Manitoba Hydro
Wholesale Electricity Business Workshop

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Workshop

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

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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.

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Objectives

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


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Format

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

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Program

- Overview
  - Corporation
  - Domestic customers
  - Extra-Provincial partners
- Governance and Planning Processes
  - External
  - Internal

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Program

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

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- 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**

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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.

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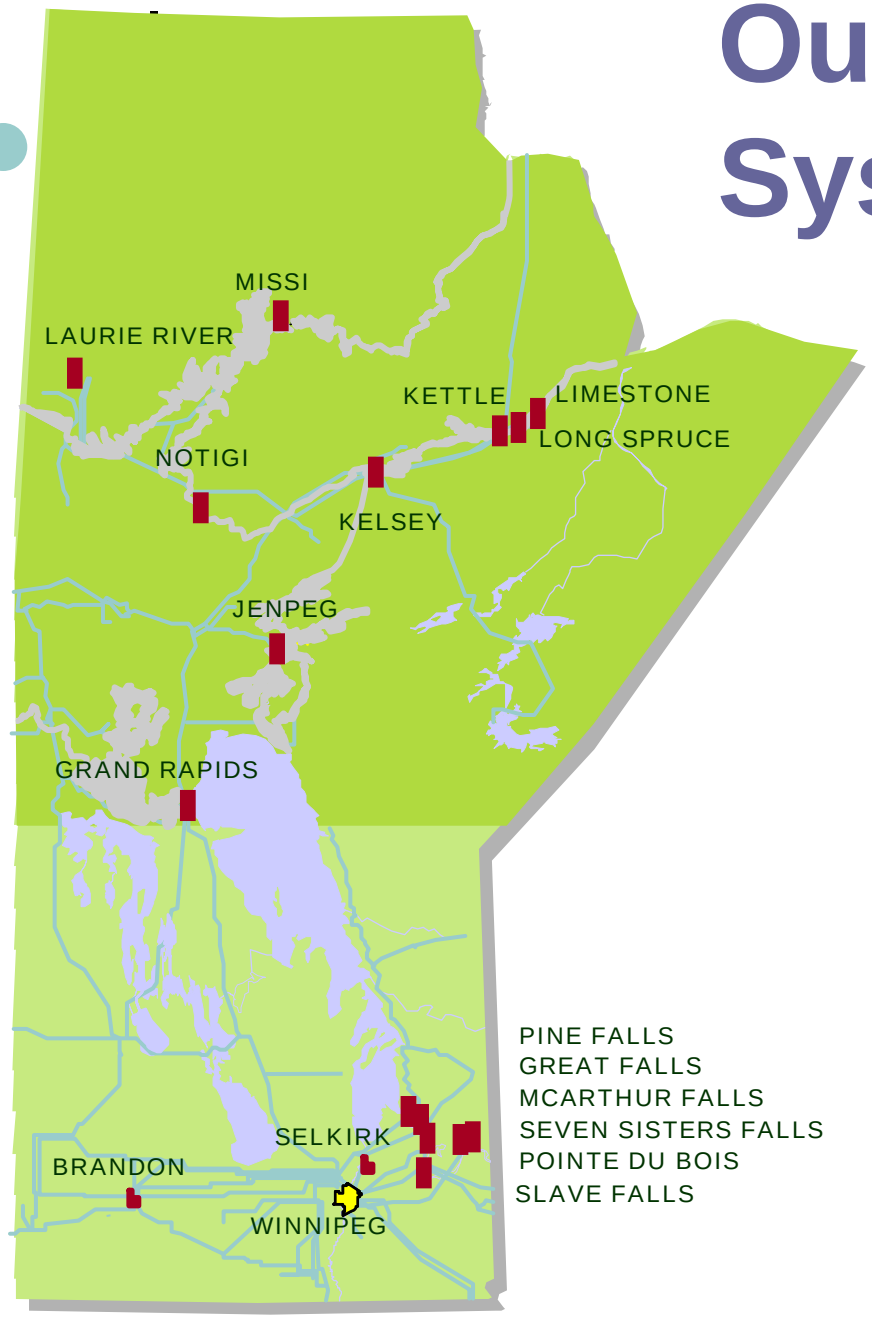
Our Existing System



- 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

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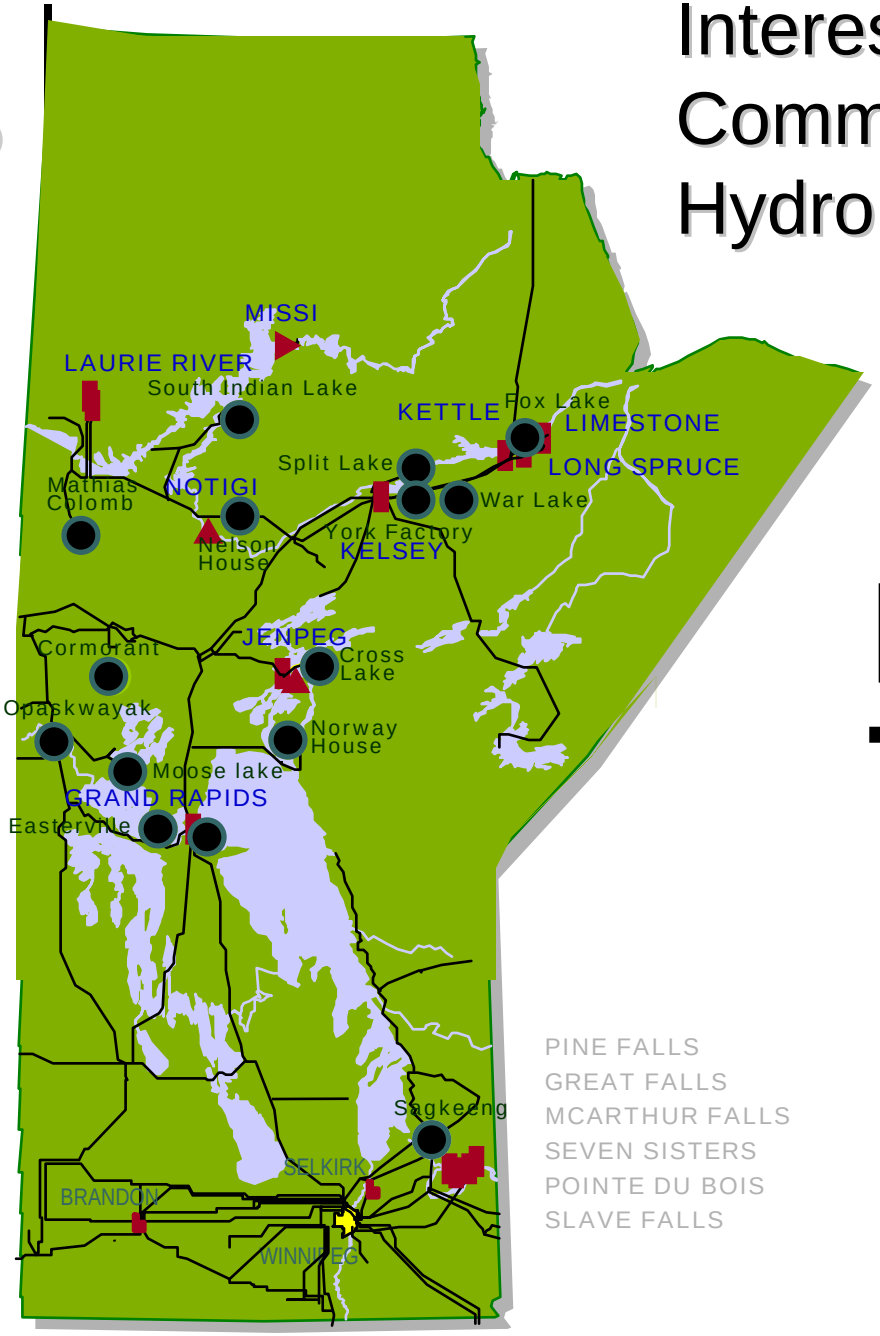
Interests of Many Aboriginal Communities and Manitoba Hydro Overlap



