



# Manitoba Hydro

## Wholesale Electricity Business Workshop

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Senior Vice President Power Supply

May 31, 2010

June 1, 2010



# Workshop

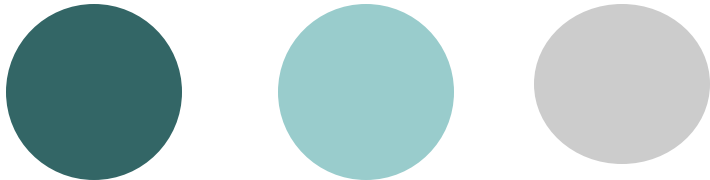
“ A brief intensive educational program for a relatively small group of people that emphasizes participation in problem solving.”





# Objectives

- Explain **what Manitoba Hydro does today, expects to do in the future, and why.**
- Develop common perspective of Manitoba electricity business environment today and likely future environment. – or at least identify differences in perspectives.



# Objectives

- Develop common understanding of how Manitoba Hydro manages its ‘wholesale’ supply obligations and opportunities.



# Format

- Informal
- Brief presentations
- Discussion
- No minutes, no transcripts
- 2 days, 3<sup>rd</sup> if required





# Program

- Overview

- Corporation
- Domestic customers
- Extra-Provincial partners

- Governance and Planning Processes

- External
- Internal





# Program



- Wholesale planning and operations
  - Wholesale concepts
  - Supply/Demand planning
  - Export markets
  - Market considerations

# Manitoba Hydro

- MH Act

- Continuance, adequate for Manitoba
- Promote economy and efficiency

**In- Province – power and services**

**Outside province – power**



- MHEB Interpretation:

Within the context of contemporary values and conditions

- **Highest reasonable level of reliability for Manitoba customers**
- **Lowest reasonable energy costs for Manitoba customers**





# Manitoba Hydro - How

1920 – Federal Government Survey of Nelson River

1963 – Study of Hydro Electric Potential of the Nelson River

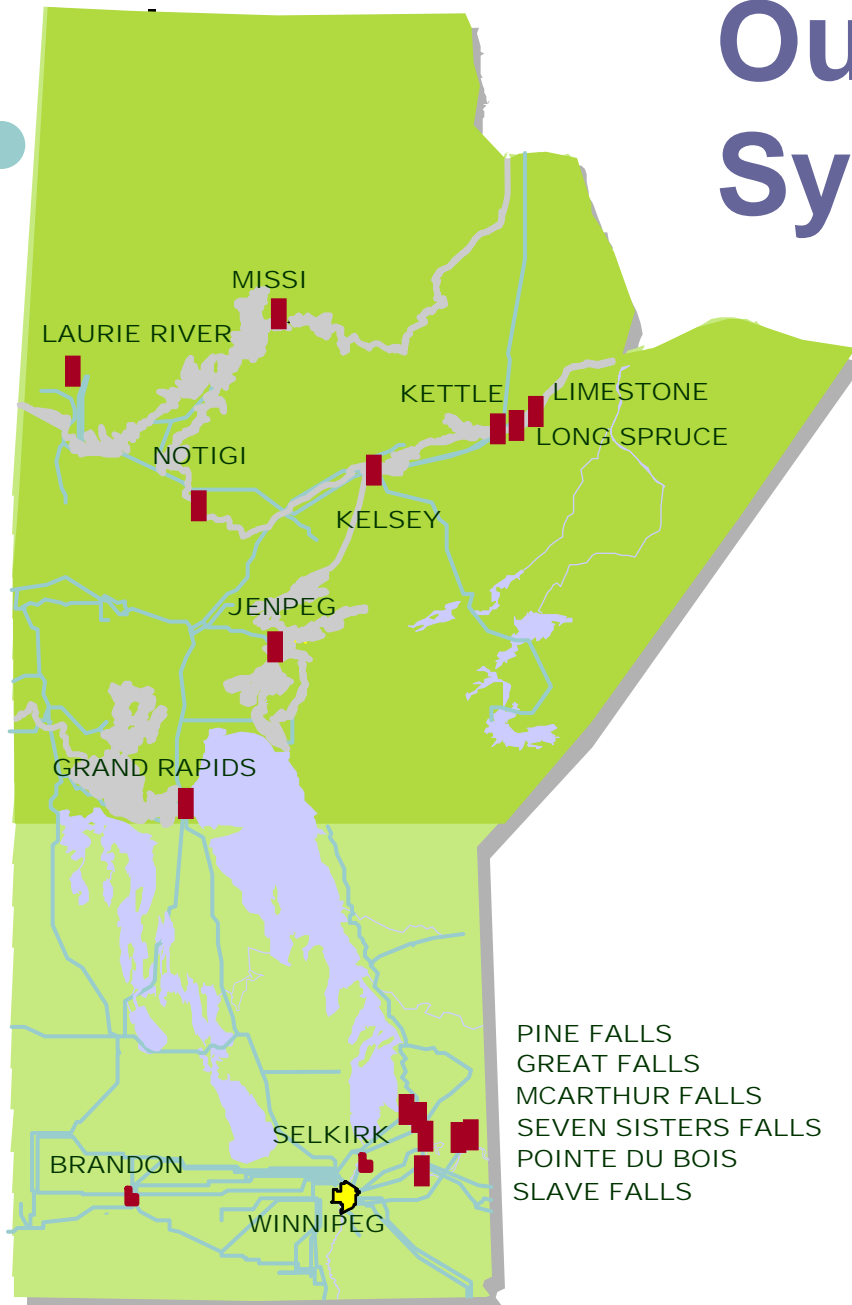
1966 – Federal and Provincial government Agreement on Nelson River Development

- HVDC Transmission - 1967-1972
- Churchill River Diversion
- Lake Winnipeg Regulation
- Series of Generating Stations – 1967- 1972

