

Fort Nelson Resource Plan

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Fort Nelson

BC hydro 

Fort Nelson Resource Planning

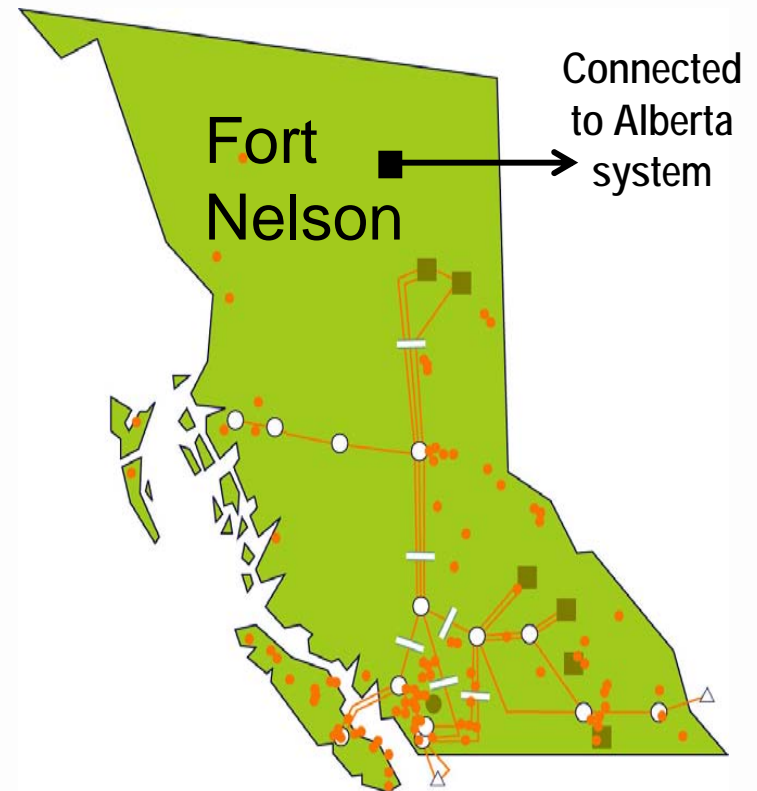
- History of Fort Nelson Supply
- Resource Planning Basics
- Existing and Future Supply/Demand
- Supply Options
- Initial Assessment

Resource Plan

- Proposed Approach and Schedule

Next Steps

Questions and Feedback



- Recent load growth has put a strain on supply
- Future load growth is potentially significant but uncertain
- Relative few reliable & cost-effective supply options
- Cost-effective, reliable supply requires long-term perspective
 - Significant investment
 - Long asset life
 - Long lead-times for implementation
 - Stakeholder and First Nations involvement
 - Regulatory approvals
- Retain flexibility – keep options open

Before 1991	Diesel generating station
1991	Transmission line to Alberta
1999	Fort Nelson 40 MW gas-fired generating station
2000	Decommissioned diesel generating station Firm back up supply from Alberta
2007/2008	Load in the Fort Nelson area increased by more than 50% (now about 40 MW)

- BC Hydro must meet the electricity demand of its customers
- We plan to meet expected demand in the most cost-effective way while balancing environmental and social objectives
- We plan based on industry reliability standards
 - **Single contingency criterion**

