



# Town of Ingersoll

June 14, 2010

*The Power of Purchasing*



**W**attsWorth  
the energy analysis people

# Who is WattsWorth

# WattsWorth

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**WattsWorth Analysis is a professional services company that helps large energy users in Ontario understand the electricity market and manage financial risk**

# WattsWorth's Family Tree

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Municipal ownership



# WattsWorth Municipal Customers

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Manage over \$100-million in electricity procurement for:

- Region of Durham
- Region of Halton
- Region of York
- City of Burlington
- City of Cambridge
- City of Guelph
- City of London
- City of Mississauga
- City of Oshawa
- City of St Thomas
- City of Thorold
- City of Windsor
- City of Woodstock
- Mun. of Central Elgin
- Mun. of Port Hope
- Mun. of W. Perth
- County of Elgin
- Town of Aylmer
- Town of Ajax
- Town of Halton Hills
- Town of Ingersoll
- Town of Markham
- Town of Richmond Hill
- Township of Tillsonburg
- Township of Wilmot

**2009 savings = \$8-million (~11% vs RPP)**

**Town of Ingersoll**

**2009 Procurement  
Summary**

# 2009 Summary

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- Town's cost of electricity increased by \$6,000 from 2008 to 2009
- Town avoided a \$23,000 cost that it would have incurred had it remained in the RPP
- Expected unit cost of electricity was \$57.50 per MWh
- Actual unit cost of electricity was \$58.14 per MWh

## The Reason:

- a 454% increase in the Provincial Benefit charges!!!

2008 Average = \$5.31 /MWh

2009 Average = \$29.32 /MWh

# 2009 Financial Summary

Date	kWh	Strategy Cost	RPP Base Cost	Difference	
				\$	%
Jan-09	451,790	\$ 29,013	\$ 29,260	\$ (247)	-0.8%
Feb-09	392,819	\$ 20,284	\$ 25,421	\$ (5,137)	-20.2%
Mar-09	391,482	\$ 14,884	\$ 25,328	\$ (10,444)	-41.2%
Apr-09	309,118	\$ 14,295	\$ 19,985	\$ (5,689)	-28.5%
May-09	276,410	\$ 18,404	\$ 18,132	\$ 272	1.5%
Jun-09	286,557	\$ 14,583	\$ 18,803	\$ (4,220)	-22.4%
Jul-09	278,888	\$ 15,378	\$ 18,305	\$ (2,927)	-16.0%
Aug-09	296,231	\$ 20,583	\$ 19,435	\$ 1,148	5.9%
Sep-09	349,155	\$ 19,086	\$ 22,936	\$ (3,850)	-16.8%
Oct-09	371,309	\$ 26,272	\$ 24,394	\$ 1,878	7.7%
Nov-09	380,266	\$ 22,949	\$ 25,362	\$ (2,413)	-9.5%
Dec-09	418,496	\$ 31,131	\$ 27,918	\$ 3,213	11.5%
<b>Total 2009</b>	<b>4,202,521</b>	<b>246,862</b>	<b>275,279</b>	<b>(28,417)</b>	<b>-10.3%</b>

# 2009 Evaluation

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**Of the Strategy options available for 2009, the current one has proven to be optimal for the City**

# Electricity Market Outlook - 2010

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## Nominal Electricity Cost

- **Price that generators get paid for electricity**
- **At an all-time historical low due to:**
  - **Significant fall in electricity demand**
  - **Large surplus of generation**
  - **Very low input fuel prices especially natural gas**
  - **Market rules that distort the price generators need to bid in order to be profitable**

