



Stakeholder Consultation Notes

**CDM, Density Cost Allocation,
Compensation Benchmarking and
Productivity Studies and Cornerstone
Phase 4 CIS Replacement in Support of
Hydro One Rate Applications**

**October 19, 2011
Hydro One Networks
Special Event Room, Ground Floor
483 Bay Street, North Tower
1 p.m. to 5 p.m.**

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The presentation materials used in this session and background materials can be found at this link:

<http://www.HydroOne.com/RegulatoryAffairs>

1. Participants

Stakeholders

- Emerissa Babin – Ontario Power Generation
- Michelle Byck Johnston – Society
- Ted Cowan – Ontario Federation of Agriculture
- Vincent DeRose (Conference Call) – Canadian Manufacturers and Exporters
- Phil Dubeski – Toronto Hydro Electric System
- Julie Girvan – Consumers Council of Canada
- Shelley Grice – Association of Major Power Consumers in Ontario
- Bill Harper – Vulnerable Energy Consumers Coalition
- Bayo Kidane – Power Workers' Union
- David MacIntosh – Energy Probe
- Neil Mather – Ontario Energy Board
- John McGee (Conference Call) – Federation of Ontario Cottagers
- Patrick McMahon (Conference Call) – Union Gas
- David Poch (Conference Call) – Green Energy Coalition
- James Sobota (Conference Call) – Pollution Probe
- Harold Theissen – Ontario Energy Board
- Mark Vainberg – PowerNex
- Steve Zebrowski (Conference Call) – Veridian Connections Inc.

Hydro One

- Carm Altomare – Hydro One
- Henry Andre – Hydro One
- Richard Bertolo – Hydro One
- Allan Cowan – Hydro One
- Susan Frank – Hydro One
- Ellen Holden – Hydro One
- Sabrin Lila – Hydro One
- Ian Malpass – Hydro One
- Keith McDonell – Hydro One
- Tony Miles – Hydro One
- Vicki Power – Hydro One
- Anne-Marie Reilly – Hydro One
- Nikita Sheth – Hydro One

Presenters

- Brad Bowness – Hydro One
- Stan But – Hydro One
- Ben Grunfeld – London Economics
- Mark Hirschey – Oliver Wyman
- Iain Morris – Mercer
- Marvin Reyes – Mercer
- Kristi Robins – Mercer

OPTIMUS | SBR

- Bob Betts – OPTIMUS | SBR
- Tara Murphy – OPTIMUS | SBR
- Miles Smit – OPTIMUS | SBR

2. Welcome by Allan Cowan, Director, Major Applications, Hydro One Networks

START 1:00pm

Allan Cowan welcomed all participants to the Stakeholder Consultation meeting. He outlined the Agenda for the day and listed the topics that would be discussed:

1. Conservation and Demand Management (CDM) Study
2. Density Cost Allocation Study
3. Compensation Benchmarking Study
4. Productivity Measures
5. An update on the CIS Replacement – Phase 4 of the Cornerstone project.

OPTIMUS | SBR will be providing the note-taking and facilitation. Allan introduced Bob Betts as the facilitator and to start the meeting.

3. Opening Remarks by Bob Betts, Facilitator

1:07pm

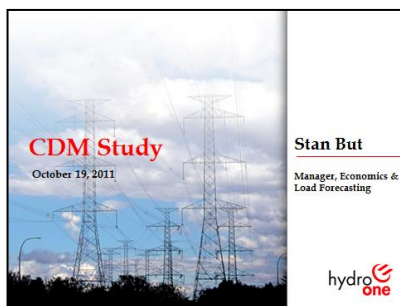
Bob Betts welcomed all participants, and advised that he is facilitating together with OPTIMUS | SBR. Bob introduced the OPTIMUS | SBR team (Tara Murphy and Miles Smit) as note-takers.

Bob began his presentation with several housekeeping items and pointed out the emergency exits. Bob stated that notes will be taken during the meeting and that the meeting and discussions will be recorded. He noted the recordings will be destroyed once the notes are produced. Any comments made will be attributed to the individual and the party they represent. Participants were instructed if they want comments to be off the record to advise beforehand.

Bob asked all attendees to introduce themselves, stating name and company for the record. He reviewed the agenda, asked for phones to be turned off and mentioned that questions are welcome as they arise. The presentations and notes generated will be published on the Hydro One website.

CDM Study, Stan But, Manager, Economics and Load Forecasting, Hydro One Networks

1:15pm



View or download a copy of the [CDM Study Presentation](#)

Stan But began his presentation with an explanation of why the CDM study was undertaken. The CDM study was directed by the Ontario Energy Board (OEB), which requested more details about the CDM analysis and particularly credible load forecasts and greater accuracy than has previously been available. The Board accepted Hydro One's CDM estimates used in load forecast, but directed Hydro One to work with the Ontario Power Authority (OPA) to

devise a robust, effective and accurate means of measuring expected impacts of CDM programs. Stan reviewed the recommendations made by stakeholders in the February 2011 and March 2011 consultations:

1. Conduct the CDM study in-house;
2. Review the CDM categories and methodologies used to incorporate CDM impacts into load forecasts by utilities in other jurisdictions;
3. Comprehensive CDM categories that are trackable;
4. Work closely with the OPA to better define and measure CDM impacts for use in load forecasting;
5. Present CDM impacts by sector and customer rate class.

Stan But stated that Hydro One had acknowledged and addressed each of these recommendations.

The study had two main objectives. The first was to develop a robust methodology to forecast CDM impacts and the second was to develop a methodology to incorporate the CDM impacts into Hydro One's load forecast.

