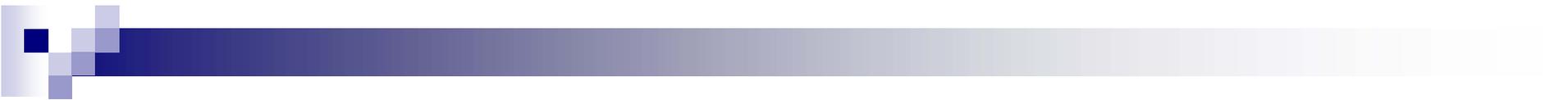


Manitoba Industrial Power Users Group Workshop

Industrial Rates
Consultation



Manitoba Hydro Representation

- Rates & Regulation

- Rates & Policies

- Industrial & Commercial Solutions

- Key Accounts
- Major Accounts
- Customer Engineering Services

- Power Sales & Operations

- Export Power Marketing, Contracts, and Trading

- Resource Planning & Market Analysis

- Generation System Studies



MIPUG Representation

- General Service Large (>100 kV)



- 13 Accounts, 4,725 GWh, 675 MVA, \$167 Million

- General Service Large (30 – 100 kV)

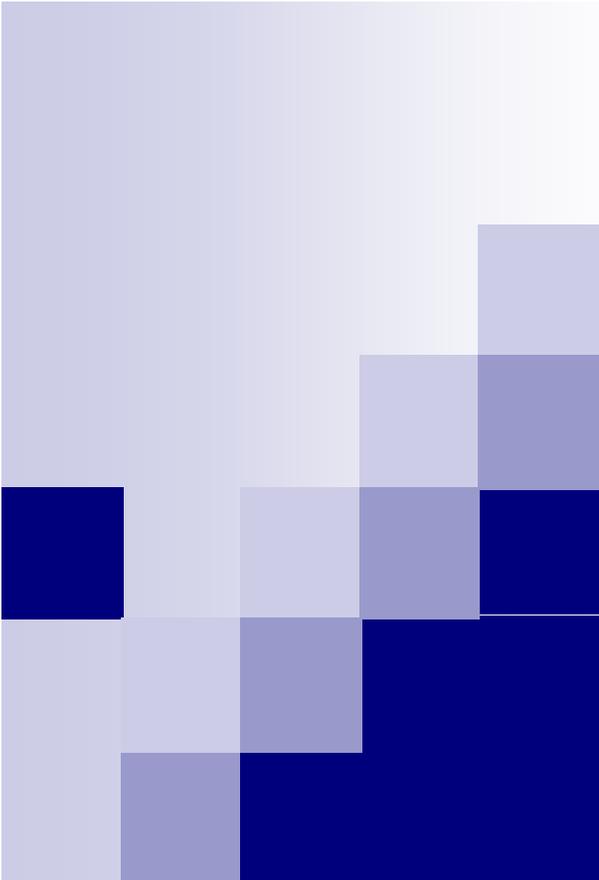


- 9 Accounts, 605 GWh, 100 MVA, \$23.5 Million



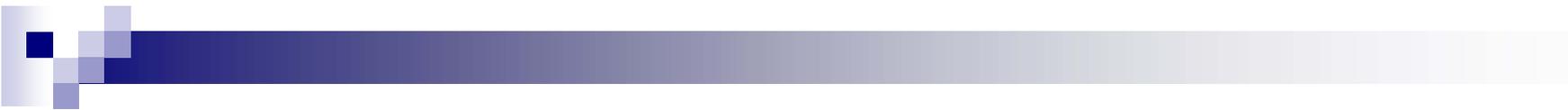
- MIPUG representative/consultant

- Active participant in consultation process



Energy Intensive Industrial Rate

Review of PUB Application
Customer Consultation



Energy Intensive Industrial Rate

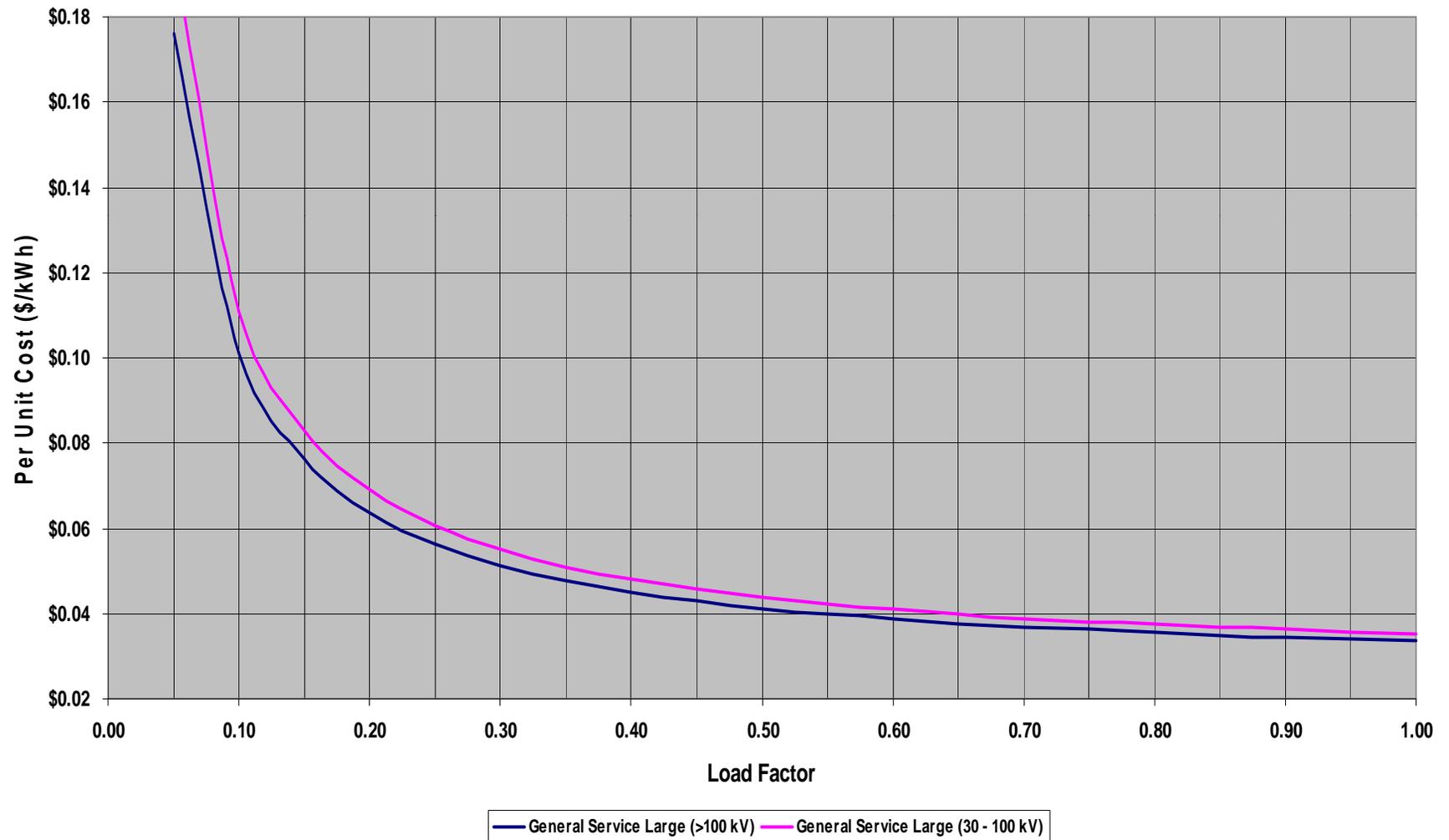
- Manitoba Hydro EIR Application - 08 GRA
- Public Utilities Board Order 112/09 - Jul 09
- Manitoba Hydro EIR Application - Feb 10
- MIPUG Consultation Process - Apr 10
- Board Review of EIR Application - Sep 10
- EIR Application Withdrawal - Oct 10



Heritage Industrial Rates

- **General Service Large (>100 kV)**
 - Energy Charge \$0.0262 per kWh
 - Demand Charge \$5.40 per kVA
- **General Service Large (30 – 100 kV)**
 - Energy Charge \$0.0269 per kWh
 - Demand Charge \$6.06 per kVA
- **Not Sensitive to Time of Use Periods**
 - Flat energy charge, peak demand charge
- **Demand Centric Cost Characteristic**

Unit Energy Costs vs Load Factor





Energy Intensive Industrial Rate

- Rational for Implementation of EIIR
 - Mitigate potential impact of low domestic rates
 - Minimize general rate impact of industrial growth
- Impact of Industrial Load Growth
 - Reduces available energy for export market
 - Lower domestic rate decreases general revenues
- Hinders Ability to Secure Firm Export Contracts
 - Lack of a market representative price signal
 - Uncertainty regarding potential load growth
 - Strong influence during on-peak periods



Rate Impact of Industrial Growth

■ 50 MW of Additional Industrial Load

- New domestic revenue \$ 13 - \$ 15 Million/Yr
- Foregone export revenue \$ 21 - \$ 25 Million/Yr
- General revenue reduction \$ 8 - \$ 10 Million/Yr

■ General Rate Impact

- 0.7 to 0.9 percent general rate increase for 50 MW addition
- Without considering additional costs for advancement



PUB Board Order 112/09

- Denial of 2008 EIR Application (GRA)
- PUB Directives in Board Order 112/09
 - Include non-governmental customers (> 30 kV)
 - Apply to peak period load growth only
 - Minimize historic baseline adjustments
 - curtailable, self-generation, mandated energy efficiency
 - Marginal rate of 5.53 cents per kWh minus 0.9 cents
 - New customers allowed 50% at heritage rates
- Willingness to examine alternate proposals
- Expanded focus to promote conservation



February 2010 EIR Application

- **Included All Non-Governmental Accounts**
 - 45 accounts in GSL Greater than 30 kV rate classes
- **Applied to Load Growth in On-Peak Period Only**
 - Monday to Friday, 6:00 AM – 10:00 PM, excluding holidays
- **Historic Baseline Determination**
 - Peak consumption over 12 consecutive months
 - 36 month period ending April 1, 2009
- **Annual Growth Adjustment to Baseline**
 - 2.5 percent for first five years of rate application
 - Compounded adjustment of 13.1 percent (five years)