# Electricity Market Outlook - 2010

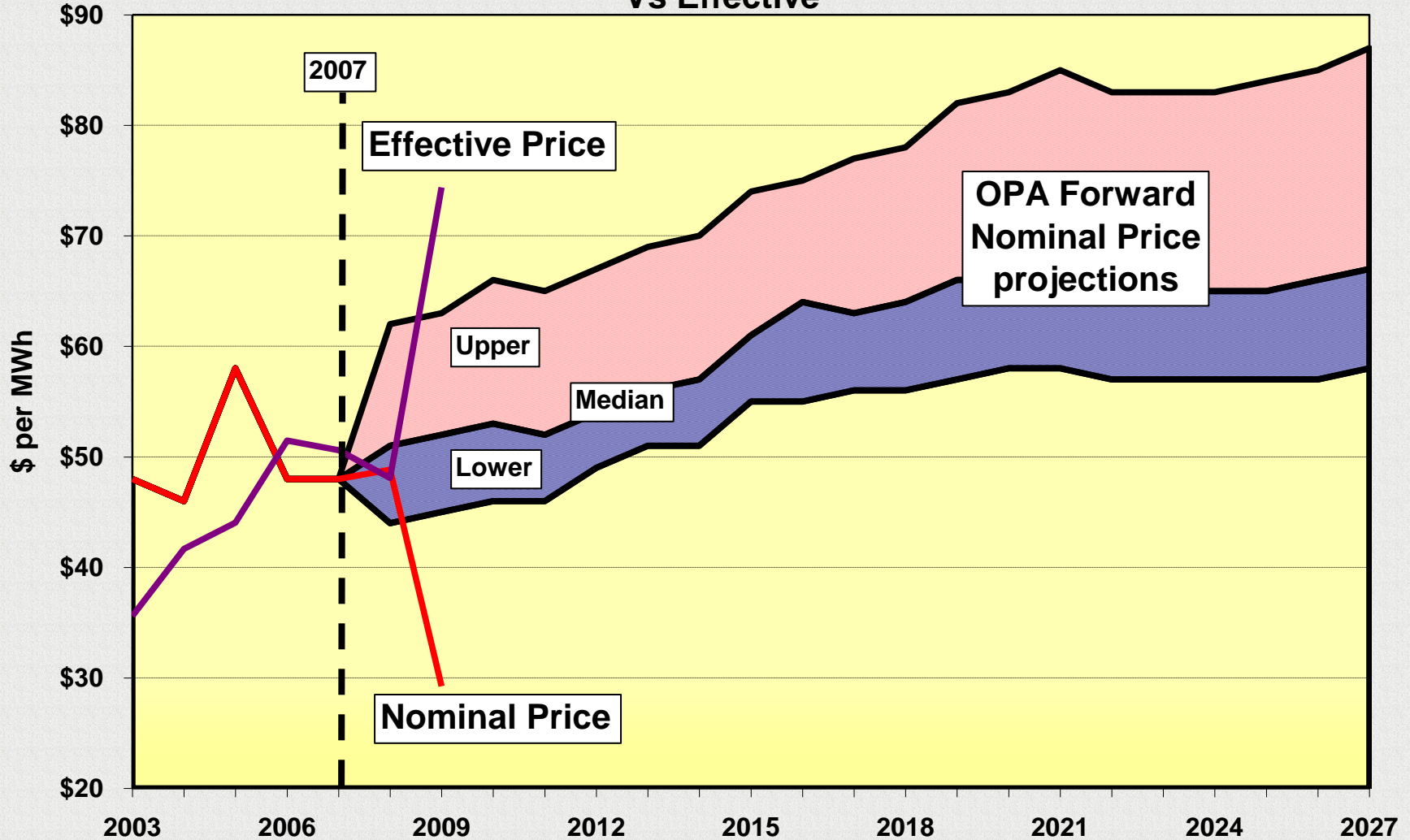
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## Effective Electricity Cost

