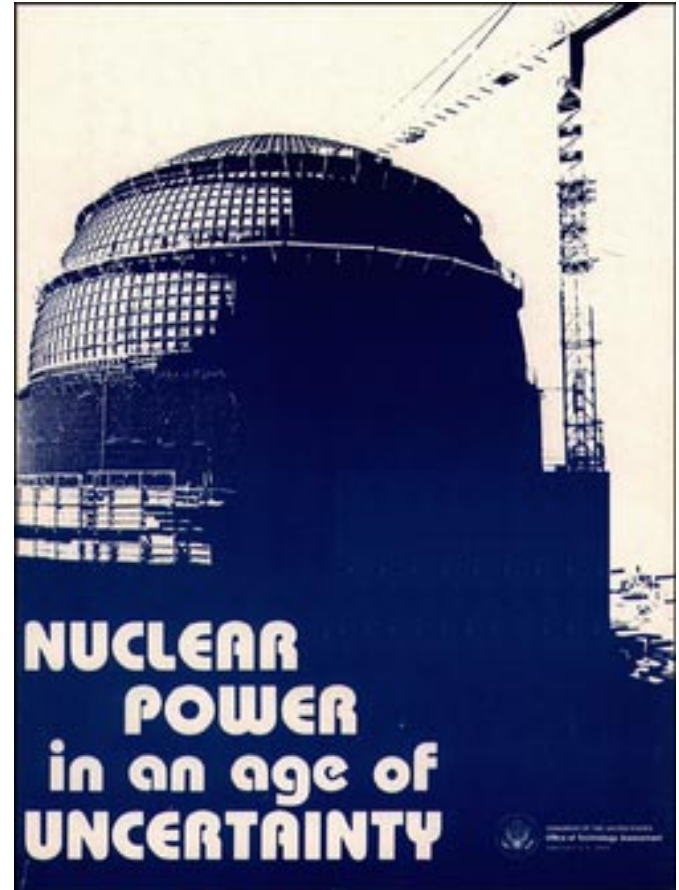


Nuclear Power in an Age of Uncertainty

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Foreword

This report responds to a request by the House Committee on Science and Technology, with the endorsement of the Senate Committee on Energy and Natural Resources, to assess the future of nuclear power in this country, and how the technology and institutions might be changed to reduce the problems now besetting the nuclear option. The report builds on an earlier OTA report, *Nuclear Powerplant Standardization*, and complements a current report, *Managing Commercial High-Level Radioactive Waste*.

The present nuclear era is drawing to a close. The cover of this report shows Unit 1 of the Washington Public Power Supply System, which was indefinitely, perhaps permanently, deferred even though it was 60 percent complete and \$2.1 billion had been invested. This plant and others such as Zimmer and Marble Hill epitomize the difficulties facing the nuclear industry. It is important to remember, however, that other nuclear plants have been very successful and produce reliable, low cost electricity. The future of nuclear power poses a complex dilemma of policy makers. It has advantages that may prove crucial to this Nation's energy system in the coming decades, but at present it is an option that no electric utility would seriously consider.

OTA examined questions of demand growth, costs, regulation, and public acceptance to evaluate how these factors affect nuclear power's future. We reviewed research directions which could improve conventional light water reactor technology and opportunities to develop other types of reactor concepts that might enhance safe and reliable operation. In addition, the crucial role of utility management in constructing and operating nuclear powerplants is examined at length. The controversy about nuclear safety regulation is also analyzed, and is presented with a review of current proposals for regulatory reform. Finally, the study discusses policy approaches that could assist a revival of the nuclear option should that be a choice of Congress.

In the course of this assessment, OTA drew on the experience of many organizations and individuals. In particular, we appreciate the generous assistance of our distinguished advisory panel and workshop participants, as well as the efforts of the project's consultants and contractors. We would also like to acknowledge the help of the numerous reviewers who gave their time to ensure the accuracy and comprehensiveness of this report. To all of the above goes the gratitude of OTA, and the personal thanks of the project staff.



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