June 16, 2000 Response from Karen M. McGaffey to NWEC/WEC Data Request #4

4. For the turbines that will be used in the proposed Sumas 2 facility, what is the manufacturer's heat rate new and clean at standard ISO, in BTU/kWh?

The ISO rating is an international standard that defines turbine ambient operating conditions. ISO standard ambient conditions for turbines are as follows:

Altitude = sea level
Ambient T = 15 C (59 F)
Relative humidity = 60%
Inlet pressure drop = 0
Exhaust pressure drop = 0

These ISO standard conditions are not the same as the conditions that will exist at the SE2 facility. For example, the SE2 has air intake ducts with silencers that have a pressure drop, and it will exhaust to the HRSG and a stack that will also have a pressure drop, so the zero inlet and exhaust pressure conditions do not apply.

We are requesting ISO ratings from the manufacturer, but in the meantime, we can provide you with the turbine ratings we have for the specific application at the SE2 facility:

Altitude = sea level
Ambient T = 59F
Relative humidity = 60%
Inlet pressure drop = 3.6 in water
Exhaust pressure drop (total) = 17.2 in water
Exhaust pressure drop (static) = 14.2 in water

Gross power output, kW = 181,440 kW
Gross heat rate (LHV) = 9,230 Btu/kWh
Gross heat rate (HHV) = 10,235 Btu/kWh
Exhaust gas T = 1103 F

At the SE2 facility, exhaust gas will be routed to the heat recovery steam generator (HRSG). The expected performance of the resulting combined cycle is:

Net power output, kW = 655,288 kW
Net heat rate = 6505 Btu/kWh
Exhaust gas T = 176 F