

APPENDIX B

ALTERNATE FUTURES

In conducting this strategic assessment, the staff felt it was prudent to not only consider the national low-level waste (LLW) system as it currently exists, but to also consider how the situation might change with time. After soliciting stakeholder input and combining it with the staff's own views, three scenarios, or "alternative futures," categorized as optimistic, realistic and pessimistic were developed. The "optimistic future" scenario is one in which staff envisions a continuous expansion of safe, secure and moderately priced disposal capacity for the entire spectrum of LLW. The "realistic future" scenario is characterized by a significant curtailment of disposal capacity and continued cost escalation for much of the spectrum of LLW, while the "pessimistic future" scenario presumes a virtual elimination of disposal capacity for LLW in the not too distant future.

When viewed through the lens of these postulated scenarios, potential work activities may assume enhanced or diminished importance. Accordingly, when proposed staff activities were analyzed to determine their priority, their responsiveness to each of the future scenarios was one of the factors considered. Further details regarding the assumptions used for each future scenario are provided below.

"Optimistic" Scenario Assumptions:

All aspects for management of the back end of the fuel cycle are continuously available, including uninterrupted commercial disposal capacity for all Class A, B, and C LLW and from all waste generators. Some limited competition results in disposal costs that are considered reasonable for most waste generators. Though most 11e.(3) byproduct waste (formerly discrete naturally occurring radioactive material) is disposed at the Richland, WA, disposal facility, some is disposed elsewhere. Greater-than-class-C (GTCC) LLW disposal is available at a U.S. Department of Energy (DOE) facility licensed by the NRC. A variety of low activity waste (LAW) disposal options keeps the average cost of disposal low for this type of waste. There is little need for extended storage of LLW or for new innovations regarding treatment of LLW, including volume reduction or use of surrogates. There are no significant events involving safety, security, or protection of the environment, and therefore little or no negative press. The regulatory focus is on developing a framework for accommodating the extremely large volumes of LAW associated with decommissioning of nuclear power plants, as well as alternative waste streams that may be created by fuel reprocessing and new types of nuclear facilities.

"Realistic" Scenario Assumptions:

Class A LLW has the only clear path forward for disposal. Waste generators in most states are not able to dispose of their Class B and C LLW and are storing this waste at numerous locations. Small quantities of relatively high activity LLW are stored at industrial, medical, and research facilities; larger quantities are stored at Nuclear Power Plants (NPPs). Limited quantities of 11e.(3) byproduct material waste can be disposed at the Richland, WA disposal facility. A small percentage of GTCC - - mainly sealed sources - continues to be moved out of the commercial sector into DOE storage, but a disposal facility for GTCC waste is still many years away. Orphan waste is identified in an ad hoc fashion, and a path forward for disposition/disposal becomes more limited. Disposal options for LAW are few, and approvals continue to be on a case-by-case basis. Life-cycle costs for some radioactive materials

increase significantly, as significant storage costs are added to increased costs for ultimate disposal. The LLW regulatory framework is relatively stable, but necessarily reactive to certain circumstances, such as development of new technology, external events and innovations in waste processing, stabilization, and storage technology.

“Pessimistic” Scenario Assumptions:

Disposal capacity for all types of LLW is severely constrained and costs of disposal are prohibitively high for many generators. Consequently, there are significant increases in both the volume and activity of LLW held in long-term storage. Disposal options for LAW are severely constrained, and there are no prospects for development of a GTCC disposal facility in the near-to-medium term. Beneficial uses of radioactive material in research, medical care and industrial applications decrease because of escalating uncertainties (both in disposal options as well as costs). Escalating costs become the driver for significant innovations in processing and storage technology. The public becomes concerned about potential safety impacts of LLW storage as it becomes increasingly aware of its widespread use by licensees. Decommissioning of NPPs is postponed, or different decommissioning strategies are used due to high disposal costs, uncertain disposal availability and conflicting public and/or political pressures.