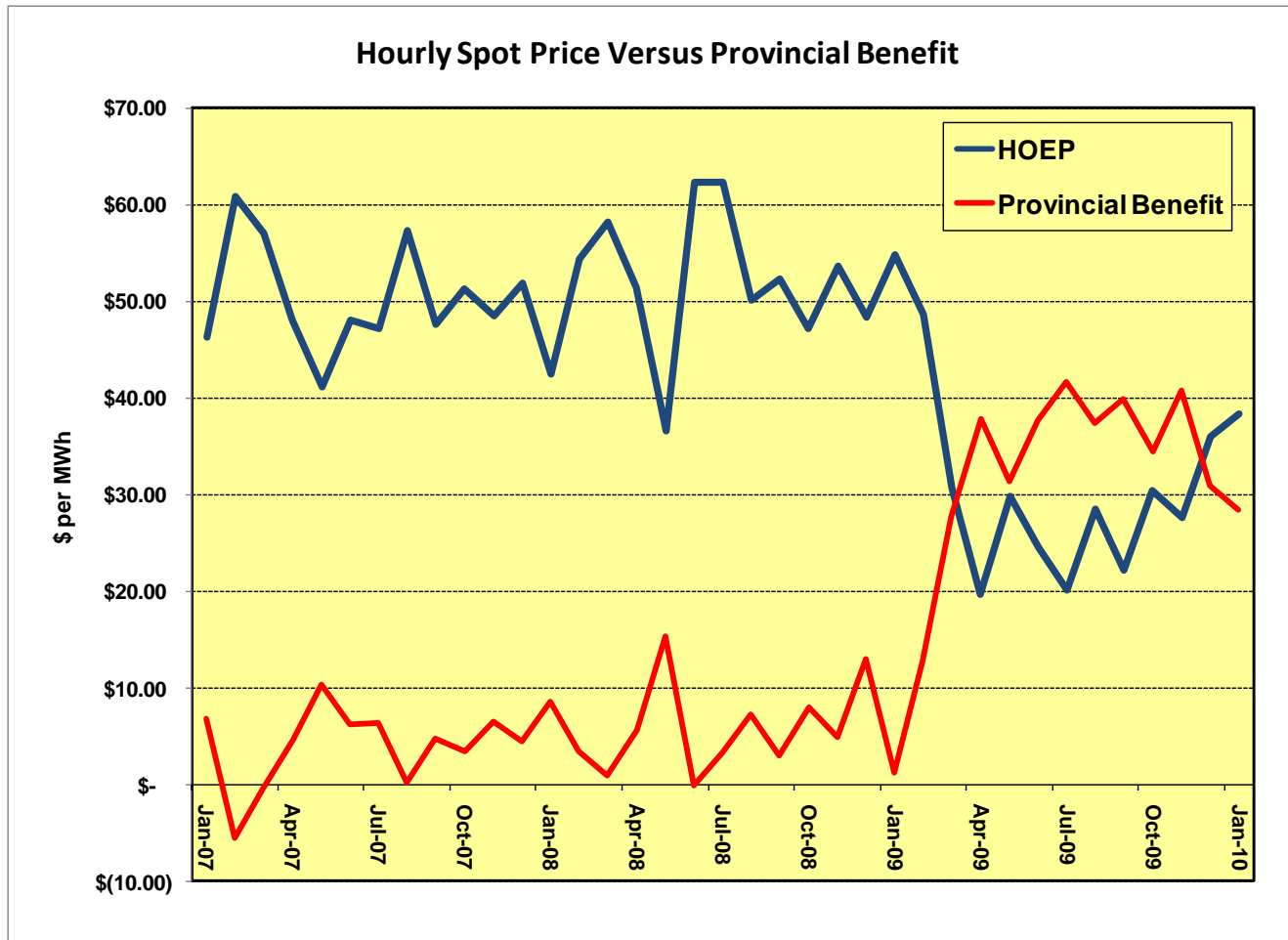
- Price that consumers are charged for electricity
- Difference between the effective and nominal price is the Provincial Benefit which represents the additional cost of:
  - Revenue guarantees for OPG's largest generators (~50% of the market) and new generation
  - Payments for Demand Response
  - Feed-in tariff payments for wind, solar, and bio-mass generation

# Comparison of Electricity Cost

Forward Estimates of Nominal Electricity Prices Vs Actual Vs Effective



# Impact of the Provincial Benefit



**The absolute cost remains the same but the number of kWh it is spread over has drastically fallen**

# Risk Analysis

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- **Upside Risk is very low due to economy**
  - Risk that market price will climb steeply and stay there
- **Downside Risk is very great**
  - Probability that a hedging strategy will result in more risk rather and not less risk

**Hedging is employed to manage Upside Risk not Downside Risk. If Downside risk is greatest then the spot market is the best option**

# Time Of Use Pricing

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- **Erie Thames Hydro has stated that all smart meters will be installed by the end of 2010 as required by legislation**
- **No date has been set for the use of the Time-Of-Use program for invoicing electricity consumers in their distribution territory**

**Town of Ingersoll**

# **Procurement Options**

# Procurement Options

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- **Regulated Price Protection (RPP) Plan**
- **Time of Use (TOU) when available**
- **Spot Market (with or without hedging)**
- **Retail Contract**

