Q. Provide the analysis that is used to determine whether a diesel plant should be upgraded as opposed to connecting the communities served by the plant to one of the interconnected systems (Reeves Prefiled Testimony, page 12, lines 22 to 30). Provide an actual case study using the La Poile plant.

A. The purpose of an interconnection study is to determine the most cost-effective means for servicing an isolated rural system: interconnection or remaining on diesel generation.

The first step is to determine a realistic year for the interconnection. Then, long-term forecasts (usually 30 years) for both isolated and interconnected scenarios are developed. From the forecasts, potential expansion alternatives are developed and evaluated to determine technical feasibility, including an assessment of the operating impacts and sequence of development. For each technically acceptable alternative, capital and operating costs are developed, using appropriate economic parameters such as escalation rates, discount rates, fuel prices, etc.

A comparison is made between the costs of an isolated diesel alternative and each interconnection alternative by calculating the cumulative present worth difference. Sensitivity analyses to such things as discount rate, capital costs of the interconnection, diesel fuel prices, interconnected energy prices, and the load forecasts are also carried out.

For interconnection studies, it is normal to plot the accumulated cost (capital plus operating costs) of all expansion alternatives discounted to a point in time. The payback period gives the time required for the higher investment

in one alternative to be offset by the higher operating costs of another expansion alternative.

The preferred expansion alternative is the one with the lowest cumulative present worth cost that also meets the economic evaluation criteria. In order for a project to proceed, Hydro has set a minimum economic guideline that interconnection projects must have payback periods not exceeding 15 years when compared to the existing operation. This allows for a reasonable level of risk associated with the long-term cost (capital and operating) of the expansion alternative.

Please see NP-93 for "LaPoile Interconnection Study" – October 1998.