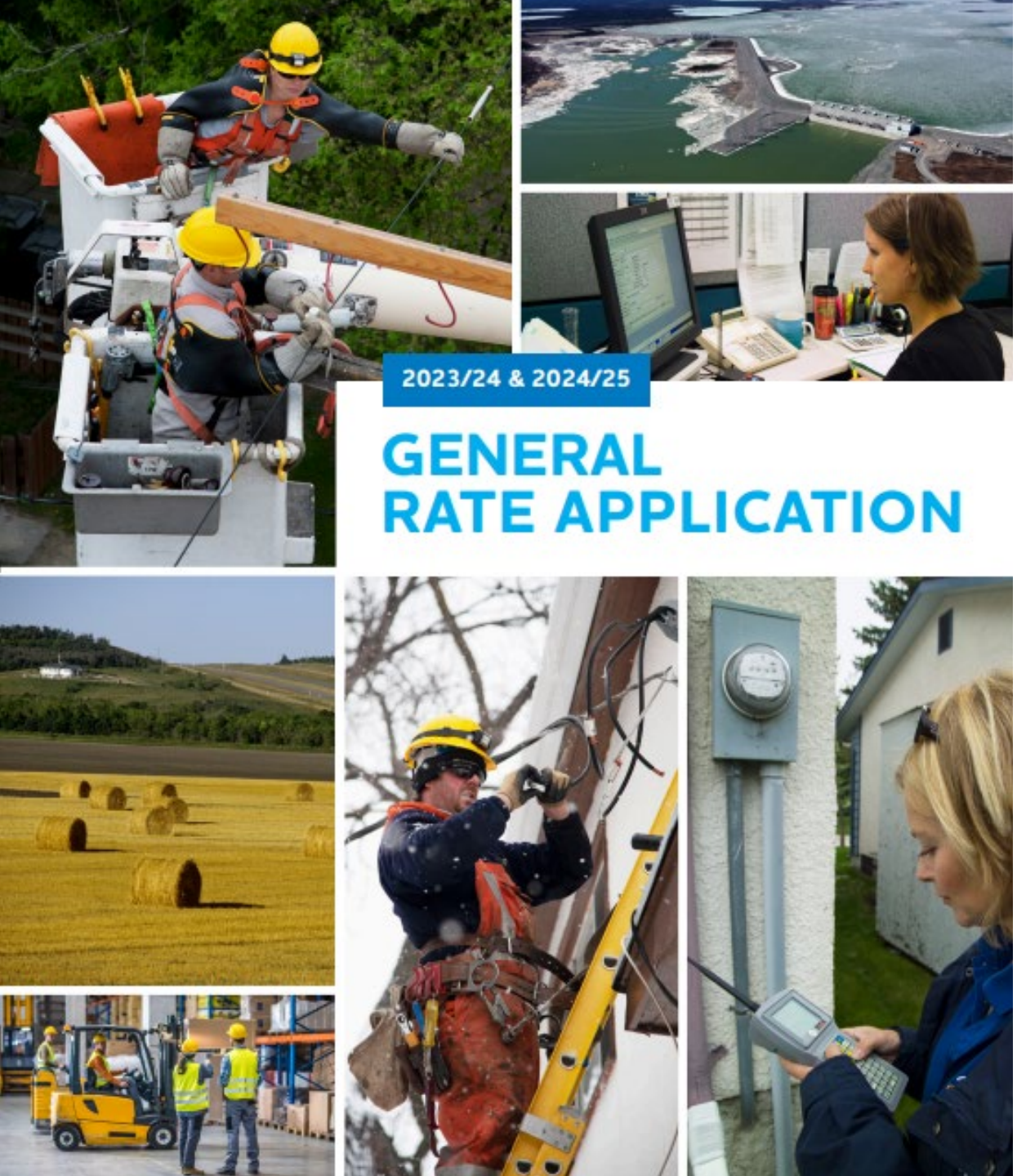



# Manitoba Hydro Rates & Cost of Service Panel

June 6, 2023

# Overview

- Summary of rate approvals requested
- Steps in Rate Development Process
- Rate Design objectives
- Cost Allocation
- Rate Design

# Approvals Requested

**Rate Changes:**

- Final approval of Rate Schedules reflecting a 3.6% overall revenue increase effective January 1, 2022 approved on an interim basis in Order 140/21;
- Approval of Rate Schedules (Appendix 8.4 and 8.7) reflecting overall revenue increases of 2% effective September 1, 2023 and April 1, 2024 to be collected through differentiated rate adjustments, sufficient to generate additional revenues of $24M in 23/24 & $38M in 2024/25;
- Final approval of Light Emitting Diode (LED) rates for the Area & Roadway Lighting class approved on an interim basis in Order 150/20;
- Approval of additional Area & Roadway Lighting rates (Appendix 8.4 and 8.7) .

# Approvals Requested

**Other Approvals identified as Out of Scope for Oral Evidence in Order 42/23:**

- Final approval of interim Orders related to weekly Surplus Energy Program rates and the annual reference discounts for the Curtailable Rates Program (listed in Appendix 9.1 and issued prior to the PUB's Order on this Application);
- Endorsement of modifications to the Terms and Conditions of Service for the Surplus Energy Program and the Curtailable Rates Program;
- Endorsement of change in the cost allocation methodology for the LED Roadway Lighting Conversion Program (Demand Side Management) costs.
- Approval to remove the Cooking and Heating Rates (Standard and Seasonal) from the Rate schedule which are no longer in use by Manitoba Hydro.