The study findings included a Literature Review involving British Columbia, New York, California (as per stakeholder recommendation) and other major utilities in North America with CDM experience. Web-search and personal communication were used to gather data. Hydro One did a comparison study of load forecast methodologies commonly used by other utilities that incorporate CDM impacts into their forecasts. Finally Hydro One has been in close communication with OPA staff over the last 6 months to incorporate this information into CDM estimates.

A Load Forecast Survey was sent to approximately 100 organizations in North America, and 41 responses were received. The Literature Review and Survey provided a roster of well-defined and comprehensive CDM categories:

- Programs initiated by the utility;
- Programs initiated by other organizations;
- Building codes and standards;
- Rate structures;
- Increased conservation effect.

The Load Forecast Survey identified three commonly used models to incorporate CDM impacts in load forecasting.

- Method 1 forecasts using the actual load (without CDM adjustments);
- Method 2 forecasts CDM impacts as a variable on the right-hand side of the econometric equation;
- Method 3 adds historical CDM impacts to the actual load and forecasts forward.

Hydro One reviewed the advantages and challenges associated with each method. On the basis of the review results, Hydro One has adopted Method 3.

Susan Frank asked which method the OPA uses. Stan replied that the OPA also uses Method 3.

Ted Cowan asked for clarification on the main differences with respect to weaknesses in Methods 2 and 3. Ted suggested Method 2 regresses data weakly and Method 3 might contain errors in the CDM data. Stan clarified that both Methods 2 and 3 require CDM estimates for the history, so the same CDM data is used in each Method. Method 2 has a potential to create bias in the forecast because of collinearity issues. Method 3 adds the CDM impact to the actual load, which avoids multiplying any such collinearity issues.

Ted agreed that Method 3 addresses the issue of including CDM impact, but posited that they are still embedded in the initial regression estimates you are subtracting from. He asked if it was correct to say that all of the Methods have some weaknesses, but in Method 3 the weakness is confined to the CDM data. Stan clarified that the same CDM data is used in both models, but the data is used differently to achieve unbiased coefficients in Method 3. Ted responded that Method 2 and 3 do not differ substantially with respect to error.

Stan acknowledged that there are pros and cons for each method. Methods 1 and 2 are not invalid or incorrect, but they have characteristics that make them less suitable for Hydro One's specific requirements.

Ted Cowan asked for Stan's intuitive relative assessment of the merits of the three methods. Stan replied that Hydro One has determined that in light of the Board's request for a robust, accurate model, Method 3 is the most appropriate choice.

Ted inquired about the experience Hydro One has using Method 3. Stan replied that Hydro One has effectively been using Method 3 for a number of years and is comfortable with its performance.

Stan proceeded to review the study findings. He identified that the categories in the Hydro One CDM forecast that are aligned with the OPA Policy Instruments referring to Slide 10 of his presentation:

- Programs, further broken down in Hydro One's forecast into Hydro One/OPA programs, and other influences;
- Codes & Standards;
- Rate Structure.

Hydro One uses a number of methods and models to track customer actions. Accordingly, Hydro One has deployed an additional category called the Increased Conservation Effect. This was defined as customer behaviour to conserve energy that is not influenced by Hydro One, OPA, and other non-government programs.

Ted Cowan asked, regarding rate structure, whether separate analysis is conducted for customers that are demand billed versus customers that are volumetrically billed. He suggested there is a larger price effect for those who are demand billed.

Stan replied that for rate structure Hydro One uses CDM impact data from the OPA, and assumes that it covers all customer data. Ted agreed that all customers are considered, but asked whether demand- and volumetrically-billed customers are distinctly identified in the data. He asked specifically about the possible case of a farmer on demand billing, who conserves more than a farmer on volumetric billing.

Stan said that the impact is accounted for in each billing scenario. Ted inquired whether it is possible to tell the two billing methods apart, because there is a difference in savings for each billing type. Stan did not believe that the data from the OPA breaks the information down by rate class. Ted suggested that the savings differences by volumetric versus demand rate classes should be identified in the data.

John McGee asked whether Hydro One had any figures on the demand reduction from the Smart Meter program. Stan replied that for 2013 the Smart Meter (Time of Use) impact for all Hydro One customers was approximately 20 megawatts.

Bill Harper sought clarification on the definition of the term “Increased Conservation Effect” used by Hydro One. He asked whether the Increased Conservation Effect was equivalent to, or aligned with, the OPA’s definition of Natural Conservation. Stan replied that they are not the same effect. Hydro One’s definition of the Increased Conservation Effect is any non-program savings above or beyond Natural Conservation.

Bill observed that electricity rates are increasing by 10% and inflation is up 2%. He wondered whether the Increased Conservation Effect could be a response to customer awareness of higher bills. Stan replied that the Increased Conservation Effect does not capture increases due to inflation. Inflation and increases in price are captured in Natural Conservation. Historically, electricity prices trend upward, and a conservation response is expected without additional interventions.

Bill used a potential example to highlight his point: a customer who looks at an energy-efficient product (without a program coupon) and wants to be environmentally conscious is counted in the Increased Conservation Effect if he purchases the product. Alternatively, if the customer chooses to buy the product because of his increased electricity bill it is considered Natural Conservation. Bill suggested that the process to determine whether conservation is increased or natural is unclear, given the definition of the Increased Conservation Effect.

Stan But proceeded to describe the steps taken to understand and align with the savings assumptions used in the OPA’s current conservation forecast.

The preliminary CDM impacts for 2011-2013 shown on his Slide 12 include the following categories:

- Impacts of Hydro One and OPA Programs;
- Other Influences;
- Codes and Standards.

Each of these categories is expected to drive increased energy savings over time. Stan did not present data for Rate Structure impacts on energy because the Rate Structure data from the OPA only includes Peak Savings while his Slide focused on energy savings. The fifth category, Increased Conservation Effects was based on data from 2010 actual, forecasting no increase in this category 2011 to 2013.

