

Time-of-Use Rates

Stakeholder Conference

August 15, 2012

Rate Design Objectives

- Mitigate the Impact of Low Domestic Industrial Rates
 - Low energy rates attract energy-intensive load to Manitoba
 - On-peak load growth reduces energy available for export
 - Lower domestic rate decreases general utility revenues
- Ability to Secure High-Value Firm Export Contracts
 - Uncertainty regarding potential industrial load growth
 - Large incremental growth in on-peak period has strong influence
 - Lack of a market representative price signal to customers
- Address PUB Directives
 - Board Order 112/09 on Energy Intensive Industrial Rates
 - Evaluation of alternative proposals and rate designs
 - Promote conservation through rate design options

Time-of-Use Rate Design

- **Broad-Based Applicability Across Rate Class**
 - All load growth contributes to loss of profitable export revenue
- **Revenue Neutral across each Rate Class**
 - Maintains economic advantage of favorable Manitoba rates
- **Provides Equity for all Accounts within Rate Class**
 - Expanding loads and New-to-Manitoba loads treated similarly
 - Eliminates discriminatory aspect of formula-based rates
- **Time-of-Use Price Signal Related to Market Price**
 - Reflects value to Manitoba Hydro in the on-peak period
- **Removes Impediments for Load Shifting to Off-Peak**
 - Reduces demand charges for peak demand billings
 - Eliminates off-peak demand charge (capped by contract)

Time-of-Use Rate Design

- Eliminates Difficulty of Baseline Determination
 - Problem with two-tier rate design for industrial loads
 - Challenge when applied to new and/or expanding loads
- Communicates Value of Energy in the On-Peak Period
 - Discourages excessive energy consumption in peak periods
 - Greater incentive for conservation activities
 - Supports economics for renewable energy initiatives
 - Provides degree of on-peak export revenue protection
- Addresses Issues of Capacity Constraints in Delivery
 - Minimum billing demands related to contract capacity
- Commonly Applied Rate Structure in Other Jurisdictions
 - Multi-national customers operating across North America
 - Mitigates against on-peak load shifting into Manitoba

Time-of-Use Definition

- Corresponds with MISO Market On/Off Peak Periods
- Relates to Seasonal Periods of Energy Constraint
- Daily On-Peak Period
 - Monday to Friday - 6:00 AM to 10:00 PM
 - Excluding statutory holidays
- Daily Off-Peak Period
 - Monday to Friday - 10:00 PM to 6:00 AM
 - 24 hours – weekends and statutory holidays
- Seasonal Aspect
 - Winter Period (Dec to Mar)
 - Summer Period (Apr to Nov)

Indicative Time-of-Use Rate

	Time-of-Use	Current Structure
➤ General Service Large (> 100 kV)		
• Winter On-Peak Energy per kW.h	\$0.0519	\$.0298
• Summer On-Peak Energy per kWh	\$0.0419	\$.0298
• Off-Peak Energy per kWh	\$0.0255	\$.0298
• On-Peak Demand per kVA	\$2.70	\$5.40
➤ General Service Large (30 – 100 kV)		
• Winter On-Peak Energy per kWh	\$0.0550	\$.0312
• Summer On-Peak Energy per kWh	\$0.0450	\$.0312
• Off-Peak Energy per kWh	\$0.0285	\$.0312
• On-Peak Demand per kVA	\$3.03	\$6.06

MISO On/Off Peak Behaviour

GSL >100 kV Domestic Load Profile applied to Hourly Day-Ahead Market Pricing (CDN\$)

Fiscal	Average (\$/kWh)	On-Peak (\$/kWh)	Off-Peak (\$/kWh)	Ratio (On/Off)
2006/07	\$ 0.0541	\$ 0.0720	\$ 0.0393	1.83
2007/08	\$ 0.0490	\$ 0.0663	\$ 0.0349	1.90
2008/09	\$ 0.0409	\$ 0.0564	\$ 0.0279	2.02
2009/10	\$ 0.0256	\$ 0.0330	\$ 0.0195	1.69
2010/11	\$ 0.0257	\$ 0.0324	\$ 0.0202	1.60
2011/12	\$ 0.0220	\$ 0.0278	\$ 0.0174	1.60
Proposed Industrial Time-of-Use Rate (CDN\$)				
Energy Only	\$ 0.0345	\$ 0.0454	\$ 0.0255	1.78
Demand & Energy	\$ 0.0395	\$ 0.0560	\$ 0.0255	2.19