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

Major Hydro facilities

Transmission Lines

Aboriginal Communities along developed waterways

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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

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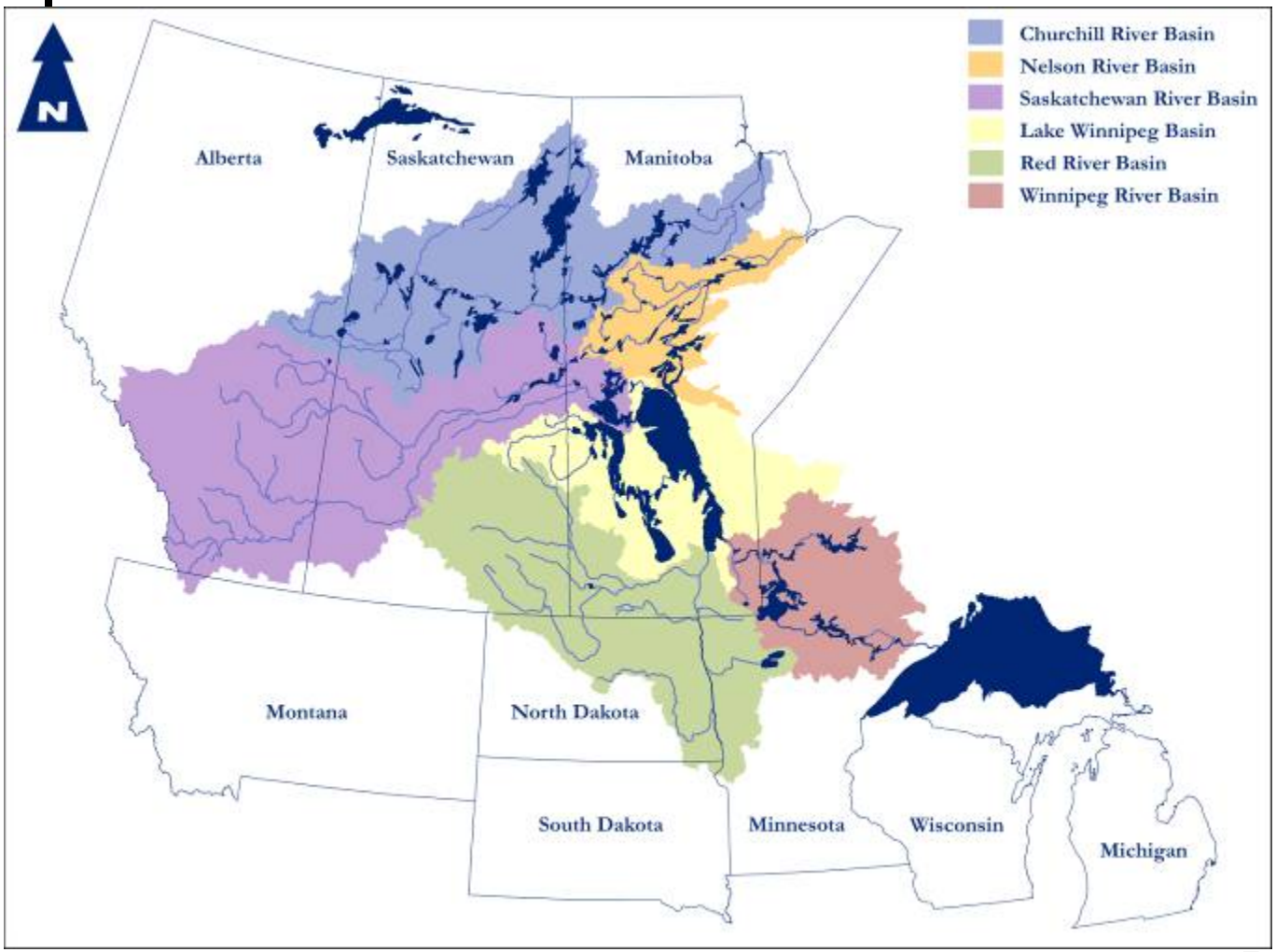
Essential Characteristics
Hydrologic Resources



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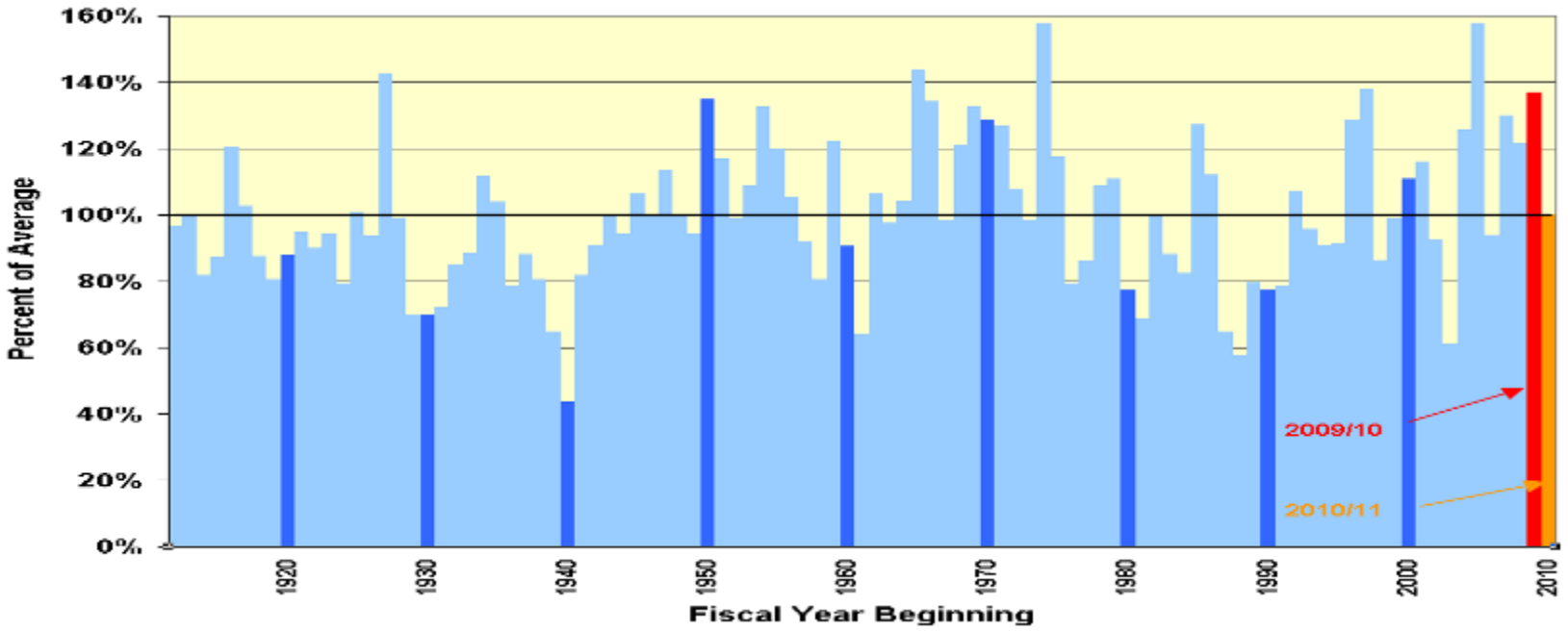
Essential Characteristics

