

Kai Millyard Associates
72 Regal Road, Toronto, Ontario, M6H 2K1, 416-651-7141
Fax: 416-651-4659

June 2, 2015

Ms Kirsten Walli
Board Secretary
Ontario Energy Board
27th floor
2300 Yonge Street
PO Box 2319
Toronto, ON
M4P 1E4

RE: EB-2015-0029 INTERROGATORIES

Dear Ms Walli,

I enclose 2 copies of interrogatories by GEC to Union Gas on its 2015-2020 DSM Plan evidence. These have also been sent to the utility, and PDF versions are being emailed to you.

Sincerely,

(Mr.) Kai Millyard
Case Manager for the
Green Energy Coalition

encl.

Cc: Vanessa Innis
Intervenors

GEC Interrogatories on Union 2015-2020 DSM Plan

June 2, 2015

1. Exh. A/T1 p. 5: Union states that since 1997 its DSM programs “have helped save an estimated \$2.6 billion in total resource costs and 7.5 billion cubic meters of natural gas.”
 - a. What avoided costs were used to calculate the TRC cost savings calculated?
 - b. Is the 7.5 billion cubic meters of gas savings the sum of the incremental annual savings from the 1997 through 2014 programs, the annual persisting savings in 2015 from programs run since 1997, the sum of the lifetime savings from each year’s worth of programs from 1997 through 2014, or something else? If something else, please explain.
 - c. Please provide, in original electronic form with formulas intact, the computations performed by Union to arrive at both the cost and gas savings totals cited.
 - d. If not included in response to subpart “c” above, please provide the TRC net benefits, incremental annual cubic meter savings, and lifetime cubic meter savings separately for each year from 1997 through 2014.
 - e. Please provide Union’s annual in-franchise total throughput volumes for each year from 1997 through 2014.
2. Exh. A/T1 p. 5: Union states its past DSM programs have reduced carbon dioxide emissions by 14 million tonnes, the equivalent of removing 2.5 million cars from the roads for a year.
 - a. Does Union have a policy or plan or program to manage its GHG emissions or those of its customers? If not, why not? If so please provide a copy and copies of any annual or progress reports.
 - b. Did Union submit comments on Ontario’s recent Climate Change Discussion Paper? If so please provide a copy.
3. Exh. A/T1: The Ontario government has indicated that it favours a cap and trade carbon pricing mechanism and that it will direct a portion of revenues from the sale of emission permits toward efficiency improvement. Should the government apply carbon cap and trade revenues toward energy efficiency, what mechanism does the company propose to consider amendments to the plan’s energy savings targets and budgets if the government’s mechanism initiation does not happen to align with the three year review?
4. General: please provide in original electronic form a copy of Union’s annual “TRC spreadsheets” (i.e. the annual Excel file which is the companion to the Company’s annual evaluation report that documents, program by program and measure by measure, actual program performance in terms of savings, as well as spending and cost effectiveness screening results) for 2012, 2013 and 2014. For 2014, please provide the most recent and most accurate version (in the event that it is not yet fully adjusted to address audit recommendations).
5. General: Would the Company agree that net to gross ratios are at least significantly a function of or affected by program design, including financial incentive levels? If not, why not? If so, when developing both its program plan for 2015-2016 and its sensitivity scenarios, did the Company adjust program and/or measure net to gross ratios? If not why not?

