

BC HYDRO WIND RESOURCE OPTION ENGAGEMENT

JUNE 3, 2015



FOR GENERATIONS

PURPOSE

- Report on BC-wide cost curve assumption
- Present preliminary results on wind UECs
- Seek input from stakeholders on cost assumptions and representation of wind potential in BC

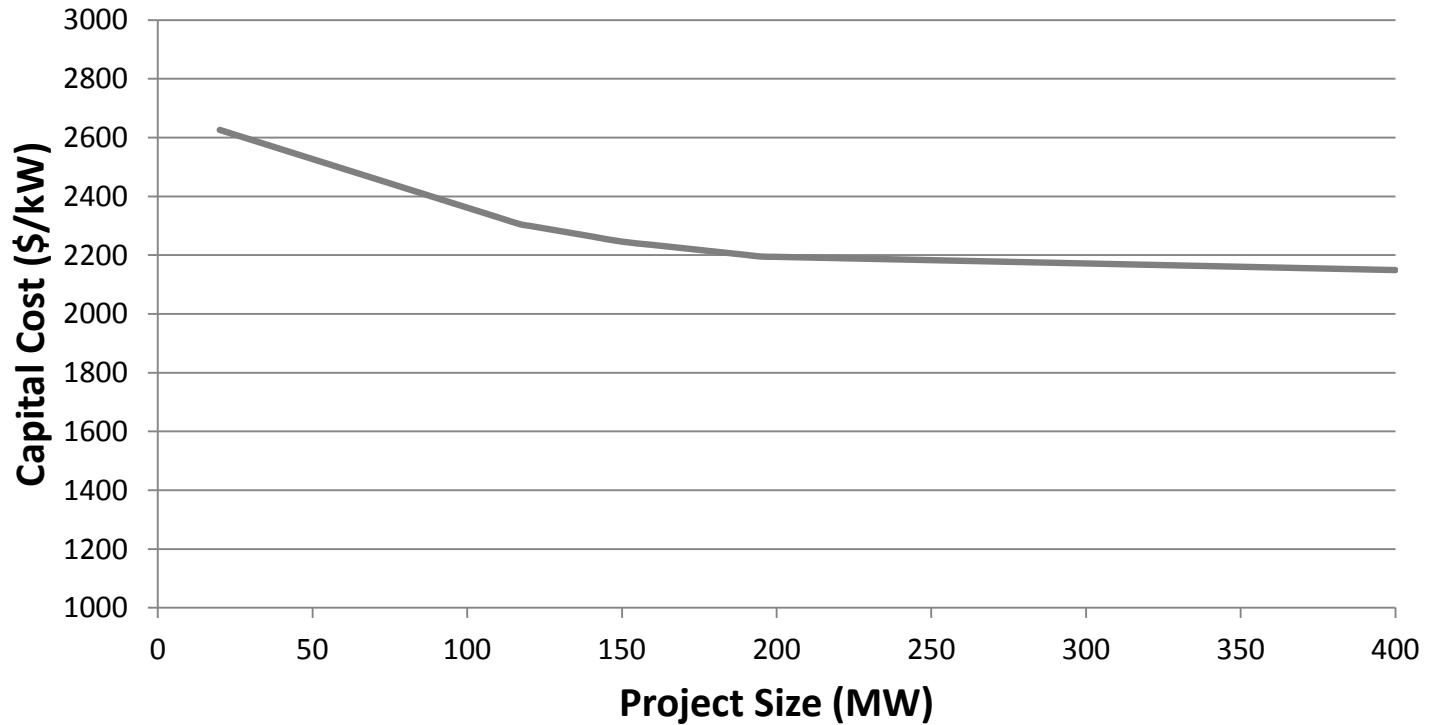
SUMMARY OF CHANGES BASED ON STAKEHOLDER INPUT

- 100 m hub height
- 3 MW turbine nameplate capacity
- 12.75% loss factor
- Updated power curves based on current/forward looking turbine technology
- 25 year project life

COST ASSUMPTIONS

- Based on line item analysis conducted by Hatch
- Considers impact of project size on capital costs
- Based on stakeholder input, use BC-wide costs instead of region specific costs (differences in site characteristics outweigh regional differences)
- Costs based on generic 'best case scenario' site conditions

BC-WIDE COST CURVE BASED ON GENERIC 'BEST CASE SCENARIO' SITE CONDITIONS



CONCERN VOICED IN PREVIOUS SESSION

- Hatch cost estimates are representative of ‘best case scenario’ sites, but not reflective of sites with challenging topography and high relief approaches
- Many of the high wind speed sites in BC are associated with challenging topography/high relief approaches
- Cost estimates likely underestimate UECs for those sites