Water Supply Variability



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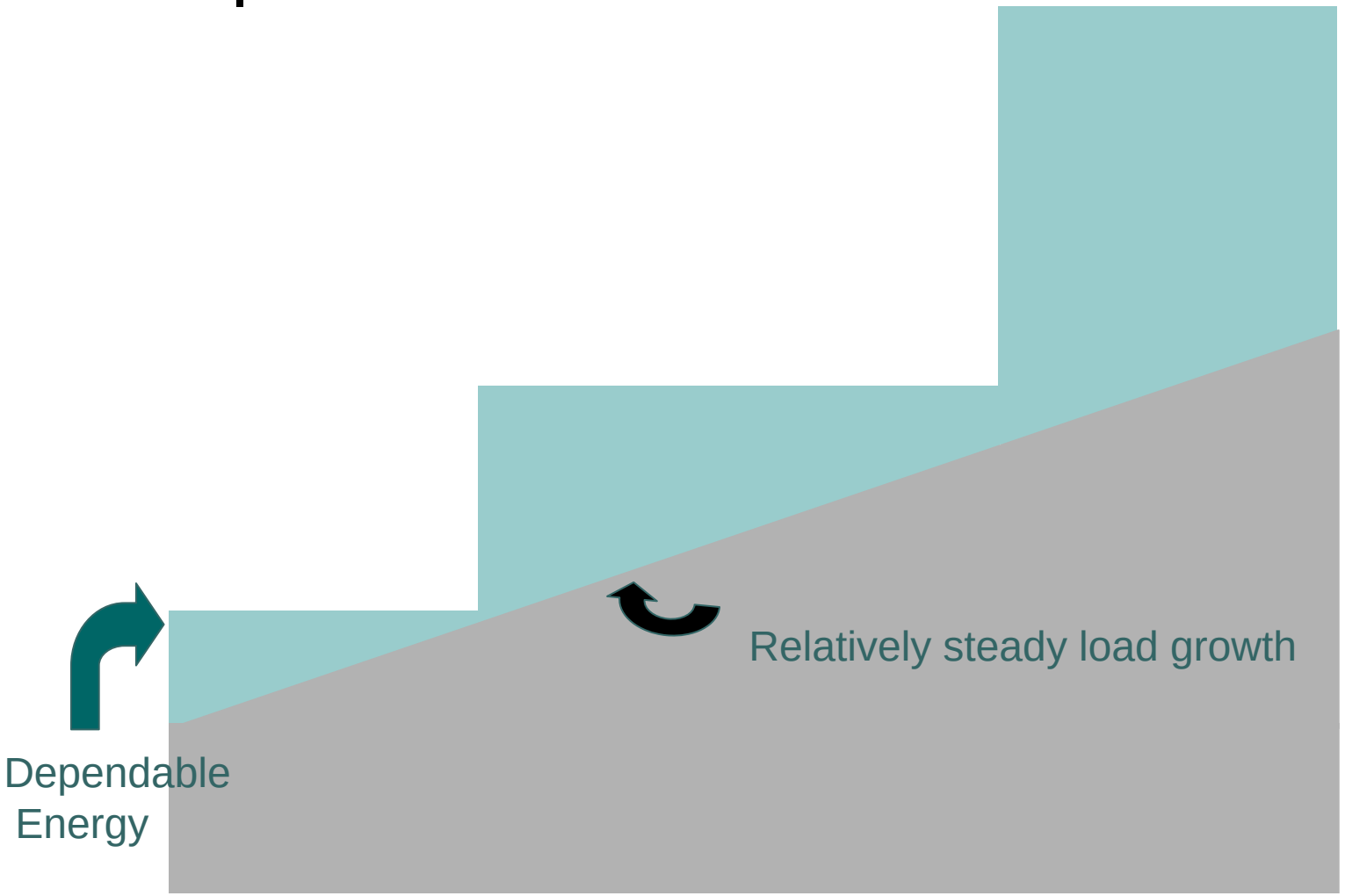
Essential Characteristics

Large Supply Increments in relation to Domestic Load Growth



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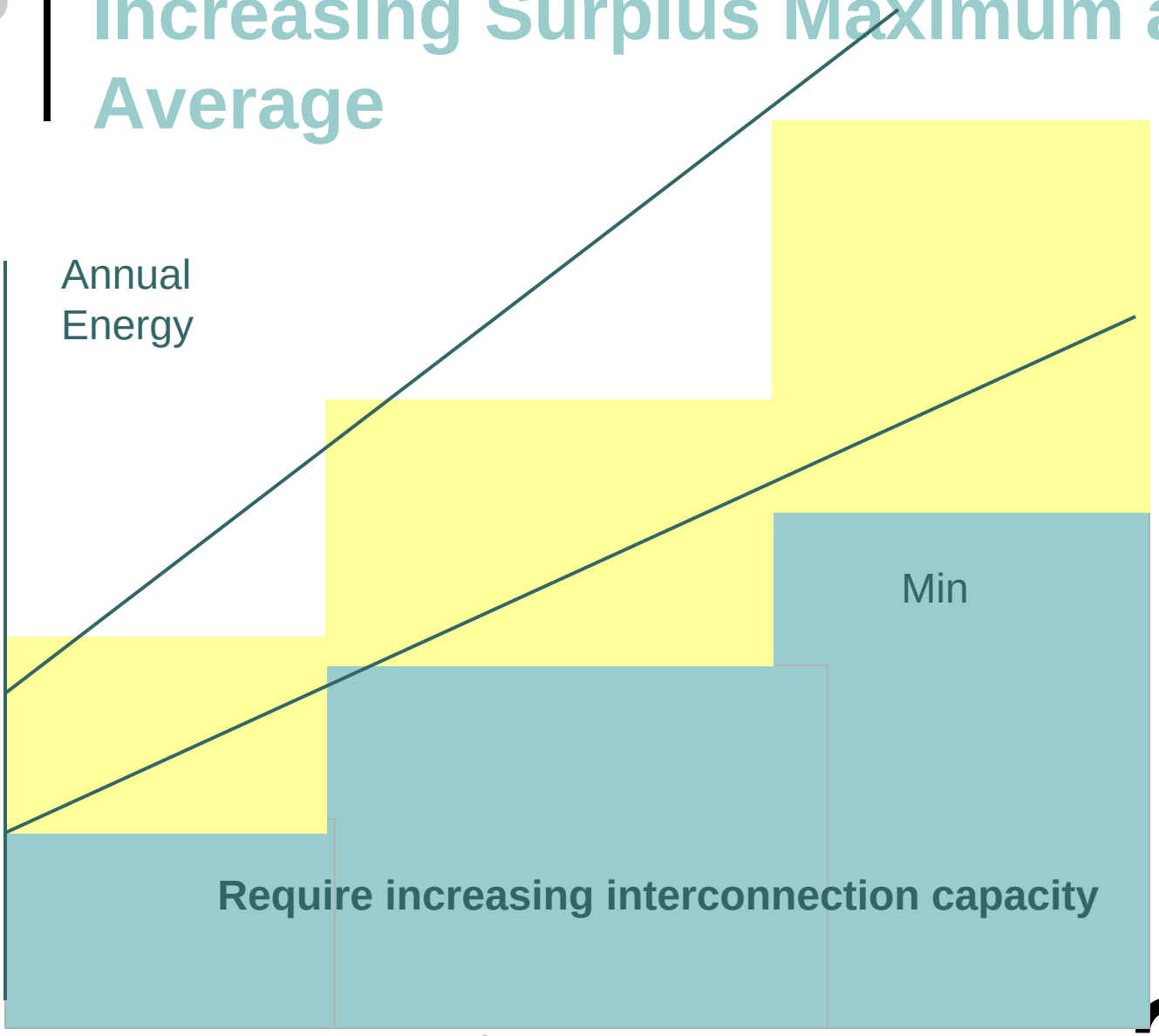
Essential Characteristics

