

# Newfoundland and Labrador Hydro



## Ocean Energy Technology A Utility Perspective

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# Purpose

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- Provide a utility perspective on the opportunities and hurdles for emerging energy technologies

# Outline

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- Newfoundland and Labrador Hydro
- Experience
- Benefits
- Hurdles
- Who is the “Blue” Energy Customer

# Newfoundland and Labrador Hydro



**System Overview**



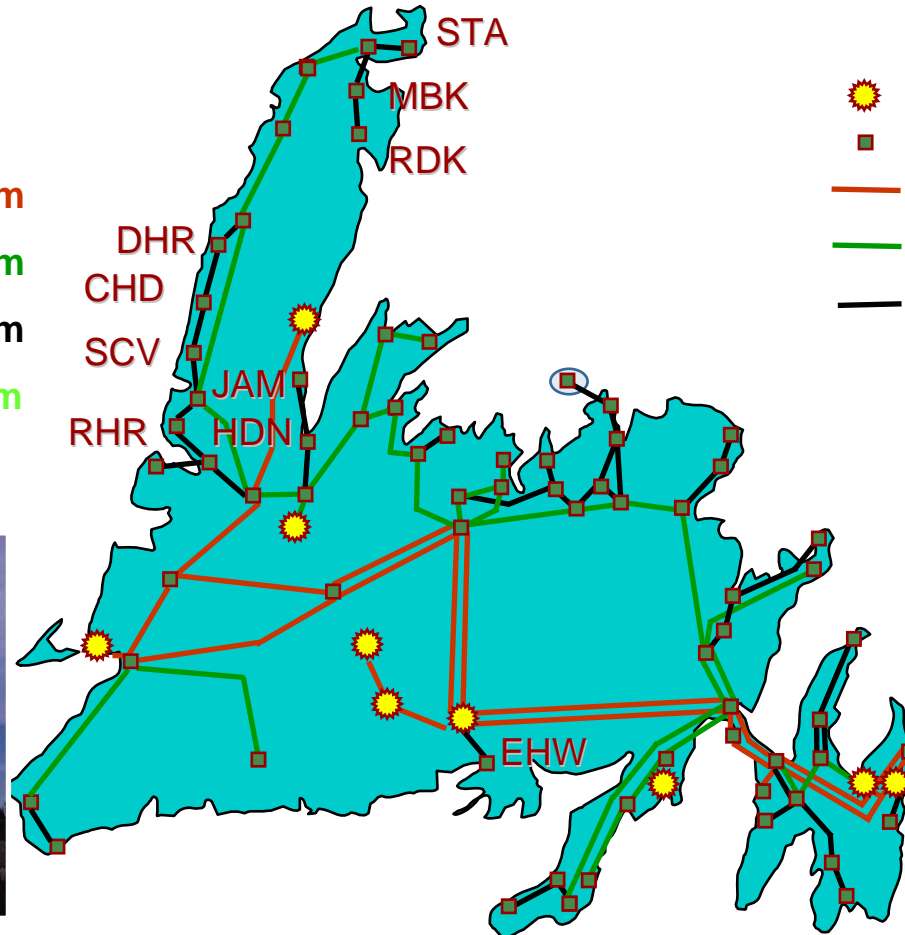
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- The following are the core business functions within Newfoundland and Labrador Hydro:
  - *Generation*
  - Transmission
  - Distribution

# Island System Map

## Distances

230 kV	1531 km
138 kV	1482 km
69 kV	636 km
Distribution	2925 km



-  **Generating Plant**
-  **Terminal Station**
-  **230 kV Transmission**
-  **138 kV Transmission**
-  **69 kV Transmission**

