

# CBRE Real Green Research Challenge

## Georgia Institute of Technology - Distributed Workplace Strategies

### Abstract

**Objective:** For almost two decades the recognition of sustainability in corporate offices has been promoted, overseen and guided by the US Green Building Council's LEED program. Over the same time period, the U.S. Federal Government, primarily through the General Services Administration (GSA), has promoted telework and alternative office design to aid in sustainability, security, employee satisfaction, and cost reduction efforts. However, the up-take of remote working has lagged and telework has not met Federal requirements (Federal Telework Law PL 106 346, Section 359, 2001). Corporations have also been slow to implement broad-scale telecommuting and distributed workplace strategies due to numerous management, cost and knowledge constraints.

This proposal would help to fund the start-up of a pilot project for distributed workplace, supporting distributed workers from multiple organizations in the metropolitan Atlanta area where **Georgia Institute of Technology** is located. The proof-of-concept need to demonstrate and measure the benefits of distributed workplace strategies is the primary objective, since most organizations are still looking for the proven cost savings associated with sustainable, distributed workplace models before they invest in this new way of working. This pilot project would enable researchers from the graduate programs at Georgia Tech to measure actual costs, use, benefits, some productivity measures and analyze these with scientific research methods to report the findings and have them reviewed and validated through peer review publication and research conference scrutiny.

**Description:** The development of a specific research initiative to understand the synergistic impacts of employee behavior, management acceptance and use, employee productivity and satisfaction, community transportation impact, as well as competitive advantages enabled by sustainable distributed workplace solutions is envisioned through this research. Set up of pilot distributed work centers and enrolment of commercial office space users is anticipated to provide data for scientific research on results. CBRE users of current distributed workplace strategies will expedite the research development. The justifications for this pilot project include these needs:

- Reduction in the need for enlarge office spaces to accommodate new workers
- Reduce office utility usage and effect resource savings
- Create a more holistic and economically sustainable model for American workers
- Federal mandates and laws to enable telework and reduce government operated commercial space, thereby reducing utility and related costs
- Worker needs for better work/life balance
- Local mandates (Clean Air Campaign)
- Reduction in the use of fossil fuels for environmental and national security reasons
- Predictably reduce traffic congestion and air pollution (Atlanta is #23 in U.S. air pollution)
- Fulfill community needs for security, emergency preparedness and continuity of operations
- Requirement for greater security and reliability of communications infrastructure
- Necessity for pro-active employee deployment to respond to emergency situations

A multi-disciplinary approach with resources from Georgia Tech, independent outside researchers, and industry commercial real estate users will collaborate to provide a complex systems approach to the Distributed Workplace Solutions research. Access to CBRE's resources and clients can expedite this research with immediate sources of data.

**Timeframe:** Working within the CBRE RGRC framework, the initial award in March 2013 will be utilized to fund part of one professor in the Georgia Tech graduate facility and property management program. Full research plans and participants will be identified with the selected Ph.D. student and industry partners beginning with the Phase 3 completion of the full research plan and its details.

Phase 3 (3/1/2012 – 5/31/2012)

Complete detailed research plan, defined objectives and full budget development

Phase 4 (6/1/2012 – 12/31/2013)

Summer 2013 – Ph.D. student recruitment

Fall 2013 - Ph.D. student engagement with research objectives, surveys, data collection and analysis begins

Spring 2014 – Ph.D. and research team analyze initial data and develop detailed scope for information/data gathering and defined analysis

Summer 2014 – Ph.D., advisor, and team continue research surveys, experiments, data gathering and analysis

Fall 2014 – Ph.D. and advisor finalize analysis and initial report on impacts of Distributed Workplace Strategies on sustainability, worker productivity and satisfaction, knowledge gained from research and potential next steps or future research plans

Phase 4 (second annual renewal 6/1/2015 – 12/20/2015)

Spring 2015 – Based on success of initial Phase 4 findings, Ph.D. and advisor present research findings to industry and academia in conferences and research symposia. Scholarly papers are also submitted for publication with acknowledgement to CBRE RGRC sponsorship.

Summer 2015 – Updates to research performed with new/additional subject organizations for additional advancements, validation and impact. Revisions, as required are prepared for scholarly journal papers.

Fall 2015 – Final report, papers and presentations completed. CBRE impacts are analyzed for return on investment from Georgia Tech support

**Budget:** Phase 2 RGRC award would enable one Georgia Tech professor in Facility Management to finalize proposal with potential partners, assemble materials, develop initial contacts for the pilot project, and begin selection process for Ph.D. student to conduct Phase 4 research objectives. 2012-13 academic year (thru 6/31/2013) costs are known but future years are estimated slightly higher due to tuition cost increases.

