Illinois Commerce Commission

Docket No. 10-0570

Direct Testimony of Chris Neme

Submitted on behalf of the Natural Resources Defense Council

I. INTRODUCTIONS AND QUALIFICATIONS

Q: Please state your name, employer and business address.

A: My name is Chris Neme. I am a co-founder and Principal of Energy Futures Group, a consulting firm that provides specialized expertise on energy efficiency markets, programs and policies. My business address is P.O. Box 587, Hinesburg, VT 05461.

Q: Please summarize your experience with energy efficiency programs.

A: As a Principal in Energy Futures Group, I play major roles in a variety of energy efficiency consulting projects. Examples include supporting the redesign of a portfolio of efficiency programs for a southern utility, developing a Technical Reference Manual of deemed savings assumptions for Ohio and the Mid-Atlantic states, and serving as an elected stakeholder representative on an Ontario gas utility's Audit and Evaluation Committee. Prior to co-founding Energy Futures Group I worked for 17 years for the Vermont Energy Investment Corporation (VEIC), the last 10 as Director of its Consulting Division managing a group of 30 professionals with offices in three states. Most of our consulting work involved critically reviewing, developing and/or supporting the implementation of electric, gas, and multi-fuel energy efficiency programs for clients across North America and beyond. As a member of VEIC's Senior Management Team, I also helped launch Efficiency Vermont in 2000 – a then new statewide "efficiency utility" VEIC was selected to operate – and became intimately familiar

with a myriad of issues associated with the day-to-day delivery of energy efficiency programs. I also helped shape the New England ISO's rules for inclusion of demand resources in its Forward Capacity Market and led the development of VEIC's first bids of peak savings from efficiency programs into that market. All told, during my career in energy efficiency I have played major roles in energy efficiency potential studies in five states and provinces, served as a technical advisor to utility-stakeholder "collaboratives" in six states, reviewed or developed efficiency programs for clients in more than 20 states and provinces and defended expert witness testimony on energy efficiency policies and/or program plans before regulatory commissions in eight states and provinces. I have also led courses on efficiency program design, published widely on a range of efficiency topics and served on numerous national and regional efficiency committees, working groups and forums. A copy of my curriculum vitae is attached as NRDC Exhibit 1.1.

II. TESTIMONY OVERVIEW

Q: What issues do you address in this testimony?

A: I address three related sets of issues:

1. The reasonableness of Com Ed's proposed savings goals given statutorily set savings requirements and spending caps;
2. The appropriateness of the mix of programs that Com Ed has put forward; and
3. Approaches to a variety of other related policy issues such as (i) deeming of measure savings assumptions, (ii) deeming of net-to-gross ratios, (iii) deeming of realization rate assumptions, (iv) the treatment of capacity market and other revenues that can accrue from efficiency programs, (v) investment in R&D and (vi) the level of

flexibility Com Ed should have in changing its programs during the implementation of its DSM plan.

Q: Please summarize your view of Com Ed's proposed savings goals.

A: Com Ed has proposed that the statutorily set savings target for Program Year 4 (PY4) of 0.8% of sales, which it suggests translates to 727,985 MWh, become the target for all three program years. I do not support that proposal. Specifically, Com Ed's proposed savings targets for PY5 and PY6 are too low. While I agree with Com Ed that it is not reasonable to expect the company to achieve the PY6 savings target within the spending cap, I do not believe that Com Ed has made a compelling case that it could not achieve the PY5 target on an on-going basis within the spending cap. Thus, I recommend that the Commission require Com Ed to meet the statutory PY5 target of 920,987 MWh for PY5 and achieve the same 1.0% savings as a percent of sales (i.e. 924,814 MWh) for PY6.

Q: Please summarize your views on Com Ed's proposed program portfolio.

A: Com Ed's proposed program portfolio is admirably broad, addressing a range of different efficiency markets. This importantly increases the reach of the portfolio to a wide range of its customers, including some – such as small commercial and multi-family customers – which are typically hard to reach. I also strongly support Com Ed's proposal to integrate delivery of electric and gas efficiency measures in a number of markets. That all said, I also have several concerns. Chief among these are:

A. <u>Heavy reliance on Home Energy Reports for savings</u>. While I appreciate that the way the statutory goals are structured – i.e. based on 1st year savings – provides incentives

for the utilities to pursue such programs, I am concerned that heavy reliance on programs that generate savings for only one year is not in the long term interest of ratepayers.

B. Inadequate focus on comprehensive, whole building solutions, particularly for existing commercial and industrial buildings. This is also critical to prospects for achieving deeper levels of savings in the future, as well as ensuring that programs do not create lost opportunities by leaving behind cost-effective measures that then become harder or even impossible to cost-effectively acquire in the future.

Q: Please summarize your views on the other policy issues you identify above.

A: My views are as follows:

A. Deemed measure savings assumptions. I support Com Ed's proposed approach to provisionally deeming measure level energy savings with two important caveats. First, savings should be deemed only for what I call prescriptive measures such as those installed through the Residential Lighting, C&I Prescriptive and Midstream Incentives programs. They should not be deemed for custom measures such as those installed through the C&I Custom, Retrocommissioning, Compressed Air and other programs or program elements whose savings are best estimated on a site-specific basis. Second, a separate process should be established to ensure adequate review before the Commission approves any assumptions.

B. Deemed net-to-gross (NTG) ratios. I believe the Company's proposal to deem NTG assumptions is reasonable, with one important caveat: deemed assumptions should

no longer apply – i.e. should be replaced by retrospective application of evaluation results – if programs undergo substantial design changes.

C. Deemed program realization rates. I do not support the Company's proposal to deem program realization rates. Some elements of realization rates should already be indirectly addressed through deeming of prescriptive measure savings assumptions (e.g. average hours of use for prescriptive lighting rebates). Others, such as data entry errors and custom savings estimates, are inappropriate to deem because they are essentially measures of the accuracy and thoroughness of the Company's own work.

