

***REPORT TO THE ILLINOIS GENERAL ASSEMBLY
CONCERNING SPENDING LIMITS ON
ENERGY EFFICIENCY AND DEMAND-RESPONSE MEASURES***

**Pursuant to subsection (d) of Section 8-103
of the Public Utilities Act**



Illinois Commerce Commission
527 East Capitol Avenue
Springfield, Illinois 62701
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June 2011

STATE OF ILLINOIS
ILLINOIS COMMERCE COMMISSION

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ILLINOIS COMMERCE COMMISSION

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The Honorable Members of the Illinois General Assembly
State House
Springfield, Illinois

Dear Honorable Members of the Illinois General Assembly:

Pursuant to Subsection(d) of Section 8-103 of the Public Utilities Act, the Illinois Commerce Commission submits the attached report Concerning Spending Limits on Energy Efficiency and Demand-Response Measures.

P. A. 96-159 directs the ICC to submit to the General Assembly this report in regards to the limitation on the amount of energy efficiency and demand-response measures required by the Act. The findings reflect whether there are any unduly limitations constraining the procurement of energy efficiency and demand-response measures.

Sincerely,

A handwritten signature in black ink that reads "Douglas P. Scott".

Douglas P. Scott
Chairman

Executive Summary

Section 8-103 of the Public Utilities Act (220 ILCS 5/8-103) (“PUA”) requires electric utilities serving 100,000 or more customers as of December 21, 2005 to implement cost effective energy efficiency (“EE”) measures and demand response measures (“DR”) (collectively “EEDR”) designed to achieve incremental annual energy savings and peak demand reductions. The two utilities affected by these standards are Commonwealth Edison Company (“ComEd”) and Ameren Illinois Company (“Ameren”). Under Subsection 8-103(b) of the PUA, the utilities are directed to implement EE measures designed to achieve energy savings of .2% of energy delivered in the year commencing June 1, 2008, and gradually increasing each year to 2% or the year commencing June 1, 2015, and each year thereafter. Under Subsection 8-103(c) of the PUA, beginning June 1, 2008, and for the following 10 years, the utilities are directed to implement DR measures to reduce peak demand by 0.1% over the prior year for eligible retail customers, as defined in Section 16-111.5 of the PUA, and for customers who have not been declared competitive and that have elected hourly service.

Paragraph (2) of Subsection 8-103(d) of the PUA requires the Illinois Commerce Commission (“Commission”) to review and report on this limitation, stating,

No later than June 30, 2011, the Commission shall review the limitation on the amount of energy efficiency and demand-response measures implemented pursuant to this Section and report to the General Assembly its findings as to whether that limitation unduly constrains the procurement of energy efficiency and demand-response measures.

The Commission has reviewed the statute’s limitation on spending on EEDR measures procured pursuant to Section 8-103 of the PUA. It hereby reports to the General Assembly its findings as to whether the statute’s limitation unduly constrains the procurement of EEDR measures.

To date, it does not appear that the limits in Subsection 8-103(d) have prevented any utility from reaching the mandated energy and demand response savings established in Subsections (b) or (c)¹. However, it is projected that the spending limits will prevent both utilities from reaching those goals within the next three years. In the Ameren service territory, the spending limits will constrain attainment of the goals in the year beginning June 1, 2011, and in ComEd's service territory, in the year commencing June 1, 2013². The Commission estimates that it will cost utility ratepayers over \$574³ million annually to achieve the 2% goals prescribed in Subsection (b), or nearly two-and-a-half times the budgets available under the 2.015% cap prescribed in Subsection (d).⁴

The Commission notes that these projections are uncertain, due to difficulties in estimating the effectiveness of EEDR programs. For example, it is nearly impossible to distinguish between "incremental" energy savings caused by a utility's EEDR programs and those energy savings that would have occurred due to normal technological change and changes in consumer behavior. This task has proven difficult in evaluating plan performance after the fact, and is certain to be more difficult prospectively. Among the factors likely to make forward-looking projections unreliable is the enactment of the

¹ Both utilities make this assertion in their most recent EEDR Plan filings. ICC Docket No.10-0568 for Ameren, filed September 30, 2010, and ICC Docket No. 10-0570 for ComEd, filed October 1, 2010.

² See Docket 10-0568, Ameren Ex. 1.0, pp. 8-9, dated September 30, 2010 and Docket10-0570, Final Order dated December 21, 2010, p.21.