# NARUC's Basic Steps of Rate Development

*"Generically, the prime purpose of cost of service studies is to aid in the design of rates. The development of rates for a utility may be divided into four basic steps:*

**Phase I**

- *Development of the **test period total utility revenue requirement** - The total revenue requirement is the level of revenue to be collected from all sources.*
- ***Calculation of the test period revenue requirement** to be recovered through rates - This is simply the total revenue requirement of the utility from all sources less the amount from sources other than rates.*

**Phase II**

- *The **cost allocation procedure** - The total revenue requirement of the utility is attributed to the various classes of customers in a fashion that reflects the cost of providing utility services to each class. The cost allocation process consists of three major parts: functionalization of costs, classification of costs, and allocation of costs among customer classes. ·*
- ***Design of rates** - Regulators design rates, the prices charged to customer classes, using the costs incurred by each class as a major determinant. Other non-cost attributes considered by regulators in designing rates include revenue-related considerations of effectiveness in yielding total revenue requirements, revenue stability for the company and rate continuity for the customer, as well as such practical criteria as simplicity and public acceptance."*

***Source:*** *NARUC, Electric Utility Cost Allocation Manual*

# Three Sequential Steps to Rate Development – Pie Analogy

## Phase 1

### STEP 1: REVENUE REQUIREMENT

*Determines the size of the pie to be considered in Steps 2 & 3*

- Consists of both costs as well as Net Income included in MH's forecast, net of export revenues.
- Establishes the average rate increase for domestic customers (i.e. 2%).

## Phase 2

### STEP 2: COST ALLOCATION

*Determines how big the slices of the pie should be for each customer class but does not change the size of the pie.*

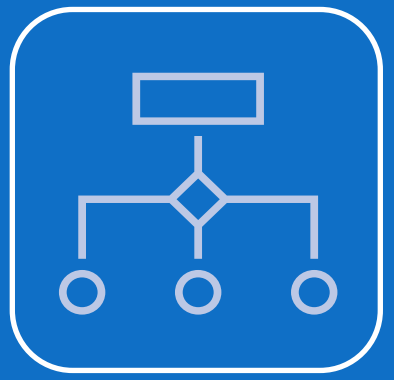
- A cost-of-service study apportions revenue requirement among the various classes it serves.
- Methodology uses the principle of Cost Causation as the appropriate basis for allocating costs.

### STEP 3: RATE DESIGN

*Divides the pie into slices for each customer class and determines their structure, based on the results of cost allocation and other factors, while still keeping the size of the pie the same.*

- Rates are designed to recover each class's Revenue Requirement, which is informed by the results of the cost-of-service study, previous direction of the PUB, and rate objectives of the utility.
- Rates can be a combination of fixed monthly charges, energy charges, and/or demand charges.

# Rate objectives balance considerations of cost to serve, stability, flexibility, efficiency and affordability

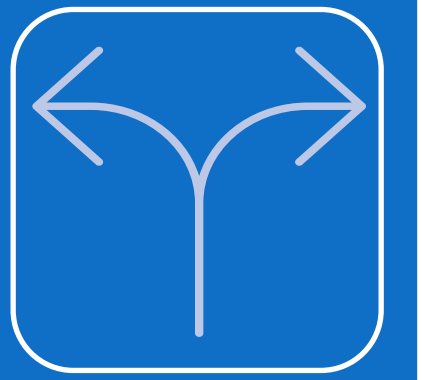


## Reflect the Cost of Providing Service

- Ensure rates fully recover the revenue requirement
- Target achieving class RCCs in the range of 95-105%

## Stability

- Considers the importance to customers of having stable and predictable bills



## Flexibility

- Considers ability of Manitoba Hydro to respond to future changes

## Efficiency

- Considers whether price signals correspond with underlying embedded and marginal costs

## Affordability

- Considers magnitude of bill impacts created by rate design changes

***It may not be possible to optimize all objectives at once.***

# *MH has followed a principled approach to rate-setting*

Balances guidance from PUB, rate objectives, and professional judgment

Considers traditional and new rate objectives in response to evolving energy landscape

Rate proposals reflect just and reasonable rates for all customer classes

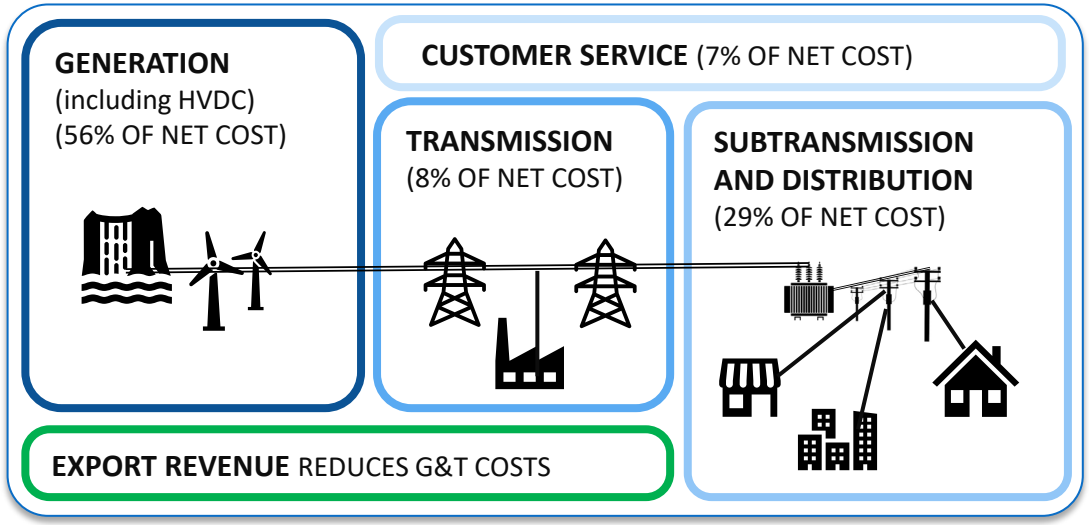
# Cost Allocation

*Determines how big the slices of the pie should be for each customer class but does not change the size of the pie*