Note: Hourly Day-Ahead MISO Market Pricing Does Not Include Transmission Charges

MISO Seasonal Behaviour

GSL >100 kV Domestic Load Profile applied to Hourly Day-Ahead Market Pricing (CDN\$)

Fiscal	Average (\$/kWh)	Winter (\$/kWh)	Summer (\$/kWh)	Ratio (Win/Sum)
2006/07	\$ 0.0541	\$ 0.0658	\$ 0.0477	1.38
2007/08	\$ 0.0490	\$ 0.0575	\$ 0.0444	1.30
2008/09	\$ 0.0409	\$ 0.0427	\$ 0.0400	1.07
2009/10	\$ 0.0256	\$ 0.0345	\$ 0.0211	1.64
2010/11	\$ 0.0257	\$ 0.0268	\$ 0.0250	1.07
2011/12	\$ 0.0220	\$ 0.0216	\$ 0.0223	0.97
Proposed Industrial Time-of-Use Rate (CDN\$)				
Energy Only	\$ 0.0345	\$ 0.0375	\$ 0.0329	1.14
Demand / Energy	\$ 0.0395	\$ 0.0420	\$ 0.0378	1.11

Note: Hourly Day-Ahead MISO Market Pricing Does Not Include Transmission Charges

MISO On-Peak Behaviour

GSL >100 kV Domestic Load Profile applied to Hourly Day-Ahead Market Pricing (CDN\$)

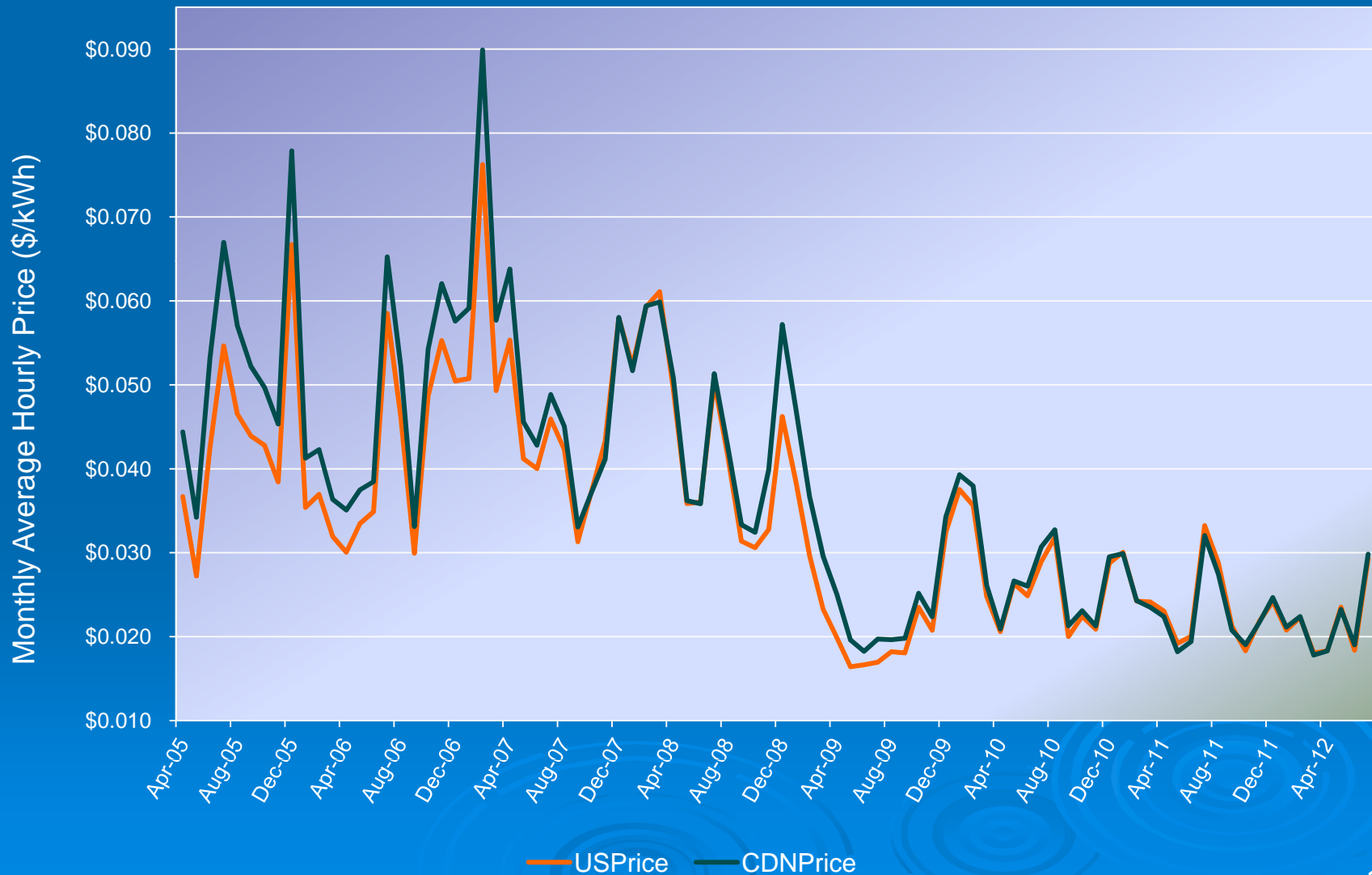
Fiscal	Average (\$/kWh)	Winter (\$/kWh)	Summer (\$/kWh)	Ratio (Win/Sum)
2006/07	\$ 0.0720	\$ 0.0834	\$ 0.0658	1.27
2007/08	\$ 0.0663	\$ 0.0736	\$ 0.0625	1.18
2008/09	\$ 0.0564	\$ 0.0540	\$ 0.0576	0.94
2009/10	\$ 0.0330	\$ 0.0420	\$ 0.0283	1.48
2010/11	\$ 0.0324	\$ 0.0328	\$ 0.0321	1.02
2011/12	\$ 0.0278	\$ 0.0255	\$ 0.0290	0.88
Proposed Industrial Time-of-Use Rate (CDN\$)				
Energy Only	\$ 0.0454	\$ 0.0519	\$ 0.0419	1.24
Demand & Energy	\$ 0.0557	\$ 0.0625	\$ 0.0525	1.19