# Town of Ingersoll

# Strategy

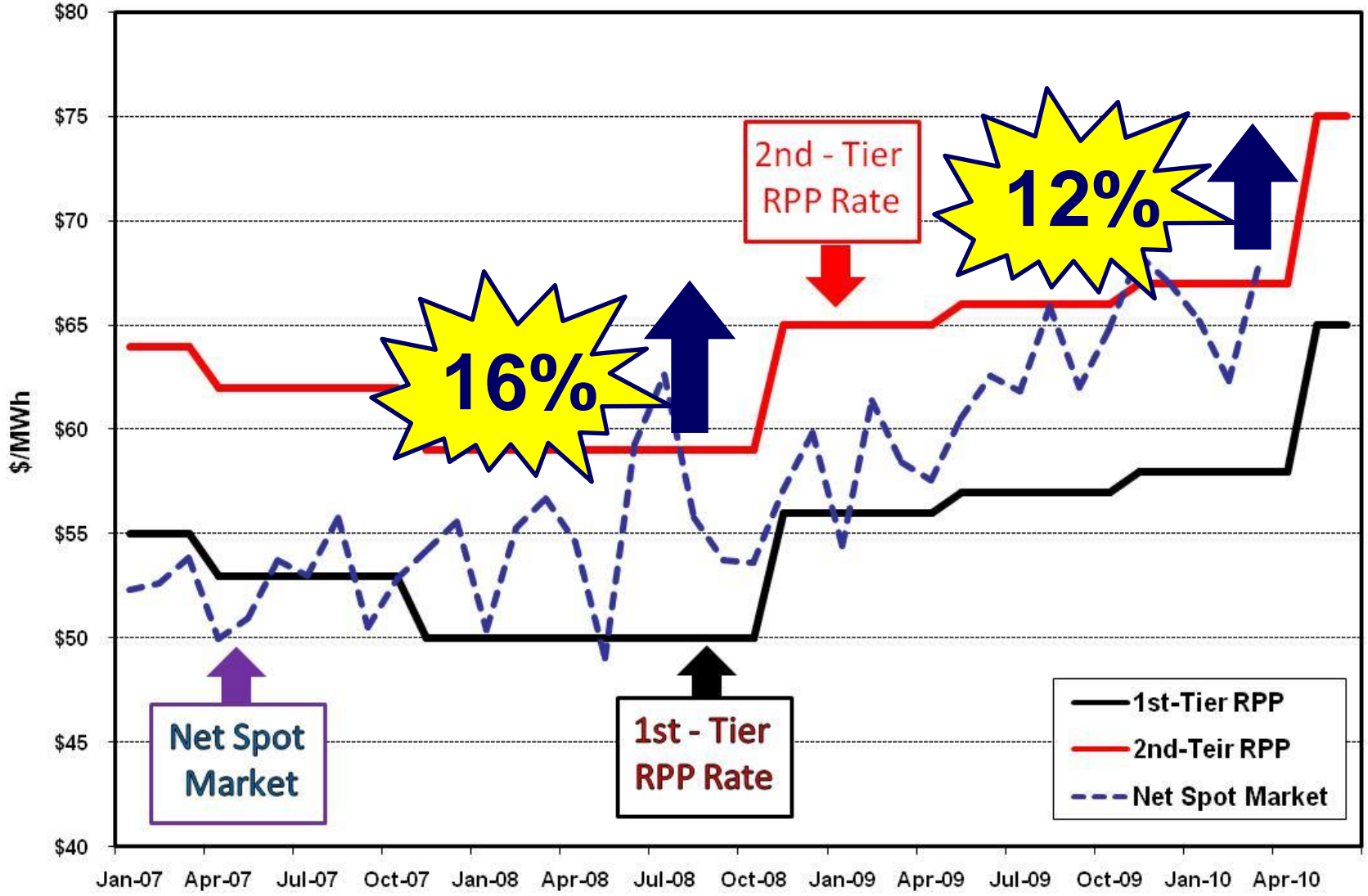
# Base Case

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- **In 2009 WattsWorth recommended that the Town purchase a similar quantity of forward electricity for the term May 1, 2010 to April 30, 2011**
- **The market for electricity in Ontario has not changed much since 2009 and yet the proposed hedge has proven to be optimal**
- **Recommend not purchasing any more electricity until market changes**

