STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
PUBLIC UTILITIES COMMISSION

IN RE: RI ENERGY EFFICIENCY AND RESOURCE MANAGEMENT COUNCIL'S PROPOSED 2013 ELECTRIC AND NATURAL GAS ENERGY EFFICIENCY SAVINGS TARGETS (2015-2017)

DOCKET NO. 4202

COMMISSION'S 1ST SET OF DATA REQUESTS
DIRECTED TO EERMC
(September 6, 2013)

1. Page 8. Has the EERMC updated the targets annually pursuant to RIGL 39-1-27.7.1(f) which states, "…The council shall revise as necessary these targets on an annual basis prior to the reconciliation process established pursuant to subsection (c) of this section and submit its revisions to the commission for approval." If not, why not.

   The EERMC and its Consultant Team work on an ongoing basis with National Grid's planning, implementation, and evaluation teams. This working relationship provides the opportunity for real-time assessment of program performance and progress toward goals by National Grid. It also provides for an active understanding of the energy efficiency markets in Rhode Island (and, through Grid's and the Consultant Team's joint knowledge of other New England and New York markets) the Region. The EERMC and National Grid have focused on the Energy Efficiency targets (once approved) as relatively fixed performance targets, to be modified only if there are dramatic changes in the markets, technologies, funding, or the economy. The annual planning process which results in an Annual Plan, submitted to the PUC each October is the context in which the targets are most likely to be re-evaluated, and modifications (if any) proposed. The EERMC has not to date seen a need to propose modifications to the targets in the context of RIGL. 39-1-27.7.1(c).

2. Page 5 states, "all savings targets are shown as a percent of 2012 retail sales." Please define in numerical terms "2012 retail sales."

   7,744,126.56 megawatt hours and 37,691,471 dekatherms. This was provided by National Grid based on actual 2012 sales data.

3. Page 5 of Attachment A, "Energy Efficiency in Rhode Island: 2015 – 2017 Achievable Potential Assessment." The term "intelligence efficiency" is defined as "energy attained through optimization of whole systems." Please elaborate.

   The phrase should be corrected to read: "intelligent efficiency".
   The American Council for an Energy Efficient Economy (ACEEE) defines intelligent efficiency as "a systems-based, holistic approach to energy savings,

enabled by information and communication technology (ICT) and user access to real-time information. Intelligent efficiency differs from component energy efficiency in that it is adaptive, anticipatory, and networked."
Traditional energy efficiency focuses on improvements in individual products, appliances and equipment. In contrast, intelligent efficiency focuses on entire systems including the individual components, their relationship to one another, and their relationship to human operators.
ACEEE recently published a report examining this topic and its potential role in the current and future energy efficiency industry - "A Defining Framework for Intelligent Efficiency"
http://www.aceee.org/sites/default/files/publications/researchreports/e125.pdf

See also the newly released report: *Intelligent Efficiency: Opportunities, Barriers, and Solutions*

4. Page 6. For whom was the Council's 2013 Energy Efficiency Program Plan Cost-Effectiveness Memo prepared, and did the Council provide a copy to the Commission? If not, please provide a copy of this memorandum to the Commission.

   RIGL 39-1-27.7(5) states, "The commission shall issue an order approving all energy efficiency measures that are cost effective and lower cost than acquisition of additional supply, with regard to the plan from the electrical and natural gas distribution company, and **reviewed and approved by the energy efficiency and resources management council**, and any related annual plans, and shall approve a fully reconciling funding mechanism to fund investments in all efficiency measures that are cost effective and lower cost than acquisition of additional supply, not greater than sixty (60) days after it is filed with the commission." As part of the Council's role of reviewing and approving the Plan, it annually has directed its Consultant Team starting in 2009 to develop a Cost-Effectiveness Memo to submit to the Commission in support of its deliberations, which thoroughly analyses the proposed annual Plan for cost-effectiveness and the associated cost of supply. Copies of the Memos relating to the first and second year of the current three year plan can be found at:
   a. http://www.ripuc.org/eventsactions/docket/4366-EERMC-CEReport(11-20-12).pdf
   b. http://www.ripuc.org/eventsactions/docket/4296-EERMC-Report(11-16-11).pdf

   A new memo will be developed after the filing of the 2014 Plan, and will be provided to the Commission within three weeks of the 2014 Plan being submitted on 11/1/13.

