

Direct Testimony

Of

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Petition pursuant to Section 8-104 of
the Public Utilities Act for Consent to and Approval of an Energy Efficiency Plan

Northern Illinois Gas Company (d/b/a Nicor Gas Company)

Docket No. 13-0549

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1 **I. Witness Qualifications**

2 **Q. Please state your name, job title and business address.**

3 A. My name is David Brightwell. I am an Economic Analyst in the Policy Program of
4 the Policy Division of the Illinois Commerce Commission (“Commission”). My
5 business address is 527 East Capitol Avenue, Springfield, Illinois 62701.

6 **Q. Please describe your educational background.**

7 A. I received a Ph.D. in economics from Texas A&M University in 2008. My major
8 fields of study were industrial organization and labor economics, and my minor field
9 was econometrics. I received a bachelor’s degree in political science in 1992 and a
10 master’s degree in applied economics in 2002, both from Illinois State University.

11 **Q. Please describe your work background.**

12 A. I have been employed as an Economic Analyst with the Commission since June
13 2008. I have focused on energy efficiency (“EE”) and smart grid related issues at
14 the Commission. From 2002-2008, I attended Texas A&M University, where I
15 served as a teaching assistant or an instructor for various courses. From 2000-
16 2002, I served as a graduate assistant for David Loomis at Illinois State University.

17 **Q. Have you previously testified before the Commission?**

18 A. Yes.

19 **II. Testimony and Recommendations**

20 **Q. Please summarize the topics you address in this proceeding.**

21 A. The purpose of my testimony is to address the proposal of Northern Illinois Gas
22 Company d/b/a Nicor Gas Company (the “Company” or “Nicor”) for excluding free
23 ridership rates from Net-to-Gross (“NTG”) values unless spillover rates are also

24 included. I also address deeming NTG ratio values. Staff witness Jennifer Hinman
25 provides Staff's proposed Modified Illinois NTG Framework (Staff Ex. 1.1). I
26 address the incentives of a partially retrospective application of NTG ratio values,
27 which is included in Ms. Hinman's proposal. Ms. Hinman also addresses a
28 Company proposal to adjust savings goals as NTG values change. In the course of
29 discussing the inclusion of spillover in NTG values, I comment on adjusting goals
30 as well. In the event that the Commission should decline to accept Staff's proposed
31 Modified Illinois NTG Framework and decide to maintain the current NTG
32 framework, I also provide a proposal for defining a "significant change" under the
33 current NTG framework.

34 **III. Calculating Net-to-Gross ratios**

35 **Q. Please describe the Company's proposal for calculating NTG ratios.**

36 A. The Company proposes that all program evaluations must address, in addition
37 to free ridership, spillover from both the participant and non-participant
38 perspectives. Spillover can either be addressed through evaluation or by having
39 the evaluators assign a value based upon their experience and judgment.
40 According to the Company, if an evaluation does not account for spillover, then
41 the free rider effect should also be ignored. (Nicor Gas Ex. 2.0, 17.)

42 **Q. What are free ridership and spillover?**

43 A. A free rider is someone who uses program funds to take actions that he or she
44 would have taken anyway, even if no program funds were offered. The significance
45 of a free rider is that since this customer would have installed the measure anyway,
46 there is no incremental savings to attribute to an EE program.

47 Spillover is more difficult to define. I would describe spillover as changes in
48 energy efficiency and conservation practices that result from increased
49 knowledge of energy efficiency through experience with the program and/or word
50 of mouth or a general increase in knowledge about EE that results from the
51 existence of the EE program.