# RPP – 2007 to 2010

Comparison RPP Tiered Rates to Net Spot Market



# Time of Use (TOU)

## Smart Meter Time-of-Use Periods

Off-Peak

Mid-Peak

On-Peak

### Summer-Weekdays

May 1<sup>st</sup> to October 31<sup>st</sup>



### Winter-Weekdays

November 1<sup>st</sup> to April 30<sup>th</sup>



### Weekends & Holidays



Off-Peak = 4.2¢/kWh

Mid-Peak = 7.6¢/kWh

On-Peak = 9.1¢/kWh

**Town of Ingersoll**

# **Strategy Results**

**Small Non-Interval**

# Small Non-Interval Accounts

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- **Largest number of accounts – 39**
- **Smallest consumption (~6% of all kWh)**

## Leave in RPP

- **Pay predominantly the first-tier rate (\$65 / MWh)**
- **No risk**
- **Subsidized by other large accounts in the RPP pool**

**Town of Ingersoll**

# **Strategy Results**

**Large Non-Interval**

# Large Non-Interval Accounts

## Non-Interval accounts > 16,000 kWh

Cumulative Probability of Expected Financial Outcomes

Procurement Option	Per kWh Unit Cost					Per kWh Unit Cost				
	Min	5%	Avg	95%	Max	Min	5%	Avg	95%	Max
	(\$/MWh)					Total Commodity \$				
Hedge "A"										
Hedge "B"	\$ 55.41	\$ 60.30	\$ 67.59	\$ 70.92	\$ 72.64	\$ 39,662	\$ 45,050	\$ 52,876	\$ 60,474	\$ 63,081
Hedge "C"										
Hedge "D"										
Base	\$ 52.15	\$ 57.04	\$ 67.21	\$ 71.83	\$ 73.54	\$ 34,272	\$ 39,269	\$ 52,579	\$ 63,102	\$ 65,759
RPP 2010	\$ 73.56	\$ 73.59	\$ 73.62	\$ 73.63	\$ 73.64	\$ 51,213	\$ 53,539	\$ 57,592	\$ 62,784	\$ 63,946
Actual 2009			\$ 61.93					\$ 47,340		

## Stay with Base Option

**Town of Ingersoll**

# **Strategy Results**

## **Interval Accounts**

# Interval Accounts

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**Interval Accounts are unique because their weighted average price is based specifically on their consumption profile**

- **Accounts that use most of their consumption during the day are “peaking” and are at a greater risk if market prices become volatile**
- **Accounts that use an equal amount of energy during the day and evening are “non-peaking” and have a built in natural hedge**

# Interval Accounts

## Ratio of On-Peak Consumption to Off-Peak

Account #	Description	Off Peak	On Peak					Account Pool
			Winter	Spring	Summer	Fall	Annual	
00100549-00	Library	1:	1.710	1.967	2.133	1.795	1.922	Peaking
00161052-00	Youth Centre	1:	1.783	1.768	2.038	1.954	1.871	Peaking
00100499-04	Pool	1:	1.499	1.536	1.662	1.502	1.547	Peaking
00100580-03	Arena	1:	1.430	1.471	1.512	1.401	1.437	LSC
00100606-01	Public Works	1:	1.520	1.474	1.437	1.504	1.484	Non-Peaking

# Peaking Interval Accounts

Cumulative Probability of Expected Financial Outcomes

Procurement Option	Per kWh Unit Cost					Per kWh Unit Cost				
	Min	5%	Avg	95%	Max	Min	5%	Avg	95%	Max
	(\$/MWh)					Total Commodity \$				
Hedge "A"										
Hedge "B"	\$ 56.70	\$ 61.35	\$ 68.51	\$ 71.54	\$ 73.37	\$ 70,618	\$ 79,747	\$ 93,251	\$ 106,149	\$ 110,860
Hedge "C"	\$ 54.59	\$ 60.24	\$ 68.22	\$ 72.10	\$ 73.92	\$ 66,873	\$ 76,263	\$ 92,855	\$ 107,958	\$ 112,696
Hedge "D"										
Base	\$ 53.36	\$ 58.00	\$ 68.07	\$ 72.41	\$ 74.23	\$ 61,008	\$ 69,474	\$ 92,657	\$ 110,688	\$ 115,486
RPP 2010	\$ 74.74	\$ 74.77	\$ 74.80	\$ 74.81	\$ 74.82	\$ 90,542	\$ 94,654	\$ 101,819	\$ 110,997	\$ 113,052
Actual 2009			\$ 61.70					\$ 81,881		