D. Treatment of capacity market and other potential sources of revenues from efficiency programs. Any such revenues should be forecasted, added to the budgets available for spending on efficiency programs, and therefore considered when establishing savings targets.

E. Investment in R&D. I support Com Ed's proposal to spend 3% of its DSM budget on R&D. However, I suggest that the 3% budget cover both R&D *and* market research.

F. Flexibility to change programs. Within some high-level constraints (e.g. regarding equitable access of all customers to efficiency programs), I support Com Ed's request for flexibility to change programs during the three year plan period without having to receive regulatory approval.

III. REASONABLENESS OF COM ED'S PROPOSED SAVINGS GOALS

Q: Please summarize Com Ed's proposed savings goals.

A: Com Ed suggests that the Commission approve the same savings target of 727,985 MWh – equivalent to the statutory target of 0.8% of sales in plan year 4 (PY4) – for each of the three years (PY4, PY5 and PY6) of its plan.

Q: What is the company's rationale for this proposal, given that the statutory requirement was to increase savings to 1.0% of sales in PY5 and 1.4% of sales in PY6?

A: Com Ed has stated that it can meet the statutorily set savings target of 0.8% of sales for program year 4 (PY4) within the statutorily set spending cap of 2.0% of revenues. It has also said that it could meet the PY5 target of 1.0% of sales – equivalent to 920,987 MWh – within the statutory spending cap of 2.015% for that year, but only by using both projected "CFL carryover" (i.e. savings from CFLs purchased in previous years but not installed until PY5) and banked kWh savings that it will have accrued from exceeding savings targets in previous years. The Company has stated that it cannot meet the PY6 target of 1.4% of sales – equivalent to 1,294,739 MWh – because the significant increase in savings goal is not matched by an increase in the spending cap which remains at 2.015% of revenues.

Q: Do you find the Company's evidence on the question of whether it could reach the PY5 statutory savings target of 1.0% without using baked kWh savings compelling?

A: No. From both the perspectives of a high level review of what other program administrators have achieved and a more focused review of Com Ed's program portfolio it appears as if 1.0% savings should be achievable.

Q: Please elaborate on your high level review of what other program administrators have achieved.

A: Savings on the order of 1.0% of sales has been achieved in a variety of other jurisdictions at levels of spending comparable to those available to Com Ed under the spending cap. Consider, for example, a benchmarking study of 2008 DSM portfolios completed just five months ago by

Navigant Consulting for the Vermont Department of Public Service.[1] Navigant's highest level benchmarking, which compared portfolio level results among 27 DSM program administrators in Northeastern, Midwestern and Western states, found median savings of 1.0% of sales (i.e. the same as Illinois' statutory goal), median spending of 1.9% of revenue (a hair under Illinois' statutory spending cap) and median cost per first year kWh saved of $0.18 (identical to the average implied by Com Ed's calculations of the PY5 statutory savings goal and spending cap).[2,3]

These results are generally consistent with the results presented by Edward Weaver in his testimony on Ameren's next three year DSM plan. His analysis shows that five of the eight utilities that exceeded savings equal to 1.0% of sales in 2008 and seven of the fourteen whose savings exceeded 1.0% of sales in 2009 did so at an average cost per first year kWh saved of $0.19 or less.[4,5]

Needless to say, there are many different factors that affect the comparability of the results from other utilities to Com Ed. Some factors, such as the fact that some program administrators report gross savings rather than net savings, may make it appear (all other things being equal) harder

[1] Navigant Consulting, "Benchmarking of Vermont's 2008 Electric Energy Efficiency Programs: A Comparative Review of Efficiency Vermont and Burlington Electric Department", submitted to the Vermont Department of Public Service, May 21, 2010.
[2] Dividing the spending cap of $162.1 million by the savings goal of 920,987,000 kWh yields a spending per first year kWh of $0.18.
[3] Note that Navigant also benchmarked results in two other ways. Its second approach was to limit the group analyzed to those with similar climates (e.g. removing California utilities) and eliminate from the analysis the results of three kinds of programs which are often the subject of regulatory mandates which can vary considerably: (1) fuel-switching, (2) low income, and (3) demand response. The results from this second approach still found median savings of 1.0% of sales, median spending of 1.6% of revenue and median cost of $0.13 per first year savings – all consistent with the notion that Com Ed could reach the 1.0% savings goal within the statutory spending cap. Navigant's third approach to benchmarking did not address portfolio level results (it focused instead on residential and commercial/industrial sector results).
[4] Direct Testimony of Edward M. Weaver, on behalf of Ameren Illinois, Illinois Commercial Commission Docket No. 10-0568, Ameren Exhibits 5.3 and 5.4.
[5] Note that the average savings of the other seven was 1.41% of sales, more than 40% higher than the Illinois PY5 target.

for Com Ed to achieve comparable results. However, others, such as baselines being higher in jurisdictions that have been operating programs for a while – i.e. much of the "low hanging fruit" has already been picked – make it easier (again, all other things being equal) for Com Ed to achieve comparable results. The bottom line from my perspective is that while the results from other jurisdictions do not definitively demonstrate that Com Ed can sustainably meet the 1.0% PY5 statutory savings goal, they do reinforce the notion that a plan to fall short of meeting that goal would need to make a compelling case, based on detailed analysis of local conditions, that the 1.0% target was not achievable. Com Ed has not made such a compelling case.

Q: How large is the gap between what Com Ed is proposing as a goal for PY5 and the statutory goal for that year?

