



Real Estate
Development,
Leasing, and Financing:
A Sustainable Approach

2012-2013 EDITION

 JASON A. MAHLER

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Real Estate Development, Leasing, and Financing: A Sustainable Approach

2012 – 2013 Edition

Jason A. Mahler

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Dedication

FOR SARA, NATHANIEL AND KAY

About the Author

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Preface and Acknowledgment

Building an environmentally stable future requires some vision of what it would look like. If not coal and oil to power society, then what? If forests are no longer to be cleared to grow food, then how is a larger population to be fed? If a throwaway culture leads inevitably to pollution and resource depletion, how can we satisfy our material needs?

In sum, if the present path is so obviously unsound, what picture of the future can we use to guide our actions toward a global community that can endure?

**Lester R. Brown, Christopher Flavin, and Sandra Postel
Earth Day 2030, World Watch Magazine, March/April 1990,
Volume 3, No. 2**

The primary objective of this book is to introduce real estate professionals to the field of sustainable development, leasing and financing. Whether you are a lawyer, developer, landowner or tenant, this book aims to provide you with the historical, social, and technological context behind the green building revolution, as well as the tools necessary to successfully incorporate sustainable principles into current and future projects.

It is no secret that the real estate community has seen a historic slowdown in the years following the global recession of 2007. At the same time, much of the scientific community has reached a consensus about the man-made triggers of climate change. During the “development doldrums” of the last five years, the local, state and federal regulatory landscape has rapidly evolved to create a foundation of mandates and incentives to encourage renewed development with an eye toward promoting sustainability. Accordingly, the real estate community, including legal, investment, design and construction professionals, has had to rapidly incorporate green principals into the daily practice of the industry in order to accommodate the “new normal” of sustainability.

This book sets forth the evolution of modern green building principles, demonstrates how these principles of sustainability have been incorporated into private, third party rating system programs, explains how these rating systems have been used as benchmarks in government mandates and public and private

sustainability incentives, and guides real estate practitioners as to practical ways to limit liability and avoid litigation by providing insights into strategies for effective green contracting. Although the sustainability movement is a worldwide effort that seeks to address a complex series of interconnected problems, this book provides a United States-centric focus, recognizing that the core principles of sustainability are applicable across international borders. Further, while this book was written at an introductory level, it contains multiple references to those that wish to delve deeper into the scientific and technical underpinnings of sustainable development.

I am grateful to a number of people and organizations that have provided various forms of support, encouragement and assistance during the writing of this book, including: The University of Connecticut School of Law, the staff of the Boston Athenaeum and Social Law Library, Patrick Fong and the editors and staff at Thomson Reuters. I also wish to thank colleagues at McCarter & English LLP who enthusiastically reviewed and commented on drafts of the manuscript.

Finally, I am indebted to Sylvia Coulter for her advice and guidance on my early ideas that led to the creation of this book, and my family for their never-ending indulgence, support, encouragement and motivation during many late nights and weekends spent writing.

Schedule of Abbreviations

ACCC	Australian Competition and Consumer Commission
ACEEE	American Council for an Energy-Efficient Economy
ACS	American Chemical Society
ACT	Association for Commuter Transportation
ACUPCC	American College and University Presidents' Climate Commitment
AEGB	Austin Energy Green Building Program
AGC	Associated General Contractors of America
AIA	American Institute of Architects
AIP	Airport Improvement Program
ANSI	American National Standards Institute
APP	Asia Pacific Partnership
ARPA-E	Advanced Research Project Agency- Energy
ARRA	The American Recovery and Reinvestment Act of 2009
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
ATVM	Alternative Technology Vehicles Manufacturing
BCA	Building and Construction Authority
BECC	Border Environment Cooperation Commission
BECP	Building Energy Codes Program