February 2010 EIR Application

- Above Baseline EIR Rate of \$0.0485 per kWh
 - Firm export contracts from previous two years
- Affiliated Accounts Aggregated
 - Accounts combined for determination of baseline
- New to Manitoba Accounts
 - 50 percent of consumption at heritage rates
 - Remaining consumption at EIR rates
 - Adjustment made after three years



MIPUG Consultation Process

- **Meetings with Individual Customers – Feb 10**
 - Discussion regarding customer impacts
 - Highlighted need for additional consultation
 - Notification to PUB about revised application
- **Initial Meeting with MIPUG - Apr 10**
 - Discussion regarding EIR application
 - Review of alternate EIR proposal
 - Establish framework for further discussion
- **Consultations Commence - Jun 10**
 - Seven meetings over five month period



Topics of Consultation

- Nature of Response to PUB Directives
- Determination of Historic Baselines
- Rational for Minimum Baseline Thresholds
- Requirement for Annual Growth Rates
- Impact of Demand Charges on Load Shifting
- Fairness and Equity in Application of EIIR
- Suitability of Marginal Rate/Export Market Price
- Impact of Export Contract Expiration/Renewal
- Revisions to Load Growth Projections



MIPUG Feedback

- Perception of Regulatory Risk
 - Nature of response to Board Order 112/09
 - Need to address specific PUB directives
- Negative Impact on Economic Growth
 - No incentive for economic development
 - Approach contrary to other provinces
- Determination of Appropriate Baseline Levels
 - Historical consumption versus contract demand
- Inequity of Rate Application (new vs existing)
 - Impact on incremental load growth



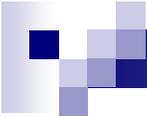
MIPUG Feedback

- **Discrimination against Industrial Load Growth**
 - Larger incremental load growth possibilities
- **Exemption for Governmental Customers**
 - Load growth has same impact regardless of source



Consideration of Alternatives

- **Revisions to Determination of Baseline**
 - Use of service contract levels to establish baseline
- **Minimum On-Peak Baseline Threshold Levels**
 - Examined the impact of 60 GWh, 30 GWh and 20 GWh
 - Provided protection for smaller customers
- **Addition of Incremental Growth Allowance**
 - 50 percent allowance for annual growth
- **Began Examination of Time-of-Use Rates**
 - Broad applicability with time-of-use price signal
 - Provision for load shifting to off-peak periods



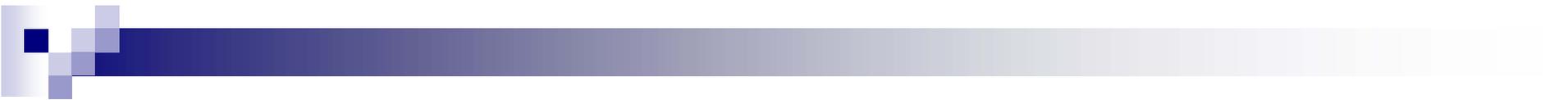
Impact of EIR Application

Analysis of Impact on MIPUG Members (growth projections)	PUB Directive Board Order 112/09	MH EIR Application (Feb 2010)	MH EIR Proposal (April 2010)
Revenue Neutrality (Domestic Rates)	Bill Increase 0% to 8.9%	Bill Increase 0% to 7.5%	Bill Increase 0% to 3.1%
Additional Revenue (Impacted Accounts)	Additional \$31.0 M (over five years)	Additional \$13.5 M (over five years)	Additional \$7.5 M (over five years)
Export Revenue (approx rate impact)	Full Recovery (rate neutral)	\$13.5 M Shortfall (approx 1.2%)	\$23.5 M Shortfall (approx 2.1%)
Regulatory Risk Customer Response	Low/Medium Risk Negative	Medium Risk Negative	High Risk Cautious



EIRR Consultation Conclusions

- **Competing Directives Compromise EIRR Rate**
 - Desire for broad applicability, conservation stimulus
 - Ability to accommodate economic development
 - Protection for export revenues, reduced rate impacts
- **“Formula-Based” EIRR Impacts all Growth**
 - Differentiate “energy intensive” from other growth
 - Positive growth (eg. jobs) negatively impacted
- **Alternatives Reduce Export Revenue Protection**
 - Higher baselines reduce Manitoba Hydro revenue
 - Growth allowance contrary to PUB directives



EIR Application Status

■ Review by MH Board of Directors

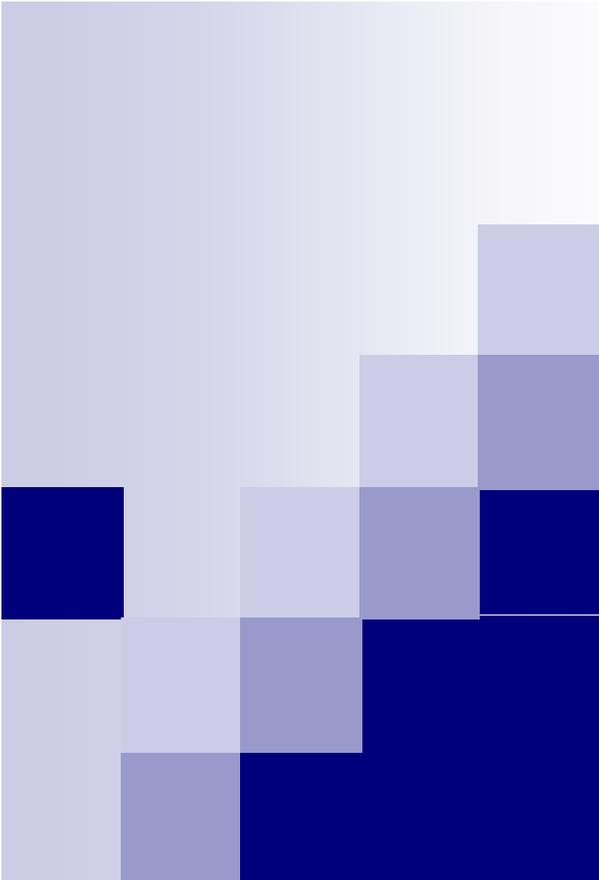
- Presentation of customer feedback from consultation
- Concerns about customer impacts in tough economy
- Review impact of revised load growth projections

■ Decision to Withdraw EIR Application

- Further review of alternative options (time-of-use)
- Examine implications of service extension policy

■ Direction for Further Action

- Detailed examination of time-of-use alternative
- Review impact of service extension policy



Time-of-Use Rates

Potential Alternative to EIIR



Illustrative Time-of-Use Rate

- Broad-Based Applicability Across Rate Class
- Time-of-Use Price Signal Linked to Export Price
- Eliminates Difficulty of Baseline Determination
- Equity for all Accounts within Rate Class
- More Energy Centric Approach to Rates
- On-Peak Incentive for Conservation Activities
- Provides Degree of Export Revenue Protection
- Compliments Potential Demand Response Rate
- Supports Economics of Green Energy Initiatives



Revenue-Neutral Rate Design

- What Does Revenue-Neutrality Mean..?
- On-Peak Rates Related to Export Prices
- On-Peak Rates Have a Seasonal Aspect
- Off-Peak Rate Related to Export Prices
- Demand Rate Adjusted to Maintain Neutrality
- Intended to Achieve Neutrality Across Class
- Evaluating Range of Winners and Losers



Time-of-Use Definition

■ Daily On-Peak Period

- Monday to Friday, 6:00 AM – 10:00 PM
- Excluding statutory holidays

■ Daily Off-Peak Period

- Monday to Friday, 10:00 PM – 6:00 AM
- 24 Hours, weekends, holidays

■ Seasonal Aspect

- Winter Period (Dec to Mar) – 4 months
- Summer Period (Apr to Nov) – 8 months



Illustrative Time-of-Use Rate

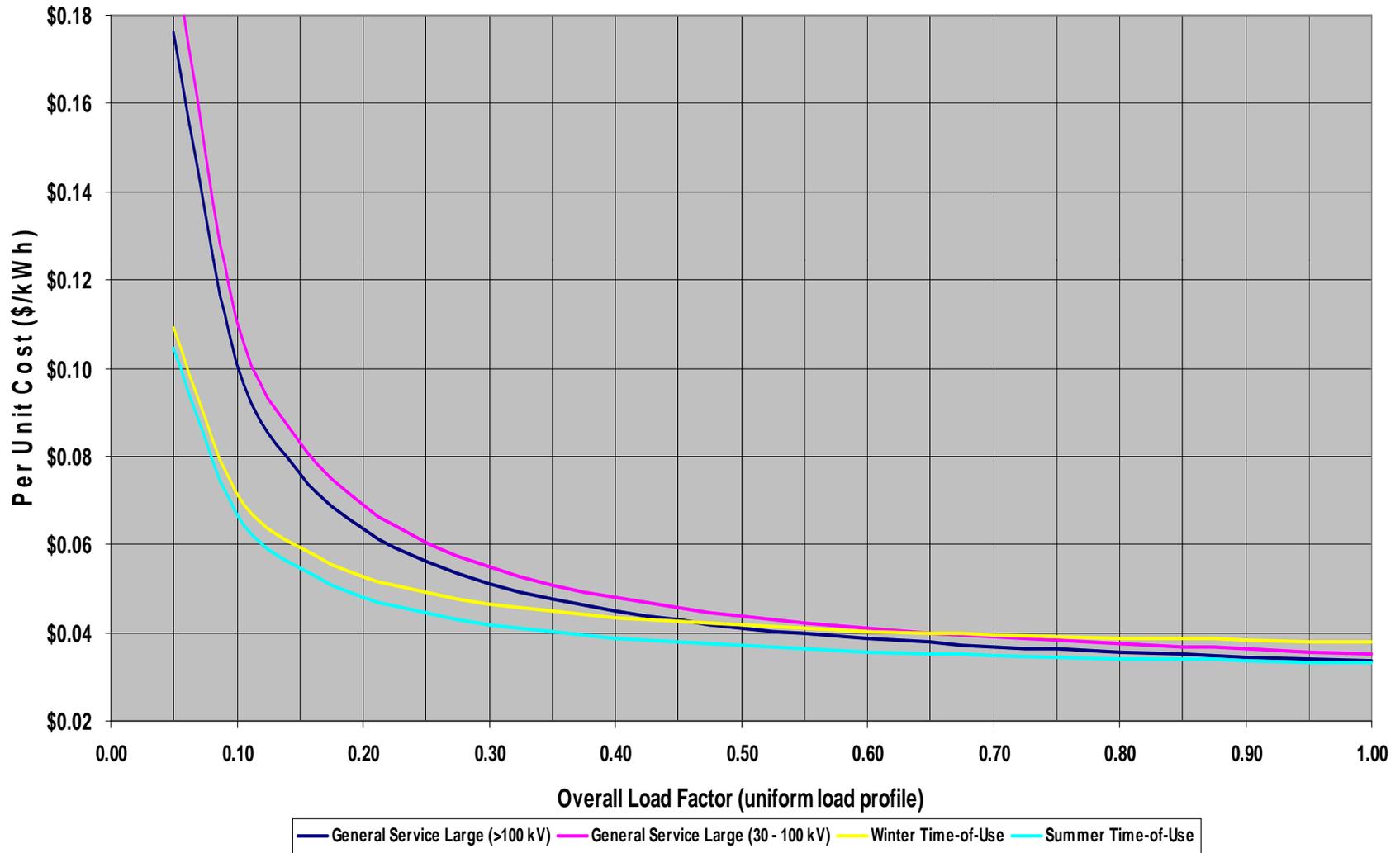
■ General Service Large (> 100 kV)