52 **Q. How do free ridership and spillover relate to NTG ratios and net savings?**

53 A. A NTG ratio is one minus the free ridership rate plus the spillover rate. If the free
54 ridership rate is estimated as 20% and spillover is estimated as 10% then the
55 NTG ratio is 0.9 ($1 - 0.2 + 0.1 = 0.9$). The value of the NTG ratio indicates what
56 percentage of gross savings is attributable to actions of the program. In this
57 example, it indicates that 90% of gross savings occurred as a result of program
58 activities. Net savings is calculated by multiplying gross savings by the NTG
59 ratio. Gross savings for a program are calculated by multiplying the unit energy
60 savings attributable to an energy efficiency measure by the number of measures
61 that received rebates through the program and are installed and operational. If
62 gross savings for a program are calculated as 1,000 therms and the NTG ratio is
63 calculated as 0.9, then net savings equals 900 therms ($1000 \times 0.9 = 900$
64 therms).

65 **Q. What is your opinion of the Company's proposed method of calculating NTG**
66 **ratios?**

67 A. There is merit in attempting to quantify both free ridership and spillover. However,
68 the measurement and quantification of spillover is much more difficult and
69 expensive than that of free ridership, and, as a result, spillover might not be

70 quantified through evaluation. Instead, under the Company's proposal, either a
71 derived guess based on the evaluation team's judgment would be applied or gross
72 savings would be measured.

73 Although I am not an attorney, I do not believe that crediting gross savings is
74 consistent with Section 8-104 of the Illinois Public Utilities Act ("Act"). Given the
75 likely cost of measuring spillover program by program, it is unlikely that all or even
76 most programs can be evaluated for spillover within the next triennial plan. Having
77 an unverified evaluator guess serve as a deemed spillover value for an extended
78 period of time does not seem to be an appealing method for accounting for spillover
79 either.

80 I provide two alternative recommendations to address the Company's concerns
81 about the exclusion of spillover. My primary recommendation is that the
82 Commission instead direct the independent evaluators to make reasonable efforts
83 to calculate both free ridership rates and spillover rates while being mindful of: (1)
84 the costs of such evaluations; (2) the likely magnitudes of spillover and free
85 ridership rates within a program; and (3) the significance of the program to the
86 overall portfolio savings. An alternative is that the Commission direct the Company
87 to perform a comprehensive evaluation of spillover across the utility service territory
88 rather than program-by-program. The first recommendation is more consistent with
89 the evaluation approaches undertaken to date. The second proposal is likely to
90 cost less and perhaps more accurately reflect how spillover occurs.

91 **Q. Why do you believe spillover is more difficult and costly to measure and**
92 **quantify than free ridership?**

93 A. Measuring spillover is, by definition, an attempt to measure changes to behavior
94 that took place outside of program channels because of the existence of the
95 program. It is difficult to know what other actions or inactions a participant took
96 as a result of their experiences with the program. It is next to impossible to know
97 what a utility customer, with whom the EE programs had no direct contact, did as
98 a result of a utility program.

99 At least in measuring free riders, most utility programs have information on which
100 customers received rebates or incentives, what items were purchased, and how
101 to contact those customers for evaluation interviews/surveys. This information
102 can be used to attempt to ascertain what motivated these customers to use the
103 utility program to purchase a measure or measures. This does not imply that
104 measuring free ridership is costless or easy; rather, information exists to know
105 where to begin the investigation.

106 **Q. You previously stated a concern that adopting the Company's proposal for**
107 **calculating NTG ratio values would ultimately lead to counting gross**
108 **savings or to applying a prolonged guess based on the evaluation team's**
109 **judgment. Why?**

110 A. Spillover is difficult to quantify, particularly non-participant spillover. It is also
111 costly. Evaluation budgets are limited to 3% of the portfolio budget per Section
112 8-104(f)(8) of the Act. As a result of the difficulty and the cost involved,
113 evaluators most likely cannot evaluate spillover for all programs and certainly
114 cannot evaluate it for all programs within the first year of the upcoming plan while
115 staying under the 3% cost cap. Accordingly, I believe under the Company's

116 proposal that evaluation study estimates of spillover will not be available for
117 many programs during the next three-year Plan Period. The alternative under
118 the Company's proposal is to either deem a guess based on the evaluation
119 team's judgment or to apply neither spillover nor free ridership in NTG ratio
120 values. If neither spillover nor free ridership is counted, only gross savings
121 remain. Under the alternative that spillover values are deemed based on the
122 evaluation team's judgment, it is uncertain when funding will allow actual
123 verification to take place.

