that the Settlement does not meet the three-pronged test because it includes  
6            Columbia's HCSL program.

7

8    ***Q33.    WHAT IS YOUR RECOMMENDATION?***

9    **A33.**    I recommend that the PUCO should reject the Settlement. If the PUCO approves  
10           the Settlement, it should modify it by eliminating all provisions concerning the  
11           HCSL program.

12

13   ***Q34.    DOES THIS CONCLUDE YOUR TESTIMONY?***

14   **A34.**    Yes. However, I reserve the right to incorporate new information that may  
15           subsequently become available through outstanding discovery or otherwise.

## **CERTIFICATE OF SERVICE**

It is hereby certified that a true copy of the foregoing *Direct Testimony of Mohammad Harunuzzaman, Ph.D. on Behalf of the Office of the Ohio Consumers' Counsel* was served via electronic transmission to the persons listed below this 28<sup>th</sup> day September 2017.

/s/ Kevin Moore

Kevin Moore  
Assistant Consumers' Counsel

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**Mohammad Harunuzzman, Ph.D.**  
**List of Professional Publications**

**Papers on Nuclear Safety and Reliability**

*Nuclear Technology*, “Optimization of Standby Safety System Maintenance Schedules in Nuclear Power Plants,” 113, 354-367 (March 1996) (with T. Aldemir).

*Transactions of the American Nuclear Society*, “Optimal Preventive Maintenance of a Nuclear Power Plant Subsystem Using Dynamic Programming,” 57, 99-100 (November 1988) (with T. Aldemir).

*American Nuclear Society*, “Sensitivity of Optimal Maintenance Cost to Reliability Constraints, PSA '96: Probabilistic Safety Assessment,” II, 1632-1635 (September 1996) (with T. Aldemir).

**Reports and Publications on Public Utility Regulation**

*The National Regulatory Research Institute*, The State of Regulation, An Examination of the Four Utility Sectors, 2001 (with K. Costello, et al.).

*The National Regulatory Research Institute*, Consumer Benefits from Gas Choice: Empirical Findings from the First Programs, 2000 (with K. Costello).

*The National Regulatory Research Institute*, Cost Allocation and Rate Design for Unbundled Gas Services, 2000 (with S. Koundiniya).

*The National Regulatory Research Institute*, Pipeline Capacity Turnback: Problems and Options, 1997 (with A. M. Rahman).

*The National Regulatory Research Institute*, Support for Social Goals in A More Competitive Electricity Industry, 1997 (with R. J. Granieri, M. Islam).

*The National Regulatory Research Institute*, State Commission Regulation of Self-Dealing Power Transactions, 1996 (with K. Costello).

*The National Regulatory Research Institute*, Integrated Resource Planning for Local Gas Distribution Companies: A Critical Review of Regulatory Policy Issues, 1994 (with M. Islam).

*The National Regulatory Research Institute*, Regulatory Practices and Innovative Generation Technologies: Problems and Rate-making Approaches, 1994 (with K. Costello, et al.).

*The National Regulatory Research Institute*, Regulatory Treatment of Electric Utility Clean Air Act Compliance Strategies, Costs and Emission Allowances, 1993 (with K. Rose, A. S. Taylor).

*The National Regulatory Research Institute*, Public Utility Commission Implementation of the Clean Air Act's Allowance Trading Program, 1992 (with K. Rose, et al.).

*The National Regulatory Research Institute*, Incentive Regulation for Local Gas Distribution Companies under changing Industry Structure, 1991, (with D. Duann, K. Costello, and S-B Cho.)

*The National Regulatory Research Institute*, Gas Storage: Strategy, Regulation, and Some Competitive Implications, 1990 (with D. J. Duann, P. A. Nagler and G. Iyyuni).

