

3.8 Transportation of Radioactive Materials

Operation of STP 3 & 4 would require transportation of unirradiated fuel, irradiated fuel (spent nuclear fuel), and radioactive waste. The subsections that follow describe transportation of these three types of radioactive materials. Solid low-level radioactive waste is the only type of radioactive waste associated with STP 3 & 4 that would be transported offsite. Section 3.2 discusses the fuel including its enrichment and burnup. Section 5.11 provides an analysis of the radiological impacts from transportation of these materials. Section 7.4 addresses radiological transportation accidents.

3.8.1 Transportation of Unirradiated Fuel

Transportation of new fuel assemblies to the STP site from a fuel fabrication facility would be in accordance with DOT (Department of Transportation) and NRC regulations. Based on a reference ABWR DCD core of GE P8x8R fuel, the initial fuel loading would consist of 872 fuel assemblies for one ABWR. On an annualized basis, refueling would require an average of 244 fuel assemblies for one ABWR. The fuel assemblies would be fabricated at a fuel fabrication plant and shipped by truck to the STP site. The details of the container designs, shipping procedures, and transportation routings would be in accordance with DOT (49 CFR 173 and 178) and NRC (10 CFR 71) regulations and depend on the requirements of the suppliers providing the fuel fabrication services. The truck shipments would not exceed 73,000 pounds as governed by Federal and State gross vehicle weight restrictions.

3.8.2 Transportation of Irradiated Fuel

Spent fuel assemblies would be discharged from the reactor core and sent to the spent fuel pool of each unit for a minimum of five years, allowing for decay of short half-life isotopes. Each ABWR unit would have a spent fuel pool with capacity for 270% of the reactor core, a minimum of 2354 fuel assemblies. This is sufficient for at least six years of fuel discharges (based on annual refueling) plus margin for a full core offload. After the sufficient decay period, the fuel would be removed from the spent fuel pool and packaged in approved casks for transport. The spent fuel would be transferred to an independent spent fuel storage installation or an offsite disposal facility. Packaging of the fuel for offsite shipment would comply with applicable DOT (49 CFR 173 and 178) and NRC (10 CFR 71) regulations for transportation of radioactive material. By law, DOE is responsible for spent fuel transportation from reactor sites to a repository (Nuclear Waste Policy Act of 1982, Section 302) and would make the decision on transport mode.

3.8.3 Transportation of Radioactive Waste

As described in Section 3.5, low-level radioactive waste would be packaged to meet transportation and disposal site acceptance requirements. Packaging of waste for offsite shipment would comply with applicable DOT (49 CFR 173 and 178) and NRC (10 CFR 71) regulations for transportation of radioactive material (Reference 3.8-1). Waste would be shipped directly to a disposal facility or to a licensed commercial facility for processing prior to disposal. Sufficient onsite storage would be provided for at least six months production of radioactive waste. An onsite staging facility would provide additional storage capacity in the event waste was transported offsite for processing and then returned to the STP site for storage

pending availability of disposal capacity. Radioactive waste would be shipped to and from the STP site by truck.

3.8.4 References

3.8-1 “STPEGS Updated Final Safety Analysis Report, Units 1 and 2,” Revision 13.