124 **Q. What is wrong with a shift to gross savings?**

125 A. I'm not an attorney, but I do not interpret Section 8-104 of the Act to permit gross
126 savings. Subsection (c) refers to annual incremental savings goals and
127 Subsection (i) refers to penalties for not meeting those goals (as modified under
128 Subsection (d)). The current approach is to include estimates of free ridership,
129 spillover, or both when one or both can be calculated. The Company's proposal
130 to include neither factor if both cannot be calculated produces a gross savings
131 result that is likely to reflect greater overestimates of the savings attributable to
132 the program than the current approach is to underestimate savings. I believe that
133 applying gross savings to the determination of savings goals leads to incentives
134 that are adverse to the interests of ratepayers.

135 Staff witness Ms. Hinman also provides support for a Company proposal to
136 adjust its savings goals as NTG values adjust. (Staff Ex. 1.0, 26-32.) If the
137 Commission approves the proposal to adjust savings goals, then the Company is
138 neither harmed nor benefitted by the inclusion of spillover. If spillover were

139 included in an NTG value, then the Company's savings goal would increase by
140 the amount of spillover. However, providing an NTG value equal to one (ignoring
141 free ridership when spillover was not estimated) can harm the ratepayers who
142 are funding these programs.

143 **Q. Why do gross savings lead to adverse incentives harmful to ratepayers?**

144 A. Achieving gross savings is not in the best interest of ratepayers because
145 ratepayers pay for the EE programs. Ratepayers only gain benefits as a result of
146 these payments from net savings, not from gross savings. Gross savings are
147 much easier to achieve than net savings. By definition, programs with high rates
148 of free ridership have a high level of savings that could have been achieved even
149 without any utility intervention. With a gross savings goal, a utility has an
150 incentive to devote resources to programs with high levels of free ridership. First,
151 to the extent savings are the result of free riders, utility revenues and profits are
152 not eroded by energy efficiency. Second, it takes less effort to encourage
153 customers to take the rebate if most of those customers were going to do the
154 project anyway. This is essentially the path of least resistance.

155 Unfortunately, free ridership provides little or no benefit to ratepayers as a group.
156 The nonparticipating ratepayers who pay for the project see their money given to
157 other ratepayers (free riders) who are taking actions that they would take without
158 the utility intervention. There are no incremental benefits associated with free
159 riders, but there are costs associated with administration of EE programs.
160 Programs designed to cater to free riders provide little benefit, redistribute wealth
161 and take real resources away from society through program administration. The

162 EE programs are intended to encourage ratepayers to adopt EE measures which
163 they would not adopt without the existence of the program. Using a gross
164 savings approach undermines the intent and purpose of the EE statutes.

165 **Q. Are there any other problems with utility programs providing benefits to**
166 **free riders?**

167 A. Yes. EE programs create a redistribution of wealth. That is, each rebate takes
168 money from non-participating customers and redistributes it to participating
169 customers. When there is an incentive to design programs with high levels of
170 free riders as would occur under a gross savings paradigm, there is a high
171 likelihood that this redistribution takes place by taking money from lower and
172 moderate income customers and redistributing it toward higher income
173 customers¹.

174 **Q. What is the basis for this high likelihood?**

175 A. The assumption made in the Illinois Department of Commerce and Economic
176 Opportunity's ("DCEO") low income programs (Docket No. 13-0499, DCEO Ex.
177 1.0, 38) is that free ridership rates are very low because the customers in the low
178 income segment do not have the income necessary to make EE investments
179 absent the rebates. It is reasonable to assume that a customer's willingness and
180 ability to make the investments absent the program increases as his/her income
181 or wealth increases. Thus, free ridership is likely to grow with participant income.

182 **Q. You mentioned that using evaluation team estimates may lead to extended**
183 **periods of unverified deemed spillover rates. Under your primary proposal,**

¹ This is somewhat mitigated because the Statute allocates funds to DCEO which directs programs towards low-income ratepayers.