- Winter On-Peak Energy \$0.048 per kWh
- Summer On-Peak Energy \$0.038 per kWh
- Off-Peak Energy \$0.022 per kWh
- On-Peak Demand \$2.70 per kVA

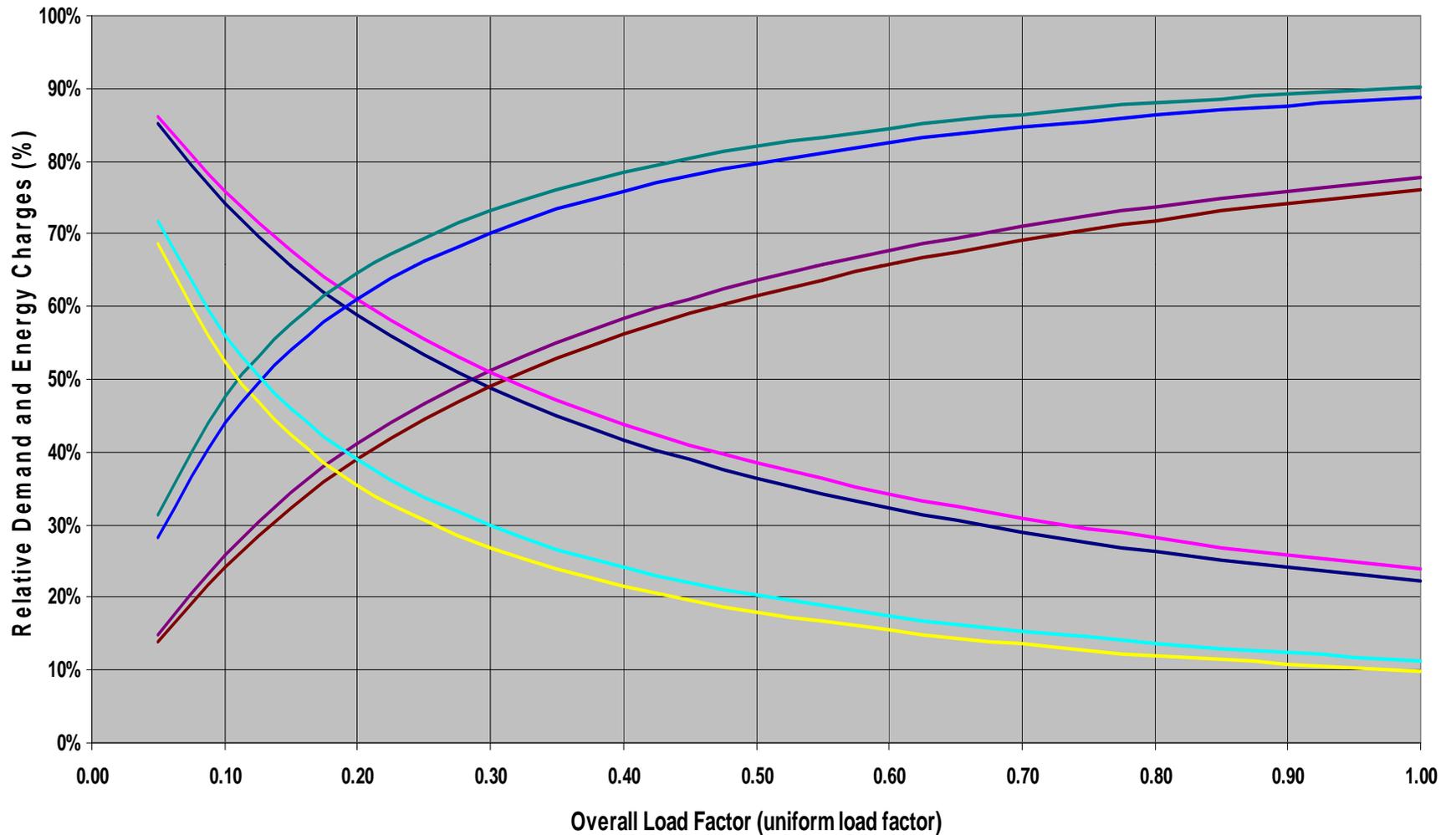
■ General Service Large (30 – 100 kV)

- Winter On-Peak Energy \$0.051 per kWh
- Summer On-Peak Energy \$0.041 per kWh
- Off-Peak Energy \$0.024 per kWh
- On-Peak Demand \$3.03 per kVA

Impact of Usage Load Factor



Energy Centric Approach



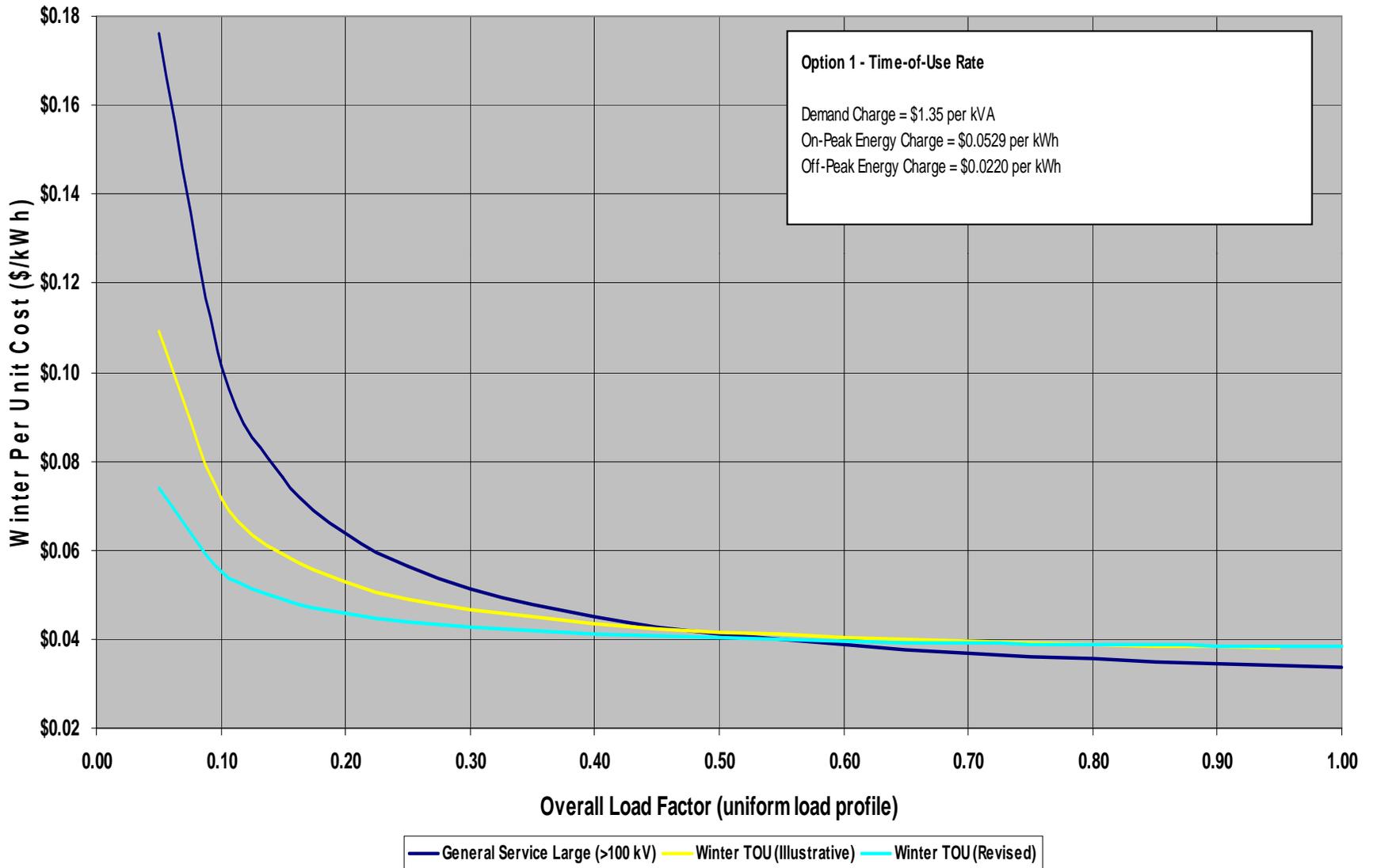
— GSL >100 Energy — GSL >100 Demand — GSL 30-100 Energy — GSL 30-100 Demand — Winter TOU Energy — Winter TOU Demand — Summer TOU Energy — Summer TOU Demand