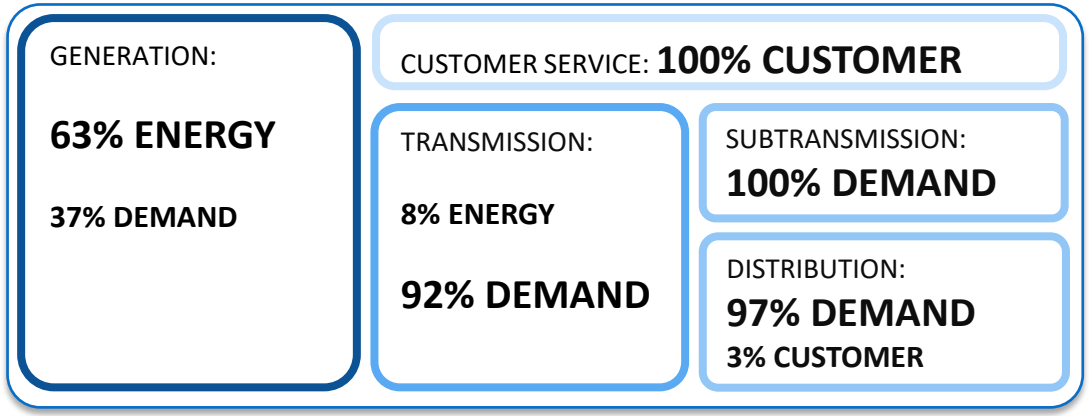
- Method of allocating a utility's costs to the various classes of customers that it serves
- Purpose is to determine a fair sharing of the utility's revenue requirement among the customer classes based on cost causation
- While there are many allocation methods, the central aim is always to allocate costs to the customer classes on the basis of known customer characteristics
- Can only provide an approximation of the actual cost of serving a particular customer or group of customers within a customer class due to the many judgements and estimates required throughout the process

# Sequential Steps to Cost Allocation

## STEP 1: FUNCTIONALIZE THE REVENUE REQUIREMENT




## STEP 2: CLASSIFY EACH FUNCTION




## STEP 3: ALLOCATE COSTS

- Classes are only responsible for the costs of the assets and services used by the customer
- Costs are allocated based on Energy used, peak Demand or weighted Customer count

| Assets & Services Used by Customer Class | Residential GSS GSM | GSL | | |
|---|---|---|---|---|
| | | 0-30 | 30-100 | >100 |
| Generation (incl BPIII and other HVDC) | Y | Y | Y | Y |
| Transmission | Y | Y | Y | Y |
| Subtransmission | Y | Y | Y | |
| Distribution (Substations, Lines & Transformers) | Y | Y | | |
| Meters & Meter Reading | Y | Y | Y | Y |
| Billing | Y | Y | Y | Y |
| Collections | Y | | | |
| Customer Service – All | Y | Y | Y | Y |
| Customer Service - Small Customers | Y | | | |
| Customer Service - Industrial & Commercial | | Y | Y | Y |
| Customer Service - Excl GSL>30kV | Y | Y | | |

**Prospective Cost of Service Study Inputs**

- Provides the forecast cost to provide service based on Manitoba Hydro's budget for the 2023/24 fiscal year
- Water rental and Provincial Guarantee Fees were cut in half
- Keeyask is fully in-service in PCOSS24
- Other Major G&T projects (BPIII, GNTL, MMTP) are also all fully in-service providing cost certainty compared to previous studies

**Net Export Revenue**

- Net Export Revenue (NER) for PCOSS is different than used by earlier panels
- NER includes all export revenues, but only the incremental portion of costs
- Calculation of NER in PCOSS is consistent with PUB direction
- Record export revenue of $1.15 billion has resulted in a $525 million increase in NER in PCOSS24 compared to previous study

