Buying Group

Electricity Procurement Options

for

The Town of Markham

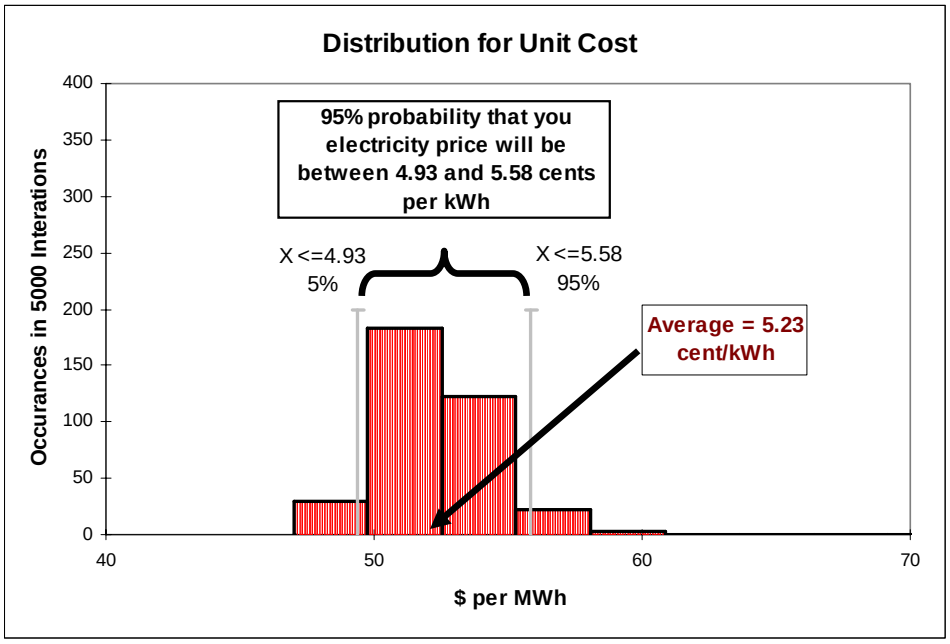
October 4, 2007

Methodology

WattsWorth employs a method of stochastic modeling to provide you with some insight into what your final cost outcomes are and the risk of their occurrence. Stochastic modeling is elaborated in greater detail in Section 4.0 of the Glossary of Terms and Market Definitions. At a high level, stochastic modeling is a technique used for situations like the Ontario electricity market where specific outcomes of variables (spot price, electricity consumption, rebate asset performance and etc.) occur within a range of probabilities. By including not only the probable but also the possible outcomes, the model provides a robust forecast of what municipalities can expect to pay for their electricity.

The model's output is a histogram of expected annual electricity cost and probability. The average price is documented on the graph along with two vertical lines that indicate the 5 and 95 percentiles. These two percentiles bound the area within which 90% of the expected outcomes will fall. This all sounds very complicated but it's not. In laymen's terms and referencing the example graph below:

- the most likely outcome is the average price of 5.23¢ per kWh,
- volatility in the market means that there is a 90% probability that your final annual electricity cost will be between 4.93 and 5.58¢ per kWh.



Each graph for all options is scaled equally for ease of comparison. The "tightness" of the distribution of outcomes around the average price represents the risk to the Town of Markham of a potential outcome occurring. A very tight distribution means low risk; a wide distribution means high risk.

Accounts

The Town of Markham (Markham) has three account types; Net System Load Shape (NSLS), Interval, and Street light. WattsWorth has broken these accounts into four distinct pools: Small NSLS, Large NSLS, Interval and Streetlights. For Markham, the following electricity procurement options are available to each of these pools:

- Option 1: Regulated Price Protection (RPP) Plan – ***("Do Nothing")***
- Option 2: Spot market without hedging – ***(Street Lights and Interval Only)***
- Option 3: Spot market with hedging
- Option 4: Retail electricity contract

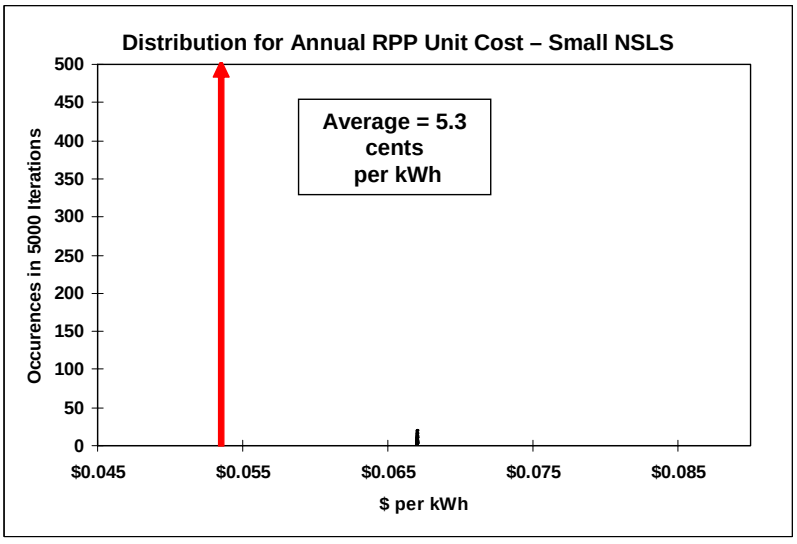
Each of these options affords Markham an opportunity to meet its electricity procurement needs. WattsWorth has taken the liberty of evaluating each option and their expected outcome. The summary of each is provided below.

Option 1: Regulated Price Protection Plan (RPP)

The RPP is the government fixed rate plan that the Markham is currently using to procure its electricity. The RPP rates from May 1, 2006 to October 31, 2006 were 5.8/6.7¢ per kWh. The difference between the RPP rate and the actual cost of electricity at 4.98¢ per kWh for the same period was used to pay down the variance account that accumulated because the previous year's RPP rate was too low relative to the actual cost of electricity. In recognition of the fact that the variance account has been completely recovered the government has announced new RPP rates effective May 1, 2007 of 5.3 ¢ per kWh for the first-tier consumption up to 750 kWh and 6.2¢ per kWh for all electricity consumed after that. Although these new rates represent a 7% decline in the cost of electricity, MUSH customers still consume most of their electricity at the second tier-rate which means they will pay more than they could by opting out of the RPP. The opportunity for MUSH customers is that the RPP exit fee today is actually a credit in recognition of the fact that the variance account is a surplus. If the RPP proves to be too low relative to the cost of electricity, the variance account will once again rise and an opportunity for MUSH customers to save on their cost of electricity will have been lost. An analysis of your expected annual cost for electricity utilizing the RPP is as follows:

Small NSLS:

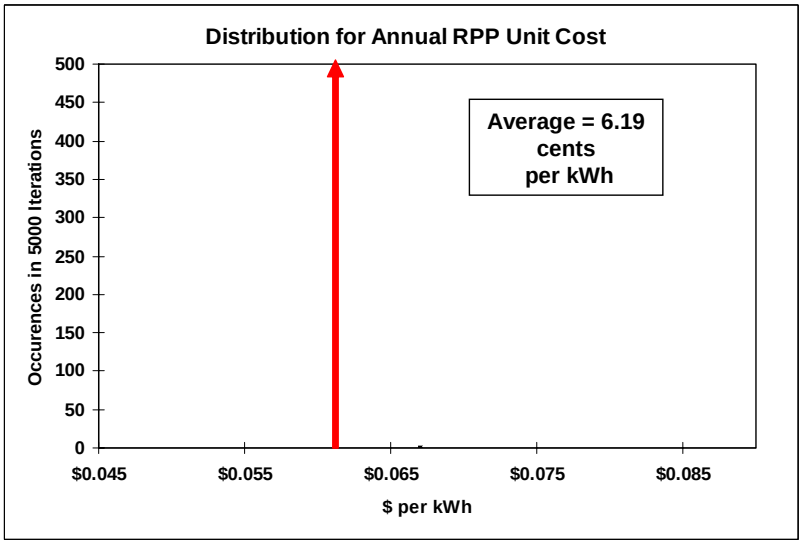
Regulated Price Plan	
Average Electricity Unit Cost:	5.3 ¢/kWh



The Small NSLS accounts pay predominantly the first-tier rate which is subsidized by second-tier rate customers. These accounts will benefit most by remaining in the RPP and therefore further options analysis will not be require for this account type.