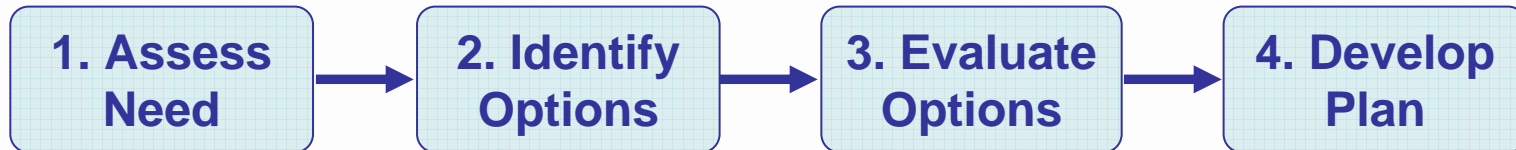
Fort Nelson Power Supply

**Fort Nelson
Generating
Station
40 MW**

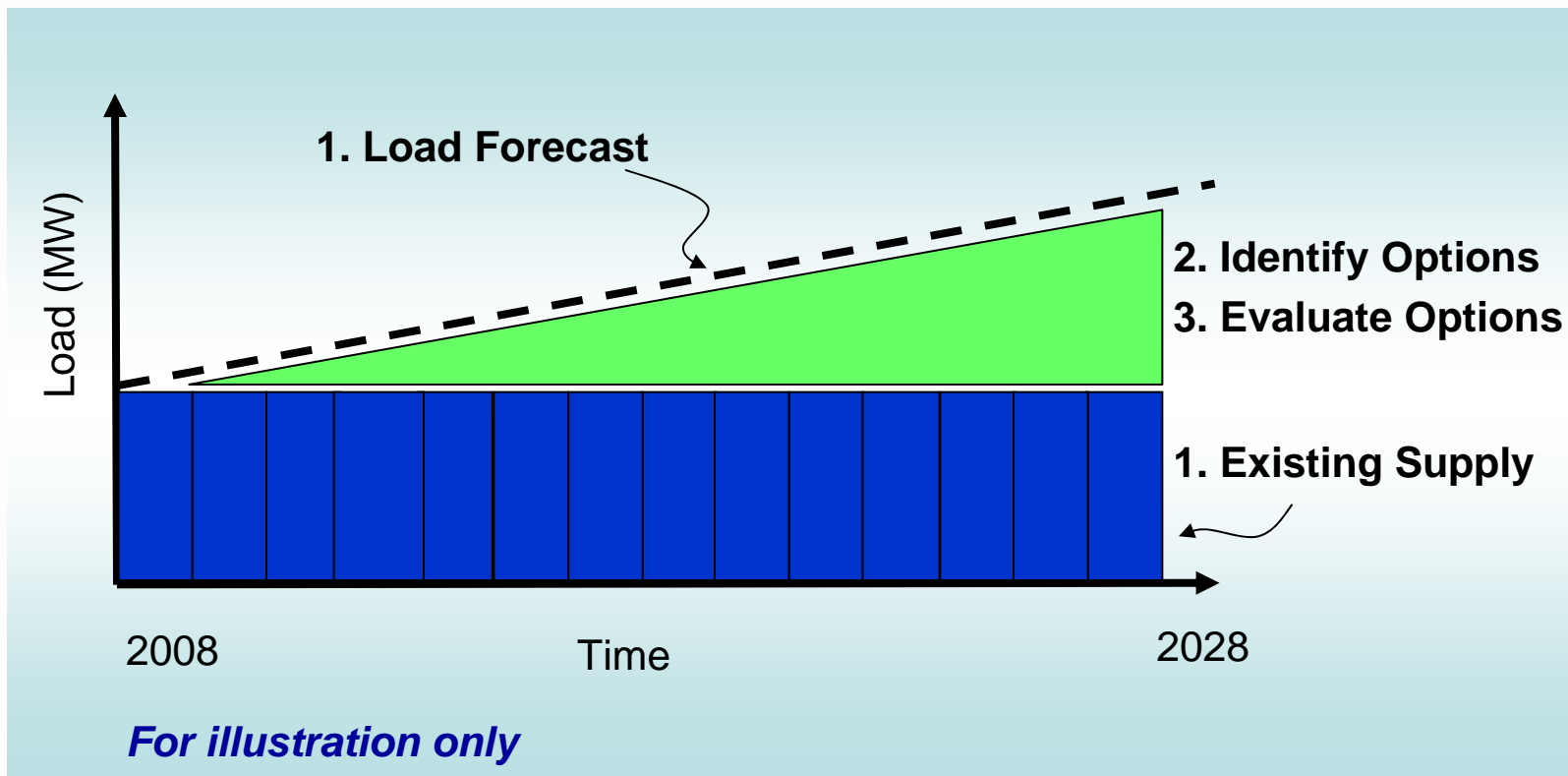


**Back-up
Supply from
Alberta
38.5 MW**

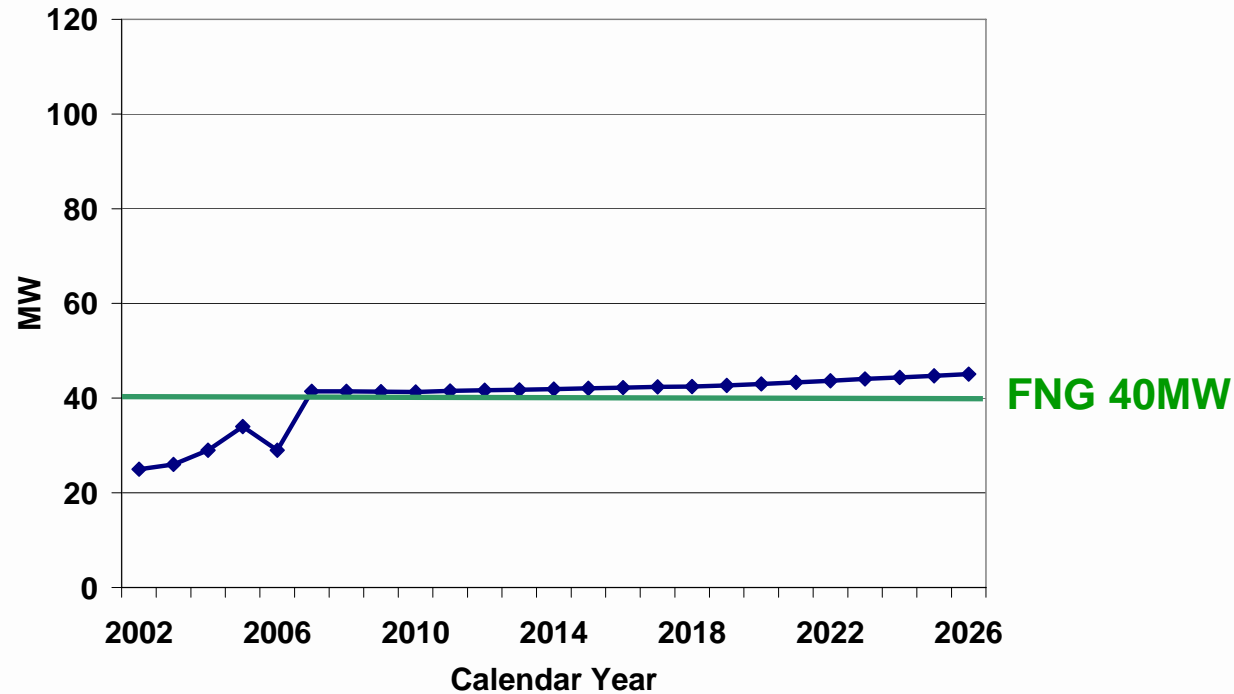
Resource Planning - Steps



All Within the Context of Planning Criteria and Objectives



FORT NELSON PROBABLE (EXPECTED) 20-YEAR FORECAST



Supply/Demand Balance

50% load growth in recent years.

Gap exists between existing supply and expected load growth.