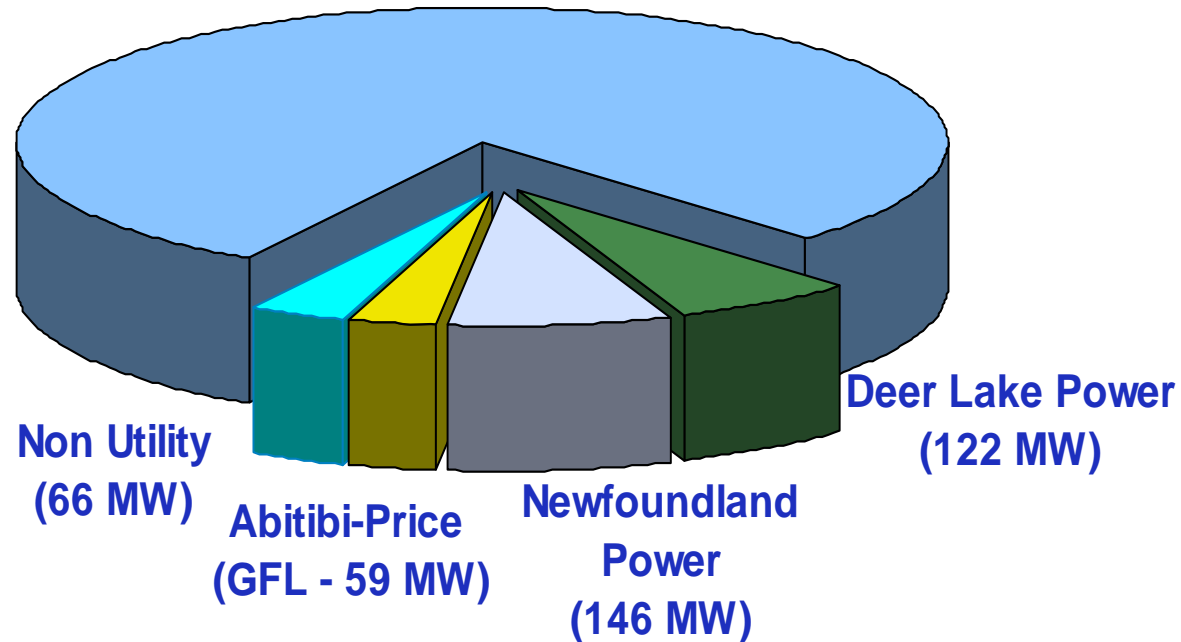


# Total Island Generating Capacity

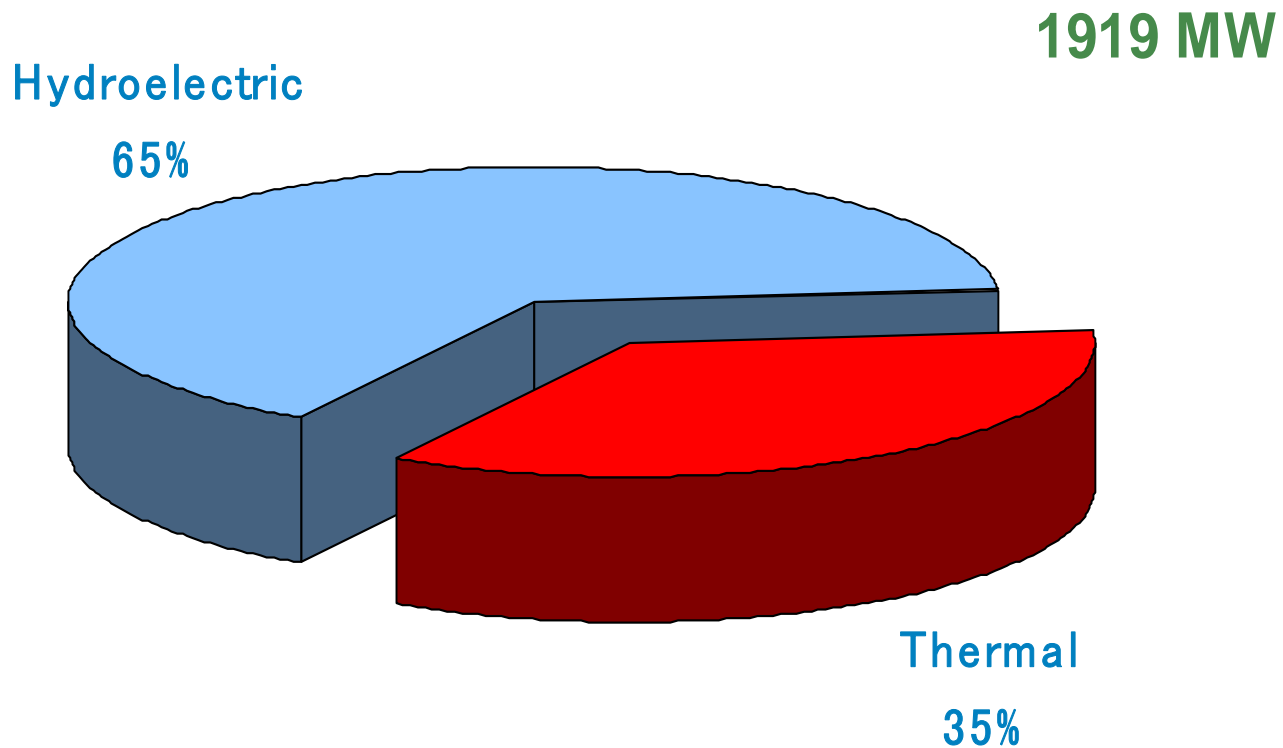