A: As I noted above, Com Ed is proposing a target of 727,985 MWh – equivalent to the statutory goal for PY4 – for PY5. The difference between that proposed goal and the statutory goal for PY5 – equivalent to 920,987 MWh is about 193,000 MWh. However, it is important to note that Com Ed's own plan forecast suggests it will achieve savings of 837,923 MWh in PY5 without using any banked kWh.[6] That represents 0.91% of sales. Second, the Company's own analysis of risk indicated that the expected value of the energy savings from Com Ed's programs is 1.1% higher than the Company presented in the main body of its filing.[7] The Company explained that this is because "…ComEd's planning teams used conservative assumptions for program performance and evaluation risks…"[8] Thus, the Company's own best estimates of what it will actually achieve is roughly 847,000 MWh or 0.92% of the sales. That means the "gap"

[6] ComEd Ex 1.0, Table 3, p. 7. This includes both the 781,074 MWh from its PY5 programs and 56,849 MWh from projected CFL carryover.
[7] Com Ed Ex. 1.0, Appendix F, p. 3.
[8] Com Ed response to ELPC Data Request 1.20.

the Company would need to fill to reach the statutory goal of 1.00% of sales is only about 74,000 MWh or 0.08% of sales.

Q: Are there ways that Com Ed could close that gap?

A: Yes. I believe that there are a number of different ways for the Company to increase the average yield from its PY5 program spending, thereby generating additional savings. Among these are:

- More aggressive C&I custom program. Com Ed proposes to achieve substantially lower savings from its C&I custom incentives program – only about 0.056% of C&I sales[9] – than leading DSM programs. For example, Xcel Energy is forecasting that it will achieve savings equal to 0.139% of C&I sales from custom measures in 2012.[10] Even more dramatically, Iowa's Interstate Power and Light (IPL) is forecasting that its custom C&I measures will represent 0.62% of C&I sales in 2012.[11] Both Xcel and IPL are achieving those savings at costs per first year MWh that are slightly lower than Com Ed's custom program. Increasing savings from the custom program is important because that is the best vehicle through which to more comprehensively address efficiency opportunities for medium and large C&I customers. More comprehensive treatment means fixed costs can

[9] Com Ed is forecasting 35,996 MWh in PY5 (Com Ed Exh 1.0, p. 13). I estimate their PY5 C&I sales to be approximately 69% of the total sales of 92,098,669 (Com Ed Exh. 2.2). The 69% is derived from Com Ed Exh. 2.1. It represents the portion of all delivered energy provided to delivery classes other than single family and multi-family buildings. It is possible that this assumption is either a little too low or too high because (1) it is possible that some multi-family buildings are treated as commercial customers and/or (2) the 85.6 million MWh of sales shown in Com Ed Exh 2.1 is about 7% less than the 92.1 million noted above and it is unclear whether the C&I portion of the difference is the same as for the 85.6 million.

[10] Xcel Energy's 2010-2012 Triennial Plan (www.xcelenergy.com/SiteCollectionDocuments/docs/2010-11-12Triennial_FINAL_FILED.pdf)

[11] IPL's 2009 to 2013 Five-year Plan (see http://www.alliantenergy.com/wcm/groups/wcm_internet/@int/documents/contentpage/024329.pdf).

be spread across a deeper level of savings. It also ensures that fewer opportunities are lost (e.g. when a facility makes an investment in a standard efficiency product that will not be replaced again for many years). In addition, it allows customers to capture synergistic benefits of different measures (e.g. efficient lighting retrofits enabling down-sizing of new cooling equipment).

- Placing more emphasis on "specialty CFLs" in its residential lighting program. This includes products with candelabra bases, dimmables, 3-ways, reflectors, floods, A-lamps and globes. These products either address market niches that are not covered by the 2012 to 2014 federal lighting efficiency standards or whose baseline after the standards (e.g. in the case of dimmables) is likely to be not much more efficient than current incandescent technology. They also address the portion of residential lighting markets into which fluorescent technologies have been least effective in penetrating to date. Thus, they are likely to be able to provide significant savings, at relatively low program cost and with relatively low risk of reduction in savings or net-to-gross ratios for some time into the future. Indeed, it would not be surprising if current Net-to-Gross (NTG) ratios for such measures are higher than the program average. Indeed, the Massachusetts utilities are assuming that the NTG ratio for standard spiral CFLs will be 0.30 in 2011, but that the NTG for specialty CFLs will be 0.8. As a result, the Massachusetts utilities are currently forecasting that 43% of their CFL rebates in 2011 will be for specialty lamps.[12] Similar strategies are being pursued in Rhode Island and Vermont. In contrast, speciality

[12] In addition, they are forecasting that an additional 27% of their program's CFLs will be marketed to hard-to-reach segments of the market (e.g. foreign language speaking populations, multi-family tenants, etc.). They are assuming higher NTG ratios for that portion of their program as well. Only 25% of CFLs will be standard spirals promoted through traditional channels to their average historical participants. The final 5% are lamps sold through school fundraisers (see: http://www.ma-eeac.org/docs/DPU-filing/ElectricPlanFinalOct09.pdf)

products appear to account for less than 3% of the lamps Com Ed is forecasting will be sold through its residential lighting program.[13]

- Shifting emphasis from fluorescent lighting fixtures to CFL lamps in the residential lighting program. Com Ed pays $10 incentives for fixtures that provide almost the same net first year savings as CFL lamps for which they are projecting to provide incentives of $1.04 to $1.48. Eliminating fixture incentives would save $1.15 million in PY5. If that money was put back into more CFLs the savings could be on the order of another 15,000 MWh, thereby closing 20% of the gap between Com Ed's forecasted PY5 savings and the statutory target for that year. In the past, the rationale for promoting hard-wired fluorescent fixtures has been that they ensure savings will last longer because consumers have no choice but to replace burned out lamps with new fluorescents. However, that is no longer a real advantage. Indeed, it may even be disadvantageous to promote such fixtures today. There are three reasons for that conclusion. First, by 2020 federal standards will essentially require all screw-in lamps to be as efficient as CFLs. Even before then, the market is moving towards CFLs so the advantage of "locking in" fluorescent technology is greatly diminished. Second, it is not always easy for consumers to find pin-based replacements for fluorescent fixtures and the changes in the market for fluorescent lamps is likely to mean it will become even more difficult in the future. This could eventually lead to premature removal and replacement of fluorescent fixtures. Finally, the next generation of lighting technology – LEDs – is advancing quickly. Thus, fluorescent pin-based fixtures will make it more difficult for consumers to switch to even more efficient and effective technology in the future.