³ These estimates are based on the cost per kWh of anticipated savings in the 6th year of the plans filed by each utility and the Department of Commerce and Economic Opportunity in the utilities' territories and the total kWh savings required to achieve a 2% reduction in Year 6.

⁴ According to testimony filed in Dockets 10-0568 and 10-0570, the Year 6 budget limits are anticipated to be approximately \$60 million for Ameren and \$163 million for ComEd, totaling approximately \$223 million. See Docket 10-0568, Ameren Ex. 1.1, Table 4, p.4, dated September 30, 2010 and ComEd Ex 1.0, Table 3, p. 7.

Energy Independence and Security Act of 2007 (“EISA”), which increased efficiency standards for common lighting. As the new EISA standards begin phasing in on January 1, 2012, they will result in very substantial reductions in electricity consumption, but they will also significantly reduce the opportunity for utilities to realize “incremental” energy savings from their own lighting programs. To date, incentives for energy efficient lighting alternatives, like Compact Fluorescent Lights (“CFLs”), accounted for over half the utilities’ energy savings. The cost per kWh saved through such lighting measures was also lower than the portfolio average cost per kWh saved. In short, such programs gave the utilities a relatively high level of energy savings for their customers’ dollars. Thus, the advent of the new EISA lighting standards requires the utilities to replace a good portion of their portfolios of efficiency measures with more expensive measures, raising the cost to achieve a kWh of energy savings.

Finally, Subsection (a) describes the General Assembly’s policy goals in enacting Section 8-103 as including provision of environmental benefits and avoidance or delay of the need for additional transmission, generation and distribution infrastructure. The Commission believes that the EISA standards will generate a substantial portion of the energy savings that otherwise would have been realized through utility programs. This will provide at least some portion of the environmental and other benefits envisioned by the General Assembly, without requiring ratepayers to provide additional funds. Additionally the current spending limits enable the utilities to pursue other measures that were not as effective as lighting measures, prior to enactment of the new EISA standards. This provides additional environmental benefits while avoiding or delaying the need for additional infrastructure investment. The Commission also estimates that it

will require ratepayers to provide approximately \$350 million annually (\$574 million - \$223 million that is available under the current caps) in additional funds. For the reasons presented above, the Commission concludes that the spending limits of Subsection (d) do not cause an undue constraint on the procurement of EEDR measures.

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I. **Introduction**

Section 8-103 of the PUA sets forth EEDR standards pertaining to electric utilities that provided electric service to at least 100,000 customers in Illinois as of December 31, 2005. The two utilities affected by these standards are Commonwealth Edison Company (“ComEd”) and Ameren Illinois Company (“Ameren”). Additionally, the Department of Commerce and Economic Opportunity (“DCEO”) is required to implement 25% of those energy efficiency measures that are approved by the Commission for each utility’s service territory. The Commission has construed this to mean that DCEO receives 25% of the funds each utility collects from ratepayers. The EEDR standards require incremental energy savings that comprise regularly increasing percentages of the utilities’ delivered energy until the year commencing June 1, 2015, at which point the EE standard is 2% of energy delivered for each year thereafter. Additionally, the EEDR standards require electric utilities to implement cost-effective DR measures to reduce peak demand by 0.1% over the prior year for eligible retail customers for a period of ten years commencing June 1, 2008.

Subsection 8-103(d) prescribes that such EEDR procurement may not cause retail rates to increase by more than certain percentages. Subsection (d) states, in pertinent part,

Notwithstanding the requirements of subsections (b) and (c) of this Section, an electric utility shall reduce the amount of energy efficiency and demand-response measures implemented in any single year by an amount necessary to limit the estimated average increase in the amounts paid by retail customers in connection with electric service due to the cost of those measures to:

- (1) in 2008, no more than 0.5% of the amount paid per kilowatthour by those customers during the year ending May 31, 2007;

(2) in 2009, the greater of an additional 0.5% of the amount paid per kilowatthour by those customers during the year ending May 31, 2008 or 1% of the amount paid per kilowatthour by those customers during the year ending May 31, 2007;

(3) in 2010, the greater of an additional 0.5% of the amount paid per kilowatthour by those customers during the year ending May 31, 2009 or 1.5% of the amount paid per kilowatthour by those customers during the year ending May 31, 2007;

(4) in 2011, the greater of an additional 0.5% of the amount paid per kilowatthour by those customers during the year ending May 31, 2010 or 2% of the amount paid per kilowatthour by those customers during the year ending May 31, 2007; and

(5) thereafter, the amount of energy efficiency and demand-response measures implemented for any single year shall be reduced by an amount necessary to limit the estimated average net increase due to the cost of these measures included in the amounts paid by eligible retail customers in connection with electric service to no more than the greater of 2.015% of the amount paid per kilowatthour by those customers during the year ending May 31, 2007 or the incremental amount per kilowatthour paid for these measures in 2011.