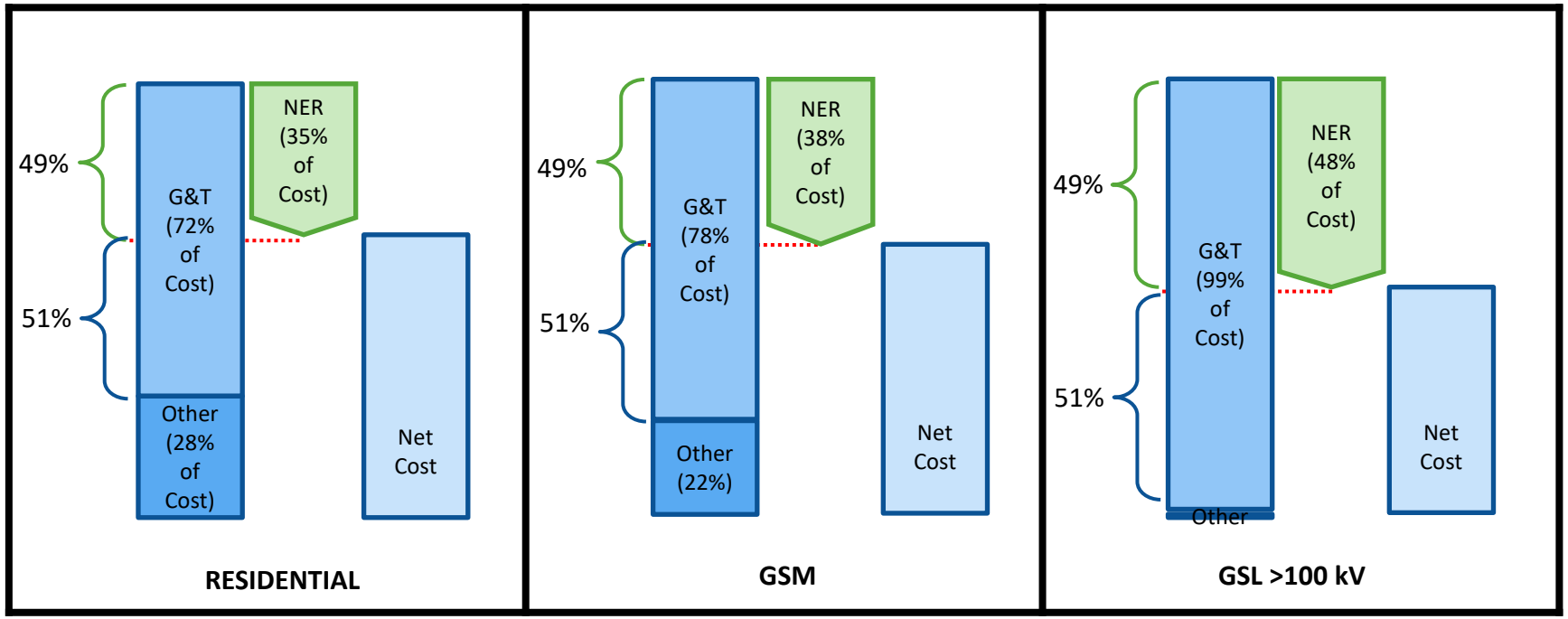
**PUB Directed Methodology**

- PCOSS24 is an appropriate guide for Rate Design proposals
- PCOSS24 methodology is fully compliant with PUB direction in Orders 164/16 and 59/18

# Domestic Customers are Only Responsible for Net Costs

**Export revenues reduce the total revenue requirement that needs to be recovered from domestic customers.**

- Only $1.9 billion of the $3.0 billion revenue requirement needs to be recovered from domestic customers since $1.1 billion is covered by export revenue
- Breakdown of costs will vary for each class based on the specific assets and services used
- NER is used to reduce the revenue requirement of the Generation and Transmission functions that is allocated to the domestic classes

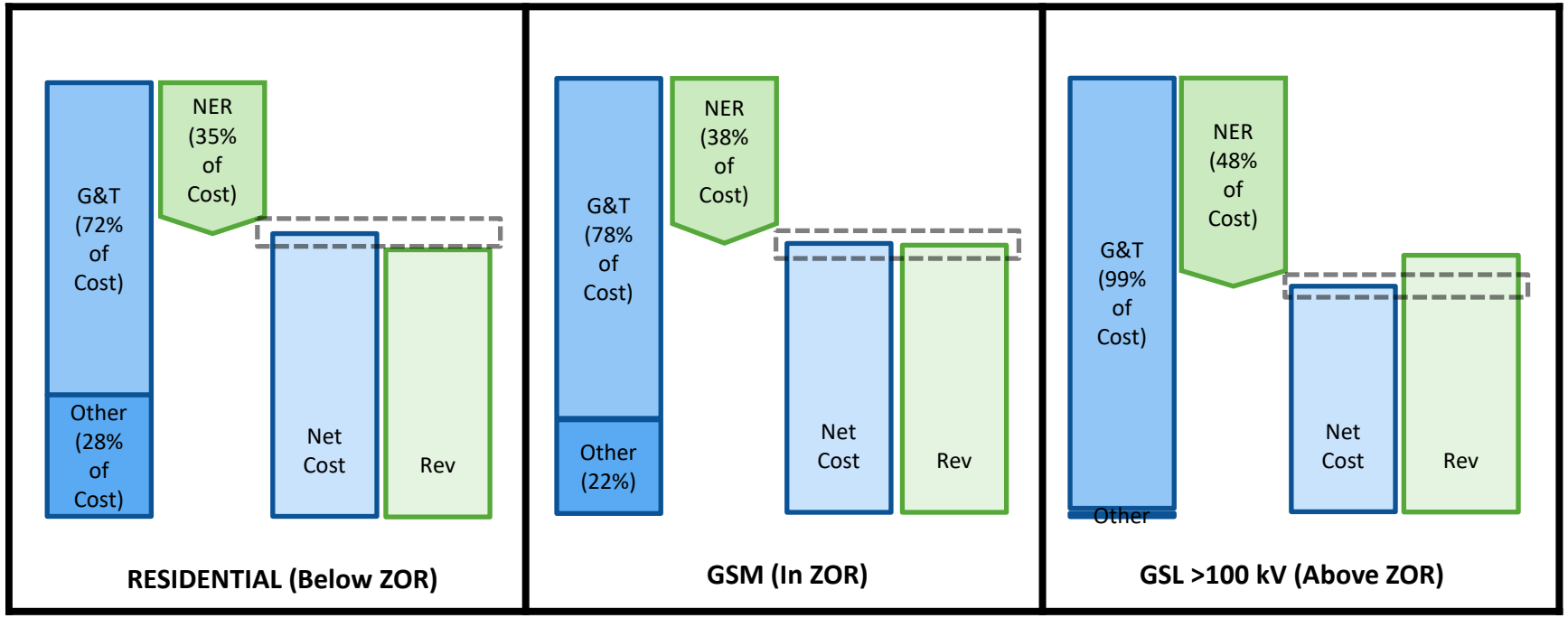



**NER allocation will offset the exact same portion of the G&T costs for each class (49%)**

# RCC Compares Revenues to Net Costs

**Revenue Cost Coverage (RCC) ratio is calculated using the revised methodology directed by the PUB**

- NER is used to offset costs in the revised RCC calculation
- Due to the many judgements required to functionalize, classify, and allocate costs a **Zone of Reasonableness (ZOR) of 95%-105%** is used.
- Zone of Reasonableness is +/-5% of **Net Costs**
- Export revenue (and net costs) are influenced by water flows and external market prices and are more volatile than embedded revenue requirement