Large NSLS, Interval and Street Light Accounts:

Regulated Price Plan	
Average Electricity Unit Cost:	6.19 ¢/kWh



Option 2: Spot Market ***Without*** Hedging

Legislation requires that non-interval accounts be billed via a supplier/retailer or returned to the RPP. Suppliers and Retailers offer the billing service as part of a supply contract but are reluctant to do so for a straight pass-through of spot. If the City could find a retailer that would offer this service, the fee will likely be prohibitive. However, this is not the case for the Interval and Street Light accounts.

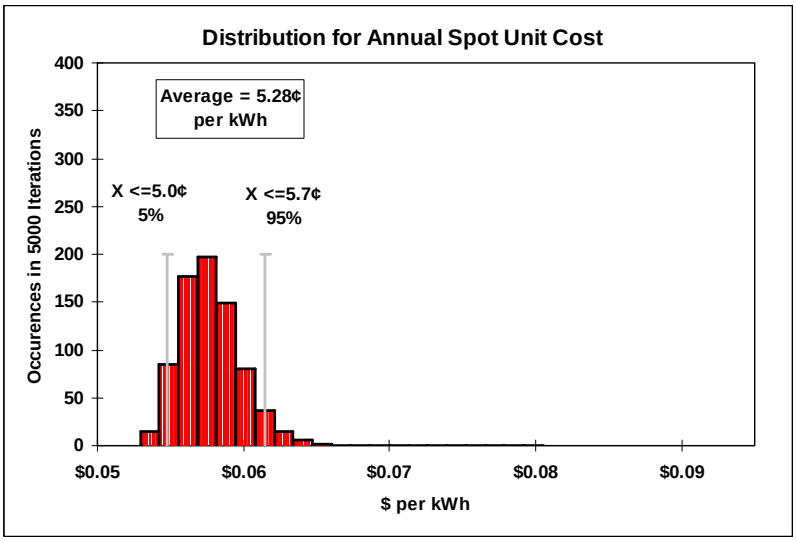
The spot market can be very volatile but the government mitigates up to 70% of this risk with price caps for the portion of electricity produced by Ontario Power Generation (refer to section 2.4 of Market Definitions for more detail on price caps). The weighted average cost of this electricity is $48.12[1] per MWh or 4.812-cents per kWh. The remaining 30% of electricity purchased from the spot market is fully exposed to price volatility. For most industrial and commercial customers a 70% hedge is an acceptable balance between risk mitigation and market opportunity.

It needs to be highlighted that the 30% exposure to spot market prices leaves Markham exposed to the possibility that an unforeseen market impact will result in a final cost above the RPP rate.

[1] Weighted average of Heritage Assets (40% at $45 per MWh), Non-Utility Generators (5% at $80 per MWh) and OPG Non-Prescribed Assets (25% at $46 per MWh)

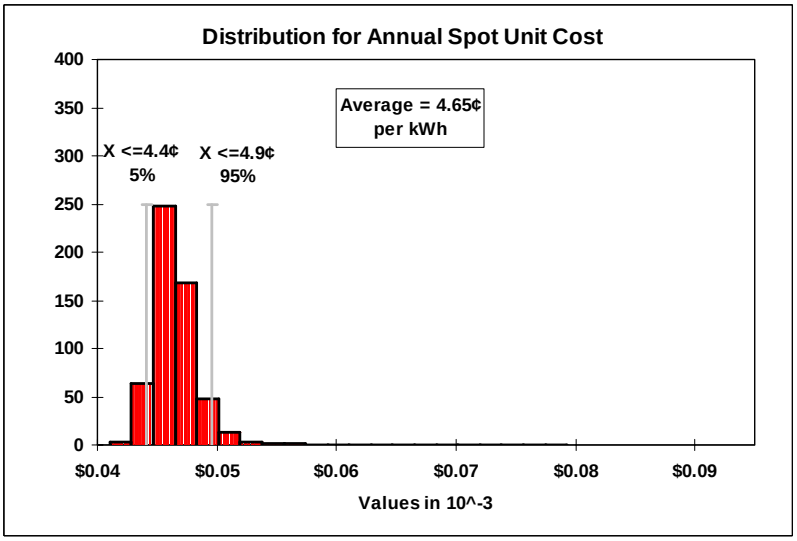
Interval Accounts:

Spot Market	
Average Electricity Unit Cost:	5.28 ¢/kWh
Annual Savings Over RPP:	$161,851



Street Light Account

Spot Market	
Average Electricity Unit Cost:	4.65 ¢/kWh
Annual Savings Over RPP:	$211,888

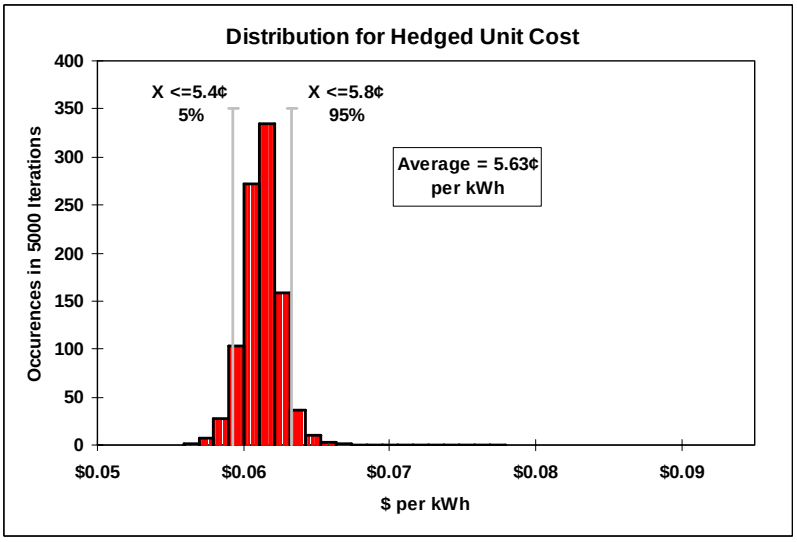


Option 3: Spot Market *With* a Hedge

Public sector entities generally find that even a 70% hedge is not effective enough to afford their rate-payers with an adequate surety of price. To gain more certainty in their final cost, Markham can employ a hedge to offset the majority of their price risk. WattsWorth has developed a hedge for each of Markham's account types that specifically meet this objective. The details are provided in the table below:

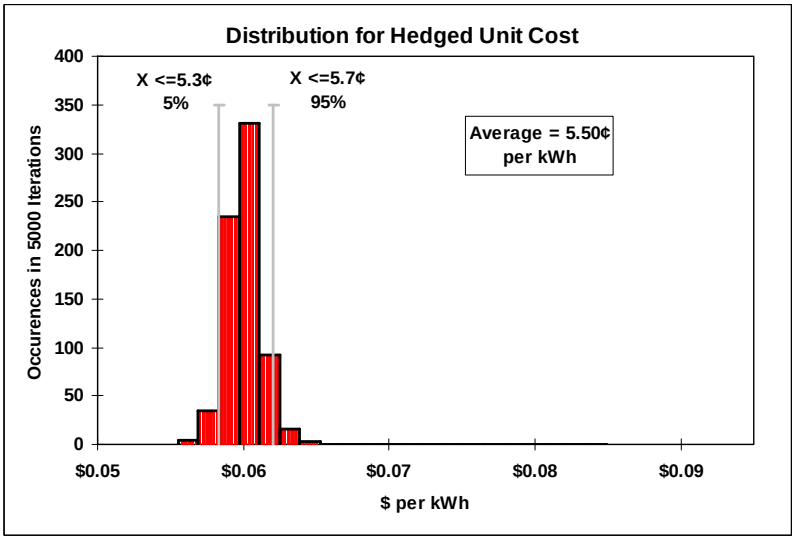
Large NSLS Accounts:

Spot Market With Hedge	
Average Electricity Unit Cost:	5.63 ¢/kWh
Annual Savings Over RPP:	$38,502



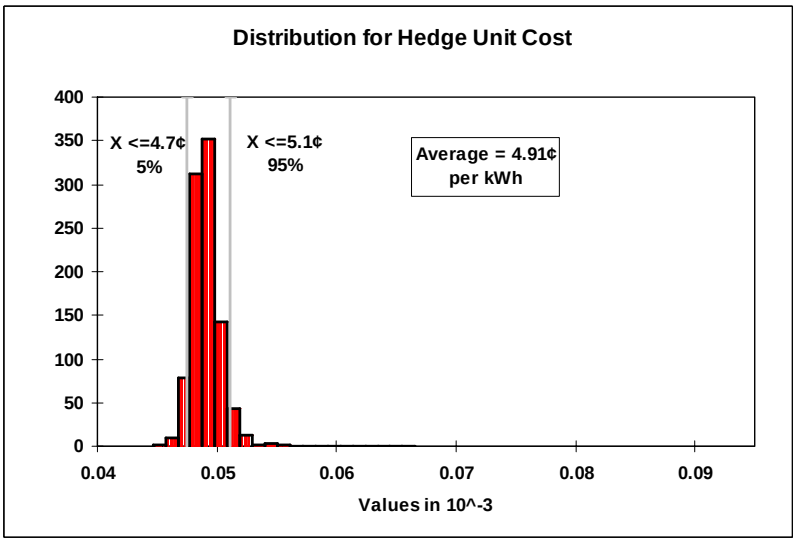
Interval Accounts:

Spot Market With Hedge	
Average Electricity Unit Cost:	5.5 ¢/kWh
Annual Savings Over RPP:	$123,148



Street Light Account:

Spot Market With Hedge	
Average Electricity Unit Cost:	4.91 ¢/kWh
Annual Savings Over RPP:	$176,346

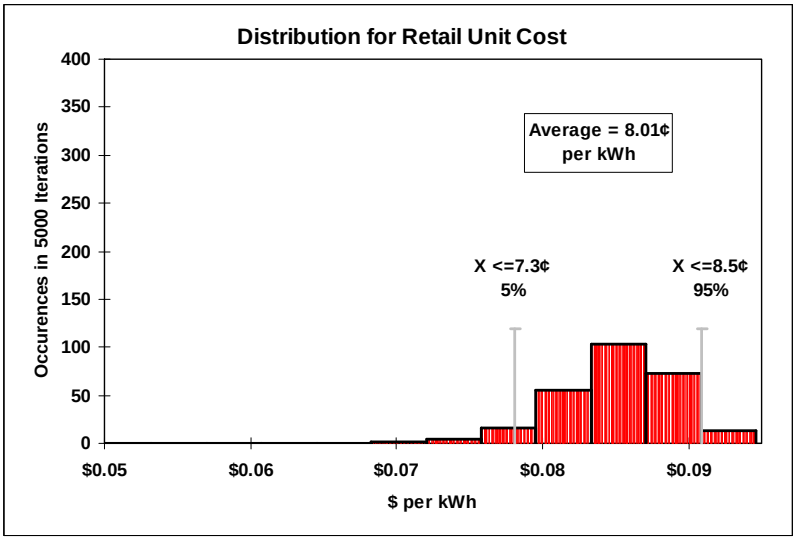


Option 4: Retail Supply Contract

Markham can enter a fixed rate contract with a retailer that covers all of their consumption with a single price, much like the RPP. The term (usually 5 years) and the price are both set at the beginning of the contract. Most retail contracts allow for the customer to retain the rebates which, in some ways, offsets the premium that these contracts charge. Current retail contracts require a five year commitment and offer a fixed price of 8.99¢ per kWh, well above the cost of the RPP.

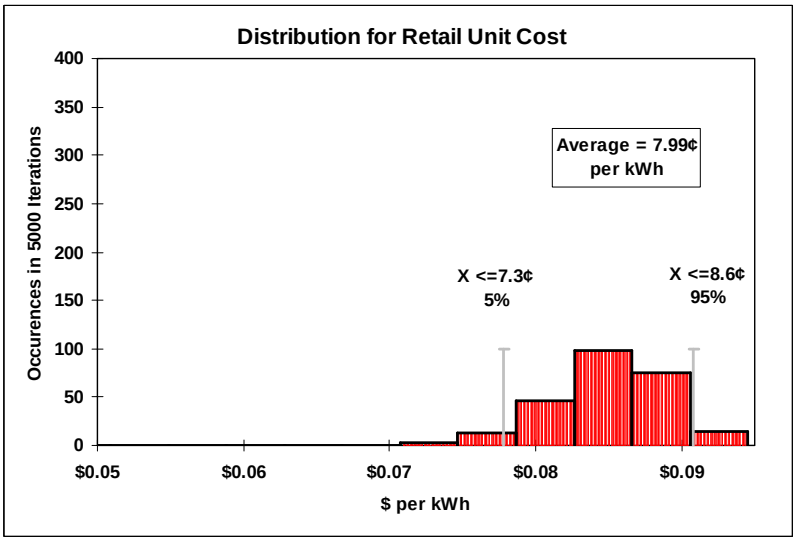
Large NSLS Accounts:

Retail Contract	
Average Electricity Unit Cost:	8.01 ¢/kWh
Annual Savings Over RPP:	None



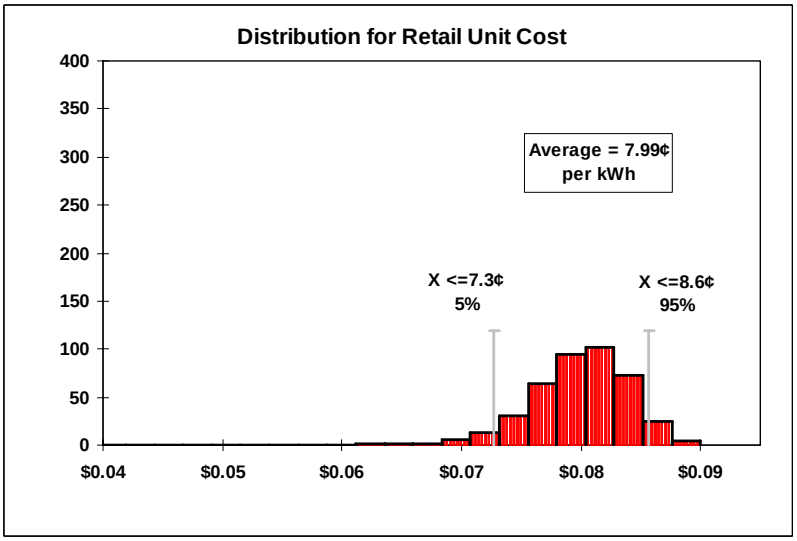
Interval Accounts:

Retail Contract	
Average Electricity Unit Cost:	7.99 ¢/kWh
Annual Savings Over RPP:	None



Street Light Account:

Retail Contract	
Average Electricity Unit Cost:	7.99 ¢/kWh
Annual Savings Over RPP:	None



Appendix A: Option Summary

Large NSLS Accounts:

Option	Program	Electricity Cost			Exit Fee/(Payment)		Expected Annual Savings Over the RPP *(pre Exit Fee repayment)*	Proportion of On-Peak Coverage
		< 5% (¢/kWh)	Average (¢/kWh)	< 95% (¢/kWh)	Cost ($)	Break Even (Months)		
1	**RPP**	6.19	**6.19**	6.19	$ -	n/a	**n/a**	**100%**
3	**Spot Market With Hedge**	5.40	**5.63**	5.80	$ (17,218)	n/a	**$ 38,502**	**96%**
4	**Retail**	7.30	**8.01**	8.50	$ (17,218)	n/a	***none***	**100%**