ESTIMATING IMPACT OF CHALLENGING TOPOGRAPHY ON CAPITAL COSTS

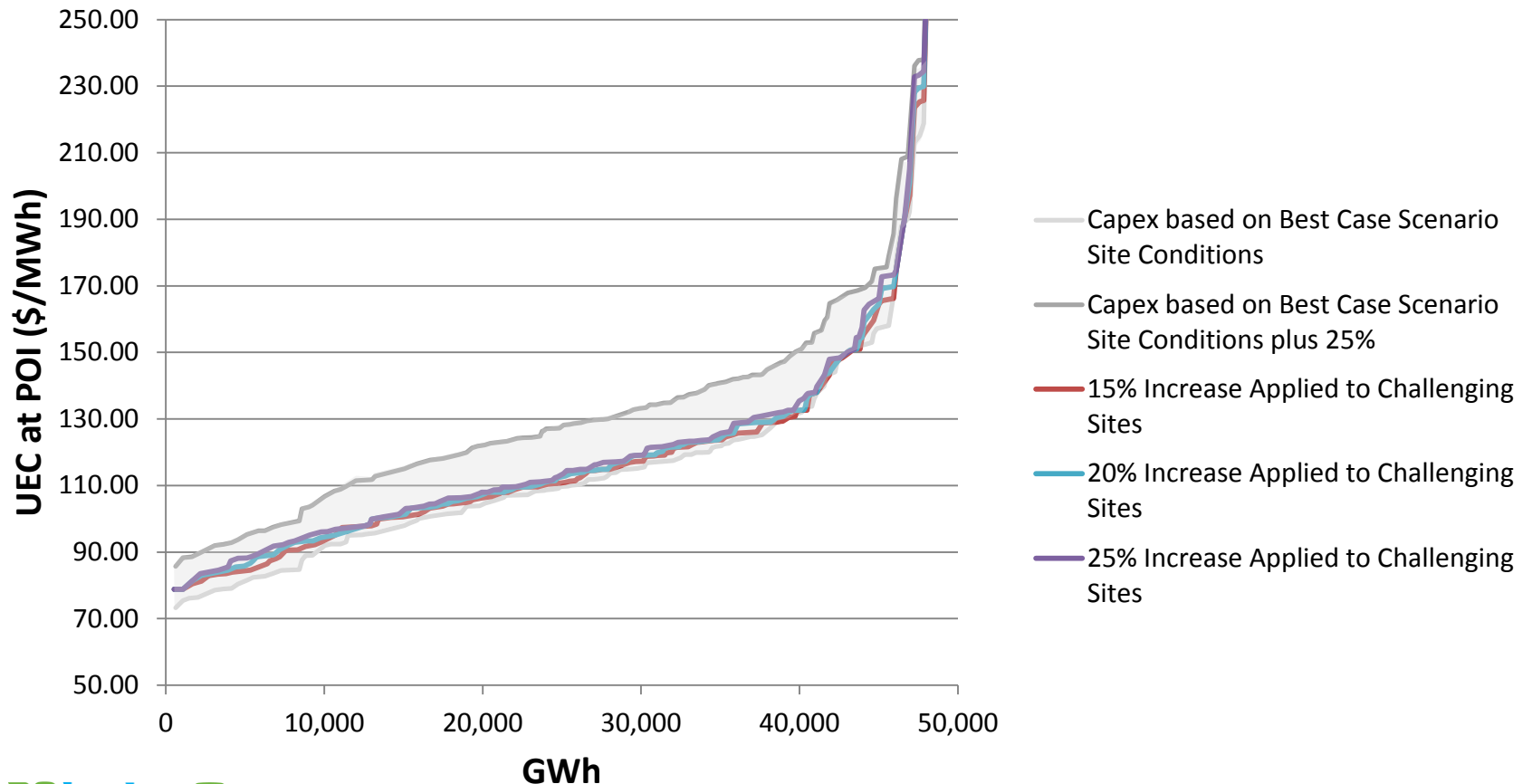
- Informal survey of IPPs (conducted by GE)
 - Capital costs range from \$2,590/kW (plateau site) to \$2,940/kW (complex site)
 - Compare this to \$2,350/kW based on the BC-wide cost curve (all estimates for a ~100 MW project)
- ➔ IPP estimate for complex site is roughly 25% more than Capex estimate based on BC-wide cost curve

Proposal:

- Apply a percent increase in Capex to sites with challenging topography (identified using Google Earth) to better reflect higher costs associated with building in difficult terrain.

UEC AT POINT OF INTERCONNECTION

- Preliminary - based on estimated CFs and 2013 R1/T1 values)
- Does not include cost adders (capacity, wind integration, etc)



OTHER CONCERNS

- Is it reasonable to assume 100 m hub heights for Class I sites?
- Database contains 17 projects with average wind speeds > 9 m/s and 8 projects with wind speeds > 9.5 m/s (at 100 m)

Are these wind speeds overly optimistic?

NEXT STEPS

- Complete UECs based on today's input
- Send out results to stakeholder group
- Post results on BC Hydro website (expected summer, 2015)