Subsection (d) of Section 8-103 concludes by stating,

No later than June 30, 2011, the Commission shall review the limitation on the amount of energy efficiency and demand response measures implemented pursuant to this Section and report to the General Assembly its findings as to whether that limitation unduly constrains the procurement of energy efficiency and demand response measures.

The Commission has reviewed the statute's limitation on the amount of EEDR measures procured pursuant to Subsections 8-103(b) and (c) of the PUA, and hereby reports to the General Assembly its findings as to whether the statute's limitation unduly constrains the procurement of EEDR measures.

II. Review of Demand Response Procurements

Subsection (c) of Section 8-103 requires electric utilities to implement cost-effective DR measures to reduce peak demand by 0.1% over the prior year for eligible retail customers, as defined by Section 16-111.5 of the PUA, and for customers that elect hourly

service from the utility pursuant to Section 16-107 of the PUA, provided those customers have not been declared competitive. The DR requirement commences June 1, 2008 and continues for 10 years.

In the first three-year planning session which began in 2008, it appears that both utilities complied with the DR reductions⁵. However, the utilities anticipate varying degrees of success in meeting the DR requirements for the second three-year plan which begins June 1, 2011. ComEd has stated that it will be successful, but Ameren does not expect to meet the goals in the second three-year plan. Ameren's difficulties in meeting the DR goals relate primarily to finding cost-effective DR measures, and secondarily to the spending limits established in Subsection (d).

A significant factor in ComEd's success relative to Ameren's is that ComEd has a long-established air conditioning cycling program and Ameren does not. The cycling program pays an incentive to customers who participate in the program. Once the customer is in the program, a device is placed on the customer's air conditioner compressor(s) that allows the compressor(s) to be turned off for short intervals during peak demand periods. This program is cost-effective for ComEd because it has a DR program that predates Section 8-103 of the PUA and it has been able to expand that program at minimal cost.

Ameren does not have a similar program. Therefore, it did not have the infrastructure in place to expand a load control program at a minimal cost. Instead, it attempted to build a new program by offering its customers a Programmable Controllable

⁵ There are no penalties associated with failing to meet the demand response goals. Therefore, there have been no proceedings to make a determination. However, the reports of each utility's independent evaluator indicate that each utility met the goals in the first two years. The third year ends May 31, 2011. In addition, in the plans filed for the second three-year plan, both utilities contend the goals are met in all three years of the first plan.

Thermostat (“PCT”). A PCT is a programmable thermostat that can be reprogrammed over the internet. In exchange for the PCT, Ameren would be allowed to cycle a customer’s air conditioner during peak usage periods. A PCT is significantly more expensive than a standard programmable thermostat, and relatively few of Ameren’s customers elected to take advantage of the program. Upon evaluation, Ameren determined the PCTs were not cost-effective and discontinued the program during its first three-year plan.

The Commission determined that the record in Ameren’s second EEDR plan filing did not support the proposition that cost-effective DR measures were currently available to Ameren. The Commission instructed Ameren to continue efforts to identify cost-effective DR measures before its next plan. A limited pilot for a Voltage Optimization Program (“VOP”) was approved that may prove worthwhile. The VOP is intended to lower energy usage by providing a more constant voltage level through a feeder line that will allow energy to be utilized more efficiently⁶.

⁶ The premise behind this technology is that appliances and equipment work properly within a certain range of voltage. Voltage drops as energy passes through lines. Under currently employed technology, to have minimally acceptable voltage levels at the end of a feeder, the voltage needs to be towards the maximum acceptable range at the beginning of the feeder. This means that appliances and equipment towards the beginning of the feeder are drawing more energy than necessary to ensure that equipment at the end of the feeder has an acceptable level of energy. By smoothing the voltage throughout the feeder, energy usage is reduced towards the beginning of the feeder while it is maintained at the end of the feeder. If this technology works as expected and is cost-effective, it could reduce both peak usage and overall usage

III. Measuring Energy Savings and Estimating the Impact of Spending Limits

The Commission is currently reviewing whether ComEd and Ameren met the second-program-year savings levels required under Subsection (b) of Section 8-103⁷. Although this review is not complete, the independent evaluators have estimated that each company met or exceeded energy savings goals set for Plan Year 2. ComEd contends that it exceeded its savings requirements by more than 10% and spent about \$16 million less than the limitations set forth in Subsection (d). Ameren contends that it exceeded its goals as well, while spending was approximately equal to the limit.

