U.S. Oil Import Vulnerability: The Technical Replacement Capability

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Foreword

Iraq's invasion of Kuwait in August 1990 triggered a long-dormant awareness of this Nation's vulnerability to disruptions in foreign oil supplies. Amid heightened concern over the potential impacts on U.S. oil supplies of prolonged hostilities in the Middle East, the Senate Committee on Energy and Natural Resources asked OTA to update the conclusions of our 1984 report, U.S. Vulnerability to an Oil Import Curtailment: The Oil Replacement Capability. The Subcommittee on Energy and Power of the House Committee on Energy and Commerce subsequently joined in the request.

This report examines the changes that have taken place in world oil markets and the U.S. economy since 1984 and provides revised estimates of the technical oil replacement potential that might be attained in the event of a severe and long lasting cutoff of imported oil. The analysis focuses on technologies that are commercial y available today or will be within the next 5 years and that are among the most cost-effective methods for replacing oil use in applicable sectors. It also considers the economic impacts of adopting an aggressive oil replacement strategy in a severe oil emergency. The report presents a variety of policy options that could help accelerate the adoption of oil replacement technologies in preparation for, or in response to, a severe supply disruption, or as part of a long-term national policy to reduce import vulnerability y.

The report's conclusion that U.S. capability to replace lost oil imports is shrinking should be sobering to those who believe that there are quick and easy technological solutions, or that market forces alone will be sufficient to overcome the substantial economic and social dislocations that could result from a prolonged major oil disruption.

Operation Desert Storm and the return to low world oil prices have lessened the immediacy of concerns over import dependence. But this latest oil scare has refocused attention on the Nation's energy policies and where they may lead us.

This report is one of four just-completed OTA studies on energy technology and policy issues. The others are: Energy Technology Choices: Shaping Our Future (July 1991), Energy Efficiency in the Federal Government: Government by Good Example? (May 1991), and Improving Automobile Fuel Economy: New Standards, New Approaches (October 1991). We hope that these studies will prove helpful to Congress as it considers proposed energy legislation.

This study enjoyed the strong support and encouragement of Michael T. Halbouty of the Technology Assessment Advisory Council, who generously shared his wisdom gained from years in the oil patch. OTA is grateful for his advice and counsel.

OTA also appreciates the assistance of the individuals and organizations who provided substantial assistance to our staff and contractors. To them and to the workshop participants, reviewers, and contractors who contributed to this report, we extend our gratitude.

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NOTE: OTA appreciates and is grateful for the valuable assistance and thoughtful critiques provided by the participants in the workshops. The workshop participants do not, however, necessarily approve, disapprove, or endorse this report. OTA assumes full responsibility for the report and the accuracy of its contents.

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ERRATA: "U.S. Oil Import Vulnerability The Technical Replacement 'Capability" GPO stock #052-003=01261=8

Figures 1-9, 1-10, and 1-11 on pages 19 and 20 of the report and summary documents* are incorrect. The corrected versions appear below.



Figure 1-9

*The summary document is available free of charge from the OTA. Call the Publications Request Line at 202=224=8996 for a copy.



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