Note: Hourly Day-Ahead MISO Market Pricing Does Not Include Transmission Charges

US-CDN Exchange Rate Impact



Monthly MISO Average Price



MISO On/Off Peak Behaviour

GSL >100 kV Domestic Load Profile applied to Hourly Day-Ahead Market Pricing (US\$)

Fiscal	Average (\$/kWh)	On-Peak (\$/kWh)	Off-Peak (\$/kWh)	Ratio (On/Off)
2006/07	\$ 0.0474	\$ 0.0632	\$ 0.0345	1.83 (1.83)
2007/08	\$ 0.0474	\$ 0.0642	\$ 0.0338	1.90 (1.90)
2008/09	\$ 0.0370	\$ 0.0513	\$ 0.0249	2.06 (2.02)
2009/10	\$ 0.0234	\$ 0.0301	\$ 0.0179	1.68 (1.69)
2010/11	\$ 0.0251	\$ 0.0317	\$ 0.0198	1.60 (1.60)
2011/12	\$ 0.0223	\$ 0.0281	\$ 0.0176	1.60 (1.60)
Proposed Industrial Time-of-Use Rate (CDN\$)				
Energy Only	\$ 0.0345	\$ 0.0454	\$ 0.0255	1.78
Demand & Energy	\$ 0.0395	\$ 0.0560	\$ 0.0255	2.19

Note: Hourly Day-Ahead MISO Market Pricing Does Not Include Transmission Charges

MISO Seasonal Behaviour

GSL >100 kV Domestic Load Profile applied to Hourly Day-Ahead Market Pricing (US\$)

