

Non-Residential Building Audits, Retrofits and Workforce Development

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Abstract:

Buildings account for approximately 40% of all primary energy use in the U.S. Eighteen Quadrillion Btu of energy is used by commercial buildings, which is about 19% of total national energy use. Small and medium commercial buildings (under 50,000 square feet in gross floor area) account for more than 40% of the energy used in the commercial sector.

These small and medium commercial buildings are not well served by private or public energy efficiency retrofit programs and existing tools. Existing building energy efficiency retrofit analysis tools either require highly skilled users and costly data collection efforts, or they make too many generalizing assumptions to provide investment grade results. The results generated by existing tools typically do not deliver actionable energy and cost savings information to the appropriate stakeholders. Existing tools fail to integrate support for the entire process from building “energy auditing” and data gathering, analysis, results reporting, and decision making required to drive successful implementation of energy efficiency retrofits.

Our tools focus on reducing energy efficiency retrofit project costs, and accelerating workflow from end to end. We continue to enhance our cloud based targeted forms to guide lower-cost, less skilled auditors, to accurately and completely collect the most important building energy information. Our automated analysis tools use in-house developed algorithms, and are being developed to leverage recent advancements in existing tools to enable sufficient customization to produce investment grade results. We continue to evolve our automated report generation tools to present these results using the metrics and language that make them actionable for each of the stakeholder types including building owners, tenants, project implementers, and contractors, project financiers. Beyond static reports we are developing decision making tools to allow managers of portfolios of many buildings to target retrofit projects to achieve energy and cost savings goals that also increase the strategic value and robustness of buildings and reduce operating and maintenance costs. Our tools operate on a secure database platform with high level security that follow required laws and protocols; they also use conditional access and anonymization to enable portfolio level decision making tools without compromising location and building characteristics.

Biography:

Siva Gunda is the Director of Research, Energy Efficiency Center (EEC), Mechanical and Aeronautical Engineering Department, University of California, Davis. He is a PhD candidate in Mechanical and Aeronautical Engineering with a focus on alternate energy systems. His research focus is on the effect of sound and vibration on mass transfer through porous media, with applications towards enhancing the performance of PEM fuel cells. Prior to joining EEC, Siva has worked at several private and public institutions including General Electric – Power Systems, California Fuel Cell Partnership and the California Air Resources Board. Since joining the EEC, he received the Edison International Energy Efficiency fellowship for 2 years between 2007 and 2009. He also received the Business Development Fellowship from the UC Davis Center for Entrepreneurship in 2007. Over his time at the EEC, Siva was involved in the business development of a number of startups in the efficiency space and won the Little Bang business plan completion and was a finalist at the California Clean Tech Open in 2008. He also presented at ACEEE on efficiency of cars and principal agent problems in campus computing usage. In the summer of 2008, he worked at PG&E as an intern in emerging technologies and in summer 2009 he worked with the Program for International Energy Technologies “Lighting the Way” team building a business in small-scale solar/LED technology for developing countries, including Zambia. Currently, as a program manager, Siva oversees all the student projects at the center and runs the Market Assessment Assistance Program (MAAP).