Interval Accounts:

Option	Program	Electricity Cost			Exit Fee/(Payment)		Expected Annual Savings Over the RPP *(pre Exit Fee repayment)*	Proportion of On-Peak Coverage
		< 5% (¢/kWh)	Average (¢/kWh)	< 95% (¢/kWh)	Cost ($)	Break Even (Months)		
1	**RPP**	6.19	**6.19**	6.19	$ -	n/a	**n/a**	**100%**
2	**Spot Market Without Hedge**	5.00	**5.28**	5.70	$ (44,843)	n/a	**$ 161,851**	**~70%**
3	**Spot Market With Hedge**	5.30	**5.50**	5.70	$ (44,843)	n/a	**$ 123,148**	**96%**
4	**Retail**	7.30	**7.99**	8.60	$ (44,843)	n/a	***none***	**100%**

Street Light Accounts:

Option	Program	Electricity Cost			Exit Fee/(Payment)		Expected Annual Savings Over the RPP *(pre Exit Fee repayment)*	Proportion of On-Peak Coverage
		< 5% (¢/kWh)	Average (¢/kWh)	< 95% (¢/kWh)	Cost ($)	Break Even (Months)		
1	**RPP**	6.19	**6.19**	6.19	$ -	n/a	**n/a**	**100%**
2	**Spot Market Without Hedge**	4.40	**4.65**	4.90	$ (37,123)	n/a	**$ 211,888**	**~70%**
3	**Spot Market With Hedge**	0.70	**4.91**	5.10	$ (37,123)	n/a	**$ 176,346**	**96%**
4	**Retail**	7.30	**7.99**	8.60	$ (37,123)	n/a	***none***	**100%**

Buying Group

Frequently Asked Questions

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Who owns Wattsworth?
Wattsworth Analysis is owned by approximately 70 local distribution companies. Many of these in turn are owned or part owned by Municipalities effectively making Wattsworth municipally owned. As one of our clients said "If we own you it makes sense to use you to provide this necessary service". You can view our list of limited partners and board of directors at www.enerconnect.com.

What is the difference between a contracted Megawatt-hour and my consumption for the purposes of calculating WattsWorth's fee?
Approximately 70% of the electricity that you purchase from the spot market will already be hedged through the government's rate caps for OPG assets. Only 30 to 35% of your actual consumption is exposed to the spot market. For this amount of electricity, WattsWorth proposes that you fix your electricity cost using a forward electricity contract. WattsWorth's fee is based on the contracted portion which is roughly 30% of your consumption. WattsWorth will not charge you for the 70% that is already hedged or your streetlight accounts because we are not doing any work for these accounts. Contrast this with other buying groups that generally charge on all electricity consumed and it is clear that WattsWorth's service is both superior and less expensive.

What happens to my price if someone in our buying group fails to pay its bills to the supplier? Am I responsible for other group member's actions?
Nothing happens to your price. Your contract with the supplier is fixed for its full term and cannot be adjusted at any time. The contract with the supplier also insulates you from the actions of other group members. Suppliers have no recourse at any time to seek damages because another group member did not meet its contractual obligations.

What happens if the supplier fails to live up to its contractual obligations?
The contract protects your rights and is fully defensible in the court of law. If the supplier suffers a business failure then you can seek damages from its parent company that will have provided a guarantee of performance by the supplier. In either case, you will have been made whole in terms of the contract.

Why is the Regulated Price Plan so expensive if it was developed to ensure everyone pays the true cost of electricity?
The RPP as a whole is designed to pay the true cost of electricity. Within that pool however, MUSH customers will pay the higher tier-rate while residential customers pay the lower tier-rate. Whatever shortfalls occur between the average revenues and the average spot market cost are shared equally between MUSH and residential customers even though the average cost is much less than the rate paid by MUSH customers. Thus, MUSH customers are subsidizing residential customers in their rates.

Won't the Regulated Price Plan go back down once the variance account balance is recovered?
Presumably…maybe…maybe not. Some even predict that the RPP rate will be set at an artificially low price in time for the provincial elections. Regardless, the RPP is meant to charge the true cost of electricity so any RPP price that falls short of the actual cost of electricity will be charged to pool members in the following terms. RPP members should concern themselves with the underlying cost of electricity which they will eventually pay. Section 2.0 of the Glossary of Terms and Market Definitions provides some insight into the electricity market. As discussed, the costs of the underlying fuels for generation and construction are increasing which means that the cost of electricity will also increase. Previous RPP rates proved to be insufficient and resulted in a large variance account balance. If the current RPP rate proves to be well above the cost of electricity, it is unlikely that the rates will fall to previous levels because then the variance account will start to grow again.

Something for you to consider is that even when the RPP rates were set at 5.8¢ per kWh, well below the market cost, customers that followed WattsWorth's strategies saved on their electricity costs over being part of the RPP. Unlike the RPP, WattsWorth's strategy minimized all of their risks and gave them complete control over their purchases of electricity. There was no variance account lurking in the background to which they were responsible to pay.

What are my risks?
Your risk from staying in the RPP is that you will continue to subsidize residential and small commercial customers. With regard to the spot market there are four main risks: price risk, volume risk, rebate asset performance risk and counter-party risk (each of these is described in detail in Section 3.0). The first three risks are minimized with WattsWorth's strategy. The final risk, counter-party risk, is eliminated with the requirements in the contract for the suppliers to provide a parental guarantee of performance. Given that the RPP does not afford any risk mitigation, WattsWorth's proposal is less risky than the RPP.

Even if I sign the Letter of Intent and you do all this work, if I choose not to enter a contract WattsWorth then I'm not obligated to WattsWorth for any payment of any kind?
Correct. There is no obligation or fees until you choose to sign the accompanying agreement.

How does the Exit Fee impact my expected results?
You are obligated to pay your portion of the variance account either as an exit fee or, if you stay in the RPP program, as part of the RPP rate which is currently 6.7¢ per kWh. Either way it's a sunk cost.

Am I impacted if other buying pool members don't have as a high a credit rating as me?
No. Each contract between the supplier and individual group members is separate. Your credit rating relative to that of the supplier will determine the amount of parental guarantee that must be provided to you specifically. The contracts ensure that the relative risk between both supplier and group members is at a minimum so there is no default premium will be built into the prices offered by the supplier in bidding for your business.

We've spent a lot of time and resources optimizing our consumption patterns with load shifting, peak shaving and conservation. How can we be sure that we won't sacrifice these benefits by entering a buying group?
Firstly, WattsWorth's strategy will actually unlock the economic value of these efforts because it differentiates the cost of power with hourly demand. If you shift consumption from the peak periods to the off-peak periods, WattsWorth's strategy will recognize the relative cost of electricity and you will earn a return for your efforts. The RPP does not recognize this, a kWh consumed at midnight costs as much as a kWh consumed at noon even though the underlying cost to deliver electricity to you differs. Additionally, all of your efforts to save are shared proportionately throughout the RPP group.

To specifically address your question, your strategy is built on the account level rather than on a pooled level where benefits are shared. The pool itself is the aggregate of all the individual strategies without losing the uniqueness of each account's needs. Once the aggregated contract has been fulfilled, the strategies return to the account level to ensure that there is no cross subsidization.

Is WattsWorth guaranteeing my electricity price?
No. Price guarantees have a significant premium attached to them as is evident in the RPP and Retail supply contracts. WattsWorth is developing a strategy for you that will minimize your risk in such a way and to a degree that the final result of your electricity costs will be very close to that which is estimated at the beginning of the period. This same strategy has been employed by the Cities of Mississauga and London with very good success.

How long does WattsWorth recommend that we contract with a supplier?
The maximum duration for WattsWorth's strategies is 1 to 1.25 years in length because the electricity market is constantly evolving. WattsWorth does not want you to enter a contract term that will preclude you from taking advantage of opportunities such as the Time-Of-Use program which has very favourable rates. Most new initiatives are instituted in April or May of each year so this is the targeted termination point for WattsWorth strategies.

