Editorial Board

Editor
Norman G. Miller
University of San Diego

Associate Editors
Kwame Addae-Dapaah
National University of Singapore
Nico B. Rottke
European Business School
Robert Simons
Cleveland State University

Michel Boudrias
University of San Diego
Isaac Megbolugbe
Johns Hopkins University

Steven Bourassa
University of Louisville
Helen Neill
University of Nevada–Las Vegas

Sofia Dermisi
Roosevelt University
Andrew J. Nelson
RREEF Real Estate

Tim Dixon
Oxford Brookes University
Gary Pivo
University of Arizona

Frank Fuerst
University of Reading
Darren Prum
Florida State University

Angela Guggemos
Colorado State University
Richard Reed
Deakin University

Rebecca Henn
University of Michigan
Karl-Werner Schulte
University of Regensburg

Jerry Jackson
Texas A&M University
Grant Thrall
University of Florida

John Kilpatrick
Greenfield Advisors LLC
Ron Throup
University of Denver

Dan Kohlhepp
Johns Hopkins University
Charles Tu
University of San Diego

Nils Kok
Maastricht University
Bing Wang
Harvard University

Steve Laposa
Colorado State University
Elaine Worzala
Clemson University

Richard Loope
Arizona State University
## Contents

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>ix</td>
<td>Preface</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Dynamics of Green Rentals over Market Cycles: Evidence from Commercial Office Properties in San Francisco and Washington DC</td>
<td>Prashant Das, Alan Tidwell, and Alan Ziobrowski</td>
</tr>
<tr>
<td>23</td>
<td>Residential Land Values and Walkability</td>
<td>Stephanie Yates Rauterkus and Norman G. Miller</td>
</tr>
<tr>
<td>44</td>
<td>The Political Economy of Green Industrial Warehouses</td>
<td>David M. Harrison and Michael J. Setler</td>
</tr>
<tr>
<td>68</td>
<td>Greening the Regulatory Landscape: The Spatial and Temporal Diffusion of Green Building Policies in U.S. Cities</td>
<td>Constantine E. Kontokosta</td>
</tr>
<tr>
<td>91</td>
<td>Explaining LEED Concentration: Effects of Public Policy and Political Party</td>
<td>Eugene Choi and Norman G. Miller</td>
</tr>
<tr>
<td>127</td>
<td>The Demand for Green Housing Amenities</td>
<td>Kimberly R. Goodwin</td>
</tr>
<tr>
<td>142</td>
<td>The Role of Dual-pane Windows and Improvement Age in Explaining Residential Property Values</td>
<td>Ramya Rajajagadeesan Aroul and J. Andrew Hansz</td>
</tr>
<tr>
<td>162</td>
<td>Green Mark Certification: Does the Market Understand?</td>
<td>Kwame Addae-Dapaah and Su Jen Chieh</td>
</tr>
<tr>
<td>192</td>
<td>The Process for Adopting an Energy Efficiency Code in Existing Homes: A Case Study of Boulder, Colorado’s SmartRegs Program</td>
<td>Laura Barrett, Scott Glick, and Caroline Clevenger</td>
</tr>
<tr>
<td>211</td>
<td>Does Sustainability Pay Off for European Listed Real Estate Companies? The Dynamics between Risk and Provision of Responsible Information</td>
<td>Marcelo Cajias and Sven Bienert</td>
</tr>
<tr>
<td>232</td>
<td>Facility Sustainment and Firm Value: A Case Study Based on Target Corporation</td>
<td>Robert Beach</td>
</tr>
<tr>
<td>254</td>
<td>The Cost of LEED—An Analysis of the Construction Costs of LEED and Non-LEED Banks</td>
<td>Chad Mapp, MaryEllen C. Nobe, and Brian Dunbar</td>
</tr>
<tr>
<td>274</td>
<td>Creative Construction: The Capacity for Environmental Innovation in Real Estate Development Firms</td>
<td>William B. Bradshaw II</td>
</tr>
<tr>
<td>312</td>
<td>Sustainability and Graduate Business Education: An Analysis of the Need, Best Efforts to Date, and Curriculum Recommendations</td>
<td>Marnie L. Abramson</td>
</tr>
</tbody>
</table>
The Board of Directors of the American Real Estate Society extends its deep appreciation to:

- **University of San Diego**, Burnham Moores Real Estate Center for its support of the editorial functions of the American Real Estate Society;

- **Florida Gulf Coast University**, for its support of the editorial functions of the American Real Estate Society;

- **Florida International University**, for its support of the Director of Publications functions of the American Real Estate Society; and

- **Kennedy Wilson**, for its support of the Executive Director functions of the American Real Estate Society.

