BRITISH COLUMBIA

Ministry of
Energy, Mines and
Low Carbon Innovation

Site C Technical Briefing

February 26, 2021

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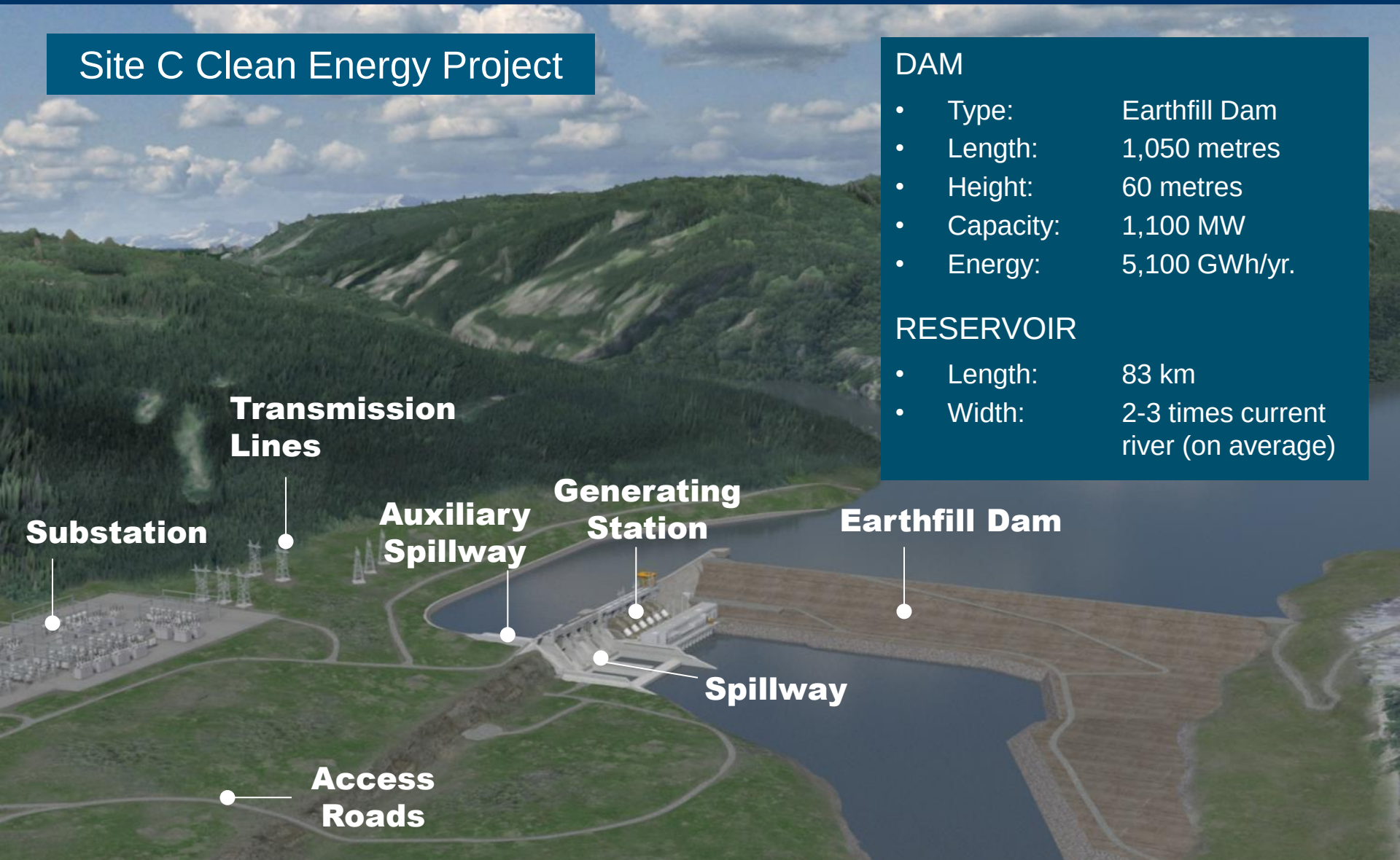
Site C Clean Energy Project



DAM

- Type: Earthfill Dam
- Length: 1,050 metres
- Height: 60 metres
- Capacity: 1,100 MW
- Energy: 5,100 GWh/yr.

RESERVOIR

- Length: 83 km
- Width: 2-3 times current river (on average)

Today's Briefing

- Update on Special Advisor Peter Milburn's Report
- Update on geotechnical issues and safety
- Update on current Site C cost and schedule

Future of Site C

- Cabinet has made the decision to continue with Site C
- Independent experts have confirmed Site C is safe
- Peter Milburn has advised process improvements are needed to enhance Project oversight and risk and commercial management
- Current Project cost estimate is now $16 billion, with a one-year delay to the in-service date
- Cost increases are largely the result of COVID-19, geotechnical issues, and other related cost and schedule pressures.

