Q. Describe Hydro's underfrequency load shedding program and the benefits provided to the grid by the participation in this program by Industrial Customers.

A. Maintaining proper system frequency at or near 60 Hz is a critical requirement in power systems. Failure to maintain system frequency near 60 Hz can result in significant damage to both generating equipment and customer loads. Deviations as little as 2.5 Hz below nominal frequency can pose a significant hazard to rotating machines. In particular, if there is a sudden loss of generation the system frequency will immediately begin to reduce. A failure to rapidly correct this will result in continued frequency deterioration, further loss of generation and eventual system collapse.

The maintenance of system frequency is based upon a match between generation and load. In the North American grid, loss of large generating units is compensated for by the spinning reserve (spare generation and rotating inertia) maintained in the grid. For isolated systems, such as Newfoundland's island interconnected system, it is not economically feasible to carry sufficient spinning reserve to completely compensate for the sudden loss of large generating units. In these cases, utilities employ underfrequency load shedding programs to automatically reduce loads upon loss of generation, thereby re-establishing the balance between generation and load.

The underfrequency load shedding program operated on the island interconnected system is based upon participation by industrial customers, Newfoundland Power, and Newfoundland and Labrador Hydro. The table

below provides the participation schedule for these customers in the current scheme. Loads shown on the table indicate the amount of load that can be shed under peak conditions. If an underfrequency event occurs at a time other than peak, then the amount of load shed by each customer will depend upon the load connected at the time.

By participating in the underfrequency load shedding scheme, industrial customers contribute to the overall stability and security of the system. Based upon the attached table, industrial customers represent roughly 22% of the total load allocated to the underfrequency load shedding program.

UNDERFREQUENCY LOAD SHEDDING
PARTICIPATION SCHEDULE
February 2003

CUSTOMER	**LOAD (MW)**
Newfoundland Power	423.0
Corner Brook Pulp & Paper	15.0
Abitibi Consolidated	
Grand Falls	55.5
Stephenville	60.0
Total Industrial	130.5
Newfoundland & Labrador Rural Customers	31.0
System Total	584.5