

**STATE OF ILLINOIS**  
**BEFORE THE ILLINOIS COMMERCE COMMISSION**

<b>North Shore Gas Company</b>	)	
	)	
<b>The Peoples Gas Light and Coke Company</b>	)	
	)	
	)	<b>Docket Nos. 09-0436, 09-0437</b>
	)	<b>(Cons.)</b>
<b>Petition Pursuant to Rider EEP of</b>	)	
<b>Schedule of Rates for Gas Service to</b>	)	
<b>Initiate a Proceeding To Determine the</b>	)	
<b>Accuracy of the Rider EEP</b>	)	
<b>Reconciliation Statement</b>	)	

**REBUTTAL TESTIMONY OF**

**JOHN J. PLUNKETT**

**PRESIDENT**

**GREEN ENERGY ECONOMICS GROUP, INC.**

**ON BEHALF OF**

**THE PEOPLES GAS LIGHT AND COKE COMPANY AND NORTH SHORE GAS COMPANY**

**JUNE 1, 2010**

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**TABLE OF EXHIBITS**

Exhibit NS-PGL 5.1 *Professional Qualifications of John Plunkett*

1                   **I. Introduction**

2    **A. Identification and Qualifications**

3    **Q: State your name, occupation, and business address.**

4    A: I am John J. Plunkett. I am a partner in and president of Green Energy  
5       Economics Group, Inc., an energy consultancy I co-founded in 2005. My  
6       office address is 1002 Jerusalem Road, Bristol Vermont 05443.

7    **Q: Summarize your qualifications.**

8    A: I have worked for over thirty years in energy utility planning, concentrating  
9       on energy efficiency (“EE”) as a resource and business strategy for energy  
10      service providers. Throughout my career I have played key advisory and  
11     negotiating roles on all aspects of electric and gas utility demand side  
12     management (“DSM”), including residential, industrial, and commercial  
13     program design; implementation management and oversight; performance  
14     incentive design; and monitoring, verification, and evaluation. I have led,  
15     prepared, or contributed to numerous analyses and reports on the  
16     economically achievable potential for efficiency and renewable resources.  
17     Over the past two decades, I have been involved in the review or  
18     preparation of many gas and electricity DSM investment plans. I have  
19     worked on these issues throughout North America and in China on behalf of  
20     energy service providers, citizen and environmental groups, state consumer  
21     advocates, utility regulators, and government agencies at the local, state,  
22     provincial, and national levels.

23 I earned my B.A. in Economics with Distinction from Swarthmore  
24 College, where I graduated Phi Beta Kappa and was awarded the Adams  
25 Prize in Quantitative Economics. My resume is attached as NS-PGL Ex.  
26 5.1.

27 **Q: Have you testified previously in utility regulatory proceedings?**

28 A: Yes. I have testified as an expert witness over two dozen times before  
29 regulators in a dozen states and three Canadian provinces.

30 **Q: Have you testified before the Illinois Commerce Commission**  
31 **(“Commission” or “ICC”)?**

32 A: Yes. I testified in July of 1989 for the Illinois Citizens Utility Board in ICC  
33 Docket 89-0034 regarding demand-side management and integrated  
34 resource planning by Commonwealth Edison Company.

35 **Q: Describe your recent domestic work on energy efficiency and**  
36 **conservation investment.**

37 A: I have been assisting the Chicagoland Natural Gas Savings Program with  
38 economic analysis in the planning and implementation of its energy  
39 efficiency programs and portfolio since the fall of 2008. I have also been  
40 engaged since 2008 by Philadelphia Gas Works (“PGW”), a natural gas  
41 utility serving the city of Philadelphia, to develop a five-year, \$54 million  
42 DSM portfolio. I submitted testimony in support of PGW’s plan with the  
43 Pennsylvania Public Utility Commission, and I am currently assisting with  
44 program implementation planning.

45 I worked for New York City's Economic Development Corporation In  
46 2007 and 2008 on three parallel assignments, including the Public Service  
47 Commission's Energy Efficiency Portfolio proceeding to establish programs  
48 for Consolidated Edison's customers to reduce by 15% the forecasted  
49 electricity and gas requirements for 2015. I have also assisted the city in  
50 collaborative negotiations concerning Consolidated Edison's gas DSM  
51 programs for 2009-2010, and in the design and evaluation of its  
52 geographically targeted electric DSM program to defer transmission and  
53 distribution investment.

54 I testified in two proceedings before the British Columbia Utilities  
55 Commission in 2008-2009 concerning the proposed DSM program plans  
56 filed (separately) by Terasen Gas and BC Hydro. I testified on behalf of the  
57 Connecticut Office of Consumer Advocate regarding long-range DSM plans  
58 by that state's two investor-owned utilities in 2008.

