NAVIGANT CONSULTING

REGULATED PRICE PLAN

WORKING GROUP REPORT

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Information contained in this working group report represents the views of the individuals participating in the working group only, and in no way reflect official Ontario Energy Board position or opinion.

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INTRODUCTION AND CONTEXT

The Government of Ontario has decided to implement a hybrid market for electricity, with some supply procured and priced under contract and some procured and priced in the open market. As an interim step towards this hybrid market, the Government fixed a two-tier price for low volume and designated customers. At the same time, Bill 4 returned the authority to the Ontario Energy Board (OEB) to have a plan in place to set such prices by May 1, 2005. The prices will be for supply to eligible customers who will be identified in a future government regulation , and over time are to reflect the cost of supply.

The method for setting prices for these customers is called the Regulated Price Plan (RPP).

The Government has also announced that it will require installation of "smart meters" over the next six years. Smart meters are capable of recording electricity usage according to its time of use. This capability enables customers to be charged electricity prices varying within a day and across seasons. Since the cost of electricity also varies across a day and the seasons, such meters allow electricity prices to track costs more closely. To be an effective tool, the meters must be coupled with prices that change as electricity costs change. The advent of such smart meters therefore could occasion a different approach to the RPP.

To obtain industry stakeholder input in the RPP design process, the OEB held an open stakeholder consultation on September 10 and invited participation in a working group. The working group was invited to help the OEB to structure the RPP. The OEB has engaged Navigant Consulting, Inc ("Navigant Consulting") to help with the RPP design. Part of that engagement was to assist the working group in structuring the RPP.

The working group's recommendations will be made to Board staff. Board staff will then draft recommendations to the Board, taking into account the advice of the working group. The Board will then hold a workshop to obtain further stakeholder input, which will ultimately conclude with an RPP approved by the Board.

WORKING GROUP PROCESS AND MANDATE

Process

The working group held seven meetings, with Navigant Consulting as the meeting chairs. Meeting notes of all meetings and all presentations made to the working group are posted on the OEB website.

For its recommendations, the working group tried to achieve substantial consensus where possible. In general, substantial consensus meant that no more than two working group members dissented from a recommendation. Dissenting members could record their concerns in the meeting notes and in this report. With respect to some issues, the working group was close to evenly split. In that case, the recommendation recorded in this report represents only a majority of the working group. All such cases are clearly identified in the report.

All recommendations identified with a asterisk (*) were unanimous. All other recommendations represent substantial consensus unless the text indicates otherwise.

Over its first two meetings, the working group had time for extensive discussions of the objectives and the tools available. These discussions helped distill views among the working group members with respect to possible configurations of designs for the RPP. Drawing on these indications, Navigant Consulting created a series of strawmen for successive meetings. Each strawman was designed to generate discussion among the working group members to foster convergence on a consensus, where possible. The strawmen were organized around the key elements necessary to achieve the objectives.

This report describes the issues facing the working group and some of its considerations in reaching a decision on a recommendation, including alternatives considered and rationale for the choices made. The report also records opinions from working group members that differ from the opinion represented by the decision.

Mandate and Objectives for the Working Group

At its first meeting, the working group discussed and accepted the basics of its assignment: its overall mission statement, the objectives it needed to meet with respect to the design of the RPP, and the tools it had available to accomplish those tasks. Board staff identified some potential issues as outside of the working group's scope.

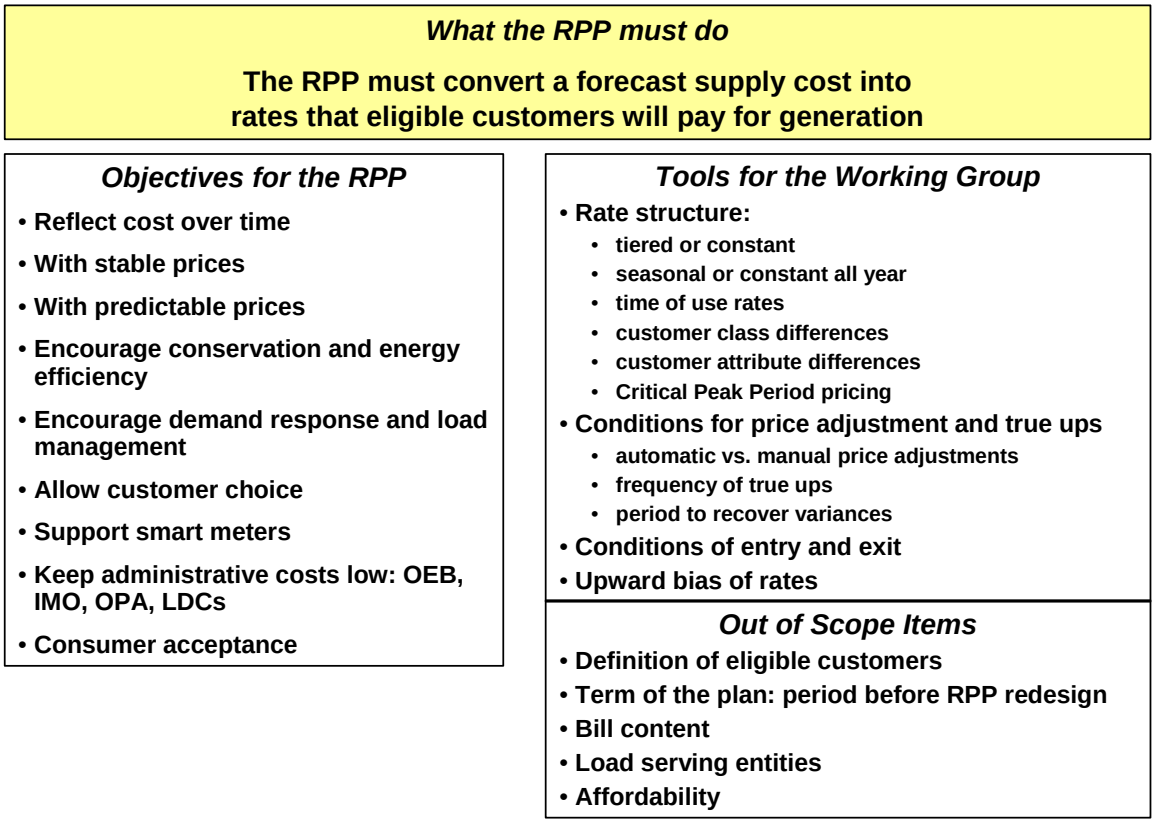
The working group agreed that its mandate is to:

Develop an RPP for consideration by the Board that satisfies the objectives as well as possible.