Why does WattsWorth recommend hedging no more than 30 to 35% of our total consumption?
Approximately 70% of your consumption is already capped at a weighted average cost of 4.82¢ per kWh (see below in Section 1.4.1for specifics). A contract only needs to cover the remaining exposed position. For the portion of a contract that overlaps with a rebate:

- When the spot market price is above the contract price, then you receive a rebate for the difference between the capped rate and also a credit from the supplier for the difference between the contract price and the spot market price. You win big!

- When the spot market price is below the contract price but above the capped price, you receive a rebate from the government which is then paid to the supplier for the difference between the spot price and the contract price. You lose!

- When the spot market price is below both the capped rate and the contract price, the rebate becomes a charge for the difference between spot prices and the capped price plus, the supplier invoices you for the difference between the spot market price and the contract price. You lose big!

For this reason, you are gambling that the spot market price will exceed the supplier's contract price otherwise you are losing. Consider this, however, suppliers will not offer contracts that they believe will be below the value of the electricity if it is just put into the market, so the chances of being a winner are small. Even so, almost every municipality has conditions in place to ensure that their managers are not speculating and that's what betting on the spot market is.

Buying Group

Glossary of Terms

and

Market Definitions

Glossary of Terms

MUSH – A category of Ontario electricity customers as defined in legislation as Municipalities, Universities, Schools, Hospitals that are entitled to pay the Regulated Price Protection rate for electricity.

Regulated Price Protection (RPP) – A government program which provides a fixed price for electricity to consumers that use less than 250,000 kWh annually or have a demand of less than 50 kW. This group generally includes residential, small commercial, farms and MUSH customers. Refer to section on Municipal Procurement Options in Section 1.1 below for more detail

Standard Service Supply (SSS) - Electricity that local utilities will sell to customers who are not part of the RPP or enrolled with an electricity retailer. The SSS is the equivalent of the average hourly spot market price after the spot market prices are weighted by the customer's volume consumed in each hour

Net System Load Shape (NSLS) – A method of intervalizing energy meter consumption into hourly data that is compatible with hourly spot market prices. NSLS customers are "deemed" to have the same consumption pattern as the utility in general.

Swaps – A financial means of exchanging a less desirable pricing methodology (usually a fixed price) with a less desirable (usually a variable price). The two counter-parties are considered to have "swapped" price methodologies. Refer to Section 1.4 for more detail on Forward Contracting (Swaps).

Stochastic Modeling – A means of predicting future results based on multiple "what-if" scenarios and the probability of their occurrence. The result is a range of outcomes rather than a single result. A detailed description is provided in Section 4.0.

Heritage Assets – Beck (Niagara Falls), Saunders, Pickering and Darlington generation stations. These assets account for approximately 38 to 40% of the generation produced in Ontario.

Non-Utility Generators (NUG's) – Long-term contracts signed between Ontario Hydro and merchant generators in the mid 1980's to supply electricity to Ontario customers. NUG's provide Ontario with approximately 5% of the electricity generated in Ontario.

OPG Non-Prescribed Assets (ONPA) – All OPG generation stations, with the exclusion of Lennox, that are not Heritage Assets. ONPA assets generate approximately 25% of the electricity produced in Ontario.

RPP Exit Fee – A charge to customers based on their previous 12 months of consumption which is payable upon exiting the RPP program. This fee represents the account's portion of the variance account that is outstanding from the previous year. The rate changes each month as the balance of the variance account is increased or paid down. A detailed explanation of the exit fee is provided in Section 1.1.2.

Contract Power Blocks - Electricity that is purchased at a fixed contract from a supplier is purchased in "blocks". These blocks are defined by their volume (kWh), duration per week, and the hours with each day that the contract applies. When graphed, the shape that is produced is a block. For your purposes, two block shapes exist:

7x24 (Base Load) – This contract covers a fixed portion of electricity for seven days per week and 24 hours per day.

5x16 (On Peak) – This contract matches the periods when electricity consumption, and therefore spot market prices, are at their maximum. In Ontario, this is defined as the period Monday to Friday from 7:00 a.m. to 11:00 p.m.

Market Definitions

1.0 Electricity Procurement Options for Municipalities

1.1 Regulated Price Protection (RPP) Plan

Advantages	Disadvantages
1. Simplicity: Constant price for all kWh's during the RPP period. 2. Everybody's doing it! Very few municipalities have exited the RPP for alternative procurement options.	1. "Constant" price gives the illusion of risk mitigation and a constant price. Variance account accumulates the difference between market cost and RPP cost. 2. The few municipalities that have exited the RPP are saving 15 to 19% over the RPP Rate.

The RPP is sometimes considered a fixed-price procurement plan because its price remains static throughout the year. In reality, the RPP is not a fixed-price electricity procurement program. True fixed-rate programs are independent of the underlying cost of electricity. The fixed-rate program that was imposed in November 2002 and capped the electricity rate at 4.3¢/kWh, ran a huge deficit which added $1-billion to Ontario's debt rather than form part of the next year's rate. In contrast, the RPP has a variance account that tracks the difference between what was paid throughout the year at the plan-rate and the actual cost of delivering electricity from the spot market. This variance, along with the expected cost of electricity for the next year, forms the basis of the next year's rate.

The intent of the RPP is to smooth the price volatility that exists for commodities traded on the spot market but still charge the actual cost of the commodity over the long-term. Thus, municipalities do not avoid the true cost of electricity, only delay it. As was evident in 2005, the rate of 5.8¢/kWh was well below the market cost of electricity. The current rate of 6.7¢/kWh is above the expected market cost for electricity in 2006 in order to recover the $417-million variance that accumulated throughout the previous year. Provided that the average amount paid by municipalities for their electricity overall equals the actual cost of electricity, then this plan lives up to the intent to which it was formed.

The reality of the RPP is that municipalities, along with universities, schools and hospitals (MUSH), subsidize the electricity cost for residential and small commercial customers that share the same rate plan. The threshold of consumption between which a customer pays the first-tier rate of 5.8¢/kWh and the second-tier rate of 6.7¢/kWh is based on what the average residence consumes each month. For large electricity consumers like a municipality this threshold is usually exceeded in the first hour and thus almost all of its electricity procurement is at the highest rate. Contrast this with residential and small commercial customers that exceed this threshold for only the smallest portion of their monthly consumption. These customers generally pay the lowest-tier rate. Since the government does not make any distinction between how much

any particular plan member paid, the municipalities share equally the balance of the variance account even though it paid a higher rate throughout the year.

A major attraction of government price plans such as the RPP is that it appears to mitigate risk. The unfortunate reality is that RPP program members face the same risk as all other electricity customers that purchase from the spot market. A summary of potential risks are provided in Section 3.0. The difference is that the risk is delayed until the subsequent period in which case the RPP rate increases to recoup the losses.

1.1.1 The RPP Variance Account and Risk Management

As discussed in the previous section, the intention of the RPP is to charge customers the true cost of electricity without the wild price swings that occur by being on the open-market. To accomplish this task, the government estimates the cost of electricity for the coming year and sets the rates that RPP pool members will be charged. Every day the cost of electricity is charged to the government based on the spot market price and the consumption by all RPP pool members. This is offset by the proceeds paid by RPP members at the fixed rates. The difference between the two can be either positive or negative and is accumulated in an account that will be included in the rates for the next year.

Consider the scenario where a nuclear reactor fails during a prolonged heat wave; neither of which can be predicted at the beginning of the year when setting the rates. The heat wave will increase overall demand while the loss of a major generator will limit supply. The spot market price for electricity will increase significantly; well above the RPP rate. Customers that are not part of the RPP will be directly impacted by these events as they will see an increase in costs on their next invoice that reflects these two market conditions. For RPP customers, the rate they pay will continue to be the same as set at the beginning of the year but the difference between the rate and the actual cost will be added to the balance of the variance account. At the beginning of the next year, customers that are not part of the RPP will pay just the spot market price. RPP customers will pay the expected spot market price plus their portion of the variance account which includes the market impacts from the loss of generation and increased demand caused by the sustained heat wave. From this analysis we can see that the RPP does not offer customers any risk mitigation or savings, it simply defers the spot market risks until the next period of the RPP.