Path to Today's Decision

2014

- Site C approved at $8.775 billion budget
- Site C exempted from BCUC review by *Clean Energy Act*

2017

- Left bank tension cracks and contractor claims
- Incoming government refers project to BCUC
- Cabinet decision to continue project with $10.7 billion budget

2020/2021

- January-March 2020 – right bank foundations require additional mitigation
- March 2020 – COVID requires scaling back work force and construction
- July 2020 – BCH submits reports to BCUC
- August 2020 - Milburn engaged
- Fall 2020 – Engineering review for safety and reliability

Continuing Site C Better for Ratepayers and Taxpayers

- Stopping Site C now has severe impacts to ratepayers and taxpayers
- Ratepayers and taxpayers are better off completing the Project at this stage, even with higher costs

External Reviews Considered in Decision-making

Independent Consultant – Peter Milburn

- Reviewed Project governance and management of risks, construction, contracts and claims handling
- Recommendations will strengthen Project oversight, management and expertise

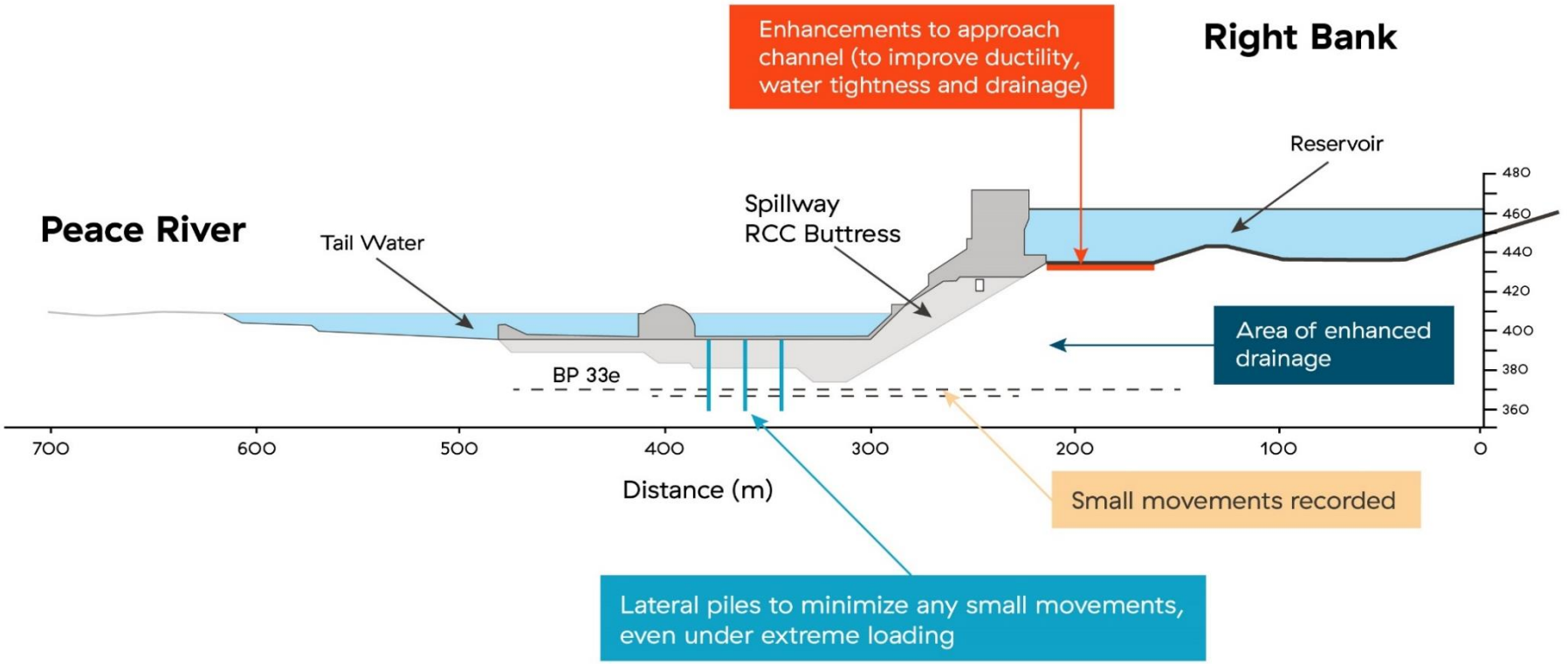
- Engineering Experts – John France and Dr. Kaare Hoeg
- Examined design of right bank foundation enhancements and earthfill dam
- Concluded that once completed, dam will be safe and reliable
- Will meet guidelines set by the Canadian Dam Association