59 Since its inception in 2000, I have served as senior policy advisor for  
60 Efficiency Vermont, the nation's first statewide "energy-efficiency utility." I  
61 helped to establish performance goals for three, three-year contracts with  
62 the Public Service Board. Under the 2009-2011 contract, portfolio  
63 investment will approach \$40 million annually, placing Vermont, for its size,  
64 at the forefront of energy-efficiency investment in North America. Last year,  
65 I was technical leader and lead author of a 20-year forecast of economically  
66 achievable peak demand and energy savings from continued efficiency  
67 investment for twenty more years. I am currently leading Efficiency

68 Vermont's work with regulators and utilities to develop a new 20-year  
69 demand-side resource plan over the next year.

70 **Q: What is your experience with energy efficiency and conservation**  
71 **investment in China?**

72 A: I have consulted on energy efficiency and conservation at the national and  
73 provincial levels in China for several non-governmental organizations since  
74 2003. For the past three years, I have provided technical support on the  
75 economic and financial assessment of energy efficiency and conservation  
76 investment projects in Guangdong Province for the Montpelier, Vermont-  
77 based Institute for Sustainable Communities. In that effort, I am currently  
78 working with Chinese experts to train and technically support citizen groups  
79 in the economic and financial analysis of community scale efficiency and  
80 renewable projects in three cities in Guangdong.

81 I was a member of the consulting team that drafted the National  
82 Chinese DSM Implementation Manual last year, sponsored by China's  
83 National Development and Reform Commission, which is the national  
84 Chinese regulatory body that provides oversight to energy efficiency in  
85 China. Working with leading efficiency experts from the U.S. and China, I  
86 prepared chapters concerning performance indicators and cost-  
87 effectiveness analysis. The Chinese central government recently issued the  
88 national DSM Implementation Manual.

89 **B. Summary**

90 **Q: On whose behalf are you testifying?**

91 A: My testimony is sponsored by The Peoples Gas Light and Coke Company  
92 (“Peoples Gas”) and North Shore Gas Company (“North Shore”) (together  
93 the “Utilities”).

94 **Q: What is the purpose of your testimony?**

95 A: My testimony responds to the prefiled direct testimony of Illinois Commerce  
96 Commission (“ICC” or “Commission”) Staff witness Dr. David Brightwell,  
97 dated April 6, 2010. In particular, I respond to Dr. Brightwell’s  
98 recommendation that the Utilities’ costs associated with financial incentives  
99 for three efficiency measures, i.e., high-efficiency clothes washers, tankless  
100 water heaters, and wall insulation, be disallowed based on his conclusion  
101 that they were not economically justified.

102 **Q: What are your conclusions?**

103 A: I conclude that Dr. Brightwell’s findings are factually and logically incorrect.  
104 His narrow focus on the results of static, measure-level Total Resource Cost  
105 (“TRC”) cost-effectiveness analysis fails to account for several factors: (1)  
106 the positive economic benefits of the measures to ratepayers (as  
107 determined through the Program Administrator Cost (“PAC”) test), (2) the  
108 economic value of the measures over time using the TRC test, and (3) the  
109 other significant value the measures provided to the ratepayers and  
110 customers both in the short and long term as described in Ms. Annette  
111 Beitel’s testimony. In fact, given the significant value and economic benefits

112 of the measures, I would recommend reintroducing them to the portfolio to  
113 achieve more cost-effective savings and greater short- and long-term  
114 benefits.

115 Further, I conclude that Dr. Brightwell's testimony miscalculates the  
116 economic losses to ratepayers that would result from promoting the  
117 measures if they indeed were not cost-effective under the TRC test. In fact,  
118 had Dr. Brightwell properly used the PAC test to assess the impact on  
119 ratepayers from paying financial incentives for the measures he disputes, he  
120 would have found that they actually benefitted ratepayers significantly.

121 Dr. Brightwell's disagreement rests solely on differences of  
122 professional judgment between him and that of the Governance Board, and  
123 the experts hired to help design and plan the Chicagoland DSM programs.  
124 This directly contradicts the Commission's definition of prudence on which  
125 he relies.

126 Finally, the cost disallowance he proposes is unreasonable.  
127 Ratepayers did benefit from all three measures that Dr. Brightwell seeks to  
128 disallow. His recommended disallowance is out of proportion to the  
129 economic losses to society that would result if he calculated them correctly  
130 according to the TRC test. Such a harsh penalty would imperil EE efforts on  
131 the part of all DSM program administrators in Illinois, gas and electric. This  
132 would do far more economic harm to society than the alleged losses he  
133 seeks to recover on ratepayers' behalf.

134                   **II. Application of the Prudence Standard to Utility DSM**  
135                   **Investments**

136   **Q: What is your understanding of the logic behind Dr. Brightwell's**  
137   **findings, conclusions, and recommendations?**

138   A: Dr. Brightwell observes that the Utilities paid \$150,000 in customer financial  
139   incentives for three gas efficiency measures initially included in the  
140   Chicagoland DSM programs that had benefit-cost ratios ("BCRs") under the  
141   TRC test below 1.0. The three measures are high-efficiency clothes  
142   washers; tankless water heaters; and wall insulation. Dr. Brightwell  
143   observes further that BCRs were in the range of 0.9 and 1.0 for the hot-  
144   water saving measures (i.e., clothes washers and tankless water heaters).  
145   Finding fault with the cost estimates for wall insulation, he calculated a BCR  
146   as low as 0.3 by using higher cost estimates.