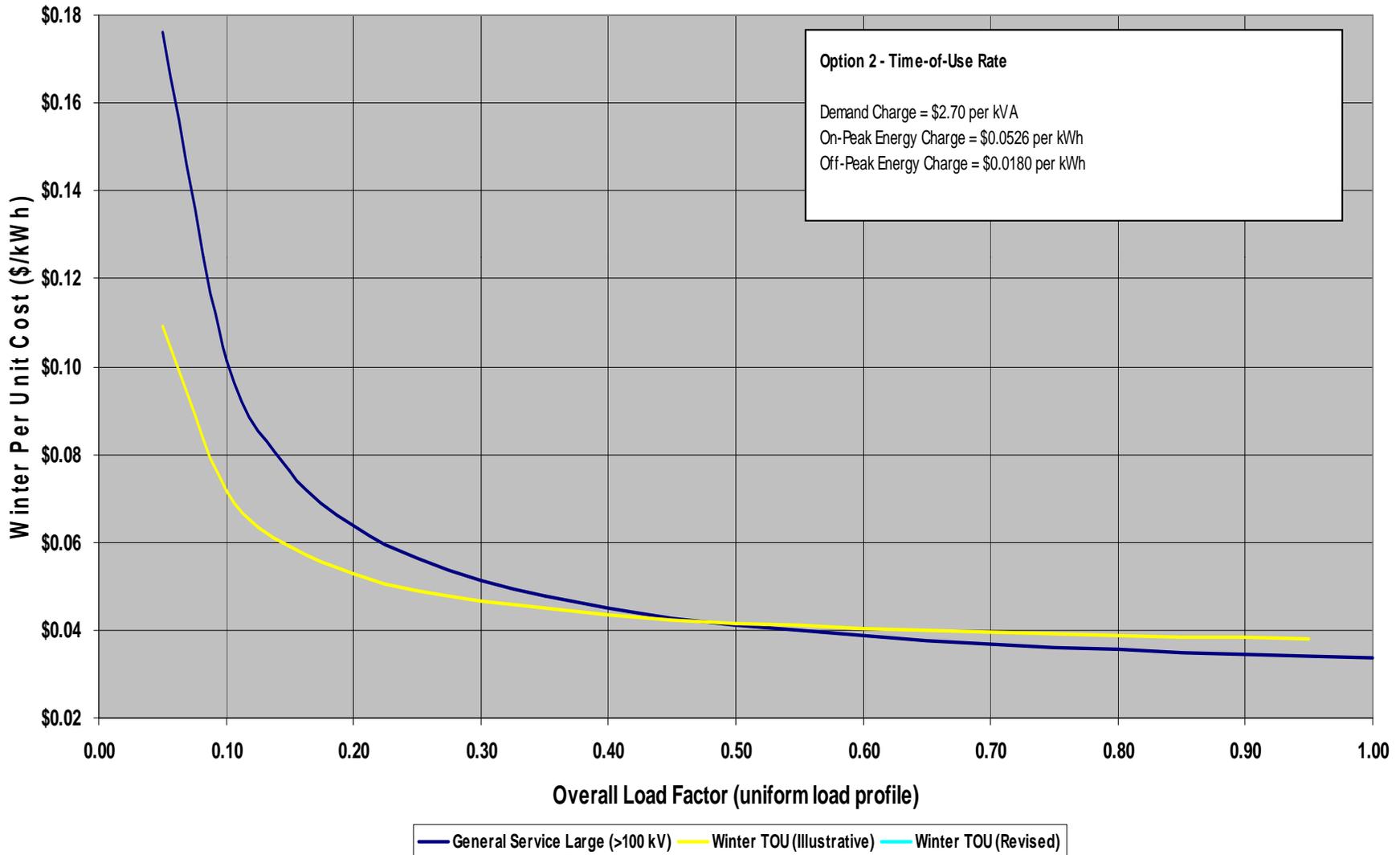
Alternate Rate Configurations

- Illustrative Time-of-Use Rate
 - Win \$0.048, Sum \$0.038, Off \$0.022, Demand \$2.70
- Option 1 - Lower Demand Rate
 - Win \$0.053, Sum \$0.043, Off \$0.022, Demand \$1.35
- Option 2 - Lower Off-Peak Energy Rate
 - Win \$0.053, Sum \$0.043, Off \$0.018, Demand \$2.70
- Option 3 - Lower Demand & Off-Peak Energy Rates
 - Win \$0.058, Sum \$0.048, Off \$0.018, Demand \$1.35
- Option 4 - Higher Demand, Lower Off-Peak Rates
 - Win \$0.048, Sum \$0.038, Off \$0.018, Demand \$4.05
- Option 5 – Levelized On-Peak Rates
 - Win \$0.041, Sum \$0.041, Off \$0.022, Demand \$2.70