Fiscal	Average (\$/kWh)	Winter (\$/kWh)	Summer (\$/kWh)	Ratio (Win/Sum)
2006/07	\$ 0.0474	\$ 0.0564	\$ 0.0425	1.33 (1.38)
2007/08	\$ 0.0474	\$ 0.0579	\$ 0.0418	1.39 (1.30)
2008/09	\$ 0.0370	\$ 0.0345	\$ 0.0382	0.90 (1.07)
2009/10	\$ 0.0234	\$ 0.0327	\$ 0.0187	1.75 (1.64)
2010/11	\$ 0.0251	\$ 0.0268	\$ 0.0242	1.11 (1.07)
2011/12	\$ 0.0223	\$ 0.0214	\$ 0.0229	0.93 (0.97)
Proposed Industrial Time-of-Use Rate (CDN\$)				
Energy Only	\$ 0.0345	\$ 0.0375	\$ 0.0329	1.14
Demand / Energy	\$ 0.0395	\$ 0.0420	\$ 0.0378	1.11

Note: Hourly Day-Ahead MISO Market Pricing Does Not Include Transmission Charges

MISO On-Peak Behaviour

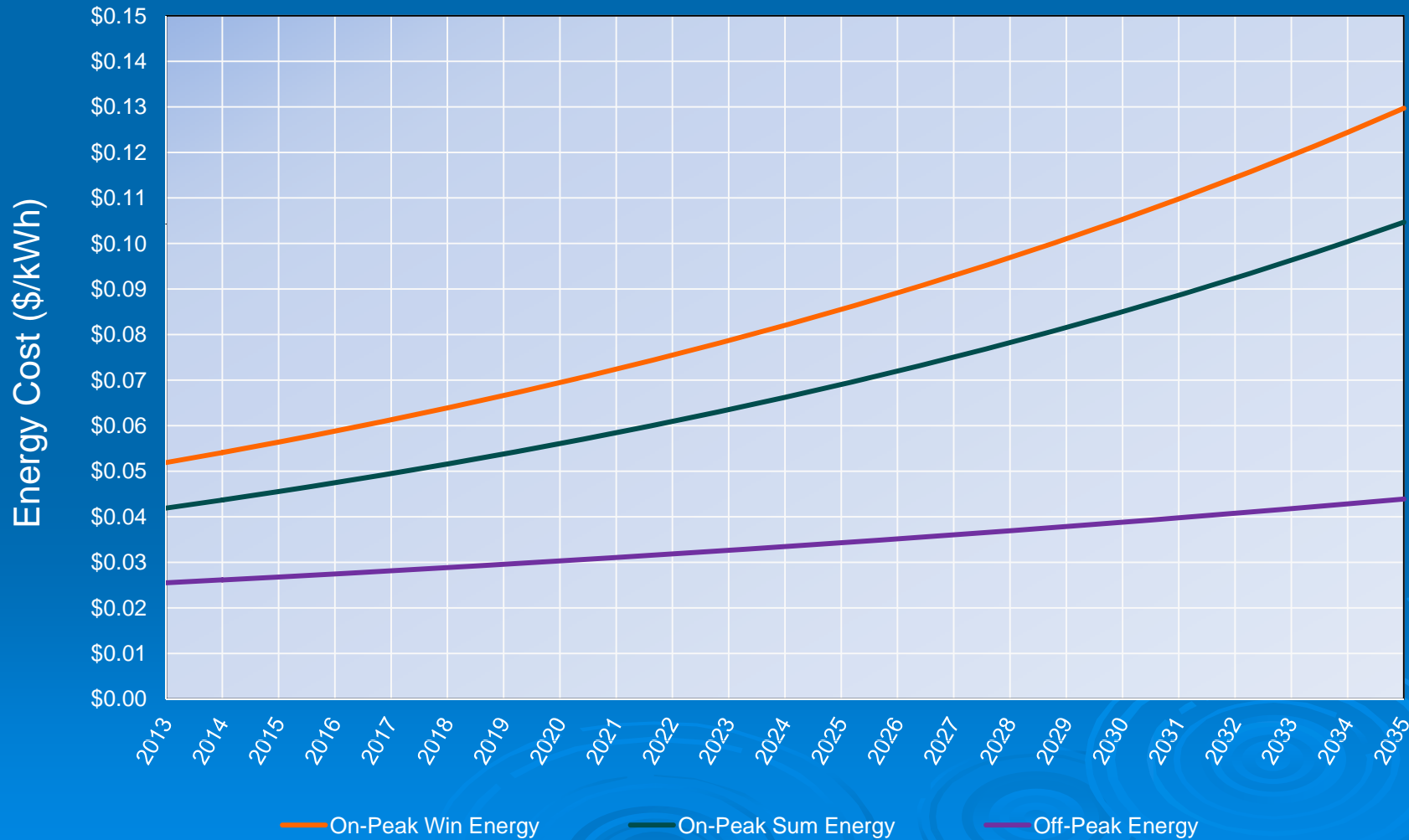
GSL >100 kV Domestic Load Profile applied to Hourly Day-Ahead Market Pricing (US\$)

