UNC Health Eastowne

Facility Energy Management Plan

Overall:

The energy management plan for the UNC Health Eastowne development will attempt to be 20% greater than ASHRAE 90.1 2010. Building envelope design, major building systems design, and site related elements all will contribute to the success of the energy reduction goal. Systems that will be explored include the use of higher insulated building materials, high performance glazing, higher efficiency mechanical equipment, and LED lighting. The project will also evaluate the use of low flow/reduced flow plumbing fixtures, as well as implementation of photovoltaic panels mounted on the roof of the medical office buildings where not in conflict with mechanical, plumbing, electrical devices or life safety and maintenance areas. Final PV sizes will depend on final architecture but shall be used in a net metering format or as allowed by the utility accompany.

The LEED building standard will be reviewed to assist the design team with its overall approach to energy conservation. Regionalism and proximity to the project site will play a large role in the selection of building products, vegetation materials, and design aesthetics. In addition, a construction waste management plan that includes recycling will be adopted and documented for the project's construction phase to minimize impacts on local landfills.

Energy modeling will be performed to evaluate options and verify compliance with the energy code and this project's energy goals.

Site/Landscape:

The vegetation design for this project anticipates implementing drought-tolerant, regional planting materials to minimize the need for irrigation. This site was previously developed as an office park with surface parking lots. The new plan will not release any additional storm water than currently exists and has a goal of releasing less storm water than the current development releases.

The site lighting design will address pedestrian security and aesthetics, while also considering energy efficiency and light pollution. The project will include sidewalks, pedestrian/bicycle ways connecting through the site and beyond as well as pedestrian bridges crossing the streams. These walkable connections shall provide access to nature and green spaces throughout the campus.

Parking facility will have dedicated spaces for electric charged vehicles with charging stations, spaces for Ride Share users and bike lockers.

Building:

Architecture + Materials:
Materials intended to be used on the project are low maintenance, long-term products that when used in concert with high performing insulation materials will provide the owner and community a building that will stand the test of time while maintaining the original design condition. The exterior insulation on the project is

within the wall cavity, outboard of the primary air barrier, to remove dewpoint from within the building. This simple design decision will also increase the efficiency of the insulation by reducing thermal bridging. In addition, the glazing systems used on the project consists of high performing products that limit air infiltration and maximize thermal breaks through enhanced product design.

The building design intends to utilize high albedo paving and roofing materials. It is intended to utilize a high albedo concrete for parking structures to help reduce the number of lighting fixtures required to light the egress paths as well as reduce the height island effect associated to impervious materials.

The materials selection for this project will place an emphasis on regional sourcing and recycled content similar to the material requirements in LEED. All paints, sealants, and other off gassing materials will also be controlled by placing limitations and requirements in the specifications.

Plumbing:
Plumbing, like storm water management, needs to have an integral approach to the overall conservation of water. Toilet rooms will utilize low flow/limited volume toilet fixtures and faucets, and the design team will evaluate the use of sensor technology for flush activation and faucet operation. In addition, the design team will evaluate the type, configuration and quantity of domestic hot water heating systems to further reduce water and energy consumption.

This project will not include the use of gray water or other reclaimed water strategies.

Mechanical:
As a part of the overall approach to an energy efficient building design, the mechanical system design must be evaluated as part of the overall building's efficiency. The mechanical system type(s) and configuration(s) will be evaluated and confirmed to comply with the ASHRAE 90.1 2010 standard. Variable volume air handling and pumping systems will be used where applicable. The mechanical design will incorporate a fresh air input and airflow measurement and control strategies to ensure the health and safety of the occupants.

Day Lighting and Electrical Lighting:
The glazing around the building will be designed to maximize daylighting allowing for a greater opportunity for the end users to have access to natural light and views. Interior improvement projects will be requested to evaluate the use of daylight zoning and occupancy sensors on all interior lighting, with a desired maximum lighting power density. This will reduce future energy consumption and provide the end user a more natural circadian rhythm lighting scheme. It is the intent of the project to utilize LED lighting for all exterior and interior lighting where not in conflict with medical requirements.

Alternative Energy:
The building will provide infrastructure and equipment for the installation of roof mounted solar energy collection. This connection will consist of an electrical panel connection, conduit and pulls, as well as photovoltaic panels.

Construction and Future Tenant Improvement Projects:

As a part of the construction process, systems performance testing will be an integral part of the project. An example of this type of testing includes the AAMA hose stream testing of each different glazing assembly to ensure no water leakage exists in the system. In addition, all sealants that act as a part of the air barrier assembly will require a statement of compatibility to ensure the long-term stability of the materials and will also require an adhesion test to verify the onsite condition aligns with the compatibility statement. The mechanical and electrical system commissioning will be performed for the primary infrastructure by a qualified commissioning authority.