147               Dr. Brightwell draws four major conclusions from these findings.  
148   First, he concludes that the three measures are not cost-effective under the  
149   societal cost-benefit test, the TRC. Secondly, he concludes that none of  
150   them should have been included in the programs as launched. Third,  
151   because the cost-effectiveness test results were known or should have  
152   been known in advance, the decision to include the measures was not cost  
153   effective. Finally, he concludes that the economic harm to ratepayers from  
154   the Utilities' financial incentive payments is the total amount of the  
155   expenditures made on their behalf.

156           In order to make ratepayers whole, Dr. Brightwell recommends that  
157           the Commission completely deny the Utilities cost recovery of expenditures  
158           on financial incentive payments to customers for high-efficiency clothes  
159           washers, tankless water heaters, and wall insulation.

160   **Q: What definition of prudence does Dr. Brightwell use?**

161   A: Quoting from page 3 of Dr. Brightwell's testimony,  
162       "[...] that standard of care which a reasonable person would be expected to  
163       exercise under the circumstances encountered by utility management at the  
164       time decisions had to be made. In determining whether or not a judgment  
165       was prudently made, only those facts available at the time the judgment was  
166       exercised can be considered. Hindsight review is impermissible.

167           Imprudence cannot be sustained by substituting one's judgment for  
168           that of another. The prudence standard recognizes that reasonable persons  
169           can have honest differences of opinion without one or the other necessarily  
170           being 'imprudent.'" (ICC Docket No. 84-0395, Order (Oct. 7, 1987) at 17).

171   **Q: Do you disagree with the Commission's definition of prudence?**

172   A: No, not at all. It is Dr. Brightwell's application of the Commission's prudence  
173       definition that is wrong.

174   **Q: What is wrong with Dr. Brightwell's application of the prudence  
175       standard?**

176   A: I find four problems with Dr. Brightwell's interpretation and application of the  
177       Commission's prudence definition.

178           First, the scope of Dr. Brightwell's assessment is too narrow and  
179 shortsighted to support his broad conclusions. By confining his examination  
180 exclusively to benefit/cost test results for individual measures at the outset  
181 of a multi-year program portfolio, Dr. Brightwell fails to recognize the long-  
182 term, strategic market considerations that must be taken into account in  
183 making prudent decisions to intervene in the marketplace to increase  
184 acceptance of high-efficiency products and services. In doing so, he is  
185 substituting his judgment for the reasoned, professional judgment made by  
186 experts with whom he disagrees – exactly what the Commission's definition  
187 *excludes* from consideration of whether a utility investment decision is  
188 prudent.

189           Second, Dr. Brightwell misconstrues the purposes and functions of  
190 the two DSM cost-effectiveness tests in assessing the economic  
191 performance of DSM investments in planning and executing program  
192 decisions. This misunderstanding leads him to exaggerate the putative  
193 economic damages he alleges result from the expenditures. In fact, as I  
194 show below, ratepayers were *better*, not worse, off because of the decision  
195 to include the three measures in the portfolio.

196           Third, the remedy Dr. Brightwell prescribes for making ratepayers  
197 whole is too severe, even if the Commission accepted the level of economic  
198 damages he incorrectly alleges. The Governance Board made the decision  
199 to include these three measures in good faith, relying on the professional  
200 judgment of consultants it engaged to advise it.

201 Finally, nowhere does Dr. Brightwell acknowledge the significant  
202 benefits generated by the Chicagoland portfolio, which Resource Solutions  
203 Group (the Program Administrator) has estimated at \$3,350,608 in lifetime  
204 avoided gas costs over the three-year program period. Penalizing a utility  
205 for all the additional benefits it failed to achieve from a portfolio expected to  
206 yield \$1,063,507 in net economic benefits would suddenly make DSM  
207 portfolio administration in Illinois appear extremely risky to utility  
208 shareholders and management. This would discourage all but the most  
209 intrepid utility from undertaking efficiency investments on its ratepayers'  
210 behalf unless offered the prospect of very high returns to counter-balance  
211 the very high regulatory risk of doing so.

212 **A. Purpose of DSM cost-effectiveness tests**

213 **Q: What was the role of DSM cost-effectiveness analysis in the**  
214 **Governance Board's development of its Chicagoland gas DSM**  
215 **portfolio?**

216 A: One objective of Chicagoland's DSM portfolio was to achieve cost-effective  
217 gas savings to benefit society and Peoples Gas' and North Shore's  
218 ratepayers in particular while building capacity for future robust gas  
219 efficiency programs. To pursue this objective, the program team employed  
220 the TRC and the PAC cost-effectiveness tests to project and compare the  
221 benefits and costs of the DSM programs and assess their value from the  
222 perspectives of the economy (society) and of ratepayers.

