

**COMMONWEALTH OF KENTUCKY**  
**BEFORE THE PUBLIC SERVICE COMMISSION**

**In the Matter of:**

<b>ELECTRONIC JOINT APPLICATION OF</b>	)	
<b>LOUISVILLE GAS AND ELECTRIC</b>	)	
<b>COMPANY AND KENTUCKY UTILITIES</b>	)	
<b>COMPANY FOR A CERTIFICATE OF</b>	)	<b>CASE NO. 2018-00005</b>
<b>PUBLIC CONVENIENCE AND</b>	)	
<b>NECESSITY FOR FULL DEPLOYMENT</b>	)	
<b>OF ADVANCED METERING SYSTEMS</b>	)	

**REBUTTAL TESTIMONY OF**  
**JOHN P. MALLOY**  
**VICE PRESIDENT, GAS DISTRIBUTION**  
**LOUISVILLE GAS AND ELECTRIC COMPANY**

**Filed: June 15, 2018**

1 **Q. Please state your name, position and business address.**

2 A. My name is John P. Malloy. I am Vice President of Gas Distribution for Louisville  
3 Gas and Electric Company (“LG&E”). LG&E and its sister company, Kentucky  
4 Utilities Company (“KU”), are collectively referred to as the “Companies.” I am an  
5 employee of LG&E and KU Services Company. My business address is 220 West  
6 Main Street, Louisville, Kentucky 40202.

7 **Q. What are the purposes of your testimony?**

8 A. The purposes of my testimony are to address testimony filed by Paul J. Alvarez on  
9 behalf of the Attorney General, Michael Ashabraner on behalf of Association of  
10 Community Ministries, Inc., Malcom J. Ratchford on behalf of Community Action  
11 Council for Lexington-Fayette, Bourbon, Harrison, and Nicholas Counties, Inc., and  
12 Cathy Hinko on behalf of Metropolitan Housing Coalition, all concerning the  
13 Companies’ proposal to deploy Advanced Metering Systems (“AMS”) across the  
14 entirety of the Companies’ service territories. I conclude the Commission should  
15 approve the certificates of public convenience and necessity (“CPCNs”) the Companies  
16 have requested for AMS because the quantifiable benefits of AMS will exceed its costs  
17 and will provide additional unquantifiable benefits to customers that merit making the  
18 investment in AMS now.

19 **Q. Are there any summary observations you would like to make about the  
20 Companies’ position and the intervenors’ testimony?**

21 A. Yes. The Companies based their proposal in this proceeding, as well as their similar  
22 proposal in their 2016 base-rate application proceedings (Case Nos. 2016-00370 and  
23 2016-00371) on the Companies’ experience with their own customers, costs, and

1 operating conditions, as well as the best available studies on the benefits of AMS  
2 deployment. The Companies believe they have presented credible evidence that their  
3 proposed full deployment of AMS will provide net benefits, both quantifiable and  
4 unquantifiable, that more than justify the cost of the deployment. Indeed, as I discuss  
5 in my testimony below, the Companies believe they have been reasonably conservative  
6 in estimating AMS benefits.

7           Regarding the testimony of the low-income advocates in this proceeding, the  
8 Companies understand the concerns the witnesses express. Though the Companies  
9 may not agree with all of their concerns, the Companies respect their views, and have  
10 sought to address concerns in this proceeding and in my testimony below.

11           The testimony of Mr. Alvarez raises a number of different concerns and  
12 objections to the Companies' AMS proposal, which I address below. Ultimately, I  
13 believe the points Mr. Alvarez raises, when correctly understood, tend to support rather  
14 than undermine the Companies' proposal for full AMS deployment. Also, I note that  
15 Mr. Alvarez's original testimony contained some significant errors, which he has now  
16 sought to address in corrected testimony filed with the Attorney General's responses to  
17 data requests.

18           Finally, I would reiterate that the Companies' decision to propose full  
19 deployment of AMS is not one the Companies made precipitously, but rather after  
20 waiting for the technology to mature and the benefits to become clear. As I noted in  
21 my direct testimony, almost half of the electric meters deployed in the United States  
22 today are advanced-metering infrastructure ("AMI") meters, and over 75% of all  
23 electric meters deployed in the United States are either AMI or automated meter

1 reading (“AMR”) meters.<sup>1</sup> More than 25% of Kentucky’s 2.2 million electric  
2 customers currently have AMI meters. In addition, the Commission’s recent approval  
3 of Duke Energy Kentucky’s deployment of over 140,000 AMI meters, approximately  
4 82,500 gas AMI modules, and 20,500 AMR gas-only modules demonstrate that the  
5 Companies’ AMS proposal is in the mainstream of Kentucky meter deployments, as  
6 well as across the U.S.<sup>2</sup> The Companies’ AMS proposal comes after almost 20 years  
7 of experience with advanced metering (beginning with the Companies’ deployment of  
8 power-line-carrier meters in 1999) and continuing with the Companies’ ongoing AMS  
9 Customer Offering provided as part of the Companies’ demand-side management and  
10 energy efficiency (“DSM-EE”) programs. Therefore, the Companies were careful and  
11 deliberate in their analysis, and were conservative in waiting for the AMS technology  
12 to advance and mature, before proposing to deploy AMS across their service territory.  
13 The Companies believe this proposal is reasonable, will provide benefits to customers,  
14 and deserves the Commission’s approval.

15 **The Companies’ Proposed AMS Deployment Will Provide Net Benefits to Customers**

16 **Q. Mr. Alvarez expresses concern that utilities deploying advanced metering do not**  
17 **ensure savings resulting from reduced operating expenses are timely reflected in**  
18 **customers’ rates, but also that utilities are often resistant to reducing operating**  
19 **expense reductions.<sup>3</sup> How do you respond?**

20 **A.** I disagree with the view that utilities have incentives not to deliver on claimed benefits  
21 and to game rate cases to ensure that any savings AMS does create do not appear in

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<sup>1</sup> Malloy at 5.

<sup>2</sup> Malloy at 5-6.

<sup>3</sup> Alvarez at 10-12.

1 test years. Certainly that is not true of the Companies. A utility would be shortsighted  
2 at best to come before its regulator to propose a major project with claims of benefits  
3 the utility has no intention of working toward. In addition, pricing pressures from  
4 distributed generation, particularly renewable generation, are real competitive forces  
5 that act on utilities like the Companies, so it is in the Companies' interest to propose  
6 additional costs only when they believe there will likely be commensurate benefits to  
7 customers. In short, the Companies remain what they have long been: highly motivated  
8 to provide safe, reliable, and economical service to their customers, including through  
9 implementing AMS with an eye to achieving benefits.

10 I would also note that the Companies have publicly stated their intent to file  
11 base-rate applications with the Commission by September 28, 2018, with a forecasted  
12 test year of May 1, 2019, through April 30, 2020, and with new rates expected to take  
13 effect on May 1, 2019.<sup>4</sup> That remains the Companies' intent. If the Commission  
14 approves the proposed AMS deployment, it is reasonable to assume that a subsequent  
15 base-rate filing will be necessary to account for the full AMS deployment, though the  
16 Companies have not firmly decided whether or when to make such a filing. In the  
17 upcoming base-rate filing, the Companies intend to seek regulatory asset treatment for  
18 AMS-related operations and maintenance (O&M) expense. Therefore, these O&M  
19 costs will not be recovered from customers until a future rate case when more of the

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<sup>4</sup> *In the Matter of: Kentucky Industrial Utility Customers, Inc. v. Kentucky Utilities Company and Louisville Gas and Electric Company*, Case No. 2018-00034, Direct Testimony of Kent W. Blake at 7 (Jan. 29, 2018) (“LG&E and KU expect to file for a change in their base rates no later than September 28, 2018 . . . . Base rates are expected to be reset effective May 1, 2019 based on a forecasted test year of May 1, 2019 to April 30, 2020.”); Case No. 2018-00034, Direct Testimony of Kent W. Blake at 3 and 7 (Apr. 6, 2018) (“[T]he TCJA Surcredit rates were based on the benefits of the TCJA from January 1, 2018, the effective date of the TCJA, through and including April 30, 2019, the day prior to the next expected change in the Companies’ base rates following a rate case the Companies expect to file in September 2018. . . . The Companies plan to file a base rate case by the end of September 2018”).

1 benefits, such as meter-reading and field-services savings, will also be reflected in  
2 customer rates.

3 Finally, there are two key points concerning reflecting operational savings from  
4 AMS in base rates it is important not to overlook. First, it is a benefit to customers if  
5 AMS-created savings allow the Companies not to seek increases in base rates for a  
6 longer time than they would absent those savings; in effect, customers do receive at  
7 least some of the operational savings not reflected in base rates if those savings permit  
8 a utility to extend the periods between base-rate increases as the savings offset other  
9 expenses not reflected in rates, thereby deferring base-rate increases. Second,  
10 Kentucky utilities' rates can change as a result of customer rate complaints or  
11 proceedings initiated by the Commission on its own authority, not just through  
12 applications made by utilities.<sup>5</sup> Indeed, the Commission has extensive oversight  
13 authority regarding the Companies, and can request to review the Companies' financial  
14 records or require the production of information at any time. For years, the Companies  
15 have filed quarterly reports showing their earned returns from a regulatory perspective.  
16 It is therefore incorrect to assume that the Companies could obtain significant  
17 operational savings and not have them reflected in base rates for any extended period;  
18 they would either be reflected indirectly by extending periods between rate cases as the  
19 savings offset other expenses not reflected in rates, or they would be reflected directly  
20 through rate proceedings initiated by the Companies, customers, or the Commission  
21 itself.

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<sup>5</sup> See, e.g., *Kentucky Industrial Utility Customers, Inc. v. Kentucky Utilities Company, Louisville Gas and Electric Company, Kentucky Power Company, and Duke Energy Kentucky, Inc.*, Case No. 2017-00477, Complaint (Dec. 21, 2017).

1 **Q. Do you agree with Mr. Alvarez's concern over what he calls the Companies' lack**  
2 **of commitment to reflect operational savings in base rates, and his proposal to**  
3 **impose a regulatory liability to account for a certain level of savings?**<sup>6</sup>

4 A. No. There is no need for a regulatory liability. All savings from the implementation  
5 of AMS will be incorporated holistically with all other changes in the Companies' cost  
6 of service. The Commission and intervenors in future rate cases will have ample  
7 opportunity to query the Companies about cost of service. The Commission will be  
8 able to review that information and determine if all costs and revenues included in the  
9 test year are reasonable at the time and will result in fair, just, and reasonable rates.

10 **Avoided Capacity Cost Is a Potential Benefit of AMS**

11 **Q. Mr. Alvarez next asserts, “[O]ne of the largest potential economic benefits from a**  
12 **smart meter deployment [i.e., avoided capacity cost] is not available due to the**  
13 **Companies' extensive excess capacity.”<sup>7</sup> How do you respond?**

14 A. First, the Companies disagree with the characterization of their reserve margin as  
15 “excess capacity.” Though the Companies do not currently have a need for additional  
16 capacity absent unexpected retirements or significant changes in load or new capacity  
17 costs, all of their generating resources are used in appropriate ways to serve their  
18 customers' needs, including maintaining a reasonable reserve margin to ensure  
19 customers' needs can be met at times of peak demand. Moreover, compared to other  
20 utilities and RTOs, the Companies' projected reserve margin is reasonable. For  
21 example, the results of the PJM RTO's Base Residual Auction for the delivery years

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<sup>6</sup> Alvarez at 12-15.

<sup>7</sup> Alvarez at 17.

1 2019-2020, 2020-2021, and 2021-2022 ranged from 21.5% to 23.3%.<sup>8</sup> Moreover,  
2 according to the North American Electric Reliability Corporation (“NERC”) 2018  
3 Summer Reliability Assessment, both PJM and the Southwest Power Pool (“SPP”)  
4 have anticipated reserve margins over 30% for the summer of 2018.<sup>9</sup>

5 Second, though the Companies’ reserve margin appears to be adequate based  
6 on currently foreseeable conditions and circumstances, and the Companies did not  
7 include any avoided-capacity-related savings in their AMS Business Case, it is possible  
8 circumstances could change to allow such a benefit to eventuate. If it did, it would add  
9 net benefits to a project the Companies have already demonstrated will have net  
10 benefits. So rather than seeing Mr. Alvarez’s point as detracting from the argument for  
11 approving AMS deployment, I believe it adds support to it in the form of potential  
12 additional benefits.

### 13 **Other States’ and Utilities’ Advanced Metering Deployments**

14 **Q. Mr. Alvarez cautions the Commission not to read too much into the continually**  
15 **growing deployments of advanced meters, noting that “tens of millions of smart**  
16 **meter installations were prompted by the American Reinvestment and Recovery**  
17 **Act, which subsidized their cost by 50%.”<sup>10</sup> Why is that caution potentially**  
18 **misleading?**

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<sup>8</sup> See 2021/2022 RPM Base Residual Auction Results at page 6, available at <http://www.pjm.com/-/media/markets-ops/rpm/rpm-auction-info/2021-2022/2021-2022-base-residual-auction-report.ashx> (accessed on May 29, 2018).