Safety and Reliability Confirmed Through Expert Review

- Solution to foundation issues includes piles to anchor the foundation, approach channel enhancements and additional drainage
- Foundation enhancements follow best engineering practices and have been reviewed by the Technical Advisory Board
- External dam experts provided a second opinion and all reviews concluded that the right bank foundation solution will result in a safe and reliable dam
- Instrumentation and monitoring throughout the life of Site C as a continued precaution will help ensure safety

Right Bank Foundation Enhancements (RFBE) -Solution

1. Install large piles (concrete-filled pipes) beneath buttress to improve stability and limit possible future movements, even under extreme loading conditions
2. Enhance drainage within the right bank and additional measures for the approach channel to improve water tightness and drainage



Additional Review of Earthfill Dam

- Technical Advisory Board and External Experts also reviewed the design of the main dam
- All reviews concluded that the main dam design is safe
- Enhancements, if required, would be low cost and non-intrusive (adding fill to the surface of the downstream portion of the dam)

Current Project Cost Estimate and Schedule

- Current Project cost estimate is $16 billion with a one-year delay in full in-service date
  - Cost increases attributable to COVID-19, unforeseeable geotechnical challenges, and other Project cost and schedule pressures
- Reviews underway
  - Foundation enhancement design optimization
  - New contractor schedules to reflect COVID-19 delay impacts and implementation of foundation enhancements
  - Maintaining a safe work environment, including working with Northern Health Authority
  - Enhanced cost and schedule risk management, including critical timelines

Independent Consultant (Peter Milburn) Review

- Consultant focused on improvements to governance and Project risk, construction and commercial contract management and oversight processes
- Review was not an audit of costs or schedule
- 17 recommendations - all accepted by BC Hydro and government, including a restructured and strengthened Project Assurance Board
- Implementation underway with oversight by EY and Milburn
- Result will be stronger Project and commercial contract oversight and management going forward

Government Fiscal Impacts of Terminating Site C

- Immediate write down of about $10 billion (sunk, contract termination, and recognition of site remediation liability costs)
- Hits bottom lines of both BC Hydro and Province
- Further debt implications could follow
  - Risk that rating agencies may remove BC Hydro's status as "self-supporting" with $25 billion in BC Hydro debt becoming "taxpayer supported"
- BC's credit rating could be downgraded resulting in higher costs for all of the Province's borrowing

Who Bears Costs – Taxpayers or Ratepayers?

- If Site C terminated, taxpayers or ratepayers pay off the debt
- If BCUC approved ratepayers to pay, BC Hydro rates would increase today (e.g., by 26% for 10 years)
- If taxpayers take on the debt, reduces the Province's ability to fund COVID recovery and needed capital projects

Rate/Bill Impacts of Continuing Site C at a Higher Project Cost

- The costs of Site C will be recovered through rates over the life of the asset, more than 70 years
- Rate impacts will not occur until the assets go into service
- At the current cost estimate of $16 billion:
  - By 2028/29 cumulative rates for the average residential ratepayer would be ~3% higher ($36 per year) higher than the previous forecast based on a $10.7 billion Project cost
- Forecast rates with this increase are still below the expected rate of inflation for the same period

BC's Electricity Rates Amongst the Lowest in North America

- Annual Hydro Quebec study of electricity rates in 21 major North American cities
- The latest study, completed in April 2020, shows that Vancouver has:
  - Fifth lowest residential rates
  - Third lowest small and medium commercial category rates
  - Fourth lowest large industrial category rates
- BC Hydro's heritage hydroelectric assets are the main factor
- Adjusting for inflation, the average residential monthly BC Hydro bill today is about the same as the average bill in 1978

Site C Benefits

- Major construction project that employs ~4,500 workers
- Provides employment, training and contracting opportunities for Indigenous Nations
- Low cost electricity keeps rates down, which supports electrification to meet GHG reduction targets
  - New forecasts indicate more electrification required
  - Industrial Electrification Rate
- Surplus sales leverage Site C's clean dispatchable power
- Provides energy and capacity – both of which are needed to safely and reliably meet BC's electricity demands for generations

Conclusion

- Difficult decision but the right one for ratepayers and taxpayers
- Independent External Experts confirm the project is safe
- Government and BC Hydro are making changes to improve Site C oversight, construction, contract and risk management
- Completing Site C at higher cost is preferable compared to the financial impacts of halting the project and pursuing alternatives