6. A/T3 p.13 TARGETS: Regarding the most recent study or studies of energy efficiency potential in Union's service territory:
- Please provide a copy of the written report(s).
 - Please provide Excel spreadsheets, with formulas intact, containing all inputs to and outputs from the analyses of efficiency potential. Such spreadsheets should include (but not be limited to):
 - A list of all analyzed efficiency measures
 - Assumptions regarding per unit savings, incremental costs, measure lives and other relevant characteristics of each efficiency measure
 - Assumptions regarding the size of the eligible market, by year, for each measure.
 - Measure cost-effectiveness screening results
 - Estimates of technical, economic and achievable potential by measure by year.
 - "Keys" that would enable the reader to interpret and understand column and row headings in each spreadsheet.
 - Would Union agree that efficiency potential studies tend to be conservative and understate true achievable efficiency potential because they can never identify and address all potential efficiency measures (particularly custom C&I measures), they cannot fully anticipate and characterize emerging technologies, they typically do not forecast declining incremental costs resulting from economies of scale as market penetrations for some technologies grow, and a variety of other reasons? If not why not?
7. Regarding gas sales in 2014: in Exh A/T1, p. 23 Union indicates that "gas purchased for system sales customers" was 5,219 million m³ and "gas supplied for the account of direct purchase customers" was 9,971 million m³, for a total of 15,190 million m³. Those values are different than the "total throughput volume" of 14,747 million m³ shown on Exh A/T1/Appendix A/S1 and different again than the 14,204 million m³ of Total Throughput Volume shown in Exh A/T1/Appendix A/S4. Please explain these differences. Specifically explain:
- What volumes in Exh A/T1 p. 23 are not in Exh A/T1/Appendix A/S1?
 - What volumes in Exh A/T1 p. 23 are not in Exh A/T1/Appendix A/S4?
 - What volumes in Exh A/T1/Appendix A/S1 are part of "gas purchased for system sales customers" referenced in Exh A/T1/p. 23? Please show how they add up to 5,219 million m³
 - What volumes in Exh A/T1/Appendix A/S1 are part of "gas supplied for the account of direct purchase customers"? Please show how they add up to 9,971 million m³
 - Which volumes (rate classes) in Exh A/T1/Appendix 1/S1 are not included in Exh A/T1/Appendix A/S4? Please show how the excluded rate classes lead to a reduction from 14,747 million m³ shown on Exh A/T1/Appendix A/S1 to 14,204 million m³ of Total Throughput Volume shown in Exh A/T1/Appendix A/S4.
8. Exh A/T1/Appendix A/S1:
- For each rate class (i.e. each row) please provide:
 - A description of the customers in the rate class (sufficient to differentiate between rate classes)

- ii. Total annual expenditure on gas – including commodity costs – by all customers in the rate class
 - iii. The average rate paid per m³ of gas, including distribution costs, commodity costs and any other costs. Please explain how this rate is computed.
- b. Please explain what each of the column headings means
- 9. Exh A/T1/Appendix A/S4 and S5: for residential customers,
 - a. What is the company's best estimate of how many are in single-family homes? In answering please explain what you include in your definition of single family.
 - b. Please provide the average annual consumption in usage deciles (i.e. for the top 10% of customers, for customers in the 80% to 90% decile, for customers in the 70% to 80% decile, etc.). Please provide it separately for all residential, single-family residential and non-single family residential.
- 10. Exh A/T1 p. 11: Regarding its home retrofit program, Union states that it "aims to get a minimum of ten applications within a rural area before deploying a delivery agent." Why does Union need to deploy a delivery agent? Could it not just let existing auditors and weatherization contractors engage prospective participants and offer the program rebates and other benefits directly to consumers? Would that not allow the market to determine the conditions under which it would make sense to deliver services to rural areas?
- 11. Exh A/T1 pp. 15-16: regarding the bulleted list of feedback that Union heard from customers, please provide copies of all studies, survey reports and other documents which Union may have produced, had produced on its behalf, and/or relied upon in reaching the conclusions presented.
- 12. Exh A/T1/Appendix B p. 1: Union suggests it conducted customer research, with one of the conclusions being that "customers do not cite access to financing as an obstacle to undertaking efficiency improvements."
 - a. What research was undertaken?
 - b. Please provide copies of all written reports, memoranda and other material that document what research was undertaken and what the results were.
- 13. Exh A/T1/Appendix B, p. 1: Please provide a copy of the report "On-Bill Financing for DSM Programs: Research Insights and Findings" referenced in footnote 2.
- 14. Exh A/T1/Appendix D, p. 1: Regarding the Board Guidelines suggestion that the utilities propose a preliminary transition plan that outlines how the gas utility would include consideration of DSM in future infrastructure planning efforts, Union states that "It is premature for Union to propose a transition plan at this time."
 - a. Please summarize why the Company believes it is premature, even for a preliminary plan.
 - b. What information does the Company not have that it would need to develop a preliminary transition plan? Please provide a specific list.
 - c. Please summarize all research, analysis and planning that the Company has done on this issue since the Board order in the GTA pipeline case. Please also provide all written documents the company has produced itself or had produce on its behalf on this topic since the conclusion of the GTA pipeline case.
 - d. Since the Board's Framework now requires all leave to construct applications to include an analysis of DSM as an alternative, does Union not require a transition plan?