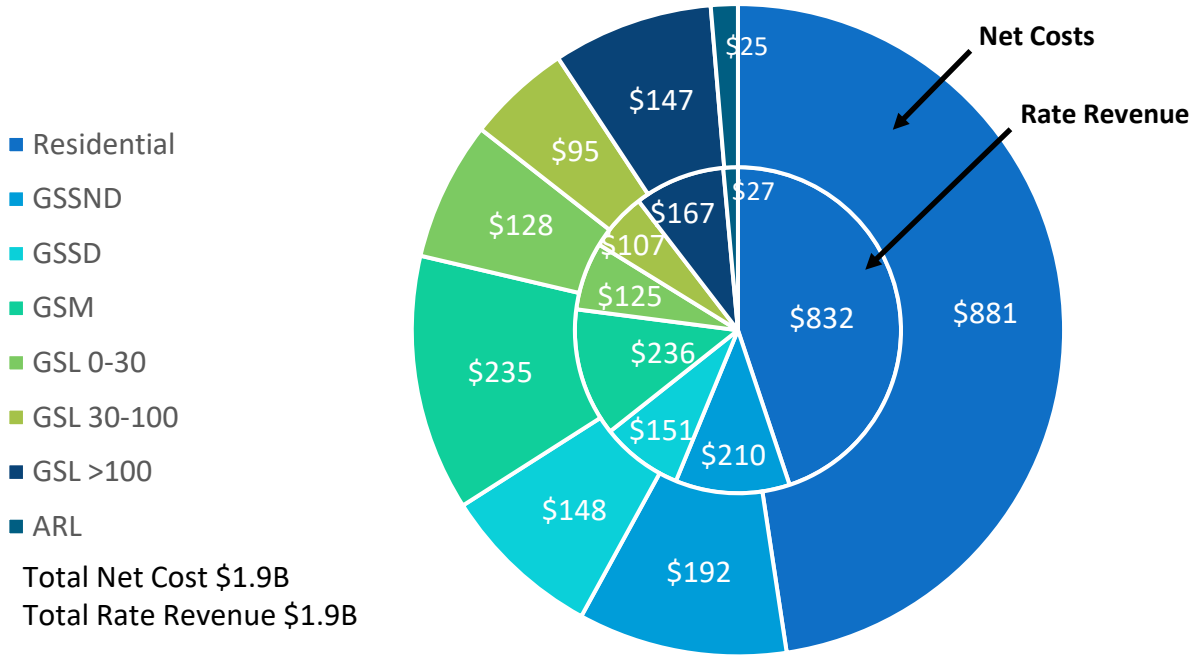



**RCC = Class Revenue ÷ (Costs – NER)**

# Results of Cost Allocation

**Cost of service study results gives guidance to differentiate class rate increases during the Rate Design phase**

- When a customer class receives a less than average rate increase other classes will require an above average increase to fully recover the revenue requirement
- Size of a class is irrelevant in RCC calculation, but will determine the impact that rate rebalancing has on other classes




Total Net Cost $1.9B
Total Rate Revenue $1.9B

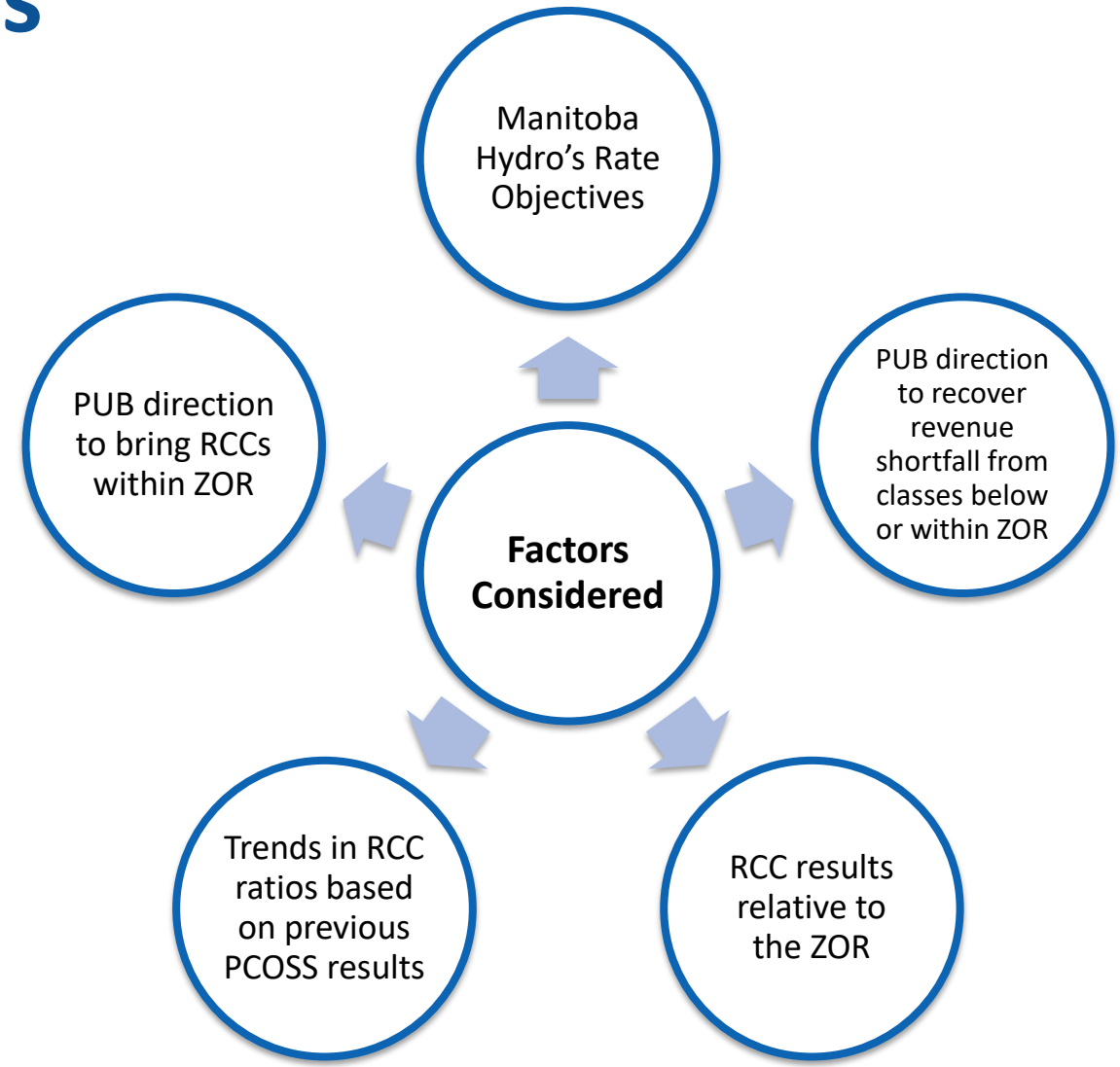
| Customer Class | PCOSS24 RCC |
|---|---|
| Residential | 94.4% |
| GSS Non-Demand | 109.7% |
| GSS Demand | 101.8% |
| GSM | 100.3% |
| GSL 0-30 kV | 97.9% |
| GSL 30-100 kV | 112.4% |
| GSL >100 kV | 113.2% |
| Area & Roadway Lighting | 108.2% |

