Georgia Tax Credit Assistance Program ("TCAP") and
Tax Credit Monetization Program ("Exchange")
Analysis of Energy Efficiency and Costs for ARRA-Funded Projects and Other Affordable Housing Projects

Overview

The Housing and Economic Recovery Act (HERA) and the American Recovery and Reinvestment Act (Recovery Act) place a major emphasis on energy efficiency while the Recovery Act has placed a major emphasis on the efficient use of Recovery Act funds. DCA has concluded that the portion of Recovery Act funds issued to the State for the production of affordable housing should be also be used ensure that the selected housing is energy efficient affordable housing and that the allocated funds are used efficiently by the applicants. DCA's main objective is to ensure that all projects that request ARRA funds are not only sustainable and energy efficient, but will achieve a positive return for the investment.

As a result, DCA has initiated a collaborative partnership with Southern Polytechnic State University's (SPSU) Construction Management Department (CMD) that will assist DCA in the evaluation of projects participating in the American Recovery and Reinvestment Act. DCA in conjunction with SPSU will evaluate each project to ensure projects for energy efficiency and analyze construction budget for accountability. DCA believes that this type of creative intergovernmental collaboration exemplifies the underlying policies and goals of ARRA. It also results in a significant decrease in costs for our office in completing this analysis.

Southern Polytechnic State University

Southern Polytechnic State University is a special purpose institution in the University System of Georgia with about 4,800 students. SPSU and the School of Architecture, Civil Engineering Technology and Construction places great emphasizes on two core values: nurturing a culture of professionalism and balancing theory and practice. The Construction Management Department (CMD) is the largest CM in the southeastern part of the United States. CMD at SPSU is the only program in the Southeast that offers a specialty in Mechanical, Electrical and Plumbing specialty (MEP). To support the MEP specialty program, the faculty of the CMD includes pioneers in energy and moisture studies, Mechanical systems, and green buildings. Many of CMD students and faculty are LEED AP certified. As part of the school of architecture at SPSU, CMD program adapted a strategic plan to implement Building Information Modeling (BIM) across its curriculum. The CMD students represent the local students' chapters of the Associated Builders and Contractors (ABC), Associated General Contractors (AGC), Georgia Utility Contractors Association (GUCA), Atlanta Electrical Contractors Association (AECA), Mechanical Contractors Association of America (MCAA), American Society of Heating Refrigeration and Air

Conditioning Engineers (ASHRAE), and National Electrical Contractors Association (NECA).

SPSU's energy related research team includes:

Dr. John Mench, Ph.D., P.E.: a Senior Member Association of Energy Engineers, LEED senior advisor, ASHRAE member, Mechanical and Electrical Engineer with more than 40 years of experience.

Shariar Makarechi, Ph.D., P.E.: a Georgia Tech graduate, and a registered engineer in the state of Georgia and many other states. Dr. Yar has more than 35 years of professional experience, and he is Certified Energy Manager by American Energy Engineers, Certified Commercial Energy compliance inspector by City of San Francisco, CA, Certified eQuest Energy Modeling for Southern Building, by Georgia Tech, and Indoor Air Quality trainer.

Dr. Hussein Abaza, Ph.D.: a Virginia Tech Ph.D. graduate in the area of energy conservation and building simulation. Dr. Abaza was a research leader in the "Upgrade and Save project", a $500,000.00 project to upgrade low-income housing projects at eastern North Carolina to adapt more energy efficient measures. Based on this project's results, the North Carolina HUD office expanded this project statewide. Dr. Abaza published a book in Holistic Design and Control Strategy for Energy Efficient and Healthy Buildings. Dr. Abaza's work in super energy efficient homes was featured in the headline news in North Carolina. Dr. Abaza is also a licensed contractor and has more than 21 years of experience in energy conservation, building simulation, and energy audit for leading construction companies in Georgia.

The Architectural Review/Energy Efficiency Process

All ARRA projects will undergo a rigorous architecture review to ensure reasonableness of the project's construction budget, and energy efficiency. The Architectural review process will include a number of studies which are as follows:

- Use Building information Modeling (BIM) and energy simulation to calculate the annual energy consumption and heating/cooling loads;
- Review overall thermal comfort and potential moisture condensation and mold growth;
- Analyze natural lighting level;
- Suggest cost effective energy conservation measures to improve the energy efficiency of the buildings;
- Review the developer's table of values for all of the 16 (or the 48) CSI divisions;
- Analyze proposed construction budgets for reasonableness and accountability;
- Generate cost estimate for any suggested design improvement;
- Meet with the Developer to discuss implementation of recommendations generated by the above studies.

Projects will be audited through the use of Revit, eQuest, E-plus and Green building studio software to conduct an energy efficiency, lighting and ventilation analysis. These studies will calculate the initial and life cycle cost, energy consumption, natural lighting quality as well as pollution analysis for each proposed project.

In accordance with the ARRA Implementation Plan and the TCAP and Exchange Application Process and Minimum Documentation Submission Requirements, the following documents must be submitted to DCA to process the architectural/energy analysis:

- Construction drawings (as detailed as possible)
- Specifications
- Schedule of values (as detailed as possible)

These documents will then be provided to SPSU to conduct the review. In order to expedite this review, DCA strongly recommends that the Applicants deliver as much detail in the cost breakdown as possible. Utilization of a CSI format is recommended, but not required. Most Applicants should have fairly detailed estimates which have much more than just a single value for each CSI division if the project is shovel-ready. DCA does not want to slow down the process if you have a detailed estimate that does not follow the CSI phases and items category for all their bid items. The more detailed the developer's cost estimate is the quicker this phase of the DCA review can be accomplished.

Implementation of Findings

DCA may require the incorporation of additional design modifications for the purpose of reducing utility costs and energy efficiency. Design alternatives and green building technologies will be recommended to the developer for implementation if the studies reveal more cost effective sustainability measures.

Conclusion

DCA would encourage architects and Applicants to think creatively and carefully about the best energy efficiency construction design and techniques that can be incorporated into this latest round of projects. Items such as solar water heaters, solar panels for community power and inexpensive construction techniques may be able to significantly reduce operating costs for these projects.

For more information contact Michael Collins, AIA at:

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