## Energy Efficient Buildings Hub Case

The Energy Efficient Buildings Hub (EEB Hub) was established in 2011with a 5-year seed grant from the U.S. Department of Energy (DOE). The EEB Hub is an Energy-Regional Innovation Cluster (E-RIC) located in Philadelphia's redeveloped Navy Yard,[1] and has a dual mission of improving energy efficiency in buildings and promoting regional economic growth and job creation. To achieve these goals, the Hub is establishing a program to provide technical assistance for retrofit projects that demonstrate replicable strategies for achieving significant energy savings. One of the Hub's first projects of this type will be working with Montgomery County, PA as they undertake a whole building renovation and retrofit of One Montgomery Plaza, a prominent County office building.

You are the Hub's Director of Market Deployment, and have been tasked with determining the appropriate roles and responsibilities for the Hub in this project. The Hub wishes to establish a process for helping plan and execute deep retrofits, which they could offer as a service to other entities in the future. While the Hub is undertaking this project at no cost, it would eventually need to find a way to cover the costs of delivering these services to others. At the same time, you must also consider the County's goals, capacities and constraints. Striking the balance between creating a role for the Hub that meets its goals and recommending the path that is best for the County will be essential to maintaining the Hub's reputation as a neutral advisor.

One Montgomery Plaza is in need of significant repairs to the building structure and envelope in order to remain structurally sound and usable. But, by itself, the capital rehabilitation project would be prohibitively expensive for the County. Therefore the Hub and County have been discussing ways to turn the project into a deep energy retrofit. Doing so could help cover costs, unlock new financing mechanisms, and make it a showcase sustainability project for local government leaders. The County does not have a savings goal, but wishes to consider the tradeoffs between potential deal structures and the level of energy savings that could be achieved.

The County has asked the Hub to review all of the technical analyses completed and recommend a path forward, including defining roles and responsibilities for all parties involved. You should analyze the strengths and weaknesses of potential strategies for completing the project, including but not limited to an integrated design process, an energy performance contract, a sale-leaseback of the building, a public-private partnership, or other options. You should recommend the best approach and describe the process for conducting contracting and procurement activities, finalizing the capital improvement plan and building design, and securing funding and financing. You should also determine a reasonable schedule and phasing, and recommend a plan for community engagement and publicity.

Assume that all major capital needs have been identified in the audits and information on existing conditions, but that all potential energy conservation measures may not have been. As part of your recommendations you may determine that technical analyses are needed to finalize the capital plan, such as a detailed audit or creation of a building model, but you should not undertake these analyses yourself. You are free to suggest alternatives to the EEB Hub's proposed plan and propose changes to Montgomery County policies. You should assume that no major changes will be made to state or federal policy.

1 "About EEB HUB" http://www.eebhub.org/about-eebhub

One Montgomery Plaza

One Montgomery Plaza, built in 1973, is an office building in downtown Norristown, PA that serves as the main location for County activities. The tenants include the following County departments: Commissioner's Office, Treasury, Human Resources, Purchasing, Controller, Detectives, and Domestic Relations. The building currently houses approximately 600 County employees, a number which is planned to increase upon completion of the renovation due to more efficient space planning. The building also houses ~20,000 square feet of private tenants - including several small law offices and two retail stores on the ground floor.

The County acquired One Montgomery Plaza in 2006 after being the primary tenant for many years. It is a two-tower (8 and 10-story) building, with about 205,000 square feet of interior floor area. The building's age, size and condition of the building is typical of the region and therefore it is a good test case for developing a project approach that could be applied to other buildings within the County and the Greater Philadelphia region.

The catalyst behind the renovation and retrofit is the apparent premature deterioration of the façade. The County commissioned an engineering inspection which uncovered additional issues including the need for window and roof replacements and some structural changes to accommodate the weight of file storage in some departments (See appendix "Condition Assessment Report"). Because of the extent of the rehabilitation project, the County saw this as an opportunity to address other issues the building currently faces, such as poor air quality and thermal comfort, lighting, and inefficient systems, and to redesign the work areas using modern design techniques and efficient space planning. A space planner was hired to advise the County on how it can more efficiently utilize the office space (see appendices). A technical site assessment has also been completed on building conditions and the efficiencies of the systems (see appendices). The technical assessment also covers the potential for controls in the building as there is currently no Building Automation System (BAS).

The EEB Hub has received approval to install a data acquisition system in One Montgomery Plaza in the near term. They plan to collect building-wide data to facilitate modeling of current energy use and impacts, develop building performance parameters, evaluate various combinations of proposed energy efficiency measures, and clearly demonstrate improved energy performance upon completion of the retrofit. (See appendix "MOU for M&V")

There are significant deciding factors to weigh when considering different strategic approaches, including quality of building design, cost, and replicability, as well as internal staff and resource requirements to manage the process. Among other options for One Montgomery Plaza, the Hub and County are considering an Integrated Design Process (IDP), which involves pulling together a team of building experts, consultants, contractors and local stakeholders to work together from the beginning of the project to maximize coordination between disciplines and ensure that the final design meets the needs of stakeholders. The IDP affects the procurement of contractors and project timing since public entities typically approach capital projects in a stepwise manner and competitively procure contractors at the beginning of each task. See the appendices for the "Montgomery County Procurement Policies for Contracting". The EEB Hub must evaluate this approach in comparison to energy performance contracting, sale-leaseback, a public-private partnership, and other potential approaches.