Stan indicated that the flat-line Increased Conservation Effect forecast was a conservative stop-gap, and Hydro One will need the actual 2011 data to make accurate forecasts beyond 2010.

Bill Harper asked for clarification on the forecasted data. He asked whether the forecast for 2013 was based on impacts from 2013 only or if it was the cumulative impact of programs implemented in 2011,

2012 and 2013. Stan clarified that the forecasted data represents the cumulative impact for that year. Therefore the difference between two years is the incremental change from year to year.

Susan Frank asked for an explanation of how the forecasts for Increased Conservation Effect were calculated. Stan replied that multiple analyses were used to determine the forecasted impact of Increased Conservation Effect. The first was using the hourly load of Hydro One in 2002-2010 to run econometric analysis. The impact of economy and weather were removed and the remaining impact was the total impact attributed to the CDM.

In addition to the econometric analysis, the customer information system was utilized. In this approach the annual energy consumption for over 500,000 residential customers with consistent information was analyzed. The result of this method showed consistent savings with the econometric approach. The final method was using tracking surveys where customers listed their own actions towards conservation and actions driven by programs. This information confirmed that there is an Increased Conservation Impact from the customer.

Julie Girvan questioned the validity of using customer surveys to calculate the increased conservation impact. Stan explained that the large survey (approximately 6000 customers) results were not used in the calculation, but rather to confirm the econometric results.

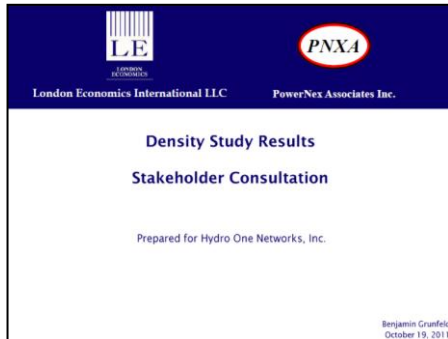
Stan provided a summary of the CDM impact study and indicated that the study was nearing completion, incorporating stakeholders' recommendations and meeting the Board's Directive.

Susan Frank added that the OPA did not evaluate the impact of the Increased Conservation Effect and asked whether other organizations are using this category. Stan replied that the results of a web survey showed that 1 in 5 utilities in the survey use a category that captures Increased Conservation Impact. He mentioned that the state of California is making a major effort to monitor customer behaviour, actions and savings associated with market transformation. This is an emerging issue that is being studied in other organizations.

Julie Girvan asked if the Green Energy Benefit (a 10% discount) would cause customers to reduce conservation efforts. Stan replied that the 10% reduction in the customer's bills is a new feature that was not captured in the analysis. Ben Grunfeld, of London Economics stated that the Green Energy Benefit came out around the same time as HST, which increased customer bills. Therefore from an incremental impact on customer bills the HST likely neutralizes the Green Energy Benefit reduction for the next 3 to 5 years.

4. Density Cost Allocation Study, Ben Grunfeld, London Economics

2:05pm



View or download a copy of the [Density Cost Allocation Study Presentation](#)

Ben reviewed the mandate given to London Economics and PNXA to evaluate the relationship between customer density and distribution service costs. He outlined that the study was initiated in response to a request from the OEB. The study also assessed whether the existing density-based rate classes and density weighting factors appropriately reflect this relationship. A third objective was to consider the appropriateness and feasibility of establishing alternate customer class definitions. The third objective, while covered in the report would not be discussed to a large degree in this afternoon's presentation.

Referring to his Slide 5, a two phased approach was used to perform the study, with the first phase being the Methodology Development and the second and current phase Methodology Implementation. The methodology consisted of two complementary analyses: Econometric study of the operating areas, and Direct Cost Assignment of smaller sample areas. Both analyses considered operating, maintenance and administrative costs and proxies for capital costs.

Julie Girvan asked for the definition of an operating area. Ben explained that an operating area is a geographic area within the province. Each operating area has service centres used to respond to customer calls, manage maintenance, operating programs and capital programs for that area. Julie asked whether the operating areas are the areas listed on the Hydro One website during an outage. Ben confirmed this is correct.

Ben continued with an outline of the econometric methodology. Using his Slide 6, he explained that the functional form of the econometric model was chosen based on theory and prior experience and pointed out that this is the form used by the OEB. The equation takes into account that an increase in customers from 5 to 500 for a given area equals an increase in cost that is not uniform. Determining the cost function was an iterative process, where a number of different specifications were tested. The five independent variables included in the final model were:

1. Customer Density (stakeholder recommendation);
2. Number of customers;
3. The square of the number of customers
4. Energy density;
5. A time or trend variable.

Ben explained that a representative cross section of sample areas was selected. A total of 11 operating areas were utilized for the direct cost assignment. The study included 62 samples areas, 24 low-density, 22 medium-density and 16 high-density from the 11 operating areas. The sample area selection guidelines included:

- Similar areas, approximately 20 km²;

- 100 – 200 customers for low density;
- 700 – 1200 customers for medium density; and
- Over 2000 customers for high density.

Ben indicated that the costs were directly assigned to the individual sample areas. These cost groups include:

- Lines and Stations (operations, maintenance and administrative costs);
- Vegetation Management;
- Asset Intensity (representing capital costs in the ground).

Julie asked about other assets not in the ground, specifically the cost of trucks. Ben stated that fixed capital costs are not dealt with in this direct cost assignment study, but maintenance costs for assets such as trucks would be included in maintenance costs for the sample area. Ben stated that the proportion of Hydro One assets reflected by vehicles is small compared to other assets in the ground.