223 **Q: What is the TRC test?**

224 A: The TRC test counts the monetary costs of societal resources devoted to  
225 efficiency investment, and sometimes all the monetary benefits of the  
226 avoided gas and other (such as water) resources saved from efficiency  
227 investment. The TRC test includes but does not distinguish between costs  
228 incurred by the program and those borne by participating customers. If the  
229 present worth of total resource benefits over the life of the efficiency  
230 investment exceeds its total resource costs, then it “passes” the TRC test.

231 However, the TRC does not capture everything of value to customers  
232 or society. The TRC does not capture non-monetary benefits, such as  
233 increased comfort that people feel when they insulate their homes, a benefit  
234 that customers highly value and appreciate. It also does not capture non-  
235 resource benefits, such as building increased awareness and support of  
236 energy efficiency.

237 The measure-level TRC is one, but not the only or dispositive,  
238 criterion used by EE program designers and administrators. Using  
239 measure-level TRC as a sole criterion for whether to include a measure in  
240 an EE program is unduly restrictive and not consistent with “best practices”  
241 in EE program design and implementation.

242 **Q: What is the purpose of the TRC?**

243 A: The TRC is widely recognized as a test of societal economic efficiency.  
244 Measures whose benefits exceed their costs lower the total resource costs  
245 allocated in the economy to satisfy a given level of demand for energy  
246 service. Program administrators use the TRC at all these levels of analysis

247 as a tool for achieving net benefits and assessing the allocation of program  
248 expenditures between competing measures, programs and portfolio  
249 objectives.

250 While the TRC is an effective tool in analyzing DSM investments for  
251 the economy as a whole, it does not consider who in the economy pays the  
252 costs or enjoys the benefits of efficiency investments. It is also not the tool  
253 used to assess benefits to ratepayers from an energy efficiency portfolio.

254 **Q: What is the PAC test?**

255 A: The PAC test counts only the costs of efficiency investments incurred by  
256 program administrators and supported by ratepayers, and only the benefits  
257 of avoided gas costs. It does not include the value of non-gas resource  
258 savings in the calculation of benefits; nor does it include customers'  
259 contribution toward efficiency investments in the calculation of costs.

260 **Q: What is the purpose of the PAC test?**

261 A: The PAC test indicates the extent to which the ratepayers responsible for  
262 funding investments benefitting the economy receive reasonable value for  
263 the money they provide to support the program portfolio. It does so by  
264 counting only those costs borne by ratepayers supporting the programs and  
265 by ignoring the costs borne directly by participants. Accordingly, it indicates  
266 the relative value to ratepayers from a particular program or from the entire  
267 DSM portfolio.

268 **Q: Are these definitions substantially the same as Dr. Brightwell's?**

269 A: Based on my understanding of his testimony, I believe they are.

270 **Q: Is either test sufficient for prudent DSM planning?**

271 A: No. It is necessary to use both tests to plan and assess DSM programs;  
272 neither test is sufficient on its own. Because the TRC test ignores customer  
273 rebates as transfers between groups, it is useless for determining rebate  
274 levels – by far the single largest item in DSM program and portfolio budgets.  
275 This is why the PAC test is also needed to assess the cost-effectiveness of  
276 DSM programs and portfolios.

277 **Q: How did the Governance Board use the two cost-effectiveness tests to**  
278 **design and plan its Chicagoland DSM portfolio?**

279 A: Benefit/cost analysis of both tests helped inform the Governance Board's  
280 decision-making about which efficiency measures to promote in the  
281 programs, and which program strategies to employ.

282 **Q: Were the results of cost-effectiveness tests the only decisive**  
283 **considerations in the Governance Board's program and portfolio**  
284 **planning?**

285 A: No. The Governance Board also considered non-monetary factors not  
286 ordinarily included in either of the cost-effectiveness tests in order to  
287 maximize long-term value from portfolio investment. These included the  
288 potential for the programs to drive down future efficiency costs by raising  
289 demand and sales volumes, and real but unquantified value through  
290 improved service quality provided by certain efficiency measures. It also  
291 took into account the need to build and maintain long-term business  
292 relationships throughout the supply chain for high-efficiency products and

293 services in order to influence market behavior in the future. Finally, it  
294 considered the importance of including measures that would build  
295 awareness and support for energy efficiency in the Chicagoland  
296 marketplace.

297 **Q: Have other jurisdictions followed the two-pronged approach the**  
298 **Governance Board used to assess the cost-effectiveness of DSM**  
299 **portfolios?**

300 A: Yes, this is the approach taken by jurisdictions with leading DSM portfolios.  
301 It is the policy and practice of regulators and DSM program administrators.  
302 It was most authoritatively documented almost thirty years ago in the  
303 California Standard Practice Manual.