**Irrevocably established the  
essence of Manitoba Hydro as  
we know it today.**



# Our Existing System



■ Generation facilities

— Transmission lines

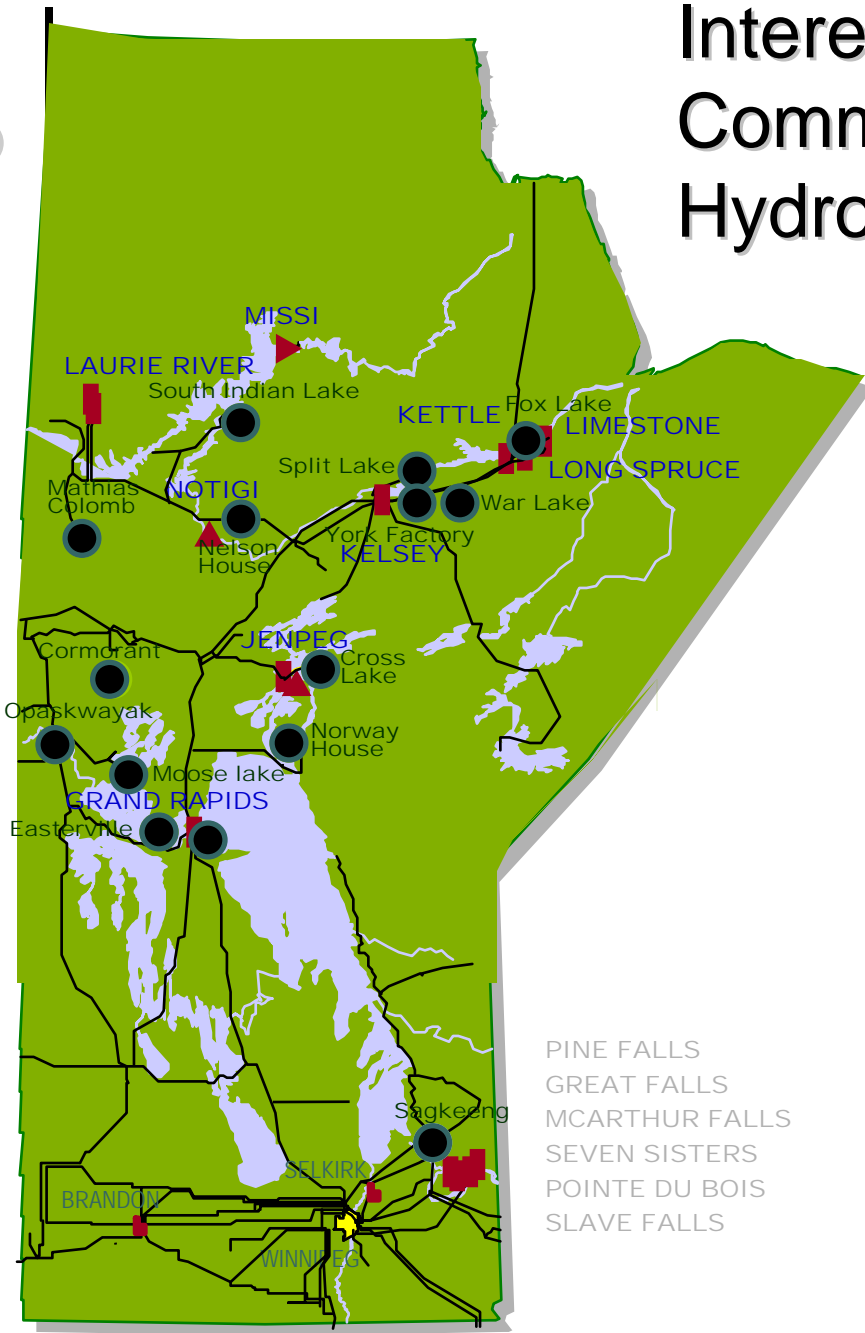
— Waterways influenced by hydro development

■ 75% of our generation capacity is in northern Manitoba. Aboriginal communities are located in the vicinity of these projects.

~5000 MW of hydraulic generation

~500 MW thermal generation

# Interests of Many Aboriginal Communities and Manitoba Hydro Overlap



-  Major Hydro facilities
-  Transmission Lines
-  Aboriginal Communities along developed waterways

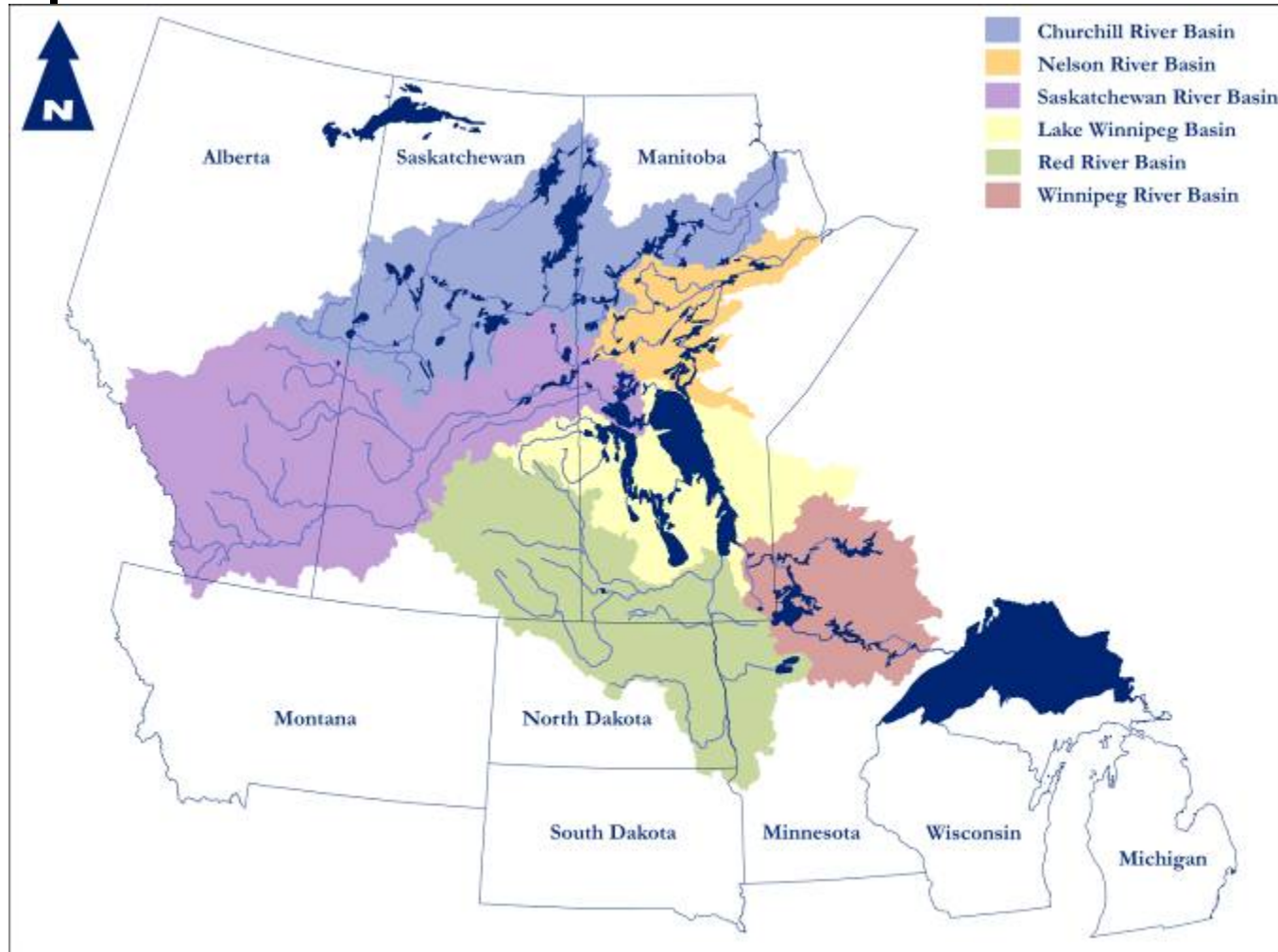
PINE FALLS  
 GREAT FALLS  
 MCARTHUR FALLS  
 SEVEN SISTERS  
 POINTE DU BOIS  
 SLAVE FALLS

# Characteristics of Manitoba Hydro



- Hydro-electric
  - Not thermal
  - Not nuclear
- Energy supply un-controlled
- Power sources distant from customers
- Extensively interconnected to neighbors
- Capital intensive
- Very long planning/development horizon
- Complex relations with impacted communities

