

TABLE OF CONTENTS

1	INTRODUCTION AND EXECUTIVE SUMMARY	9
	A Common Approach to Reform is Developing	9
	A Review of Reforms to Date	10
	Key Issues: Unbundling	12
	Key Issues: Empowering the End User	13
	Key Issues: Meeting Security of Supply, Environmental and Social Goals	13
	Key Issues: Reforming Regulatory Institutions	14
	Designing Markets and Regulation	14
	Outlook	15
2	THE BACKGROUND TO REFORM	17
	Defining Electricity	17
	What are the Benefits of Reform?	22
	What are the Costs of Reform?	25
	What is Driving Reform?	26
3	A REVIEW OF ESI REFORMS IN OECD COUNTRIES	29
	A Brief History	29
	Early Reforms	30
	Recent Reforms	36
	Performance	48
4	WHAT MODEL FOR THE ESI?	55
	Retail Competition	55
	Alternative Approaches	58
	Retail Competition Issues	59
	An Assessment	62
	Appendix	
	Transition Issues: Stranded Costs	65

5 UNBUNDLING **69**

Why Unbundle?	69
Vertical Separation of Generation and Transmission	70
Vertical Separation of Generation and Distribution	76
Vertical Separation of Distribution and End-user Supply	77

6 MARKETS **79**

"Spot" Electricity Markets	79
Power Exchanges: Review of the International Experience	82
Trading Outside the Pool	91
Capacity Mechanisms	93
Financial Markets	97

7 NETWORKS **101**

Means and Ends of Network Regulation	101
Short-term Pricing Issues: Managing Congestion	104
Setting Price Levels: Cost of Service Versus Incentive Regulation	110
The Institutional Framework: The Role of System Operators in Investment	113
Appendix	
Allocating Costs to Users	114

8 INSTITUTIONS AND THE POLICY FRAMEWORK **117**

The Need for Regulatory Institutions to Adapt	117
Regulatory Independence	118
A Review of Institutional Approaches	119
The Important Role of Competition Policy	120
Developing a Framework for International Trade	123

The Relationship with Natural Gas	125
The Broader Policy Framework: Security of Supply	125
The Broader Policy Framework: the Environment	128
The Broader Policy Framework: Social and Regional Objectives	135

9 CONCLUSIONS AND OUTLOOK 137

Consumer Choice is the Key to Reform	137
Challenges	137
Further Change Can be Expected	140

REFERENCES 143

GLOSSARY 151

LIST OF TABLES

1. Functional Structure of the ESI	18
2. Key Characteristics of Some Early Reformers	31
3. Horizontal Concentration	34
4. Market Opening under the EU Electricity Directive	37
5. Network Access in EU Countries	40
6. European Electricity Market Reform	41
7. Wholesale Average Prices (US\$ per MWh)	53
8. Cost of Metering Equipment (US\$)	61

9.	<i>Organisation of Transmission-related Activities in Competitive Electricity Systems</i>	72
10.	<i>Organisation of Electricity Exchanges in the OECD Area</i>	83
11.	<i>International Comparison of Transmission Pricing</i>	103
12.	<i>Pricing of Network Services</i>	104

LIST OF FIGURES

1.	<i>Planned Electricity Market Opening in EU Countries</i>	38
2.	<i>Status of State Electricity Industry Restructuring as of May 2000</i>	47
3.	<i>Market Share of Two Largest Generators in Selected OECD Markets (1998)</i>	49
4.	<i>Monopoly vs. Retail Competition</i>	56
5.	<i>Retail Competition: How does it Work?</i>	57
6.	<i>Other Approaches</i>	57

LIST OF BOXES

1.	<i>Main Lines of Reform in the US</i>	45
2.	<i>Competition for Small Consumers : the Case of California</i>	62
3.	<i>How an Ideal Spot Electricity Market Would Work</i>	80