At first glance it appears that all customers, regardless of whether or not they are in the RPP, will pay the spot market price for electricity. In reality, municipalities in the RPP program paid more than a non-RPP customer. As discussed, the variance account is the difference between the true cost of electricity and the proceeds received from all RPP customers. The majority of the proceeds received from RPP customers was paid by the municipalities and the MUSH customers who were charged the highest tier-rate; yet the variance account balance is shared equally when the next set of RPP rates are set. To further aggravate the situation, the spot market customer has the option of hedging its position which would have completely

mitigated these costs and risks. The RPP offers no such hedging mechanism other than to spread the spot market cost over a longer period. In terms of risk management and cost savings, the RPP offers neither.

1.1.2 The RPP Exit Fee

RPP customers cannot escape the variance account by exiting the RPP program. To exit the RPP the customer is charged an exit fee which represents their portion of the variance account balance. This fee may prohibit some customers from leaving the program but it should be treated as a sunk cost. RPP customers are going to pay it either as a one-time fee or as part of their electricity rate, which includes the variance balance. The advantage of leaving the RPP and paying the fee is that the savings from doing so will start to offset their fees. The earlier an account exits the RPP, the sooner it will recover the fee and start to save the customer money.

1.2 Standard Supply Service or Spot Market Pricing

Advantages	Disadvantages
1. Simplicity: No complex contracts or strategies required. 2. Cheaper: No subsidization of the residential or small commercial customers.	1. Risk: Exposure to the hourly "spot market" price. 2. Difficult to budget month-to-month electricity costs because market is unpredictable.

Standard Supply Service (SSS) is the electricity that local utilities will sell to customers who are not part of the RPP or enrolled with an electricity retailer. The SSS is the equivalent of the average hourly spot market price after the spot market prices are weighted by the customer's volume consumed in each hour. The weighting methodology can be based on actual consumption, where the metering device is interval, or by the Net System Load Shape (NSLS) of the utility in general if the metering device is an energy design. A general rule of thumb is that the NSLS pricing methodology usually results in a higher electricity cost than the interval pricing methodology.

1.3 Retailer Contract

Advantages	Disadvantages
1. Offers the same features of the RPP but without the variance account true-up each term.	1. Very expensive. Current rates are well above market results.

Electricity consumers in Ontario have the choice of buying electricity from licensed retailers. Customers that choose this option are simply replacing the RPP rate with a fixed rate for a specified term. The major

advantage of a retail contract is that the rate does not change from year to year as happens with the RPP. As well, the significant size of a municipal customer generally means that the rate offered in a retail contract is actually less than that of a residential customer. That said, the cost of a retail contract is generally at a significant premium to any other method of electricity procurement.

Retailers are marketing organizations that will enter into wholesale transactions to fix their acquisition price for a block of power and then resell it to customers at the retail level for a profit. In addition to the profit motive, retailers bear the full market risk by guaranteeing a price which further adds to the premium charged. Customers that enter into a contract with a retailer generally do so if they perceive that the savings in the latter years of the contract will more than cover the shortfall in the beginning years. Current retail contract offers for residential customers are 9.2¢/kWh. Contrast this with spot market prices of 5.5¢/kWh and the RPP of 6.7¢/kWh and it is easy to see that retail supply may not be the best option for a large municipal customer.

Most retail contracts will not require the consumer to surrender its rebates as part of the fixed price agreement. However, consumers must be very aware of the contract language to ensure that the rights to the rebates are firmly spelled out. The reason for this is that the IESO will use the retailer relationship to transfer the rebate to the customer. Without firm contract language the customer may have no recourse with which to pursue its payment from the retailer.

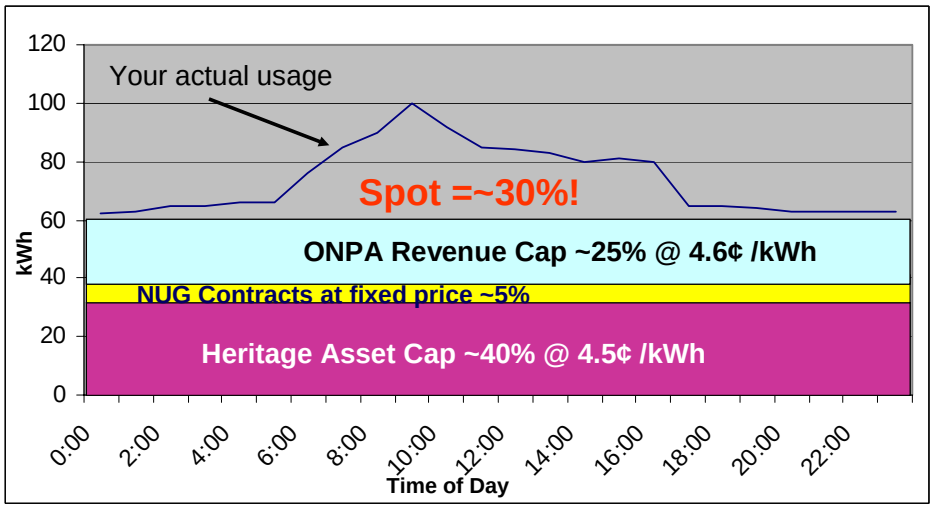
1.4 Forward Contracting

Advantages	Disadvantages
1. Ability to structure pricing terms to suit individual needs. 2. Ability to enter into several contracts with different parties, providing flexibility and diversity for portfolio management 3. Properly structured, this option can present a low fixed power cost and minimal exposure to the spot prices on the variance between actual use and the contracted quantity.	1. Complexity of contractual documents, strategy design, accounting treatments, and financial regulations. Professional support is recommended. 2. Uncertainty about forward prices will likely cause swap sellers to build a significant “price risk premium” into their offers. 3. Counterparty risks need to be mitigated through parental guarantees

A great advantage for customers that are not part of a fixed rate program is that they have the opportunity to hedge the portion of their electricity consumption that is exposed to the price volatility of the spot market with a contract for differences (CFD). A financial contract for differences, also called a financial “swap”, is a contract entered into between two parties for an exchange of financial cash flows. Electricity is still delivered to the customer by the local distribution utility and its bill is based on the SSS pricing methodology. A financial swap is an over-riding mechanism that substitutes a desirable pricing mechanism (such as a fixed price) for the default pricing mechanism which is variable.

1.4.1 Over Hedging

In the Ontario electricity market, the government has provided a series of price caps that serve to fix up to 70% of your electricity costs at a weighted average cost of $4.82-cents per kWh. These price caps are explained in greater detail in Section 2.4. The graphic below best illustrates this:



Adjusting for the fact that these proportions are subject to generator performance, Ontario electricity consumers only need to hedge 30 to 35% of their total electricity consumption. Hedging any proportion above this means that you are betting the spot market price will be above the contract price; which is generally not the case. Any portion of a contract that overlaps with the capped portion, results in the electricity customer passing on the value of the government capped rate to the supplier.

1.5 Buying Group Aggregation

Advantages	Disadvantages
1. Larger loads (10MW or greater) will attract a greater number of suppliers willing to offer supply. Competition and liquidity generally translates into better pricing.	1. Increased complexity of decision-making and authorizations. 2. Without proper management, Individual accounts will surrender benefits to the entire group.

Buying group aggregation is simply a means of gathering together a number of affiliated or unaffiliated buyers into one (or more) groups for the purpose of procuring electricity. Aggregation creates an opportunity to achieve better prices and lower costs by combining the loads of many accounts (buyers) to produce a total load that is more attractive to power sellers, and to achieve scale economies. Generally, a load is more appealing to sellers (and therefore will attract a better price offer) if it is large enough to produce a sizeable

revenue stream relative to the cost of administering the sale. The current threshold in Ontario's market is 10 Megawatts.