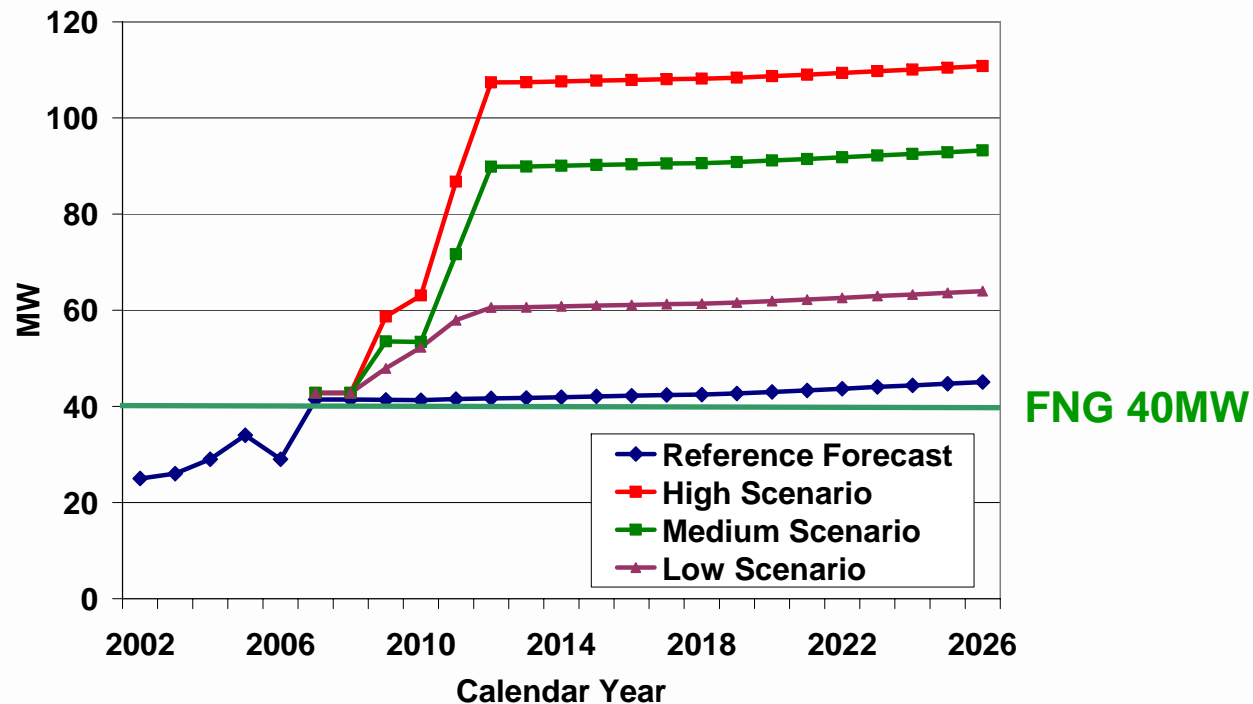
Reliability

Single contingency criterion cannot be met for new industrial customers.

Indication

Modest new supply is needed to meet actual and expected growth

LOAD GROWTH SCENARIOS – HIGH, MEDIUM, AND LOW SOURCES – FUEL-SWITCHING AND NEW INDUSTRIAL ACTIVITY

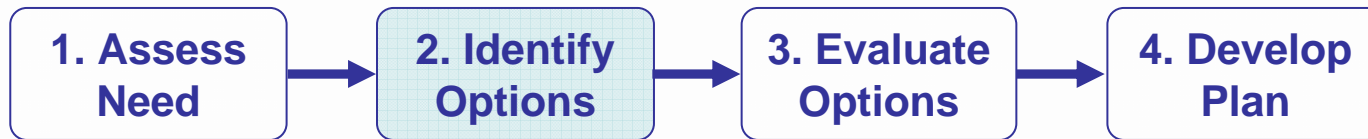


Supply/Demand Balance

Potential load growth could be as much as 200% greater than existing levels.

Indication

Any significant future load growth will require major resource additions.



All Within the Context of Planning Criteria and Objectives

Local Generation Options

- FNG Resource Smart Upgrade Project
- Further expansion of FNG
- IPP - Acquisition of clean or renewable or gas-fired generation

Transmission Options

- Connection from Fort Nelson to BC Hydro grid (Peace region)
- Increased supply from Alberta

Load Options

- Demand-Side Management

THE POTENTIAL PROJECT

- Convert the existing simple cycle gas-fired unit into a combined cycle facility without expanding the existing footprint
- Estimated cost - \$60M



EFFICIENCY & POWER OUTPUT IMPROVEMENTS

- Increase power output by about 10 MW
- Increase power output using the same amount of fuel as simple cycle
- Add voltage support to the region