This mandate, by its nature, recognizes the potential for conflicts among the objectives.

Figure 1 below illustrates the objectives accepted by the working group as those it was expected to meet and the tools it had to work with. It also indicates some issues that Board staff said were outside of the working group's scope.

Figure 1. What the RPP Must Do



During its first two meetings, the working group considered these objectives and tools, added to the list proposed by Navigant Consulting and Board staff, and looked to define them more clearly. For example, the working group wrestled with how to define price stability. Perfectly stable prices are frozen, which means they cannot reflect changing cost conditions. Completely unstable prices would change every hour in a year. The working group agreed that the desired degree of price stability lies somewhere between these two extremes, and that trying to define it too carefully would simply divert the group's attention from more important issues. The group therefore did not agree on formal definitions of the objectives, though after the discussions the members had a more clear understanding of what the dimensions might be.

In these meetings, the working group also explored the possible conflicts between objectives and what tradeoffs might be necessary as a result. The main conflicts identified were between cost reflectivity and price stability and predictability. Other objectives could also conflict such as price stability and encouraging conservation.

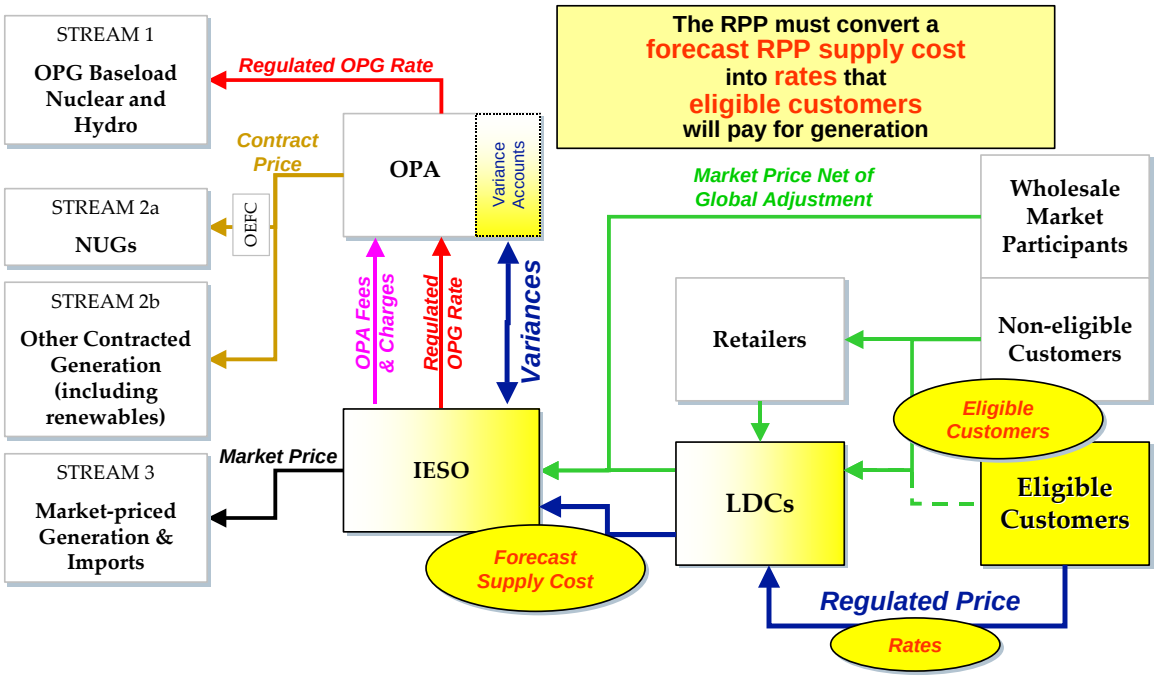
Also during the first two meetings, the working group explored the limits of the items that Board staff initially identified as being out of its scope. The group had some concerns about exclusion of certain considerations. Ultimately, the group addressed one of the issues initially identified as out of scope, that of bill content and presentation. Board staff continued to discuss these issues with the Ministry of Energy while the working group was meeting.

The working group expressed its concerns with respect to the difficulty of designing an RPP without firm information on customer eligibility. Without knowing customer class eligibility, the analysis could not know the number or total demand of the RPP customers, their load shapes, and the size of the associated variances. Also, some design features such as tiers may have differential impacts across customer classes. To move forward the working group generally used as a working assumption that residential and 'small volume' commercial class customers (currently defined as less then 250,000 kWh/yr) would be the only groups eligible for RPP. Some of the working group discussions also considered possible impacts of broader customer eligibility.

Context for the RPP

For the basic task of converting a forecast RPP supply cost into prices for eligible customers, Navigant Consulting produced Figure 2, which shows the relationship of the important factors in RPP supply. Supply for the eligible customers will come from three streams, with varying degrees of price certainty. The RPP then converts the costs of those streams, which together make up the RPP supply cost, into a price that customers will pay for generation. The price will be fixed, creating a variance between the actual costs and what customers have paid; that variance will be held by the OPA in a variance account. The RPP must also, therefore, ensure that the variance account is trued up over time to ensure that the RPP price reflects, over time, the cost of the electricity RPP customers use.

Figure 2: Diagram of the RPP Context



This diagram illustrated that the RPP will specify processes only for the right hand side of the diagram; that is, setting the retail price for the eligible customers only. Processes for setting the prices for the three streams of generation, for paying generators, and for creating and maintaining the RPP variance account will be specified in other ways. The RPP is concerned only with the shaded blocks in this diagram.

Several working group members identified that the above diagram is a collapsed representation of the expected market operation. They pointed out that the RPP supply cost consists of two distinct components: the forecast market price for generation and the Global Adjustment, which captures the difference between the market prices and the costs for regulated generation, Ontario Power Authority (OPA) fees and charges associated with NUGs and other contracted generation.

INFORMATION PRESENTED TO THE WORKING GROUP

Variance Modelling

The working group identified that its decisions might depend on the possible size of the accumulated RPP variances. If the variance is likely to be low, cost reflectivity could be achieved with less frequent true-ups and therefore more stable prices. On the other hand, if the variances were likely to become large, true-ups might need to be more frequent. Some members of the working group were also concerned with the possibility of a sudden large increase in electricity prices as a result of the need to recover a large variance and the resulting bill impacts.