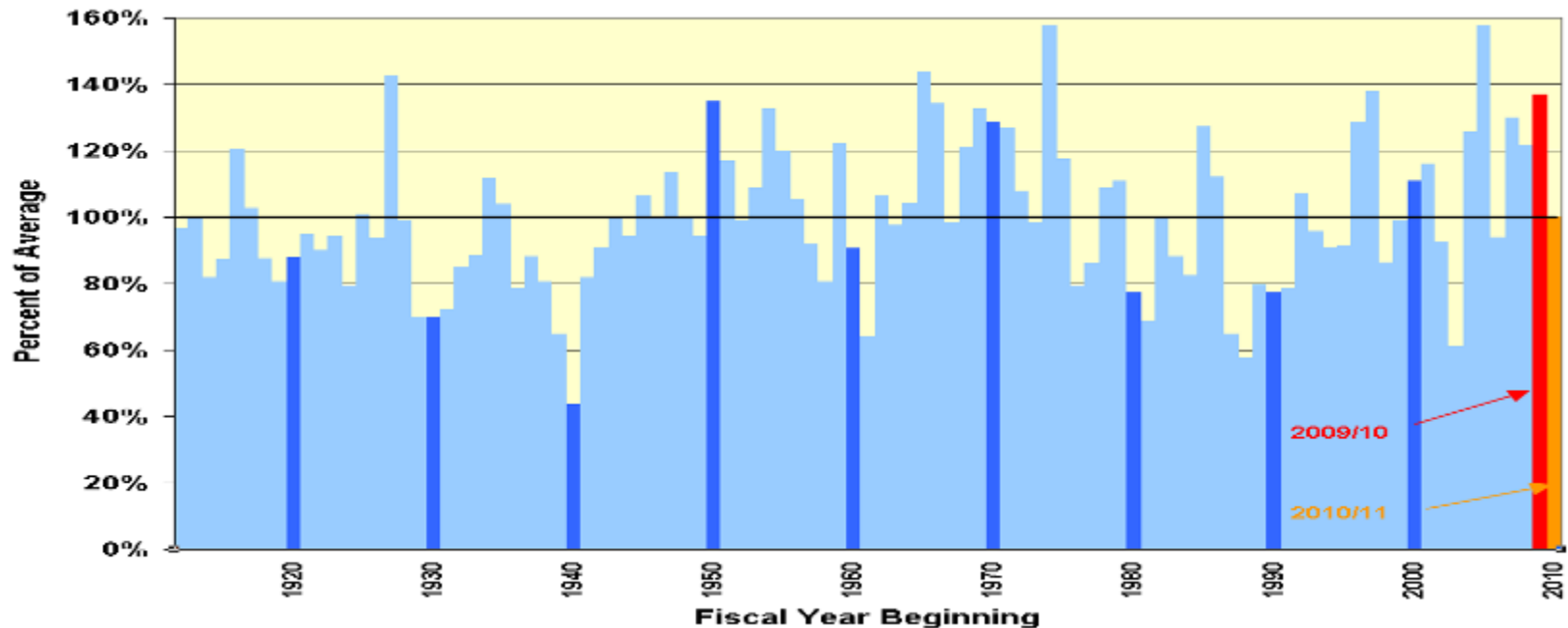
# Essential Characteristics Hydrologic Resources