### 2011 Membership

Academic ($135), Professional ($300), Academic Library ($600), Corporate Library ($600), Student or Retired Academic ($85), Corporate ($600), Sponsor ($1,500), Regent ($3,000) and President’s Council ($6,000). **Additional membership options are available. See the 2011 Membership Form in the back of the journal.** Checks should be made payable to ARES and correspondence should be addressed to: Diane Quarles, Clemson University, College of Business & Behavioral Science, Dept. of Finance, 424 Sirrine Hall, Clemson, SC 29634-1323. Phone: 864-656-1373; Fax: 864-656-7519. Website: www.ARESnet.org or equarle@clemson.edu.

The *Journal of Sustainable Real Estate* (1949-8276) is published annually by the American Real Estate Society at Clemson University, School of Business and Behavioral Science, Department of Finance, 424 Sirrine Hall, Clemson, SC 29634-1323. Postmaster, please send address changes to: Diane Quarles, Clemson University, School of Business and Behavioral Science, Department of Finance, 424 Sirrine Hall, Clemson, SC 29634-1323. Changes of address, claims and all correspondence dealing with subscriptions should be sent to Diane Quarles, Manager of Member Services, Clemson University, School of Business and Behavioral Science, Department of Finance, 424 Sirrine Hall, Clemson, SC 29634-1323. Phone 864-656-1373, Fax 864-656-7519 or email equarle@clemson.edu. For more information, visit our website: www.ARESnet.org.
2011 American Real Estate Society

President’s Council
Altus Group
Appraisal Institute
CCIM Institute
Cornerstone Real Estate Advisers, Inc.
CoStar Group
Counselors of Real Estate (CRE)
Institutional Real Estate, Inc.
Prudential Real Estate Investors

Regents
Argus
Blackrock Financial Management
Charles River Associates
Dearborn Real Estate Education
Freddie Mac
LaSalle Investment Management
National Association of Real Estate Investment Trusts (NAREIT)
National Association of Realtors® (NAR)
National Investment Center for the Seniors Housing & Care Industry (NIC)
NYU Schack Institute of Real Estate
Richard H. Pennell Center for Real Estate Development–Clemson University
Real Capital Analytics
UBS

Sponsors
Bailard, Inc.
Burnham-Moores Center for Real Estate–University of San Diego
CBRE Econometric Advisors
Cengage Learning
Clarion Associates, Inc.
Colvin Institute of Real Estate Development
Dividend Capital Research LLC
Emerald Group Publishing Limited
GIC Real Estate Pte., Ltd.
Graduate School of Real Estate Studies–KonKuk University
Jerome Bain Real Estate Institute at Florida International University
Johns Hopkins Carey Business School
Kennedy Wilson
National Association of Industrial and Office Properties (NAIOP)
National Multi Housing Council (NMHC)
Real Estate Center at DePaul University
2011 Fellows of the James R. Webb
American Real Estate Society

Endowed International Scholar Sponsorship
Arthur L. & Helen Beckett Schwartz

Endowed Doctoral Sponsorships
Youguo, Lucy, Michelle, and Mia Liang
Glenn R. and Jan H. Mueller
Theron R. and Susan L. Nelson
Michael J. and Vicky L. Seiler

Benefactors
Marc A. Louargand
Commercial Real Estate Advisers
Stephen A. Pyhrr
Kennedy Wilson
Karl-Werner Schulte
University of Regensburg
John E. Williams
Morehouse College

Distinguished Fellows
Joseph D. Albert
James Madison University
John D. Benjamin
American University–Emeritus
Marsha Courchane
Charles River Associates
Bart Danielsen
North Carolina State University
Jan A. DeRoos
Cornell University
Don Dorechester
Cushman & Wakefield
Paul R. Goebel
Texas Tech University
David Harrison
Texas Tech University
Forrest E. Huffman
Temple University
Alex Klatskin
Forsgate Industrial Partners
Mark L. Levine
University of Denver
Christopher A. Manning
Loyola Marymount University
Margaret McFarland
University of Maryland
Norman G. Miller
University of San Diego
Nico B. Rottke
European Business School
Seungwoo Woo Shin
Konkuk University
Robert A. Simons
Cleveland State University
Michael C. Truebstein
University of Reading
Zhong Y. Tong
U.S. Department of the Treasury
Richard Wincott
Altus Group
Elaine M. Worzala
Clemson University