To help in this discussion, Navigant Consulting created some models of variance accumulation. The models use econometric and statistical techniques to simulate the factors that are likely to cause variance in the RPP supply cost. These techniques allowed identification of variance paths representing different levels of cumulative probability.

One conclusion from these quantitative exercises was that unfavorable variances (that is, variances that customers will have to pay) are more likely than favorable variances. This is due to asymmetries both in the probability distribution of price and of other conditions affecting RPP supply cost, particularly generation availability.

A second conclusion was that the actual market performance would have to deviate from expected performance by a wide margin to create a very large variance. The Navigant Consulting estimates showed that the chances were about 10% of having a cumulative variance of $140 million (about $35 per customer) or more in a single year. And, in general, the factors causing a bad year at one time will change, so that conditions are not highly likely to produce a string of bad years leading ultimately to a very high variance.

Using this methodology, Navigant Consulting produced estimates of variances representing the 10^{th}, 25^{th}, 50^{th}, 75^{th}, and 90^{th} percentiles of the distribution of variances over a test period from 2005 to 2008.

Once the working group began to consider strawmen, Navigant Consulting applied the simulated variances to each of the strawmen. These applications showed the effects of the differential treatment under the strawmen on price, the size of price changes, and the size of the accumulated variance.

The results of the variance modeling were helpful to the working group in making their ultimate decisions.

Other Ontario Mechanisms

During their discussions, several working group members realized that one of the models being discussed for the RPP was very similar to the Quarterly Rate Adjustment Mechanisms (QRAM) currently in use by the natural gas distribution industry in Ontario. That mechanism has developed over time through experience and stakeholder input, has widespread consumer acceptance, and has proven generally effective. The working group therefore sought more information on the QRAM.

To assist in this education, the working group invited Ms. Pascale Duguay from Direct Energy to a regularly scheduled meeting to give a presentation on the workings of the QRAM. Both Enbridge Gas Distribution and Union Gas use such a mechanism, though the implementation details differ. The QRAM is a quarterly process that simultaneously trues up and rebases the price paid by customers for system gas.[1] The working group was interested in several aspects of the QRAM, including the fact that natural gas customers have become accustomed to quarterly price adjustments and the fact that they are not formally informed of price changes until after the change has been implemented.

The model of the QRAM was useful to the working group in its discussions of strawmen. However some working group members cautioned against extending presumed acceptance of natural gas rate adjustment mechanisms to electricity. It was argued that gas customers have not displayed any significant opposition to substantial price changes, as they have with electricity, and that lack of complaint with QRAM cannot be interpreted as consumer acceptance.

Information from Other Jurisdictions

As part of the preparation for this project, Navigant Consulting undertook research on the provisions of default supply in many other jurisdictions in the world. The working group received a brief introduction to the mechanisms used for default supply provision and pricing in other jurisdictions, particularly in North America.

Navigant Consulting also obtained information during the working group process on practices elsewhere, as possible approaches began to be more clearly defined. Information from this research, such as the design of seasonal price patterns, also proved useful to the working group.

[1] System gas is the product sold to gas customers who do not arrange to get their energy supply from a competitive retailer. Its provision is regulated by the OEB.

ISSUES AND RECOMMENDATIONS

The following sections deal in turn with each of the elements in the strawmen created for discussion purposes, the issues arising from each, the tenor of the discussion within the working group, and the ultimate resolution in the form of recommendations and their rationale, and dissent from the recommendations, if any, and accompanying rationale for the dissent.

Price Adjustment

Price adjustment encompasses several components of the RPP:

- True-ups. True-ups are a *retrospective* price adjustment. They are the mechanism to collect from RPP customers (or pay to them, depending on the direction of the variance) accumulated RPP variances. The variances arise from the difference between the actual and forecast cost of the RPP supply. True-ups adjust the RPP price (above or below expected cost) so that revenues collected under it will clear the variance over some future time period. Questions with respect to true-ups include on what criteria true-ups are based, how frequently the variance is trued up, is a true-up automatic or is it triggered by some event, over what period is it collected, how is the variance accumulated, and should there be a cap on the size of the true-up.
- Rebasing. Rebasing is a *prospective* price adjustment; the base price is being reset . The RPP price is to be based on a forecast of the costs of the three streams supplying electricity for RPP customers. The price is rebased (that is, the base is changed, as opposed to true-ups which only affect the price until previous variances are cleared) to reflect changes in the RPP supply cost forecast. Questions with respect to price rebasing include how often the RPP price is reset, on what criteria the price is rebased, and how the rebasing process is coordinated with the true-up process.
- Recovery period. The recovery period is the period over which the variance is expected to be cleared after a true-up. Issues with respect to the recovery period include over what period the variance is collected and how to clear variances remaining after the end of the collection period (because the collection rate will be based on a forecast that is subject to error).
- Cap on price changes. A cap would set a maximum allowable price change for any single true-up/rebasing. Questions with respect to a cap include whether to have one and its level.

During its discussions, the working group considered numerous answers to each of these questions and numerous combinations of them. The mechanisms for considering these possible combinations were the Navigant Consulting strawmen, which contained specific choices for each of the options and facilitated full discussion and exploration of the implications of the choices and the interactions among them.

The most difficult issue with respect to price adjustment was that of the frequency of price adjustments, either true-ups or rebasing. The frequency of true-ups was linked to the frequency of rebasing, in that more frequent rebasing could reduce the pace of variance accumulation (by keeping the base price closer to the actual RPP cost), thus reducing the need for true-ups. The frequencies considered included 3, 6 or 12 months. The basic trade offs are that the more frequent the true-ups or rebasing, the closer the price will be to cost reflectivity, but the less stable and predictable it will be. More frequent price changes are also likely not to be well understood or accepted by customers.

A related consideration is that of whether the true-ups should be automatic or based on a trigger. Automatic true-ups would occur on a regular schedule, perhaps subject only to a *"de minimus"* threshold below which there would be no true-up. With a trigger, true-ups would only occur if the variance account reached a certain size.

The criteria for truing up and the frequency are related in that, if the true-ups are scheduled frequently (say, quarterly), there is less time for the variance to accumulate and therefore less need for a trigger mechanism. For less frequent true-ups, the working group felt a need for some way to avoid building up excessive variances due to unforeseen extreme circumstances.

The working group discussed both strawmen with true-ups and rebasing always considered together and strawmen with the two processes separated, making true-ups more frequent than rebasings[2].