Increasing Surplus Maximum and Average



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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”

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Interconnections Bring Obligations

	Reliability	Market
PUB	✓	
MISO	✓	✓
MRC	✓	
NERC	✓	
FERC	✓	✓
AESO		✓
IESO		✓
NEB		✓

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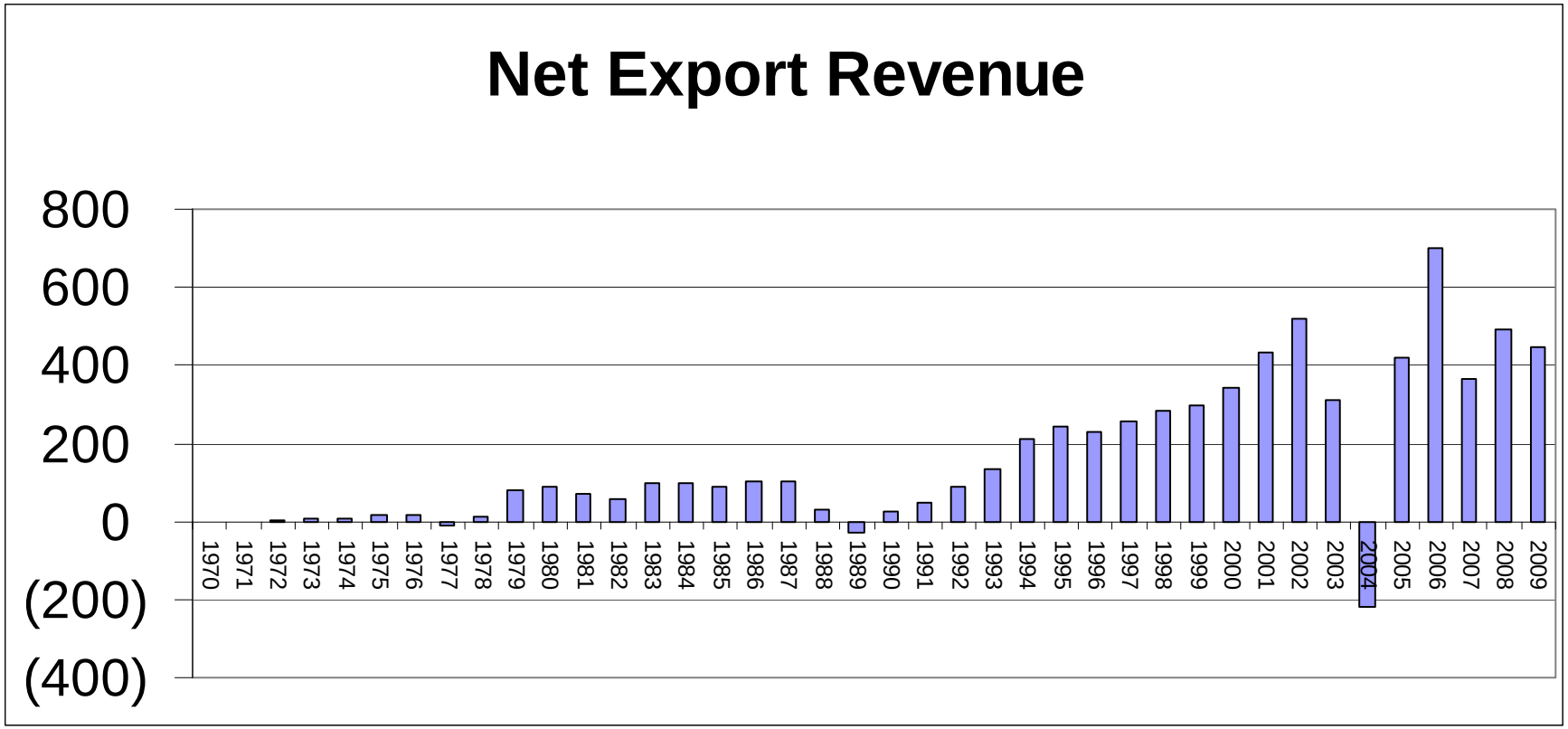
Net Flow Related Export Revenues

- Huge variation
- Step changes



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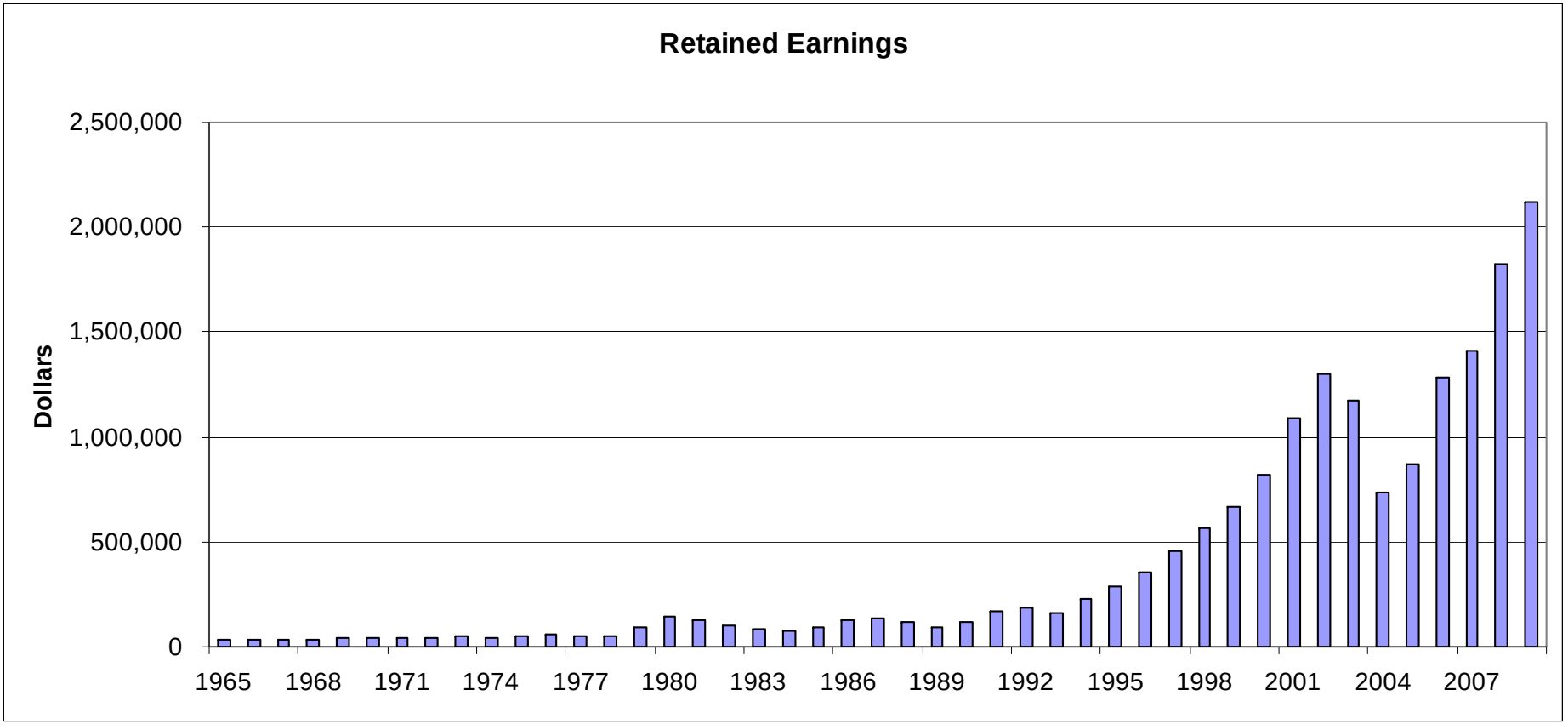
Retained Earnings



