Strategic Planning of Sustainable Operations

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Choosing between renovating or building new is a weighty dilemma for owners of large campuses who wonder whether buildings and laboratories constructed some 20 to 40 years ago can be made useful again. It is also a financially pressing issue, given the unending cost of maintaining and operating problematic building systems and inefficient, uninviting, and poorly configured workplaces.

Accordingly, Flad Architects seeks to provide a long-term financial planning framework to its clients. Recently, the firm has taken a data-driven strategic planning approach for a large manufacturing research and development campus with numerous aging facilities and 4 million square feet of laboratories. The goal of the 25-year strategic facilities plan is to reduce operational costs, including energy and maintenance costs, by up to 50 percent per square foot; shrink overall physical space by 25 percent (or more than 1 million square feet); and ensure a modern and productive workplace.

A space needs assessment conducted for this client, known for product development and innovation, revealed that more than 20 percent of its campus buildings were underutilized. The assessment, which used the Facility Condition Index and benchmarks drawn from similar Flad projects with large corporate clients, served as a basis for a compelling action plan that addresses the concerns of all stakeholders, including researchers, facility engineers, and corporate leadership.

The five-phase plan aims to provide facilities that are cost-efficient, operationally effective, and flexible. Some outcomes will include the opportunity to:

- consolidate on campus new development labs and pilot scale manufacturing facilities to increase speed-to-market with the most innovative products. Currently the client leases some offsite industrial or warehouse space for this purpose.
- rebalance the ratio of lab to office space while configuring both to improve efficiencies, collaboration, and innovation among diverse groups within the organization.
- create a flexible new modular lab design to accommodate evolving future technologies.
- provide campus-wide energy savings through innovative sustainable strategies.

The strategic facilities plan provides an overview of the age and expected life expectancy for research and development facilities, and therefore lays the groundwork for aligning a company's business plan with its assets over a period of years. The goal is to improve cost efficiency, improve space utilization in lab and office spaces by as much as 90 percent, and optimize net square feet per person or function. The result is a more

functional and accessible campus with modular facilities and consolidated buildings that improve site density and connectivity.

One central question for the master plan team was whether to renovate or build new. In our experience, replacing old buildings 40 to 60 years old is in many cases more economical, less disruptive, and reduces the risk of failure in the long term. New buildings can be designed so efficiently that they use less than 44 percent of the energy of most older buildings lacking the same sustainable design features, while construction costs for new buildings are often 10 to 20 percent lower per square foot than equivalent renovations.

The 2040 vision of the research site shows a consolidated and more closely interconnected, pedestrian-friendly campus featuring extensive use of green space and conveniently located parking structures. Labs and offices will be standardized and modular so they can be converted for multiple users and functions, and will be comfortable “people spaces” with accessible window views and natural lighting.

The data provides a tool to measure progress toward the master plan’s long-term goals. It is projected that by 2040, laboratory utilization efficiency will nearly double from the current 700 square feet per person to about 400 square feet per person, while the overall footprint of the research and development space will be reduced by 1.6 million net square feet.