Fiscal	Average (\$/kWh)	Winter (\$/kWh)	Summer (\$/kWh)	Ratio (Win/Sum)
2006/07	\$ 0.0632	\$ 0.0715	\$ 0.0586	1.22 (1.27)
2007/08	\$ 0.0642	\$ 0.0741	\$ 0.0591	1.25 (1.18)
2008/09	\$ 0.0513	\$ 0.0436	\$ 0.0552	0.80 (0.94)
2009/10	\$ 0.0301	\$ 0.0398	\$ 0.0251	1.59 (1.48)
2010/11	\$ 0.0317	\$ 0.0328	\$ 0.0310	1.06 (1.02)
2011/12	\$ 0.0281	\$ 0.0253	\$ 0.0297	0.85 (0.88)
Proposed Industrial Time-of-Use Rate (CDN\$)				
Energy Only	\$ 0.0454	\$ 0.0519	\$ 0.0419	1.24
Demand & Energy	\$ 0.0557	\$ 0.0625	\$ 0.0525	1.19

Note: Hourly Day-Ahead MISO Market Pricing Does Not Include Transmission Charges

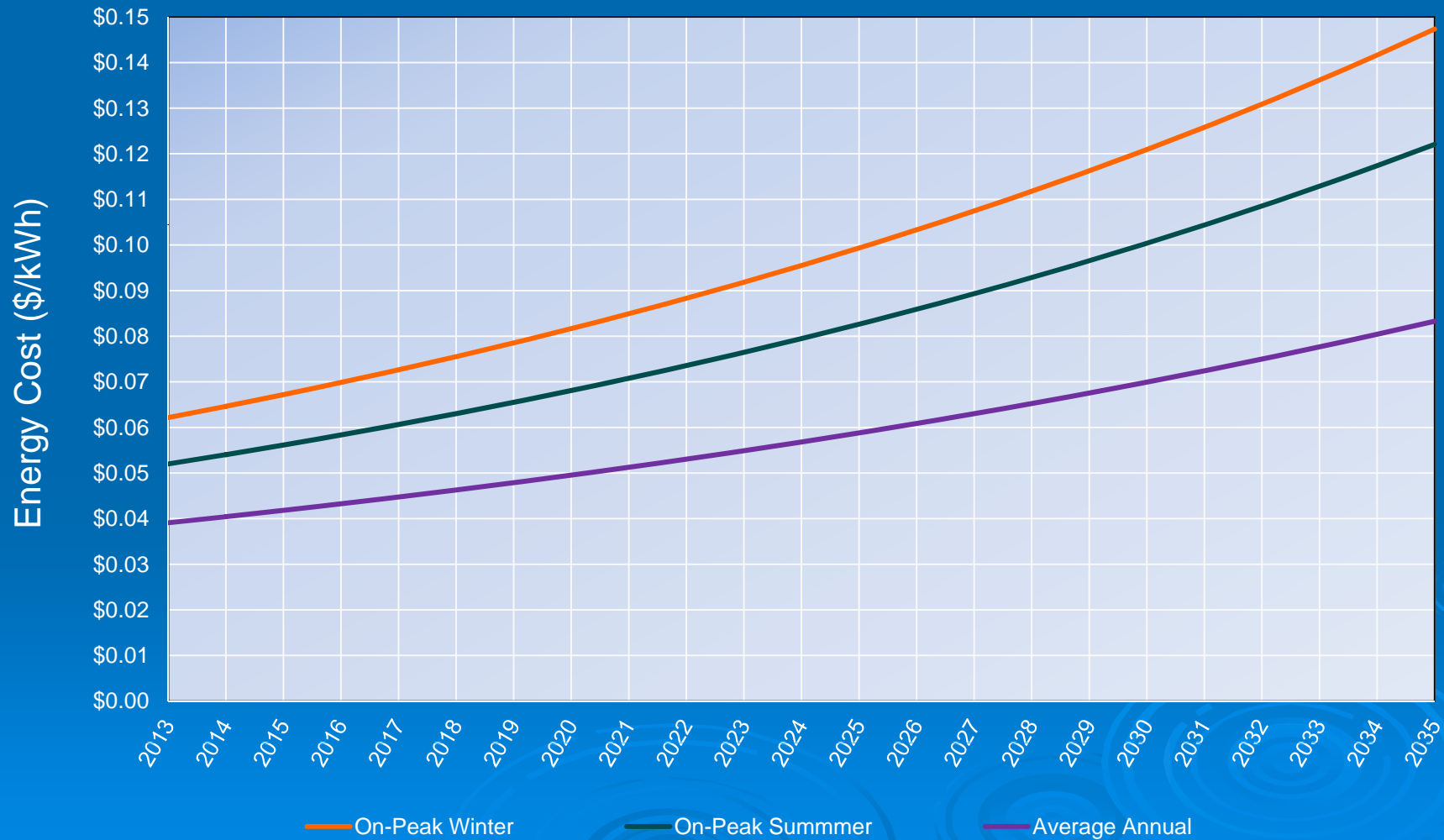
Rate Strategy (Energy)