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Manitoba Customers

- Primary Market
  - Reliability of supply
  - Cost of energy

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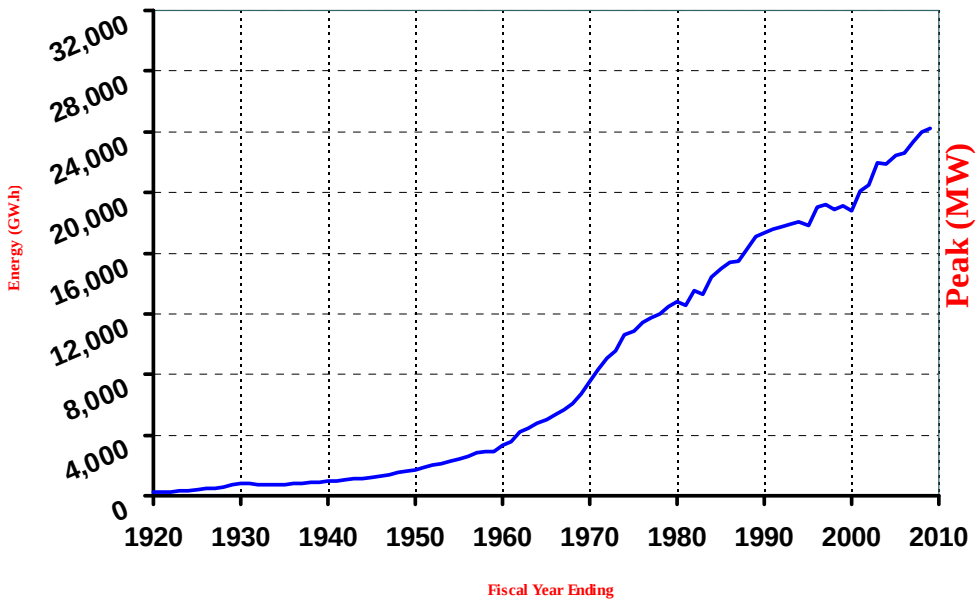
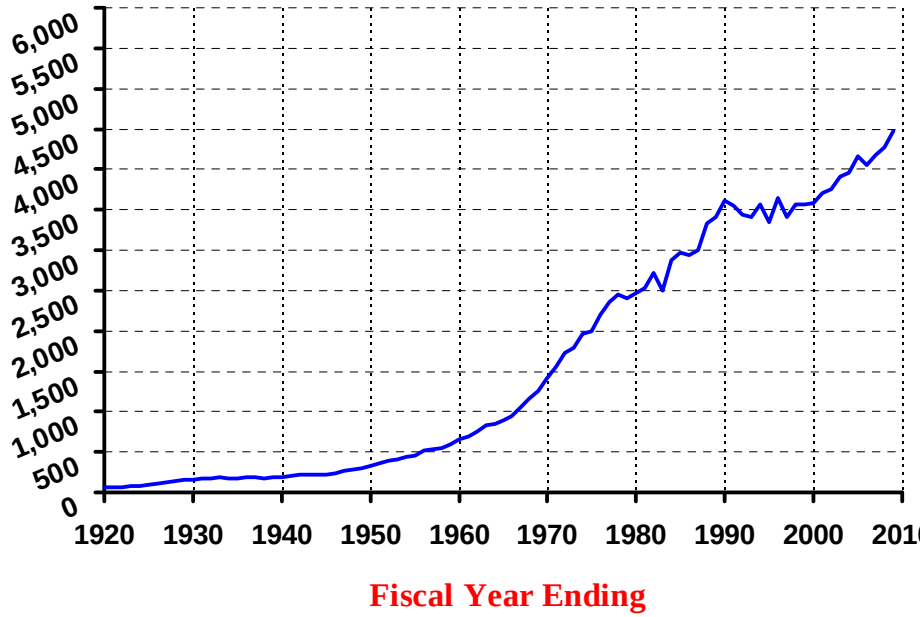
Domestic Load