Henry Andre confirmed that the costs associated with trucks and other vehicles are included in maintenance costs. He continued with an example, stating pole replacement costs include the cost of equipment required to replace the pole. Maintenance costs include labour and equipment.

Bill Harper asked if lines and stations administrative and maintenance costs were combined, given that distance is important for lines and not important for stations. Ben Grunfeld replied that they are dealt with separately. He added that station costs were allocated based on the number of distribution stations within an operating area and the way they are used to serve load in the sample areas.

Ben introduced the results portion of his presentation and asked for questions before he continued.

Julie asked if the approach that Ben is undertaking has been used in other jurisdictions. Ben replied that based on the research there are no jurisdictions that have yet used this level of detail to analyze the effects of customer density. He added that he has seen econometric models to predict utility costs that incorporate customer density, as considerations. The OEB cost allocation model uses a number of allocation factors to distribute cost to classes of customers. [This general approach, of allocating costs based on factors, is similar to the one used in the direct cost assignment analysis. However, the direct cost assignment analysis looked at smaller samples of customers that vary with respect to density, as opposed to a complete class - Note this clarification is subsequent to the session.] Ben reiterated that the specific approach of looking at customer density is a unique feature.

Ben continued with the results, stating that the econometric analysis indicates a negative or inverse relationship between cost and customer density. Four distinct models were analyzed, and all showed a negative relationship:

1. OM&A (operations, maintenance and administration) using circuit km.
2. OM&A using sq. km.
3. OM&A and a capital proxy using circuit km.
4. OM&A and a capital proxy using sq. km.

Bill asked for clarification about the final bullet point on Slide 12 suggesting that it should say that according to the fourth model, a fivefold increase in customer density should correlate to a 150 percent decrease in cost per customer. Ben confirmed this is correct.

Julie asked if Ben was referring to cost per customer. Ben replied that it is the measure of total cost. He stated that the number of customers is included in the econometric model so they normalized for scale already. He explained with an example, where if the number of customers stayed the same, but the density increased there would be a decrease in cost.

Ted Cowan sought to clarify Ben's example, asking if, in the hypothetical case of two different 20km² areas, one with 200 customers and one with 1000 (i.e., a fivefold difference in density) the one with 200 customers would see a 50% decrease in cost.

Ben replied that the relationship depends on the number of customers being constant. Ben used an example of a 20km² area and a 4km² area with the same number of customers. In that case, the cost would be different: it would cost 50% more for the less dense area. This is the conclusion from the econometric model, and is also consistent with direct cost assignment approach.

Ben elaborated other results, indicating that the individual sample area results revealed a sharp decline in cost per customer as density increases.

Ted asked whether most of the variation is found in areas under 100 customers per km² and whether most of the variation within that range is under 20 customers per km². This would mean that most of the variation is in low and very low density. Ben replied that Ted's interpretation was correct.

Bill asked how a density of 100 customers per km² would translate into customers per line km. Ben answered that in Hydro One's rate class definition, a cluster of 100 customers and 20 customers per line km. Subsequent to the session Henry Andre confirmed that the definition is based on 15 customers per line km.

Ben stated that the sample mean averages in the study were distinct, and confirmed the negative relationship. He concluded that the two independent analyses confirm that the average cost to serve Hydro One customers increases as the customer density decreases with 99% statistical confidence.

Bill asked if graphs were created for customer per km of line. Ben answered that those graphs were generated and that they could be found in the final report.

Beginning to address the second study objective whether the existing density-based rate classes and density weighting factors appropriately reflect this relationship, Ben discussed customer density as a differentiator on his Slide 15.

He noted four elements of Hydro One's existing rate class structure to consider:

1. Type of rate classes;
2. Number of rate classes;
3. Demarcation points;
4. The cost of allocation factors.

The first significant point he made was that from a rate making perspective, based on “cost causality”, it is reasonable to differentiate between customer classes by customer density.

The results also support having different classes, two general service customer classes makes sense, given a much smaller number of customers. There was no strong evidence to support a change in demarcation points.

Vince DeRose asked whether the report would look at municipal or regional boundaries. Ben answered that the report will look at both and the pros and cons associated with each approach.

Julie Girvan asked how Hydro One currently demarcates the rate classes. Ben answered that an urban rate (UR) class is an area that has 3000 customers total and has a line density of more than 60. The Medium density grouping applies to residential (R1 and R2) and has over 100 customers and a line density of 15, the Low density for residential is the remainder. For general service, there is a distinction between urban and non-urban customers.

Ben explained that the last objective was to consider cost allocation factors, of which there are two elements: non-density factors and the density-weighting factors. The study compared the overall results of the cost allocation model to the direct cost assignment analysis. The concern was with the ratio of per customer assigned costs, not the total magnitude. Ben concluded that the existing allocation may not capture the actual differences between the mean costs of serving year-round residential customers in areas with varying customer densities.

Slide 17 of the presentation package showed the comparison between the allocation factors for Hydro One’s current UR, R1 and R2 classes, 1.0, 1.6 and 1.7 respectively and the allocation factors resulting from the study for HD, MD and LD, 1.0, 1.7 and 3.8 respectively. While the relative comparison did reflect a higher cost per customer in a low density area versus a higher density area, it indicated that the higher costs are not being fully allocated.

The study further found that:

- The average customer density of the Seasonal rate class falls between that of the R1 and R2 classes;
- The average customer density of the urban GS classes, UGe and UGd, is similar to that of the UR class; and
- The average customer density of the non-urban GS classes, GSe and GSd, falls between that of the R1 and R2 classes.

Ben reviewed the three study objectives. He concluded that two independent analyses demonstrated that there is a statistically significant negative or inverse relationship between customer density and costs. The study demonstrated that cost to serve customers of different densities is different, supporting the use of density-differentiated rate classes.