[13] The total of all lamp types labeled as candelabras, reflectors, floodlights, or floods (Com Ed Response to NRDC Data Request 1.03, Attachment 1).

- Moving to more of an upstream or midstream approach to promoting prescriptive C&I efficiency measures. For example, Com Ed could transition from providing direct customer rebates for high performance T8 fluorescent lighting systems to providing incentives to distributors to stock and sell such products. Such strategies have the potential to reduce program costs, both because smaller incentives are usually required to overcome incremental costs at the wholesale level and because fewer resources are required to manage interactions with a much smaller number of market players. Upstream strategies also have the potential to increase savings by increasing the market penetration of efficiency measures. This is because the relatively small number of market players with which the program needs to interact can make it easier to reach and influence a larger portion of the market. This issue is discussed in some detail by Attorney General witness Mosenthal. I support his conclusions on the topic.
- Develop financing tools that would enable the programs to leverage greater customer contributions for some measures. Com Ed is required by statute to implement on-bill financing for its customers. While on-bill financing will certainly not be a panacea for addressing market barriers to efficiency investment, it can be a useful tool or strategy that, in combination with other strategies, can enable Com Ed to achieve greater savings for a given level of spending than they could achieve without it. However, it does not appear as if Com Ed has factored the potential benefits of on-bill financing into its DSM plan.
- Lowering Com Ed program budgets to reflect gas utility contributions. Com Ed plans to coordinate the delivery of three residential and four C&I programs with the gas utilities. However, while the Company's proposed budgets for the three residential programs were

developed assuming costs would be shared with the gas utilities, its budgets for the four C&I programs – Custom Incentives, Retrocommissioning, New Construction, and Small Business Direct Install – did not account for any potential cost sharing. Com Ed's rationale for that assumption is that "the majority of the energy savings for the joint business programs will be realized from electric measures". [14] However, that cannot be a justification for assuming no cost-sharing. Indeed, Com Ed notes that it expects the majority of the savings from the three joint residential programs to come from gas savings, yet it assigned itself – appropriately in my view – a portion of the costs of those programs. Moreover, the Company states in its plan that it *will* share costs and that the sharing will be "based on the savings/benefits to each utility's customers".[15] Put simply, Com Ed's budgets for those four commercial programs are over-stated. I cannot accurately estimate how much they are overstated because I do not have access to the information the Company has regarding the likely distribution of benefits between gas and electric rate-payers. However, because the combined budgets of the four programs is about $18.5 million in PY5, even modest levels of cost-sharing would free up a substantial amount of budget to spend on additional electricity saving measures.

- <u>Joint delivery of more measures with the gas utilities</u>. While I commend Com Ed for working to coordinate delivery of several programs with the gas companies, it would appear that there may be opportunities for even greater collaboration. Other measures that might merit sharing of program incentives, for example, include the application of variable frequency drives (with controls) to fresh air ventilation systems, rebates for

[14] Com Ed Response to NRDC Data Request 1.10.
[15] ComEd Exh 1.0, pp. 95, 100, and 118 (see "Utility Collaboration" sections).

condensing gas furnaces with efficient fans and Energy Star clothes washers.[16] In each of these cases coordination with the gas utilities could offer an opportunity for achieving greater savings and/or reducing the amount of money Com Ed has to pay to acquire savings (e.g. by sharing rebate costs).

- Exploring joint delivery of some programs with Ameren. Utilities in a number of different states have found it advantageous – both from the perspective of sharing some costs and providing a more consistent message to key market actors which could lead to greater program participation – to jointly deliver some programs, particularly upstream/midstream programs.
- Shift more resources from portfolio level administration to programs generating savings. For example, while I support investing in research to develop options for obtaining savings in the future, I would recommend spending no more than 3% on R&D *and* market research. That would be $1 million less than Com Ed has proposed. It would also be possible to invest less in general education and outreach than the $2.75 million proposed for PY5 by Com Ed. It may also be possible to reduce the level of spending on non-program specific labor, since the Company has simply assumed that it will need to grow proportionally with the increase in overall spending (which is probably conservatively high) and has not yet identified what function the five new positions for which it is budgeting will serve.[17]

[16] Com Ed has indicated that "with few rebates for clothes washers scheduled to be offered by the gas companies, there are no economies of scale that make it viable…to offer the program in coordination with the gas companies." This statement is somewhat perplexing as one would expect a substantial portion of the 30,000 rebates Com Ed projects providing in PY5 to go to customers who would save both electricity and gas. If just the financial incentive was shared equally between the utilities, that would represent a budget savings to Com Ed of $1.25 million which could then be spent on other measures.

[17] Com Ed response to ELPC Data Request 1.29.

- Make use of revenues generated by the efficiency programs. Com Ed has already indicated that it plans to invest revenues from bidding efficiency resources into the PJM capacity market into its efficiency programs. However, the potential benefits of those revenues, in terms of additional savings, do not appear to be reflected in Com Ed's filing.[18] Similarly, I understand that it may be possible for Com Ed to receive revenues from the Illinois Power Agency through its future procurement processes.

Q: Are these the only way for Com Ed to achieve greater savings.

A: No. They simply represent some initial ideas I have from the level of review of Com Ed's portfolio that was possible for this proceeding. Undoubtedly Com Ed (and others) could identify other ideas worth exploring. The point I try to make in presenting the list above is that there are many different options worth exploring to cover a relatively modest gap between what Com Ed has already indicated it can achieve with its portfolio of proposed programs and the statutory savings goal for PY5.

Q: Have you attempted to craft an alternative DSM portfolio and budget that would be consistent with achieving the PY5 statutory goal of 1.0% savings?

A: No. That is not my responsibility. Com Ed bears the burden of proof to show that it cannot meet the statutory target within the statutory spending cap. The list of ideas above simply demonstrates that the Company has not met a reasonable burden of proof for rejecting the statutory savings goal for PY5.

