

Executive Summary:

All building HVAC systems in the United States must comply with ASHRAE standards. This report examines the compliance of The Waverly on Lake Eola with ASHRAE standard 62.1 by a comparison with ASHRAE's ventilation rate calculation procedure. ASHRAE standard 62.1 is used to assure that systems are designed with proper ventilation levels to avoid health problems, and maximize zone comfort. The Waverly on Lake Eola is a 23 story luxury condominium facility. There are five stories of parking and other amenities for residents of the building. The 3rd through 5th floor include some apartments in addition to parking. The 22nd floor is a 3,000 square foot luxury penthouse. The 23rd floor is reserved for building systems.

The Waverly on Lake Eola's mechanical system uses a unique system to supply air. All 230 apartments are supplied by a separate heat pump that acts as an air handling unit for that zone. The 22nd floor penthouse utilizes two heat pumps. Three rooftop heat pumps supply shared spaces throughout the building. Four supply fans located on the roof are used for stairwell pressurization. All supply air utilizes 100% outdoor air to maximize comfort to building residents. Buildings utilizing 100% outdoor air typically have no problem complying with ASHRAE standard 62.1, so long as the proper amount of air is supplied to each space.

The Waverly is split into a 23 story tower section, and a "wave" section of 19 floors. Since all apartments are designed to similar specifications based on their occupancy, calculations were focused to a specific part of the building. All zones with heat pumps attached to a specific relief hood were studied. The Southwestern most section of the tower was chosen for evaluation. This relief hood is connected to heat pumps supplying apartments from the 3rd to the 22nd floors. This required studying the supply air, occupancy, space use, and floor area of each space supplied by this air handling unit.

After running calculations based on ASHRAE standard 62.1, it is apparent that these spaces not only meet outdoor air requirements, but far exceed the necessary specifications. This provides for a healthy and comfortable environment for residents of the building. The use of 100% outdoor air provides consistently high levels of outdoor air entering each space. The reason all buildings are not designed to 100% outdoor air specifications is to decrease energy use. The design of The Waverly on Lake Eola focuses more on clean air than energy savings, providing a comfortable environment for residents.