184 **is it true that there may be extended periods of time before the Company is**
185 **credited with spillover?**

186 A. Yes. However, my understanding is that the Company used currently-available
187 NTG value results to judge the savings that are attainable within the next Plan.
188 As a result, the savings goal that the Company is attempting to achieve reflects
189 the lack of estimated spillover. If the Commission permits the addition of deemed
190 spillover, it should also adjust the portfolio savings goals to reflect the
191 adjustments to NTG. This would already occur if the Company's adjustable
192 savings goal approach is adopted.

193 **Q. Other than applying a spillover factor to each program or measure, is there**
194 **another method to consider spillover?**

195 A. Yes. An alternative would be to conduct an evaluation of non-participant
196 spillover across the entire portfolio, the goal being to evaluate how much non-
197 participant spillover is actually occurring across the portfolio rather than trying to
198 analyze spillover on a program-by-program basis. If a non-participant spillover
199 survey is conducted, there would be no need to conduct program-specific
200 assessments for non-participant spillover.

201 A comprehensive portfolio-level evaluation may more accurately reflect how
202 spillover occurs. I think it is almost impossible to identify a specific program's
203 spillover impact on non-participants; there are too many factors that influence
204 decisions. It is also extremely costly to try to separate the role of a specific
205 program. Much of non-participant spillover is an aggregate effect of receiving a
206 plethora of information coming from numerous sources such as information about

207 tax credits for EE measures (which is an influence outside of the utility Program),
208 a friend or neighbor who installed an EE device (which may or may not be a
209 utility influence), a bill insert, a contractor trying to sell a more expensive product,
210 etc. To spend evaluation funds to determine how much the Home Energy
211 Efficiency Rebate Program or a comprehensive whole home weatherization
212 project through the Home Energy Savings Program caused people who didn't
213 participate in any of these programs to upgrade to EE measures seems
214 misdirected.

215 It may be more reasonable and is certainly less costly to conduct between one
216 and three surveys over the three-year Plan Period in order to determine how
217 much non-participants were influenced by the utility program than to conduct
218 between one and three surveys for each individual EE program over the same
219 period. To my knowledge, portfolio-level spillover evaluation is fairly new. I am
220 aware of one study that is being conducted in the state of Washington. In
221 Commonwealth Edison Company's ("ComEd") EE Plan docket, ComEd witness
222 Michael Brandt indicated awareness of another study in Connecticut (Docket No
223 13-0495, ComEd Ex. 3.0, 72). The feasibility of a portfolio-level spillover study
224 may need to be developed. The Commission may wish to encourage the
225 Company and its evaluator to work with the Stakeholder Advisory Group ("SAG")
226 in determining the feasibility of a portfolio-level spillover study.

227

228 **IV. Net-to-Gross Framework**

229 **Q. Please explain your understanding of the reasons for adoption of the**
230 **previous NTG framework.**

231 A. It is my understanding that the NTG framework was established to provide utilities
232 with more certainty in meeting their savings goals. In the electric utilities' first three-
233 year plans, savings were determined retrospectively based on program
234 evaluations.

235 A drawback of retrospective evaluation is that evaluations tend to be completed
236 after the Program Year is completed. As a result, the information is not available
237 until October or November of the next Program Year, and sometimes later than
238 that. For example, Electric Program Year 1 ("PY1") was completed on May 31,
239 2009. The evaluators collected and reviewed data, made verifications of
240 installations, etc., then made preliminary evaluation reports available. The utilities
241 and parties in the SAG commented on the reports, which went through revisions
242 before final versions were produced in or after November 2009. Thus, half of
243 Program Year 2 ("PY2") was complete by the time the PY1 evaluations were
244 finished. Retrospective evaluation was problematic from a utility perspective
245 because not only was PY1 complete, but most of PY2 was also complete by the
246 time the utilities knew what the PY1 savings would be and how effective the
247 program was in the market. The NTG ratio values were one of the largest sources
248 for this uncertainty. As a result, the current NTG framework was proposed in the

249 2010 EE hearings². It is my understanding that this framework was intended to
250 provide greater certainty to utilities by recognizing that, in many cases, the market
251 for EE products doesn't change much, the result being that prospective NTG ratio
252 values would be used to count savings in most cases.