Although there is no definite timeline for the project, the County would like it complete as soon as possible and hopes that it will take no more than two years, per an initial engineering estimate. It has been recommended that vacating the building will allow for the County to accomplish the project in the desired timeframe, and avoid disruption while renovations are underway. Therefore, the County would like to phase the project so as to minimize the amount of time the building is empty and to minimize any impact to building occupants.

The EEB HUB

As an Energy-Regional Innovation Cluster, the EEB Hub's objectives are: to demonstrate the market viability of integrating energy saving technologies for whole building system solutions; identify policies that accelerate market adoption of energy efficient retrofits of commercial buildings and support policy makers in the development of such policies in the Greater Philadelphia region; and inform, train, and educate people about proven energy saving strategies and technologies whether they design, own, construct, maintain, or occupy buildings. The EEB Hub is particularly focused on helping accelerate the adoption of Advanced Energy Retrofits, or deep retrofits making use of new but proven technologies, systems and processes. The EEB Hub is looking for wide market adoption and therefore wishes to develop processes that meet the budgets and needs of different kinds of commercial buildings and retrofit projects.

The EEB Hub has offered to assist the County, free of charge, in managing the retrofit and renovation of 1 Montgomery Plaza, but has not finalized the specific tasks that this will entail (see appendix AER MOU). The EEB Hub could utilize its in-house management and technical expertise to complete activities potentially including, but not limited to: serving to assist in overall project management; reviewing assessments of existing conditions; conducting additional engineering analyses or financial modeling; providing advice regarding design alternatives, retrofit technology solutions, financial options, etcetera; and helping review any Request for Proposals (RFPs) and evaluate responses. The EEB Hub must determine which of these activities are appropriate for the Hub to conduct, and which may be better completed by the County or other contractors or researchers. The Hub's core competencies are advising on technical and financial options for energy retrofits; they do not currently have architects, structural engineers or construction managers on staff to manage implementation. The EEB Hub wishes to position itself as a trusted advisor that can help public entities determine the best approach for retrofitting their buildings and manage the process. As this is the first project of this type that the EEB Hub is completing, their reputation will be riding on its success. It will be under scrutiny during the management of this project by the County and local/regional contractors and designers. The EEB Hub will achieve success by recommending a process that helps the County reach their stated goals and provides a replicable model for the County and the EEB Hub.

County Political Context

Although there is no publically stated energy or sustainability goals specific to this project or county wide, the County is making an effort to increase the efficiency of its buildings, encourage sustainable use of resources, and increase operational productivity. The County is currently under an energy service performance contract (ESPC) following the successful retrofit of the correctional facility and is reviewing RFPs to use an ESPC for the retrofit of the county courthouse.

The County has hired a Director of Assets and Infrastructure (DAI) to manage the real estate of the County government and specifically manage this retrofit effort. The DAI is responsible for initiatives such as renovation of structures that are in disrepair, installation of clean energy infrastructure, assessment of work space use and efficiency (including encouraging working remotely), and increase in productivity through improvement of workplace environment. The DAI, along with the County Commissioners, would benefit from the impact of a great success on the renovation/retrofit.

The County has recently hired a Procurement Officer and made changes to the procurement policy. See the appendices for RFP language for hiring contractors. In an effort to make the process more transparent and competitive, the County is moving primarily to a competitive bid process. In terms of technical expertise, the County has two space planners on staff.

Project Structure and Financing

No budget has been determined, but the County's wishes to be fiscally prudent. A recent news article reported cost estimates of $80 Million to demolish One Montgomery Plaza and build a new building, nearly four times the level proposed by the engineers to rehabilitate the building.

The county has a few options for internal financing, including $8 million (see appendices) in energy efficiency bonds and the possibility to issue up to $35 million more in bonds, to fund the rehabilitation of the building. But the county does not want to raise taxes to fund this project and would like to avoid or limit the amount of bond issuance as much as possible. The County recently advertised a Request for Information (RFI) to the real estate industry to solicit innovative solutions for financing the rehabilitation of the building along with two parking structures that are also in need of serious rehabilitation. See the appendices for the RFI.

There may also be state or federal financing programs, as well as EEB Hub programs, such as the AERO RFI, that would support the County in this retrofit. The local electric utility is PECO Electric which offers rebates and incentives on commercial building retrofits, such as the Custom Commercial Retrofit Program.[2]

2 "PECO Smart Construction Incentives" https://www.peco.com/Savings/ProgramsandRebates/Business/Pages/ConstructionIncentives.aspx