Q. The response to GT-CA-NLH-017, page 2 lines 15-22, lists certain differences between the proposed 100 MW (nominal) CT and a 60 MW CT, including that the 60 MW unit was an aero derivative design, not a frame design as is the 100 MW CT, that the 60 MW unit had an oversized generator with the ability to generate 120 MW, that the 60 MW unit had synchronous condenser capability which the 100 MW unit does not and that the estimate for the 60 MW unit included additional foundation and equipment for future expansion. Please explain in detail each difference between the two units and state whether it will be necessary to add to the 100 MW unit any feature that was included with the 60 MW unit but not yet with the 120 MW unit. If it is not planned to add a feature, explain why not.

A. The following is an explanation of the differences between the proposed 120 MW (nominal) CT and a 60 MW CT.

1) Aero derivative vs frame design:

Aero derivative gas turbines are an adaption of aircraft jet engines to make them suitable for the power generation industry and other applications. They are lightweight and constructed of different metals than frame units, which makes them higher cost. Frame designs are of heavier construction and considered to be more robust. In the power generation industry, aero derivative gas turbines are generally used in plants up to 60 MW and frame engines above that size. Frame units are a more compact design with less space required between the gas generator and electric generator. Both designs are used for emergency and peaking duty; however, frame units are used more in base load applications.

It will not be necessary to replace the frame design with an aero derivative design in the future.

2) 60 MW plant with oversized generator vs 120 MW plant:

The 60 MW plant would have been constructed to provide 60 MW of power generation. It would have been provided using a single 60 MW gas turbine coupled to one end of a 120 MW electric generator, allowing it to produce up to 60 MW of electricity. That configuration would allow a second gas turbine to be coupled to the other end of the electric generator in the future thereby increasing electric power generation capability to 120 MW. This configuration is a standard plant offering available from only one manufacturer and offers future expanded electric power generation at relatively low capital cost and short installation schedule. The 120 MW plant provides a 120 MW gas turbine coupled to one end of the electric generator that can deliver 120 MW of power.

It will not be necessary to replace the 120 MW generator with a 120 MW generator in the future, as the generator being supplied by the successful tender can provide 120 MW of power generation.

3) 60 MW with synchronous condensing capability vs 120 MW which does not:

Synchronous condensing provides capability to stabilize voltage fluctuations on the Island Interconnected System. It is an option that could be provided with the 60 MW plant as a standard offering. It is not a standard offering with the 120 MW plant and would require custom design.

Hydro has not decided if it will be necessary to add a synchronous condensing feature to the 120 MW plant in the future. As stated in the

Report, synchronous condensing capability would be desirable but it is not the only means of stabilizing voltage fluctuations required for the HVdc by 2017. Hydro will be assessing all the options for providing the required voltage support, including the addition of synchronous condensing capability to this combustion turbine, and will recommend proceeding with the least cost, technically acceptable alternative.

4) 60 MW unit included additional foundation and equipment for future expansion:

The 60 MW unit included extended concrete foundations to support the addition of a second 60 MW gas turbine in the future as a standard expansion. It also included an enlarged transformer to receive additional power from the electric generator when a second gas turbine was added. The plant controls system allowed for ease in expanding it to accommodate the new gas turbine in the future. The additional foundations and equipment provided for increased plant generation to 120 MW at low capital cost and short installation schedule.

Additional foundations and equipment for future expansion will not be required for the 120 MW plant to increase its capacity to 120 MW as the combustion turbine plant being supplied by the successful tender can provide 120 MW of power generation.