A practical consideration in the application of any price adjustment mechanism is how it interacts with the process for billing customers. Most LDCs use a bi-monthly billing system; that is, they bill customers every two months. Most of them also use a rolling billing cycle, so that a roughly equal number of bills are sent out every business day. If price adjustments occur quarterly, every bill will have a price adjustment affecting part of that billing period. The working group felt that such frequent price adjustments would likely lead both to confusion and to resentment on the part of customers and be unlikely to be viewed prices as stable. Therefore, the objectives of stability and cost reflectivity are constrained by the current bi-monthly billing practices of some LDCs.

To resolve these issues, the working group agreed to view price adjustment as an integrated process, with true-ups and rebasing always considered together. That reflects the fact that they are often related. If the underlying cost conditions have changed, then the variance will be high, requiring true-ups. If the change is permanent, then there likely will also need to be a rebasing. If

[2] True ups would likely be needed more often because they relate to past variance, which is subject to random transient effects. Rebasing occurs because of a change in the forecast, representing a permanent change in the underlying conditions determining RPP supply cost.

the change is temporary, such as the temporary unavailability of some of the regulated assets, then the forecast will indicate that a rebasing may not be necessary.

Given their integration, and given the concerns above about price instability associated with quarterly true-ups applied where LDCs bill on a bi-monthly basis, the working group consensus was that rebasing and true-ups should occur together, every six months. This was a compromise between annual and quarterly frequencies.

Two members of the working group disagreed with this decision. One member observed that, if the main reason for price adjustment on a six-month cycle is incompatibility with the LDC two-month billing cycle, the Board should examine this billing policy as an impediment to achieving price stability and cost reflectivity relative to quarterly true-ups, or alternatively, it could be reconsidered if the LDCs move to a monthly cycle. This could be occasioned by the widespread introduction of smart meters. Another member observed that the variances forecasted by Navigant Consulting were relatively low, and the working group decisions were likely to keep them low. Therefore, price adjustments need not be more frequent than annual, which would keep prices stable, improve customer acceptance and reduce administrative costs.

In conjunction with the decision on frequency, the working group considered whether to recommend a trigger mechanism to avoid accumulation of excessive variance. A trigger would produce true-ups when the difference between actual and expected variance reaches a critical value. Two issues with respect to triggers are the size of the trigger and whether the true-up occurs whenever the critical value is reached or only at regularly scheduled review point. One concern was whether allowing true-ups to occur based on a trigger value at a quarterly review point was not, in effect, moving to a quarterly true-up. The working group therefore agreed to wording that made it clear that the critical value for the trigger should be high enough to make reaching it an extraordinary event. The working group also felt that the consideration of a possible trigger event should occur quarterly, rather than whenever the variance reached the trigger value. Allowing a trigger at any time would leave possibilities of true-ups too close to rebasing or at times not synchronized to LDC processes.

A more basic discussion related to what would be trued up. Under the proposed legislation, at the initial implementation of the RPP the price structure will be constant over the first year. Prices will be set at a level to reflect the forecast annual average cost. But cost will vary seasonally, being higher in the peak (winter and summer) periods. Then the variance can be expected to build up during the peak periods and to be paid down during the off-peak periods, to end the year at zero. The working group did not want a true-up to be triggered by a variance amount that did not differ from the expected variance. The variance trigger is therefore specified as a deviation from expected variance.

The working group also discussed how much of the extraordinary variance should be trued up after a trigger event. One suggestion was that the amount to be trued up would be the deviation

from the expected variance,. The other option is to set the true-up to collect only the difference between the actual variance and the trigger level, leaving the remainder to be trued up with the next price adjustment. The working group was close to evenly split on this decision, but the majority favored truing up the entire difference between the actual and the expected variance.

The working group did not state a specific amount as a trigger for an extraordinary truing up. The working group had estimates from Navigant Consulting of a range of values for the accumulated variance, but actual variance amounts will not be known until the RPP is in place. Further, the working group recognized that other interests, particularly those associated with financing the accumulated variance, could impinge on the level seen to be acceptable.

The working group debated whether to recommend asymmetric treatment for the true-ups, depending on whether they were positive or negative. Given the expectation that an unfavorable variance (that is, one that consumers will ultimately have to pay) can lead to undesirable consequences – chiefly, to a price increase – the working group felt that it might be prudent to allow favorable variances to accumulate as a cushion against possible future unfavorable variances. The alternative would be to repay the favorable variances to consumers in the form of a downward price adjustment. The recommendation from the working group says that favourable variances should generally not be trued up. If, however, a large favourable variance does accumulate, part of it should be trued up to customers. Enough should be retained to meet a target level of cushion. Again, in the absence of actual data, the working group did not specify numerical values either for the trigger amount or for the cushion. Some members of the working group felt that favourable variances should be credited to customers.

The working group agreed readily that the recovery period to clear variances should be 12 months. That is, the price adjustment should be set, as an increment to all prices, at a level that is expected to clear the variance over 12 months' expected electricity sales to the eligible customers.

A price change cap would contribute to price stability, but would defer cost reflectivity. It would also add complexity, and the Navigant Consulting variance analysis indicated that most price changes would not be large. The working group did not recommend a price cap. The working group recognized as a practical matter that such decisions would be left to the Board's discretion within the context of other potential future bill impacts such as distribution rate changes.

Some members of the working group expressed a strong concern that the process adopted by the Board for approval of price adjustments under the RPP make appropriate allowance for public input, including scrutiny of the underlying assumptions and forecasts. The working group members are aware of the likely time constraints on such a process, but pointed to the QRAM approval process as a potential model for the RPP.

The numbered paragraphs below contain the recommendations from the working group. As noted in the introduction, recommendations marked with an asterisk (*) were adopted unanimously.

Summary of Recommendations:

1. Price adjustment should be an integrated process, with true-ups and rebasing considered at the same time*
2. The RPP price adjustment should be frequent enough to reflect anticipated RPP supply cost, but not so frequent as to produce excessive instability in prices*.
3. RPP price adjustment should occur every six months, with the true-ups based on deviation of actual from expected RPP supply cost variance at that time, and rebasing based on the then current 12-month forecast of RPP supply cost.
4. If the price change due to true-ups and rebasing is below some minimal level, it will not be implemented but will be carried over to the next price adjustment*.
5. True-up levels should be set to recover the cumulative variance over 12 months, assuming that demand from RPP customers will be at the level forecast*.
6. Variances which would result in price reductions to customers are not trued up until they reach a trigger amount, and then are set to leave a residual favorable cumulative variance.
7. Variance will be reviewed quarterly. If the cumulative unfavorable variance reaches a trigger level at a review point in between the 6-month price adjustments, that variance can be trued up. The true-up will be set to collect only the difference between the actual variance and the expected level. The trigger level should be set to identify exceptional circumstances.
8. There should not be a cap on the size of price adjustments, subject to due process for interested and affected parties to comment in respect of any proposed price adjustments*.