Q: How would you address the Company's concerns regarding risk of setting savings targets that are high?

[18] Com Ed response to NRDC Data Request 1.04.

A: First, it is unreasonable to expect the Company to not incur risk in meeting statutory savings targets. Put another way, some level of risk is reasonable. Second, I would note that the Company's own analysis of risk suggests that the upside potential for exceeding savings forecast for its programs is greater than the down-side risk that they will fall short. As noted above, this is because the Company used conservative assumptions as a way of managing its risk. Further, that risk analysis focused only on the savings that will be generated from its proposed set of programs. It did not examine risk-mitigating potential associated with new program designs. Finally, the Company has itself estimated that it will have accumulated 110,000 MWh of banked savings over the first four years of its programs that it could apply to any shortfalls in achievement in PY5 or PY6. Together, this suggests that the level of risk associated with maintaining the PY5 goal at the statutorily set level is relatively low and eminently reasonable.

Q: What about PY6? Do you agree with Com Ed that the statutorily set goal of 1.4% of sales is not attainable within the statutorily set spending cap?

A: I don't know if it is mathematically unattainable. For example, if the Company only pursued savings in its least cost programs such as Residential Lighting, Home Energy Reports, C&I mid-stream incentives, Prescriptive Incentives and Custom Incentives programs – and attempted to maximize participation and savings in just those programs – it might be possible to reach the statutory goal for PY6. However, in my view, that would be a bad outcome because it would reduce the range of customers who would participate in programs, focus excessively on savings that have short lives and do too little to build a foundation for deeper savings in the future. Put another way, I agree that it is not reasonable to assume today that the PY6 statutory savings target could be met both within the current statutory spending cap and with a reasonably balanced portfolio of programs.

Q: What do you suggest should be the savings target for PY6?

A: I suggest that it be the same as I suggested for PY5 – i.e. 1.0% of sales or 924,814 MWh.[19] Obviously, that target should be modified if the state modifies the statutory spending cap.

Q: Does your analysis suggest that the statutorily set savings target for PY6 – equal to 1.4% of sales – cannot be met cost-effectively?

A: Absolutely not. It just cannot be captured within both a reasonably balanced program portfolio and the statutorily set budget cap. The budget cap was not set because it represented a proxy for the most that could be spent cost-effectively. In fact, there is substantial evidence to suggest that savings well beyond the 1.0% target I propose for PY6 could be cost-effectively acquired. For example, the Company's own potential study concluded that economic potential in 2013 is on the order of 2.3 million MWh – roughly two and a half times what I recommend for the PY6 goal. It also suggested that the maximum achievable savings was roughly 1.9 million MWh in 2013 – roughly double my proposed PY6 goal.[20] However, capturing the maximum achievable cost-effective savings will require greater spending than the 2.015% utility net spending cap would permit. For example, a number of the leading DSM administrators, including those achieving greater than 1.5% savings (some greater than 2.0%), were spending in the range of 3% to 5% of revenues on their efficiency programs in 2008.[21] While I have not comprehensively analyzed forecasted spending for those leaders, information from selected states suggests that their spending is likely to continue to be that high (or higher) in the future.

---

[19] This is about 3800 more MWh than for PY5 to reflect Com Ed's slightly higher forecasted sales for PY6 (Com Ed Exh. 2.2)

[20] The Cadmus Group, "Assessment of Energy Efficiency and Load Management Potential (2011-2016)", prepared for Commonwealth Edison, February 17, 2009.

[21] Navigant Consulting, "Benchmarking of Vermont's 2008 Electric Energy Efficiency Programs: A Comparative Review of Efficiency Vermont and Burlington Electric Department", submitted to the Vermont Department of Public Service, May 21, 2010.

IV. APPROPRIATENESS OF COM ED'S PROPOSED MIX OF PROGRAMS

Q: **Please summarize Com Ed's proposed mix of efficiency programs.**

A: Com Ed has proposed 11 different C&I programs and 8 different residential programs. They have also proposed setting aside $2 million in each of PY5 and PY6 to fund additional initiatives identified through a competitive bidding process. The proposed programs cover a wide range of market types.

Q: What is your view of the mix of programs proposed by Com Ed?

A: Several aspects of the portfolio deserve commendation. First, the portfolio is admirably broad. As a result, it is at least structurally set up to addresses a wide range of efficiency opportunities. Thus, even if some potentially worthwhile efficiency measures are not included, they could be added relatively easily in the future. Second, it includes programs either designed to address typically hard to reach markets (e.g. small commercial and multi-family customers) or designed to address some difficult to capture savings opportunities (e.g. Retrocommissioning and Central Air Conditioning Efficiency Services). Third, as noted earlier, seven of the programs are designed to be jointly or collaboratively administered with gas utilities. That enables Com Ed (and the gas companies) to address opportunities that may not be cost-effective from the perspective of one fuel alone, but cost-effective when both fuels are considered. It also enables sharing of costs.

That said, I believe the portfolio could and should be improved in both small and bigger ways. I will leave further discussion of opportunities for modest changes for another day. My two big concerns are:

1. There is a heavy reliance on savings from Home Energy Reports, and
2. There is inadequate focus on comprehensive, whole building approaches to efficiency of existing commercial and industrial buildings.

Q: Please elaborate on your concern about heavy reliance on Home Energy Reports.

A: Com Ed is proposing to obtain between 22% and 34% of its residential program savings and between 10% and 12% of its total savings from the Home Energy Reports program. That is an awful lot for a program that generates only one year of savings. Com Ed, the Commission and other stakeholders should all prefer programs that generate longer lasting savings and/or which build the foundation for deeper levels of investment in cost-effective savings in the future. There is no evidence of which I am aware that programs such as Home Energy Reports have any benefits beyond one year.

Q: Doesn't the structure of the statutory savings goals – the fact that they are expressed as first year savings (divided by annual sales) – provide an incentive for the utilities to pursue programs with short-lived savings if they are inexpensive on a dollar per first year kWh saved basis?