# Rate Design

- The determination of a pricing structure that will recover the utility's revenue requirement and the classes share of costs.
- Involves consideration of rate objectives and policies to ensure that revenue requirement is fairly being recovered from customers and results in just and reasonable rates.
- Changes to rate design may from time to time change the way costs are recovered and from whom they are recovered but do not change the overall amount of revenue that needs to be recovered (i.e. the size of the pie).

# Proposed Rate Increases

***Manitoba Hydro's rate proposals are based on a balanced approach that is cost based, is consistent with PUB direction, and appropriately incorporates policy considerations when necessary***



# Basis for Proposed Rate Increases

| | PCOSS24 RCC | ZOR | Proposed Rate Increase Sep 1, 2023 | Proposed Rate Increase Apr 1, 2024 | |
|---|---|---|---|---|---|
| **Residential** | 94.4% | Below | 2.4% | 2.4% | Residential is only class below ZOR |
| **General Service Small Non-Demand** | 109.7% | Above | 1.0% | 1.0% | The General Service Small Non-Demand Class has been persistently above the ZOR |
| **General Service Small Demand** | 101.8% | In | 2.1% | 2.1% | The General Service Small Demand, General Service Medium and General Service Large 750V – 30kV are within the ZOR |
| **General Service Medium** | 100.3% | In | 2.1% | 2.1% | |
| **General Service Large 750V-30 kV** | 97.9% | In | 2.1% | 2.1% | |
| **General Service Large 30-100 kV** | 112.4% | Above | 1.5% | 1.5% | The General Service Large 0-30kV and >100 kV are higher in PCOSS24 compared to previous studies due to record levels of export revenue which are highly variable and expected to decline |
| **General Service Large >100 kV** | 113.2% | Above | 1.5% | 1.5% | |
| **Area & Roadway Lighting** | 108.2% | Above | 1.0% | 1.0% | A&RL has been persistently above the ZOR. The proposed change to DSM assignment temporarily lowers RCC. |

# Alignment of Rate Differentiation Proposals with Rate Objectives

| Objective | Comment |
|---|---|
| **Reflect the Cost of Providing Service:** Rates ensure revenue requirement is recovered and target achieving class RCCs in the range of 95% - 105% | Rate proposals continue to move the RCC of classes that are outside of the ZOR closer to the ZOR.<br>Above and below average increases must offset each other in order to recover proposed 2% average increase. |
| **Stability**: considers the importance of customers having stable and predictable bills | Proposed differentials are consistent with concept of gradually moving customers into ZOR. Consistent with past practice, MH considered an approximately 5–10-year window for moving classes into ZOR. |
| **Flexibility:** considers ability of Manitoba Hydro to respond to future changes | Rate structures may need to adapt to future policy, system, or economic changes. Moving classes into ZOR will provide greater flexibility to address these changes in the future. |
| **Efficiency:** considers whether price signals correspond with underlying embedded and marginal costs | Rate differentials increase alignment with embedded cost causation. |
| **Affordability**: considers the magnitude of bill impacts created by rate design changes | Rate differentials are modest for classes receiving above average increases. |

# Rate Structure Components

*When all components are adjusted by the average class increase all customers within a class will have the same bill impact from the proposed rate increase*

**CUSTOMER Charge**
A **fixed charge** per month not impacted by usage

**DEMAND Charge**

Demand is the rate at which electricity is used. Billing demand is the highest rate of electricity use during a month. The **demand charge is a fixed charge** per kVA.

**Demand ratchets** specify that if measured demand is lower in the current month, it will be billed using some other pre-defined level of demand.

**ENERGY Charge**

A **volumetric charge** based on how much energy is used.

For customer classes without demand metering, energy charges are also used to recover the costs related to demand-related requirements.

# Proposed Rate Structure Changes

***Manitoba Hydro is proposing the following changes consistent with Rate Objectives for this application:***

**Residential**

- No change in rate structure
- Rate increase applied equally to BMC and energy charge