PUCO Case No. 16-2422-GA-ALT  
Staff Data Request Set 1 No. 4  
Respondent: Donald P. Ayers

**COLUMBIA GAS OF OHIO, INC.**  
**RESPONSE TO STAFF'S DATA REQUESTS**  
**DATED APRIL 12, 2017**

**Data Request No. 4:**

Please provide staff with the following:

Pertaining to Don Ayers' testimony regarding Hazardous Customer Service Lines (HCSL), page3:

- a. Please provide the number of HCSL lines that have been replaced by year from 2008 – 2016
- b. Please provide the replacement cost per line per year from 2008 – 2016. Please include supporting work papers and a detailed explanation of the calculation.

**Response:**

Please find the number of HCSL lines replaced and the replacement cost per line by year in the table below.

<b>Year</b>	<b>Number of HCSL Lines</b>	<b>Cost per Line</b>
2008	8,047	\$1,200
2009	9,955	\$2,314
2010	9,879	\$2,218
2011	8,577	\$2,899
2012	7,997	\$2,804
2013	7,568	\$2,804
2014	6,587	\$3,276
2015	6,030	\$3,414
2016	5,617	\$3,774

The cost per line replaced was calculated by dividing the annual investment in hazardous customer service line replacements by the number of lines replaced. Please find the workpaper (Staff DR Set 1 No. 4 - HSCL Cost per Line.xlsx) used to calculate the cost per line attached.

## Hazardous Customer Service Lines

*Cost per Line*

	2008	2009	2010	2011	2012	2013	2014	2015	2016
Service Lines Replaced	8,047	9,955	9,879	8,577	7,997	7,568	6,587	6,030	5,617
Total Annual Investment	\$ 9,658,514	\$ 23,031,528	\$ 21,907,660	\$ 24,861,956	\$ 22,420,702	\$ 21,222,240	\$ 21,577,045	\$ 20,584,848	\$ 21,197,546
Cost per Line	\$ 1,200	\$ 2,314	\$ 2,218	\$ 2,899	\$ 2,804	\$ 2,804	\$ 3,276	\$ 3,414	\$ 3,774

\*Service lines replaced and annual investment information was obtained from annual Rider IRP filings.



PUCO Case No. 16-2422-GA-ALT  
OCC Interrogatories Set 6 No. 130  
Respondent: Diana M. Beil

**COLUMBIA GAS OF OHIO, INC.  
RESPONSE TO THE OFFICE OF THE OHIO  
CONSUMERS' COUNSEL'S INTERROGATORIES  
DATED SEPTEMBER 11, 2017**

**INT-130.**

Identify how Columbia calculated its projected expenditure of \$25 million per year for the HCSL program as proposed in the Stipulation.

**RESPONSE:**

Columbia projects the annual \$25 million spend for the HCSL program based on past experience. For total costs per year, see Staff DR No. 4 at Staff DR Set 1 No. 4 - HSCL Cost per Line.xlsx. Unlike the AMRP, the HCSL program spend is not based on planned work. Columbia repairs or replaces customer service lines when a Hazardous Customer Service Line Leak, as defined by Columbia's tariff, is identified.

PUCO Case No. 16-2422-GA-ALT  
OCC Interrogatories Set 6 No. 123  
Respondent: Melissa L. Thompson

**COLUMBIA GAS OF OHIO, INC.  
RESPONSE TO THE OFFICE OF THE OHIO  
CONSUMERS' COUNSEL'S INTERROGATORIES  
DATED SEPTEMBER 11, 2017**

**INT-123.**

Identify all other methods or programs to mitigate the alleged risk that the HCSL is designed to mitigate that Columbia considered before proposing to continue the HCSL.

**RESPONSE:**

Columbia did not consider other methods or programs to address the risk of hazardous customer service lines prior to filing its application in this docket.

PUCO Case No. 16-2422-GA-ALT  
OCC Interrogatories Set 2 No. 36  
Respondent: Donald P. Ayers

**COLUMBIA GAS OF OHIO, INC.  
RESPONSE TO THE OFFICE OF THE OHIO  
CONSUMERS' COUNSEL'S INTERROGATORIES  
DATED JUNE 2, 2017**

**INT-36.**

In reference to the Direct Testimony of Donald Ayers, page 2, lines 34-40, please define the phrase "probable hazard."