**Newfoundland & Labrador  
Hydro ( 1526 MW) 80 %**

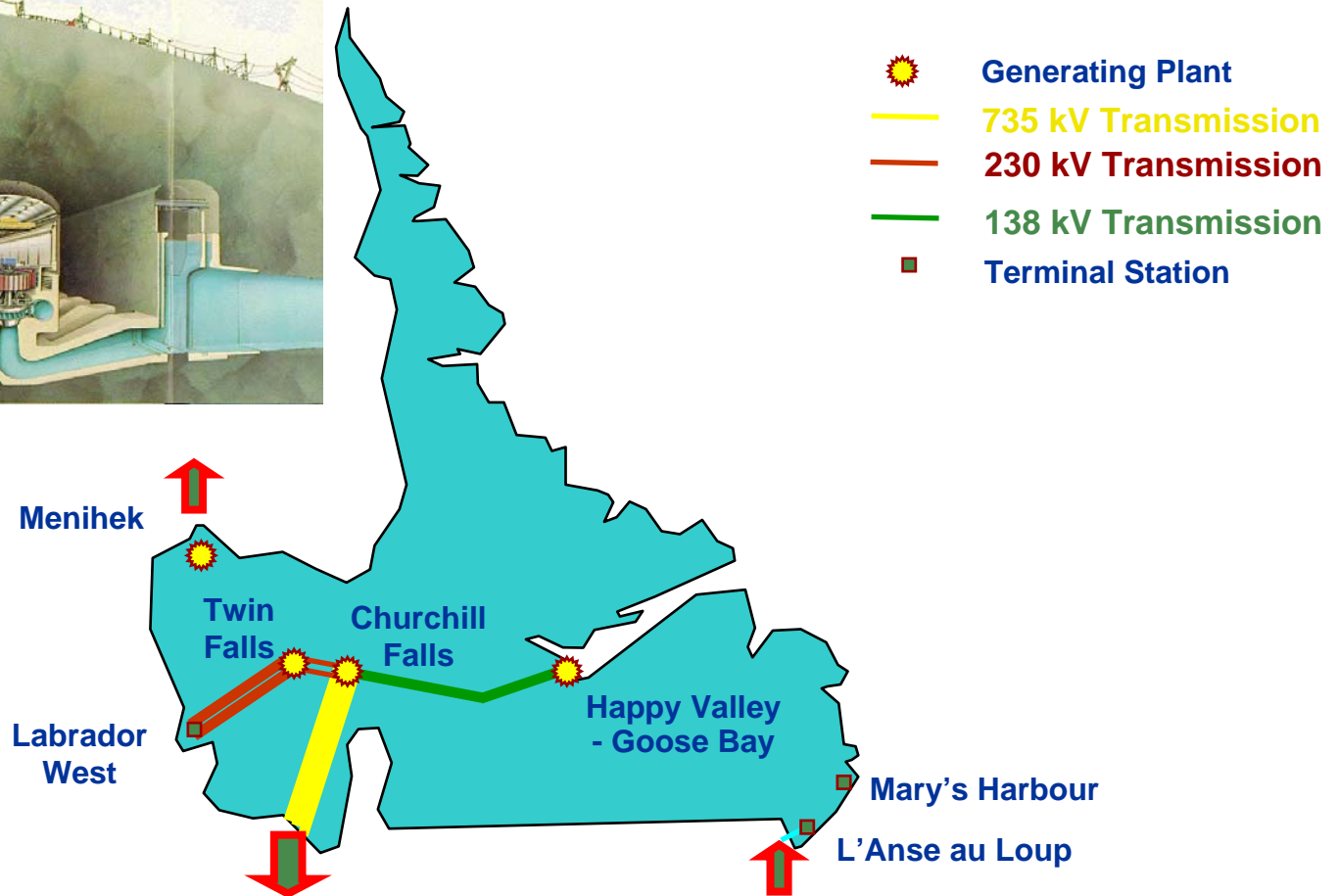
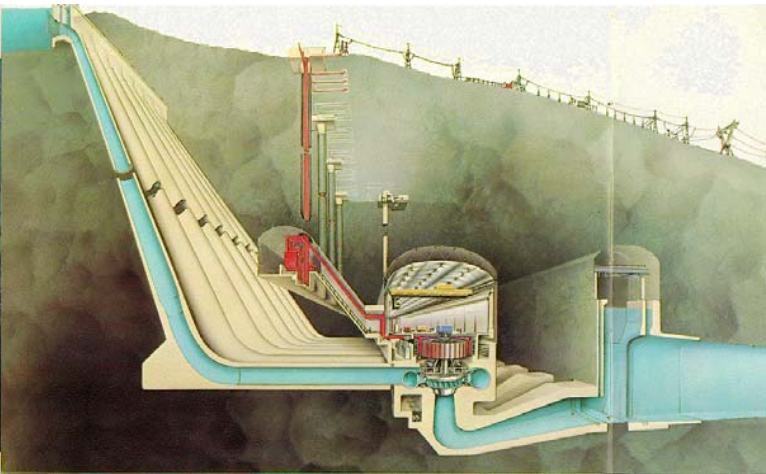
**1919 MW**