BEES	Building for Environmental and Economic Sustainability
BEPA	Building Energy Performance Assessment
BERDE	Building Ecologically Responsive Design for Excellence
BMRA	Building Materials Reuse Association
BREEAM	Building Research Establishment's Environmental Assessment Method
BRI	Building Related Illness
BTU	British Thermal Unit
CAA	The Clean Air Act of 1963
CAAFI	Commercial Aviation Alternative Fuels Initiative
CAFE	Corporate Average Fuel Economy
CARE	Community Action for Renewed Environment
CASBEE	Comprehensive Assessment System for Building Environment Efficiency
CBEAs	Commercial Building Energy Alliances
CBI	Commercial Building Initiative
CCTP	Climate Change Science Program
CEC	Commission for Environmental Cooperation of North America
CEPHEUS	Cost Efficient Passive Houses as European Standards
CEQ	White House Council on Environmental Quality
CERCLA	The Comprehensive Environmental Response, Compensation and Recovery Act of 1986
CFCs	Chlorofluorocarbons
CFFP	Clean Fuel Fleet Program
CFL	Compact Fluorescent Lamp

SCHEDULE OF ABBREVIATIONS

CHP	Combined Heat and Power
CIB	Conseil International du Bati- ment
CIR	Credit Information Request and Ruling
CMAQ	Congestion Mitigation and Air Quality Improvement Program
COP	Conference of the Parties
CPF	United Nations Collaborative Partnership on Forests
CREB	Clean Renewable Energy Bond
CSA	Canadian Standards Associa- tion
CSD	Commission on Sustainable Development
CSE	Centre for Sustainability and Excellence
CSP	Concentrating Solar Power
DGNB	German Sustainable Building Council
DOD	United States Department of Defense
DOE	United States Department of Energy
DOI	United States Department of the Interior
DOT	United States Department of Transportation
DSD	Division for Sustainable Development
DWSRF	Drinking Water State Revolv- ing Fund
EAI	Earth Advantage Institute
EECBG	Energy Efficiency and Conser- vation Block Grant Program
EEM	Energy Efficient Mortgage
EERE	The Department of Energy's Office of Energy Efficiency and Renewable Energy
EEWH	Ecology, Energy Saving, Waste Reduction and Health

EISA	Energy Independence and Security Act of 2007
EPA	Environmental Protection Agency
EPAct 2005	Energy Policy Act of 2005
EPCA	Energy Policy and Conservation Act of 1975
FEMP	Federal Emergency Management Program
FFV	Flexible Fuel Vehicle
FHA	Federal Highway Administration
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act of 1947
FSC	Forest Stewardship Council
FGBC	Florida Green building Coalition
FHA	Federal Housing Administration
FTC	Federal Trade Commission
GBAS	Green Building Assessment Method
GBCI	Green Building Certification Institute or Green Building Council Indonesia
GBI	Green Building Initiative
GCCMIF	Global Climate Change Mitigation Incentive Fund
GCI	Green Chemistry Institute
GEF	Global Environmental Facility
GEI	GREENGUARD Environmental Institute
GENICES	Global Ecolabelling Network's Internationally Coordinated Ecolabelling System
GFN	Global Footprint Network
GHG	Greenhouse Gasses
GHGRP	Greenhouse Gas Reporting Program
GMI	Global Methane Initiative
GMIC	Green Meetings Industry Council

SCHEDULE OF ABBREVIATIONS

GNESD	Global Network on Energy for Sustainable Development
GRIHA	Green Rating for Integrated Habitat Assessment
GSA	General Services Administration
GWP	Global Warming Potential
HBN	Healthy Building Network
HCFCs	Hydrochlorofluorocarbons
HFCs	Hydrofluorocarbons
HHQE	Haute Qualité Environnementale
HK-BEAM	Building Environment Assessment Method- Hong Kong
HUD	The United States Department of Housing and Urban Development
HVAC	Heating, Ventilating, and Air Conditioning
ICC	International Code Council
ICLEI	International Council for Local Environmental Initiatives
IGBC	Institute for Green Business Certification
IGCC	International Green Construction Code
ILSR	Institute for Local Self Reliance
IPCC	Intergovernmental Panel on Climate Change
IRS	Internal Revenue Service
ISO	International Organization for Standardization
ISWG	Interagency Sustainability Working Group
ITC	Investment Tax Credit
IWG	Interagency Working Group
LCA	Life Cycle Assessment
LCC	Life Cycle Costing
LED	Light Emitting Diode
LEED	Leadership in Energy and Environmental Design

