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All nuclear fuel cycles require a robust used fuel management program. However, the technical details of the used fuel management programs will vary depending on the specifics of the fuel cycle (e.g. reactor designs, degree of recycling). While the technical details may differ, there are some common themes for all fuel cycles.

- Consistent, sustained political and policy support is a must.
- Geologic disposal of used fuel or used fuel byproducts will be necessary.
- Only mature, reliable technologies will be adopted on a commercial scale by the nuclear power industry.
- The transition to a new fuel cycle or fuel cycles will take decades.

Moving beyond the open fuel cycle, currently in use in the United States, will require some form of recycling, advanced reactors, durable federal policies, and a sustained financial investment. An advanced fuel cycle will have to provide significant value compared to the open cycle to justify this support and investment. For example, an advanced fuel cycle could:

- Enhance the sustainability and economical viability of the nuclear fuel supply.
- Enhance the management and siting of a geologic disposal facility by altering many of the materials destined for disposal (e.g. reduce heat and radiotoxicity of the material).

Regardless of the value added, an advanced fuel cycle should not reduce the ability of the nuclear reactor fleet to produce electricity reliably and efficiently. To this end, the greater than 90% capacity of the current fleet of light water reactors should be a design goal for reactors operating in an advanced fuel cycle.

Research, development, and demonstration of advanced recycling technologies and advanced reactors should be pursued in a timely manner with the goal of creating real, practical approaches that the private sector will be willing to develop and finance while being successful in the marketplace. It is conceivable that more than one technology could be commercialized to create advanced fuel cycles that address the large fleet of operating reactors (104) and the substantial inventory of used fuel in storage (>60,000 MTU and growing at a rate of ~2200 MTU/year). Since alternate fuel cycles create different types of used fuel (e.g. MOX) or byproducts (e.g. vitrified glass), geologic disposal of these alternate waste forms should be considered to the extent practical when contemplating a change from the open cycle.

If changes to the fuel cycle are to occur, the efforts currently under way to revise the regulatory framework for licensing of recycling facilities must be completed. In addition, research should be conducted with target dates specified for phased development and demonstration of commercial scale ventures rather than waiting for multiple decades of research to be complete. The implementation of advanced fuel cycles in the United States should occur in an evolutionary manner building upon current technologies that are developed and operated in a way that meets nonproliferation goals.