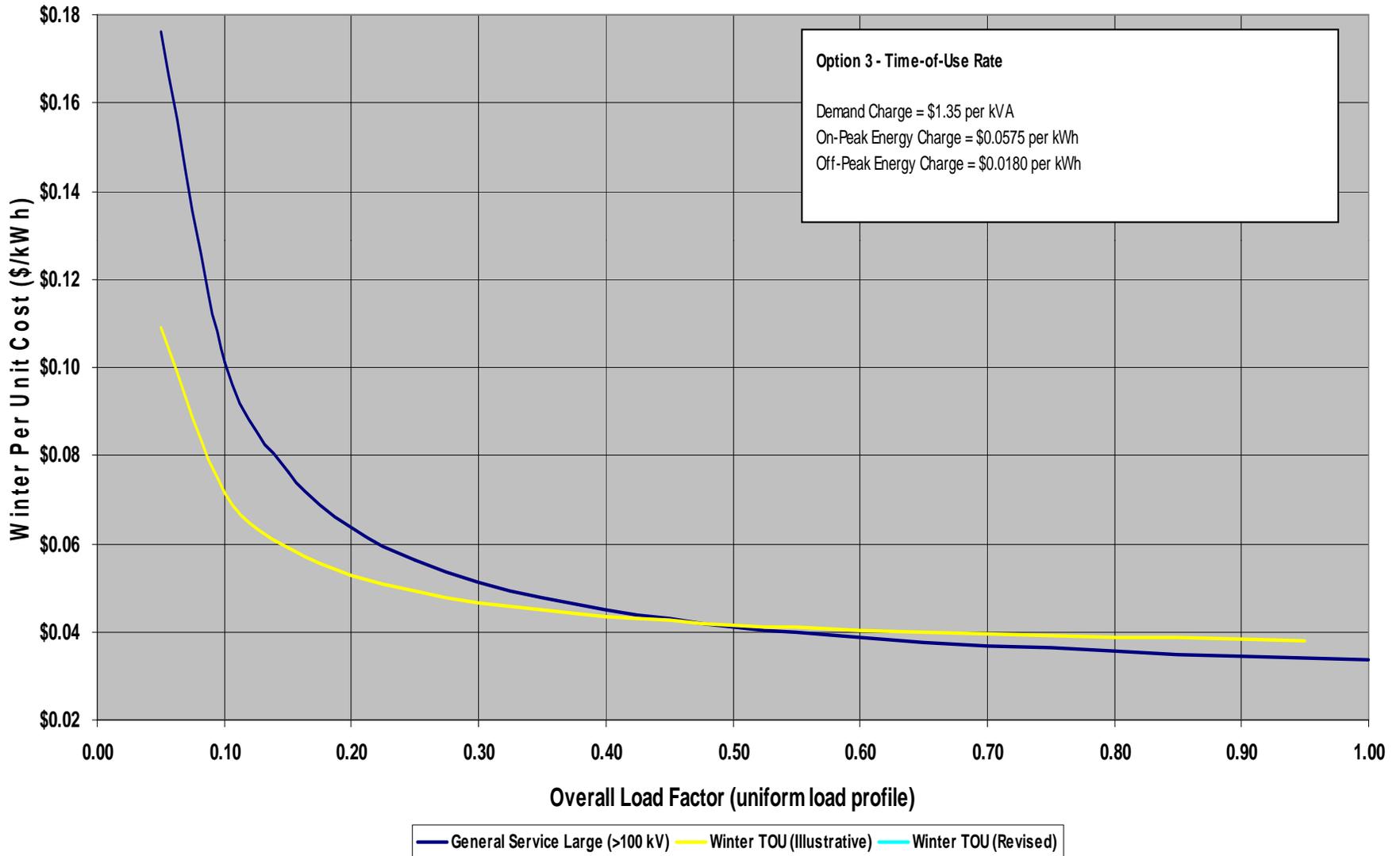
Option 1: Lower Demand Rate



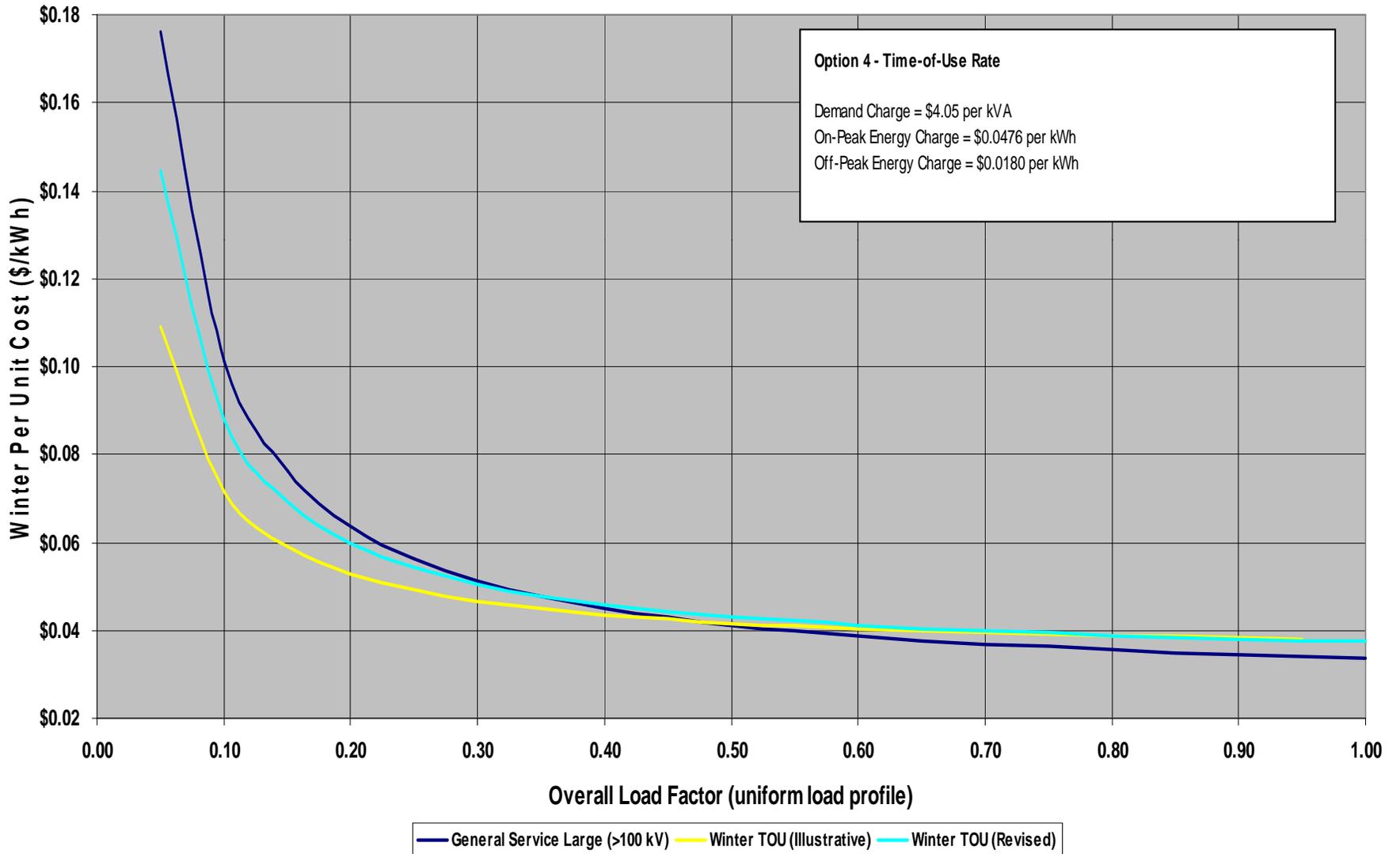
Option 2: Lower Off-Peak Energy Rate



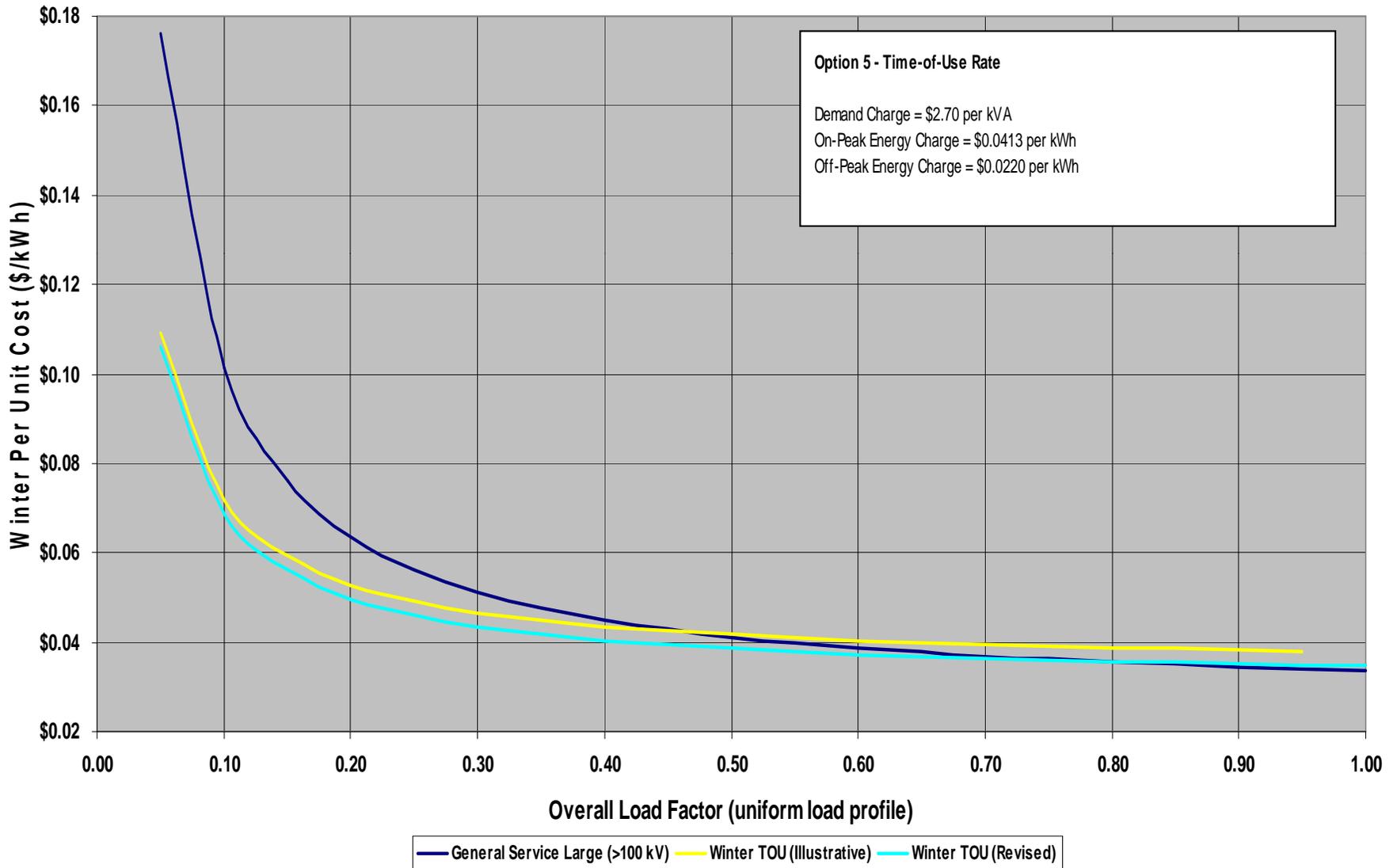
Option 3: Lower Demand/Lower Off-Peak Energy



Option 4: Higher Demand/Lower Off-Peak Energy



Option 5: Levelized On-Peak Energy Rate



Impact of Time-of-Use Rate

GSL Greater than 100 kV (2008-09)

Annual Load Factor	On-Peak Ratio	Winter Ratio	Illustrative Rate	Option 1 Rate	Option 2 Rate	Option 3 Rate	Option 4 Rate	Option 5 Rate
0.376	43.94%	26.15%	-7.92%	-11.80%	-8.45%	-12.34%	-4.67%	-7.95%
0.689	47.11%	33.69%	-1.98%	-3.25%	-1.89%	-3.16%	-0.75%	-2.03%
0.927	60.86%	49.75%	1.42%	2.10%	2.11%	1.80%	2.89%	1.66%
Less than -1.0%			7	8	7	8	5	6
Plus/Minus 1.0%			5	4	5	3	8	6
Greater than 1.0%			2	2	2	3	1	2

Impact of Time-of-Use Rate

GSL 30 - 100 kV (2008-09)

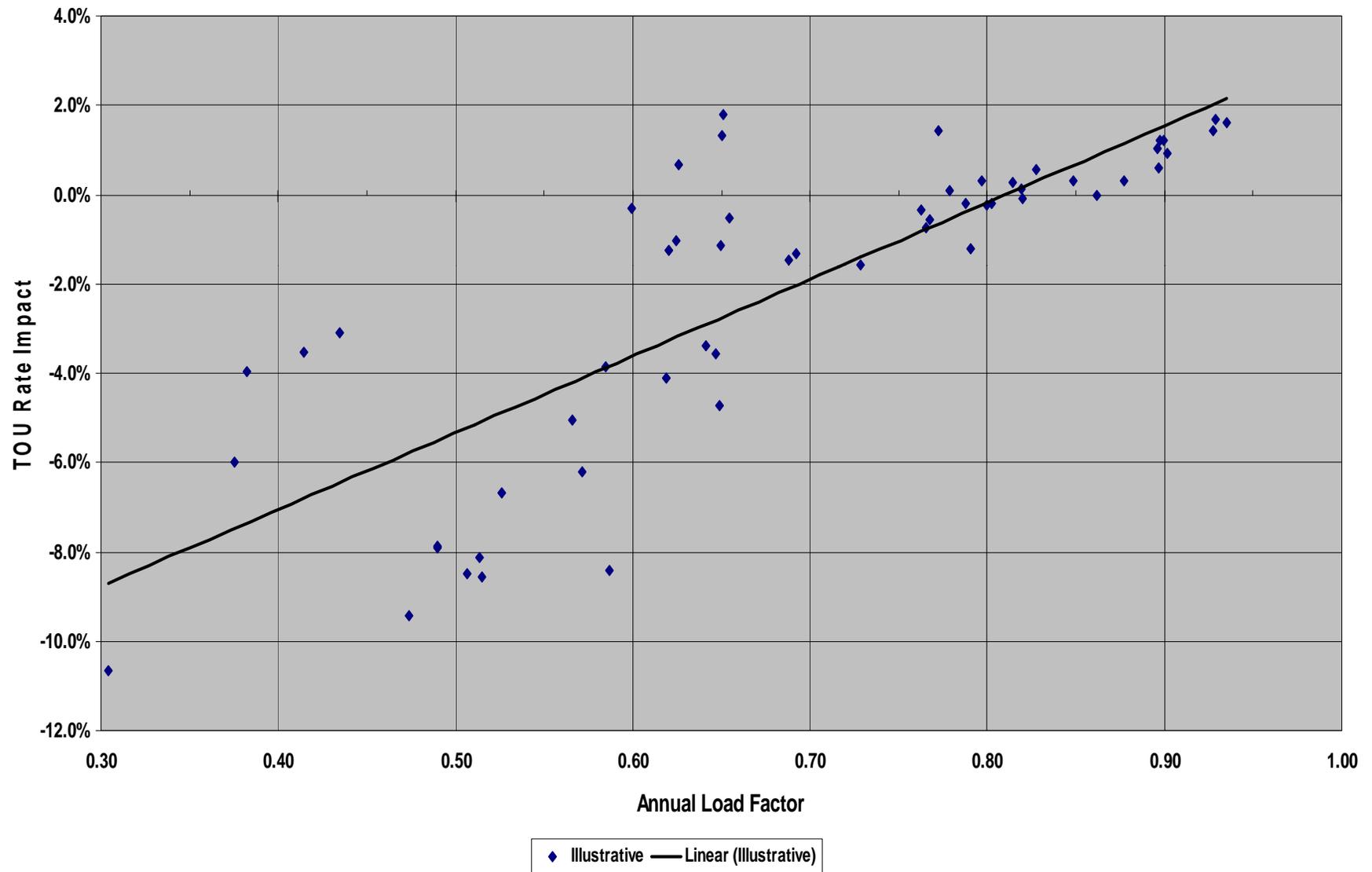
Annual Load Factor	On-Peak Ratio	Winter Ratio	Illustrative Rate	Option 1 Rate	Option 2 Rate	Option 3 Rate	Option 4 Rate	Option 5 Rate
0.303	43.49%	27.51%	-8.93%	-15.19%	-9.13%	-15.39%	-3.55%	-10.33%
0.584	48.12%	36.39%	-1.34%	-3.79%	-1.09%	-3.54%	1.26%	-1.67%
0.877	76.46%	58.11%	5.10%	4.66%	6.86%	6.42%	9.17%	4.66%
Less than -1.0%			14	22	15	20	5	15
Plus/Minus 1.0%			8	0	6	1	9	7
Greater than 1.0%			6	6	7	7	14	6