Potential buying group participants must be careful not to surrender the benefits of advantageous consumption patterns (i.e. streetlights) to the group. Experience in the electricity market has shown that the relative benefit of achieving the 10 MW threshold is less than the value surrendered as part of the group. A buying group that does not distinguish between the various consumption patterns (i.e. NSLS, interval, street light) will likely create value for some participants at the expense of the others rather than creating value for all.

2.0 Ontario Electricity Market Information

2.1 The Ontario Electricity Market

The electricity market in Ontario is loosely based on the principles of supply and demand that drive traditional commodity markets. The greatest influence on the electricity market is weather. Winter demand is driven by electrically heated homes and the extended need for lighting to compensate for shorter daylight hours. Summer demand is predominantly driven by air conditioning. Ontario experiences its maximum demands in the winter and summer months. Generators within Ontario bid their supply of electricity to meet these demands. The price at which generators are willing to supply electricity is largely determined by the cost of its underlying fuel cost. The spot market price for each hour is equal to the last bid that supplies the last MW demanded by electricity consumers.

2.2 Influence of Fuel Type

The bids from each generator are primarily influenced by the type of fuel used for generation. Ontario's electricity generation mix is very diverse and includes nuclear, hydraulic, coal, oil, natural gas, renewables (wind, biomass, solar and etc.) and imported generation. The proportion of overall capacity for each fuel type and the range of bids are listed in table 1[1]:

[1] IESO – Market Year Review – 2005, April 2006, page 7.

Table 1: Ontario Generation Mix and Bid Ranges

Generation Fuel	Total Proportion of Overall Installed Generation Capacity	Range of bids (cents per kWh)	Proportion of Time Generation Has Set Market Price
Nuclear	47%	0 to 2 cents	0%
Hydraulic	23%	3 to 5 cents	35%
Coal	17%	4 to 5 cents	49%
Oil/Natural Gas	7%	7+ cents	16%
Renewable	<1%	12+ cents	Charged as a fixed cost
Imports	6%	20+ cents	

Of these fuel types, coal generation has set the market spot price 49% of the time with an average price of 4.84¢ per kWh. The current Liberal government committed curb pollution and CO_2 emissions by closing its 5 coal-fuelled generation plants and replacing them with cleaner sources of generation such as natural gas and renewables by 2009. In early 2006 the reality of Ontario's electricity supply situation forced the Liberal government to keep these plants open in order to ensure an adequate amount of generation in Ontario. Unfortunately, OPG allowed its long-term contracts for coal to expire and thus the favourable pricing that was a function of coal generation no longer exists. Coal sold in short term contracts or purchased from the spot market has a significant premium attached to it and OPG cannot commit to a cheaper long-term contract because the government still insists that it will close these plants at the first opportunity. The effect on spot market prices is expected to be substantial. As evidenced in the table above, 49% of the market spot prices that cleared at an average of 4.84¢ per kWh will be replaced with more expensive coal or very expensive natural gas generation.

2.3 Influence of Weather

Four distinct patterns of electricity price behavior exist primarily due to the influence of weather. The "heating" months include December, January, February and March and are characterized both by high day and evening electricity prices as heating loads compete with electricity generation for a finite amount of natural gas. Shorter daylight hours and cooler evenings have an inflationary effect on prices across the entire 24 hour period.

The lowest average electricity prices generally occur in April, May and June. These months are considered "shoulder" months because temperate weather conditions do not require heating or cooling to maintain comfort. Both day and evening prices are generally low and have little volatility around the mean price.

The "cooling" season in Ontario is the period when electricity demand and prices are at their maximums. July and August (and sometimes September) daytime air-conditioning loads generally push demand for electricity beyond the ability of Ontario's internal generation capacity. Excess demand is only met with the import of a

large amount of electricity from neighboring jurisdictions and at a significant premium of price. In the cooling season generators will bid opportunistically in order to take advantage of the demand for a highly valued but limited commodity. Nighttime prices for electricity generally fall significantly as compared to the daytime due to the longer daylight hours and reduced demand for cooling.

The months from September through to November were traditionally included in the "shoulder" month category with April, May and June but this is expected to change after hurricanes Katrina and Rita in 2005. These two events served to highlight the vulnerability that exists in North America with the lack of surplus natural gas production. This in turn drives up the price of electricity that is generated by natural gas. Although there is no guarantee of another event like category five hurricanes, the mere threat of such an occurrence throughout the hurricane season will be enough to inflate the price of natural gas based on pure speculation. This period of time will be characterized by moderate average prices with high volatility around the mean price. Once a threat of hurricanes becomes apparent the average price should climb substantially as speculative natural gas purchasers will drive up the price of natural gas for the remainder of the year. By the beginning of December the hurricane threat will have abated and prices for natural gas, and therefore electricity, are expected to follow their historic patterns for the heating season. Price risk for electricity consumers during this period will be very high even if actual prices are not.

2.4 Price Caps

To offset the wild price swings that are common in other markets where demand sometimes exceeds supply, the government has committed to using its ownership of Ontario Power Generation (OPG) to provide rebates to electricity customers. Two such rebates exist in Ontario's electricity market and operate by capping the revenue that each generator can earn per MWh. The difference between the capped rate and the actual spot price is returned to Ontario electricity consumers for their volume of electricity consumed. Similarly, the difference between a low spot price and the capped rate is charged to the customer on the same basis.

The first rebate group consists of OPG's nuclear and large water generation stations and is entitled to earn $45 per MWh. The remaining OPG assets, with the exclusion of specific generators, are entitled to earn $46 per MWh. The former group is referred to as Heritage Assets; the latter are OPG Non-Prescribed Assets (ONPA). A third group of generators are called the Non-Utility Generators (NUG's) and contractually earn approximately $80 per MWh. The Global Adjustment (also called Provincial Benefit) that is debited/credited on each electricity bill from the Independent Electricity Systems Operator (IESO) is based on the generation and rate caps of the Heritage Asset and NUG groups. Combined, the output proportion of these generator groups is expected to equate to approximately 70% of all the electricity consumed in Ontario. Intuitively, Ontario electricity consumers should be purchasing 70% of the electricity that they consume at a weighted

fixed price of $48.21 per MWh[2]. This means that spot market customers have a built in hedge for 70% of their electricity consumption.

2.5 Forward Electricity Markets

Forward contracts offer electricity consumers the opportunity to reduce their price risk by locking some or all of their consumption in at a fixed price with a supplier. The fixed price that is offered by the supplier is greatly influenced by expectations of future electricity prices and the underlying fuel cost to generate; which is predominantly natural gas. By timing the purchase of forward contracts when the price of natural gas and electricity are at their minimums, consumers can generally achieve the most attractive forward contract price.

Historically, natural gas prices are at their minimum levels in April, May and June of any given year where storage levels after the heating season are at or above their normal five-year levels. This coincides with the lower electricity prices that occur in these same "shoulder" months. In the last quarter of 2005, speculative natural gas purchases after hurricanes Katrina and Rita drove prices up significantly in anticipation of a supply shortage during the heating season. The winter of 2006 proved warmer than expected, and as a result, natural gas demand was well below expectations. By the end of February 2006 natural gas storage levels were in excess of the five-year maximum. In mid-March 2006 traders began selling natural gas at a significant discount in order to correct their long positions. This correction, combined with relatively low spot market electricity prices has provided an opportunity for customers in the current shoulder period to enter into forward electricity contracts at an attractive price. The current situation in the forward contract market is not expected to last beyond the middle of June as temperatures in Ontario start to rise and air conditioning loads become a factor. Beyond this point the spot market price and forward contracts are expected to climb steadily and not fall until the end of the hurricane season.

