



# The Impact of Green Affordable Housing

A Report by Southface and the Virginia Center for Housing Research

Alex Trachtenberg  
Sarah Hill  
Dr. Andrew McCoy  
Teni Ladipo  
January, 2016



## **The Impact of Green Affordable Housing**

A Report by Southface and the Virginia Center for Housing Research

### **Authors:**

Alex Trachtenberg - Southface

Sarah Hill – Southface

Dr. Andrew McCoy Ph.D. – Virginia Center for Housing Research, Virginia Tech University

Teni Ladipo - Environmental Design and Planning Ph.D. Candidate, Virginia Tech University

### **Prepared by:**



Southface Energy Institute

241 Pine St., NE, Atlanta, GA 30308

EarthCraft™ is a partnership between the Greater Atlanta Homebuilders Association and Southface. Developed in 1999 by the Greater Atlanta Home Builders Association and Southface, EarthCraft is the Southeast's standard for green building.

ENERGY STAR® and the ENERGY STAR mark are registered trademarks owned by the U.S. Environmental Protection Agency. ENERGY STAR certified new homes are verified by independent Home Energy Raters. Products/Homes/Buildings that earn the ENERGY STAR prevent greenhouse gas emissions by meeting strict energy efficiency guidelines set by the U.S. Environmental Protection Agency.

The ICC 700 National Green Building Standard™ (NGBS) – the only residential green building rating system approved by ANSI as an American National Standard. The NGBS provides practices for the design and construction of all types of green residential buildings, renovations, and land developments. Home Innovation Research Labs is an independent subsidiary of the National Association of Home Builders (NAHB).

LEED®, and its related logo, is a trademark owned by the U.S. Green Building Council® and is used with permission.



## Acknowledgements

Southface extends gratitude and thanks to the hundreds of individuals and companies who supported the completion of this report. Without the contribution of their time, resources, information and insights over the past year we would not be able to complete this project.

We are especially appreciative of the generous support from an anonymous donor and Enterprise Community Partners who made this project possible after years in the making.

We are fortunate to have the guidance of our advisory committee members: Andrea Winquist, MD, PhD, Assistant Research Professor, Department of Environmental Health, Rollins School of Public Health, Emory University; Barry Weaver, Barry Weaver Consulting; Dr. Deborah Phillips, CPM, Georgia Institute of Technology; Denis Blackburne, The Woda Group; Laurel Hart, Georgia Department of Community Affairs; Robert Barfield, Columbia Residential and Sara Haas, Enterprise Community Partners who provided their time, feedback and professional expertise to help shape and inform this project.

Additional thanks to our research partner, Virginia Center for Housing Research –Virginia Tech University and our contributing authors, Dr. Andrew McCoy Ph.D. and Teni Ladipo Ph.D. candidate, who provided considerable academic and industry expertise throughout this project.

Further thanks to the current and former Southface staff who contributed to the project, specifically Kathryn Lovda, Scott Lee, Greg Brough, Bonnie Casamassima, Joe Baumann, Dennis Creech, Laura Capps, Clarissa Delgado, Robert Reed, Marci Reed and Gray Kelly.

This report is the result of a collaborative effort involving all persons and entities mentioned above in an effort to enhance our understanding of green building certification programs and their impact on affordable housing development and operations. However, Southface is solely responsible for the content presented in this report.

# Executive Summary

---

The impact of green building certification programs on the cost and energy performance of multifamily affordable housing has long been misunderstood due to a lack of data and analysis, particularly in the Southeast United States. The research presented in this report addresses this data gap by comparing a sample of green building program certified multifamily affordable housing to non-green multifamily affordable housing in the Southeast.

The research team, consisting of Southface, a nonprofit in Atlanta, GA, and the Virginia Center for Housing Research (VCHR) at Virginia Tech University, conducted a year-long research project to collect and analyze data on the cost and efficiency impact of green building certification programs on affordable housing development. A total of 18 affordable housing developments in Alabama, Georgia, North Carolina and South Carolina participated in the study. Eleven of which are green building program certified or “green” developments, and 7 represent conventional or “non-green” developments. The sample consists of Low Income Housing Tax Credit funded multifamily new construction properties with a minimum of one year of occupancy. The developments, otherwise, represent a wide variety of rural and urban locations, building characteristics and amenities, construction methods and residents. Despite the limitations of the variability and scale of the sample evaluated in this study, the research presents a large amount of compelling, significant data to compare the cost and energy performance of affordable housing developments across the Southeast.

Contractors, developers, housing finance agencies (HFA), property managers and residents provided cost documentation, operations and maintenance (O&M) reports, one year of utility data and surveys to inform this study. The research uses comparative statistics to evaluate the qualitative and quantitative difference between green and non-green affordable developments.

Overall, the research findings suggest that the green developments are performing better than the non-green developments in terms of construction and development costs, energy efficiency and utility costs, and satisfaction. That said, however, the research also highlights some areas of improvement for the green building industry, challenging green building certification programs and practitioners to continue to push the bar beyond energy code to achieve even greater energy savings throughout the buildings lifecycle by providing enhanced training and guidelines for building operations and maintenance.

Key findings from the report are:

- Families residing in green developments save nearly \$8/month and \$96/year, and seniors save more than \$10 per month and \$122 per year more on energy costs when compared to non-green developments.
- Green developments in this study save nearly \$5,000 per year on owner-paid utility costs when compared to non-green developments.

- Green developments spend 12% less on energy (common areas) per square foot than non-green developments. Residents of green developments use 14% less energy per square foot.
- Green developments are nearly 5% less expensive on total construction costs per square foot and more than 13% less expensive on soft construction costs than the non-green developments. More specifically, analysis indicates that green certified developments in GA, NC and SC cost less to design and build than non-green alternatives in AL and SC.
- Non-green developments are only 1.6% less expensive in terms of hard construction costs when compared to green developments.
- Total operations and maintenance costs are 15% less expensive for non-green developments when compared to green developments.
- Developers, property managers and Housing Finance Agencies agree that green developments are more energy efficient.
- The majority of developers indicate that green buildings provide benefits in terms of quality of end product and achieving their firm's objectives and mission.
- Property managers and residents require a greater level of education on how to properly operate and maintain green developments in order to fully realize savings.

In summary, when affordable housing is green-certified, developers are constructing higher quality housing at a lower

cost while low-income residents are saving more energy and money. Housing finance agencies that administer the state affordable housing development programs are also recognizing that properties with a green building certification are providing a higher quality and more efficient product, which saves money for residents and provides the agencies with additional quality assurance. Savings and benefits could be even greater with improved education, training and technical assistance to housing finance agencies, property managers, maintenance staff and residents. This research demonstrates that green building program certified affordable housing does not cost more to construct and provides short and long-term benefits, challenging the argument that green development comes with an excessive premium that prohibits cost-effective development.

The research presented in this report adds substantive data evidence to the anecdotal argument that green buildings save energy and money, and disputes the perception that upfront costs for green building are prohibitively significant for affordable housing development. Empirical data indicates that green buildings are providing an array of benefits to affordable housing stakeholders including: contractors, developers, housing finance agencies, property managers and residents. It is our goal that this research is used by other researchers, industry associations and policymakers to advocate for the adoption of green building policies and requirements for affordable housing development across the Southeast and nation.