<sup>9</sup> NERC 2018 Summer Reliability Assessment at 7, available at: [https://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/NERC\\_SRA\\_05252018\\_Final.pdf](https://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/NERC_SRA_05252018_Final.pdf) (accessed on June 13, 2018).

<sup>10</sup> Alvarez at 18.



1 A. Based on the information cited by Mr. Alvarez, roughly 20 million advanced meters  
2 were deployed with federal subsidies from the American Reinvestment and Recovery  
3 Act (“ARRA”).<sup>11</sup> But as I noted in my direct testimony, in 2016 there were almost 71  
4 million advanced meters deployed in the U.S., not counting the almost 47 million  
5 automated-meter-reading meters deployed, both of which categories were far larger  
6 than the 33.7 million standard meters.<sup>12</sup> Even if approximately 20 million advanced  
7 meters were deployed with ARRA subsidies, the vast majority of deployed smart  
8 meters were not deployed with ARRA subsidies. Moreover, the Companies have  
9 shown in this proceeding that the proposed AMS deployment is likely to be net  
10 beneficial even absent outside subsidies.

11 **Q. Mr. Alvarez asserts that the only unbiased and comprehensive evaluations of**  
12 **smart-grid benefits and costs have concluded that customer costs exceeded**  
13 **customer benefits.<sup>13</sup> How do you respond?**

14 A. As an initial matter, I would note that all three of the analyses to which Mr. Alvarez  
15 refers are at least six years old, which means that the advanced metering deployments  
16 they concern are necessarily older than that. It is undisputed that advanced metering  
17 technology has improved and costs have declined since those deployments began in the  
18 2008-2009 timeframe, making analyses of that vintage of limited usefulness.

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<sup>11</sup> Recovery Act Selections for Smart Grid Investment Grant Awards - By Category. Report by the US Department of Energy, Office of Electricity, available at: <https://www.energy.gov/sites/prod/files/SGIG%20Awards%20by%20Category%202011%2011%2015.pdf> (accessed May 29, 2018). Summing the meters deployed figures available in that document, it appears just over 18 million advanced meters received ARRA subsidies. To account for projects for which numbers of meters were not provided, I have rounded up the number to about 20 million.

<sup>12</sup> Electric Power Annual 2016 at Table 10.10, available at <https://www.eia.gov/electricity/annual/pdf/epa.pdf> (accessed May 29, 2018).

<sup>13</sup> Alvarez at 18.

1           The first analysis Mr. Alvarez cites concerns Xcel Energy, which he helped to  
2 author. That report states, “The idea that value appears to be greatest on the utility side  
3 of the grid assumes circumstances that may be unique to PSCO [Xcel] and cannot be  
4 extrapolated to other utilities’ deployments: Meter reading has already been automated,  
5 making associated savings low from AMI investments.”<sup>14</sup> The same document also  
6 contains a section on Value Proposition 6.2 “Ability to Reduce Energy Use Through  
7 Usage Data Access.”<sup>15</sup> That section contains a hypothesis that granular energy-use  
8 data access will help customers understand their energy usage and decrease it. It  
9 concludes, “Benefits are plausible. External research indicates 8% reduction in energy  
10 use per customer per year is possible.”<sup>16</sup> Therefore, the Xcel analysis does not  
11 undermine the Companies’ AMS proposal because Xcel had already deployed  
12 automated meter reading, which reduces the potential new benefits of deploying AMS  
13 meters, and because it appears the Xcel analysis tends to support the Companies’  
14 ePortal benefit.

15           The second analysis Mr. Alvarez cites concerns MetaVu’s report on Duke  
16 Energy Ohio’s advanced meter deployment.<sup>17</sup> That analysis explicitly states that it  
17 does not account for any customer benefits related to smart-grid deployments, i.e., it  
18 did not attempt to account for any benefit comparable to the ePortal benefit.<sup>18</sup>

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<sup>14</sup> SmartGridCity Demonstration Project Evaluation Summary, dated Oct. 21, 2011, at 11, available at <http://www.dora.state.co.us> by searching for proceeding number 11A-1001E and accessing Exhibit No. MGL-1 (accessed May 29, 2018).

<sup>15</sup> *Id.* at 97.

<sup>16</sup> *Id.*

<sup>17</sup> Alvarez at 18.

<sup>18</sup> Duke Energy Ohio Smart Grid Audit and Assessment dated June 30, 2011, at 10, available at [https://www.smartgrid.gov/files/Duke\\_Energy\\_Ohio\\_Smart\\_Grid\\_Audit\\_Assessment\\_201104.pdf](https://www.smartgrid.gov/files/Duke_Energy_Ohio_Smart_Grid_Audit_Assessment_201104.pdf) (accessed May 29, 2018).

1           Therefore, it is not comparable to the analysis supporting the Companies’ AMS  
2           proposal.

3           That aside, the Duke Energy Ohio analysis does lend support to some of the  
4           benefits of the AMS proposal. For example, the analysis provides support for part of  
5           the Companies’ non-technical losses benefit when it states, “A test of a statistically  
6           significant number of smart electric meters revealed that the smart meters’  
7           measurement accuracy is well within manufacturer’s specifications and better than the  
8           traditional meters they are replacing.”<sup>19</sup> It also supports a benefit the Companies have  
9           quantified, namely how “detailed meter data from individual customer premises can be  
10          aggregated by feeder, lateral, or transformer to dramatically improve the understanding  
11          of capacity needs,” which can “lead to improved transformer sizing and improved  
12          investment prioritization which can create beneficial delays in capital spending,  
13          improvements in reliability, and reductions in line losses.”<sup>20</sup> Thus, just as with the Xcel  
14          analysis, the Duke Energy Ohio analysis Mr. Alvarez cites is not comparable to the  
15          Companies’ analysis in significant respects that prevents it from detracting from the  
16          Companies’ proposal, but simultaneously supports the Companies’ proposal by lending  
17          support to benefits the Companies have stated.

18          Finally, Mr. Alvarez cites a case study of Southern California Edison’s  
19          advanced meter deployment by the California Public Utility Commission’s Division of  
20          Ratepayer Advocates.<sup>21</sup> This document does not appear to be an “unbiased,

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<sup>19</sup> *Id.* at 11.

<sup>20</sup> *Id.* at 42.

<sup>21</sup> Case Study of Smart Meter System Deployment: Recommendations for Ensuring Ratepayer Benefits, dated March 2012, available at

1 comprehensive evaluation[] of smart grid benefits and costs post-deployment.”<sup>22</sup>  
2 Indeed, it explicitly states, “This report does not attempt to offer a conclusion as to the  
3 final net cost or net benefit of SCE’s program.”<sup>23</sup> Instead, the report provides concerns  
4 and recommendations, not a definitive analysis of the deployment’s costs and benefits:  
5 “This report does not provide a definitive answer to the simple question ‘Does SCE’s  
6 SmartConnect Program provide a net benefit to customers?’”<sup>24</sup> Therefore, I do not  
7 believe the report is applicable to the Companies’ proposed AMS deployment.

8 **Q. Mr. Alvarez and Ms. Hinko note that state regulatory commissions in**  
9 **Massachusetts and New Mexico have recently rejected large-scale advanced-**  
10 **metering proposals.<sup>25</sup> Do you believe these are instructive for the Commission?**

11 A. On the whole, I do not believe they are instructive because they are distinguishable on  
12 important grounds. For example, regarding the Public Service New Mexico proposal,  
13 the hearing examiner’s report, which the New Mexico commission adopted and  
14 approved in its order, treated one of the main sources of operational savings, namely  
15 meter-reading headcount reductions, as a detriment, not a benefit, of the proposed  
16 advanced-metering deployment: “This is not a good time to approve a project whose  
17 primary purpose is to eliminate 125 jobs.”<sup>26</sup> Regarding the two Massachusetts  
18 proposals, there were insufficient operational benefits because both of the utilities had

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[http://www.ora.ca.gov/uploadedFiles/Content/Energy/Management\\_and\\_Conservation/Smart\\_Meters/SmartMeterSystemDeploymentReportMar2012FinalDraft\\_wcover\\_Public.pdf](http://www.ora.ca.gov/uploadedFiles/Content/Energy/Management_and_Conservation/Smart_Meters/SmartMeterSystemDeploymentReportMar2012FinalDraft_wcover_Public.pdf) (accessed May 29, 2018).

<sup>22</sup> Alvarez at 18.

<sup>23</sup> Case Study of Smart Meter System Deployment: Recommendations for Ensuring Ratepayer Benefits, dated March 2012, at 1-2.

<sup>24</sup> *Id.* at 5.

<sup>25</sup> Alvarez at 18-20; Hinko at 13.

<sup>26</sup> New Mexico Public Regulation Commission, Case No. 15-00312-UT, Recommended Decision at 112 (Mar. 19, 2018), *approved by* New Mexico Public Regulation Commission, Case No. 15-00312-UT, Final Order (Apr. 11, 2018).

1 already broadly deployed automated meter reading, which is not true of the  
2 Companies.<sup>27</sup> Therefore, I believe these decisions are distinguishable from the case at  
3 hand. Perhaps more importantly, as Mr. Alvarez’s own testimony shows, the number  
4 of utility-commission decisions approving such deployments far exceeds those denying  
5 them, and this Commission has repeatedly approved such deployments. The  
6 Companies believe their proposed deployment will provide benefits to customers that  
7 more than justify the costs, meriting the Commission’s approval in this proceeding.

8 **The Companies’ Use of a 20-Year AMS Service Life Is Reasonable and within Industry**  
9 **Norms**

10 **Q. Mr. Alvarez has asserted the Companies have used a 23-year benefit period in the**  
11 **AMS Business Case, which he claims overstates the benefits of AMS.<sup>28</sup> What is**  
12 **the Companies’ view?**

13 A. Though Mr. Alvarez is correct that the Companies used a 23-year cost and benefit  
14 period in its AMS Business Case (2018-2040) and a 20-year service life for AMS  
15 meters, this approach does not overstate the benefits of AMS for several reasons.

16 First, the Companies’ AMS Business Case did not anticipate deploying the first  
17 AMS meters until the second quarter of 2019; therefore, AMS meters are expected to  
18 be deployed for less than 22 years of the 23-year benefit period. The initial AMS  
19 benefits shown in 2018 and early 2019 consist largely of deferred or avoided capital  
20 expenditures, which do not depend on AMS meters’ service lives, and therefore should  
21 not be tied to those lives.

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<sup>27</sup> Alvarez at 19.

<sup>28</sup> Alvarez at 21-23.

1           Second, as shown in the deployment schedule on page 55 of Exhibit JPM-1 to  
2 my direct testimony, almost 34,000 AMS meters are scheduled to be deployed in the  
3 first quarter of 2021, but the benefit period does not extend into the first quarter of 2041  
4 to fully account for the benefits those meters will provide over their 20-year service  
5 life.

6           Third, this approach was reasonable due the Companies' inclusion of capital  
7 expense for some replacement AMS meters and gas indices, which capital is assumed  
8 to be spent beginning in 2024 as the five-year warranty on the first AMS meters begins  
9 to expire. Notably, the early years of those expenditures are not heavily discounted in  
10 present-value calculations, and therefore would be larger nominal capital dollars after  
11 20 years.

12           Finally, as Mr. Alvarez noted in his testimony, the Companies' depreciation  
13 expert in their most recent base-rate cases testified that AMS-type meters can have a  
14 maximum service life of 25 years.<sup>29</sup> Therefore, the Companies' AMS meters could last  
15 well beyond the end of the study period. For all of these reasons, the Companies' cost-  
16 benefit approach was reasonable.

17 **Q. If one overlooked all the reasons the Companies' approach to calculating AMS**  
18 **costs and benefits over 2018-2040 was reasonable, what would be an appropriate**  
19 **way to revise the Companies' benefit calculation?**

20 A. Again, the Companies believe their approach was and is wholly reasonable, particularly  
21 because of the inclusion of spare and replacement costs. But putting that aside solely  
22 for the sake of argument, if one were to revise the Companies' benefit calculation to

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<sup>29</sup> Case Nos. 2016-00370 and 2016-00371, Direct Testimony of John J. Spanos at 15 (Nov. 23, 2016).

1 ensure benefits tied to deployed meters for only 20 years, it would be appropriate to  
 2 reduce benefits in the last two years in proportion to the number of AMS meters that  
 3 had reached the end of their projected 20-year service life in that year, e.g., a meter  
 4 deployed in April 2019 would not count toward benefits after March 2039. Taking that  
 5 approach would result in net present value of revenue requirements (“NPVRR”)  
 6 benefits of full AMS deployment of \$21.8 million (versus \$34.1 million calculated  
 7 according to the Companies’ original approach as updated to account for the Tax Cuts  
 8 and Jobs Act).