304 **Q: Do you support the portfolio-level cost-effectiveness standard adopted**  
305 **and affirmed by the Governance Board, rather than the measure-level**  
306 **standard promulgated by Dr. Brightwell?**

307 A. Yes, unequivocally. Analyzing cost-effectiveness at the program and/or  
308 portfolio level to maximize economic value is the standard approach  
309 adopted by all jurisdictions with leading, mature efficiency investment  
310 portfolios across North America, including California, Massachusetts,  
311 Vermont, and British Columbia. It is this approach – not the measure-level  
312 standard Dr. Brightwell seeks to apply – that over time will produce the  
313 greatest amount of cost-effective energy savings (from the perspective of  
314 both the TRC and PAC tests).

315 **Q: Can you provide a concrete example of how the two tests are applied**  
316 **by regulators elsewhere?**

317 A: Yes. Efficiency Vermont's performance incentive mechanism uses both the  
318 TRC and PAC tests to balance economic resource and ratepayer value.  
319 Under this mechanism, Efficiency Vermont is free to make tradeoffs by  
320 emphasizing some measures with relatively low TRC benefits but high PAC  
321 value, and vice versa.

322 **Q: If a measure fails the TRC and passes the PAC test, should it**  
323 **automatically be excluded from the program?**

324 A: No. Including the measure may provide unquantified benefits not captured  
325 by the TRC test while still providing ratepayer economic value as measured  
326 by the PAC test. This is the case with the three efficiency measures Dr.  
327 Brightwell claims were not economically justified in the Utilities' programs.

328 **Q: Has the Commission chosen either test as the definitive litmus of DSM**  
329 **cost-effectiveness?**

330 A: Not to my knowledge. The programs that the Governance Board approved  
331 all passed the PAC test; with the exceptions identified by Dr. Brightwell, all  
332 other measures passed the TRC. As described in Ms. Beitel's testimony, for  
333 electric efficiency programs, the Commission adopted a portfolio-level cost-  
334 effectiveness standard.

335 **B. *Cost-effectiveness and the prudence of the Chicagoland DSM portfolio***

336 **Q: If Dr. Brightwell were correct that the three measures were not cost-**  
337 **effective and not economically justified, did he correct estimate the**  
338 **economic losses?**

339 A: No, for two reasons. First, he used the wrong test to determine the potential  
340 loss to ratepayers from including the measures in the program portfolio.  
341 The PAC is the appropriate test for how much ratepayers gain or lose from a  
342 program or portfolio. Second, he used the total costs as the measure of the  
343 economic loss, not the portion of costs in excess of benefits.

344 **Q: Why do you conclude that Dr. Brightwell misconstrues the TRC and**  
345 **PAC tests?**

346 A: Dr. Brightwell incorrectly uses the TRC test to assess the losses to  
347 ratepayers from promoting measures that fail to achieve a benefit/cost ratio  
348 of 1.0 or above. It is the PAC test that indicates the extent to which  
349 ratepayers receive reasonable value from a program or portfolio.

350 **Q: Did Dr. Brightwell correctly conclude that the Utilities' expenditures on**  
351 **high-efficiency clothes washers, tankless water heaters, and wall**  
352 **insulation were not economically justified for ratepayers?**

353 A: No. According to the Governance Board's calculations under the PAC test –  
354 which Dr. Brightwell does not dispute – the three measures have in fact  
355 provided significant value to ratepayers, and on that basis the Utilities'  
356 expenditures to promote them were economically justified for ratepayers.

357 **Q: Even if the Commission accepted Dr. Brightwell's use of the TRC test**  
358 **to assess whether the three measures were economically justified,**  
359 **how much would the losses be to the economy at large if the test were**  
360 **calculated correctly?**

361 A: For clothes washers and water heaters, the putative losses would amount to  
362 less than 10 percent of the costs, since the BCRs were between 0.9 and 1.0  
363 – not the entire amount of the rebate payments. For wall insulation, the so-  
364 called losses to society (not ratepayers) would be greater, but the TRC does  
365 not count the significant and real benefits to customers who installed wall  
366 insulation, specifically greater comfort and warmth. These benefits are not  
367 captured by the TRC but are greatly valued by customers.

368 **Q: What are the losses suffered by ratepayers using the PAC under Dr.**  
369 **Brightwell's assumptions?**

370 A: There are none; as I testified above, the measures produced economic  
371 gains to the ratepayers. Since the programs pay less than the full costs of  
372 the measures, the incentives paid out for all of them were less than the  
373 present worth of the avoided costs to ratepayers. Thus, ratepayers gained,  
374 not lost, as a consequence of the inclusion of high-efficiency clothes  
375 washers, tankless water heaters, and wall insulation in the DSM programs.

376 **Q: If the Commission were to accept Dr. Brightwell's use of the TRC test**  
377 **to assess the economic losses from including the measures, does it**  
378 **follow logically that the Utilities were imprudent?**

379 A: No. The TRC analysis indicates that the Chicagoland portfolio is expected  
380 to yield upwards of \$1.0 million in value to the Illinois economy and \$1.7  
381 million to the Utilities' ratepayers. It would be unreasonable to determine  
382 that such a portfolio is imprudent. Contrary to the Commission's definition  
383 of prudence, Dr. Brightwell seeks to substitute his professional judgment for  
384 that of the Governance Board, and the experienced experts it hired to  
385 design and plan the DSM program portfolio.