A: Yes. As a result, I would advise any entity establishing savings goals based on annual savings to simultaneously put in place other requirements that have the effect of clearly focusing efficiency programs on longer-lasting savings.

That said, while first year savings is clearly a critical focus of the current Illinois statute, it is important to note that it is not the only relevant statutory requirement. For example, it is clear that the state was also very concerned about cost-effectiveness. Measure life is an important

factor in determining cost-effectiveness. While all the programs in Com Ed's proposed portfolio meet the TRC cost-effectiveness screen, some are much more cost-effective than others. Because of its short measure life, the Home Energy Reports program is among the least cost-effective of the residential programs (when measured by TRC benefit-to-cost ratios). It is not just residential lighting that is more cost-effective. For example, Com Ed's analysis suggests that both the Multi-Family Home Performance and Appliance Rebate programs are more cost-effective.

Q: Given the way the current Illinois statutory goals are structured, what would you recommend to the Commission do regarding Com Ed's proposed level of reliance on Home Energy Reports?

A: I recommend that the Commission express concern about the level of reliance on Home Energy Reports and instruct Com Ed to explore every possible means to reduce the portion of savings coming from it. I also suggest the Commission cap the portion of both residential savings and C&I savings that can be realized from measures that have a life of 2 years or less. I recommend that such caps be initially set at 25% of sector savings as long as the current spending cap is in place. If the spending cap is increased, the Commission should consider an even lower cap on the portion of savings that could accrue from short-lived measures.

Q: Please elaborate on your concern regarding inadequate focus on whole building solutions for existing C&I customers.

A: If Com Ed is to succeed in acquiring, over time, the cost-effective savings potential that is available in its service territory, it will need to more comprehensively address efficiency opportunities in individual buildings. The Company has itself stated that its objective is, over

time, "to move customers towards comprehensive whole building solutions". However, its plan continues to be heavily oriented around individual technology incentives. There is little in its program designs that would encourage let alone drive existing C&I customers to comprehensive whole building approaches to efficiency investments.

Q: What do you recommend the Commission do to address this concern?

A: This is a short-coming in Com Ed's filing that is not simply or quickly fixed. Thus, I am not recommending that the Commission do anything other than (1) instruct Com Ed to work with the SAG to identify ways in which its programs can evolve to better support whole building solutions and (2) express the expectation that this short-coming be addressed prior to the Company's next three year plan filing.

OTHER POLICY ISSUES

3. Deemed Measure Savings Assumptions

Q: Please summarize what Com Ed has proposed regarding the deeming of gross measure savings assumptions.

A: Com Ed has proposed that all measure level savings provided in Appendix B to its filing be "provisionally deemed". By that it means that such assumptions are deemed until new values are developed to reflect changes in the market or feedback from evaluations. Any such changes would go into effect June 1 of the following Plan year.

Q: What is your view of that proposal?

A: I support the suggestion that it is appropriate to deem savings from a variety of efficiency measures. However, I have two important concerns about the specifics of Com Ed's proposal.

Q: Why do you support deeming savings from any efficiency measures?

A: It is generally appropriate for savings values that are based on the best currently available information to be used until new information becomes available. Put another way, I agree with Com Ed that it is inappropriate to expose the Company to the risk of not meeting savings goals because of changes in assumptions that occur after programs are implemented and over which the Company itself has no control.

Q: You suggested that support has a couple of caveats. What is the first caveat?

A: First, deemed savings are not appropriate for all measures. They are only appropriate when the following related criteria are met:

1. The deemed savings are tied to specific program designs (because program designs can affect savings).[22]
2. The expected average savings can be reasonably accurately predicted for the range of customers into whose buildings the measures will be installed (this is partly a function of both (1) the number of measures expected to be installed – the larger the number of measures installed in a year, the more conducive it is to deemed savings; and (2) the potential variability in savings across the target market).

[22] For example, the savings from a 15 Watt CFL promoted through retail channels will be different than the savings from one directly installed in a home or business (because the installer can have greater assurance that it will stay installed, greater insight into the hours of operation of the installed location – e.g., installations in closets will yield lower savings – and greater likelihood of lower free ridership).

3. The potential for "gaming the system" is low.
4. The cost of developing site specific estimates of savings is high (this is partly a function of both (1) the magnitude of the savings – the smaller the savings per participant, the more appropriate it is to deem savings, and (2) the channel through which the measure gets installed – e.g., measures sold through retailers are more appropriately deemed than measures promoted through direct program interaction with individual customers).

Q: Do the measures for which Com Ed is requesting deemed savings values meet these criteria?

A: Many do, but many others do not.

Q: For which measures do you support deeming savings assumptions?

A: Measures sold through mass market channels such as retailers or commercial equipment vendors generally lend themselves well to deemed savings assumptions. While the actual savings from such measures will vary from participant to participant, the variations matter less because (1) the measures promoted through such channels tend to be very common and historically well evaluated; and (2) the large volume of measures and participants means that actual average gross savings can usually be reasonably well predicted. Moreover, many such measures get sold to small customers, so the costs of making site-specific determinations of key savings factors such as hours of operation would be incredibly high. Thus, I generally support the deeming of savings for measures promoted through Com Ed's Residential Lighting, C&I Prescriptive Rebate and C&I Midstream Incentives programs.[23] I also generally support

[23] Note that I say "generally support" because I have not carefully examined every measure in these programs or the way in which their deemed savings are structured to determine whether there are a few that would be better addressed through deemed calculations that rely on some site-specific inputs such as system size or capacity.

deeming of assumptions for the Small C&I Direct Install program because measures in such programs tend to be very basic and well understood, and the customers are small so any increase in accuracy of savings estimates from using site-specific variables could not justify the cost of collecting such data. Finally, I support the deeming of savings of prescriptive measures in the C&I new construction program and possibly for the C&I Central Air Conditioner Efficiency Services program.