9 **Q. Mr. Alvarez states he is unaware of any investor-owned utility that has used a**  
 10 **smart-meter benefit period longer than 20 years.<sup>30</sup> How do you respond?**

11 A. First, I note that Mr. Alvarez has changed his position on this issue concerning some  
 12 of the same utilities to which he referred in his testimony in the Companies’ 2016 base-  
 13 rate cases. In those proceedings he stated just over a year ago, “I know of no AMS  
 14 proposal approved by a regulator in which an IOU's benefit time period is as long as  
 15 the Companies’. The longest I know of is 18 years.”<sup>31</sup> Mr. Alvarez provided the table  
 16 below in support of his assertion:<sup>32</sup>

IOU	State	Docket	Year	Benefit Years	Customers (millions)	Regulatory Approval?
Ameren	IL	12-0244	2012	18	1.22	Yes
ConEd	NY	15- E0050	2015	18	3.40	Yes
Massachusetts Electric	MA	15-120	2015	15	1.32	TBD
KU/LGE	KY	00370/1	2016	21	0.92	TBD

<sup>30</sup> Alvarez at 22-23.

<sup>31</sup> Case Nos. 2016-00370 and 2016-00371, Direct Testimony of Paul J. Alvarez at 10 (March 3, 2017).

<sup>32</sup> Id. (Red outlining added).

1 Today, Mr. Alvarez’s view of the benefit periods used by Ameren and ConEd has  
 2 changed (I believe correctly), and he has found four other utilities that used 20-year  
 3 benefit periods, at least two of which involved proceedings filed in advance of his  
 4 March 3, 2016 testimony in the Companies’ base-rate cases:<sup>33</sup>

IOU	State	Docket	Year	Benefit Period	Customers (millions)	Regulatory Approval?
Eversource	MA	15-122	2015	15	1.20	No
Massachusetts Electric	MA	15-120	2015	15	1.32	No
San Diego Gas & Electric <sup>^</sup>	CA	R08-12-009	2011	15	1.43	Yes
Ameren	IL	12-0244	2012	20	1.22	Yes
ComEd	IL	12-0298	2012	20	3.95	Yes
ConEd	NY	15-E0050	2015	20	3.40	Yes
Duke Energy Ohio*	OH	08-920-EL-SSO	2008	20	0.69	Yes
Duke Energy Carolinas	NC	E7 Sub 1146	2017	20	1.95	TBD
Pacific Gas & Electric	CA	R08-12-009	2011	20	5.43	Yes
KU/LGE	KY	2018-00005	2018	23	0.92	TBD

<sup>^</sup> “Terminal Values” (to account for benefits beyond 15 years) also provided for information purposes.

\* While a 20-year useful life was assigned to smart meters, the associated communications network was assigned just a 10-year useful life.

5  
 6 Though the Companies appreciate Mr. Alvarez’s recognition that a 20-year  
 7 service life is common in advanced-metering cost-benefit analyses, including those  
 8 accepted by state regulatory commissions in approving advanced-metering  
 9 deployments, it is inaccurate to assert that no other investor-owned utility has  
 10 accounted for values or benefits outside a 20-year study period. For example, in the

<sup>33</sup> Alvarez at 22 (red outlining added).



1 cost-benefit study Ameren Illinois submitted, the utility used a 20-year useful life for  
2 its AMI meters, and noted that a number of other utilities had done so: “With respect  
3 to meter depreciation, Ameren Illinois has reviewed some of the largest AMI  
4 deployment plans in the United States, such as those by Duke Energy, Southern  
5 California Edison, DTE, and PG&E to base its AMI deployment on a useful life of 20  
6 years for the AMI meter. ... Moreover, Southern California Edison conducted product  
7 testing that concluded that the meter useful life would be 20 years or more.”<sup>34</sup> Notably,  
8 though Ameren’s study period was only 20 years, which included an 8-year AMI  
9 deployment period and therefore did not include all of the benefits of the full 20-year  
10 life of Ameren’s AMI meters, Ameren ensured the full 20-year-life benefits were  
11 ultimately reflected in its cost-benefit analysis by including a “terminal value”  
12 component to capture the net benefits of its AMI meters beyond the study period: “The  
13 time horizon used for the business case was 20 years. However, a terminal value was  
14 also calculated to take into account the costs and benefits associated with the un-  
15 depreciated AMI infrastructure remaining beyond the 20 year period.”<sup>35</sup> The terminal  
16 value Ameren Illinois calculated was significant: Of the \$550 million of total net  
17 present value benefit asserted for the AMI deployment, fully \$154 million of it was the  
18 terminal value, i.e., the net benefits the originally deployed AMI produced beyond the  
19 end of the 20-year study period.<sup>36</sup> So in the Ameren Illinois case cited by Mr. Alvarez,  
20 it is clear the utility proposed both to use a 20-year useful life for its AMI meters and

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<sup>34</sup> Case No. 2016-00370, Attachment to AG’s Response to KU DR 1, “Ameren Illinois Benefit-Cost Analysis.pdf” at pdf page 11 (Ameren Exhibit 2.4RO Page 7 of 52); Case No. 2016-00371, Attachment to AG’s Response to LG&E DR 1, “Ameren Illinois Benefit-Cost Analysis.pdf” at pdf page 11 (Ameren Exhibit 2.4RO Page 7 of 52).

<sup>35</sup> *Id.*

<sup>36</sup> *Id.* at pdf pages 44-45 (Ameren Exhibit 2.4RO Pages 40-41 of 52).

1 to include the full 20 years of net benefits associated with those meters, even though  
2 some of those benefits occurred outside the 20-year study period.

3 I would also note that Mr. Alvarez, quoting a report by the Electric Power  
4 Research Institute, states that one option for estimating smart grid benefits and costs is  
5 “to focus on the expected lifetime of the technologies under consideration and compare  
6 the costs and benefits over this time period.”<sup>37</sup> That is precisely the approach the  
7 Companies took in the AMS Business Case, ensuring that the entire 20-year service  
8 life of the AMS meters is reflected by recognizing that the meters will not be fully  
9 deployed until the first quarter of 2021, necessitating a study period that extends to the  
10 end of 2040 (and arguably into the first quarter of 2041).

11 **Q. Mr. Alvarez states, “Several data points lead to my belief that Smart Meters will  
12 not last 20-23 years.”<sup>38</sup> How do you respond?**

13 A. The Companies have not asserted that AMS meters will have average service lives of  
14 more than 20 years. As Mr. Alvarez’s testimony shows, the majority of utilities he has  
15 cited assumed benefit periods, and therefore average advanced-meter service lives, of  
16 20 years. In addition to those Mr. Alvarez cited, Duke Energy Indiana used a 20-year  
17 study period in support of its smart-grid proposal.<sup>39</sup> The Maine Public Utilities  
18 Commission approved an AMI project for Central Maine Power Company based on a

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<sup>37</sup> Alvarez at 23.

<sup>38</sup> Alvarez at 23.

<sup>39</sup> See IURC Cause No. 43501, Order on Settlement at 6 (Nov. 4, 2009) (“Mr. Christopher D. Kiergan, Executive Consultant with KEMA, Inc., described and sponsored the SmartGrid cost/benefit model (“SmartGrid Model” or “Model”), which generally captures the capital expenditures, O&M expenses, and associated benefits for 2009-2028, as well as calculating an overall 20-year net present value for the SmartGrid Initiative.”), available at [http://www.in.gov/iurc/files/43501order\\_110409.pdf](http://www.in.gov/iurc/files/43501order_110409.pdf).

1 20-year cost-benefit study period.<sup>40</sup> Also, BC Hydro in British Columbia, though not  
2 an IOU, used a cost-benefit analysis that assumed at least a 20-year service life for  
3 deployed AMI meters: its cost-benefit study period ran through its fiscal year 2033, but  
4 AMI meters were to begin deployment in 2011 and be complete by 2012, and the study  
5 did not include a wholesale replacement of meters prior to the end of the study period.<sup>41</sup>  
6 So it is not at all uncommon to assume a 20-year service life for AMS meters.

7           Moreover, as I noted above, Mr. Alvarez co-authored a 2011 study concerning  
8 Duke Energy Ohio’s smart grid—a study performed for the Staff of the Public Utilities  
9 Commission of Ohio (“PUCO”)—that assumed a useful life of 20 years for AMI  
10 meters.<sup>42</sup> It stands to reason that if 20 years was a reasonable useful-life expectation  
11 in 2011 when Mr. Alvarez conducted his study for PUCO Staff, it is a reasonable  
12 expectation now, particularly because manufacturers have had an additional seven  
13 years to improve and mature AMS technology since then.

14           Notwithstanding Mr. Alvarez’s use of a 20-year service life for advanced  
15 meters in the past when working for another client, he now cites the Companies’  
16 depreciation expert from their 2016 base-rate cases, noting that the expert, John Spanos,  
17 stated, “The most consistent average life within the industry for new technology electric  
18 meters is 15 years, with a maximum life potential life of 25 years.”<sup>43</sup> As shown above,

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<sup>40</sup> See Maine Public Utilities Commission, Docket No. 2007-215(II), Order at 6 (Feb. 25, 2010) (“CMP has provided a cost-benefit analysis that shows with the DOE grant, its proposed AMI investment will result in approximately \$25 million in operational savings over 20 years”), available at <https://mpuc-cms.maine.gov/CQM.Public.WebUI/Common/CaseMaster.aspx?CaseNumber=2007-00215>.

<sup>41</sup> See, e.g., BC Hydro Smart Metering & Infrastructure Program Business Case at 1 and 33, available at <https://www.bchydro.com/content/dam/BCHydro/customer-portal/documents/projects/smart-metering/smi-program-business-case.pdf>.

<sup>42</sup> *Id.* at 5 and fn. 2.

<sup>43</sup> Case Nos. 2016-00370 and 2016-00371, Direct Testimony of John J. Spanos at 15 (Nov. 23, 2016).

1 numerous utilities—and Mr. Alvarez himself—have assumed AMI or AMS service  
2 lives of 20 years, which is well within the range cited by Mr. Spanos.

3 Mr. Alvarez then cites the Companies’ experience with LG&E’s Responsive  
4 Pricing and Smart Meter Pilot from 2007-2009 to suggest that a 20-year service life for  
5 AMS might be too long.<sup>44</sup> As Mr. Alvarez notes, the Companies’ discovery responses  
6 in their 2016 base-rate cases explained there was a problem with the LCD display  
7 screen—not the underlying metering or communications capabilities—on a particular  
8 type of meter LG&E used in the pilot; the Companies do not propose to use the same  
9 meter in the AMS full deployment.<sup>45</sup> Moreover, as Mr. Alvarez states, “[T]he smart  
10 meter manufacturer has likely corrected such an issue by now ....”<sup>46</sup> That seems a  
11 reasonable assumption given that more than ten years have passed since the pilot began,  
12 and manufacturers have improved and matured the technology in the interim. Indeed,  
13 Mr. Alvarez presumably believed such meters could have a 20-year useful life when  
14 he co-authored the above-cited MetaVu report for PUCO Staff stating that AMI meters  
15 had a useful life of 20 years.

16 **Q. Does a 5-year warranty for AMS meters indicate a 20-year service life for AMS**  
17 **might be too long, as Mr. Alvarez argues?**<sup>47</sup>

18 A. No. The purpose of any standard manufacturer’s warranty is not to insure a product  
19 for the entirety of its expected useful life, but rather to provide a buyer assurance that  
20 if the particular item purchased has a manufacturing defect, which would typically  
21 manifest itself early in the product’s life, the manufacturer will replace it. For example,

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<sup>44</sup> Alvarez at 23-24.

<sup>45</sup> See Case No. 2016-00370, Response to KU AG 2-86; Case No. 2016-00371, Response to LG&E AG 2-94.

<sup>46</sup> Alvarez at 23.

<sup>47</sup> Alvarez at 24.

1 a car, which requires a much more significant capital outlay than an AMS meter,  
2 typically will have a limited warranty with a much shorter duration than the average  
3 useful life of the car. Therefore, the warranty is a protection against buying a lemon.  
4 Similarly, most consumer electronics, which are much closer in price to AMS meters  
5 than cars, have warranty periods much shorter than 5 years. Again, that is not because  
6 many such items have average useful lives no longer than their warranties, but rather  
7 because most manufacturers' defects will manifest themselves within that time. So  
8 there is no reason to assume AMS meters will have a service life shorter than 20 years  
9 simply because manufacturers offer standard 5-year warranties; indeed, if service lives  
10 truly were tied to warranties, one would presumably expect a 5-year service life for  
11 such meters, but Mr. Alvarez is not suggesting that.

12 **Q. Mr. Alvarez cites to outdoor temperature sensors, wood decks, and solar-powered**  
13 **garden lights to cast doubt on the likelihood that AMS meters could have an**  
14 **average service life of 20 years.<sup>48</sup> How do you respond?**

15 A. Mr. Alvarez apparently believes that electronics and moving parts necessitate shorter  
16 useful lives, at least for outdoor equipment. But the single-phase electromechanical  
17 power meters the Companies have deployed, which have multiple moving parts and are  
18 nearly always placed outdoors, have average service lives in excess of 25 years. In  
19 addition, at least one study has suggested that an energy measurement integrated circuit  
20 in an AMR meter could have a service life of 60 years.<sup>49</sup> Again, Mr. Alvarez himself

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<sup>48</sup> Alvarez at 24.

<sup>49</sup> Wan, Natasha and Kevin Manning, "Exceeding 60-Year Life Expectancy from an Electronic Energy Meter," Metering Asia Pacific Conference, Feb. 20-22, 2001, Conference Documents, available at: <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.137.1859&rep=rep1&type=pdf> (accessed May 30, 2018).