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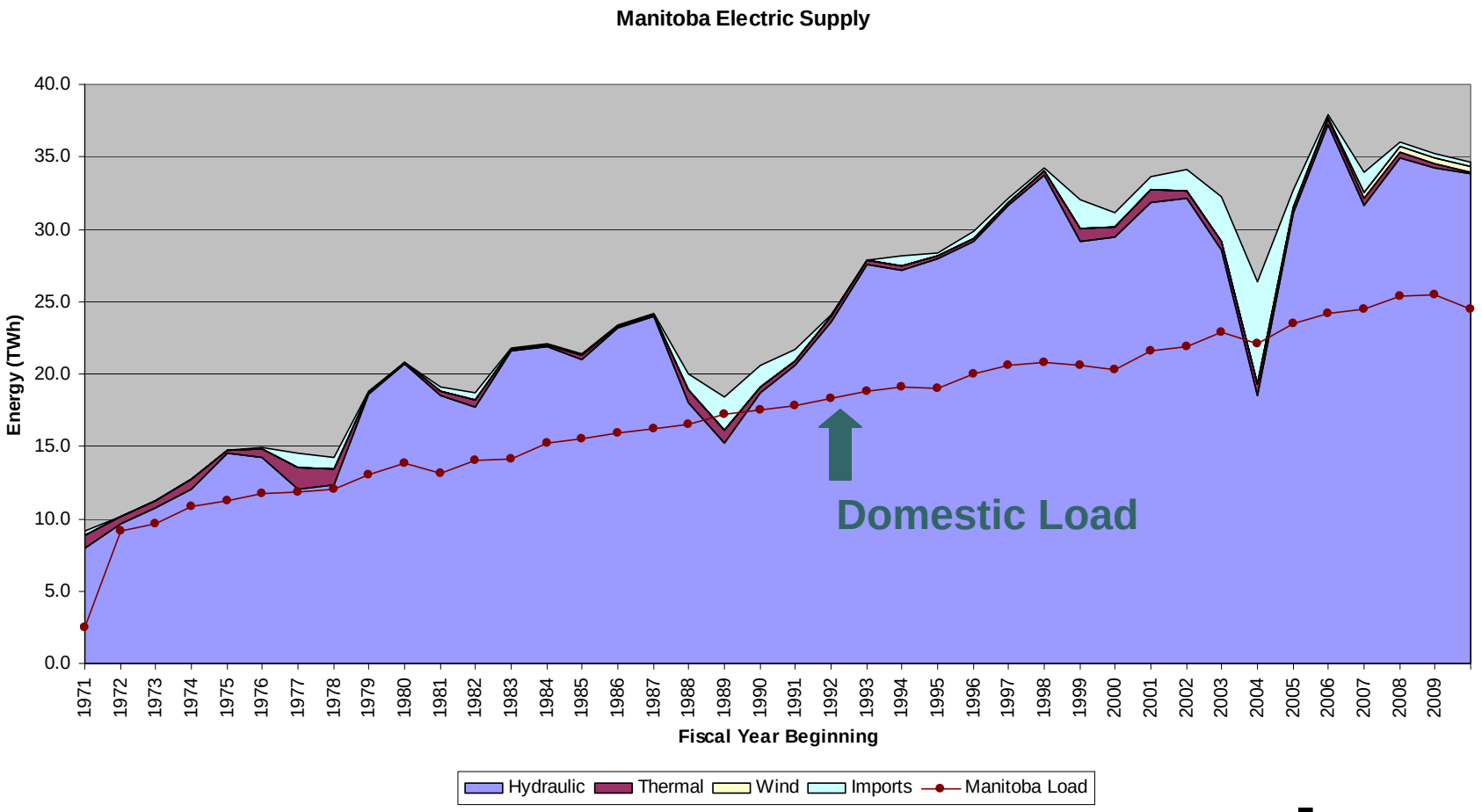
Reliability – Bulk Energy Supply



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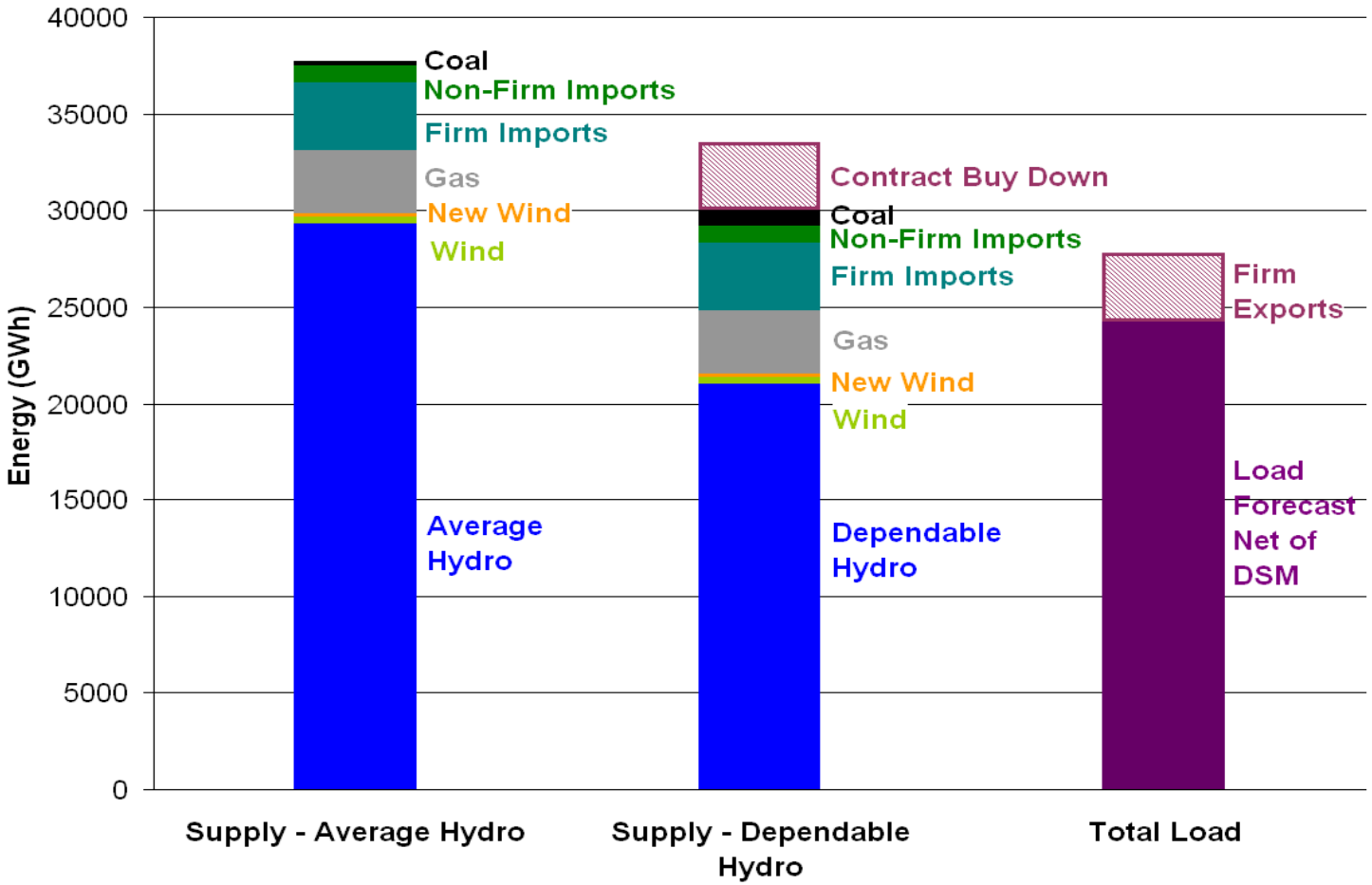
Reliability - Bulk Energy Supply – 2010/11