15. Exh A/T1/Appendix D pp. 1-2: Union states that “There is a fundamental difference between the approach used for distribution infrastructure planning (e.g. instantaneous peak volumetric flow rate, or needle peak) and the approach used for gas supply planning (e.g. peak day). The design day demands for Union South and Union North take into account existing DSM program volume reduction since the design day demands are based on the previous winter’s actual daily measured volumes. Any impact of in-place DSM programs will be reflected in the actual daily measured volumes.”
 - a. Isn’t that also equally true for peak hour impacts? If not, why not?
 - b. In this statement Union differentiates between distribution infrastructure planning and supply planning.
 - i. What does the term “supply planning” encompass?
 - ii. Does it include planning for new transmission or pipeline projects as in the GTA proceeding?
 - c. Is Union assuming that the requirement for consideration of DSM in infrastructure planning is limited to distribution system infrastructure? If so, why? Why would it not apply equally to transmission system infrastructure?
16. Exh A/T1/Appendix D, p. 3: Union states one of the issues to be addressed through a study is “the required load reduction that would lead to deferral of infrastructure”.
 - a. Is Union planning to analyze all future potential infrastructure projects to address this question for each potential project? If not, why not?
 - b. Also if not, how would Union address this question generically? Isn’t the answer going to be very situation/location/project-specific?
17. Exh A/T1/Appendix D, p. 3, footnote 1: Union has estimated avoided T&D costs to be 2% of other avoided gas costs.
 - a. How was that estimate developed?
 - b. Please provide copies of all studies, analyses, computations, etc. that were used to develop that estimate.
 - c. How does that estimate compare to past Union estimates of avoided T&D costs? To the extent that it is lower or higher, please explain.
18. Exh A/T2/p. 7: regarding the 2015 budget table (table 4), please provide both the Company’s budget and actual expenditures for the comparable categories in each table for each of the past three years (2012, 2013 and 2014).
19. Exh A/T2 p. 24: Union suggests that the new Framework direction is to roll-forward its 2014 approach on cost-effectiveness screening to 2015. While it is clear that the Board was interested in a roll forward of budgets and targets for 2015, it is not clear to GEC that the Board also wanted a roll forward of the 2014 approach to cost-effectiveness screening. Please provide a reference to where the Company believes such an approach was requested?
20. Exh A/T2 p. 28: Union suggests that the new Evaluation Advisory Forum (EAF) “will advise” on several evaluation activities. However, it later (Exh A/T2/Appendix D, p. 2) appears as if Union may be proposing that the EAF be a decision-making body rather than an advisory body. Please clarify which interpretation is correct.
21. Exh. A/T2/Appendix B:
 - a. Are the avoided gas costs presented in the table the values used for cost-effectiveness screening for 2015 only?