1 assumed a 20-year service life for advanced meters when conducting a cost-benefit  
2 analysis seven years ago, so it is unclear why he now believes that is an untenable  
3 assumption, given that advanced metering has improved in the intervening years.

4 **Q. Do you agree with Mr. Alvarez that possible equipment and software obsolescence**  
5 **should require an AMS service life of less than 20 years?**<sup>50</sup>

6 A. Certainly technological obsolescence is a concern with any technology. But the  
7 Companies have selected an AMS solution that does not depend on third parties to  
8 maintain a network to support the ongoing operation of the AMS system, which ensures  
9 that the Companies should be able to maintain and operate the AMS system for a full  
10 20 years of deployment. In other words, the concern Duke Energy Ohio is facing  
11 regarding its field data collectors' cellular service mode is one that the Companies'  
12 proposed AMS system has contemplated and addressed. In addition, the AMS system  
13 the Companies propose to deploy is capable of receiving over-the-air software and  
14 firmware upgrades, which should alleviate the software-inflexibility concern Duke  
15 Energy Ohio is facing.

16 Regarding the TS2 communications network Mr. Alvarez discusses, it is  
17 noteworthy that TS2 was first released in 2002.<sup>51</sup> The Cumberland Valley Electric,  
18 Inc. filing to which Mr. Alvarez cited indicates that Cumberland Valley "became aware  
19 that Landis & Gyr's support for the TS2 system would most likely be ending sometime  
20 around the year 2020."<sup>52</sup> In other words, the TS2 technology has been available and

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<sup>50</sup> Alvarez at 24-25.

<sup>51</sup> See "Hunt Technologies Introduces New Automatic Meter Reading System" (June 20, 2002), available at: <http://www.ecmweb.com/power-quality-archive/hunt-technologies-introduces-new-automatic-meter-reading-system> (accessed May 31, 2018).

<sup>52</sup> Case No. 2018-00056, Application Exh. 2 at 1 (Feb. 1, 2018).

1 supported for nearly 16 years, and it appears it will continue to be so for at least two  
2 more years. Notably, the Companies’ own experience with the TS1 “Turtle” power-  
3 line-carrier meter communications technology, which it first deployed in 1999,  
4 indicates that even the earliest iterations of this technology can last nearly 20 years.  
5 The technology and equipment have only improved since then, giving reason to believe  
6 the Companies’ proposed AMS meters can plausibly be expected to have an average  
7 service life of 20 years.

8 **Q. Mr. Alvarez states that reducing AMS benefit period from 23 years to 15 years**  
9 **reduces NPVRR benefits of AMS by \$139.0 million.<sup>53</sup> Do you agree with his**  
10 **approach?**

11 A. No. A 15-year benefit period is not the same as a 15-year average service life for AMS  
12 meters. Using a 15-year benefit period (2018-2032) omits benefits AMS would provide  
13 even if one assumed only a 15-year average service life for AMS meters. As I noted  
14 above, the AMS Business Case assumed the first AMS meters would not be deployed  
15 until the second quarter of 2019, and further assumed meter deployment would not be  
16 complete until the first quarter of 2021. Therefore, a 15-year benefit period necessarily  
17 overlooks more than a year of benefits related to the first-deployed meters, and omits  
18 more than two years of benefits related to the last-deployed meters, even on the 15-year  
19 average service life assumption. Moreover, Mr. Alvarez is comparing NPVRR values  
20 that do not take into account the effect of the Tax Cuts and Jobs Act (“TCJA”), so his  
21 NPVRR conclusion is inaccurate even if one accepts his erroneous 15-year benefit  
22 period.

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<sup>53</sup> Alvarez at 24-25.

1 The correct calculations of nominal benefits, NPVRR benefits, and net NPVRR  
2 benefits or costs for 15-, 18-, and 20-year average service lives are below:

	\$M	Service Life		
		15-year	18-year	20-year
Net AMS Project NPVRR*	\$	59.6	\$ 9.4	\$ (20.9)
Nominal Benefit	\$	661.4	\$ 820.2	\$ 932.7
Benefit NPV	\$	376.0	\$ 426.2	\$ 456.5

\*Negative amount means net benefit

3  
4 These values were calculated to ensure that benefits (and costs) carry through for the  
5 entire assumed average service life for meters in accordance with the proposed  
6 deployment schedule in the AMS Business Case. It shows that the AMS full  
7 deployment does result in net NPVRR costs of \$59.6 million when assuming a 15-year  
8 service life, but that an assumed average service life of beyond 18 years turns the net  
9 NPVRR calculation positive. Again, the Companies believe there is ample reason to  
10 believe their proposed 20-year average service life is reasonable, but even a somewhat  
11 shorter average service life assumption retains a positive net NPVRR benefit for the  
12 project.

13 **Q. Also with regard to meter life and benefit periods, Ms. Hinko asserts that**  
14 **customers will face a significant cost at the end of 20 years to replace all AMS**  
15 **meters, and that extending the cost-benefit study period to 25 years would change**  
16 **the ratio of costs and benefits.<sup>54</sup> How do you respond?**

17 **A.** I disagree with the thrust of Ms. Hinko's assertion, which seems to be that if the  
18 Commission looked just beyond the end of the current AMS study period, it would find  
19 that AMS actually results in large net costs. But the only way to reach that conclusion

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<sup>54</sup> Hinko at 11.



1 is by overlooking the costs and benefits for the entire service life of the next AMS  
2 deployment. Also, consider that most technology tends to become less expensive, not  
3 more expensive, over time. Therefore, all other things being equal, the cost of AMS  
4 replacement meters in 20 years, assuming they are truly equivalent meters, should be  
5 lower in present-value terms than the meters the Companies propose to deploy now. It  
6 follows that, if one ran the cost-benefit analysis correctly and fully accounted for all of  
7 the benefits and costs of the second generation of AMS deployment—which  
8 presumably would extend another 20 years, not just another five years—one would  
9 expect to see the NPVRR benefits of the second generation of AMS deployment equal  
10 or exceed those of this proposed deployment.

11 Moreover, as I explain further below, there are unquantified and unquantifiable  
12 benefits of AMS that make the investment worthwhile even if the Commission believes  
13 the deployment will result in modest net costs based on the quantified costs and  
14 benefits. Those unquantified and unquantifiable benefits include increased reliability,  
15 customer empowerment through ePortal data, and possibly new rate offerings

16

17 **The Companies' AMS Benefit Based on Customer Savings from ePortal Are Well**  
18 **Supported by the Companies' Data and Industry Data**

19 **Q. Mr. Alvarez asserts the Companies' ePortal savings are overstated in part because**  
20 **they include non-fuel cost reductions.<sup>55</sup> What is the Companies' view?**

21 **A.** The Companies' AMS Business Case attempts to quantify net savings to customers  
22 resulting from full AMS deployment. Unlike the Companies' DSM mechanism, which  
23 has a lost-sales cost recovery component that collects non-fuel revenue from sales

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<sup>55</sup> Alvarez at 27-28.

1 assumed to be lost due to DSM programs between base-rate cases, the Companies do  
2 not have, and have not proposed, such a mechanism for base rates related to AMS. This  
3 means that the non-fuel benefit of energy savings between rate cases resides solely with  
4 customers. It is therefore appropriate to count those savings when determining what  
5 customers' net savings will be from full AMS deployment. I would also note that Mr.  
6 Alvarez earlier asserted that customers might not receive the value of operational  
7 savings resulting from AMS because utilities have an incentive not to have rate cases  
8 to pass along such savings, and will instead keep those benefits for themselves. Here,  
9 Mr. Alvarez asserts the Companies' ePortal benefit is overstated by 71% because non-  
10 fuel savings customers achieve through reduced energy use will be erased in  
11 subsequent rate cases.<sup>56</sup> But both of the arguments he advances cannot be  
12 simultaneously correct: either the Companies will retain all the operational savings by  
13 not having rate cases, which will result in the ePortal benefit being what the Companies  
14 asserted; or the Companies will have multiple rate cases, explicitly passing along to  
15 customers AMS operational savings, but reducing the ePortal benefit. On the  
16 arguments Mr. Alvarez advances, it cannot be both ways.

17 The Companies, on the other hand, appropriately assert that customers in the  
18 aggregate can receive both the value of reduced operation expenses and the value of  
19 energy savings, including non-fuel savings. As I argued above, rate cases are not  
20 required for customers to enjoy the benefits of operational savings resulting from AMS  
21 deployment. If the Companies are able to extend periods between rate cases because  
22 AMS operational savings offset other increases in operating expenses or capital

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<sup>56</sup> Alvarez at 28-29.

1 investments, customers receive the value of those operational savings by not having  
2 rates increased as soon as they might otherwise be. Similarly, those extended periods  
3 between rate cases make it possible for customers who save energy prompted or  
4 empowered by the data AMS provides to enjoy those savings, including the non-fuel  
5 portion of savings, for longer periods. When the Companies eventually do seek  
6 increased rates, operational savings resulting from AMS will be included in base rates,  
7 and the resulting increased rates will create an additional incentive for customers to  
8 conserve, again driving non-fuel (and fuel) savings for those customers. Therefore, the  
9 Companies' assertions of savings in the AMS Business Case are both internally  
10 consistent and reasonable.

11 **Q. Mr. Alvarez states, “[T]he Companies’ assumptions regarding customer**  
12 **motivation to participate, and therefore customer participation levels, are**  
13 **extremely aggressive.”<sup>57</sup> How do you respond?**

14 A. Mr. Alvarez asserts that a good assumption of how many customers will use ePortal  
15 data to save energy is 1% because roughly 1% of the Companies’ residential electric  
16 customers had become participants in the Companies’ DSM-EE AMS Customer  
17 Offering as of March 31, 2018.<sup>58</sup> He claims this participation rate is the result of “2.5  
18 years of heavy promotion.”<sup>59</sup> But the Companies spent less than \$200,000 from  
19 January 2015 through May 2018 to market the offering because participation was  
20 limited to 10,000 total customers. Therefore, it is inaccurate to assert that heavy  
21 promotion resulted in only 1% of the Companies’ customers participating in the AMS

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<sup>57</sup> Alvarez at 29.

<sup>58</sup> Alvarez at 30-31.

<sup>59</sup> Alvarez at 30.

1 Customer Offering; rather, limited promotion has resulted in the targeted level of  
2 participation.

3 Moreover, the only actual data on this issue is the Companies' data from their  
4 own customers using the MyMeter portal. Using that data, the Companies' 2016  
5 analysis showed 48% of customers used the portal at least once, and that 36% of those  
6 customers become active users, i.e., a total of about 17% of customers become active  
7 users.<sup>60</sup> The Companies projected that active users would achieve annual bill savings  
8 of 3% relative to not having AMS deployed. Spreading that savings over the entire  
9 customer population, the total projected savings came to 0.51%. The Companies  
10 applied that percentage to billed revenues to calculate the ePortal benefit.

11 As I noted in my direct testimony in this proceeding and as supported by the  
12 2017 Tetra Tech analysis included as Appendix A-10 to the AMS Business Case  
13 (Exhibit JPM-1 to my testimony), it appears the ePortal benefit is, if anything,  
14 understated. The Tetra Tech analysis shows that through August 2017, more than 70%  
15 of AMS Customer Offering participants had logged onto MyMeter at least once—much  
16 higher than the 48% assumed in the Companies' benefit calculation—and of those,  
17 37.2% became active users, which is again higher than the 36% the Companies used in  
18 their ePortal benefit calculation. Tetra Tech further showed that active users achieved  
19 average energy savings of 3.8% (about 3.3% bill savings based on the Companies'  
20 calculations). As I noted in my direct testimony, based on Tetra Tech's findings it  
21 would be reasonable to assume an ePortal benefit of 0.9% (70.3% x 37.2% x 3.3%),  
22 well in excess of the Companies' proposed ePortal benefit. In other words, the

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<sup>60</sup> Malloy at 18-19.

1 Companies' 0.5% bill savings is reasonable and conservative compared to the 0.9% bill  
2 savings the Tetra Tech analysis indicates.

3 **Q. Do you agree with Mr. Alvarez that possible future rate-structure changes could**  
4 **undermine the ePortal benefit?**<sup>61</sup>

5 A. To the contrary, though it is possible that different rate structures enabled by AMS  
6 could affect the ePortal benefit, I believe AMS deployment may open the door to new  
7 rate options for customers. For example, the introduction of demand rates for  
8 residential or general service customers would tend to have the effect of relatively  
9 reducing energy rates for those rate classes. Though that might reduce the incentive to  
10 conserve energy, it will introduce an incentive to shift or reduce demand, creating a  
11 new savings opportunity.