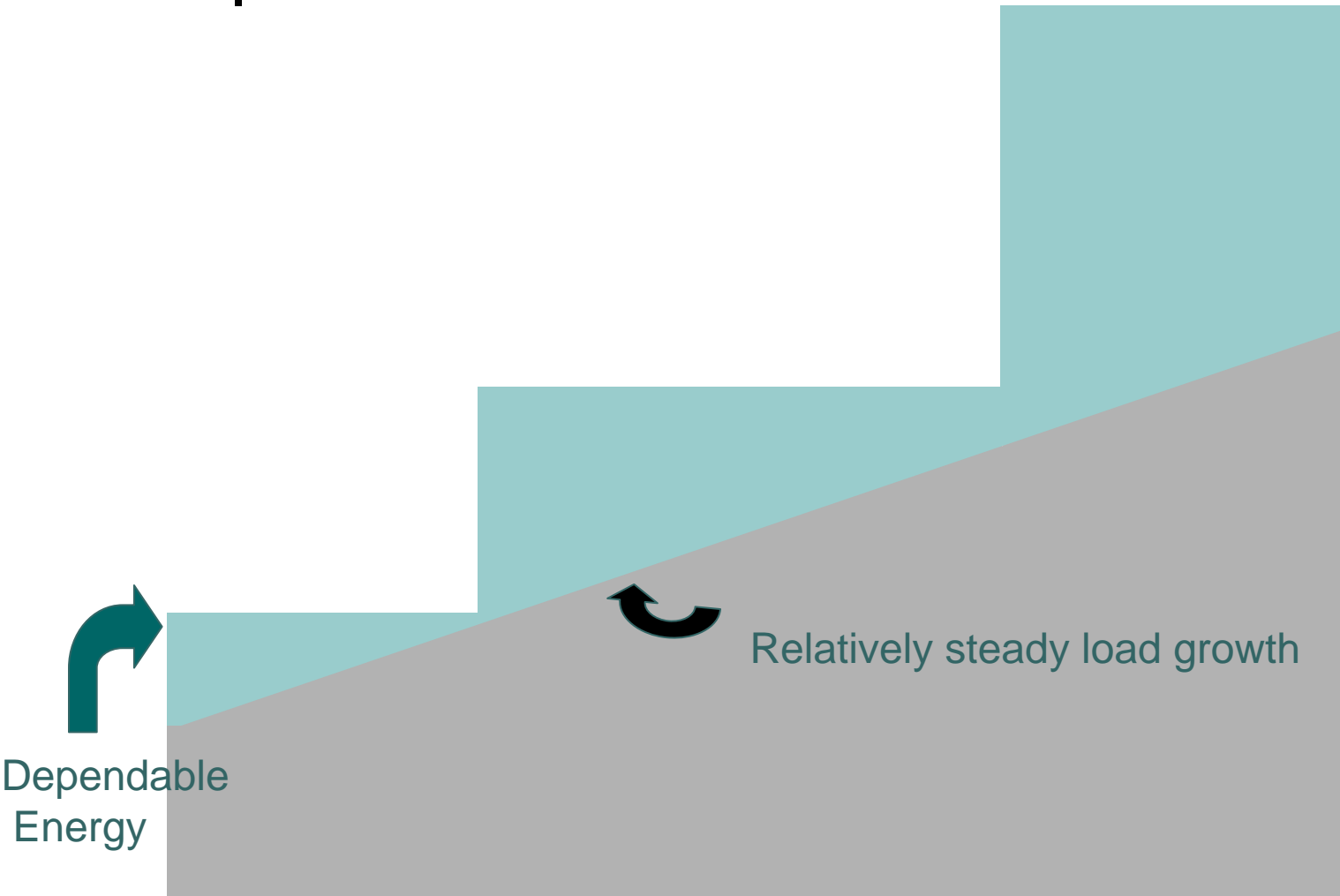
# Essential Characteristics

## Water Supply Variability



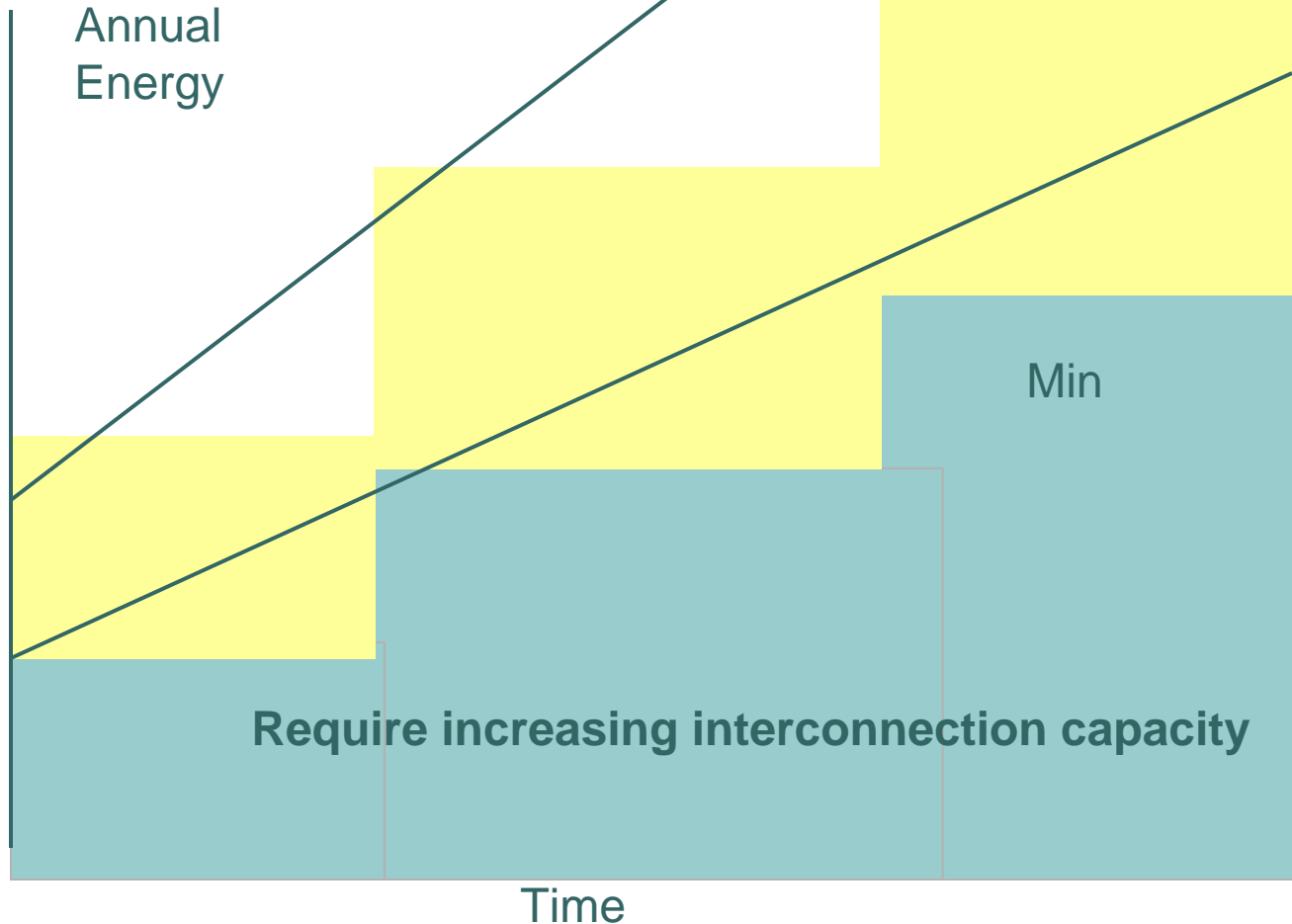
# Essential Characteristics

● ● ● Large Supply Increments in relation to Domestic Load Growth



# Essential Characteristics

Increasing Surplus Maximum and Average











# Essential Characteristics Interconnections



- Improve reliability
- Market surplus power
- Purchase power
- Optimize development and operations
- Diversity exchanges
- Cycling, temporal arbitrage
- Emergency support

“Must be mutually beneficial”