<u>Phase 3</u> - summer salary for 1 month (including overhead) 2013	\$13,313.68
<u>Phase 4</u> – Ph.D. researcher hired (including tuition & overhead) 2013	\$13,500 (est.)
Ph.D. researcher spring, summer & fall semesters 2014	
3 semesters @ est. \$13,900 each	\$41,700 (est.)
Professor/advisor part-time for guidance and review	
½ mo. each semester @ \$6,750	<u>\$20,250 (est.)</u>
Initial Phase 4 funding	\$94,063.68 (approx.)
Phase 4 Ph.D. researcher 2015 and two months advisor reviews	<u>\$69,000 (est.)</u>
Funding with supplemental 2015 Phase 4 add	\$157,413.68 (approx.)

**Resources:** The Georgia Institute of Technology has abundant resources in its diverse faculty and areas of expertise in transportation, city and regional planning, computing technologies, evidence-based architectural design, real estate development, in addition to the graduate Facility and Property Management program under which this grant is submitted. Collaborations with industry partners interested in developing and launching distributed workplace models and testing their application and best use have been established with Strategic Office Networks and Sustainable Project Management, LLC to begin local and Federal government projects in the metropolitan Atlanta marketplace. This grant from CBRE will enable Ph.D. student researchers to enroll in the research to bring scientific analysis and objective data gathering to support the findings planned for this project.

In addition to industry collaborations, networks within the facility management community through International Facility Management Association (IFMA), Corenet Global, U.S. Green Building Council, and Building Owners and Managers Association (BOMA) are well established with the Primary Investigator and can be used as additional sources for research data and testing.

Primary Investigator – Kathy O. Roper, Associate Professor and Chair Integrated Facility Management at Georgia Institute of Technology (see attached abbreviated curriculum vita). Additional collaborators from Georgia Tech are to be determined. Professional facility and property management students in the graduate program comprise a number of industry and Department of Defense professionals who may also contribute through class projects to this effort, managed by the P.I.

Ph.D. student – TBD

Industry collaborators – Michael Shear – Strategic Office Networks  
Chuck Burleson – Sustainable Project Management

Industry networks – CBRE  
International Facility Management Association  
Atlanta Chapter, IFMA  
Corenet Global, Atlanta Chapter  
Corenet Global  
U.S. Green Building Council  
Georgia Chapter - BOMA

Potential additional National Science Foundation research grants are under development within the Science of Organizations division which could supplement and enlarge this research. This NSF proposal could be coordinated with the CBRE RGRC grant to more fully develop the findings from the first stages of the CBRE research. It is anticipated that successful dissemination of the CBRE research through scholarly journals, industry articles, and conference presentations will elicit numerous corporate and government supporters, as well.

With the financial support from CBRE to fund the initiation of this project, along with access to client data, a streamlined and expeditious research effort to establish scientific proof needed by industry to advance distributed workplace models will be enabled. This important research will spur more rapid improvement in the sustainable impacts that distributed workplace concepts have for users, communities and our nation.

Attachment – Principal Investigator CV – Kathy O. Roper (double-click document to open full pdf)

**Kathy O. Roper, CFM, MCR, LEED AP, IFMA Fellow**  
Associate Professor and Chair Integrated Facility Management  
School of Building Construction

Associate Professor	Georgia Institute of Technology	3/2008 - Present
Assistant Professor	Georgia Institute of Technology	7/2002 – 3/2008

Establishment of a new graduate (M.S. degree) program titled: “Building Construction and Integrated Facility Management” in the College of Architecture. New graduate curriculum and research development, publication, teaching and service to the Atlanta communities to advance the Integrated Facility Management education, research, and professional development.

Region Manager	Sprint Communications	4/1988-11/2001
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Management of southeast region facilities totaling over 560,000 square feet in office, data center, call center, sales, training and network control spaces, including strategic planning, business process improvements, procedures and administrative management for 2,400+ employees to support ongoing critical and day-to-day operations.

Administrative Service Manager	Financial Service Corporation	1/1985 - 4/1988
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Management of facilities, real estate and administrative services for 2,400 independent financial planner representative network and operations of company headquarters office.

Public Information Director	American Cancer Society	7/1982 - 5/1984
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Development, planning and management of promotions, conferences and public relations for state office of society.

Administrative Services Manager	U.S. General Services Administration	6/1976 - 7/1982
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Progressively responsible management positions developing space plans, environmental impact, historical documentation and recommendations for Federal locations in two GSA states within SE region; management of internal GSA office, furniture, telephone and relocations; and development of standardized evaluation formats for historical preservation standards within Federal renovations.

#### **Courses Taught**

BC 6100	Professional Trends in Facility Management
BC 6400	Facility Planning, Project Management & Benchmarking
BC 6650	Advanced Project Management
BC 8903	Special Problems (independent research projects)
BC 7000	Master’s Thesis
BC 8813	Sustainable & Health FM
BC 8833/4803	Executive Business Trends
COA 4803	Managing the Built Environment
COA 8996	Ph.D. Qualifying Paper
COA 8900	Ph.D. Dissertation

- General Motors Distance Learning and Quality Watch course launched with Distance Education and Professional Learning, Fall 2007, BC 6100 – Professional Trends in Facility Management course. International student enrollment of ten credit and nine non-