12 I disagree with Mr. Alvarez's assertion that increasing Basic Service Charges  
13 is similar to a straight-fixed-variable rate design.<sup>62</sup> In its most recent base-rate case,  
14 KU proposed a \$22.00 monthly Basic Service Charge for residential service.<sup>63</sup>  
15 Notably, even at that level of Basic Service Charge, which included essentially all of  
16 the customer-specific costs identified by KU, there remained over \$0.05 per kWh of  
17 infrastructure (i.e., demand) related cost embedded in the total proposed energy rate of  
18 \$0.08523 per kWh.<sup>64</sup> In other words, there remained ample room for customers to  
19 achieve non-fuel savings through energy conservation. Were that demand cost to be

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<sup>61</sup> Alvarez at 31-32.

<sup>62</sup> Alvarez at 31-32.

<sup>63</sup> Case No. 2016-00370, Application Filing Requirements Tab 4, Proposed KU Tariff at Sheet No. 5 (Nov. 23, 2016).

<sup>64</sup> *Id.*

1 recovered instead through a demand charge, such a charge would create a new avenue  
2 for achieving non-fuel savings.

3 Consequently, I believe the ePortal benefit is reasonable as presented.

4 **Q. Mr. Alvarez has asserted that after the AMS is deployed the Companies will have**  
5 **a disincentive to ensure energy conservation related to ePortal actually occurs.<sup>65</sup>**  
6 **Do you agree?**

7 A. I believe the opposite is true: If the Commission approves full AMS deployment, it will  
8 be entirely in the Companies' interest to work to ensure customers benefit from it. The  
9 Companies do indeed face increasing competitive pressures to ensure they provide  
10 value commensurate with the cost of their service. Therefore, the Companies are  
11 motivated to work toward cost-effective AMS deployment and implementation.

12 In addition, one of the virtues of the ePortal benefit is that it is entirely in  
13 customers' control, not the Companies'; it depends entirely on customers' choices,  
14 investments, and behaviors. All the Companies would have to do to facilitate the  
15 ePortal savings is ensure the ePortal continues to deliver timely and accurate  
16 information and to educate customers about how to use that information. Therefore,  
17 although it is clear the Companies do indeed have a clear and compelling motivation  
18 to do what they can to see customers realize the ePortal benefit, the Companies'  
19 incentives are ultimately of little or no consequence concerning whether customers  
20 actually take the steps necessary to achieve or exceed the projected ePortal benefit.

21 **Q. Mr. Alvarez has also questioned the Companies' assumption that active ePortal**  
22 **users will reduce their bills by 3% through conservation.<sup>66</sup> How do you respond?**

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<sup>65</sup> Alvarez at 32-33.

<sup>66</sup> Alvarez at 33-35.

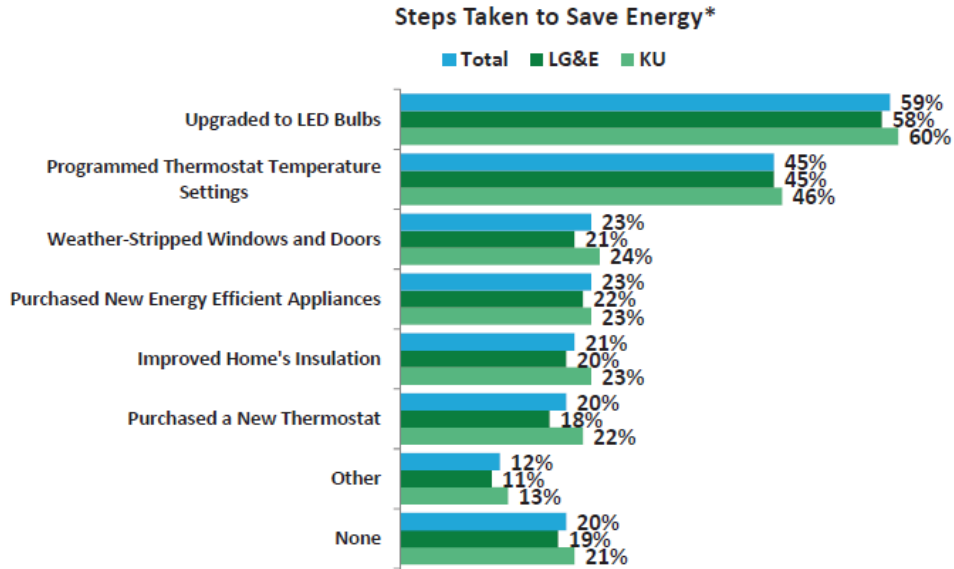
1 A. Mr. Alvarez notes that the research cited by the Companies shows that customers who  
2 had in-home displays reduced energy consumption between 5% and 15%, but also that  
3 savings of 0-10% have resulted from indirect feedback such as the ePortal the  
4 Companies will provide with AMS (and the MyMeter portal AMS Customer Offering  
5 participants use today). A 3% savings assumption is below the range of savings  
6 believed to result from in-home displays, which the Companies do not propose to  
7 include in the AMS deployment, but on the low end of the range stated in the literature  
8 for feedback of the kind the Companies are proposing to provide. That would tend to  
9 support, not undermine, the proposed ePortal savings.

10 In addition to the Tetra Tech analysis I described above, which showed 3.8%  
11 energy savings per active user, the Companies have data from an AMS Customer  
12 Offering study conducted by Bellomy Research in 2016.<sup>67</sup> That study shows fully 80%  
13 of AMS Customer Offering participants who responded to the Bellomy survey and had  
14 accessed the MyMeter Dashboard indicated they had undertaken energy-savings steps  
15 because of AMS, including almost 60% who changed over to LED bulbs and almost  
16 50% who programmed their thermostats (presumably to save energy).<sup>68</sup> The full set of  
17 responses is shown in the chart below:

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<sup>67</sup> Malloy Exhibit JPM-1 Appx. A-1.

<sup>68</sup> Exh. JPM-1 Appx. A-1 at 32.



Q8. Which, if any, of the following steps have you taken to save energy as a result of your participation in the Advanced Meter Service?  
 \*Among customers who have accessed the MyMeter Dashboard (n=310)

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Also, in-home displays are not necessary to convey information to customers in ways that will get their attention, particularly given the ubiquity of smart phones, which can provide customers usage and other data anytime and anywhere. A number of customers have already signed up for various energy alerts to be sent to them by text or email, a capability that will remain in the full AMS deployment. Thus, the Companies have conservatively estimated energy savings for actively engaged customers at 3% of their total bills.

**Q. Mr. Alvarez expresses concerns about the Tetra Tech analysis and its finding that MyMeter active users save an average of 3.8% more energy than non-active users.<sup>69</sup> How do you respond?**

**A.** I believe the analysis presented by Tetra Tech is reliable, and that the alternative modeling approach suggested by Mr. Alvarez, the Fixed Panel Effects model, would be inaccurate as applied to these data sets. The Fixed Panel Effects model takes one

<sup>69</sup> Alvarez at 35-37.



1 global look at all households in a group and compares the pre- and post- consumption  
2 data for differences. It is a good model to use when everyone has the same load profile  
3 because it averages everyone together, i.e., when everyone has similar consumption,  
4 then averages are good representations for the group. But it is less accurate if any  
5 people have dramatically different load profiles.

6 In contrast, the PRISM model used by Tetra Tech provides household-level  
7 estimates and factors in temperature data by finding the temperature with the highest  
8 explanatory power for each household. Temperature is an important factor for any  
9 energy-consumption comparison, but it is particularly important when one considers  
10 that the model compared treatment-group customers' consumption for 12 months after  
11 an AMS meter was installed to consumption before the meter was installed. Notably,  
12 this is not necessarily the same 12 months for all customers in the group because  
13 customers received their meters at different times.<sup>70</sup> Therefore, I believe Tetra Tech  
14 correctly selected the PRISM model for its analysis, and that the results of the analysis  
15 are valid.

16 Finally, Mr. Alvarez states his concern about the number of customers removed  
17 from Tetra Tech's analysis due to extreme changes in "estimated annual pre-post  
18 consumption," and expressing concern that the Companies did not provide an updated  
19 report or statistical outcomes as a result of the updated outlier counts.<sup>71</sup> But as the  
20 Companies noted in the discovery response Mr. Alvarez cited, no updated report or  
21 statistical outcomes are needed; the issue identified in the cited response was that the  
22 number of outliers was incorrectly stated in Table 1 of Tetra Tech's analysis provided

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<sup>70</sup> See Exhibit JPM-1 Appx. 10 at 4 for a graphical representation of this.

<sup>71</sup> Alvarez at 36.

1 in Appendix A-10 to my Exhibit JPM-1, not that the outliers removed was incorrect in  
2 the underlying analysis. The Companies corrected the previously misstated data in the  
3 discovery response, but no further analysis or updates were or are necessary.  
4

5 **Q. In view of Mr. Alvarez’s criticisms and critiques of the Companies’ ePortal  
6 benefit, what do you conclude?**

7 A. I conclude that, if anything, the Companies might have underestimated the ePortal  
8 benefit. The Companies’ calculation of the ePortal benefit accounts for savings only  
9 among residential electric customers; ePortal-related savings could also result from  
10 non-residential and gas customers’ use of ePortal to reduce or optimize their usage.  
11 The evidence in this proceeding indicates it is likely that customers will meet or exceed  
12 the Companies’ projected energy savings resulting from ePortal, which in the short run  
13 will redound to the benefit of the customers who reduce their usage. Therefore, I  
14 recommend the Commission deem reasonable the Companies’ entire ePortal benefit of  
15 \$158 million nominal (\$74.8 million NPVRR).

16 **The Companies’ Benefit Related to Non-Technical Losses Is Reasonable**

17 **Q. Mr. Alvarez states he has concerns about the Companies’ non-technical-loss  
18 recovery projections, beginning with the Companies’ assumption of 2% non-  
19 technical losses and a 36% recovery rate for non-technical-loss revenue.<sup>72</sup> Was it  
20 reasonable for the Companies to assume 2% non-technical losses and a 36%  
21 recovery rate?**

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<sup>72</sup> Alvarez at 37-38.

1 A. Yes. To the best of my knowledge, the EPRI study upon which the Companies based  
2 their 2% non-technical-losses assumption remains the most comprehensive recent  
3 attempt to estimate the magnitude of non-technical losses across the electric industry.  
4 Notably, neither Mr. Alvarez nor Ms. Hinko, who questioned the usefulness of the  
5 EPRI study because it is ten years old,<sup>73</sup> cited to another study that is more recent or  
6 comprehensive to dispute the EPRI study. Therefore, to avoid relying on anecdotes  
7 from any single or handful of utilities, unsupported subjective projections, or mere  
8 speculation, the Companies sought out the best study available on which to base their  
9 estimate of non-technical losses. That study was and is the EPRI study.

10 But the Companies did not arbitrarily select a 2% non-technical losses value as  
11 supported by the EPRI study; rather, 2% of revenue is the estimate of non-technical  
12 losses the study repeatedly cites as reasonable, e.g., “Considering the referenced studies  
13 and reports, statistics and analysis, and the opinions of industry experts in revenue  
14 protection, a reasonable percentage for non-technical losses is 2.0%.”<sup>74</sup> To increase  
15 the reasonableness of the AMS benefit calculation, the Companies assumed with full  
16 deployment of AMS that only 60% of actual non-technical losses would be identified  
17 and billed, and that only 60% of identified and billed non-technical losses would be  
18 collected. The Companies’ recent ratio of collected theft amounts to billed theft  
19 amounts is about 60%, so it is a well-supported multiplier.<sup>75</sup> Therefore, the total  
20 amount of non-technical losses the Companies have assumed they will detect, bill, and  
21 collect regarding AMS-equipped customers is not 2.0%, but rather 64% less than that

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<sup>73</sup> Hinko at 12-13.

<sup>74</sup> Malloy Exh. JPM-1 Appx. A-8, EPRI Report at 1-17.

<sup>75</sup> Malloy at 17-18.

1 (i.e., a total of 0.72% for AMS-equipped customers), which is a reasonable and well  
2 supported assumption.

3 Indeed, Mr. Alvarez himself, testifying for the Attorney General in the  
4 Companies' 2016 base-rate cases, asserted it was reasonable to assume the Companies'  
5 non-technical losses were 1.9% and that the Companies would be able to collect 30%  
6 of those losses rather than 36% as the Companies assumed.<sup>76</sup> As I argued in response  
7 in those cases, the Companies' 2% assumption is within the range of non-technical  
8 losses the EPRI study found likely and was the "mode" EPRI found "reasonable and  
9 reflective of the impact [of non-technical losses] on distribution utilities,"<sup>77</sup> whereas  
10 Mr. Alvarez provided no empirical support for his proposal to use a 1.9% assumption.  
11 Nonetheless, the two assumptions were not far apart. In this proceeding, Mr. Alvarez  
12 has not estimated the Companies' non-technical losses.

13 With regard to Mr. Alvarez's assertion that the Companies' assumed recovery  
14 rate of 36% is too high (though he again does not provide a proposed recovery rate of  
15 his own in this proceeding), Mr. Alvarez provides a chart purporting to show three  
16 other utilities' assumptions concerning non-technical losses. At least two rows of the  
17 data shown in the table require additional explanation.

18 First, concerning ConEdison ("ConEd"), Mr. Alvarez asserts that ConEd  
19 assumed 1% theft losses and a 25% recovery of those losses.<sup>78</sup> Though that appears to  
20 be correct,<sup>79</sup> non-technical losses comprise more than theft, and ConEd's AMI

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<sup>76</sup> Alvarez at 20-21.