- b. Are the avoided gas costs presented in the table in nominal dollars (i.e. including inflation effects) or in real dollars (i.e. net of inflation effects, or with inflation backed out)?
 - c. Do the avoided costs presented include avoided transportation, avoided distribution and avoided storage as well as avoided commodity costs? If not, why not?
 - d. Do the avoided costs presented in the table include the 15% non-energy benefits adder?
 - e. Regarding the discount rate was used to produce the NPV values in the table:
 - i. What rate was used?
 - ii. Is it a real discount rate or a nominal discount rate?
 - iii. How was it derived? What is it based on?
 - f. Did Union make any assumptions regarding inflation for the development of the gas avoided costs in the table? If so, what were the assumption? How were they used?
 - g. What methodology was used to derive the gas avoided costs in the table? Please provide all documents that describe the process used.
 - h. Please provide a table that shows each of the components of avoided costs – commodity, transportation, distribution, storage, non-energy benefits adder, etc. – and how they collective add up to the totals shown in the current table for each year for each end use.
 - i. Regarding avoided commodity portion of the avoided gas costs presented in the table, what assumption was made regarding how prices will escalate through the year 2044? What were those assumptions based on?
 - j. Please provide all key input assumptions used to develop the gas avoided costs in the table.
 - k. Please provide in Excel form, with formulas intact, the analysis conducted to produce the values in the table.
22. Exh. A/T3 p. 6: for the 2016-2020 budget in table 2, please provide both the Company's budget and actual expenditures for the comparable categories for each of the past three years (2012, 2013 and 2014).
23. Exh A/T3 p. 12 (Table 3): What are Union's forecast gas throughput volumes for the same customer types for each year from 2016 through 2020?
24. Exh A/T3 p. 14: Union states that its proposed savings targets are based on its "experience, program potential and market opportunity."
- a. Please provide copies of all studies, reports or other documents upon which Union relied in trying to understand "market opportunity".
 - b. Beyond the documents provided in response to "a" above, please explain what types of research, analysis and/or computations that Union performed to assess program potential and/or market opportunity for each program and/or market considered. Please provide copies of all documents the Company may have produced itself or had produced on its behalf that document the results of such research, analysis and/or computations.
25. Exh A/T3/ p. 14: Union states that phase one of its analysis to develop targets included "assessing remaining market size using internal and third party data":
- a. Please specific for exactly which markets (and submarkets) Union assessed remaining market size;

- b. For each of those markets/submarkets, please identify all internal data upon which Union relied (in whole or in part) in its assessment. Please provide copies of all such data. To the extent any such data are in Excel form, please provide the electronic file with formulas intact.
 - c. For each of those markets/submarkets, please identify all third party data upon which Union relied (in whole or in part) in its assessment. Please provide copies of all such data. To the extent any such data are in Excel form, please provide the electronic file with formulas intact.
- 26. Exh A/T3 p. 14: Union states that phase one of its analysis to develop targets included “performing jurisdictional scans to determine whether key elements of the program offering, such as incentive levels, were in-line with comparable jurisdictions”:
 - a. Please specify which jurisdictions Union considered “comparable”. If the answer differs by market or submarket, please provide the answer separately by market and/or submarket.
 - b. Please provide copies of any documents that provide information (including but not limited to the specific types of data sought in the scans, the jurisdictions scanned, the data collected, Union’s analysis of the data, etc.) regarding each jurisdictional scan completed.
- 27. Exh A/T3 p. 14: Union states that phase one of its analysis to develop targets included “reviewing market research to better understand the opportunities and barriers in the market”. Please identify all market research reviewed. Please provide copies of all documents which include the market research reviewed.
- 28. Exh A/T3 p.14 If not provided in responses to other questions please provide:
 - a) Union's DSM Annual reports from 2012, 2013 and 2014 (unaudited).
 - b) DSM Opportunities Associated with Unit Heaters, NTGC, 2009
 - c) DSM Opportunities Associated with Commercial Dishwashers, NTGC, 2009.
 - d) Evaluation of Natural Gas DSM Measures: ERVs & HRVs, Nexant 2010.
 - e) DSM Opportunities Associated with Gas-Fired Food Service Equipment, NTGC, 2010.
 - f) Development of Market Information and DSM Measure for High Efficiency Gas Fryers, NGTC, 2008.
 - g) Development of DSM Measures and Market Information on Commercial Drain Water Heat Recovery, Enermodal Engineering, 2010.

If too voluminous to file in hard copy, please provide links to where the reports can be found online.
- 29. Exh A/T3 p. 15: Union states that phase two of its analysis to develop targets included “performing jurisdictional scans on leading jurisdictions to identify new program opportunities”:
 - a. Please specify which jurisdictions Union considered “leading”. If the answer differs by market or submarket, please provide the answer separately by market and/or submarket.
 - b. Please provide copies of any documents that provide information (including but not limited to the specific types of data sought in the scans, the jurisdictions scanned, the data collected, Union’s analysis of the data, etc.) regarding each jurisdictional scan completed.