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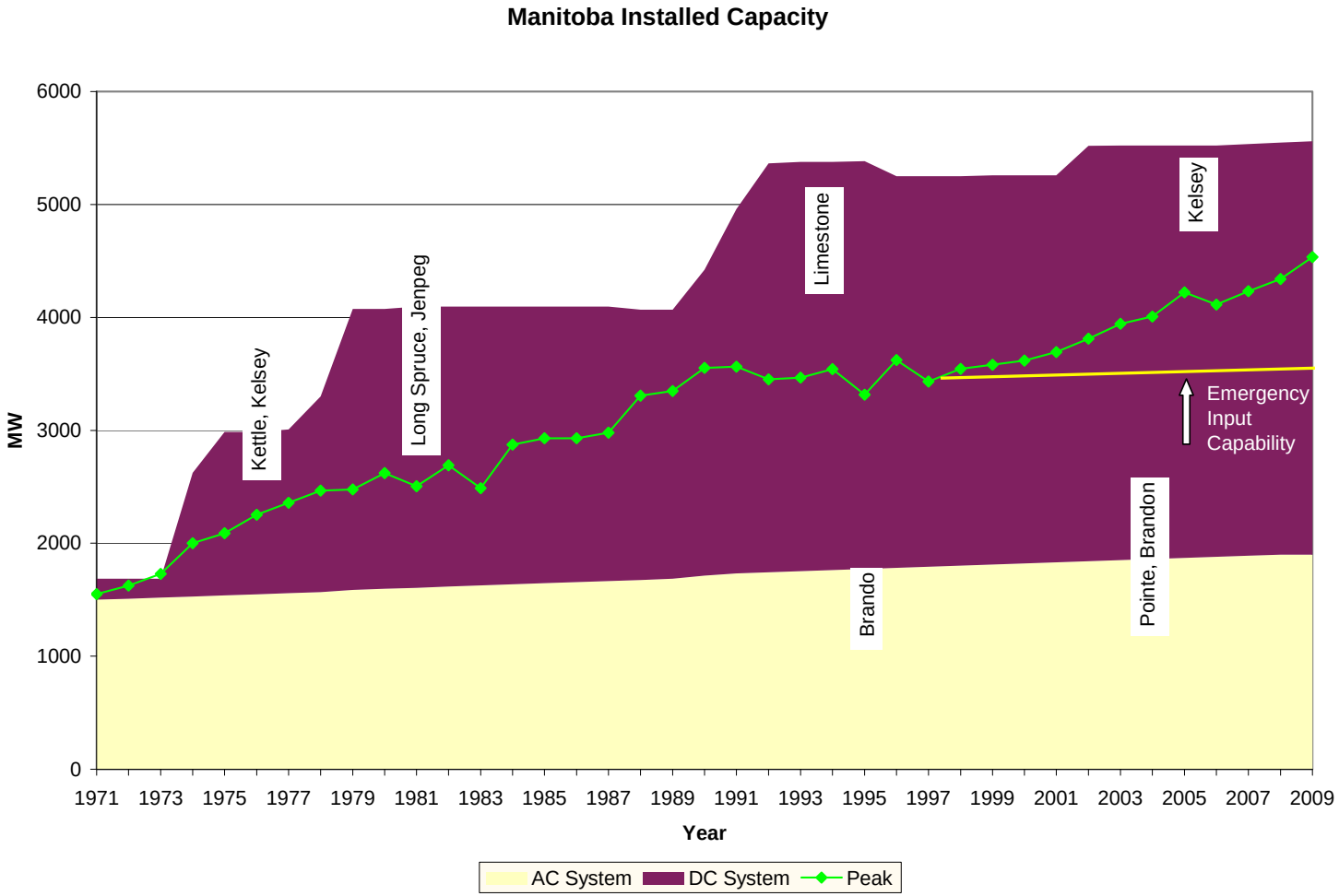
Reliability – Bulk Delivery System



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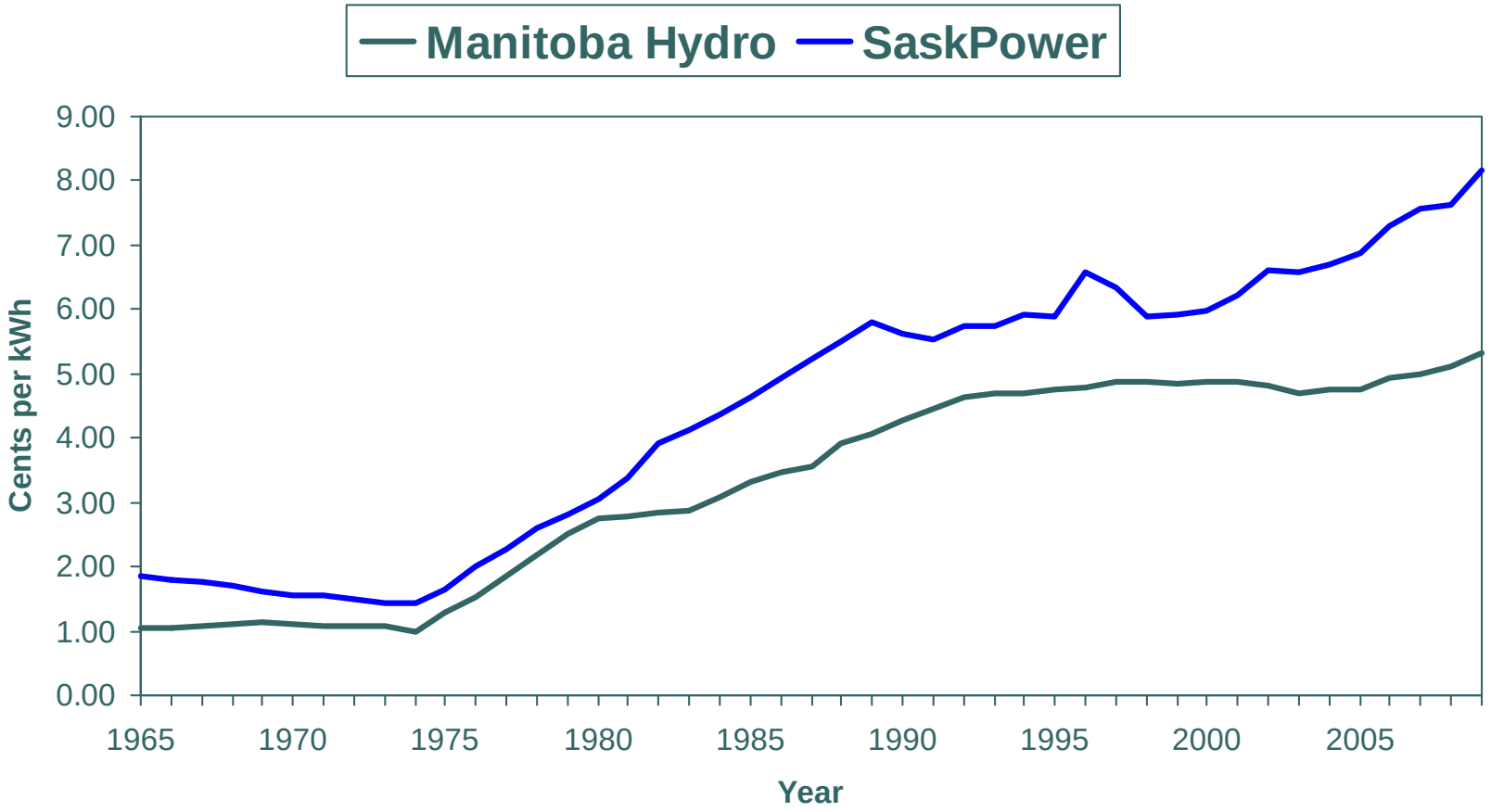
Cost of Energy