Timetables for Price Adjustment

The timetables for price adjustment encompass several issues:

- Notice period for customers. This is the time that a customer receives notice of a price change before it starts paying the new price.
- Notice period for LDCs. This is the time after a new price decision is made until it is implemented
- Decision period. This is the time taken to determine a new price, including both the rebasing and the true-up, if any.

- Synchronization. The RPP price adjustment can occur at the same time as other events affecting rates eligible customers pay, or it can be on a different timetable.

Tradeoffs for these issues include price predictability against cost reflectivity, since the farther in advance the price is set, the less it is likely to reflect current cost conditions, and administrative costs against price reflectivity, since implementing price changes rapidly can be costly for the LDCs. Another consideration in setting timetables is whether decisions can be made on the basis of partially historical and partially forecast information, or whether they need to wait until the relevant historical information is available.

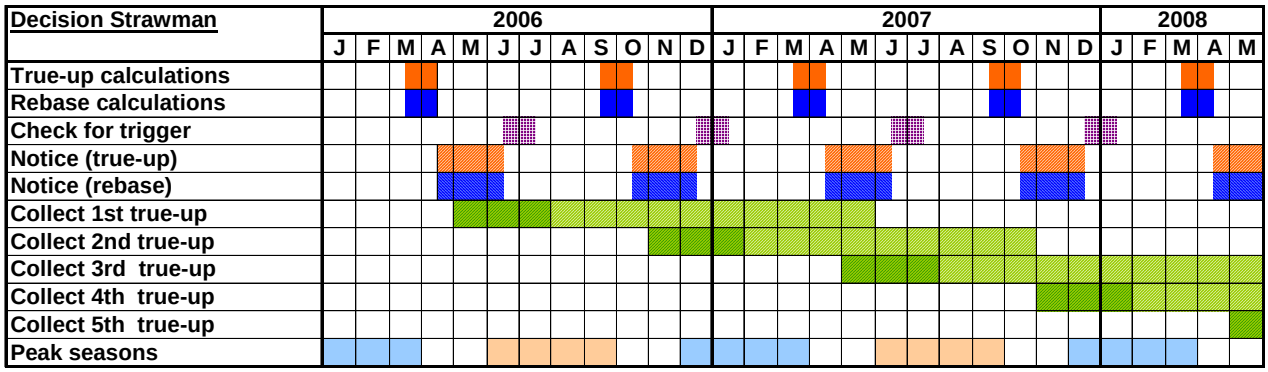
The working group considered likely timetables in conjunction with strawmen. In doing so, it looked at the practice in the Ontario natural gas industry, where consumers do not get individual notice of price changes until after the change when they receive a bill which typically includes some consumption at the new price. The working group also had input from its LDC members as to the amount of lead time that LDCs would need to implement price adjustments of various kinds, and to notify customers. Lead time for simple price changes is 30 days before the customer billing date (or 15 days before the effective date). For structural changes (such as changing the tier thresholds), the LDCs need notice 90 days before the customer billing date (or 75 days before the effective date). These times are required to enter the new prices and then to test them in bill runs.

Keeping true-ups and rebasing on a schedule geared to a 12-month cycle necessitates using some forecast information. To get historical information for a full 12 month period would require waiting until at least a month after the end of that period, which would force the price adjustment into the thirteenth month or later. The working group concluded that the timetable required the use of some forecast data, but to reduce the chances of error, the amount of forecast data used should be minimized.

The timetable was therefore determined by the working group's decision with respect to the need for notice to both the LDCs and the customers.

The working group observed that the projected start of the RPP is May 1, 2005, whereas the projected date for distribution rate changes is March 1, 2005. Implementing changes to customer bills on these "staggered" dates would lead to increased administrative costs and unfavorable customer reaction. The working group recommends that the OEB synchronize these processes at the start of the RPP, but in any event as soon as practical.

Figure 3: Timeline for Rebasing and True-ups



Summary of Recommendations

1. Price adjustments should be completed so that LDCs have a minimum of 30 days notice in advance of customer billing, which is equivalent to 15 days notice prior to the effective date, of an impending simple price change and a minimum of 90 days notice in advance of customer billing, which is equivalent to 75 days notice prior to the effective date, for more complex price or price structure changes requiring Customer Information System modifications/program changes*.

2. The timetable for calculation of the price adjustment should be set using historical data to the extent possible while still meeting the notice requirement*.

3. Customers will receive notice of approved price changes 15 days before the effective date through broadcast media, including LDC, OEB, and other websites*.

4. Customers will receive individual notice of price changes through bill messages, starting as soon as the LDCs receive notice of the price change*.

5. The OEB should ensure that changes affecting all prices and rates charged to customers eligible for RPP should be synchronized as soon as practical*.

Insert graphic re: timing of price changes and other related activity here

Principles for Price Setting

Several other issues emerged with respect to setting the basic price:

- Seasonality. The basic price could vary seasonally, or it could be the same throughout the year. Questions with respect to seasonality include whether to have a seasonal price pattern and, if so, how much price differentiation there should be. Whether or not to have seasonal prices also depends on the nature of the meter; the installation of smart meters, capable of time-differentiated readings of consumption, will make seasonal prices more feasible and desirable.

- Basic RPP price. The RPP price will be set based on a forecast of costs. It could be set at the average forecast price, or it could be set to provide a hedge against future variances. Navigant Consulting's analysis showed that there is a tendency towards unfavorable variances. Questions with respect to this include what price to target and what objective to set.

- First year conditions. The proposed legislation, as currently amended, implies that no price adjustment will be allowed during the first year of the RPP, which could allow variances to accrue. The question that raises is whether the transition from the fixed price to the RPP price adjustment mechanism requires any special rules.

- Tiers. A tiered structure has different prices for different levels of consumption. The current price structure for eligible customers has two tiers: 4.7 cents per kWh for consumption below 750 kWh per month, and 5.5 cents per kWh for consumption above that level. Questions with respect to tiers are how many to have, the price difference between tiers if there is more than one, and the consumption threshold values for moving from one tier to the next.