Fellows
Randy I. Anderson
University of Central Florida
John S. Baen
University of North Texas
Edward A. Baryla
East Tennessee State University
Donald H. Bleich
California State University–Northridge
Steven C. Bourassa
University of Louisville
M. Gordon Brown
Urban Land Institute
Todd A. Canter
LaSalle Investment Management
Charles Carter
Haint Blue Realty, LLC
Karl E. Case
Wellesley College
Lijian Chen
UBS Realty Investors, LLC
Ping Cheng
Florida Atlantic University
James W. Coleman
Wright State University
Glenn E. Crellin
Washington State University
Charles G. Dannis
Crosson Dannis Inc.
Karen G. Davidson
Davidson & Associates/UCLA Extension
Geoffrey Dohrmann
Institutional Real Estate Inc.
David H. Downs
Virginia Commonwealth University
Donald R. Epley
University of South Alabama
Andrew C. Florance
CoStar Group Inc.
Dan W. French
University of Missouri–Columbia
Karen M. Gibler
Georgia State University
Hany Guirguis
Manhattan College
Karl L. Guntermann
Arizona State University
Otis E. Hackett
Otis E. Hackett & Associates
Thomas W. Hamilton
University of St. Thomas
David J. Hardaway
Pennybacker Capital, LLC
William G. Hardin, III
Florida International University
Jack Harris
Texas A&M University–Emeritus
Michael J. Highfield
Mississippi State University
Aart Hordijk
Real Estate Council
Mingjun Huang
Property and Portfolio Research, Inc.
Thomas O. Jackson
Texas A&M University
Ken H. Johnson
Florida International University
Ronald W. Kaiser
Bailard, Inc.
John Kilpatrick
Greenfield Advisors, LLC
Steven P. Laposa
Colorado State University
Joseph B. Lipscomb
Texas Christian University
Emil Malizia
University of North Carolina–Chapel Hill
John F. McDonald
Roosevelt University
Willard McIntosh
Abu Dhabi Investment Authority
Graeme Newell
University of Western Sydney
Joseph L. Pagliari, Jr.
University of Chicago
David R. Parker
University of South Australia
Ruijue Peng
Property and Portfolio Research
Rudy R. Robinson, III
Austin Valuation Consultants
Mauricio Rodriguez
Texas Christian University
Stephen E. Roulac
Roulac Global Places LLC
Ronald C. Rutherford
University of South Florida
Sean P. Salter
Middle Tennessee State University
David Scribner, Jr.
Baruch College
G. Stacy Sirmans
Florida State University
Thomas M. Springer
Clemson University
Mark A. Sunderman
University of Memphis
Stephen F. Thode
Lehigh University
Grant I. Thrall
University of Florida
Ronald L. Throupe
University of Denver
Raymond Y.C. Tse
Hong Kong Institute of Real Estate
Ko Wang
Baruch College/CUNY
H. Shelton Weeks
Florida Gulf Coast University
Margot B. Weinstein
MW Leadership Consultants
Anthony Welch
Sarasota Welch Strategies
Daniel T. Winkler
University of North Carolina–Greensboro
Kimberly Winson-Geideman
University of North Texas
Larry E. Wolfford
University of Tulsa
Zhonghua (George) Wu
Florida International University
Charles H. Wurtzebach
DePaul University
David Wyman
Clemson University
Melinda L. Yarling
Casey Key, FL
James Young
University of Auckland
Leonard V. Zumpano
University of Alabama
<table>
<thead>
<tr>
<th>Name</th>
<th>Company/Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ray Anderson</td>
<td>Interface Global</td>
</tr>
<tr>
<td>Scott Anders</td>
<td>University of San Diego</td>
</tr>
<tr>
<td>Grant Austin</td>
<td>Greenfield Advisors</td>
</tr>
<tr>
<td>Aaron Binkley</td>
<td>AMB Property Corporation</td>
</tr>
<tr>
<td>Stuart Brodsky</td>
<td>GE Real Estate</td>
</tr>
<tr>
<td>John Crews</td>
<td>Jones Lang LaSalle</td>
</tr>
<tr>
<td>Dale Dekker</td>
<td>Dekker/Perich/Sabatini</td>
</tr>
<tr>
<td>Brian Dunbar</td>
<td>Colorado State University</td>
</tr>
<tr>
<td>Richard Epstein</td>
<td>RNL Design</td>
</tr>
<tr>
<td>Andrew Florance</td>
<td>CoStar Group, Incorporated</td>
</tr>
<tr>
<td>Doug Gatlin</td>
<td>U.S. Green Building Council</td>
</tr>
<tr>
<td>Lydia Jacobs-Horton</td>
<td>Procter &amp; Gamble</td>
</tr>
<tr>
<td>Kent Jeffreys</td>
<td>International Council of Shopping Centers</td>
</tr>
<tr>
<td>David Jellison</td>
<td>Liberty Property Trust</td>
</tr>
<tr>
<td>Stephen Kapp</td>
<td>Siemens Industry Inc.</td>
</tr>
<tr>
<td>Charles B. Leitner III</td>
<td>Greenprint Foundation</td>
</tr>
<tr>
<td>David Lorenz</td>
<td>Lorenz Property Advisors</td>
</tr>
<tr>
<td>Marc Louargand</td>
<td>Commercial Real Estate Advisers</td>
</tr>
<tr>
<td>L. Hunter Lovins</td>
<td>Natural Capitalism Solutions (NCS)</td>
</tr>
<tr>
<td>Asieh Mansour</td>
<td>CBRE</td>
</tr>
<tr>
<td>Scott Muldavin</td>
<td>The Muldavin Company, Inc.</td>
</tr>
<tr>
<td>David Pogue</td>
<td>CBRE</td>
</tr>
<tr>
<td>Mark Robinson</td>
<td>Momentum Bay Associates LP</td>
</tr>
<tr>
<td>Jay Spivey</td>
<td>CoStar</td>
</tr>
<tr>
<td>Leanne Tobias</td>
<td>Malachite LLC</td>
</tr>
<tr>
<td>Cathy Turner</td>
<td>New Buildings Institute (NBI)</td>
</tr>
<tr>
<td>B. Alan Whitson</td>
<td>RPA</td>
</tr>
<tr>
<td>Sally Wilson</td>
<td>CBRE</td>
</tr>
<tr>
<td>Jim Young</td>
<td>Realcomm</td>
</tr>
<tr>
<td>Jerry Yudelson</td>
<td>Yudelson Associates</td>
</tr>
</tbody>
</table>
Preface