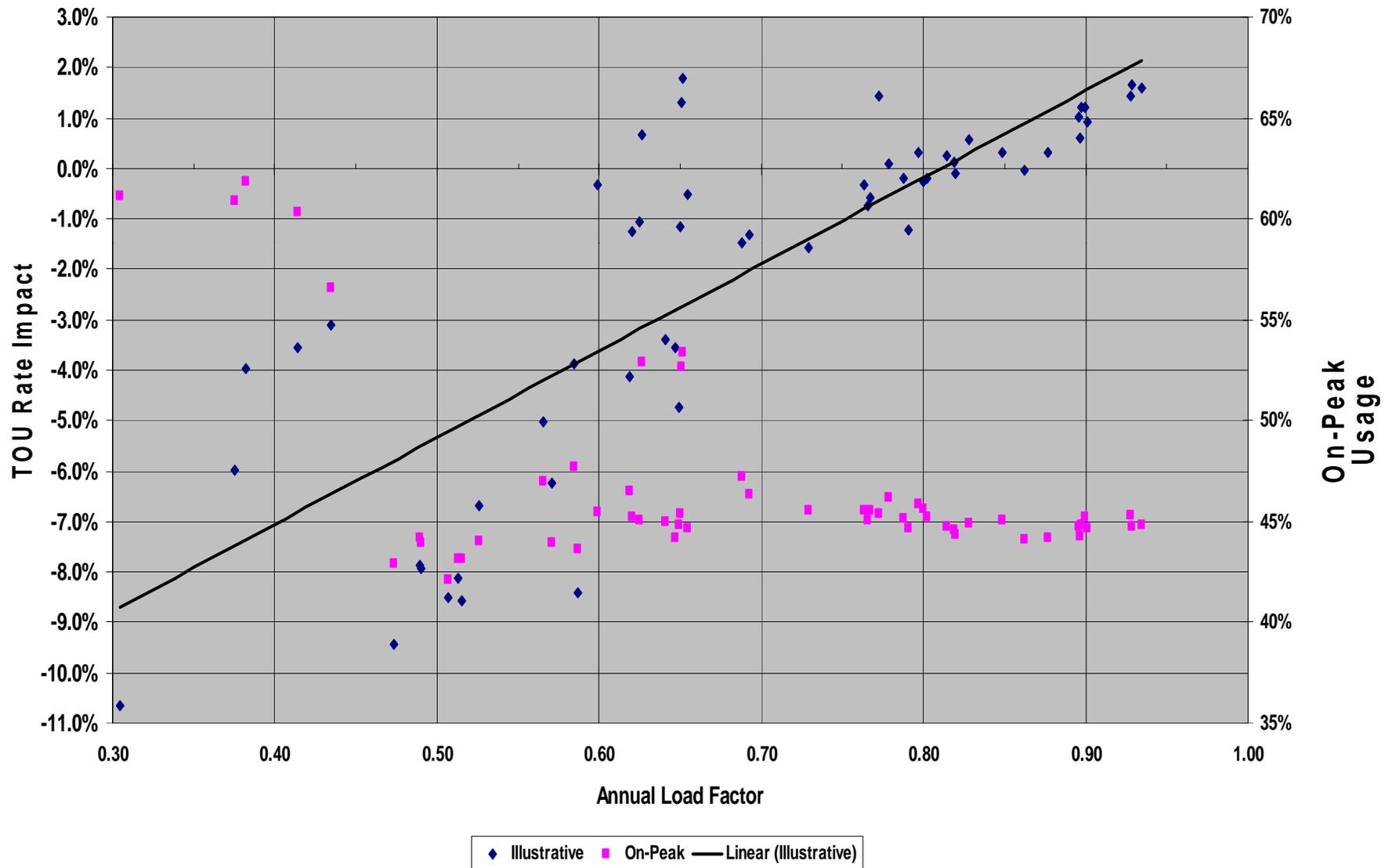
Factors Influencing TOU Impact

- Annual Load Factor
 - Relationship between consumption and peak demand
- On-Peak Energy Consumption Ratio
 - Portion of energy consumed in the on-peak period
- Winter-Summer Consumption Ratio
 - Seasonal consumption of energy in on-peak period

