Contents

1 Summary and Findings, 1

Overview, 1
Background, 3
The Structure of Federal R&D, 7
Disposition of the DOE Weapons
Laboratories, 15
Summary of Policy Issues and Options, 30
New National Initiatives, 38

2 Policy Issues and Options, 43

Options to Reduce the Size of
DOE Weapons Labs, 46
Options to Improve Technology Transfer From
the DOE Weapons Labs, 48
Definitions of National Interest Within the
Technology Transfer Process, 56
Measuring the Value of Cooperative R&D, 60
Strategic Direction of Cooperative Technology
Development, 61
New National Initiatives, 64

PART ONE: Redirecting Research and Development in Federal Laboratories and Agencies

3 Nuclear Weapons Laboratories: From Defense to Dual Use, 73

Federal Laboratories, 75 The DOE Weapons Laboratories, 78

4 Technology Transfer From DOE Weapons Laboratories, 97

Technology Transfer at Federal Labs, 97 Technology Transfer at DOE Laboratories: Early Efforts, 99 CRADAs and the National Technology Initiative, 103

5 ARPA: A Dual-Use Agency, 121

ARPA and Dual-Use Technology, **122 The** Future of ARPA, 131
Technology Transfer From ARPA, 139
Extending the ARPA Model, 142

6 Department of Defense Laboratories, 145

RDT&E in DoD Facilities, 146 DoD Labs and the "Peace Dividend," 148 Technology Transfer From DoD Laboratories, 152

Appendix A: R&D Institutions in Germany, 159

PART TWO: New National Initiatives: Energy-Efficient Transportation

Introduction to Part Two, 167

7 Personal Transport: Road Vehicles, 173

Electric Vehicles, 173 Legislative Context and Federal R&D Support for EVs, 182 Existing and Near-Term EVs, 193 Employment and Competitiveness, 197 Intelligent Vehicle and Highway Systems, 199 Concluding Remarks, 206

8 Energy-Efficient Transportation: Public Systems, 207

High-Speed Intercity Ground Transportation, 207 Intracity Mass Transit, 221

Index, 231