Forward contract prices will include some amount of premium to cover the supplier's risk. The risk to suppliers will vary depending on the underlying expectation of spot market prices and market liquidity. Longer contract terms have higher risk because there is a greater opportunity for the spot market to exceed the overall value at the contract price. As the spot market price increases relative to the contract price, the cost to suppliers is the opportunity to sell the same contract at a higher price in the future. In a liquid market suppliers are able to hedge their own risk with other suppliers but Ontario's market lacks this vital liquidity. The premiums on fixed contracts in Ontario will be greater than other jurisdictions in order to adequately reflect the fact that the supplier is bearing all of the risks itself. For this reason, longer term contracts in Ontario will have a higher premium attached to it than would be the case for shorter term contracts or contracts in other jurisdictions.

[2] Heritage Assets = 40% @ $45/MWh, NUG's = 5% @ $80/MWh, ONPA = 25% @ $46/MWh

3.0 Risk Summary

3.1 Price and Volume Risk – Total electricity cost is a function of the amount of electricity consumed times its price. At the beginning of any year, electricity consumers try to budget their total electricity costs by estimating these two items; how much they will use and what will the price be. Price risk is the resulting cost when prices exceed those expected. Volume risk is the resulting cost when you use more electricity than you expected.

3.2 Rebate Asset Performance Risk - Because the rebate is specifically linked to the assets' ability to generate electricity, the actual proportion of coverage won't always be the expected 70% due to maintenance and unplanned outages. Risk to Ontario electricity consumers is that shortfall of production from the assets that produce a rebate will be replaced by more expensive forms of generation that don't produce a rebate. A good risk management will mitigate this risk.

3.3 Counter-Party Risk – In any contractual relationship each party faces the risk that the other party will not or cannot live up to its obligations. If one party suffers a business failure then there can be little recourse for the other party. Of the parties to a contract, the entity with the best credit rating is generally the one the faces the greatest counter-party risk. In this scenario, the municipalities will have the better credit rating and thus the greatest counter-party risk. To mitigate this, contracts must include parental guarantees to the municipality for the supplier such that the municipality has an avenue with which to make a claim for damages in the even that its counter-party suffers a business failure.

4.0 Stochastic Modeling

4.1 Pricing Assumptions and the Probabilistic Nature of Prices

Electricity prices in Ontario are best characterized as mean-reverting. From hour-to-hour electricity prices may be highly volatile with large swings above and below the average price. However, these price swings generally revert back to the mean price as demand and supply react quickly to the opportunity that is created to earn or avoid extra-ordinary profits or costs.

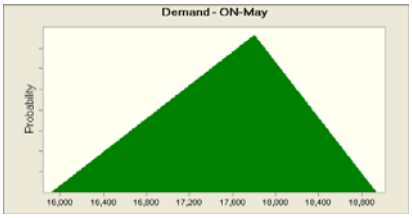
Typical market models will utilize the mean price in their analysis and provide a single-line price forecast. Others may go one step further and adopt a "high scenario/low scenario" that attempts to capture the upper and lower boundary of expected electricity costs. Both of these are deterministic models and ignore or understate the price and rebate performance risk that customers face in the Ontario electricity market. In contrast, WattsWorth employs the use of probability distributions, or stochastic modeling, which captures not only the likely cost scenarios but also the potential behavior of total cost and the probability of their occurrence. Experience in the Ontario market has shown that prices can be volatile and can move over a wide range in response to market forces. The interaction of these market forces (underlying fuel cost, rebate

asset performance, Ontario demand and etc.) is the most important factor in quantifying an electricity customer's risk; and the most difficult to predict. Hence, a single line forecast or even a high case/low case methodology would understate the high degree of uncertainty that is contained in any cost projection. This uncertainty is a major source of risk for power buyers, especially budget-constrained buyers. Our methodology is designed to reasonably reflect the risk created by this uncertainty.

Possible prices, rebates, and consumption results are described using triangular probability distributions. Triangular distributions are well suited to situations where events are known to be probabilistic, but only a qualitative definition of the probability distribution is possible or there is a limited amount of data upon which to base potential outcomes. The objective of choosing this method is *a)* to give customers a reasonable indication of where the commodity costs may go, and *b)* to show some plausible price variability effects and set the scene for risk mitigation strategies. An example of a triangular distribution is shown in Figure 2 and defined by stating the 10th, likeliest and 90th percentiles of price distributions. Each potential outcome will be based upon the range of outcomes defined by the interaction of the variables defined by the distributions.

Figure 2 - Triangular Distribution with Parameters

10%-ile	16,669
Likeliest	17,603
90%-ile	18,352



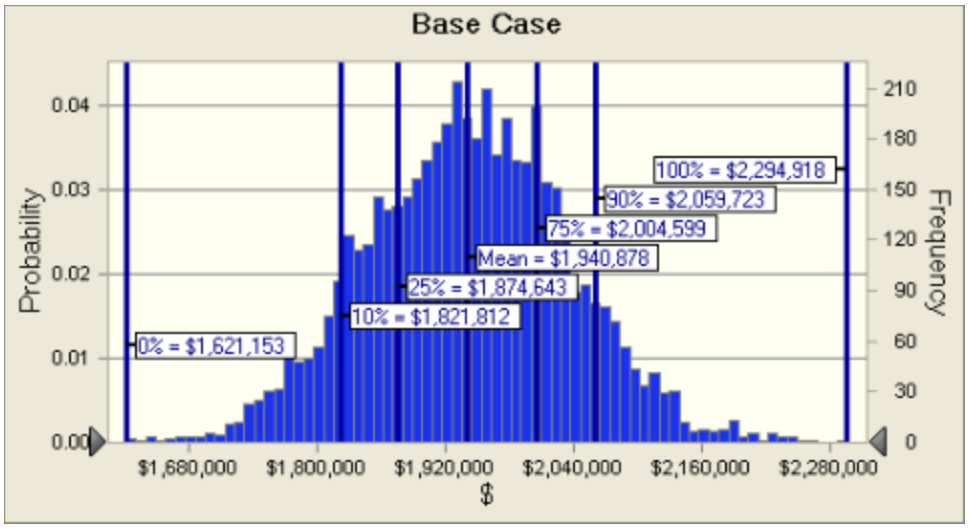
The focus of stochastic (probabilistic) modeling is to capture the behavior of the underlying data, which as noted, includes not only the probable but also the possible outcomes. Utilizing the model's output provides decision-makers insight into the range of possible and probable outcomes, and helps them focus on the need for a robust risk management strategy.

4.2 Monte Carlo Simulation

Using these distributions, a Monte Carlo model was applied in which five-thousand simulations were done for each month to estimate the range of expected power costs in the forward market. For each trial of the Monte Carlo simulation, the model generates a power price for each hour in the period (on-peak, off-peak and weekends/holidays for each month) and multiplies that by Smurfit's expected consumption in the period based on the load profile analysis. The cost of electricity is then netted with the rebates for the same period to achieve a net cost for electricity. The sum of these calculations for all periods represents one possible outcome for a customer's annual power cost. The model then generates another cost for each period, with the prices generated in conformance with the specified triangular probability distributions for price, and again sums the annual cost. This process repeats 5000 times, generating 5000 potential annual power cost outcomes that array themselves in a probability distribution of the facility's annual power cost.

The results from all 5000 simulations are shown graphically with percentiles that are useful for assessing cost risk. An example of this is shown in Figure 3 below:

Figure 3: Example of a Distribution of Potential Outcomes



4.3 Interpreting Results

The resulting distribution provided by the Monte-Carlo simulations provides a number of insights that will be used to determine the best strategy option to pursue. The statistics are as follows:

- **Average Cost** – Expected electricity cost
- **5% Delimiter** – There is a 5% cumulative probability that the net outcome for the municipality will be at or below this amount.
- **95% Delimiter** – There is a 95% cumulative probability that the net outcome for the municipality will be at or below this amount.

The Average price describes the net cost if market and consumption conditions for the coming year follow the "most likely" scenarios. Experience in the Ontario electricity market has proven that history is not the best indicator of future performance. The changing influence of market conditions and the evolution of this newly "opened" market generally results in outcomes that diverge from those that are expected. Given that risk is inherent in any commodity market, there is a 95% cumulative probability that the final outcome will be less than the 95% delimiter.