Note that I would conceptually support deeming of savings for measures in several other residential programs – including Appliance Recycling, Central Air Conditioner Efficiency Services, the lighting and other small measure components of Single-Family Home Performance and Multi-Family Home Performance, Appliance Rebates and the lighting component of Residential New Construction. However, it does not appear as if Com Ed is seeking deeming of savings for such programs since their measures are not in Appendix B to Com Ed's filing.

Q: For which measures do you not support deeming assumptions?

A: Measures whose savings are very dependent on site-specific conditions (including variability in the way the measure is installed – i.e. where the approach to installation is as or more critical than the technology itself) and for which average savings across a participant population can vary significantly from year to year (depending on the customers that install the measure that year) should not have deemed savings. In some cases, it may be appropriate to have deemed calculations for savings, where standard engineering calculations are used and appropriate inputs to those calculations are developed for each site. In other cases, savings should simply be computed on a custom basis. Thus, I do not support deeming measure savings for the

Company's C&I Custom Rebates, Retrocommissioning, Compressed Air, the comprehensive track of C&I New Construction and/or Data Center Efficiency programs.

Q: What is your second caveat?

A: My second caveat is that I do not believe this proceeding is the appropriate venue for approving or rejecting the specific assumptions put forward by Com Ed. Given the amount of material it was necessary to review for this proceeding and the limited time available to develop this testimony, I have not critically reviewed their proposed list of assumptions. I suspect other experts have also not been able to do so. It should be emphasized that Com Ed is asking for approval of literally thousands of measure assumptions. Further, the even more numerous additional underlying assumptions that one would need to review in order to pass judgment on the reasonableness of Com Ed's assumptions are not clearly presented anywhere in their filing.[24] Thus, I recommend that the Commission establish a separate process for vetting and approving or modifying the assumptions put forward by Com Ed.

4. Deemed Net-to-Gross Assumptions

Q: **Please summarize what Com Ed has proposed regarding the deeming net-to-gross (NTG) assumptions.**

A: Com Ed has proposed that NTG assumptions be deemed by the Commission. Those assumptions could be updated based on evaluation results. However, the new values would only

[24] For example, savings from a CFL is usually estimated as a function of such subsidiary assumptions as average change in watts, average hours of use, average installation rate and potentially other factors such as interactions with heating and cooling loads. Com Ed's Appendix B shows only the final product of all such subsidiary assumptions so it is not possible to critically review their proposals.

be applied prospectively, beginning on June 1 of the next plan year.[25] The Company states that this proposal is the same as the overall framework developed with the Stakeholder Advisory Group (SAG). The Company provided the specific program-level assumptions for which it is seeking approval in Appendix E of its filing.

Q: Is the Company's proposal identical to the framework developed through the SAG process?

A: Not exactly. I have attached, as NRDC Exhibit 1.2, what I understand to be the most recent version of the SAG memo which documents the group's discussions on this issue. This memo lays out five elements of a framework for dealing with NTG issues. The third of the five elements of the SAG frameworks states:

> *"For new programs or programs undergoing significant changes…NTG ratios established through evaluations would be used retroactively."*

The fourth element provides an "out" on the third element, stating that

> *"For programs falling under #3, deeming a NTG ratio prospectively, may be appropriate if: the program design and market are understood well enough to reasonably accurately estimated the initial NTG…<u>or</u> it is determined that the savings and benefits of the program are not sufficient to devote the evaluation resources necessary to better estimate a NTG ratio."*

Com Ed is implicitly assuming that all programs for which a NTG has not already been developed as a result of evaluation of one of its programs fall under the fourth element of the

[25] Com Ed Exh. 1.0, pp. 164-165.

SAG framework. That is, it is assuming that there is either sufficient information to reasonably accurately estimate a prospective NTG ratio or the programs are too small to warrant developing better NTG ratios that would be applied retrospectively. However, that implicit assumption has not been directly tested in its filing.

Q: What is your view of the Company's proposal?

A: Notwithstanding its difference from the SAG framework, I believe it is reasonable and should be approved, with one caveat.

Q: What is the caveat?

A: Any substantial change in program design should render the deemed NTG assumption no longer applicable. In such cases, unless an explicit determination is made (ideally within the SAG process) that the fourth element of the SAG framework described above applies, new NTG assumptions developed through evaluations should be applied retrospectively.

Q: Why?

A: NTG assumptions, in particular, are very much a function of program design. For example, all other things being equal, the free ridership for a program paying financial incentives equal to 75% of the cost of a measure will be lower (and the net-to-gross ratio higher) than for the same program paying incentives equal to only 10% of the incremental cost of a measure.

Q: Does your proposed caveat create a disincentive for the Company to modify its programs in response to market feedback?

A: It probably provides some disincentive to make major changes because such changes could open the Company up to greater risk. However, that disincentive should be modest and would need to be weighed against the often substantial benefits of making changes.

In any case, the Commission needs to ensure that rules for claiming savings cannot be "gamed". Allowing a deemed NTG ratio to remain in effect regardless of how much a program design has been changed opens the door to gaming.

5. Deemed Realization Rates

Q: What is a realization rate?

A: A realization rate is the ratio of actual measured gross savings to estimated gross savings. It can correct for a variety of different factors ranging from data entry errors to flaws in engineering calculations to differences between the way a measure is used and the planning assumption for how it would be used.

Q: **Please summarize what Com Ed has proposed regarding the deeming realization rates.**

A: Com Ed has proposed that realization rates be deemed under essentially the same rules it proposes for NTG assumptions. That is, realization rates would be initially deemed. They could be updated based on evaluation results. However, the new values would only be applied prospectively, beginning on June 1 of the next plan year.

Q: What is your view of this proposal?

A: I oppose it.

Q: Why?