Average Retail Rate



Source: Annual Reports

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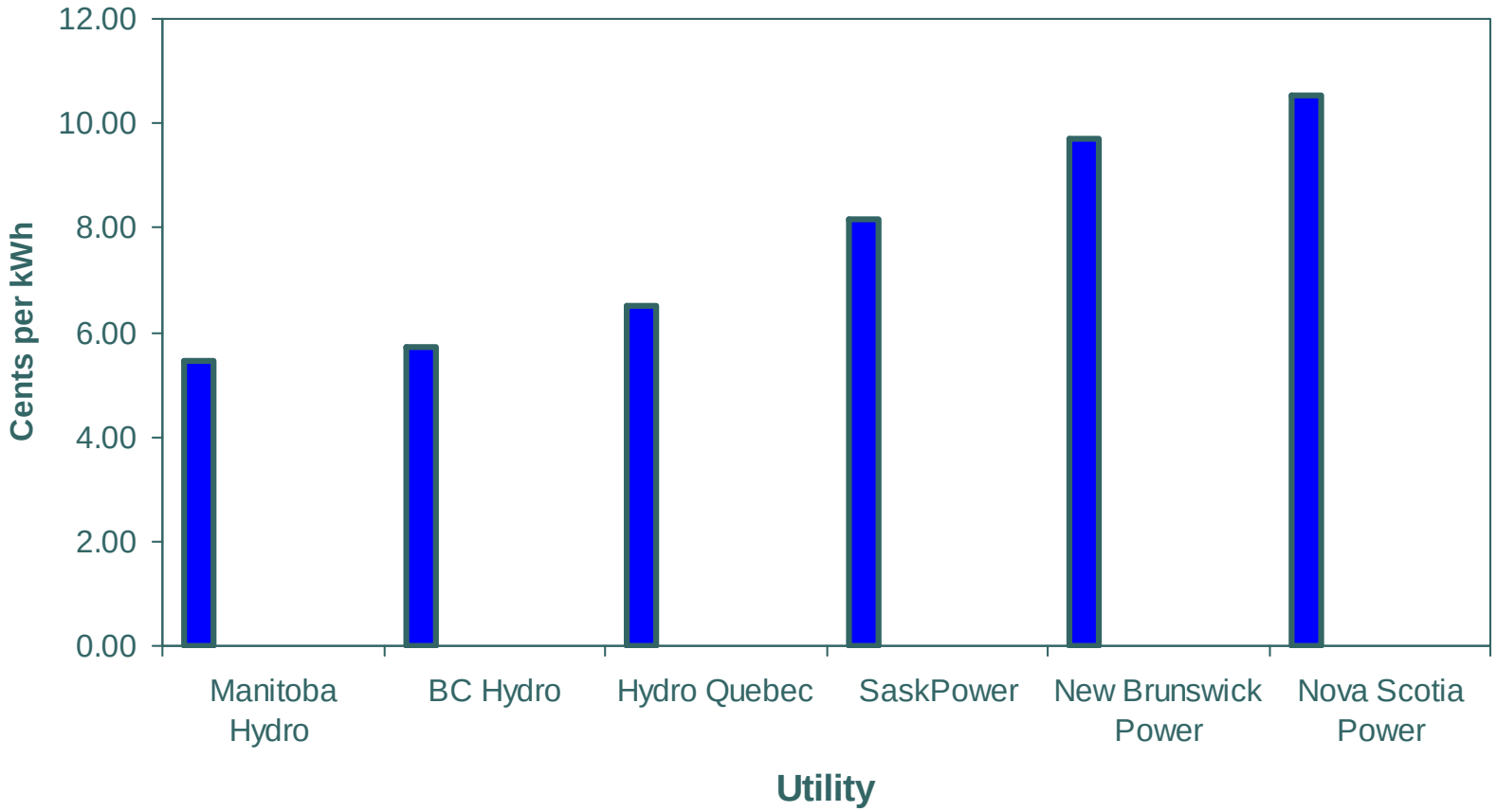
Domestic Customers

Average Retail Rate



Source: Edison Electric Institute January 1, 2010 Annual Reports

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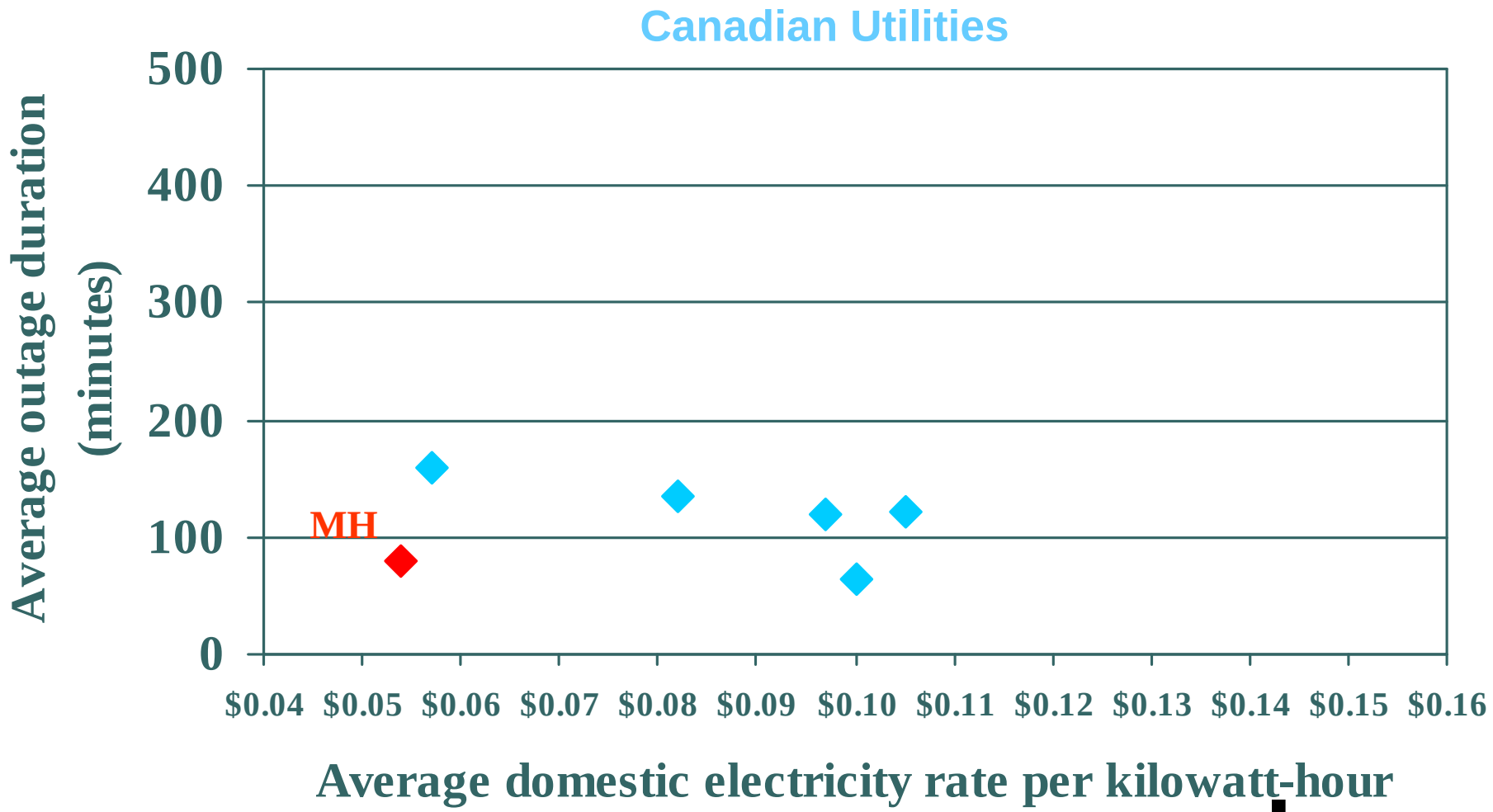
2009 Average domestic electricity rate vs. 2009 Average customer outage duration in minutes



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Manitoba Hydro's Success (at Wholesale Level)

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



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

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