<sup>77</sup> EPRI Report at 1-18 (Attachment to Response to KIUC 1-16(a) at 31).

<sup>78</sup> Alvarez at 38.

<sup>79</sup> Case No. 2016-00370, Attachment to AG's Response to KU DR 1, "ConEd AMI Plan.pdf" at pdf pages 52 and 63 (ConEd Study pages 48 and 59); Case No. 2016-00371, Attachment to AG's Response to LG&E DR 1,

1 Business Plan assumed a 20-year NPV benefit of \$389 million for theft recovery and a  
2 \$491 million benefit for reduced meter-related errors.<sup>80</sup> Therefore, ConEd’s overall  
3 non-technical loss percentage appears to be higher than the 1% shown in Mr. Alvarez’s  
4 table or its recovery rate is higher than 25%, or both.

5 Second, the Mass Electric data shown in Mr. Alvarez’s table would seem to  
6 indicate a theft-reduction rate of 100%, presumably comprising some amount of  
7 recovery and some amount of deterrence, on a 1.5% reduction in theft losses for  
8 residential customers and a 1.0% reduction for commercial customers.<sup>81</sup> That is  
9 consistent with National Grid’s Grid Modernization Plan document, which states, “The  
10 use of specific tools to detect theft will be enabled with AMI. The Company has  
11 assumed an increase in theft detection and consequent decrease in theft of  
12 approximately 1.5% of delivered energy for residential customers, and approximately  
13 1% for customers with single phase small commercial meters.”<sup>82</sup> (National Grid is the  
14 d/b/a for Massachusetts Electric Company and Nantucket Electric Company.) As  
15 discussed above, the Companies assumed a 36% recovery rate of 2.0% of non-technical  
16 losses, with a net of 0.72% recovery of non-technical losses for AMS-equipped  
17 customers; the Companies did not assert a benefit related to theft deterrence. The  
18 Companies’ 0.72% assumption for AMS-equipped customers is conservative

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“ConEd AMI Plan.pdf” at pdf pages 52 and 63 (ConEd Study pages 48 and 59). Please note that a later version of the ConEd Study exists and contains substantially similar information. See ConEdison AMI Business Plan, dated Nov. 16, 2015. Available at:

<http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterSeq=47337>.

<sup>80</sup> *Id.* at pdf page 56 (ConEd Study page 52).

<sup>81</sup> Alvarez at 19.

<sup>82</sup> National Grid’s Grid Modernization Plan, dated Aug. 19, 2015, at 41. Available at [http://170.63.40.34/DPU/FileRoomAPI/api/Attachments/Get/?path=15-120%2fGrid\\_Mod\\_PlanFinalRedacted\\_Boo.pdf](http://170.63.40.34/DPU/FileRoomAPI/api/Attachments/Get/?path=15-120%2fGrid_Mod_PlanFinalRedacted_Boo.pdf).

1 compared to Mass Electric's assumption that AMI will reduce theft by 1.5% for  
2 residential customers and 1.0% for small commercial customers.

3 In addition, the Companies' proposed AMS benefit related to non-technical  
4 losses compares favorably to two of the three examples Mr. Alvarez cites. According  
5 to Mr. Alvarez's table, ConEd stated its AMI deployment would produce \$870 million  
6 of present value benefits due to non-technical losses, and that ConEd has 12-month  
7 revenues of \$8.172 billion.<sup>83</sup> Scaling ConEd's claimed benefit to align with the  
8 Companies' \$2.438 billion in 12-month revenues would result in \$259.6 million in  
9 present-value benefits, well in excess of the Companies' benefit calculation of \$192  
10 million. Similarly, Mass Electric, which has essentially the same annual revenues as  
11 the Companies, has a claimed \$168.7 million present-value benefit resulting from non-  
12 technical-loss reductions, but that benefit was calculated over only 15 years. Therefore,  
13 it would seem reasonable to assume that scaling up Mass Electric's non-technical-loss  
14 benefit for 20 years would certainly bring it closer to the Companies' \$192 million, and  
15 might exceed it.

16 Finally, the Companies' 36% recovery rate has two components: 60% non-  
17 technical-loss identification and billing, and 60% collection of billed amounts. As  
18 noted above, the Companies' 60% collection rate is not arbitrary, but rather is based on  
19 the Companies' recent experience in collecting amounts billed related to tampering.<sup>84</sup>  
20 The 60% multiplier for non-technical-loss identification and billing is a reasonable  
21 discount to apply to total non-technical losses to recognize that, though AMS will  
22 dramatically improve the Companies' ability to detect and remedy non-technical

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<sup>83</sup> Alvarez at 19.

<sup>84</sup> Malloy at 17-18.

1 losses, the Companies still will not be able to detect, bill, and collect all such losses.  
2 This is a principled approach the Companies believe is well supported by the available  
3 data.

4 **Q. Mr. Alvarez states three additional reasons he disputes the Companies' non-**  
5 **technical-losses benefit.<sup>85</sup> How do you respond to Mr. Alvarez's concerns?**

6 A. Mr. Alvarez first notes that a PowerPoint presentation by the Companies in 2009  
7 showed 25-year NPV benefits from "system losses" and "revenue protection" resulting  
8 from advanced-metering deployment of \$28 million.<sup>86</sup> That 2009 presentation was not  
9 nearly as well developed or supported as the AMS Business Case, which the  
10 Companies have developed over the course of years and have supported as I have  
11 previously described. In short, there is nothing in the 2009 PowerPoint presentation  
12 upon which the Companies' AMS proposal or cost-benefit analysis relies or depends.

13 Second, Mr. Alvarez notes that the Companies' current expense per dollar of  
14 non-technical-loss recovery is about \$0.50, causing him to believe the non-technical  
15 losses benefit is overstated because the Companies have not included increased costs  
16 associated with increased collections efforts.<sup>87</sup> Though Mr. Alvarez is correct that the  
17 Companies did not include additional costs associated with non-technical-losses  
18 collections efforts, one of the purposes of AMS and its related non-technical-loss  
19 detection technology is to multiply the effectiveness of the Companies' existing  
20 revenue-protection resources. Therefore, the Companies anticipate that the increased

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<sup>85</sup> Alvarez at 37-38.

<sup>86</sup> Alvarez at 38-39.

<sup>87</sup> Alvarez at 39-40.

1 ability to detect and address non-technical losses will drive down the cost per dollar  
2 recovered from non-technical losses.

3 Third, Mr. Alvarez asserts that the number of increased incidents of non-  
4 technical losses required to be detected and collected upon is implausibly high based  
5 on current average non-technical loss collections.<sup>88</sup> I believe that is incorrect for at  
6 least two reasons. First, it assumes that the value of the average non-technical loss will  
7 not change post-AMS. It is entirely possible the average will increase as the Companies  
8 are better able to detect non-technical losses; it is not clear that the Companies are  
9 already detecting the largest non-technical losses today, whether due to theft or meter  
10 errors. Second, Mr. Alvarez does not take into account that the non-technical-losses  
11 benefit does not depend upon finding an additional increment of non-technical losses  
12 each year; rather, non-technical-loss issues corrected in the first year that persist into  
13 subsequent years (e.g., corrected meter-error issues) are residual, i.e., they continue to  
14 provide non-technical-loss benefits for years into the future and are counted as such in  
15 the Companies' non-technical-losses benefit.

16 Finally, the Companies have not attempted to identify separately a non-  
17 technical-losses benefit resulting from deterrence, i.e., having AMS meters deployed  
18 and better detection technology installed presumably will have some deterrent effect  
19 regarding theft. That deterrent effect, whatever its size, does not require additional  
20 revenue-protection expenditures or efforts; rather, it contributes to supporting the non-  
21 technical-losses benefit at no additional cost.

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<sup>88</sup> Alvarez at 40-41.



1 **The Companies' Cost Estimates Are Not Understated**

2 **Q. Mr. Alvarez states that he believes the Companies' original nominal AMS cost**  
3 **projections do not include carrying costs.<sup>89</sup> How do you respond?**

4 A. Ordinarily, utilities present nominal capital cash outlays, not capital plus carrying costs,  
5 i.e., nominal revenue requirements, for a proposed capital project. That is not to  
6 deceive, but rather to aid the Commission to see clearly the magnitude of the underlying  
7 capital investment, which is what will be included in the utility's capitalization and rate  
8 base. It is entirely in keeping with how the Companies, and to my knowledge all  
9 Kentucky utilities, present costs of capital projects to the Commission.

10 That aside, the Companies presented in their application and my testimony  
11 NPVRR values—which include carrying costs—for all categories of costs and  
12 benefits.<sup>90</sup> The Companies believe the Commission should judge costs and benefits  
13 for such a long-term project not on nominal costs and benefits, but rather on NPVRR  
14 values to ensure they are comparing costs and benefits on an equal footing and to get a  
15 more accurate sense of the value of a proposed project to customers.

16 **Notwithstanding the Companies' view that NPVRR, not nominal, values**  
17 **are most important to consider, on January 30, 2018, the Companies filed in this**  
18 **proceeding a table showing all capital costs grossed up for carrying costs and**  
19 **accounting for the effect of the TCJA.<sup>91</sup> Notably, in the same January 30 filing,**  
20 **the Companies fully explained the differences between the two columns of**

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<sup>89</sup> Alvarez at 42-44.

<sup>90</sup> Application at 7; Malloy Exh. JPM-1 at 45.

<sup>91</sup> LG&E and KU Informational Update Filing for the Electric and Gas Advanced Metering Systems Business Case to reflect the Tax Cuts and Jobs Act of 2017 (Jan. 30, 2018).

1        **nominal values presented.**<sup>92</sup> Therefore, it is not clear why Mr. Alvarez’s corrected  
2 testimony appears to treat the Companies’ April 27 response to the Attorney General’s  
3 DR 1-20(c) as the first time the Companies presented nominal capital costs including  
4 carrying costs; the Companies had done so almost three months earlier.<sup>93</sup>

5            In short, the Companies have not tried to hide their cost of capital associated  
6 with the AMS deployment. That cost was always included in the Companies’ present-  
7 value calculations, as the Companies stated in their January 30 filing and in their  
8 response to Attorney General DR 1-20(a). The Companies stated their nominal capital  
9 costs including carrying costs in their January 30 filing, as well. Therefore, when the  
10 Attorney General asked about carrying costs on their April data requests, the  
11 information they requested had already been in the record of this proceeding for more  
12 than two months; the Companies’ responses simply restated what was already in the  
13 record.

14 **Q. Why did Mr. Alvarez file corrected testimony on this issue?**

15 A. In his original testimony, Mr. Alvarez presented the following table:<sup>94</sup>

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<sup>92</sup> *Id.* at 3.  
<sup>93</sup> See Alvarez Corrected Testimony at 43.  
<sup>94</sup> Alvarez at 44 (red ovals added).

	Nominal Capital <sup>65</sup> (for reference)	Present Value Capital (carrying costs included per discovery) <sup>66</sup>	TCJA <sup>67</sup> Present Value Capital	Difference between initial and TCJA Present Value Capital
Initial Project Capital	320.0	357.1	515.0	157.9
Ongoing Capital Requirements	43.8	22.3	63.0	40.7
Total Capital Requirements	363.8	379.4	578.0	198.6

1  
2

3 The values presented in the third column as “TCJA Present Value Capital” values are  
4 actually *nominal* TCJA-adjusted values contained in the table reprinted further above  
5 from the Companies’ January 30 filing, which the Companies also reprinted in their  
6 response to Attorney General DR1-20(c). Notably, in the table twice provided by the  
7 Companies, the column from which Mr. Alvarez took these values had “Nominal RR”  
8 in the header. The error in Mr. Alvarez’s original table above results in comparing  
9 nominal revenue-requirements values that do account for the TCJA to NPVRR values  
10 that do not account for TCJA. Therefore, the fourth column of Mr. Alvarez’s table  
11 provides values that are apples-to-oranges comparisons on two levels: comparing  
12 nominal values to present values and TCJA-adjusted values to pre-TCJA values. In  
13 short, the values in that column are not useful.

14 Instead, if the Commission desires to compare the original nominal values  
15 (without carrying costs) to the nominal values with carrying costs (i.e., revenue-  
16 requirements values) that account for the TCJA, the Commission can compare the first  
17 two columns of the table the Companies provided on January 30. If the Commission

1 would like to compare the NPVRR values pre-TCJA with the NPVRR values post-  
2 TCJA, it can compare the third and fourth columns of the table the Companies provided  
3 on January 30. What the latter comparison shows is that the NPVRR benefit of the  
4 AMS deployment increased from \$28.5 million to \$34.1 million, an increase of \$5.6  
5 million NPVRR, as a result of TCJA's impact on the discount rate used to compute  
6 present values.

7 Mr. Alvarez appears to have recognized these issues after being prompted to  
8 review them by the Commission Staff's DR No. 6 to the Attorney General, and filed  
9 corrected testimony as a result.