A: Realization rates are fundamentally different than NTG ratios. To begin with, they address factors that affect gross savings rather than more difficult to assess issues such as free ridership and spillover. More importantly, the factors they address should either already be deemed at the measure level (e.g. estimated hours of use or installation rates of rebated prescriptive lighting measures) or fully under the control of the utility (e.g. data entry and, more importantly, calculations of custom measure savings). The company must be held accountable for quality in its work (or the work it manages). To deem ahead of time that no corrections will be made to address data or calculation errors, for example, is to invite inadequate attention to quality control or worse.

6. Treatment of Capacity Market and Other Potential Program Revenues

Q: Please summarize Com Ed's position on the treatment of revenues from the PJM forward capacity market (otherwise known as its Reliability Pricing Model)?

A: The Company has said that it intends to incorporate such revenues "into the program funding stream" to either "generate additional portfolio savings or to offset incremental costs". The Company also states that it cannot know the exact magnitude of such revenues "until PJM accepts ComEd's final verification report immediately prior to the relevant delivery year". As a result, the Company cannot factor such revenues into its DSM plan.[26]

Q: What is your view of that position?

A: I agree with what I understand to be the first part of the Company's position – that it will use the revenues to support its DSM efforts. However, I disagree with what I understand to be the

[26] Com Ed Response to NRDC Data Request 1.04.

second part of the Company's position – that it cannot know for sure exactly how much revenue it will receive and therefore cannot consider such revenues in its DSM planning.

Q: Why do you disagree with the second part of the Company's position?

A: I appreciate that the Company cannot know how *precisely* how much money it will receive from PJM. However, there are many other things it also does precisely know, but for which it develops forecasts in its plan. Revenues from PJM should be no different. By not factoring them into its plan, the Company is essentially assuming such revenues will be zero – an assumption they know is incorrect. It would be better to make and use the most accurate forecast they can make. Indeed, that is exactly what they appear to have done for PJM capacity market revenues for its demand response programs. This is particularly important in the current situation in which the statutory budget cap is constraining what Com Ed can achieve, at least in PY6.

7. Investment in R&D

Q: Please summarize Com Ed's proposal regarding investment in R&D.

A: The Company has proposed that it devote 3% of its DSM budget – the maximum allowed by statute – to investments in R&D. It defines R&D to include assessing new technology, behavioral changes, or new measure or program delivery mechanisms. It argues that such investments are necessary to build a pipeline of new options for achieving savings in the future. The Company also proposes that it be allowed to count any savings generated by its R&D efforts towards its annual savings goals

Q: What is your view of Com Ed's proposal?

A: I support it, with a couple of caveats. Many program administrators are so focused on meeting near term goals that they do not put sufficient effort into developing the next "generation" of savings. I also appreciate that Com Ed is not just thinking about technology R&D, as testing of new program delivery approaches may be more important.

Q: What are the caveats to this support?

A: First, it will be important for Com Ed to ensure that it is making R&D investments only after carefully considering what others are doing in this arena. Put another way, Com Ed's investment in R&D should either significantly leverage other (non-Com Ed) R&D or be focused exclusively on investigating issues particular to Com Ed's territory.

Second, the purpose of Com Ed's proposed market research budget (an additional $3.75 million over the three year plan) is essentially the same as its R&D budget – to support the development of new directions for its programs. Thus, I suggest that market research be eliminated as a separate line item and included in the R&D budget (still limited to 3% of spending).[27]

8. Flexibility to Change Programs

Q: Please summarize Com Ed's proposal regarding its ability to change the design of its programs during the implementation period of its three year plan.

A: Com Ed has suggested in several places in its filing that it will be important for the Company to be able to modify its program designs and even its portfolio of programs during the course of

[27] Note that I am not suggesting that market research is statutorily defined as part of R&D. I am simply suggesting that spending 3% on both R&D and market research combined is enough given the impacts of budget constraints on meeting statutory goals.

implementing its plan.[28] I assume they propose to be able to make such modifications without regulatory approval.

Q: What is your view of that position?

A: I agree that the Company should have the flexibility to make changes to its programs and portfolio of programs. There should probably be some high level constraints on the ability to make changes. However, such constraints should be truly high level. For example, it would be reasonable for the Commission to require that moving more than 10% of Com Ed's portion of total portfolio spending (i.e. about $12 million in any given year) from residential to C&I programs (or vice versa) would require regulatory approval.

Q: Why would such constraints be appropriate?

A: For equity reasons. It is important that all customer groups have roughly equal ability to participate in efficiency programs. Note that the level of constraint I am suggesting is much looser than is applied in most other jurisdictions.

Q: Why shouldn't constraints be tighter?

A: The Company faces a statutory obligation to achieve a certain level of savings. Such responsibility and accountability should be matched by flexibility to adapt in real time to changing market conditions, customer feedback and any other new information.

Q: Does this conclude your testimony?

A: Yes.

[28] For example, see Com Ed Exh. 1.0, pp. 93 and 158.

State of Illinois

Illinois Commerce Commission

Commonwealth Edison PY4-PY6 DSM Plan Proceeding

Docket 10-0570

Affadavit of Christopher P. Neme

The undersigned, under oath, deposes and states as follows:

1. My name is Christopher P. Neme
2. I am a co-founder and Principal in the energy efficiency consulting firm Energy Futures Group.
3. My services have been retained by the Natural Resources Defense Council (NRDC) as an expert witness in this proceeding.
4. I have written the expert testimony being filed in the above mentioned docket as NRDC Exhibit 1.0.
5. To the best of my knowledge, information and belief, everything expressed in my testimony is accurate and true.

Christopher P. Neme

Signed and sworn before me on

The 30th day of the month of November 2010

Notary Public

STATE OF VERMONT, CHITTENDEN COUNTY SS:
AT SHELBURNE THIS 30 DAY OF Nov 2010 PERSONALLY
APPEARED CHRISTOPHER P. NEME
AND HE ACKNOWLEDGED THIS INSTRUMENT SIGNED
BY HIM TO BE HIS FREE ACT AND DEED.
BEFORE ME NOTARY PUBLIC
LISA C. MANN, NOTARY
COMM. EXPIRES: 02/10/2011