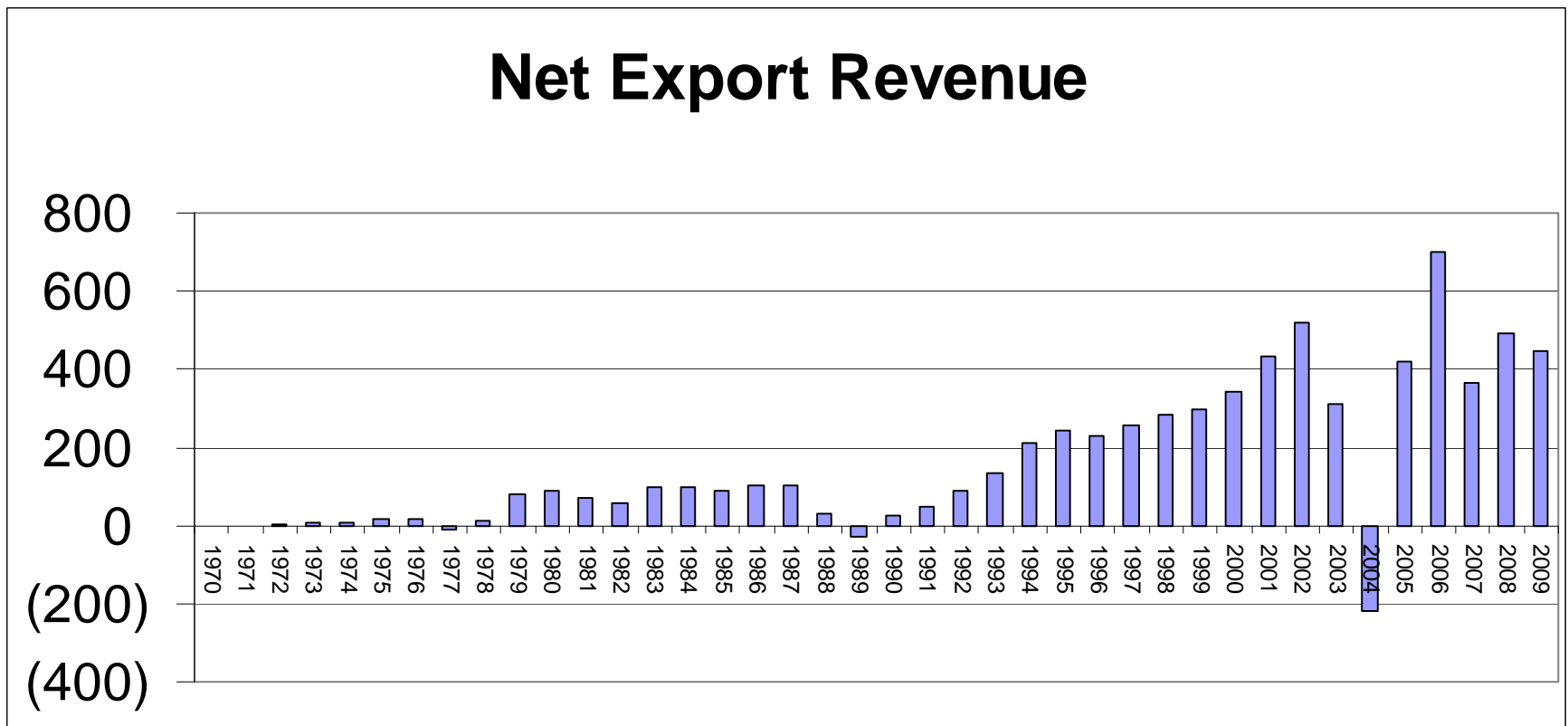
# Interconnections Bring Obligations

	Reliability	Market
PUB		
MISO		
MRC		
NERC		
FERC		
AESO		
IESO		
NEB		



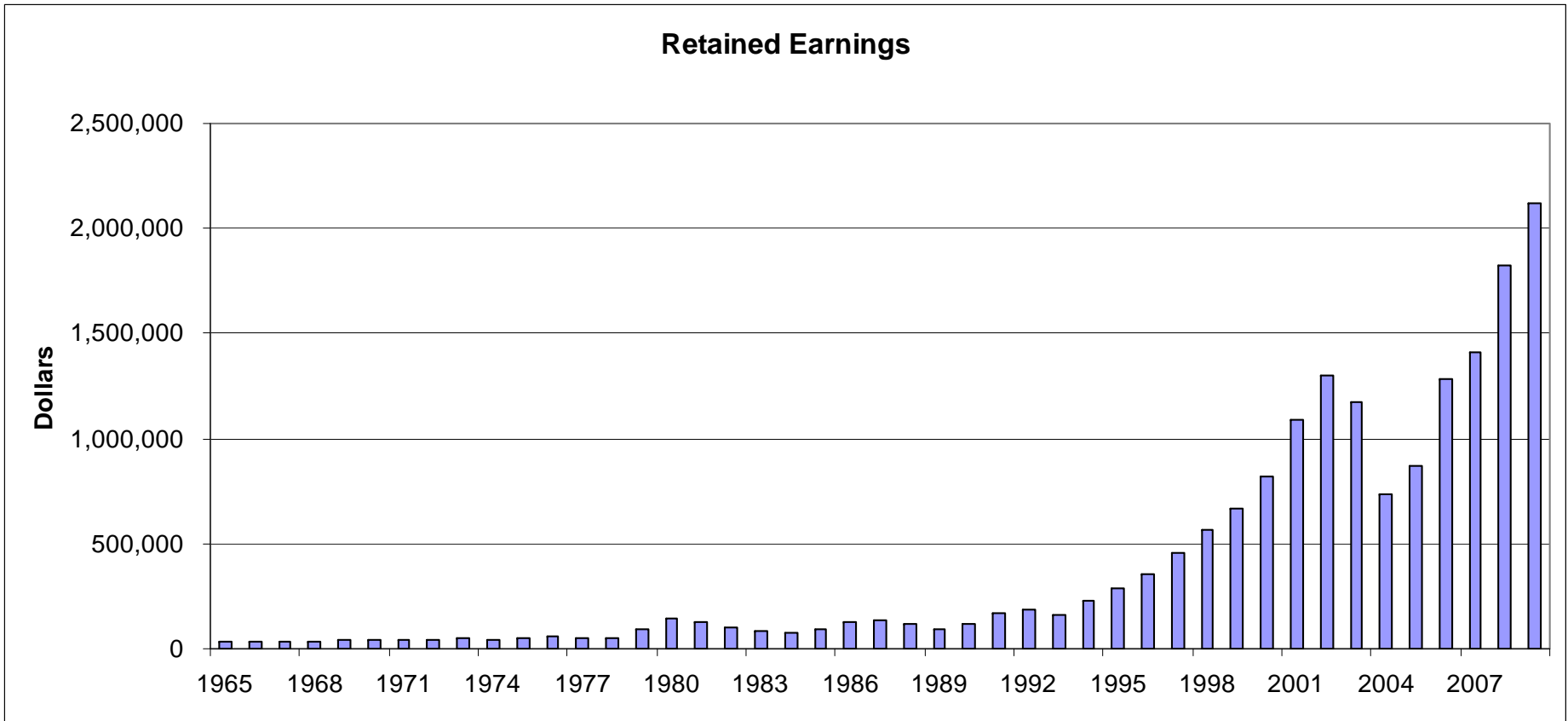
# Net Flow Related Export Revenues

- Huge variation
- Step changes





# Retained Earnings

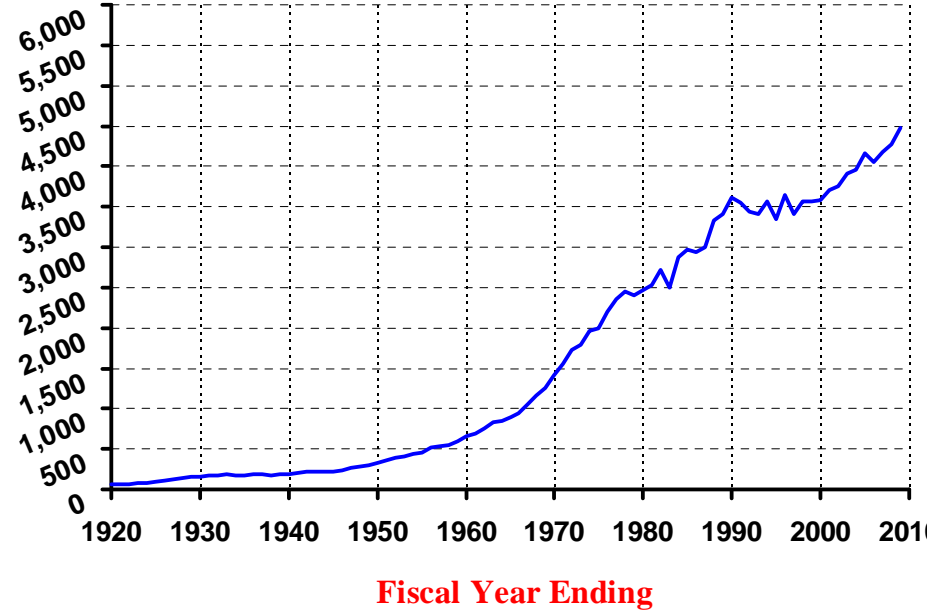
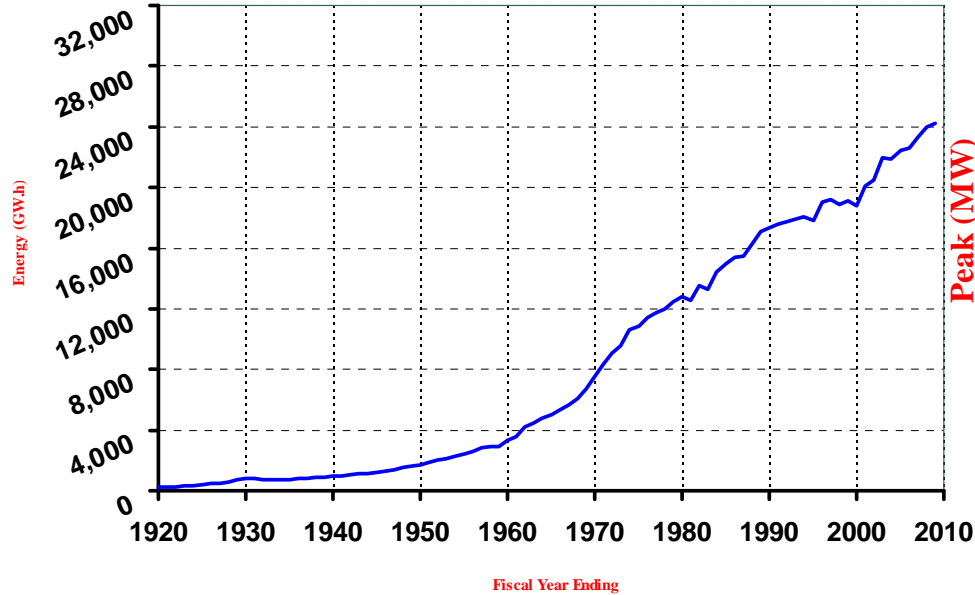