The fundamental issue before the Commission in these proceedings is whether the energy savings were reasonably estimated by the independent evaluators. There is great uncertainty in the estimation of incremental savings because it compares total savings from the program with the savings that would have resulted if the program did not exist. This estimation process is highly speculative as it requires answering the following three questions: (1) how much is the annual energy savings from a measure; (2) how much of the savings from the incented measures would occur even if there were no incentives provided (free ridership); and, (3) how much indirect energy savings occurred because utility promotion of EE encouraged investment in other EE projects for which no incentives were provided (spillover). None of these questions can be answered with a high degree of accuracy or reliability.

⁷ The review of Ameren's and ComEd's second year savings is ongoing in ICC Dockets No. 10-0519 and 10-0520 respectively.

Indeed, even measurement of the annual energy savings relies on assumptions about usage patterns.⁸ Once the assumptions about usage are in place, gross savings from the measures are estimated. This allows program evaluators to estimate the effects of free riders and spillover to determine the net savings that are attributable to the program. The Commission must rely substantially on the expertise and objectivity of the independent evaluators as there is significant uncertainty in these measurements⁹.

As difficult as it is to determine the incremental savings that occurred in previous years, it is even more difficult to anticipate future incremental savings. In addition to speculating about how many customers will be encouraged by incentives for various measures in the future, it is unclear whether the rates of free riders and spillover will be similar to what was recently estimated. The uncertainty about free riders and spillover are further increased by the American Recovery and Reinvestment Act tax credits and rebates encouraging unrelated EE investment during the same period that the utility programs were gaining experience and maturity.

The difficulty of projecting future outcomes is exacerbated by the improved lighting standards being phased in by EISA, beginning January 1, 2012. The new lighting standards can potentially affect gross savings, free ridership and spillover rates from lighting measures. Gross savings may be affected because EISA prohibits the sale and

⁸ For example, a CFL placed in a high use area such as a family room will save much more energy on an annual basis than a CFL placed in a hall closet. Likewise, it is assumed that a certain number of CFLs for which rebates are provided are stored until another bulb burns out, and may therefore not be installed in the year they are purchased.

⁹ Ameren's independent evaluators stated that reasonable estimates of savings from lighting measures could range from 54% to 154% of gross savings depending on the model used. ComEd's evaluation report indicates ranges from 21% to 60%. These reports are parts of open ICC Dockets and the Commission has made no conclusions about the validity of these reports. The reports are filed in ICC Dockets No. 10-0519 (Ameren) and 10-0520 (ComEd). A review of programs conducted by the New York State Economic Research and Development Authority found that free riders ranged from 2% to 28% and spillover ranged from 5% to 48% for residential customer programs. The ranges for both free ridership and spillover were larger for Commercial and Industrial programs.

manufacture of 100 Watt bulbs.¹⁰ Instead, 72 Watts is the maximum permissible Wattage to achieve the lumens associated with the current 100 Watt bulb. It is unclear whether manufacturers will begin manufacturing 72 Watt incandescent bulbs, whether halogen bulbs¹¹ will replace incandescent bulbs, or whether the CFL will become the standard lighting measure. If the 72 Watt incandescent bulb or the halogen bulb becomes the baseline of comparison, energy savings decline by at least 28 Watts per hour of use per bulb incented.¹² If the CFL becomes the baseline, there is no incremental energy savings associated with promoting CFLs. Given the cost of halogen lights and the uncertainty that a 72 Watt incandescent bulb will be manufactured, it is likely that free ridership will increase as more customers will choose the CFL as their default lighting purchase. The reduced gross savings and increased free ridership will decrease the incremental energy savings associated with incentives for lighting measures. The Commission notes that there are still energy reductions associated with changes to the lighting standards. However, these reductions are no longer incremental to the utilities' efforts and therefore are not creditable towards meeting the goals of Subsection (b).