- c. Please identify all possible new program opportunities (whether ultimately included in Union's proposed plan or not) that the company identified through these scans.
- 30. Exh A/T3 p. 15: In phase three of its analysis the Company attempted to balance a number of variables and objectives in developing its portfolio. What alternative program portfolios or mix of programs did the Company consider? How were they different from the portfolio actually proposed? What was the deciding factor in preferring the portfolio ultimately proposed?
- 31. Exh A/T3 p. 17: Is the Company suggesting that its targets in future years would be formulaically adjusted as TRM and/or NTG assumptions change? If so, how would the mechanics of that adjustment work?
- 32. Exh. A/T3 p. 20: for the 2016 resource acquisition scorecard please provide
 - a. the comparable actual achievements of each performance metric for each of the past three years (2012, 2013 and 2014) for the comparable target markets (e.g. include historic results from Rate Class T1 if T1 savings are to be included in the 2016 scorecard). Please provide the historic results whether or not there were comparable performance metrics in all cases for all historic years. For 2014, note whether the results provided reflect the results of CPSV reviews and/or other feedback from the current auditor.
 - b. The lifetime m³ gas savings target level proposed is a very precise value (i.e. not round number), suggesting it was produced by some combination of mathematical formulas. Please explain in detail how the value was mathematically developed. Please also provide a copy – in Excel with formulas intact – of the calculations performed to produce it. Such a file should include the greatest level of detail possible – e.g. forecasts by program, by measure, by customer type and by another other variable used.
- 33. Exh. A/T3 p. 26: for the 2016 low income scorecard please provide
 - a. the comparable actual achievements of each performance metric for each of the past three years (2012, 2013 and 2014). Please provide the historic results whether or not there were comparable performance metrics in all cases for all historic years. For 2014, note whether the results provided reflect the results of CPSV reviews and/or other feedback from the current auditor.
 - b. The lifetime m³ gas savings target levels proposed are very precise values (i.e. not round numbers), suggesting they were produced by some combination of mathematical formulas. Please explain in detail how the values were mathematically developed. Please also provide copies – in Excel with formulas intact – of the calculations performed to produce it. Such files should include the greatest level of detail possible – e.g. forecasts by program, by measure, by customer type and by another other variable used.
- 34. Exh A/T3 p. 30: Regarding Union's proposed 2016 Market Transformation scorecard, approximately what fraction of homes built in Union's territory each year are built by builders currently enrolled in its Optimum Home program? What fraction are built by builders forecast to be enrolled in the program in 2016?
- 35. Exh A/T3 p. 32: Regarding Union's proposed 2016 performance-based scorecard:
 - a. How many of its customers are eligible to participate in RunSmart? Please explain how this number was estimated.

- b. How many of its customers are eligible to participate in its SEM program? Please explain how this number was estimated?
 - c. How were the targets developed? Put another way, why are 25 RunSmart participants and 2 SEM participants reasonable targets? Why are they more reasonable than 50 and 5 program participants, respectively?
- 36. Exh A/T3 p. 32: Regarding Union's proposed 2018 performance-based scorecard:
 - a. How was 10% average savings selected as the target for RunSmart savings? What is that number based on? Is there any analysis or reference points to suggest it is a reasonably aggressive target?
 - b. How was 5% average savings selected as the target for SEM savings? ? What is that number based on? Is there any analysis or reference points to suggest it is a reasonably aggressive target?
- 37. Exh A/T3 pp. 66-73: In its discussion of bill impacts, please clarify:
 - a. Whether the impacts reported are net of any downward pressure on rates resulting from reduced capital investments in transmission and/or distribution system infrastructure, from reduced market clearing prices for gas (resulting from lower gas demand due to greater end use efficiency), from reduced credit and collection costs (as some participants find it easier to pay their bills), from reduced future carbon emission and/or other environmental compliance costs, or from any other factor that could lead to rates and/or commodity prices that are lower than they otherwise would be as a result of efficiency investments. If any such effects are included in Union's analysis, please specify which ones.
 - b. Whether the impacts are net of the value of the savings customers will realize from efficiency investments.
- 38. Exh A/T3/Appendix A pp. 2-8: Regarding the Home Reno program:
 - a. How many homes are in what Union considers to be part of the "target market?"
 - b. Regarding the proposed prescriptive rebate levels shown on p. 5:
 - i. How were they developed?
 - ii. What fraction of incremental cost do they represent?
 - iii. How do they compare to Union's current rebate offerings? To its 2014 offerings (if different than current)?
 - iv. How was it determined that these levels of incentives would lead to the 2016 forecast target participation level of 3000?
- 39. Exh A/T3/Appendix A p. 14:
 - a. Please specify what start-up costs will be incurred in 2016? What categories of costs does that line item cover that are not covered in program-specific items?
 - b. What is included in "administrative costs"? Is this purely administration/management? Or does it include marketing costs as well?
 - c. How did Union estimate an average rebate cost per Home Reno participant? Please provide all calculations underlying this estimate (with formulas intact).
- 40. Exh A/T3/Appendix A p. 15: The payback analysis table includes a row for programmable thermostats:
 - a. Are these standard thermostats or wi-fi/adaptive thermostats?