386 **C. *Qualitative Factors in DSM Program Planning***

387 **Q: Why would it be prudent for a DSM program administrator to include**  
388 **measures in a program for which TRC cost-effectiveness analysis**  
389 **indicated BCRs below 1.0?**

390 A: While cost-effectiveness analysis is a critical part of the decision to promote  
391 a particular efficiency measure in a DSM program, I testified earlier that it is  
392 not the sole consideration. Leading DSM program administrators use  
393 analysis results and their professional judgment about factors not captured  
394 in standard cost-effectiveness calculations. Several considerations can lead  
395 DSM program administrators to promote efficiency measures in their  
396 programs despite standard cost-effectiveness calculations indicating that  
397 the present worth of their societal resource benefits do not exceed current  
398 cost estimates.

399 Cost-effectiveness calculations are static snapshots, predicated on  
400 point estimates of the measure's cost, as well as its performance and the  
401 future value of its energy savings over its expected lifetime. All these

402 numbers are predictions of expected values based on engineering and  
403 economic judgment about future efficiency and energy market conditions.  
404 They are subject to wide variation over time, the more so the further into the  
405 future the estimates are applied. It is not practical to constantly update  
406 rapidly-changing cost estimates and change course on the basis of ever-  
407 changing cost-effectiveness calculations. The estimates can be applied  
408 accurately over a fairly wide range, but not necessarily precisely to a single  
409 point -- such as a benefit/cost ratio of 1.0. Two of the measures in question,  
410 efficient clothes washers and tankless water heaters, had a TRC cost-  
411 effectiveness of just under 1.0.

412 **Q: Can you provide an example where another utility widened the range**  
413 **of benefit/cost ratios for determining cost-effectiveness of certain**  
414 **classes of measures?**

415 A: Yes. It was this rationale that led the Potomac Electric Power Company  
416 (“PEPCO”) to include so-called “lost-opportunity” efficiency measures in its  
417 Maryland new construction program in 1992 as long as they showed a TRC  
418 benefit/cost ratio of at least 0.8.<sup>1</sup> The rationale was to prevent the potential  
419 loss of savings from such measures over the long lifetimes of the inefficient  
420 measures that would otherwise be installed without the program.

421 **Q: Do the measures that Dr. Brightwell concludes are not cost-effective**  
422 **constitute lost-opportunity resources?**

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<sup>1</sup> As indicated in NS-PGL Ex. 5.1, I served as lead negotiator for the Maryland Office of People’s Counsel in the collaborative design process that produced PEPCO’s DSM plans until 1997.

423 A: In most cases, yes. The program is designed to influence choices by  
424 customers in the market to purchase a new washer or water heater. These  
425 are durable goods expected to last 15 years or more. Likewise, most  
426 customers who install wall insulation are likely to do so as part of a home  
427 renovation, and/or in conjunction with an attic insulation project. The  
428 opportunity to install wall insulation while such projects are already  
429 underway is short-lived, and lost for many years to come.

430 **Q: Do snapshot measure cost-effectiveness calculations account for the**  
431 **effect DSM programs can have on future efficiency measure costs?**

432 A: No. Static measure cost-effectiveness calculations under the standard  
433 definition of the TRC do not consider the dynamic influence programs are  
434 designed to have on future costs of high-efficiency measures with low  
435 current market penetration. The history of DSM programs in North America  
436 is replete with successful efforts to capitalize on economies of scale in  
437 manufacturing and distribution to drive down future costs of emerging  
438 efficiency technologies by stimulating consumer demand for high-efficiency  
439 products and equipment. Sustained national, regional and even state-level  
440 efforts have increased demand for expensive high-efficiency products by  
441 offering financial incentives to consumers and/or suppliers. The resulting  
442 increases in volume led to major cost reductions, which in turn led to faster  
443 and higher market penetration over time.

444 **Q: Give some examples of efficiency products whose costs came down**  
445 **as a consequence of utility market intervention.**

446 A: The best examples are compact fluorescent lamps and high-efficiency  
447 refrigerators and clothes washers. All three measures used to be extremely  
448 non-cost effective from the TRC perspective, and are now highly cost-  
449 effective “low-hanging fruit” that together have provided much if not most of  
450 residential electric efficiency savings in portfolios around the country.

451 • *Compact fluorescent lamps (“CFLs”).* Leading electric DSM programs in  
452 California and the Pacific Northwest, Wisconsin, and the Northeast have  
453 been providing aggressive financial incentives and marketing assistance  
454 to lighting product retailers, distributors, and manufacturers since around  
455 2003. This resulted in a pronounced increase in the types of quality  
456 lamps available from a wider variety of retail outlets. By 2008, the  
457 difference in market penetration of CFLs between these jurisdictions and  
458 the rest of the country was remarkable and well documented by  
459 evaluation studies. For example, the average household in the U.S. had  
460 one CFL installed; in Vermont, the average was 6.