Ameren and ComEd filed plans and provided sworn testimony that supported the conclusion that the goals of Subsection (b) will not be achievable within the spending limits of Subsection (d) at some point in the second triennial plan. Ameren projects that it will not be able to achieve the goals in any of the next 3 years of its plan. ComEd projects that

¹⁰ The maximum Wattages to produce the lumens associated with 75 and 60 Watt bulbs will decline as part of the phasing in of the EISA standards as well.

¹¹ Halogen lights comply with the new EISA standards but have costs similar to CFLs.

¹² Twenty-eight Watts is the difference between a 100 Watt incandescent bulb and a 72 Watt alternative.

it will not be able to achieve the goals in Year 6.¹³ Both utilities testified that improved efficiency of common lighting measures would greatly impact their portfolios.¹⁴ The Commission concurred with the utilities in these projections, as energy savings from CFLs accounted for more than half of total energy savings in each utility's first triennial plan and the costs to achieve a kWh of energy savings through CFLs was less than the average cost per kWh saved for the first portfolios.

The utilities differed in their opinions as to the magnitude of the impacts lighting efficiency standards are likely to have, but both agreed that the cost necessary to achieve a kWh of savings would increase. Additionally, DCEO proposed to implement measures calculated to achieve only approximately 15% of the total energy savings in the second triennial plans, compared to 20% of the energy savings in the first plans. When the increased cost of achieving a kWh of savings was combined with the increased proportion of total savings the utilities are undertaking in the second triennial plan, the anticipated result is that the goals set forth in Subsection (b) will not be met within the spending limits of Subsection (d). The Commission conservatively estimates that it will require annual budgets of about \$574 million dollars for the utilities to achieve the 2% savings of subsection (b) and the 0.1% demand reductions of Subsection (c).¹⁵ This \$574 million estimate is approximately \$186 million in the Ameren territory, which represents a 6.1%

¹³ It is possible that ComEd will not achieve the goals in Year 5 either. The plan approved for ComEd allows adjustments to the goals based on free ridership and spillover estimates to lighting measures as well as adjustments for potential compensation for EE through PJM, the Regional Transmission Organization through which ComEd operates. See ICC Docket No. 10-0570, Final Order, dated December 21, 2010, pp. 18-22.

¹⁴ See Dockets 10-0568 (Ameren), Final Order, dated December 21, 2010, pp. 57-58 and 10-0570 (ComEd) Final Order, dated December 21, 2010, pp.13-14.

¹⁵ The estimates are conservative because there is only one budget for EE and DR. The \$574 million is what is necessary to achieve 2% energy savings and does not account for Ameren failing to meet its DR goals in the second triennial plan. See footnote 3 for a description of the \$574 million estimate.

increase in rates and approximately \$388 million in ComEd's territory which represents a 4.8% increase in rates.

IV. Conclusions

The Commission has reviewed the impact of the Subsection (d) limitation on spending on EEDR measures procured pursuant to Section 8-103 of the PUA. The Commission finds that, to date, the limits in Subsection (d) have not prevented any utility from reaching the mandates established in Subsections (b) or (c). However, it appears that spending limits will constrain the procurement of EEDR measures in the near future. This constraint is likely to occur in the Ameren service territory in the year beginning June 1, 2011 and in Commonwealth Edison's service territory in the year commencing June 1, 2013.

Although the spending limits are likely to prevent the utilities from achieving the goals set forth in Subsections 8-103(b) and (c) of the PUA, the Commission does not believe this is an undue constraint within the meaning of Section 8-103(d). The Commission bases this opinion on the fact that much of the energy savings through CFLs that would have been incremental to the utilities' efforts when the General Assembly passed Section 8-103 will no longer be counted as incremental. These savings will still provide net energy reductions and the environmental benefits associated with those reductions. The Commission also estimates that it would cost ratepayers about \$574 million annually to achieve the 2% goals set forth in years commencing on or after June 1, 2015. This amounts to approximately a 6.1% rate increase for customers in Ameren's service territory and a 4.8% rate increase for

customers in ComEd's territory. The Commission does not believe that imposing rate increases of this size on ratepayers in order to avoid or delay the new generation, transmission and distribution infrastructure investments described in Subsection (a) of Section 8-103 is economically justifiable. Therefore, it is the Commission's recommendation that the General Assembly maintain the current spending limits established in Subsection (d).