253 **Q. How does the current NTG Framework resolve the problems of delayed**
254 **reporting of NTG values?**

255 A. The current NTG framework approved by the Commission in 2010 largely allowed
256 for prospective determination of NTG values. Some of the areas where there was
257 to be retrospective application of NTG values were when the program was new and
258 lacking a previous NTG evaluation or when programs experienced significant
259 changes in program delivery or market conditions. As the gas programs required
260 under Section 8-104 began in June 2011, these programs were new at the onset of
261 the NTG framework, and were therefore subject to retrospective evaluation in Plan
262 Year 1 and prospective evaluation in Plan Years after evaluations occurred.

263 The retrospective evaluation of new programs and programs that experience
264 significant market change is important because it places the performance risk on a
265 utility until an evaluation takes place rather than allowing savings to be determined
266 through a deemed value that may have little marginal justification.

267 **Q. Are there any potential concerns with applying NTG ratio values on a**
268 **prospective basis?**

² See Docket Nos. 10-0562, 10-0564, 10-0568, 10-0570.

269 A. Yes. Since evaluation reports are not completed until about November of the
270 following Program Year, there is a two-year lag between the time the NTG values
271 go into effect for prospective application. That is, the PY1 evaluations were not
272 complete until midway through PY2 and would not apply for prospective application
273 until PY3. As a result, prospective application estimates savings based on
274 conditions that are about two years old at the time the NTG ratio values are being
275 applied. When the market is stable, this may be a reasonable approach. When the
276 market is changing, an NTG ratio value that is two years out of date by the time it is
277 applied is problematic. It is problematic because it potentially provides too much
278 certainty to the affected utility to the detriment of its ratepayers in times of uncertain
279 market conditions.

280 **Q. Please provide an example of providing too much certainty to the utility to**
281 **the detriment of its ratepayers.**

282 A. I'm not aware of any that have affected the gas utilities as of yet. However,
283 upcoming changes in efficiency standards for furnaces provide a good example.
284 The U.S. Department of Energy ("DOE") is reviewing the efficiency standards for
285 furnaces. There was intent to make a 90% Annual Fuel Utilization Efficiency
286 ("AFUE") furnace the effective minimum standard in the climate zone that includes
287 Illinois by May 2013. However, that standard was delayed as part of a settlement
288 of a lawsuit. Now The DOE is currently conducting further analysis. It is unclear
289 what the result of the analysis will be, when it will become effective and what
290 efficiency standards will be established. However, once this standard or any other
291 potential change in standard goes into effect, an NTG value that is two years old is

292 unlikely to provide a reasonable estimate of current market conditions. The reason
293 that a two-year old NTG value is unlikely to represent current conditions is that the
294 baseline³ unit changes to the new minimum efficient standard. Consumers would
295 no longer be deciding between an 80% AFUE and a 92% or greater AFUE furnace.
296 Instead, the choice would be between a 90% and 92% or greater AFUE furnace
297 (assuming 90% AFUE becomes the new standard). Both the relative costs and
298 relative benefits change, which affect the economics of the decision. A NTG ratio
299 based on the economics of the 80% to 92% or greater comparison is unlikely to
300 reflect market conditions when a consumer faces a comparison of 90% to 92+
301 AFUE.

302 **Q. Has the current NTG Framework been effective?**

303 A. Overall, it has provided more certainty to utilities than was provided to the electric
304 utilities in the 2008-2011 Planning Period. However, the process is contentious and
305 much time was spent attempting to apply NTG ratio values. Part of the problem
306 was that the current Framework called for retrospective evaluation in times of
307 significant changes to the market or to program delivery mechanisms. The term
308 “significant changes” was not defined and parties could not agree on when
309 significant changes occurred. Gas utilities, which largely received retrospective
310 NTG application because of the programs being new, did not feel that some of the
311 NTG values estimated by evaluators were representative of the true impacts of the
312 program in the market and argued for higher NTG values in those cases well.