The basic RPP price will be set based on a forecast of the average RPP supply cost and of the demand of RPP customers. That average cost will depend also on the shape of the demand, since some of the supply will be priced in the IMO-administered markets. If the forecasts are completely correct, the cumulative variance over a year will be zero. Both favourable and unfavourable variances can be expected to occur seasonally, because the market price varies seasonally.

However, all forecasts are subject to error. In this case, the expectation is that deviations from forecast are more likely to cause unfavourable than favourable variances. This is due to several factors, including the basic asymmetry of the distribution of hourly prices (there is much more room for them to go up than down) and the asymmetry of output from nuclear plants (much more room for them to go down than up.)

The choice, therefore, is to set the RPP price at the forecast level, which would create an expectation of generating unfavorable variances, or to set the RPP price at a level that would bring the expected value of the variance to zero. The working group saw this decision as a trade off between cost reflectivity, price stability and predictability and customer acceptance. Because of the asymmetry, the price would have to be slightly higher to produce a zero expected variance, but it would reduce the risk to customers of high levels of unfavorable variance. Because it would likely reduce the difference between the actual and expected prices, it would also likely be more cost reflective. The working group agreed that the price should be set to reduce the expected value of the variance to zero.

Having decided on a 6-month cycle for rebasing and true-up, the working group recognized that the fixing of prices for the first year of the RPP would mean that only one true-up/rebasing was missed. Given the size of the expected variances, and the recommendation that the basic RPP

price be set to keep the expected variance to zero, the working group did not anticipate that the transition from the first year's fixed prices to the second year implementation of the RPP process would require any special consideration.

The question of a tier structure generated significant discussion with the working group. Several members questioned the purpose and effectiveness of tiers. Others pointed out that the current tier structure is inequitable to larger customers (mainly eligible business customers), because they pay at the higher tier for a much higher fraction of their total supply. Since the price of the higher tier is above the average cost of power, and the lower tier is below it, these larger customers can be said to be subsidizing those who buy less, or none, of their power at the upper tier price. Also, a working group member noted that some LDCs prorate the monthly tier amounts according to the number of days in the billing cycle, while others do not.

In considering whether to recommend a tiered rate structure, the working group compiled a list of advantages and disadvantages of tiers. They were about equal in number. Advantages of retaining tiers, as seen by some working group members, included the simplicity of avoiding a change from present conditions, that tiers can promote conservation (and are seen to be a way to do that in the absence of seasonal prices), are generally more cost reflective and are likely to reduce variances because they tend to raise prices to customers at times when demand, and therefore costs, are high. Disadvantages, as seen by some working group members, included difficulty of customer comprehension, problems of cross subsidization (across and within customer classes), administrative difficulties for the LDCs, and lack of true cost reflectivity at a customer class level.

The main advantage seen for tiers is that they should encourage conservation. Data compiled for the working group suggested that residential customers without electric heat pay at the upper tier rate for a relatively small proportion (under 20%) of their total supply. Those with electric heat pay a larger proportion (over 60%). Both kinds of customers are likely to be over the threshold in the peak months. This marginal use is therefore priced at the upper tier, and gives consumers an incentive to reduce their use in those months. This is true of the summer months when using air conditioning and the winter when using heating. However, there is no clear evidence that the tier structure in Ontario has led to conservation, although working group members pointed out that the experience with tiers is too short (6 months) to expect to be able to see a clear effect on consumption patterns.

The working group decided that a different structure for tiered prices might be able to keep most of the advantages and avoid some of the disadvantages, primarily the problem of cross-subsidization. Both three-tier structures and tiers that are differentiated seasonally were rejected on the grounds of complexity and unlikelihood of consumer understanding and acceptance. The remaining design variables for the tier structure are the threshold consumption level for moving from the lower to the higher price and the differential between the price levels.

If the RPP does have a tiered price structure, a change that the working group favored is to set different thresholds for different customer classes. Currently, small commercial customers (peak demand under 50 kW) are eligible for the RPP. Information presented by Navigant Consulting based on data from one working group member showed that, under the current tier structure, they pay at the upper tier, on average, for over 75% of their consumption. An increase in the threshold for commercial customers would reduce that level to one closer to that of residential customers.

Ultimately, a majority of the working group recommended that the RPP should have a tiered price structure, although this decision was very closely split. The dissenting members maintained that tiers created fundamental inequities between customer classes. Instead, a single price would provide simplicity and fairness. The loss of an implicit conservation message using tiered pricing would be addressed by the move to the smart meter RPP.

The working group did not have good enough information to recommend a detailed design for the tier structure, so it recommended some principles for the choice of the two remaining variables.

Summary of recommendations.

1. The RPP price(s) for conventional meters should not have a seasonal pattern.
2. The RPP price(s) should be set at a level that makes the expected value of the variance zero*.
3. The RPP should have a two-tier price structure.
4. If the RPP has a two-tier price structure, the tier structure should be based on fairness among customer classes eligible for RPP and on achieving the conservation objective. The design of the tier structure should be based on empirical evidence on actual consumption in Ontario. The choice of tier thresholds and rate differentials should be coordinated*.

Mobility Conditions

Mobility conditions relate to provisions in the events of a customer changing supply:

- Exit fees. Exit fees can be charged in some conditions when customers are responsible for their share of some fixed costs that have already been incurred for their benefit, and would avoid paying if they leave. The question is whether to have exit fees, and if so at what level.
- Clearance of variances. Under the process as diagramed in Figure 2, the Ontario Power Authority (OPA) will accumulate variances to be repaid by customers taking supply under the RPP. Customers who do not leave will pay their share of that variance in the price they pay for future electricity purchases. When customers change their conditions of supply, they could be required to clear their share of the accumulated variance. The questions are

whether the variances should be cleared, under what conditions they should be cleared, and to what extent they should be cleared.

The working group agreed that there are no significant fixed costs incurred in the system specifically for the benefit of RPP customers. It did not recommend an exit fee, since there are no costs to collect with such a fee.

There was considerable discussion on the issue of clearing variances. The working group distinguished four conditions that might occasion such clearance:

- A customer moving residence to another within the same LDC
- A customer moving residence from one Ontario LDC to another
- A customer moving residence out of Ontario
- A customer migrating to supply from a competitive retailer, but continuing to receive distribution service from the same LDC at the same location.

Navigant Consulting presented data on residential moves in Ontario. They showed that, on average, about 13% of people in Ontario move within Ontario in a year, while about 2% move outside of Ontario.