# Total Island Generating Capacity



# Labrador Interconnected System



# Isolated Diesel Systems

**Black Tickle**  
**Cartwright**  
**Charlottetown**  
**Davis Inlet**  
**Hopedale**  
**L'Anse au Loup**  
**Makkovik**  
**Mary's Harbour**  
**Nain**  
**Norman Bay**  
**Paradise River**  
**Port Hope Simpson**  
**Postville**  
**Rigolet**  
**St. Lewis**  
**Williams Harbour**



**Francois**  
**Grey River**  
**Little Bay Islands**  
**McCallum**  
**Ramea**  
**St Brendan's**

# Newfoundland and Labrador Hydro



**Alternative Energy  
Technologies**



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# Electricity - Basics

- Electricity Produced, Distributed and Consumed without the consumer ever seeing or touching the product.
- Must be Produced as it is Used
  - On a network - cannot be stored
- Consumer Expects an Uninterrupted Supply - 99.9% Availability is Typical



# Alternative Technology

## Hydro's Experience

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- Mini Hydro - Roddickton
  - In service 1981

# Alternative Technology

## Hydro's Experience

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- Mini Hydro - Roddickton
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- Wind/Diesel Demonstration
  - In-service fall 2004



# Alternative Technology

## Hydro's Experience

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- Mini Hydro - Roddickton
  - In service 1981
- Wind/Diesel Demonstration
  - In-service fall 2004
- Utility Scale Wind
  - 2001 Feasibility Study



# Emerging Technology

## Why the Utility Interest?

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- Address system requirements with renewable resources
- Shield against oil price volatility
- Diversity of supply
- Help to meet Hydro's Kyoto commitments
- Reduction in all emissions ( $\text{SO}_2$ ,  $\text{NO}_x$ , particulates, etc) at Holyrood

# Emerging Technology Hurdles Traditional Utility Perspective

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- Cost/Value!
  - New Supply
  - Oil Substitute
  - Other “Green” Technologies
- Uncertainty - Secondary Benefit Value?
- Uncertainty - Unproven Technology?
- Uncertainty - System Integration?
  - Intermittency
  - Energy vs. Capacity

# Who is the “Blue” Customer?



- Until the technology is proven, Ocean Energy will likely be viewed as an IPP
  - Certainly in the deregulated energy world
  - Likely also in the traditional regulated world
  - Look to wind energy for example
- Utilities will likely be willing partners to demonstrate the technology
  - Will look to limit risk
- Larger utilities with R&D focus could act as a development partner

Thank-you!