**RESPONSE:**

Columbia does not have a formal definition for "probable hazard"; however, Columbia's technicians in the field have the ability to determine, based on their expertise, what conditions would constitute probable hazards.

PUCO Case No. 16-2422-GA-ALT  
OCC Interrogatories Set 6 No. 106  
Respondent: Donald P. Ayers

**COLUMBIA GAS OF OHIO, INC.**  
**RESPONSE TO THE OFFICE OF THE OHIO**  
**CONSUMERS' COUNSEL'S INTERROGATORIES**  
**DATED SEPTEMBER 11, 2017**

**INT-106.**

In reference to the HCSL program as proposed in the Stipulation, for each HCSL line that has been replaced from 2008 to 2016, identify:

- a) The material type of each line;
- b) The reason that each line was replaced;
- c) The leak grade (i.e., first, second, or third degree) of each line that was replaced;
- d) The leak cause of each leaking line that was replaced;
- e) The amount of non-leaking lines that were replaced;
- f) The amount of leaking lines that were replaced;
- g) The amount of abandon lines that were replaced.

**RESPONSE:**

Columbia has consistently tracked this information since 2011, therefore Columbia has provided data from 2011 through 2016.

- a) See OCC Set 6 INT-105 Attachment A.xlsx, Columns F & G
- b) See OCC Set 6 INT-105 Attachment A.xlsx, Column E
- c) See OCC Set 6 INT-105 Attachment A.xlsx, Column D
- d) See OCC Set 6 INT-105 Attachment A.xlsx, Column E
- e) There were 8,741 services that did not have a DPI associated with them.
- f) There were 34,295 services that did have a DPI associated with them.
- g) Columbia does not replace abandoned service lines in the Hazardous Customer Service Line Program.

PUCO Case No. 16-2422-GA-ALT  
OCC Interrogatories Set 6 No. 118  
Respondent: Donald P. Ayers

**COLUMBIA GAS OF OHIO, INC.  
RESPONSE TO THE OFFICE OF THE OHIO  
CONSUMERS' COUNSEL'S INTERROGATORIES  
DATED SEPTEMBER 11, 2017**

**INT-118.**

Define the term "Distribution Property Investigation" as it relates to repairing or replacing service lines under the IRP?

**RESPONSE:**

Where Columbia has used the term "Distribution Property Investigation" in prior discovery responses, the term should be "Distribution Plant Inspection." "Distribution Plant Inspection" refers to the investigation, classification and further action processes that are related to monitoring and repairing leaking mains and service lines.

PUCO Case No. 16-2422-GA-ALT  
OCC Interrogatories Set 6 No. 107  
Respondent: Melissa L. Thompson

**COLUMBIA GAS OF OHIO, INC.  
RESPONSE TO THE OFFICE OF THE OHIO  
CONSUMERS' COUNSEL'S INTERROGATORIES  
DATED SEPTEMBER 11, 2017**

**INT-107.**

Before filing the Stipulation, did Columbia conduct a cost-benefit analysis of continuing the HCSL program as proposed?

**RESPONSE:**

Though Columbia did not conduct a cost-benefit analysis of the Hazardous Customer Service Line ("HCSL") Program before filing the Stipulation, continuing the HCSL Program benefits ratepayers by allowing Columbia to repair hazardous service lines without the full expense being borne by the property owner.

**This foregoing document was electronically filed with the Public Utilities**

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**Case No(s). 16-2422-GA-ALT**

Summary: Testimony Direct Testimony of Mohammad Harunuzzaman, Ph.D. Opposing the Joint Stipulation and Recommendation on Behalf of the Office of the Ohio Consumers' Counsel electronically filed by Ms. Deb J. Bingham on behalf of Moore, Kevin F. Mr.