Existing allocation and weighting factors may not capture the magnitude of the difference in costs to serve customers of varying density. The report addressed alternative customer class definitions, including structures based on municipal boundaries or regional rates. Ben concluded that a move to such a design is a long-term decision that should be considered in the context of a broader provincial

dialogue that looks at rate design across all of the LDCs. Overall, the study's objectives have been accomplished.

Julie asked for a restatement of the conclusion for seasonal classes. Ben replied that the costs currently assigned to seasonal customers is 1.5 times the per customer cost assignment of urban class, this is in line with R1. The average density for seasonal customers is between the R1 and R2 rate classes, this indicates under representation of the costs to serve those customers. A similar conclusion applies for the non-urban general service classes.

Susan Frank pointed out that the results of this extremely comprehensive and expensive study cannot be ignored when it comes to rate design. Susan asked Henry Andre how Hydro One would implement the impact of the study.

Henry replied that the results of the study were very compelling. Some changes to Hydro One's cost allocation and rate design to incorporate the study are warranted, and Hydro One expects to respond appropriately.

The extent of the impact on cost allocation and rate design is dependent on how the results are used within the cost allocation model. Hydro One has not explored this in detail, but they did look at the last cost allocation model that was filed with the 2008 Distribution Application. Based on that model and trying to incorporate the findings of the 2011 study, there could be an approximate decrease of 10-15% in UR rates, and a potential approximate increase of 2-3% for the R2 rate classes.

The increase in R2 rates matching the decrease in UR is less because the volume of revenue collected from the R2 class is significantly more. In terms of delivery rates, delivery is approximately 1/3 of the transmission bill, so one could divide the estimated increase/decrease by 3 in terms of overall bill impacts. These are mere approximations because Hydro One has not utilized the new cost allocation model for the upcoming application. The findings are based on the previous cost allocation.

Julie Girvan asked how the study might help Hydro One rethink the seasonal rate design. Julie stated that she would like Hydro One to be more proactive on the issues involving seasonal rate design. Henry Andre replied that in terms of cost allocation, the study suggests that the cost of serving seasonal customers as a class (made up of low density and higher density area customers), would likely fall between R1 and R2. The current cost allocation model is pinning them at the R1 level (Subsequent to the meeting Hydro One clarified "pinning them at the R1 level" reflects that under the current cost allocation model the total costs per customer allocated to the Seasonal and R1 rate classes are about the same).

Henry stated that he took the point about issues with seasonal rate design. He continued that Hydro One could look at shift between fixed and variable costs, a concern raised by some seasonal customers. The study suggests that the cost to serve seasonal customers is higher because they are made up of medium- and low-density (corrected subsequent to the meeting from high-density) areas.

Bill Harper asked if Hydro One should alter the definition of the class or if they should change the way density is considered in the cost allocation model. Bill noted that the study suggested a change in allocation factors rather than changing the class definitions. Bill asked if Hydro One is considering choosing a different allocation factor other than customer per km to weigh customers by class.

Henry replied that Bill was correct. There is no current plan to change the definition of the rate classes. Hydro One does plan to look at the cost allocation model to consider whether the density weightings need to be changed. He raised the question of whether something else needs to be done at the bottom line to shift costs.

Bill asked if Hydro One was considering a new parameter for the model. Bill noted that changing the bottom line outcome of the model would be a new approach to cost allocation overall.

Henry clarified that his preference would be use the current approach, but the study suggests there is not enough differentiation between the weighting factors. The differentiation between the weighting factors would need to be increased so that more is allocated to the R2 class versus the UR class.

Bill observed that the study analysis assumes relationships between costs and density. He noted that the differences in the end are a function of what allocation factors were used in the analysis and stated that the differences need to be reflected in the Hydro One model. Henry agreed.

Ted Cowan mentioned that the general service class is the life-blood of the economy in rural Ontario. He asked if there would be any changes to their rates based on the results of this study. Henry replied that the ratios for the general service class were not covered in Ben's presentation, but they will be included in the final report. He noted that if the general service class is a blend of R1 and R2 then there might be some adjustments made. Ted asked if this would likely mean a 2% adjustment. Henry replied that he has not made any calculations on the general service class and so could not speculate, but there would be a higher differential based on the results.

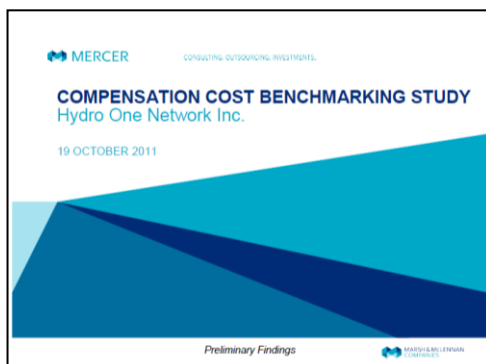
Julie asked when Hydro One was planning to file the Distribution Rate Case. Susan Frank replied that the original filing date was after the November Board Meeting, but the filing would be delayed until the shareholder could review it, including the new Minister.

The filing date will likely be early 2012, after the budget is reviewed by the shareholder.

Vince asked if that meant the Distribution Rate and Transmission Cases would be occurring simultaneously. Susan replied that this is a likely possibility.

5. Compensation Benchmarking Study, Iain Morris, Mercer

3:27pm



View or download a copy of the [Compensation Cost Benchmarking Study Presentation](#)

Iain Morris began by discussing the input from the May 2011 Stakeholder consultation. He stated that consideration was given to all Stakeholder requests, but not all could be met in professional opinion of the consultant. For example, Mercer did include a comparison to market average compensation.