461 • *Refrigerators.* In the early 1990s, California utilities formed a consortium  
462 with other utilities to offer a multi-million dollar award to the manufacturer  
463 that came up with a model that met its efficiency, price, and performance  
464 specifications. Nicknamed the “Golden Carrot” competition, the effort led  
465 manufacturers to bring to market models with characteristics that were  
466 then rare and extremely expensive. In the years that followed, the  
467 manufacturers shipped higher and higher volumes, and the efficiency  
468 price premium dropped steadily until the technologies are now

469 embedded in the highly efficient refrigerators available throughout the  
470 country.

471 • *Clothes washers.* Horizontal-axis machines had been available by the  
472 early 1990s but selection was limited and the efficiency price premium  
473 was high. The technology was not cost-effective at the time.  
474 Nevertheless, utilities from New Jersey to Vermont joined in an effort to  
475 provide financial incentives that covered much of this price premium in  
476 the late 1990s. After sustained promotion, the price premium fell  
477 steadily. Today, programs throughout the Northeast continue to pay  
478 rebates for high-efficiency clothes washers, but at much lower levels due  
479 to the success of earlier efforts.

480 Dense-pack cellulose wall insulation is another case where sustained  
481 promotion of a particular practice by utilities and low-income weatherization  
482 providers in the Northeast has led to widespread adoption. This technique  
483 was pioneered by weatherization providers in the late 1980s. It took over  
484 twenty years, but it is now standard practice after continued promotion by  
485 gas utilities and weatherization providers in New England.

486 **Q: Is it reasonable to expect a similar dynamic to apply in the case of the**  
487 **Utilities' efforts in conjunction with other regional utilities?**

488 A: While none but perhaps the largest utilities can individually influence  
489 decision-making by manufacturers or distributors, when they combine  
490 forces at the regional or even state level they affect decisions about where  
491 to ship how much of their highest-efficiency products. This is why other gas

492 DSM program administrators in Illinois (the ARRA-funded rebates) and  
493 elsewhere in the Midwest, as set forth in Ms. Beitel's testimony, are  
494 providing incentives for high-efficiency clothes washers and tankless water  
495 heaters. Moreover, some of these same utilities, including Ameren Illinois,  
496 are offering incentives for wall insulation; by acting together, they are more  
497 likely to influence practices by Illinois insulation contractors. The Midwest  
498 Energy Efficiency Alliance has provided support to the Chicagoland  
499 programs, and in this role has worked to coordinate the activities of multiple  
500 Midwest programs to have greater regional impact.

501 **Q: Do the three efficiency measures Dr. Brightwell finds not to be cost-**  
502 **effective provide benefits beyond gas savings not counted in the**  
503 **standard TRC cost-effectiveness calculations?**

504 A: Yes. Another reason program administrators do not rely solely on the  
505 standard TRC benefit/cost calculations is because many efficiency  
506 measures provide non-energy benefits to customers that are known but not  
507 easily quantified. These benefits provide real economic value in terms of  
508 improved service quality, such as comfort, health and safety, or other cost  
509 savings. In the case of the measures in dispute,

- 510 • High-efficiency clothes washers reduce wear on clothes and use  
511 less water and detergent.
- 512 • Tankless water heaters provide instantaneous and unlimited  
513 amounts of hot water compared to standard tanks.

- 514           • Wall insulation improves the sensation of comfort by reducing drafts  
515           and radiant heat loss.

516           These attributes constitute real value that is not reflected in the cost-  
517           effectiveness calculations the Board performed as part of its program  
518           planning and that Dr. Brightwell uses as the basis for his conclusion the  
519           Utilities were imprudent in promoting them.

520   **Q: Are there valid marketing considerations that lead program**  
521   **administrators to promote measures even though periodic cost-**  
522   **effectiveness calculations may indicate that costs exceed predicted**  
523   **benefits?**

524   A: Absolutely. Building long-term presence in markets requires making  
525   permanent inroads with both buyers and sellers of efficiency measures.  
526   Program administrators try to use certain efficiency measures as a part of a  
527   long-term strategy for building consumer awareness of energy-efficiency  
528   products and services over time. They also try to build and maintain  
529   strategic relationships with all the links in the supply chain – retailers,  
530   wholesale distributors, contractors, and ultimately manufacturers – and  
531   convince them that promoting high-efficiency upgrades is a profitable sales  
532   strategy.

533   **Q: How do strategic marketing considerations affect the prudence of**  
534   **promoting measures with a benefit/cost ratio less than one to**  
535   **consumers?**

536 A: At the beginning of an efficiency program portfolio, administrators try to  
537 convince consumers that efficiency can save them money without sacrificing  
538 or even improving quality. To start this process, they try to “hook”  
539 consumers on the favorable attributes of particular efficiency measures in  
540 order to build awareness, appreciation, and acceptance of the value  
541 efficiency measures can offer. This demonstration effect is widely seen as a  
542 necessary precursor to wider customer acceptance of the full range of  
543 efficiency opportunities available as they enter the market for different  
544 products and services over time.