ENVIRONMENTAL IMPROVEMENTS

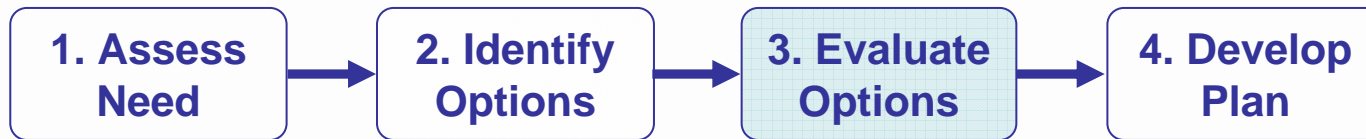
- Reduce effluent production by 50 – 75%
- Reduce GHG/MW per year by 15 – 20%
- Potentially reduce raw water usage by 60 – 80%

Clean or Renewable Generation Procurement

- Request for Expression of Interest (RFEOI) for Clean or Renewable Projects was undertaken in October 2007
- Response from 14 proponents with 16 projects
- Breakdown of respondent projects:
6 Biomass, 2 Run of River, 6 Wind, and 2 Additional
- Most attractive acquisition option for Fort Nelson resource needs – presented itself to be Bioenergy – these projects still contain significant fuel risk and high cost
- RFEOI provided little indication that cost-effective, or viable clean, or renewable supply could meet load

Gas Generation Procurement

- A Call Process could be undertaken for additional gas-fired generation



All Within the Context of Planning Criteria and Objectives

Initial Assessment

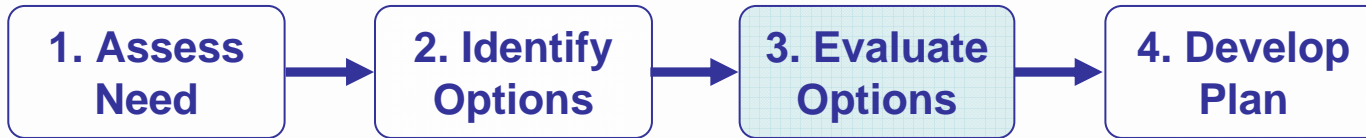
- Bundle supply options into ‘portfolios’
- Assessed each portfolio against the forecasted load and each of the three scenarios (low, mid, high).
- Reliability and cost criteria were primary considerations
- Other considerations identified for further assessment (e.g., consistency with BC Energy Plan).

LOAD	POSSIBLE PORTFOLIOS	COSTS (\$/MWh)	TIMING
Forecasted	Resource Smart Upgrade	~120 – 130	2012
Low	Resource Smart Upgrade AND Increased Alberta supply	~125 – 140	2012
Medium	Resource Smart AND New generation (clean/gas) AND Increased Alberta supply	~130 – 150	2013
High	Resource Smart AND New generation (clean/gas) AND Increased Alberta supply OR BCTC transmission line	~125 – 145	2014

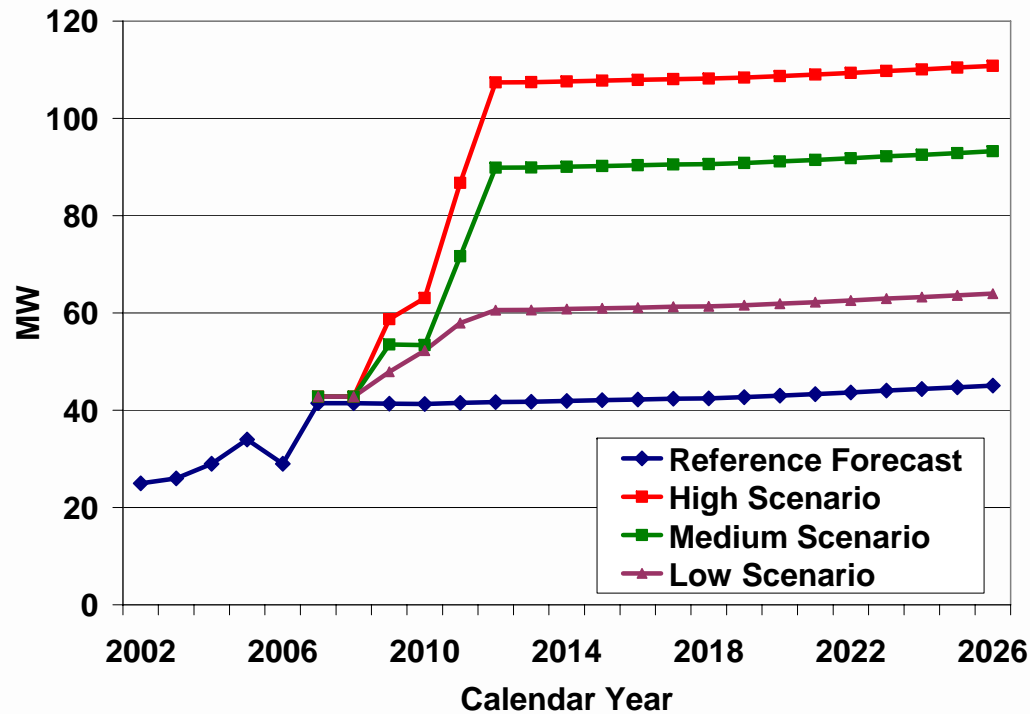
Other Considerations:

Environmental, Social, Market prices, Stranded investment, Jurisdictional

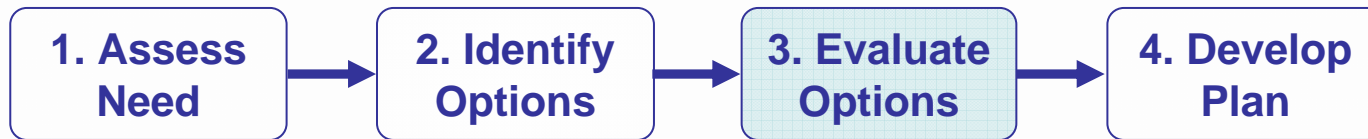
Evaluating Options



All Within the Context of Planning Criteria and Objectives

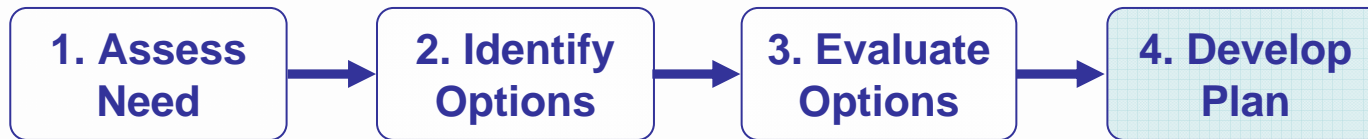


- ↑ New transmission line to BCH Grid
- or
- ↑ New local generation
- +
- ↑ Upgrade of AB Transmission Supply
- +
- ↑ Resource Smart
- +
- Fort Nelson Generating Station
- + Backup supply from Alberta



All Within the Context of Planning Criteria and Objectives

- New supply required just to meet expected load forecast
- All supply options will require significant investment and lead time
- RFEOI provided little indication that cost-effective or viable clean or renewable supply could meet load
- Resource Smart Upgrade Project appears to be most cost-effective across all load growth scenarios
- More detailed study of other options, combined with increased certainty of future load increases needed to determine next best supply option



All Within the Context of Planning Criteria and Objectives

- Advance Resource Smart Upgrade Project
 - Seek regulatory approvals (BC Utilities Commission, Environmental Agencies, etc.)
- Initiate more detailed studies of:
 - Expansion of Fort Nelson plant (~ doubling in size) and new gas generation
 - Transmission connection to BC grid
 - Transmission reinforcements to support increased supply from Alberta
- First Nations and Stakeholder Engagement

PLANNED ACTIVITIES

2008

- File Fort Nelson Resource Plan with BC Utilities Commission
- Refine Fort Nelson Resource Smart Upgrade Project configuration and costs
- Initiate Resource Smart Upgrade Project environmental permit review, stakeholder and First Nations engagement (continues through to completion)

2009

- Completion of Transmission and Generation studies
- Continue discussion with potential customers
- Update Fort Nelson Resource Plan with recommended next steps

2009 – 2012

- Begin implementation of Resource Smart Upgrade Project

- **Comments & Questions?**
- **Feedback Form**

Energy Planning Website:

www.bchydro.com/iep

Email:

energy.planning@bchydro.com

** Fort Nelson webpage planned to be online in the summer **