Iain described how benchmark positions were determined

and listed the positions used. He noted two differences between the previous study and this one resulting from insufficient available data to benchmark the Field Service Coordinator and the Tree Trimmer positions. In the case of Tree Trimmers, this position is most likely been contracted out at other utilities, and the Field Service Coordinator responsibilities were generally distributed throughout other job classes.

Mercer's experience also suggests that there needs to be a balance in the number of benchmark positions to use because often survey participants will avoid surveys that involve too many benchmark jobs; the 34 they chose is a reasonable balance. He reviewed the chosen jobs in the three Groups, Non-Represented, Professionals and Power Workers contained on Slide 5 of his presentation. He indicated that these jobs collectively represent approximately 3300 employees, or approximately 49% of Hydro One's workforce. In Mercer's opinion this is a representative sample size.

Iain described the process for determining the peer group. A similar approach to the 2008 study was taken. The process met the key objective of creating a single peer group to assess total compensation costs for the entire set of benchmark jobs. The list of peer groups was provided on Slide 7, and Iain noted that because some organizations such as Bruce Power and Bell Canada opted out of the study in 2011 and while others were added, this would generally be expected to result in an overall lower survey group benchmark in the marketplace than the 2008 study.

Iain gave a description of elements included in Total Compensation which are the same as 2008. It focuses on items that can be monetized including:

- base wages or salaries;
- short-term incentives;
- long-term incentives;
- insured benefits;
- retirement plans.

Definitions and methodology for determining total compensation were discussed and outlined on Slides 9 & 10. Slide 10 provided the definitions of average and P50 (the 50th percentile). Mercer took this opportunity to once again state their reasoning for relying on the P50 or the middle point in a distribution of data rather than the average, including its representation of the compensation paid by the employer in the middle of the group and its stability coming from ignoring occasional skewing associated with extremely high and extremely low compensation circumstances of some survey participants. However, as requested by some stakeholders, Mercer has provided comparisons on the market mean in addition to the market median.

Iain reviewed the preliminary results in Slides 11 to 17. He compared the Hydro One median to the Market median changes from 2008 to 2011. Overall, there has been a decrease in Hydro One's total compensation from 2008, but total compensation remains above the Market median on a weighted average basis. Iain noted that wage and salary freezes and turnover costs affect total compensation; and further that many organizations in the study have also been attempting to reduce compensation costs just as Hydro One has. Iain explained that as a result of these efforts to reduce labour costs (in addition to the lower survey group benchmark noted earlier), the market median is effectively lower in 2011 than it would have been in 2008; but despite this lower market median, Hydro One has been more effective in reducing its relative compensation costs and has moved closer to the market median in 2011. He also

explained that greater variation between 2008 and 2011 may be driven by low job incumbency and high turnover, where a more junior staff replaces a higher paid senior staff that retired.

Michelle Byck-Johnston asked for a definition of the Engineer F position. Keith McDonnell responded that it is a management-level compensation job (typically a band 7, and may contain some band 6 positions). Iain added that Engineers A to F are generic titles that line up with the Professional Engineers Ontario (PEO) categories.

Shelley Grice asked about the “not applicable sign” beside positions such as Senior Legal Counsel and Area Superintendent. Iain replied that the not applicable sign denotes that insufficient data exists, for example when a statistically significant sample is not available. In the case of Senior Legal Counsel, Area Superintendent, Business Analyst A, Electrical Apprentice and Lines Apprentice, “not applicable” is indicated because these jobs were not included in the 2008 study.

Bill Harper asked for clarification on the weighted averages. He asked if the 2008 weighted average was based on the incumbents in 2008 or those in 2011. Iain replied that the 2008 weighted average was based on incumbents in 2008. Bill asked what the effect of positions that had insufficient data in either year had on the weighted averages. Iain replied that overall the effect was insignificant.

Iain presented the comparison of overall - total compensation averages on Slide 17 as was requested by some stakeholders. He stated that the results did not differ greatly from the overall total compensation median results found on Slide 11. The only strong difference was in the Power Workers category.

Bill asked why the average compensation was not listed for 2008. Iain replied that the average was not calculated in 2008.

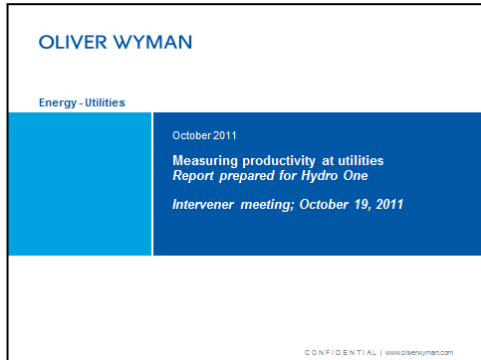
Iain concluded that overall the Hydro One relative position is still above market, but its efforts at controlling compensation costs have been effective and Hydro One has moved closer to market median since the 2008 study.

Ted Cowan asked if there was a comparison for turnover rates. He also asked for information on productivity, asserting that one needs to analyze what is produced to determine value of the compensation package.

Iain replied that he could not comment on turnover as it was not part of the study and was not a metric used in the past. Iain further stated that productivity was also not a factor in the study and mentioned that Mark Hirschey would discuss productivity in his presentation.

Productivity Study, Mark Hirschey, Oliver Wyman

4:05pm



View or download a copy of the [Productivity Study Presentation](#)

Mark began by stating that the 2008 Productivity study made reference to compensation and could be consulted to answer at least in part Ted Cowan's question about mapping to compensation.

Mark provided the background to the study, explaining that the Board had requested Hydro One to provide more robust evidence on initiatives to achieve a level of cost per employee closer to market value at its next transmission rate

hearing. He noted that the Board will expect any compensation increases to be matched with demonstrated productivity gains.