On-Peak - 4.25%, Off-Peak 2.5%, Average 3.5%



Rate Strategy (Energy/Demand)

On-Peak - 4.25%, Off-Peak 2.5%, Average 3.5%



Customer TOU Impacts

- **Bill Impacts are Related to Consumption Behavior**
 - Consumption load factor (more energy-centric rate design)
 - On-Peak to Off-Peak energy consumption ratios
 - Seasonal Winter to Summer energy consumption ratios
- **Contracts May Impact Minimum Billing Demand**
 - 50 percent minimum demand bill relates to contracted capacity
 - Addresses transmission and distribution capacity constraints
 - Relates to reserved transmission and distribution capacity
- **Larger Bill Impacts Addressed by Contract Revisions**
 - Contracted capacity levels relative to actual consumption levels
 - Opportunity for customer to reserved capacity (at a known cost)
 - Addresses changing economy and constraints in MH system

Customer TOU Impacts

(Standard Rates .vs. Indicative April 1, 2013 TOU Rates)

	Number of Customers	
	Large 30 – 100kV	Large >100kV
Decrease > 5%	2	2
Decrease 3% – 5%	5	2
Decrease 1% – 3% %	11	2
Increase or Decrease <1%	5	4
Increase 1% – 3%	5	1
Increase 3% - 5%	6	0
Increase > 5%	3	1
Total Customers	37	12

Time-of-Use Conclusions

- Time-of-Use Addresses Many Rate Design Concerns
 - Provides broad applicability to all customers within rate class
 - Eliminates challenge of baseline determination (industrial)
 - Ensures equitable treatment of all consumption and growth
 - Enables customers to load-shift with minimal rate impediment
 - Provides strong on-peak conservation stimulus for industry
- Reduces Impediments to Industrial Economic Growth
 - Provides for revenue neutral implementation of new structure
 - Preserves Manitoba's favorable average industrial power rates
 - Provides reasonable access to lower cost off-peak energy
 - Accommodates customers with favorable load profiles
 - Addresses impact of high load-factor, energy-intensive growth

Time-of-Use Conclusions

- Short-Term MISO Market Has Changed Since 2008
 - Reduced demand for energy coupled with low natural gas rates
 - US-CDN exchange rates have decreased and stabilized
 - On/off peak price ratios have remained relatively constant
 - Seasonal ratios have fluctuated due to economic conditions
 - Time-of-Use rate design is reflective of market price signals
- Provides a Market Relative On-Peak Price Signal
 - Representative of higher-value energy during on-peak periods
 - Provides flexibility in future rate design for market changes
 - Provides some degree of on-peak export revenue protection