10 Though the Companies appreciate Mr. Alvarez's corrections, several  
11 significant mistakes also appeared in Mr. Alvarez's testimony in the Companies' 2016  
12 base-rate cases, which should be considered when deciding how much weight to afford  
13 Mr. Alvarez's testimony in this proceeding.<sup>95</sup>

14 **Q. Would you like to address the issues raised by Mr. Alvarez in his response to the**  
15 **Commission Staff's DR No. 7 to the Attorney General?**<sup>96</sup>

16 A. Yes. First, the Companies did not create the confusion about nominal capital costs that  
17 led to the error Mr. Alvarez addressed in his corrected testimony.<sup>97</sup> As I noted above,  
18 the Companies provided a full explanation of their nominal and present-value costs and  
19 benefits in their January 30 filing. The Companies cited to that filing in their response  
20 to Attorney General DR 1-20 and reprinted the table of costs and benefits from the

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<sup>95</sup> See Case Nos. 2016-00370 and 2016-00371, Rebuttal Testimony of John P. Malloy at 15-18, 25-28, and 34-35 (Apr. 10, 2017).

<sup>96</sup> Please note that Mr. Alvarez raises some of the same issues in his response to the Commission Staff's DR No. 9 to the Attorney General. My response below and my testimony above addresses those issues, as well.

<sup>97</sup> Emphasis in original.

1 January 30 filing in their response to Attorney General DR 1-20(c). Therefore, when  
2 the Attorney General noted in DR 2-12, “\$320 million in project capital balloons to  
3 \$515 million to be collected from customers,” the Companies assumed it was  
4 understood that the first figure was a nominal project capital figure and the latter was a  
5 nominal revenue-requirements figure; what else would it mean for “\$320 million in  
6 project capital” to “balloon” to “\$515 million to be collected from customers”? This  
7 reading of the Attorney General’s data request was supported by the next two subparts  
8 of the request, which differentiate between “nominal project capital” of \$320 million  
9 and a “nominal project capital revenue requirement” of \$515 million.<sup>98</sup> Therefore, the  
10 Companies did not create the confusion that led to Mr. Alvarez’s error; the record has  
11 been clear on this issue at least since January 30.

12 Second, Mr. Alvarez states that a single spreadsheet the Companies provided in  
13 response to Attorney General DR 2-12(a), namely 2018\_DR2\_Attach\_to\_Q12a\_-  
14 \_CEM\_-\_Summary.xlsx, was problematic in part due to a “lack of detail sufficient to  
15 verify that carrying charges are included in the net present value analysis, or what those  
16 amounts are by year ....” I would simply note that, as the name of the spreadsheet  
17 indicates, it is a summary sheet, not a detailed sheet. The other four Excel files  
18 provided in response to Attorney General DR 2-12(a) contain three tabs, one of which  
19 explicitly contains debt and equity costs *by year* and calculates nominal and present-  
20 value revenue requirements *by year*, and is the basis for the “Summary” tab presented

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<sup>98</sup> AG DR 2-12(a) and (b) (emphases added below):

- a. Provide all documentation, calculations, estimates, assumptions, workpapers, etc. which translates \$320 million in *nominal project capital* into a net present value of \$357.1 million.
- b. Provide all documentation, calculations, estimates, assumptions, workpapers, etc. which translates \$515 million in *nominal project capital revenue requirement* into a net present value of \$342.5 million.

1 in each file. Those files’ totals are then summed up into the summary spreadsheet Mr.  
2 Alvarez cited. Therefore, it is misleading to assert that one summary spreadsheet has  
3 a “lack of detail sufficient to verify that carrying charges are included in the net present  
4 value analysis, or what those amounts are by year” when the four other spreadsheets  
5 the Companies supplied provided the very detail Mr. Alvarez claims is lacking.

6 Third, Mr. Alvarez notes that the heading of column K of the summary  
7 spreadsheet he cited reads, “Life 2018-2033.” Certainly that is true, but it does not  
8 support his assertion that using a 15-year depreciation life for AMS meters—which is  
9 what that heading reflects—causes the Companies’ assumption of a 20-year service life  
10 or a 23-year cost-benefit to be inappropriate. If the Commission prefers the Companies  
11 use a 20-year depreciation life for AMS meters, the Companies will certainly do so  
12 (and the change will actually decrease the present-value capital cost, increasing  
13 NPVRR benefits of the project). Also, the spreadsheet Mr. Alvarez cites does not  
14 purport to address all capital expenditures for the entire cost-benefit period (i.e.,  
15 through 2040); rather, in accordance with the Attorney General’s data request, the  
16 spreadsheet addresses only capital deployed in the initial deployment phase of the  
17 project (i.e., through 2022). The Companies addressed all other capital deployed across  
18 the study period (recurring capital) in the spreadsheets it provided in response to  
19 Attorney General DR 2-12(d) and (e) to account for upgrades, replacements, and spares  
20 for AMS meters and other items across the study period. Therefore, it is incorrect to  
21 assume the heading on one spreadsheet Mr. Alvarez cites should necessitate using a  
22 15-year (or 18-year) cost-benefit period.

1 **Q. Mr. Alvarez states the Commission should consider the cost (including carrying**  
2 **costs) of early-retired meters to be a cost included in AMS cost-benefit**  
3 **calculations.<sup>99</sup> Ms. Hinko appears to agree with Mr. Alvarez’s position.<sup>100</sup> How**  
4 **do you respond?**

5 A. I do not believe any cost of early-retired meters should be included in AMS cost-benefit  
6 calculations. The reason is straightforward: The Companies would incur those costs  
7 regardless of whether they deployed AMS. If the Commission denied the Companies’  
8 requested CPCNs for AMS, the Companies’ existing meter plant would remain in  
9 place, and presumably the Companies would continue to recover their carrying costs  
10 for that plant, as well as the depreciation cost of those meters. If the Commission  
11 approved the CPCNs, the Commission would presumably approve the Companies’  
12 recovery of the costs of retired meters, including their carrying costs, because the  
13 current meters were prudent investments when made. The Companies would recover  
14 their costs of existing meter plant in both scenarios. Therefore, the existing meter costs  
15 are not costs of the AMS project because they are not caused by, and do not result from,  
16 the AMS project; rather, the Companies would incur and recover those costs as prudent  
17 investments regardless of whether the Companies fully deployed AMS.

18 Mr. Alvarez is incorrect when he characterizes the Companies’ position as a  
19 change from their position on this issue in their 2016 base-rate cases. In the  
20 Companies’ AMS full-deployment proposal in 2016, they proposed to accelerate the

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<sup>99</sup> Alvarez at 44-46.

<sup>100</sup> Hinko at 11-12.

1 recovery of the retired-meter cost to a five-year recovery.<sup>101</sup> Because of the time value  
2 of money, the accelerated recovery of that value did indeed create a cost that needed to  
3 be accounted for in the cost-benefit analysis, but only to the extent of the acceleration;  
4 the net costs of that accelerated recovery were reflected in the Companies' AMS  
5 Business Case in those proceedings.<sup>102</sup> But it would introduce error into the cost-  
6 benefit analysis in this proceeding to add as a cost of the AMS project a cost the  
7 Companies (and their customers) would incur regardless of whether the project  
8 proceeded.

9 With regard to Ms. Hinko's assertion that the Companies will benefit from a  
10 tax deduction related to retiring existing meters and that the tax benefit should go to  
11 customers, I can assure the Commission that the Companies will follow all applicable  
12 tax law and accounting requirements regarding the retired meters.<sup>103</sup> In addition, any  
13 tax benefits garnered by the Companies will ultimately benefit customers.

14 **Q. Mr. Alvarez asks a series of rhetorical questions regarding including the cost of**  
15 **the Companies' existing meters as a cost of the AMS project: "If a customer is**  
16 **already paying for an asset that adequately reads his or her electric usage, why**  
17 **should that customer pay for a second asset to read electric usage? Why pay for**  
18 **two assets to perform the function of one asset? Would a rational consumer buy a**  
19 **second car if he or she had no use for a second car?"<sup>104</sup> How do you respond?**

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<sup>101</sup> Case No. 2016-00370, Application at 14-15; Case No. 2016-00370, Direct Testimony of John P. Malloy Exh. JPM-1 at 38; Case No. 2016-00371, Application at 15-16; Case No. 2016-00371, Direct Testimony of John P. Malloy Exh. JPM-1 at 38.

<sup>102</sup> *Id.*

<sup>103</sup> See Hinko at 11-12.

<sup>104</sup> Alvarez at 45.



1 A. These rhetorical questions do not affect how a rational cost-benefit analysis should be  
2 conducted. Consider the second-car question, slightly revised so as not to presuppose  
3 the answer: Would a rational consumer buy a second car if the consumer already owned  
4 a car that was reliable transportation? Yes, a rational consumer would do so if the  
5 benefits of the second car exceeded the car's costs. For example, assume a rational  
6 person owns a car on which the person is still making payments, and further assume  
7 the person has no way to avoid those payments. If the rational consumer's current car  
8 lacks desirable features a new car would provide, the consumer should count the costs  
9 and benefits of the new car, *but not the cost of the payments on the current car that*  
10 *cannot be avoided.* Perhaps the new car would have better gas mileage, additional  
11 safety features, and fewer repairs; those would be benefits to consider in relative terms  
12 against the cost of the new car. That is how a rational person decides whether to buy a  
13 new car; the person does not count the costs that cannot be avoided, but rather compares  
14 the relative costs and benefits of buying a new car.

15 **Q. Mr. Alvarez notes that the Massachusetts Department of Public Utilities (“DPU”)**  
16 **took note of the cost of meters that would have to be retired early when recently**  
17 **rejecting two advanced-metering proposals.<sup>105</sup> Do you believe the Commission**  
18 **should follow the DPU’s approach?**

19 A. No. As I showed above—and as the DPU appears to have understood when it did not  
20 include the cost of retired meters in the cost-benefit analyses per se—it introduces error  
21 into a cost-benefit analysis to include a cost that is sunk or cannot be avoided. If it is  
22 not a marginal cost or benefit, it has no place in a project's cost-benefit analysis. That

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<sup>105</sup> Alvarez at 47.

1 the DPU noted the magnitude of the retirement in its order rejecting the advanced-  
2 metering proposals is interesting as a rhetorical matter, but not as a business-analytical  
3 matter; it should not have been a ground on which the DPU denied the requests from a  
4 cost-benefit perspective.

5 **The Monthly Bill Impact Calculation Provided in the Application Is Reasonable**

6 **Q. Why should the Commission not follow Mr. Alvarez’s recommendation that the**  
7 **Commission disregard the \$2.60 peak monthly bill impact calculation provided**  
8 **by the Companies?<sup>106</sup>**

9 A. Unfortunately, Mr. Alvarez’s errors regarding the Companies’ cost-and-benefit tables  
10 cause him to assert the Companies excluded almost \$200 million of present-value  
11 capital cost related to the TCJA (an error not addressed in his corrected testimony),  
12 which he believes represent carrying costs customers must pay.<sup>107</sup> As I explained  
13 above, the number Mr. Alvarez calculated is mistaken, and has no bearing on the  
14 Companies’ calculation of the peak monthly bill impact.

15 Mr. Alvarez is correct that the Companies included the value of operational  
16 savings in their bill calculations, but they also included carrying costs.<sup>108</sup> The \$2.60  
17 value was correctly calculated under the previous tax law as the peak monthly  
18 residential electric bill impact. The peak monthly residential electric bill impact that  
19 includes TCJA effects is \$2.17 (\$1.01 for gas service).

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<sup>106</sup> Alvarez at 48; Corrected Alvarez at 47-48.

<sup>107</sup> Alvarez at 48.

<sup>108</sup> See Excel attachment to Companies’ Response to AG DR 1-21(a-b) (showing cost-of-capital items in the “Baseline” tab).

1 **The Companies Recommend AMS Approval Even If the Commission Believes Costs**  
2 **Modestly Exceed Quantified Benefits**

3 **Q. Would you recommend the Commission approve full deployment of AMS even if**  
4 **the Commission believed the deployment would result in modest net costs rather**  
5 **than net benefits based on the costs and benefits quantified in these proceedings?**

6 A. I would. There are unquantifiable benefits and possible future benefits of AMS that  
7 that justify approving the proposed AMS deployment even if the Commission  
8 determines the AMS costs and benefits quantified in these proceedings would result in  
9 net costs. For example, AMS data and functionality will enable enhanced customer  
10 service by providing more granular usage data to customer service representatives, who  
11 will be able to use that information to advise customers about possible rate options or  
12 energy-efficiency programs that might serve their needs. In addition, customer service  
13 will be enhanced by providing rapid service activations for move-ins and terminations  
14 for move-outs. Also, some customer service issues, such as possible metering errors,  
15 can be detected and addressed more quickly with AMS in place than without it.