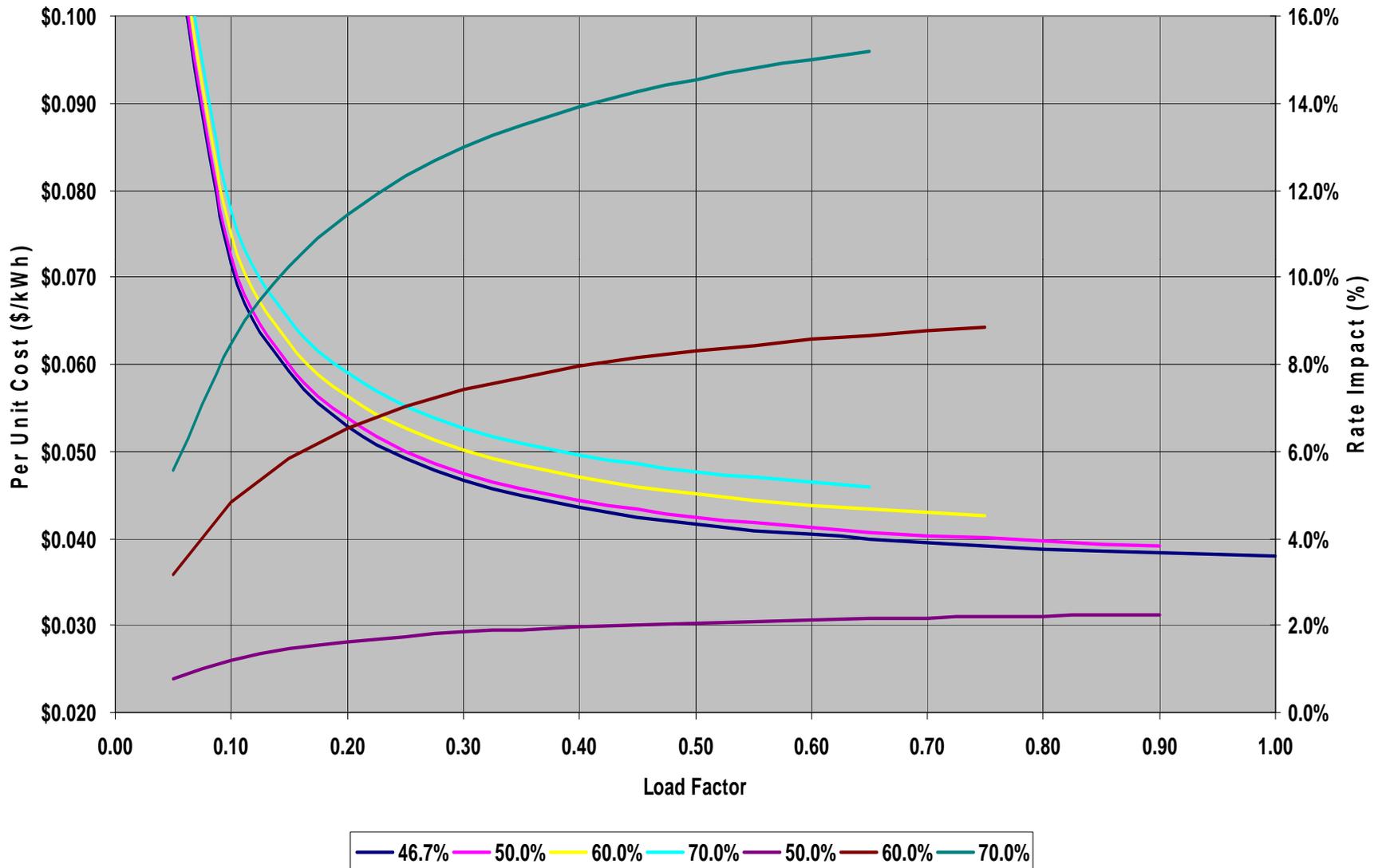
Greater 100 kV - Load Factor

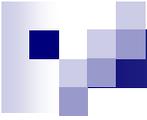


Greater 100 kV - On-Peak Usage

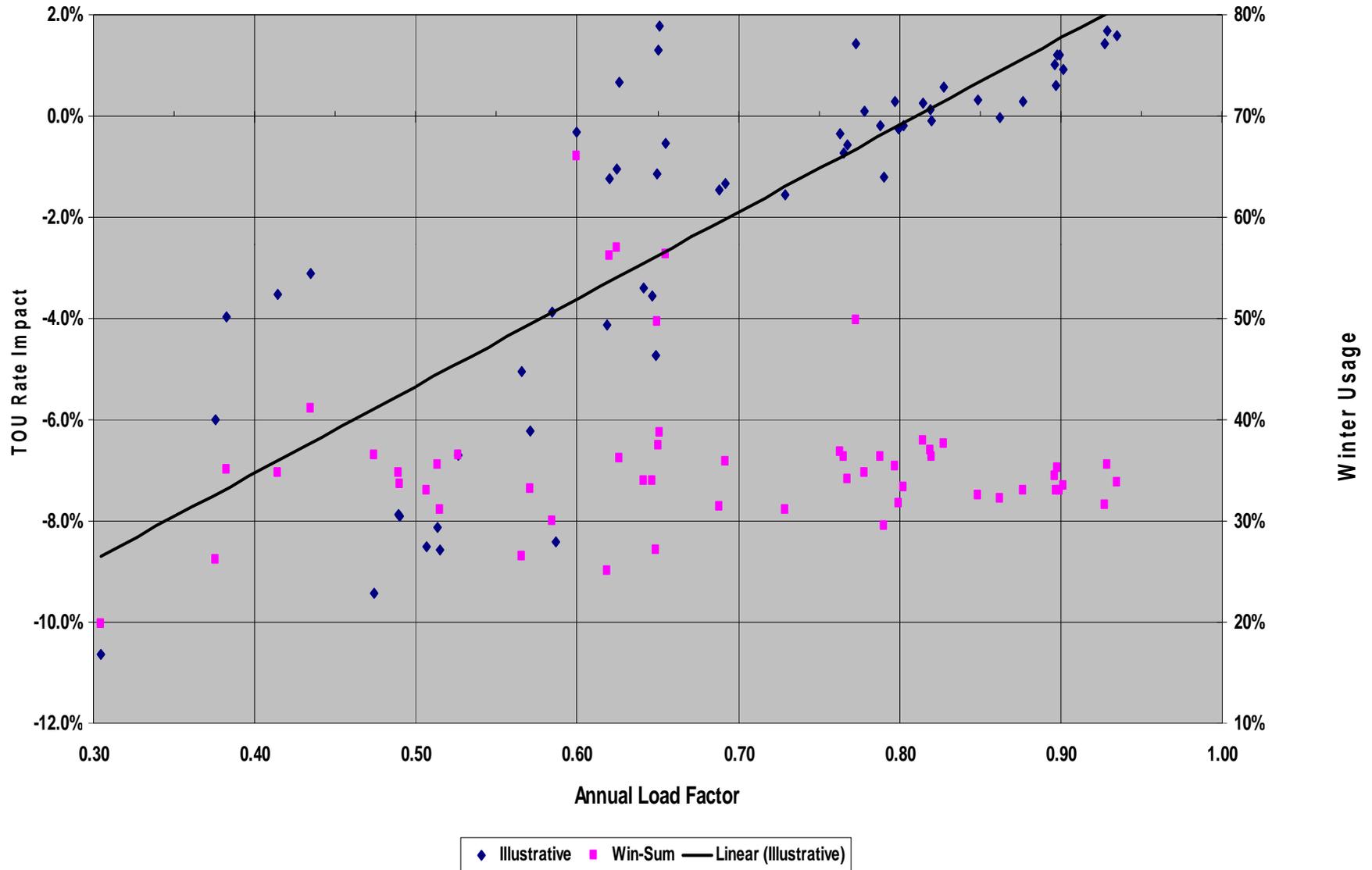


Greater 100 kV – On-Peak Usage

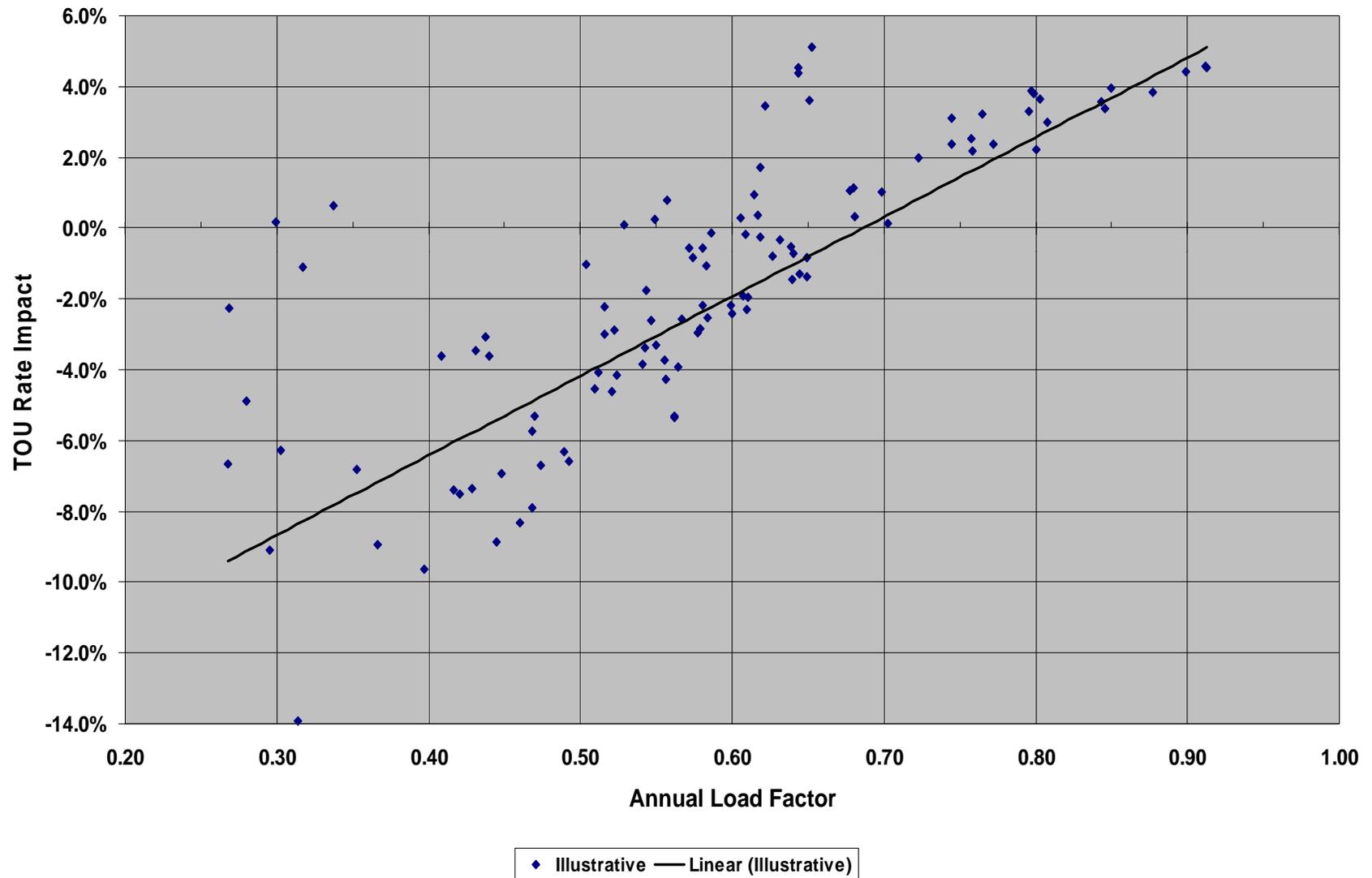




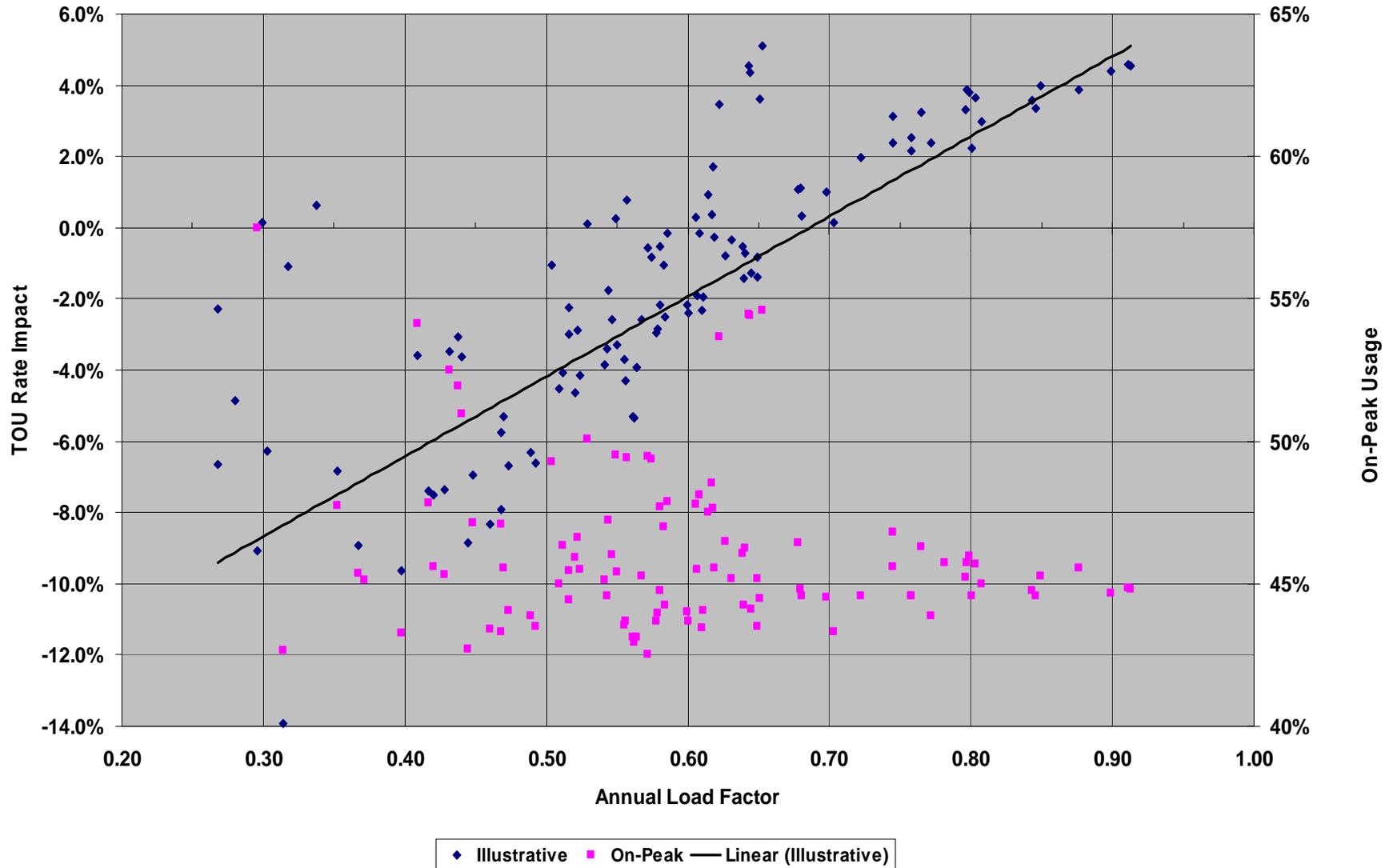
Greater 100 kV – Seasonal Usage



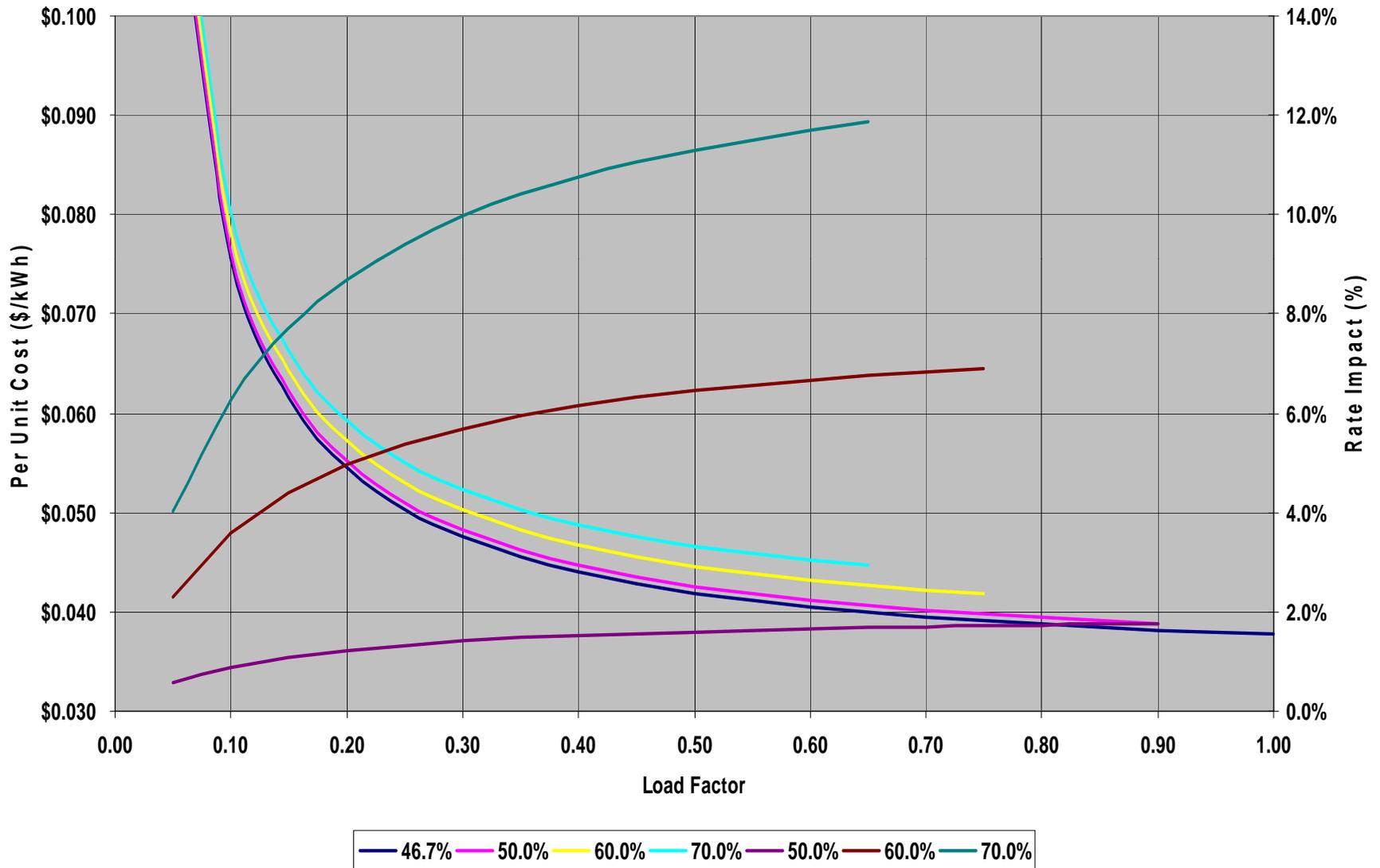
30 to 100 kV – Load Factor



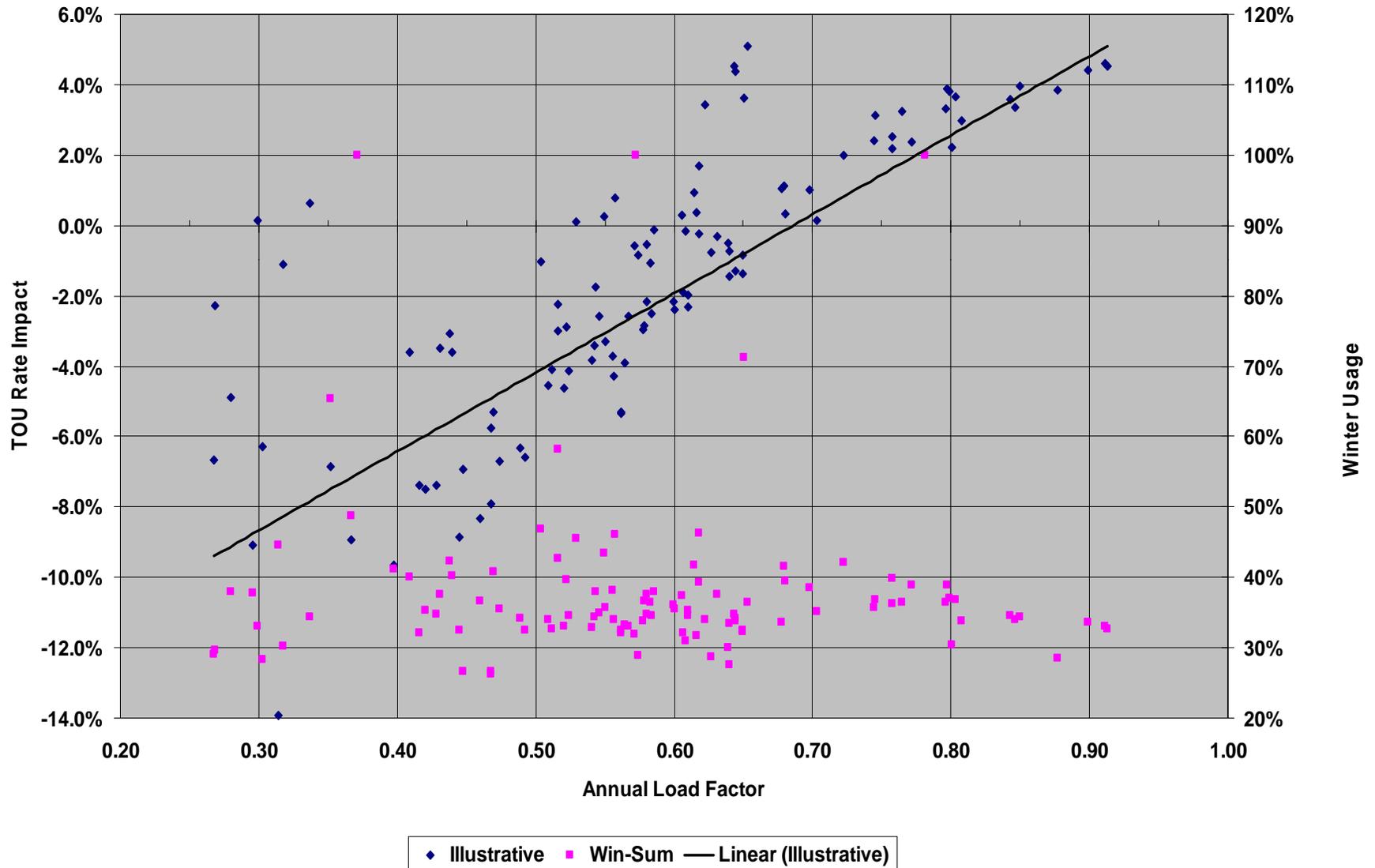
30 to 100 kV – On-Peak Usage

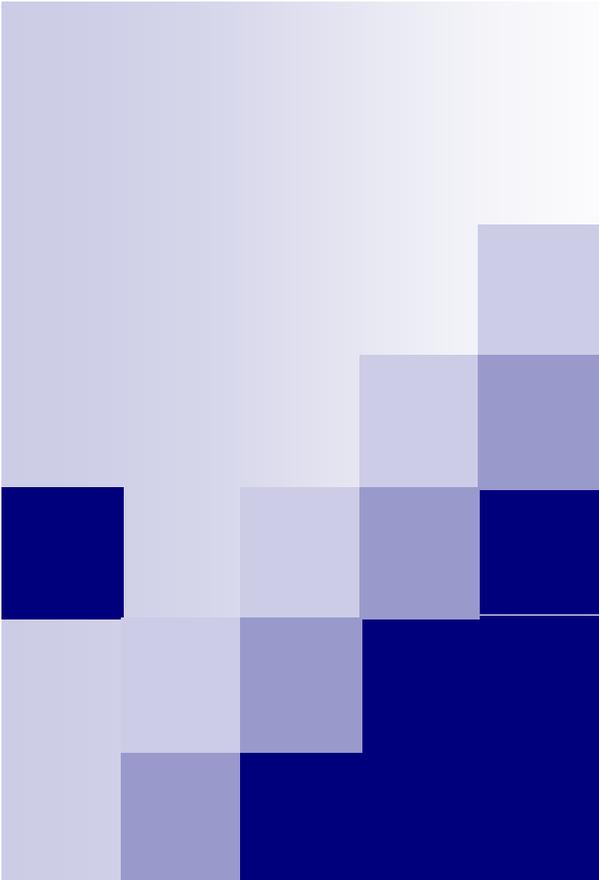


30 to 100 kV – On-Peak Usage



30 to 100 kV – Seasonal Usage





Moving Forward....

Future Direction for Industrial Rates
Consultation and Discussion



Moving Forward....

- **Presentation to the MH Board in January**
 - Sense of customer acceptance and preference
- **Potential for 2011/12 GRA application**
 - Revised application for April 1, 2012 implementation
- **Approaches to Phase-In of Time-of-Use**
 - Phantom time-of-use billing (duplicate bill)
 - Phase-in exposure (plus/minus capped)
- **Additional Consultation with Stakeholders**
 - Remaining General Service Large >30 kV customers
 - Other stakeholders, public interest, etc.



Questions and Discussion..?

■ Additional Information

- Impact on historic consumption patterns
 - monthly and annual impact analysis
- Impact of future load growth projections
 - monthly and annual impact analysis
- Impact of changes in consumption behavior
 - load shifting, peak shaving, self-generation

■ Manitoba Hydro Contacts

- Key Account Officers
- Major Account Energy Services Advisors