We are pleased to present the third volume of the *Journal of Sustainable Real Estate*. We continue to believe that electronic journals will prove superior to hard copy journals in several ways and we remind authors of the possibilities such journals present. First, authors may use color in graphs and charts, although many authors have yet to take advantage of the benefits of color. Second, you may embed links as a way to present additional materials and resources as long as they are not selling a product or service. For example, you can insert a video commentary by the authors or some experts on the topic of the paper.

While we continue to publish once per year, we will likely move to a format where we accept, edit, and publish papers within a given year’s volume as they are processed so that the lag for early submissions to publication will not be as long.

We continue to benefit from the financial support of CoStar for this publication. Since its inception, CoStar has been the sole sponsor of this journal without any editorial oversight. Not only has CoStar supported the journal but some of the papers on sustainable real estate would not be possible without the data provided by CoStar. We greatly appreciate this unconditional and continuous support.

In this volume we start with a paper on the dynamics of green office rentals by Das, Tidwell, and Ziobrowski. The authors show that, while green rental premiums exist, these premiums vary with market conditions. Next, we have a paper on walkability and residential values by Rauterkus and Miller, which suggests that well-located properties near amenities in denser urban areas tend to show less price volatility than those areas that are more car-dependent, suggesting that price risk for consumers and lenders may be lowered with more attention paid to locational risk. The third paper is one of the first studies on green industrial property by Harrison and Seiler. The authors find that green premiums are not universal but correlated with the political environment of the region. Continuing this theme of politics and regulation, the next two papers, one by Kontokosta and the other by Choi and Miller, both provide evidence that politics and regulation vary by region and can provide a push or pull in the case of incentives spurring the rate of sustainable development or renovation observed in each region or state.

Next, we have a series of five papers that deal with residential property. Starting with one on green home design by Bloom, Nobe, and Nobe, followed by one on the demand for green amenities by Goodwin, and another dealing with specific insulation features by Aroul and Hansz. Next, we move to Singapore and explore the ability of the market to understand and value certifications by Addae-Dapaah and Chieh, which is followed by a case study in Colorado on adopting energy efficiency building codes by Barrett, Glick, and Clevenger.

We also have two papers that take the perspectives of public corporations. The first paper is an exploration of the trade-offs between risk-taking and socially responsible investing for European public companies by Cajias and Bienert. The second is on facility maintenance and firm value based on a case study of Target corporation by Beach.

Next, we have two papers related to construction costs. The first, by Mapp, Nobe, and Dunbar, focuses on a comparison of LEED and non-LEED bank construction
costs, while the second, by Bradshaw, is on the capacity of development firms to absorb environmental innovations.

Our last paper, but not the least, and one of the most valuable for educators is by Marnie Abramson on Sustainability and Graduate Business Education. This is a must read for all those concerned about integrating sustainability into their curriculum.

We thank all of you who read, discuss, disseminate and submit new papers to this journal.

Norman G. Miller, Senior Editor
University of San Diego, Burnham-Moores Center for Real Estate
nmiller@sandiego.edu

Myla Lorenzo-Wilson, Managing Editor
University of San Diego, Burnham-Moores Center for Real Estate
mwilson@sandiego.edu

Robert Simons, North American Associate Editor
Cleveland State University
r.simons@csuohio.edu

Kwame Addae-Dapaah, Asian-Pacific Editor
National University of Singapore
rstka@nus.edu.sg

Nico B. Rottke, European Editor
European Business School
rottke.ebs@rem-institute.org.