545 High-efficiency clothes washers offer a case in point. They provide a  
546 highly visible and tangible demonstration of the advantages of efficiency –  
547 customers observe that they use less water and less detergent, and get  
548 clothes cleaner with less wear and tear. This raises the likelihood that they  
549 will be favorably disposed to the next efficiency opportunity they encounter  
550 through other DSM programs.

551 **Q: Why should strategic marketing considerations trump benefit-cost**  
552 **ratios below one when it comes to sellers of high-efficiency products?**

553 A: For sellers, program consistency and continuity is critical to active and  
554 sustained engagement with DSM programs. Dropping or adding eligibility  
555 for individual measures depending on which side of 1.0 the latest  
556 benefit/cost ratio falls is extremely disruptive and damages the long-term  
557 business relationships programs must maintain to make efficiency  
558 successful.

559 **Q: Could it be prudent for a DSM program to provide incentives for**  
560 **individual measures even if they were found not to be cost-effective**  
561 **over the long term?**

562 A: Yes. Such a decision might be less costly and more effective than other  
563 program strategies to promote the cost-effective measures, such as  
564 additional marketing.

565 ***D. Reasonableness of Staff's proposed disallowance***

566 **Q: Why do you conclude that Dr. Brightwell's proposed cost disallowance**  
567 **is unreasonable?**

568 A: The disallowance Dr. Brightwell recommends is unsupported by the  
569 evidence he provides in his testimony. Under the TRC test, the economic  
570 losses are small or non-existent, especially given the dynamic and changing  
571 measures costs that will result in changes to the measure-level TRC and  
572 unquantified but known non-energy benefits of the measures involved.  
573 Under the PAC test, the expenditures produced gains, not losses, for  
574 ratepayers.

575 The disallowance is also unfair, even if the Commission were to  
576 apply the TRC test as Dr. Brightwell recommends. The Utilities did not  
577 intentionally or negligently promote measures they knew or believed not to  
578 be in the interest of its ratepayers. Instead, the Governance Board  
579 designed and has implemented the portfolio in good faith with the goal of  
580 saving money for the Utilities' ratepayers and the Chicagoland economy and  
581 building awareness, support, and capacity for efficiency in the marketplace.

582                   Finally, the solution Dr. Brightwell prescribes would cause more harm  
583                   than that he seeks to cure by forfeiting the economic gains that are  
584                   achievable from aggressive, conscientious DSM program administration.

585   **Q: In what ways Dr. Brightwell's proposed disallowance harm ratepayers?**

586   A: If adopted by the Commission, the disallowances would discourage utility  
587   DSM program administrators from seeking to maximize cost-effective  
588   savings from their programs over the long term. Even if required by the  
589   Commission to pursue DSM, portfolio managers would be extremely risk-  
590   averse, taking no chances on having their decisions to push emerging  
591   technologies and practices second guessed after the fact. In order to  
592   pursue deeper cost-effective savings, utilities would require a significant  
593   performance incentive to compensate them for taking on the real risk of  
594   major cost disallowances. Both outcomes would sacrifice significant  
595   economic and ratepayer benefits.

### 596                   **III. Conclusions and Recommendations**

597   **Q: What are your conclusions and recommendations.**

598   A: There was nothing imprudent in the Governance Board's decision to include  
599   the three measures Dr. Brightwell disputes in the launch of the Chicagoland  
600   DSM portfolio. In fact, the same considerations that originally led to the  
601   decision to include the three measures lead me to conclude now that it  
602   would be prudent for the Governance Board to re-consider their removal  
603   from the programs.

604           Moreover, no economic harm has befallen ratepayers as a  
605           consequence of paying rebates for high-efficiency clothes washers, tankless  
606           water heaters, and wall insulation. Indeed, PAC test results indicate that  
607           expenditures to promote these measures will have netted ratepayer savings  
608           of \$35,000 in avoided gas costs over their lifetimes.

609           Finally, even if Dr. Brightwell's prognosis of economic harm to  
610           ratepayers from promoting the three measures were correct, his prescribed  
611           remedy would cause even more harm. His proposed cost disallowance is  
612           disproportionately punitive, given that all three measures provided economic  
613           benefits to ratepayers and yielded higher than savings than would have  
614           resulted had the measures been excluded. If the ICC adopted Staff's  
615           proposed standard, in contrast to the standard the ICC has adopted for  
616           electric energy efficiency programs in Illinois, it would have a chilling effect  
617           on gas and electric utility DSM investment decision-making throughout  
618           Illinois for years to come, to the great detriment of the state's ratepayers.

619   **Q: What do you recommend?**

620   A: I recommend that the Commission reject Dr. Brightwell's proposal and  
621       instead allow the Utilities' full cost recovery of all Chicagoland DSM program  
622       expenditures.

623   **Q: Does this complete your rebuttal testimony?**

624   A: Yes, it does.