- b. They are not called out separately in either the budget table or in savings tables. Where are their costs and savings included? ESKs? What portion of other program budgets/costs and savings do they produce?
- 41. Exh A/T3/Appendix A pp. 17-18: Union states that “Federal ecoEnergy grants combined with provincial HESP rebates were more than double that of the Home Reno Rebate:
 - a. Please substantiate this statement.
 - b. What is Union’s understanding regarding the average Federal ecoEnergy grant in Ontario during each of the last 5 years of the program’s operation? Please provide separately for each year. Also, please document the source of this understanding, providing copies of referenced documents.
 - c. What is Union’s understanding regarding the average Provincial HESP rebate during each of the last 5 years of the federal ecoEnergy program? Please provide separately for each year. Also, please document the source of this understanding, providing copies of referenced documents.
- 42. Exh A/T3/Appendix A p. 18: Union states that its projected average Home Reno rebate covers 34% of project costs.
 - a. What is the basis for that statement? Please provide all calculations used to estimate the average project cost.
 - b. Is Union suggesting that the average project cost is close to \$7500?
 - i. If so, does that include the full cost or replacing heating equipment for some portion of customer?
 - ii. If it includes the cost of replacing heating equipment for a portion of participants, for what portion?
 - iii. If it includes the cost of replacing heating equipment for a portion of participants, what portion of the total (i.e. close to \$7500) cost is estimated to be associated with replacing heating equipment?
 - iv. If both the cost and rebates for heating equipment replacements is excluded from the calculation, what portion of retrofit costs would Union’s rebates cover on average?
- 43. Exh A/T3/Appendix A p. 24: The PAC Ratios for each program in Table 8 do not appear to be correct. They appear much lower than the ratio of the PAC benefits to the PAC costs. Are they correct? If not, please provide the correct values.
- 44. Exh A/T3/Appendix A pp. 23-24: Please provide in Excel form, with formulas intact, all assumptions and calculations underpinning the cost-effectiveness screening results in Tables 7 and 8.
- 45. Exh. A/T3/Appendix A pp. 27-30: Regarding the Company’s proposed C&I prescriptive rebate program:
 - a. For each measure on first bulleted lists on p. 27, please provide
 - i. The number of units the Company rebated in each year from 2012 through 2014.
 - ii. The first year and lifetime savings that the Company generated from each measure in each year from 2012 through 2014
 - iii. The rebate level in effect for each measure from 2012 through 2014