LEED AP	LEED Accredited Professional
LEED-CI	LEED for Commercial Interiors
LEED-CS	LEED for Core & Shell
LEED-EB: O&M	LEED for Existing Buildings: Operations & Maintenance
LEED-HC	LEED for Healthcare
LEED-NC	LEED for New Construction and Major Renovations
LEED-ND	LEED for Neighborhood Development
LEED-SCH	LEED for Schools
MGGRA	Midwest Greenhouse Gas Reduction Accord
MOU	Memorandum of Understanding
MPI	Meeting Professionals International
NABERS	The National Australian Built Environment Rating System
NADB	North American Development Bank
NAECA	The National Appliance Energy Conservation Act of 1975
NAHB	National Association of Homebuilders
NARC	National Advertising Review Council
NASA	National Aeronautics and Space Administration
NCDC	National Clean Diesel Campaign
NCE	National Center of Excellence
NCER	National Center for Environmental Research
NECPA	The National Energy Conservation Policy Act of 1978
NEEA	Northwest Energy Efficiency Alliance
NEEC	Northwest Energy Efficiency Council

SCHEDULE OF ABBREVIATIONS

NEPA	National Environmental Policy Act of 1969
NERC	Northeast Recycling Council
NETC	National Environmental Technology Competition
NETI	National Environmental Technology Institute
NFCBP	National Fuel Cell Bus Program
NRDC	Natural Resources Defense Council
NSF	National Science Foundation
OSHC	Office of Sustainable Housing and Communities
PCSD	President's Council on Sustainable Development
PEEC	Precourt Energy Efficiency Center
PHILGBC	Philippine Green Building Council
PMU	Phasor Measurement Units
PPIN	Pollution Prevention Information Network
PTC	Production Tax Credit
PV	Photovoltaic
QECB	Qualified Energy Conservation Bond
QSAS	Qatar Sustainability Assessments System
REPI	Renewable Energy Production Incentive
RBF	Rockefeller Brothers Fund
RCAC	Rural Community Assistance Corporation
RCRA	Resource Conservation and Recovery Act of 1976
REC	Renewable Energy Certificate
RESNET	Residential Energy Services Network
RFF	Resources for the Future
RFS	Renewable Fuel Standard

RGGI	Regional Greenhouse Gas Initiative
SBA	Small Business Administration
SBIR	Small Business Innovation Research Program
SBS	Sick Building Syndrome
SCN	Smart Communities Network
STTR	Small Business Technology Transfer Program
SEP	State Energy Program
SFI	Sustainable Forestry Initiative
SHPO	State Historical Preservation Office
SMI	Sustainable Manufacturing Initiative
SSI	Sustainable Skylines Initiative
STRDD	Surface Transportation Research, Development and Deployment
TIAP	Tax Incentives Assistance Project
TIGER	Transportation Investment Generating Economic Recovery Discretionary Grants
TIGGER	Transit Investments for Greenhouse Gas and Energy Reduction Program
TSCA	Toxic Substances Control Act of 1976
UN	United Nations
UNFCCC	United Nations Framework Convention on Climate Change
UNFF	United Nations Forum on Forests
USDA	United States Department of Agriculture
USGBC	United States Green Building Council
USGCRP	United States Global Change Research Program
VA	United States Department of Veterans Affairs

SCHEDULE OF ABBREVIATIONS

VALE	Voluntary Airport Low Emission
VEETC	Volumetric Ethanol Excise Tax Credit
VOC	Volatile Organic Compound
WBCSD	World Business Council for Sustainable Development
WCED	World Commission on Environment and Development
WMO	World Meteorological Organization

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