# Manitoba Customers

- Primary Market
  - Reliability of supply
  - Cost of energy

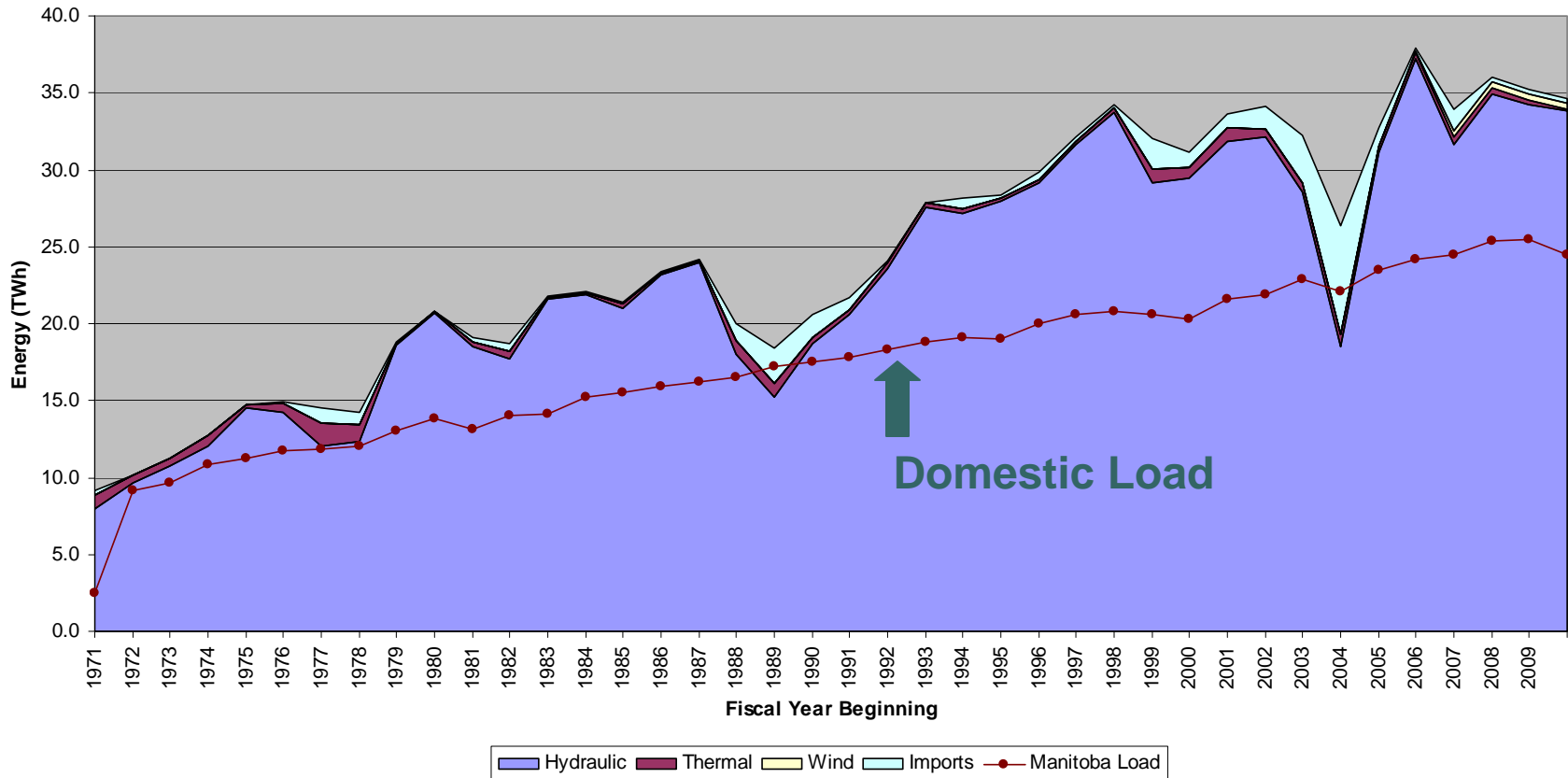


# Domestic Load



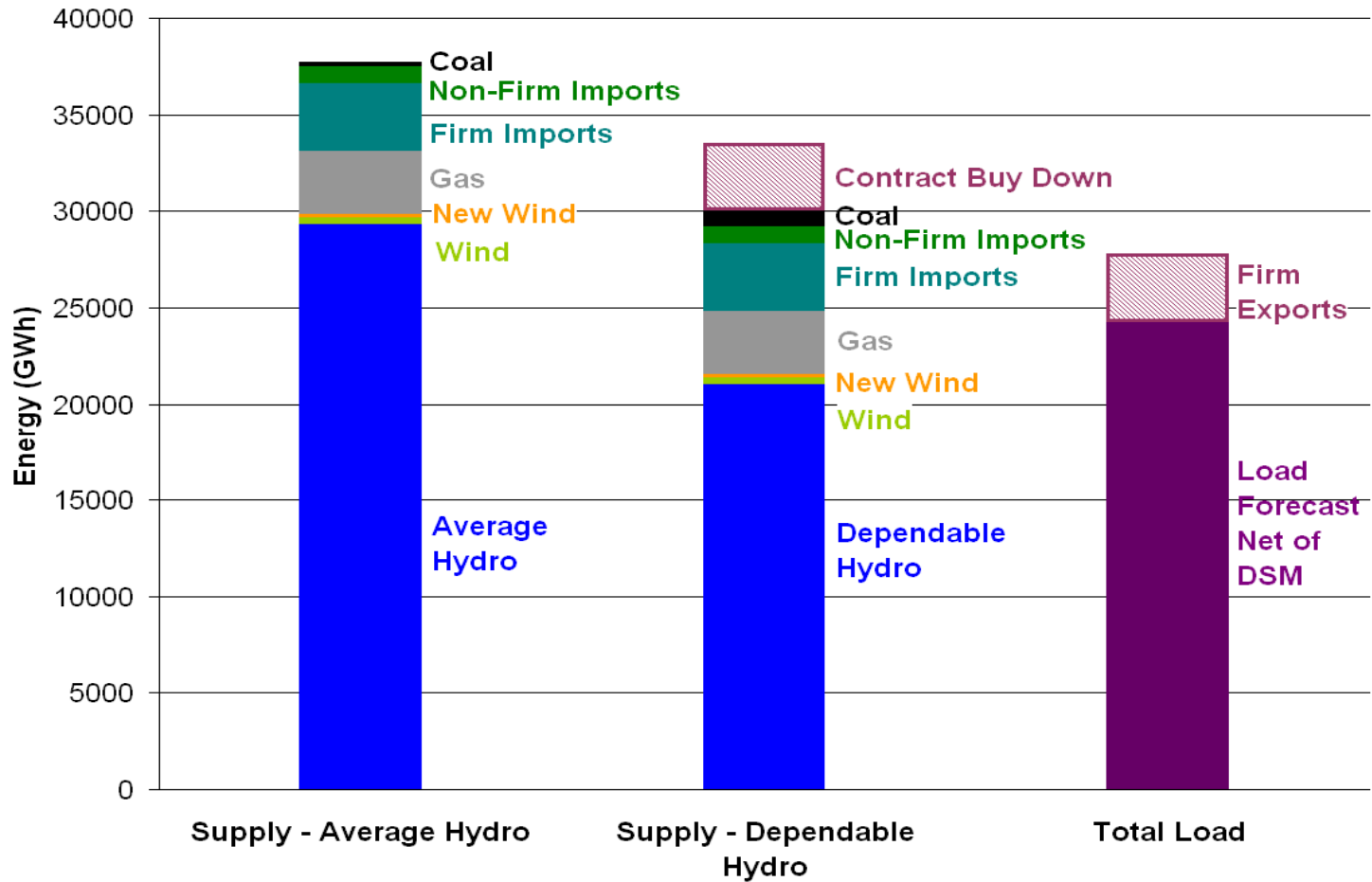
# Reliability – Bulk Energy Supply

Manitoba Electric Supply





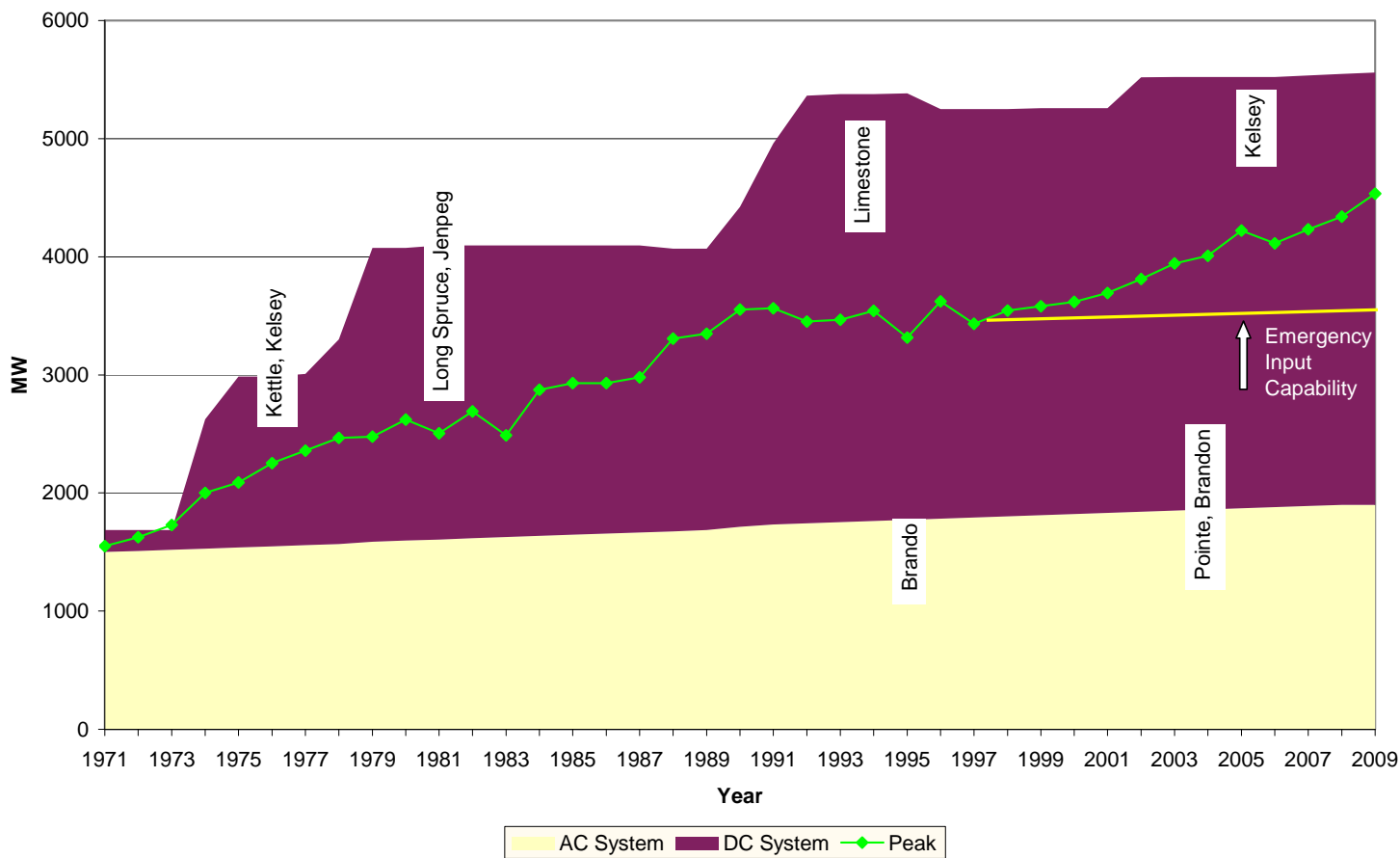
# Reliability - Bulk Energy Supply – 2010/11