- iv. The rebate level that the Company assumed it would provide from 2016 through 2020 for the measure
 - v. The portion of incremental measure cost that rebate is estimated to cover
 - vi. The number of units the Company is forecasting it will rebate in each year from 2016 through 2020.
 - vii. The first year and lifetime savings that the Company is forecasting will come from each measure from 2016 through 2020
 - viii. Whether the Company's estimates of per unit savings in 2016 through 2020 for any measure are different than its estimates for 2012 through 2014. If so, for which measures, how are the savings estimates different and why?
 - ix. Whether the measure is offered in the RETROFIT market or NEW/REPLACEMENT markets. Please list the measure separately if both.
 - x. The Company's best estimate of the size of the market in its service territory for the measure. For measures purchased at time of natural replacement, that would be the annual number of units sold when existing equipment in buildings are replaced. For measures that can be retrofit (e.g. demand controls for ventilation), the estimate would be the number of units that could be installed in existing buildings.
 - xi. The Company's best estimate of the baseline market share for each product. For measures purchased at natural time of replacement, percent of all product sales that would be high efficiency absent the Company's program.
- b. For the second bulleted list of measures on pp. 27-28 (i.e. those the company says it will explore adding to the prescriptive offering in the future), please:
- i. Indicate whether they have been part of the Company's prescriptive programs in the past? For those that were included in the past, please provide the number of units the Company rebated in each year from 2012 through 2014.
 - ii. Explain why they are not being included right away.
 - iii. Whether the measure will be offered in the RETROFIT market or NEW/REPLACEMENT markets. Please list the measure separately if both.
 - iv. Provide the Company's best estimate of the size of the market in its service territory for the measure. For measures purchased at time of natural replacement, that would be the annual number of units sold when existing equipment in buildings are replaced. For measures that can be retrofit (e.g. demand controls for ventilation), the estimate would be the number of units that could be installed in existing buildings.
 - v. Provide the Company's best estimate of the baseline market share for each product. For measures purchased at natural time of replacement, percent of all product sales that would be high efficiency absent the Company's program.
46. Exh A/T3/Appendix A pp. 28-29: Regarding the upstream incentive model:
- a. Does Union agree that this model offers potential for achieving greater market penetration rates at a lower cost per unit? If not, why not?
 - b. Why did Union not specifically include this program approach in its filed plan? Why not at least include a pilot program to test it? Why is it committing to only study the model for possible future application?

47. Exh A/T3/Appendix A pp. 39: Regarding Custom C&I projects and related studies/metering:
- Why are incentives no longer being made available for O&M repair projects? Why the “shift of focus to other custom initiatives”?
 - In 2012, 2013 and 2014, what portion of custom program spending and custom program lifetime savings were derived from O&M projects?
 - Is the proposed custom project incentive level of \$0.10 per annual m³ saved for contract customers and \$0.20 per annual m³ saved for general service customers different from historic levels? If so, by how much?
 - If Union’s performance goals are expressed in terms of lifetime savings, why are its proposed incentives expressed in terms of annual savings? Wouldn’t that approach reward a measure with a 5 year life the same as a measure with a 20 year life (assuming the same annual savings)? Why would that be appropriate?
 - How do Union’s proposed study and metering incentives compare to historical (e.g. 2012 through 2014) levels?
48. Exh A/T3/Appendix A, p. 41, table 9:
- What is included in the term “Administrative Costs”? Please provide a breakdown of what the roughly \$4 million/year in administration costs covers?
 - Where are marketing/outreach costs captured? In which row?
49. Exh A/T3/Appendix A pp. 42-43, tables 12 and 13: Please provide all assumptions, the basis/source of each assumption and all calculations underpinning the forecast savings for each type of offering for each year. Please provide them in Excel format with formulas intact and with sufficient description of any row or column headings.
50. Exh A/T3/Appendix A, pp. 41-43, Please provide tables comparable to Tables 9, 10, 12 and 13 for the previous three historic years (i.e. 2012, 2013 and 2014). The tables should be broken down in the same way as in this filing.
51. Exh A/T3/Appendix A, pp. 43-44: Table 15 suggests that the forecast lifetime savings for 2016 is 268,216,000. However, table 13 seems to suggest it is 274,596,193. Please reconcile these two values. Why are they not the same?
52. Exh A/T3/Appendix A p. 44: Union states that its forecast savings are based in part on “market trends” including “equipment penetration in the market”. Please provide all data on market trends, including equipment market penetration rates, that the Company used to inform its savings forecast.
53. Exh A/T3/Appendix A, pp. 48-52. Please provide in Excel spreadsheet form, with formulas intact, the calculations underpinning the cost-effectiveness screening results presented for 2016.
54. Regarding the Company’s large volume customers in Rate T2 and Rate 100 and its self-direct efficiency program targeted to those customers:
- Please provide the number that were eligible to participate in Union’s 2013 and 2014 programs.
 - Please provide the number that participated in Union’s 2013 and 2014 programs
 - Please provide the percentage that participated in Union’s 2013 and 2014 programs
 - Please provide the throughput weighted percentage that participated in Union’s 2013 and 2014 programs