**General Service Small & Medium**

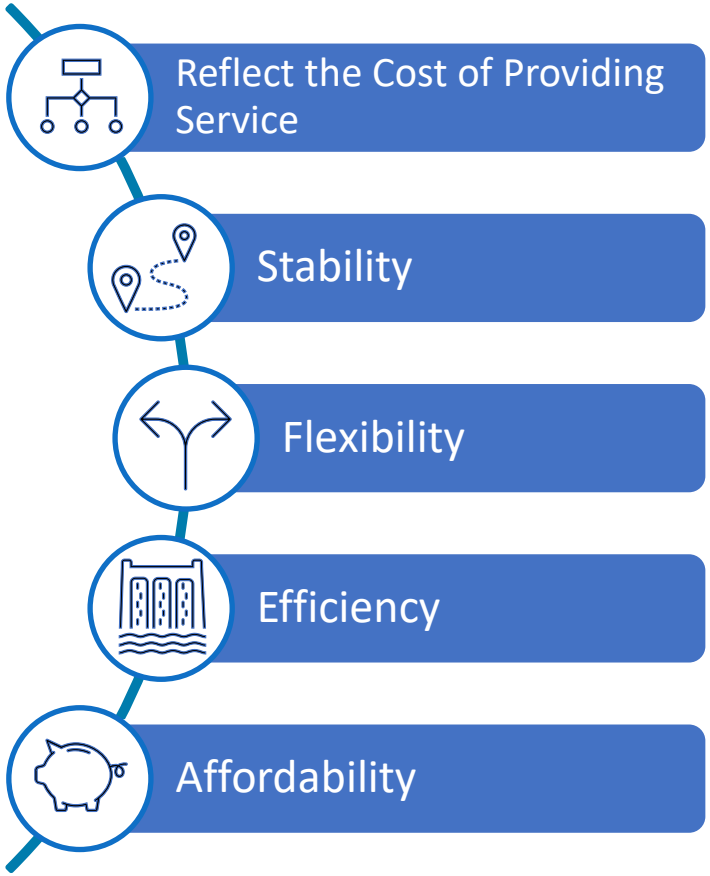
- Cease Rate Harmonization of General Service Small and General Service Medium classes that results in differentiated rate increases across rate components:
  - No increase to the BMC
  - Lower increase to first block rate
  - Higher increase to second block rate
  - Higher increase to the demand charge
- Consolidate the first and second energy blocks for the GSM class

**General Service Large**

- Rate increase applied to the demand charge only
- Refined Approach to Calculate Billing Demand for GSL > 30 kV Customers

**Area & Roadway Lighting**

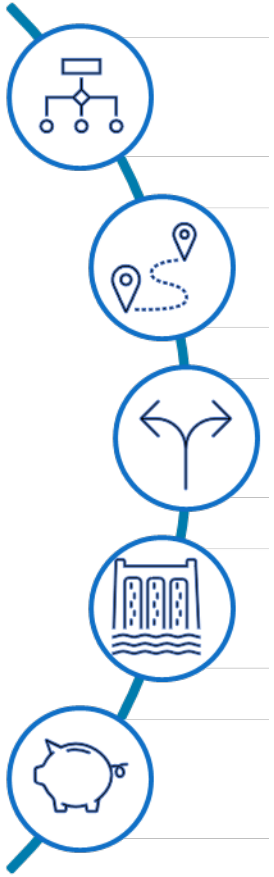
- Implementation of differentiated rates based on the results of LCOSS24.



# General Service Small & Medium

***Manitoba Hydro is proposing to de-harmonize the GSM rates from those of the GSS classes given the diverse class characteristics and the extent of the RCC differences***

| | General Service Small Non-Demand | General Service Small Demand | General Service Medium |
|---|---|---|---|
| First 11,000 kWh | 91% | 32% | 10% |
| Next 8,500 kWh | 9% | 26% | 7% |
| Balance of kWh | - | 42% | 83% |



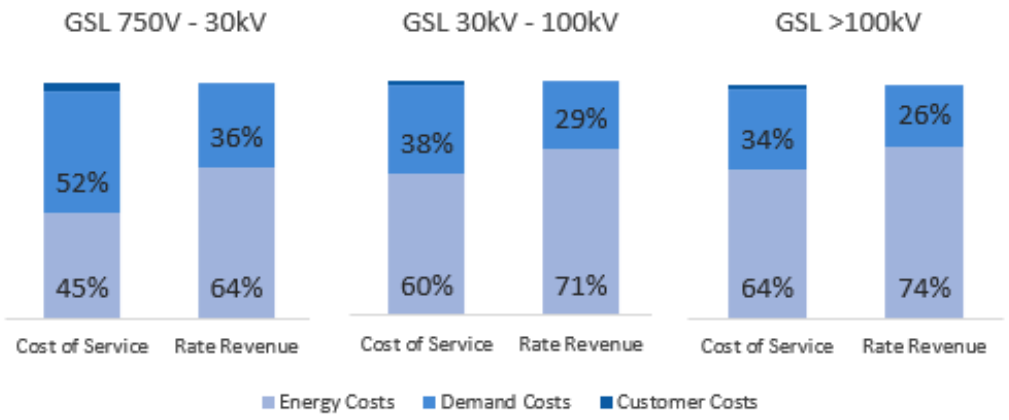
- Maintaining longstanding rate harmonization and the existing declining block structure for GSS minimizes unexpected changes that could adversely affect existing customers
- De-harmonizing the rates of the GSM from GSS classes will allow Manitoba Hydro to achieve the revenue requirement for each class.
- Increases ability to send price signals in the various rate components – specifically the first block, tail block and demand charges and provides better alignment with cost to serve.

# General Service Large

Customers in the GSL classes have varying degrees of alignment with the unit costs from PCOSS24.

**Manitoba Hydro is proposing to rebalance demand and energy charges** by increasing the demand rates and maintaining energy rates unchanged.

This approach enhances price signals by **bringing revenue recovery more in line with cost allocation**



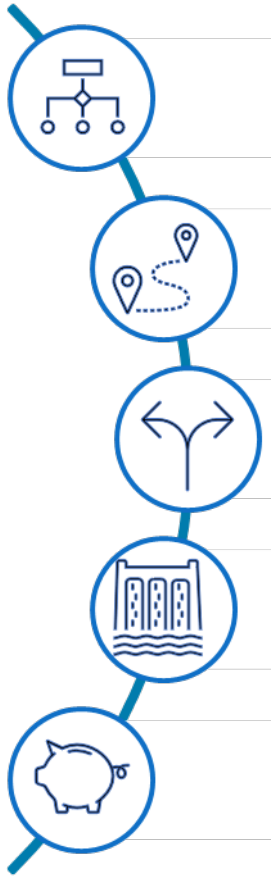

- For customers in the GSL >30kV classes, **Manitoba Hydro is proposing a more refined approach to calculate Billing Demand** by introducing "peak" and "non-peak" considerations that are consistent with when Manitoba Hydro's system peaks in each season.

