Q. (Reference NLH-NP-033) It is stated "*In Newfoundland Power's view, a replacement generator would not provide any additional benefits sufficient to justify these added costs. The plant's efficiency would not necessarily improve and the expected remaining service life would not change materially.*" What is the typical water conversion efficiency of hydro generator technology today versus when the Mobile Hydro Plant was commissioned?

A. Newfoundland Power's assessment that the plant's efficiency would not necessarily improve is based on the *Hydroelectric Systems Strategic Planning Study* completed by Hatch (formerly Acres International) in January 2001.[1] The typical water conversion efficiency of hydro generator technology today is estimated to be between 90% and 92%.[2] The most recent estimate of water conversion efficiency for the Mobile Hydro Plant is approximately 90%.[3]

[1] The *Hydroelectric Systems Strategic Planning Study* was most recently filed with the Board in the response to Request for Information PUB-NP-009 of the Company's *2010 Capital Budget Application*.

[2] See the IEA-ETSAP and IRENA *Technology Brief E06 – February 2015* and the Agtech Centre's *Focus on Alternative Energy* pamphlet on Hydroelectric Power.

[3] The original Mobile Hydro Plant turbine runner was replaced by a more efficient design in 1990. At that time, the water conversion efficiency was determined to be 91.8% following the runner replacement. Over the past 32 years the efficiency has reduced slightly due to age and deterioration.