- e. Please provide the total and average per participant savings, both first year and lifetime, realized by participating customers in Union's 2013 and 2014 programs
 - f. Please provide the total and average per participant utility program costs experienced by Union in 2013 and 2014.
 - g. Please provide the NPV of TRC benefits, TRC costs and TRC net benefits for Union's 2013 and 2014 programs
 - h. Please provide any evidence Union has regarding the likely free rider and/or spillover rates – whether through formal NTG studies, or more informal market research or other source the Company may have – for the 2013 and 2014 programs years.
55. If the Board were to conclude that it is desirable to maintain the large industrial program until the outcome of the Government's climate change cap and trade program design is complete, what additional resources and approvals would Union require?
56. Exh A/T3/Appendix A, p. 87, table 27:
- a. What is included in the term "Administrative Costs"? Please provide a breakdown of what the roughly \$1.4 million/year in administration costs covers?
 - b. Where are marketing/outreach costs captured? In which row?
57. Exh A/T3/Appendix A p. 89, tables 30 and 31: Please provide all assumptions, the basis/source of each assumption and all calculations underpinning the forecast savings for each type of offering for each year. Please provide them in Excel format with formulas intact and with sufficient description of any row or column headings.
58. Exh A/T3/Appendix A, pp. 87-89, Please provide tables comparable to Tables 27, 28, 30 and 31 for the previous three historic years (i.e. 2012, 2013 and 2014). The tables should be broken down in the same way as in this filing.
59. Exh A/T3/Appendix A, pp. 96-98:
- a. Why does the Company believe it is appropriate to support its furnace replacement offering and multi-family custom offering when those offerings have TRC ratios of 0.37 and 0.44, respectively? Wouldn't those funds be better spent on reaching more low income customers with offerings that have TRC ratios of at least 0.7? If not, why not?
 - b. Please provide in Excel spreadsheet form, with formulas intact, the calculations underpinning the cost-effectiveness screening results presented for 2016.
60. Exh. A/T3/Appendix F:
- a. Are the avoided gas costs presented in the table the values used for cost-effectiveness screening for 2016 through 2020?
 - b. Are the avoided gas costs presented in the table in nominal dollars (i.e. including inflation effects) or in real dollars (i.e. net of inflation effects, or with inflation backed out)?
 - c. Do the avoided costs presented include avoided transportation, avoided distribution and avoided storage as well as avoided commodity costs? If not, why not?
 - d. Do the avoided costs presented in the table include the 15% non-energy benefits adder?
 - e. Regarding the discount rate was used to produce the NPV values in the table:
 - i. What rate was used?
 - ii. Is it a real discount rate or a nominal discount rate?
 - iii. How was it derived? What is it based on?

- f. Did Union make any assumptions regarding inflation for the development of the gas avoided costs in the table? If so, what were the assumption? How were they used?
- g. What methodology was used to derive the gas avoided costs in the table? Please provide all documents that describe the process used.
- h. Please provide a table that shows each of the components of avoided costs – commodity, transportation, distribution, storage, non-energy benefits adder, etc. – and how they collective add up to the totals shown in the current table for each year for each end use.
- i. Regarding avoided commodity portion of the avoided gas costs presented in the table, what assumption was made regarding how prices will escalate through the year 2044? What were those assumptions based on?
- j. Please provide all key input assumptions used to develop the gas avoided costs in the table.
- k. Please provide in Excel form, with formulas intact, the analysis conducted to produce the values in the table.