³ Energy savings are determined by comparing usage between a baseline unit and the energy efficient unit. The baseline unit is intended to represent the type of equipment a consumer would have purchased in the absence of the program. It is often assumed to be the minimum efficient product available.

313 **Q. Is there a new NTG Framework proposal?**

314 A. Yes. Ms. Hinman provides a proposal with her direct testimony (ICC Staff Ex. 1.1).
315 The proposal includes a provision that would provide more certainty to utilities than
316 a retrospective application while acknowledging that new programs and programs
317 undergoing changes in market conditions are inherently risky to both program
318 administrators and to the ratepayers who are paying for the programs.

319 **Q. How does Ms. Hinman's proposal address the concern about using evaluated**
320 **NTG ratios that are two years old?**

321 A. Ms. Hinman's proposal allows for deeming of NTG ratios to be based on a SAG
322 consensus. The evidence is not limited to the most recent evaluation of a program.
323 Instead, historical performance of the program and evaluations of similar programs
324 within Illinois or in other jurisdictions can be used to determine expected NTG
325 values. In times when a consensus is reached, the consensus NTG value would be
326 applied prospectively. When consensus cannot be reached regarding whether
327 there is significant market change, instead of applying a retrospective NTG ratio
328 value in PY(t+1), the average of the evaluated NTG values conducted in PY(t-1)
329 and PY(t) would be used.⁴ For example, if parties cannot reach a consensus on an
330 NTG ratio value for the upcoming PY4 that begins on June 1, 2014, then the
331 average of the evaluations for the PY2 and PY3 evaluations would be applied.

332 **Q. How does Ms. Hinman's proposal affect incentives for program**
333 **management?**

⁴ Where t is equal to the current Program Year. Evaluated NTG ratio values is defined in Staff Exhibit 1.1.

334 A. The proposal provides more certainty than the current approach (fully retrospective
335 NTG application) because the evaluation result from PY(t-1) should be known at
336 the time that planning for PY(t+1) takes place. In some cases, the estimated NTG
337 ratio for PY(t) may be available by March 1 of the current Program Year as well.
338 However, it still acknowledges some uncertainty and risk because the result of
339 PY(t) may not be known by the time that the utility has to make plans for PY(t+1).

340 Additionally, since there is a degree of uncertainty, the utility has an incentive to
341 agree to a consensus deemed NTG value reflective of the NTG value likely to exist
342 in the Program Year or to move funds away from a risky proposition and towards
343 less risky propositions. This provides benefits to ratepayers because the utility now
344 has an incentive to manage risky programs rather than to divert the risk to
345 ratepayers.

346 **Q. Do you have any other recommendations regarding a NTG Framework?**

347 A. Yes. If the Commission declines to accept Staff's proposed Modified NTG
348 framework and decides to maintain the current NTG Framework for Nicor, then I
349 request that the Commission define a "significant change" in either market
350 conditions or delivery mechanism to a change that results in a NTG ratio value
351 changing net savings by 10% or more.

352 **Q. What is the purpose of this recommendation?**

353 A. As I stated earlier, the problem with the previous NTG Framework was that
354 "significant change" was not defined and parties could not agree to its meaning. By
355 defining "significant change" to any change resulting in a 10% or greater difference

356 in program net savings, the meaning is clear and this source of contention is
357 eliminated. I propose 10% because I believe a 10% shift in savings reflects a
358 rather large value. However, if other parties have an alternative percentage or
359 definition to propose, I am open to addressing other parties' proposals either in
360 rebuttal testimony or briefs.

361 V. **Conclusion**

362 Q. **Does this conclude your direct testimony?**

363 A. Yes, it does.