- Remain with Base Option

# Non-Peaking Interval Accounts

Cumulative Probability of Expected Financial Outcomes

Procurement Option	Per kWh Unit Cost					Per kWh Unit Cost				
	Min	5%	Avg	95%	Max	Min	5%	Avg	95%	Max
	(\$/MWh)					Total Commodity \$				
Hedge "A"										
Hedge "B"										
Hedge "C"	\$ 50.70	\$ 56.04	\$ 63.38	\$ 67.35	\$ 68.66	\$ 33,534	\$ 38,306	\$ 46,584	\$ 54,447	\$ 56,517
Hedge "D"	\$ 49.85	\$ 54.85	\$ 63.25	\$ 67.56	\$ 68.87	\$ 32,608	\$ 37,091	\$ 46,485	\$ 55,114	\$ 57,194
Base	\$ 49.13	\$ 53.50	\$ 62.71	\$ 67.06	\$ 68.35	\$ 30,332	\$ 34,601	\$ 46,089	\$ 55,347	\$ 57,423
RPP 2010	\$ 74.94	\$ 74.97	\$ 75.00	\$ 75.01	\$ 75.02	\$ 49,018	\$ 51,244	\$ 55,123	\$ 60,092	\$ 61,204
Actual 2009			\$ 58.89					\$ 42,299		

- Utilize the Spot market owing to the self-hedging nature of these account's consumption patterns

# Street Light Account

## Cumulative Probability of Expected Financial Outcomes

Procurement Option	Per kWh Unit Cost					Per kWh Unit Cost				
	Min	5%	Avg	95%	Max	Min	5%	Avg	95%	Max
	(\$/MWh)					Total Commodity \$				
Base	\$ 42.76	\$ 46.66	\$ 54.72	\$ 58.03	\$ 59.74	\$ 51,265	\$ 58,598	\$ 78,090	\$ 93,011	\$ 97,453
RPP 2010	\$ 74.87	\$ 74.91	\$ 74.94	\$ 74.95	\$ 74.96	\$ 95,105	\$ 99,423	\$ 106,949	\$ 116,590	\$ 118,748
Actual 2009			\$ 54.09					\$ 75,342		

- Utilize the Spot market owing to the self-hedging nature of these account's consumption patterns

**Town of Ingersoll**

# **Strategy Results**

# Recommended Strategy

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- **Small NSLS (<16,000 kWh)**
  - Leave in RPP
  - Pay 1<sup>st</sup>-tier rate which is stable and better than spot
- **Large NSLS (>16,000 kWh)**
  - Utilize 2010 contract purchased in 2009
- **Interval Peaking**
  - Utilize 2010 contract purchased in 2009
- **Interval Non-Peaking**
  - Utilize 2010 contract purchased in 2009
- **Street Lights**
  - Move onto the spot market

# Town of Ingersoll

## Table of Expected Financial Outcomes and their Cumulative Probability of Occurrence

Procurement Option	Per kWh Unit Cost					Per kWh Unit Cost				
	Min	5%	Avg	95%	Max	Min	5%	Avg	95%	Max
	(\$/MWh)					Total Commodity \$				
Hedge "A"										
Hedge "B"	\$ 50.82	\$ 55.38	\$ 62.89	\$ 66.24	\$ 67.92	\$ 195,079	\$ 221,701	\$ 270,801	\$ 314,081	\$ 327,911
Hedge "C"	\$ 49.56	\$ 54.44	\$ 62.73	\$ 66.58	\$ 68.25	\$ 185,944	\$ 212,435	\$ 270,108	\$ 318,517	\$ 332,425
Hedge "D"	\$ 49.03	\$ 53.53	\$ 62.66	\$ 66.71	\$ 68.39	\$ 179,152	\$ 204,432	\$ 269,811	\$ 321,915	\$ 335,892
Base	\$ 48.90	\$ 53.30	\$ 62.57	\$ 66.62	\$ 68.30	\$ 176,876	\$ 201,942	\$ 269,416	\$ 322,147	\$ 336,121
RPP 2010	\$ 74.60	\$ 74.64	\$ 74.67	\$ 74.68	\$ 74.69	\$ 285,879	\$ 298,859	\$ 321,483	\$ 350,464	\$ 356,951
Actual 2009			\$ 58.74					\$ 246,862		

**2009 Actual Rate: \$58.74 /MWh**

**2010 Base Rate: \$62.57 /MWh**

**2010 RPP Rate: \$74.67 /MWh**



# Questions?

*The Power of Purchasing Program*



**W**attsWorth  
the energy analysis people