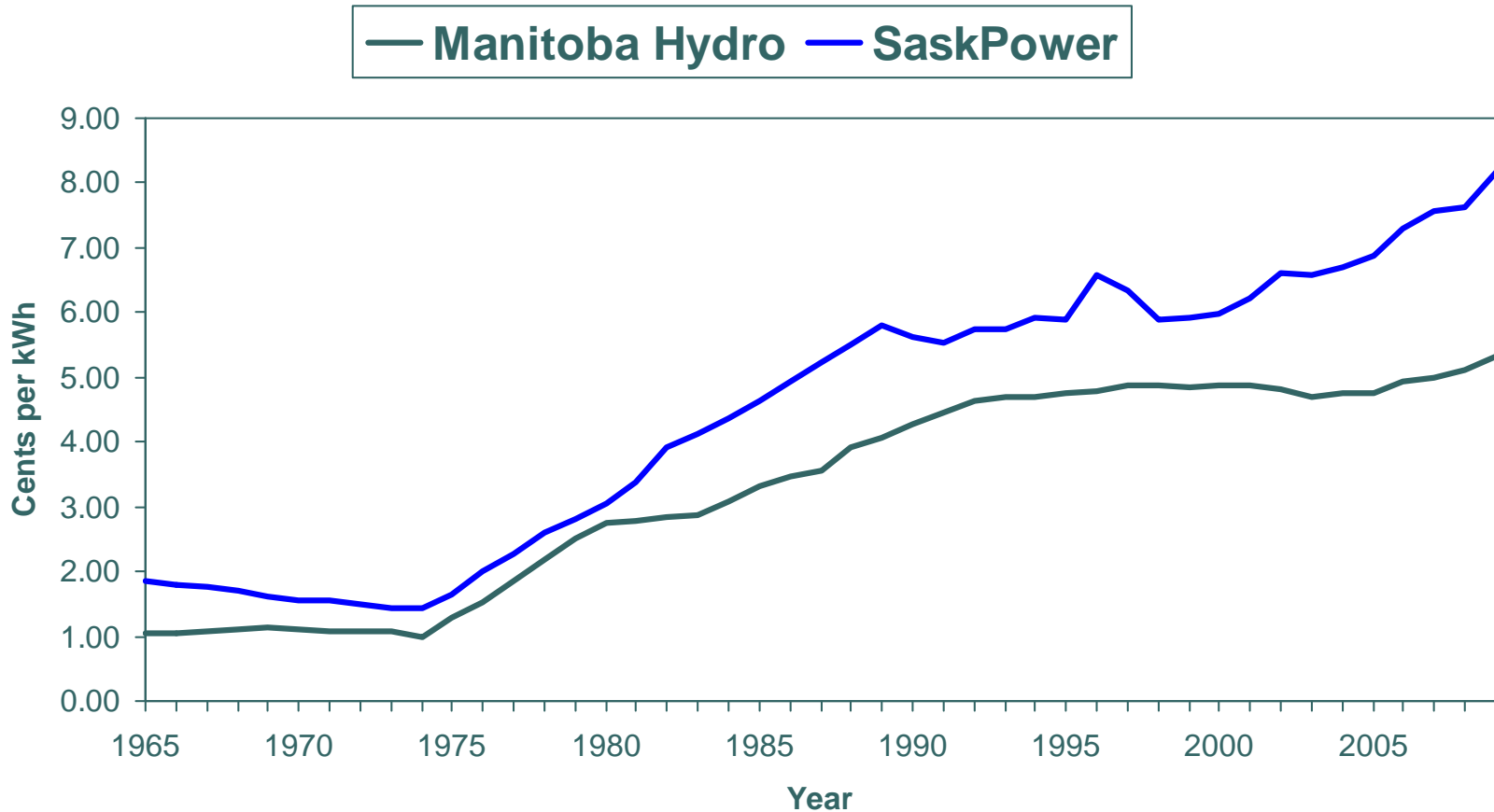
# Reliability – Bulk Delivery System

Manitoba Installed Capacity



# Cost of Energy

## Average Retail Rate

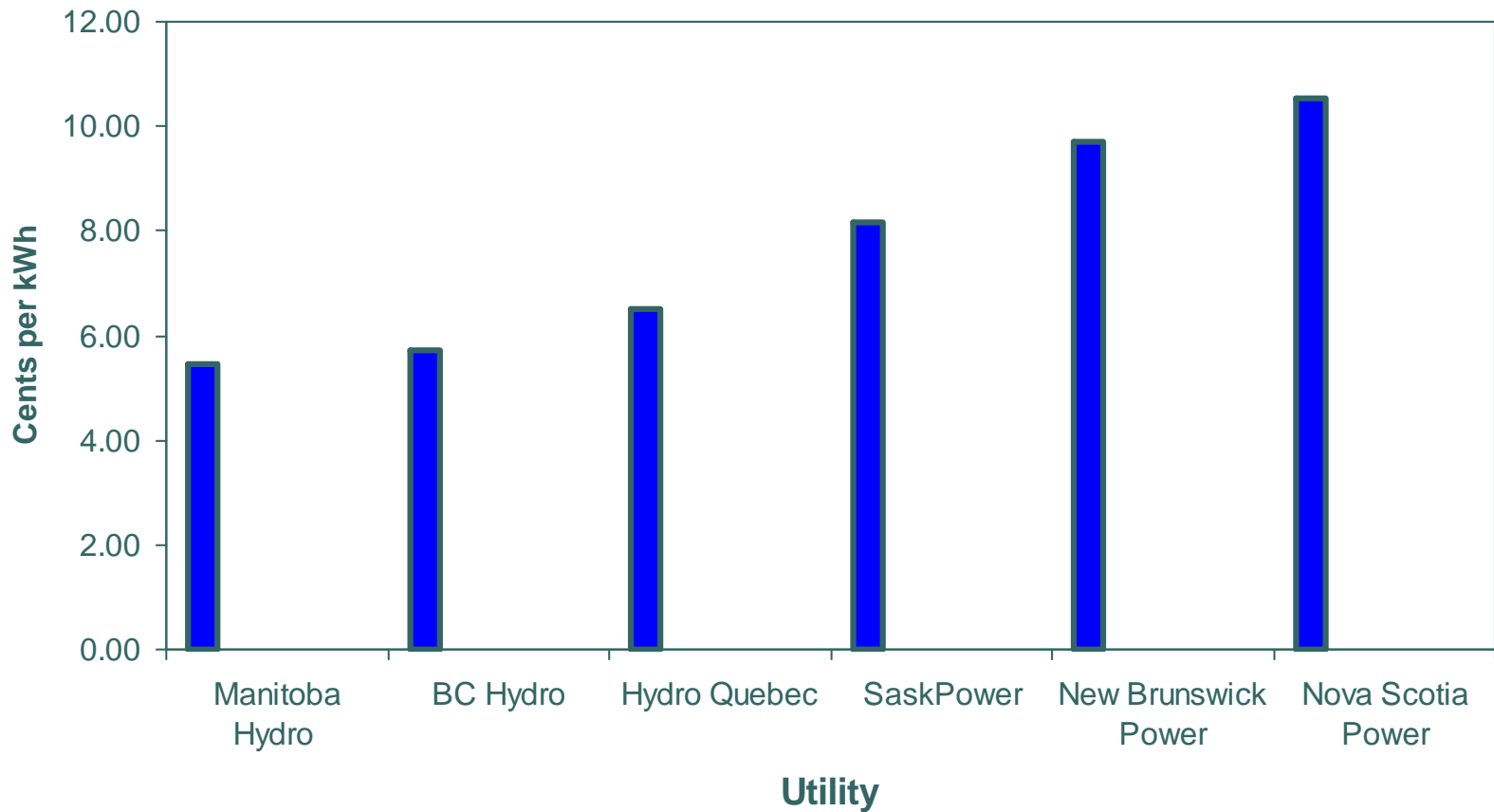


Source: Annual Reports



# Domestic Customers

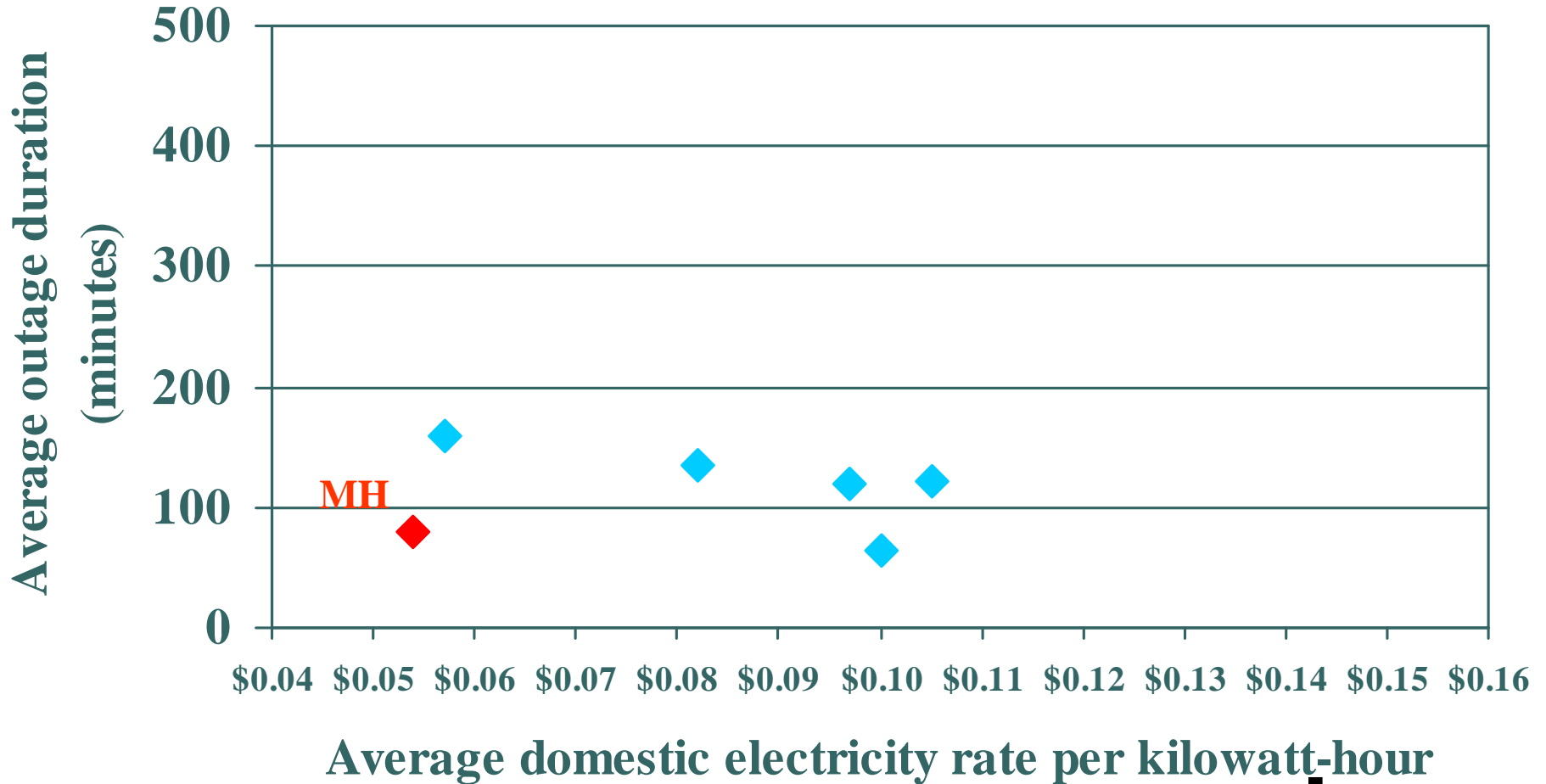
## Average Retail Rate



Source: Edison Electric Institute January 1, 2010  
Annual Reports

# 2009 Average domestic electricity rate vs. 2009 Average customer outage duration in minutes

## Canadian Utilities

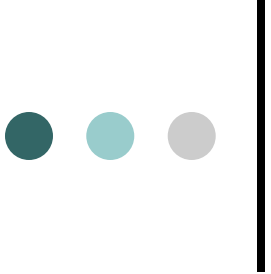




# Manitoba Hydro's Success (at Wholesale Level)

- Strong and adequate interconnections
- Effective exploitation of
  - Available surplus energy
  - Available extra-provincial opportunities



- 
- Ms. Wray
    - Governance and Planning Processes
  - Mr. Cormie, Ms. Flynn
    - Wholesale Planning and Operations