Proposed Billing demand is defined as the greatest of the following (expressed in kVA):

a) measured demand during **Peak Hours**; or
b) 90% of measured demand during **Non-Peak Hours**; or
c) 25% of contract demand; or
d) 25% of the highest measured demand in the previous 12 months

- This change will reduce demand billing determinants by ~1%. Manitoba Hydro is proposing a slight increase to the demand rate to maintain revenue neutrality for the classes.

- The 90% limitation is a measure of prudency to prevent unchecked load growth during off-peak hours.



# Billing Demand Example

| | Peak Hours Current Month | Non-Peak Hours Current Month | Highest Measured Demand in the previous 12 months | Contract Demand |
|---|---|---|---|---|
| Highest Measured Demand (based on 15-min interval readings) | 10,000 kVA | 11,000 kVA | 9,000 kVA | 15,000 kVA |

## Current Billing Demand Definition

| Monthly Billing Demand is the greatest of: | |
|---|---|
| Highest measured demand for the current month | 11,000 kVA |
| 25% of contract demand | 3,750 kVA |
| 25% of the highest measured demand in the previous 12 months | 2,250 kVA |
| **Billing Demand** | **11,000 kVA** |

## Proposed Billing Demand Definition

| Monthly Billing Demand is the greatest of: | |
|---|---|
| Highest measured demand for the current month during "Peak Hours" | 10,000 kVA |
| 90% of the highest measured demand for the current month during "Non-Peak Hours" | 9,900 kVA |
| 25% of contract demand | 3,750 kVA |
| 25% of the highest measured demand in the previous 12 months | 2,250 kVA |
| **Billing Demand** | **10,000 kVA** |

The proposed change in the billing demand definition:

- ✓ Will result in customers' billing demand being **the same or less** than under the current definition
- ✓ It's not a new ratchet – it incorporates a time-varying component to the measurement of billing demand
- ✓ It provides opportunities for customers to reduce demand costs by shifting demand requirements to off-peak hours.

# Even with the proposed 2% increase, Manitoba Hydro's electricity rates are among the lowest in Canada

Manitoba Hydro's rate proposals result in average electricity rates that are stable, predictable and are among the lowest in Canada across all segments and consumption levels.

## *Utility Rate Increases in 2023*

| | |
|---|---|
| Nova Scotia Power, An Emera Company | 6.9%<br>February 2, 2023 |
| Énergie NB Power | 4.8%<br>April 1, 2023 |
| SaskPower, Powering our future | 4.0%<br>April 1, 2023 |
| Hydro Québec | 3.0% (residential)<br>6.5% (business)<br>4.2% (industrial)<br>April 1, 2023 |
| BC Hydro, Power smart | 2.0%<br>April 1, 2023 |
| Manitoba Hydro, energy for life | 2.0%<br>September 1, 2023<br>*(proposed)* |

## *Comparison of Monthly Bills in Major Canadian Cities*

| | Residential | Residential | Small Power | | | Medium Power | | | Large Power | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Power Demand** | | | **14 kW** | **40 kW** | **100 kW** | **1,000 kW** | **1,000 kW** | **2,500 kW** | **5,000 kW** | **50,000 kW** |
| **Consumption** | **1,000 kWh** | **2,000 kWh** | **2,000 kWh** | **10,000 kWh** | **25,000 kWh** | **200,000 kWh** | **400,000 kWh** | **1,170,000 kWh** | **3,060,000 kWh** | **30,600,000 kWh** |
| **Load Factor** | | | **20%** | **35%** | **35%** | **28%** | **56%** | **65%** | **85%** | **85%** |
| Winnipeg | $107 | $205 | $215 | $989 | $2 744 | $22 961 | $32 326 | $79 692 | $188 073 | $1 586 307 |
| Calgary | $199 | $371 | $386 | $1 825 | $4 187 | $39 574 | $59 862 | $163 539 | $402 713 | $4 020 116 |
| Charlottetown | $178 | $331 | $399 | $1 849 | $4 516 | $38 321 | $63 141 | $178 843 | $311 180 | $3 111 800 |
| Edmonton | $195 | $361 | $400 | $1 928 | $5 324 | $43 592 | $69 364 | $191 298 | $430 871 | $3 746 692 |
| Halifax | $173 | $335 | $310 | $1 636 | $4 091 | $36 137 | $55 219 | $147 638 | $348 719 | $3 487 219 |
| Moncton | $139 | $255 | $304 | $1 441 | $3 596 | $30 974 | $50 744 | $143 759 | $258 412 | $2 465 040 |
| Montreal | $76 | $166 | $219 | $1 042 | $2 822 | $25 348 | $33 495 | $83 102 | $163 059 | $1 543 554 |
| Ottawa | $129 | $233 | $268 | $1 269 | $3 501 | $28 708 | $46 699 | $134 155 | $299 324 | $2 856 156 |
| Regina | $165 | $307 | $305 | $1 398 | $3 650 | $32 680 | $48 028 | $117 239 | $274 788 | $2 312 973 |
| St. John's | $138 | $260 | $295 | $1 276 | $3 173 | $24 655 | $41 256 | $114 174 | $285 130 | $2 013 256 |
| Toronto | $139 | $245 | $299 | $1 365 | $3 766 | $32 140 | $50 904 | $139 023 | $398 525 | $2 946 264 |
| Vancouver | $114 | $252 | $256 | $1 169 | $2 910 | $23 979 | $35 856 | $97 617 | $237 343 | $1 976 723 |

Lowest rate
Second lowest rate

* Rates in effect as of April 1, 2022 but including proposed rate increases for Manitoba Hydro in both 2023/24 & 2024/25

# Thank you