The working group recognized that customers moving residence within Ontario will be continuing to take RPP supply. They will therefore pay for a share of the accumulated variance. Their new share might be less or more than their old share, because their new residence might use less or more electricity than their old one. For the purpose of equity, therefore, they might be required to clear their variance on leaving their old residence, and they would get a credit against past variance in their new residence. However, such a system would carry very high administrative costs to address a problem that is quite small. The working group did not recommend that customers moving residence within Ontario should be required to clear their accumulated variance.

Customers moving outside Ontario will no longer be paying for RPP supply in Ontario. They could be required to clear their variance accounts. That would face several administrative obstacles, including the difficulty of enforcing payment on an addition to a final bill for a customer who has left the jurisdiction. Customers who move residence out of the province are unlikely to be motivated by a desire to escape paying for their share of the accumulated variance in the RPP supply cost. Given the small fraction of customers who move, and the possibility that the accumulated variance could be unfavourable or favourable, the working group did not recommend clearing variance for such customers.

Finally, customers who migrate from RPP supply to competitive supply do have the opportunity to shift cost from themselves to those remaining on RPP supply. The size of the variance account, which is carried by the OPA, will likely be public information. Customers can estimate how

much their share might be and avoid paying it by moving to a competitive retailer if it is not cleared when they leave.

Clearing the variance on leaving would place an administrative cost on the LDCs. They would have to know the customer's total electricity use over the past year, and the amount of the variance associated with that use. They would then have to add that amount to the customer's final bill. The variance amount per unit of energy could be readily calculated by the OPA, but the LDCs told the working group that their current systems cannot readily calculate the amount of energy used over the year before a customer leaves. A major problem is that most LDCs read customer meters no more often than bimonthly, so they cannot have accurate historical consumption data for any specific date, unless it happens to coincide with a meter reading date.

The question of whether to clear variances on leaving is a tradeoff between fairness, administrative cost, customer understanding and customer choice objectives. Navigant Consulting presented information suggesting that a customer could avoid as much as $50 in accumulated variance. Some members of the working group said that collecting such accumulated variances in a lump sum on leaving would constitute a barrier to migration to competitive retailers. Others said that allowing customers to leave without paying their share of the variance, while customers who stayed with RPP did pay their share, would allow the competitive retailers to offer supply at a rate that looked artificially more attractive to customers relative to the RPP price. Some also identified that more frequent true-ups would mitigate and minimize such variances that may exist, and also, that variances may be charges or credits.

The working group decided that the potential administrative costs, lack of customer understanding and the potential barrier to retail choice outweighed the fairness implications and did not recommend clearing variances on leaving. Some working group members did not support this position, and supported clearing variances, at least for customers who migrate to competitive supply.

The working group did not make recommendations about whether a customer could return to RPP supply after leaving for a competitive supplier because LDCs continue to have an obligation to serve all customers.

Summary of Recommendations:

- The working group does not recommend clearing variances of customers who leave RPP supply for any reason, or who move from one RPP supplier to another.

Bill Content

Although the subject had originally been identified as outside its scope, the working group did consider questions on the identification of component streams of the RPP price on the bill. Two components were discussed: the Global Adjustment and any true-ups.

The Global Adjustment is the amount added to or subtracted from the price of electricity to adjust for the difference between the market price and the cost of the top two streams on the left side of Figure 2 (NUGs, any new generation contracted to OPA and the designated assets). If these costs are below the market price, the Global Adjustment will be subtracted; if above, it is added.

The proposed legislation is explicit about the treatment of the Global Adjustment for customers who are taking competitive supply; it must be identified separately on the bill. For customers taking RPP supply, the proposed legislation is silent. Such customers will be receiving supply from LDCs, which under current regulations must use a four-line bill which would not provide for a separate line for the Global Adjustment. It could be identified on the bill by a message. Some working group members argued that the Global Adjustment should be clearly identified on all customer bills, so that they can see clearly the price of generation supply that they would replace by moving to a competitive retailer.

A further difference in treatment between customers taking RPP supply and those taking competitive supply is the degree of fixity of the Global Adjustment. For customers taking competitive supply, the Global Adjustment will be computed every month, using data from the IMO. Customers taking supply from the RPP will be getting a Global Adjustment that is calculated on the basis of forecasts, and is as fixed as the rest of the RPP price.

Some working group members argued that, to ensure comparability for all customers and avoid creating a barrier to moving to competitive retailers, customers who are eligible for RPP supply, but taking supply from a competitive retailer, should get the same fixed Global Adjustment as those who do not migrate.

Many of the working group members agreed that the issue of bill presentation of the Global Adjustment could detract from comparability of RPP prices and those from a competitive supplier.

The presentation of true-ups on customer bills is also an issue of comparability. True-ups are another item that is a fixed part of the price of RPP supply. Customers who leave RPP supply will no longer be paying the true-ups.

The working group eventually agreed to the principles stated below.

In principle, some WG members recommend that the OEB should design an RPP in which:

a. The market (HOEP) price and the global adjustment for RPP customers are separately identified in order to provide comparability for consumers between the RPP and other retail supply options.

b. The global adjustment is determined in the same fashion for all RPP eligible customers, whether they choose RPP supply or an alternative supply. If the global adjustment is fixed for RPP customers, it should be similarly fixed for RPP eligible customers who choose an alternative supply. Similarly, if the global adjustment is

variable for RPP customers, it should be variable for RPP eligible customers who choose an alternative supply.

c. The global adjustment is identified in the same fashion for all RPP eligible customers, whether they choose RPP supply or an alternative supply.

The foregoing is subject to practical, operational considerations.

The WG recognizes that, for full comparability, true-ups should also be separately identified, but could not reach agreement on the method by which this would be achieved.

RPP for Smart Meters

The government has directed the OEB to develop an implementation plan to introduce smart meters to Ontario electricity consumers, with a target of 800,000 smart meters installed by December 31, 2007, and installation of smart meters for all Ontario customers by December 31, 2010. The OEB established separate working groups to develop recommendations in response to this directive and recently released a draft smart meter implementation plan for comment.

Given the government directive and the expectation that, over time, more and more eligible customers will have smart meters, the RPP working group needed to consider the establishment of a RPP for those eligible customers with smart meters. The RPP for smart meters would need to consider the unique capabilities of smart meters relative to conventional meters

Key issues related to the RPP for smart meters that were discussed by the working group include:

- What price structure (e.g., Time-of-Use – TOU – rates) should be introduced to take advantage of the additional capabilities of SMs
  - If TOU, how many periods and for what hours?
  - should the TOU prices vary seasonally with changes to the underlying RPP supply costs?
  - should the RPP for smart meters incorporate Critical Peak Pricing (CPP)?
- Should the price in any period merely reflect underlying supply costs or should the prices or differences in prices between periods be "exaggerated" to elicit more customer response?
- Should variances in the RPP for smart meters be recovered separately from variances in the RPP for conventional meters?
- Should the other elements of the RPP for conventional meters (e.g., true-up frequency, recovery period, notice, etc.) also apply to the RPP for smart meters or should these elements differ for the RPP for smart meters?