5. Page 7 of Attachment A. "Averaging Massachusetts' and Connecticut's installed capacity, and scaling to Rhode Island using annual energy sales and ACEEE scores, we find annual achievable potential of roughly 3.8 MW."
   Explain exactly how you arrived at 3.8MW (beyond "scaling back" from neighboring MA and CT)

Estimating CHP potential is notoriously difficult. Real world experience shows that actual installed capacity tends to significantly lag the levels identified in potential studies – for a variety of reasons ranging from the technical (i.e. unable to fit an exhaust flue in the boiler room) to the economic (i.e."spark spread" requires limited project investment to show cost-effectiveness). Given those limitations we elected to develop our estimate using actual installations from states with the most relevant and comparable experience – Massachusetts and Connecticut.

The calculation involved the following steps:

1. For each state, dividing the actual installed CHP capacity by the number of years taken to install it, which results in an average installed capacity per year.
2. Scaling the average annual installed capacity to RI using the ratio of each states' 2012 annual sales to RI's 2012 annual sales. (e.g., MA's 2012 annual sales was approximately 47 TWh while RI's was approximately 7.7 TWh. MA's average annual installed capacity was scaled to RI by multiplying it by approximately 7.7 / 47)
3. To account for differences in the favorability of state policy in promoting CHP (e.g. interconnection standards), the number developed in step two was scaled again using the ratio of each state's policy score to RI's policy score. The CHP policy scores come from the most recent ACEEE state scorecard which awards points to states based on various financial, technical, policy, and regulatory factors. A maximum of 5 points is possible. MA achieved a score of 4.5, CT a score of 3, and RI a score of 2.5. So, for example, MA's average annual installed capacity was multiplied by 2.5 / 4.5 = 0.56 to account for MA's more favorable environment for CHP. The most recent state scorecard is available online at: http://www.aceee.org/sites/default/files/publications/researchreports/e12c.pdf
4. The final step was to take a weighted average (using 2012 annual sales) of the adjusted values – as arrived at through step three – for MA and CT. The resulting number was 3.86 MW.

6. Page 7 of Attachment A. "However, recognizing that Connecticut's installed capacity is particularly high compared to other states and may be an outlier, the Consultant Team feels that a more reasonable and conservative estimate of 2MW is appropriate." Explain with specificity why you chose 2MW as opposed to some other number below 3MW.

   The selection of 2MW was a product of discussions with National Grid, CHP experts on the consultant team, and the analysis described in question five. Since we are not relying on a detailed, state-specific analysis, and are instead backing into an estimate using actuals from other states, we tried to build in conservatisms to ensure that our final number was well within the bounds of achievable potential. The choice of a lower number than identified in the analysis is a reflection of that conservative approach.

7. Page 7 of Attachment A. "Assuming 2MW of CHP could be installed annually, and assuming a conservative 7,000 annual run hours, we find cumulative energy savings potential of roughly 35.6Gwh over 2015-2017. The assumption of 7,000 hour annual run hours is footnoted to state that "typically" full load operating hours of a CHP unit must meet or exceed 7,000 per year to be cost effective but depends on installation. Please provide a range of annual run hours for a range of capacity factors so that we can see where 7,000 falls in the range.

   7,000 hours is an estimate based on discussions with individuals familiar with both the technology and the screening process. It is a reflection of the fact that many CHP systems have difficulty passing cost-effectiveness screening unless they have very high run hours, thus offsetting a lot of thermal energy requirements. 7,000 falls between a continuous system (8,760 hours, more common in smaller projects where the system is sized to meet the water heating load) and a 3 shift industrial (6,300 hours, generally representative of large projects).

8. Page 9 of Attachment A. If the lighting market has moved to a blend of technologies, and socket saturation of efficient lighting has not grown as much as anticipated, why does the Consultant Team expect an increase in savings potential for residential lighting?

   The increase in potential for residential lighting beyond KEMA's estimate is largely due to KEMA's mistaken assumption that the Energy Independence and Security Act (EISA), which increased efficacy requirements of general service light bulbs, would result in CFLs becoming the baseline technology. That assumption turned out to be wrong as manufacturers developed relatively inexpensive minimally compliant EISA halogen bulbs that look and function nearly identically to the less efficient incandescent lamps they replace. Consumers are purchasing these halogen lamps instead of the now banned incandescent lamps making them the new baseline. CFLs still save energy when installed in place of a halogen lamp, and thus their energy saving potential persists.

   Residential lighting programs, as currently designed, appear to be slowing down in terms of increasing socket saturation. The stalled socket saturation issue actually suggests that additional potential exists. It is our belief that the potential for further energy savings is not diminished. Rather, the opposite is true – there is even more room for efficient lighting to achieve energy savings as many sockets still remain to be converted.

