

*Hypothetical: Company A owns their business headquarters. The building is 21 years old.*

## **AGING BUILDING STOCK – REPAIR OR REPLACE**

### **INTRODUCTION:**

As buildings age, the issue arises and businesses have to make the decision on whether they need to repair the existing infrastructure (HVAC equipment, plumbing equipment, lighting systems and controls, etc.) or replace the aging equipment with new, modern technology. Our company is at a critical turning point in the life cycle of our business headquarters. **It is my recommendation that following a *Facility Condition Assessment*, the organization starts implementing a Capital Replacement Plan that will require the replacement of aging building systems.**

### **BACKGROUND:**

The first step in developing a Capital Replacement Plan is to perform a *Facility Condition Assessment* where all assets will be inventoried and analyzed to determine capacity, efficiency, the risk of failure and the remaining useful life. According to the ASHRAE HVAC Applications handbook, average useful life of equipment starts at 15 years, depending on the type of equipment. Replacement becomes necessary at a 15-30 year life cycle. During the assessment process, each piece of equipment will be evaluated independently and a recommendation will be made based on the optimum service life of the system and its components.

Optimum service life occurs when cumulative maintenance labor and material costs equal the replacement cost. Access to data that shows costs associated with maintenance and repair will be critical to the evaluation and decision making process for replacement or repair.

### **REPLACEMENT:**

***LOWER OPERATIONAL & REPAIR COSTS:*** New equipment lowers the operational costs and repair and maintenance costs associated with aging building systems.

***PARTS & REPAIR:*** As systems age, parts and product support become unavailable. The ability to repair a component of an aging system is dependent upon the availability of a technician that is trained in the repair of that piece of equipment. Manufacturers also discontinue the production of parts for old systems that have been “phased out” and are no longer integrated in newer buildings

***EQUIPMENT DOWNTIME:*** A malfunctioning or under-performing building system can result in postponed or canceled meeting/events, dissatisfied customers, loss of revenue, and additional expenses. Less downtime from equipment failure results in money saved. Unplanned maintenance or emergency repairs lead to increased costs to repair.

*TENANT COMFORT & SATISFACTION:* A modern building with more precise controls and energy efficient components can lead to more satisfied tenants. While it is obvious that tenants or employees would be happier with a more comfortable environment, it is also important that they know that we have equipment that is more efficient and are environmentally responsible through the use of energy efficient building systems.

*ENERGY EFFICIENCY:* New equipment is more energy efficient. Heating and cooling equipment uses up the largest percentage of energy consumption in a building. Modern equipment upgrades will help our business achieve electric energy savings, conserve water, and provide an opportunity to evaluate renewable energy opportunities. Often times there are government subsidies for upgrading to more energy efficient equipment and therefore lowering the ROI of the project/replacement.

#### REASONS AGAINST REPLACEMENT:

Replacement requires a lot of up front capital.

While it is true that the replacement of equipment requires a lot of up front capital, a well-managed Capital Replacement Plan will result in lower operating costs and energy efficiencies that optimize the return on investment.

*“Why can’t we just run the equipment until it breaks down and then decide if we want to replace or repair?”*

Waiting to decide on replacement can result in equipment downtime and dissatisfied tenants/employees. When employees are working in an uncomfortable environment their production decreases resulting in lost revenue. When replacement takes place at the threshold of optimum service life, the equipment is planned for replacement and work schedules and tenant occupancy can be managed during the replacement period.

It is also important to note that planned replacement of equipment will ease the financial impact to our fiscal budget. The organization can plan the replacement over the span of several years so that the budget is focused around these expenses/investments.

#### SUMMARY:

Unexpected costs associated with the needs of the facility can be detrimental to the bottom line of an organization. It is important to plan and implement a Capital Replacement Plan that will navigate the business through the financial decisions regarding the health of the building. After analyzing the building through a *Facility Condition Assessment*, I recommend the organization starts investing in a plan to replace aging building systems.