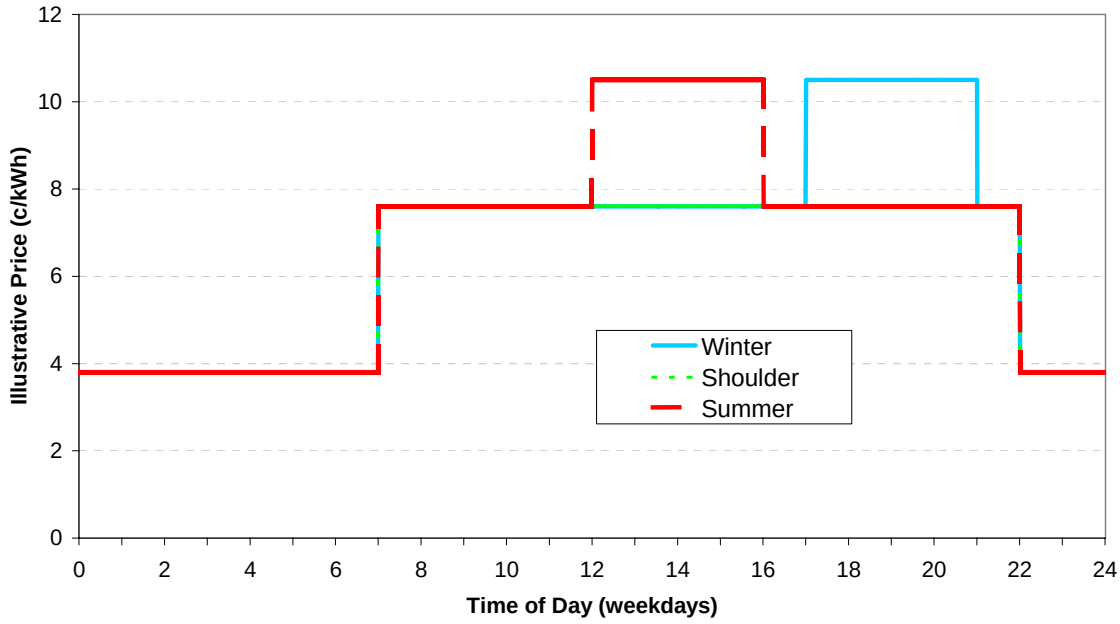
The working group reviewed the history of market prices in Ontario since market opening on May 1, 2002 and how these prices varied by time of day and season. In addition, Navigant Consulting provided the working group with illustrative forecasts of market prices by time of day and season. The working group also reviewed Time-of-Use (TOU) rates structures in other jurisdictions and recent experience with CPP rates in California.

With respect to the number of TOU periods, the working group considered a traditional peak and off-peak structure, with peak prices typically applying during the day on weekdays, and off-peak prices applying during weeknights and weekends. The working group also considered a three-period TOU structure, with off-peak, shoulder and peak periods. Under a three-period TOU structure, the off-peak period would be similar to the off-peak period under a two-period TOU rate structure, and the shoulder period would be similar to the peak period under a two period TOU rate structure. but there would also be a higher price applying to the four or five most expensive hours in a typical weekday. The timing of this peak period would vary by season, since the underlying supply cost pattern varies by season. While the two-period TOU structure would be most readily understood by customers, the working group felt that a three-period structure would provide a stronger conservation and demand response signal to customers.

Although RPP supply costs are expected to vary seasonally, the working group felt that the magnitude of these changes (both historic and forecast) were not sufficient to warrant changing the RPP for smart meters price seasonally. Instead, it was felt that a constant price for each TOU period between true-ups and rebasing would be less confusing to customers and would ultimately yield greater customer response.

Based on historic and forecast price patterns, the working group felt that a three-period TOU structure, with off-peak, shoulder and peak prices applying in winter and summer, and off-peak and shoulder prices only outside these seasons (i.e., in fall and spring) should be considered. However, given that the RPP supply cost patterns suggest that the winter and summer seasons should be four months each, the duration of the fall and spring seasons might only be two months. For this reason, the working group felt that the definition of seasons should specify only summer and winter, and that the only distinction be that the peak price applies only in those seasons. Figure 4 illustrates the proposed price pattern.

Figure 4 Illustrative TOU Price Pattern



With respect to critical peak pricing whereby high market prices during extreme weather or system conditions flow through to customers on an infrequent basis (perhaps 15 to 20 days each year), the working group generally felt that the concept was promising and would yield greater demand response when it is most needed. However, the working group felt that the introduction of CPP right away, without getting a better understanding of how eligible customers would react and respond and what technology might be available for use could be problematic. The working group was aware that participation in CPP programs in other jurisdictions was generally on a voluntary basis, and mandatory enrolment in a CPP program should be approached very cautiously. To this end, the working group believes that research and pilots on CPP with Ontario customers would help to inform a future decision with respect to CPP.

The working group recommendations with respect to the RPP for smart meters are:

1. Eligible RPP customers with smart meters should have a three-level TOU price
   - Price levels: Peak, mid-peak, and off-peak
   - Off peak prices apply during weeknights, weekends and holidays
   - Mid-peak prices apply to most hours during working weekdays
   - Peak prices apply for the four or five hours in a working weekday in the summer or winter seasons when RPP costs are expected to be highest
   - Winter season is the four months from December through March; summer season is the four months from June through September.

2. Price levels should be cost reflective.
3. Levels of these TOU p;rices should not vary seasonally
4. The Global Adjustment and any true-up should be applied uniformly to the prices for each TOU period*.
5. Further research and trials should be undertaken on the application of CPP in Ontario to inform a future decision with respect to the introduction of CPP for RPP customers*.
6. Variance recovery should be uniform for customers with conventional and smart meters to mitigate administrative complexity given the expected migration to smart meters in the short and medium term*.
7. Except for any tier structure, the elements of the RPP for conventional meters (e.g., frequency of true-ups, rebasing, notice, etc.) should also be applied to the RPP for smart meters.