Mark outlined the approach on his Slide 3, where internal and external research was conducted to build a set of recommendations around how Hydro One could measure productivity. He explained the research, recommendation and implementation processes. The results of the study suggest a number of metrics as candidates to measure productivity.

The primary research used US and Canadian regulators. The majority of regulators examined measured total costs and service quality metrics instead of productivity metrics. In fact, no commission or regulator was found to routinely measure productivity directly.

A survey of utilities' productivity was administered to understand which metrics could be collected internally. The list of survey recipients and respondents was presented on Slide 8. The findings from the productivity survey noted a wide disparity in internal performance measurement. Common metrics for cost, productivity and service quality were collected if measured by at least two utilities. The criteria for choosing a set of metrics was highly dependent on the individual business needs.

Moving to his Slide 15 he focused on the process of selecting appropriate metrics to be used. The first step to determining the area to measure was understanding the breakdown of spend on resources (principally being labour), included in transmission and distribution capital and operations, administrative and maintenance costs. In Slide 16, Mark gave examples including distribution operations, maintenance and administrative project metrics. The eight largest distribution projects had suitable metrics to measure. Most metrics were inconsistent over time and could not be measured.

Ted Cowan stated that he had trouble accepting the inconsistencies attributed to trouble calls over time. He suggested that each trouble call is distinct, but at the end of each year they could be useful as aggregated information and compared from year to year. He used an example of unique ER visits at a hospital, which provide cumulative metrics that can be measured.

Mark granted that Ted's comment was correct, when looking at trouble calls over a multi-annual basis, since weather added a large variability from year to year. Ted noted that there are other examples of projects that can be measured over 5 years. Mark replied that it is difficult to utilize the results on an assessment made every 5 years. Mark acknowledged that further study could possibly establish some consistencies in multi-year trouble call data to allow that to be used in some way as a productivity metric.

Slide 17 listed the twenty-five productivity metrics that have been recommended and which account for approximately 22% of the total project costs. Unfortunately, the last quarter of these metrics reflect no more than 0.2% of Total Costs individually, but they are all associated with discrete units of work that can be measured.

Michelle Byck Johnston noted that there were two metrics titled "Cost per km of line cleared", and asked for clarification regarding their differences. Mark explained that one referred to line clearing in transmission new-build projects and the other in distribution maintenance.

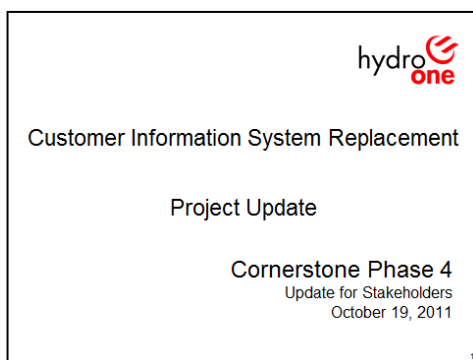
The idea was for Hydro One to choose a set of metrics that could be measured and managed over a shorter time period to begin to effect positive changes. Hydro One will require a detailed plan to develop a set of productivity metrics that are integrated and aligned with the overall corporate scorecard and direction.

Julie Girvan asked if the metrics were strictly field-related, because administration work is contracted out.

Mark replied that the metrics have fully-loaded overhead costs showing savings in overhead over time. Julie asked why there were no service quality indicators or typical customer service measures in the metrics. Mark replied that the customer service measures are associated with a contracted work force; Hydro One's work force aligns with field service measures.

6. Cornerstone Phase 4 CIS Replacement, Brad Bowness, Hydro One

4:37pm



View or download a copy of the [Cornerstone Phase 4 CIS Replacement Presentation](#)

Brad Bowness began with a status update, confirming that the CIS project is nearing the end of the Blueprint phase. The project schedule is on track to the baseline plan and the targeted "Go Live" of October 2012. The forecast cost at completion remains at \$179.8 million (including contingency, which has not been used thus far). Brad further added that the contingency is "owned" by the Hydro One Board and cannot be used without their prior approval.

The Phase 4 Project involves four phases the first is the Blueprint phase which is nearing completion. One of the key objectives of the Blueprint phases is to validate the benefits and confirm benefits will be

realized as part of the program. The requirements also have to be validated. The other three phases are Realization, Final Preparation, and Verification and Stabilization, which commences following Go-Live. The status of these phases and other Milestones such as Implementation Kickoff and Go-Live are progress reported regularly to senior management and the Hydro One Board.

Brad explained that the process was intended to minimize customer impact, but that they would follow up about specific touch points with the customer.

Ted Cowan asked whether additional customer inputs through the Customer advisory Board would be included in the design phase. Brad responded that the Blueprint phase will be completed on October 31st, 2011 so the next consultation window would likely come after blueprinting. Ted confirmed that the Customer Advisory Board meets next on December 9th, 2011, and expected the matter could be discussed at that time. As a follow up to this item, it was confirmed that the Customer Advisory Board received an update regarding this project on September 29th.

Brad indicated that the Realization phase will commence in November 2011 and it will involve system configuration, building interfaces and data migration programs, change management communication plans and training design, and making sure that business process changes have been documented and are fully understood. Following Realization comes Final Preparation which ensures that business users understand and accept the system changes. It is also the point that data conversion is fully planned and tested. After Go-Live October 9th, 2012, the new system will be stabilized and verified.

Bill Harper asked when the old system will be retired. Brad responded that the Go-Live Milestone is scheduled for October 9th, 2012. He stated that the process generally requires 3-4 days to shut down the old system, migrate the data, set-up the new system and validate functioning appropriately and begin billing customers.