   The growth in new lighting technologies also creates further opportunity for energy savings because certain new technologies (LEDs) are even more efficient than the old, high efficiency technology (CFLs). Additionally, LEDs do not suffer from the same issues that likely have contributed to stalled CFLs' market penetration, including flicker, limited dimming capability, mercury, and slow warm up, to name a few. The arrival of a growing number of cost-effective LEDs for residential applications, at increasingly lower prices, is expected to help programs overcome many of the market barriers they currently face, thus driving savings to new levels.

9. On Page 13 of Attachment A, what specific lighting controls are you referring to that were not included in the streetlight savings estimate? ("This estimate is conservative in that it assumes no additional savings from lighting controls…")

   Current conventional street lights are controlled by a fixture-mounted twist-lock photocell that provides dusk-dawn operation. KEMA's estimate of savings from street lighting did not factor in any potential for savings from advanced controls. Many municipalities across the country are beginning to implement more advanced street lighting controls that dim or turn off street lights during periods of low activity. (This technology is an example of "intelligent efficiency" as described in response to Question #3 above.) For those municipalities that want to utilize more advanced controls, there are a couple options:

   1. The most basic option is to go to a combination twist-lock photocell/timer that would allow them to turn lights on at dusk, then off at a prescribed hour at night, then on at a prescribed hour, then off at dawn.
   2. The more sophisticated option is networked street lighting controls that communicate wirelessly. These systems offers much more flexibility for programming and dimming to increase energy savings, do not require a fail-prone photocell, and can be programmed from the ground with a laptop. Furthermore they offer reporting capabilities to alert a municipality immediately when a street light needs servicing, rather than waiting for customers to complain.

   However, any energy savings that controls may provide will need to be factored into the conditions of the upcoming street lighting tariffs.

10. Page 17 of Attachment A, what specific regional studies did you rely on to estimate the gas efficiency potential. For each study you relied on, please provide the title, author(s) and date published.

Title	**Author**	**Date Published**
Additional Opportunities for Energy Efficiency in New Hampshire	GDS Associates, Inc	January, 2009
Natural Gas Energy Efficiency Potential in Massachusetts	GDS Associates, Inc	April 22, 2009
Connecticut Natural Gas Commercial and Industrial Energy-Efficiency Potential Study	KEMA, Inc	May 7, 2009
Evaluating Gas Efficiency Market Potential in Consolidated Edison Company of New York Inc. Has Franchise Area	GDS Associates, Inc	February 20, 2008

11. Page 18 of Attachment A, Table 1 seems to indicate that the most recent study relied upon is from 2009. Is this true? If so, were there any more recent gas efficiency studies that the EERMC could have relied upon in developing the targets?

    That is true – 2009 is the date of the most recent gas efficiency potential study that we looked at. We are aware of a more recent study that was completed in Maryland (2012). However, we chose not to rely on that study due to Maryland's milder climate, which translates to different heating load profiles and thus different efficiency opportunities. Also, the Mid-Atlantic States are significantly behind the Northeast in maturity and depth of programs.

12. Please provide a copy of the Consultant Team's 2012 Natural Gas Opportunities Report referred to on Page 19 of Attachment A.

    The report from July, 2012 sought to summarize the data collection and analytical activities used to prepare a list of promising opportunities and develop initial information on their potential magnitude and cost as well as factors relevant to acquiring savings from them. While the primary focus was in support of planning for 2013 and 2014, the data also is relevant for the 2015 – 2017 period. The report can be found at:

    http://www.rieermc.ri.gov/documents/RI%20Gas%20Opportunity%20Report%20 2012.pdf

13. Page 19 of Attachment A, the Consultant Team is not comfortable identifying achievable potential but feels the true level is above the targets. If the targets are not based on an identified level of achievable potential, on what basis do you conclude that the achievable potential is above the targets?

    The intent of the analysis was not to create a new potential study, which is an extensive and expensive undertaking. Since the KEMA Potential Study was for a ten year period, the Council deemed it sufficient to assign the Consultant Team to conduct a review of the KEMA study with the primary intent of confirming that the potential identified by KEMA has not eroded and continues to represent an appropriate basis for future targets. By narrowing the analysis to items that were significant "dial turners," the Consultant Team was able to confirm that the potential had held strong and likely increased at least moderately. While further analysis may have been able to more clearly quantify this increase, the associated costs of such research were deemed inappropriate since the main objective of confirming the potential was achieved in this effective and expedient manner. Also, we are confident that the achievable potential is greater than proposed targets because similar levels of savings relative to sales are being achieved, or planned, in our neighboring jurisdictions with similar profiles: Massachusetts, Connecticut and Vermont.