16 But even more promising than the known unquantifiable benefits are the  
17 possible future benefits AMS could provide. It is a certainty that AMS will provide the  
18 Companies and their customers with significantly more usage data than is available  
19 today. In addition to aiding the Companies to formulate new and better-tailored rate  
20 structures, the data will enable customers to better understand their own usage  
21 characteristics, and therefore to exert more effective and informed control over their  
22 usage. And as the information technology revolution has shown time and again, the  
23 market constantly produces innovative and ingenious ways of harnessing data to  
24 provide new value and benefits. Therefore, there is ample reason to believe that the

1 Companies' AMS Business Case understates the full value AMS will deliver to  
2 customers over 20 years; indeed, as I noted at several points in my testimony above,  
3 the Companies have attempted to be conservative in estimating benefits. For example,  
4 the Companies' calculation of the ePortal benefit accounts for savings only among  
5 residential electric customers; ePortal-related savings could also result from non-  
6 residential and gas customers' use of ePortal to reduce or optimize their usage. In  
7 addition, the Companies were intentionally conservative in estimating the value of  
8 reliability benefits resulting from AMS, and enhanced reliability has qualitative  
9 benefits in addition to quantitative benefits. For these reasons, I recommend the  
10 Commission approve the Companies' requested CPCNs even if the Commission  
11 determines the costs of the deployment modestly exceed the currently quantifiable  
12 benefits.

13 **The Companies Will Apply Existing Customer Data Privacy Policy to AMS Data**

14 **Q. Ms. Hinko expresses concerns about customer data privacy and cites to**  
15 **regulations in California regarding privacy protections for data created by**  
16 **advanced metering.<sup>109</sup> How do you respond?**

17 **A.** The Companies will continue to apply their existing customer-data privacy policy after  
18 AMS deployment, which states in relevant part:

19 We will make every effort to protect and preserve  
20 customer account information and will not share specific  
21 information about your account with third parties,  
22 without written authorization or unless we are required  
23 to do so by a court order, subpoena or other compulsory  
24 process, or by operation of law.<sup>110</sup>

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<sup>109</sup> Hinko at 12.

<sup>110</sup> <https://lge-ku.com/privacy>

1 The Companies believe this is strong protection for customers’ individually identifiable  
2 account and usage data. Notably, the Commission has not imposed additional data-  
3 privacy restrictions on any other utility for which it has approved advanced-metering  
4 deployments. Moreover, the Commission declined to mandate a customer-privacy  
5 standard in the final order in its most recent smart-grid administrative proceeding.<sup>111</sup>  
6 Also, if the Commission were to mandate a standard similar to the one California has  
7 adopted and Ms. Hinko appears to support,<sup>112</sup> it would increase the Companies’ cost of  
8 doing business because additional personnel would likely be needed to contact all the  
9 parties regarding whom the Companies receive subpoenas; it would certainly increase  
10 the Companies’ legal expense as they sought to determine whether the Companies were  
11 required to provide written notice to each customer for whom the Companies received  
12 a subpoena. Therefore, I recommend the Commission deny Ms. Hinko’s request for  
13 the imposition of a privacy policy the Commission has not imposed on any other utility  
14 and stated just over two years ago it would not impose.

15 **Low-Income Customers Will Continue to Enjoy Existing Customer Protections after,**  
16 **and Will Receive Benefits from, Fully Deploying AMS**

17 **Q. Some advocates for low-income customers have expressed concern about AMS**  
18 **meters’ remote service switches, and in particular the ability for such switches to**  
19 **disconnect a customer’s service remotely.<sup>113</sup> Will current protections remain in**  
20 **place for customers concerning service disconnections?**

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<sup>111</sup> Case No. 2012-00428, Order at 13 (April 13, 2016) (“The Commission agrees that each utility should have a customer privacy policy and will accept the proposal set forth in the Report. Although the Commission will not mandate the adoption of a particular standard, the Commission finds that each utility should formalize its customer privacy policy and include it as part of its internal procedures.”).

<sup>112</sup> See Hinko at 12; Hinko Exh. 3 at A4-A5.

<sup>113</sup> See Ashabraner at 8-14; Ratchford at 12.

1 A. Absolutely. The Companies will continue to follow all applicable legal requirements  
2 concerning connection of service, disconnections, and reconnections, and will do so if  
3 the Commission approves the proposed AMS deployment just as it will if the  
4 Commission does not. In particular, the Companies will continue to follow the  
5 procedures set out in their electric tariffs at Sheet No. 105.1, “Discontinuance of  
6 Service,” at paragraph H. These procedures comply with all applicable legal  
7 requirements, and the Commission has repeatedly approved them as part of the  
8 Companies’ electric tariffs. The Companies will also continue to follow their existing  
9 policy concerning residential disconnections during periods of cold weather. And the  
10 Companies will continue to act on their clear incentive to maintain service to customers  
11 by continuing to work with them and customer advocates on payment arrangements,  
12 LIHEAP, WinterCare, WinterHelp, WeCare, and other assistance programs. The  
13 Companies are committed to ensuring all disconnection policies, procedures, and  
14 practices comply with applicable Commission regulations. To be clear, the Companies  
15 are not proposing to change their policies with regard to non-payment with full scale  
16 deployment of AMS, but rather the mechanical method for disconnecting or  
17 reconnecting customers.

18 Finally, it is important to reiterate that the remote service switch will allow the  
19 Companies to reconnect service to customers remotely and almost instantaneously.  
20 This capability will help ensure that customers who have arranged to have their service  
21 reconnected do not have to wait hours or even a day to have service back; rather, in a  
22 matter of minutes after confirming the satisfactory payment arrangements, the  
23 Companies will be able to reconnect service. That is a real benefit for customers.

1 **Q. How do you respond to the concern that low-income assistance agencies will**  
2 **become overwhelmed if the Companies are permitted to disconnect service**  
3 **remotely?**<sup>114</sup>

4 A. The Companies appreciate the good work low-income advocates and assistance  
5 agencies provide to the communities the Companies serve, and particularly to the  
6 Companies' customers. It is the Companies' hope and expectation that the staggering  
7 of billing cycles (i.e., not all customers are billed at the same time, but rather in roughly  
8 equal tranches) will help keep low-income assistance providers from becoming  
9 overwhelmed if the Commission approves AMS deployment and remote  
10 disconnections go into effect.

11 Also, it is in the Companies' interests and the interests of all customers not to  
12 disconnect service except when necessary, whether due to non-payment or otherwise.  
13 It is further in the Companies' interest and all customers' interests to reconnect service  
14 as quickly as reasonably possible when the requirements of reconnection are met. The  
15 Companies' expectation is that the ability to disconnect and reconnect service remotely  
16 and promptly will ultimately redound to all customers' benefit.

17 **Q. How do you respond to concerns that the proposed opt-out fees might prevent**  
18 **some low-income customers who desire to opt out from doing so?**<sup>115</sup>

19 A. The Companies wrestled with whether to offer an opt-out at all in this AMS full-  
20 deployment proposal. When the Companies first made this proposal in their 2016 base-  
21 rate cases, they did not include an opt-out because part of the value AMS provides

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<sup>114</sup> Ashabraner at 8-10; CAC Response to PSC Staff DR No. 3 (June 6, 2018).

<sup>115</sup> Ratchford at 11.

1 derives from its being ubiquitous, as the Commission recognized in the most recent  
2 smart-grid administrative case.<sup>116</sup> Therefore, when the Companies decided to include  
3 an opt-out in this proposal, in part due to feedback provided by the intervenors in the  
4 2016 rate cases and by the participants in the AMS Collaborative, the Companies  
5 formulated the opt-out charges to reflect the costs imposed by each customer's opt-out.  
6 Thus, although the Companies appreciate the point that paying opt-out charges could  
7 be more difficult for some customers than for others, the Companies believe the  
8 proposed charges accurately reflect the costs of opt-outs, which are not insignificant.

9 I would also note that reducing opt-out charges from the cost-based levels the  
10 Companies have proposed would not reduce the actual cost of opt-outs, but rather  
11 would result in the under-recovered cost of opt-outs being borne by other customers in  
12 the same rate class when the Companies seek to change base rates. Though it might be  
13 the case that low-income customers would elect disproportionately to opt out if the  
14 charges were arbitrarily low, it is not obvious that would occur, which could result in  
15 low-income customers effectively subsidizing the opt-outs of non-low-income  
16 customers. Therefore, the Companies believe the better approach is for the  
17 Commission to approve the cost-based opt-out charges the Companies have proposed.

18 **Q. Several low-income advocates have expressed concern that low-income customers**  
19 **will not receive benefits from AMS due to lack of access to the Internet,<sup>117</sup> and**  
20 **that the low participation of low-income customers in the DSM AMS offering**

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<sup>116</sup> Case No. 2012-00428, Final Order at 17 (Apr. 13, 2016).

<sup>117</sup> Ashabraner at 17-20; Ratchford at 10; Hinko at 7; MHC Response to PSC Staff DR No. 2 (June 5, 2018).



1 **indicates that low-income customers are unlikely to use ePortal tools and engage**  
2 **with AMS data.<sup>118</sup> How do you respond?**

3 A. Although access to ePortal and responding by taking appropriate energy-saving  
4 measures is certainly one way customers will benefit from AMS, it is far from the only  
5 way customers—including low-income customers—will benefit from AMS. First,  
6 reduced operational costs resulting from AMS will redound to all customers' benefit.  
7 Second, enhanced identification and recovery of non-technical losses will again  
8 redound to all customers' benefit, including low-income customers. Third, reduced  
9 post-storm and other service-restoration times resulting from AMS data will be a  
10 benefit for all customers, including low-income customers. Fourth, to the extent AMS  
11 data allows the Companies to formulate rate structures that better reflect underlying  
12 costs based on much better customer-usage data from AMS, all customers will benefit,  
13 and particularly those low-income customers who have above-average usage and are  
14 effectively subsidizing low-usage customers. Fifth, AMS-related features like usage  
15 and bill alerts require only a phone capable of receiving text messages, which devices  
16 are typically broadly available. Finally, although having Internet access is not  
17 necessary to receive most categories of AMS benefits, there are a number of available  
18 federal and state programs designed to facilitate access to the internet and to cellular  
19 services for low- or fixed-income customers.<sup>119</sup>

20 **Q. How do you respond to concerns that low-income customers are not positioned to**  
21 **engage in energy efficiency even if they can access the data ePortal will provide?<sup>120</sup>**

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<sup>118</sup> Ashabraner at 14-17; Ratchford at 12-13.

<sup>119</sup> See Huff Exh. DEH-3 at 33.

<sup>120</sup> Hinko at 7.

1 A. The Companies understand that engaging in energy efficiency may be challenging for  
2 some low-income customers. That is why the Companies have consistently sought to  
3 provide significant funding for their low-income DSM-EE WeCare program, which  
4 provides weatherization and other energy-efficiency assistance to low-income  
5 customers. In the Companies' most recent DSM-EE application, the Companies have  
6 proposed to have WeCare move from being one of the largest programs in the DSM-  
7 EE portfolio to being the largest single program in the residential portfolio by a wide  
8 margin. Indeed, the proposed WeCare budget is well more than double than the next-  
9 largest residential DSM-EE program for all plan years except 2019, when it is nearly  
10 double. Therefore, the Companies have made and will continue to make reasonable  
11 efforts to ensure that customers, including low-income customers, have cost-effective  
12 resources and information available to them to empower their energy-efficiency efforts.

13 **Q. How do you respond to concerns that the bill impact of AMS deployment will be**  
14 **too high for low-income customers?**<sup>121</sup>

15 A. The Companies appreciate that every dollar counts, especially for low-income  
16 customers. That is why the Companies have contributed millions of dollars over the  
17 years to assist low-income assistance groups and customers, and continue to provide  
18 significant shareholder support to such efforts. It is also why the Companies supported  
19 the current Home Energy Assistance charge. As I noted above, it is why the Companies  
20 have consistently sought to provide significant funding for their low-income DSM-EE  
21 WeCare program. So though the Companies can understand that any bill increase is a  
22 challenge, even a temporary increase of \$2.17, the Companies believe that increase will

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<sup>121</sup> Ratchford at 11; Hinko at 7.

1 result in net benefits for all customers, and the Companies believe their efforts and  
2 contributions on low-income customers' behalf will help offset the bill impact.

3 **Conclusion and Recommendation**

4 **Q. What is your recommendation to the Commission?**

5 A. Having now read and addressed the intervenors' testimony concerning the Companies'  
6 proposed full deployment of AMS, I again recommend the Commission approve the  
7 Companies' requested CPCNs because it will provide net benefits to customers.  
8 Indeed, the Companies have attempted to be thorough but conservative in estimating  
9 benefits, so it is possible that quantifiable AMS benefits are understated. Even if the  
10 Commission finds AMS not to be net beneficial based on quantifiable benefits, there  
11 are ample unquantified and currently unquantifiable benefits that will result from  
12 having AMS-provided data to support approval of full AMS deployment.

13 With regard to low-income advocates' concerns, the Companies will continue  
14 to adhere to all current requirements regarding protections for customers facing service  
15 disconnection, and the ability to rapidly and remotely reconnect service will be a  
16 benefit to the customers these advocates serve. In addition, there are numerous other  
17 AMS benefits low-income customers will receive, including improved service  
18 restoration times and relatively lower costs resulting from operational efficiencies and  
19 improved collections of non-technical losses.

20 Therefore, I conclude the Companies' proposed full deployment of AMS will  
21 provide benefits, both quantified and otherwise, exceeding its costs. It merits the  
22 Commission's approval.

23 **Q. Does this conclude your testimony?**

24 A. Yes, it does.