Susan Frank indicated, from a regulatory perspective, that the Go-Live date may not be the date that the assets go “into service”, in the regulatory framework. Hydro One is looking to go to USGAPP, which has criteria as to what is considered an in-service IT system. It is currently believed that some of the testing that occurs in the stabilization and verification phase has to happen before it can be considered “in-service”. This is why the words “in service” do not appear in the presentation. The actual in-service date is probably after October 9th, 2011 and could be as late as February 15th, 2013. These additional steps are for regulatory accounting purposes.

Brad then moved to his Slide 5 and outlined details of the CIS that were requested in the last consultation, including that:

- 15 current systems will be retired;
- 40 existing systems will be integrated with the new CIS;
- 68 Business Processes designs are included in this solution
- ±2700 Business Requirements have been met and will used throughout the project;
- 1500 employees and contract employees will be impacted as part of this implementation.

Hydro One will utilize change management methodology to address staff and customer impacts.

Michelle Byck Johnston asked what the total number of systems will be after retiring the old and integrating the new systems occurs.

Brad responded that across the landscape the application portfolio is broken up into 4 types of applications: core business, productivity tools, specialty software and system tools. Business systems (core, productivity, specialty) currently total approximately 800. Detailed information would be included in the filing. They have decommissioned upwards of 400 items across the 4 types driven by the Cornerstone Program, and are continuing to make progress. In follow up Hydro One confirms that it expects 15 business systems and an additional 10-15 system tools will be decommissioned as a part of CIS and replaced with 3 new business systems (SAP, Itron, Streamserve) and a small number of system tools.

The main functions of the CIS are in:

- Customer Service;
- Service Order and Work Management;
- Metering;
- Billing and Payment;
- Retail and Wholesale Market.

Each function in the CIS has several major IT components supporting it. Over 80 Interfaces will be built and tested within the 40 existing systems that will be integrated with the new CIS.

Brad's final Slide 9 provided a high level summary of the \$179.8 million Project Total Cost.

ADJOURN 5:00pm

7. Appendices

A. Summary of Stakeholder Session

The Stakeholder Session was structured to afford stakeholders a concise summary of study results and progress reports on a number of fronts with the potential to inform the next round of Rate Applications, and to allow open, frank discussion of important issues and questions concerning:

1. Conservation and Demand Management (CDM);
2. Density and Cost Allocation;
3. Compensation Benchmarking;
4. Productivity and Metrics;
5. Cornerstone Phase 4—Customer Information System (CIS) Replacement.

Throughout the session, there was wide-ranging, free-flowing two-way discussion with Stakeholders, covering questions, issues of concern, requests for detail or explanation, challenges to various study premises and methods, and explicit requests for further input and consultation. Broadly stated, open questions and options include:

- Clarification of the Method used for load forecasting including CDM, and its suitability for co-ordination with OPA;

- Consumer input on the design phase of CIS replacement, through the Customer Advisory Board (Complete);
- Likely schedule for pending Rate Applications.

External consultants and Hydro One internal specialists explained the rationale, approach and results for each study, and indicated where further details and explanations would be forthcoming in the filing dossiers.

B. Key Actions and Notable Items

1. There was stakeholder interest in having volumetric/energy-billed and demand-billed rate classes separately broken out in CDM impact data, to ascertain whether either shows a greater price effect.
2. Stakeholders indicated a desire to have the impact of the Green Energy Benefit factored into CDM impact forecasting.
3. Stakeholders expressed an interest in a more robust and explicit comparison of the merits of the three prevalent Methods of forecasting CDM, including the resolution of data regression and collinearity issues.
4. Stakeholders asked for a clearer definition and explanation of reductions attributable to Increased Conservation Effect as compared to Natural Conservation, and of the specific value or benefit of including Increased Conservation Effect in load forecasting.
5. Hydro One indicated that it would clarify how Increased Conservation Effect growth will be forecast, once 2011 actual data is available.
6. Hydro One will consider including a review of the Seasonal Rate class cost allocation factors when implementing Density Cost Allocation Study results.
7. The CIS project leads were asked to present an update to the Customer Advisory Board at their December 9, 2011 meeting. Subsequently confirmed as complete on September 29th presentation to CAB
8. The exact number of systems affecting and affected by CIS replacement will be confirmed.
9. Hydro One confirmed that CIS Replacement project is “green” (on-track and on-budget) and has not yet had to use any of the contingency funds included in its total budget. Subsequently confirmed to be 15 business systems and approximately 10-15 system tools to be replaced.
10. Hydro One confirmed that the Distribution Rate application filing will be delayed to a date uncertain, but the new filing date will likely be early 2012.

C. Meeting Agenda

Stakeholder Consultation



CDM, Density Cost Allocation, Compensation Benchmarking and Productivity Studies and Cornerstone Phase 4 CIS Replacement in Support of Hydro One Rate Applications

AGENDA
October 19, 2011
Hydro One Networks
Special Event Room, Ground Floor
483 Bay Street, North Tower
1 p.m. to 5 p.m.

1:00 p.m.	Welcome	Allan Cowan, Director, Major Applications, Hydro One Networks
1:10 p.m.	Introduction	Bob Betts, Facilitator, OPTIMUS SBR
1:20 p.m.	CDM Study	Stan But, Manager, Economics and Load Forecasting, Hydro One Networks
2:00 p.m.	Density Cost Allocation Study	Ben Grunfeld, London Economics
3:00 p.m.	BREAK	
3:15 p.m.	Compensation Benchmarking Study	Iain Morris, Mercer
4:00 p.m.	Productivity Study	Mark Hirschey, Oliver Wyman
4:30 p.m.	Cornerstone Phase 4 CIS Replacement	Brad Bowness, Director – Business Architecture, Hydro One Networks
5:00 p.m.	Adjourn	