Informative Note: For example, an office within a restaurant might be designated as a space ancillary to a Class 2 space, thus enabling the office to receive Class 2 air.

5.16.3 Recirculation Limitations. When the Ventilation Rate Procedure of Section 6 is used to determine ventilation airflow values, recirculation of air shall be limited in accordance with the requirements of this section.

5.16.3.1 Class 1 Air. Recirculation or transfer of Class 1 air to any space shall be permitted.

5.16.3.2 Class 2 Air

5.16.3.2.1 Recirculation of Class 2 air within the space of origin shall be permitted.

5.16.3.2.2 Recirculation or transfer of Class 2 air to other Class 2 or Class 3 spaces shall be permitted, provided that the other spaces are used for the same or similar purpose or task and involve the same or similar pollutant sources as the Class 2 space.

5.16.3.2.3 Transfer of Class 2 air to toilet rooms shall be permitted.

5.16.3.2.4 Recirculation or transfer of Class 2 air to Class 4 spaces shall be permitted.

5.16.3.2.5 Class 2 air shall not be recirculated or transferred to Class 1 spaces.

Exception: When using any energy recovery device, recirculation from leakage, carryover, or transfer from the exhaust side of the energy recovery device is permitted. Recirculated Class 2 air shall not exceed 10% of the outdoor air intake flow.

5.16.3.3 Class 3 Air

5.16.3.3.1 Recirculation of Class 3 air within the space of origin shall be permitted.

5.16.3.3.2 Class 3 air shall not be recirculated or transferred to any other space.

Exception: When using any energy recovery device, recirculation from leakage, carryover, or transfer from the exhaust side of the energy recovery device is permitted. Recirculated Class 3 air shall not exceed 5% of the outdoor air intake flow.

5.16.3.4 Class 4 Air. Class 4 air shall not be recirculated or transferred to any space or recirculated within the space of origin.

5.16.4 Documentation. Design documentation shall indicate the justification for classification of air from any occupancy category, airstream, or location not listed in Table 5.16.1, 6.2.2.1, or 6.5.

5.17 Requirements for Buildings Containing ETS Areas and ETS-Free Areas. The requirements of this section must be met when a building contains both ETS areas and ETS-free areas. Such buildings shall be constructed and operated in accordance with Sections 5.17.1 through 5.17.8. This section does not purport to achieve acceptable indoor air quality in ETS areas.

5.17.1 Classification. All spaces shall be classified as either ETS-free areas or ETS areas.

5.17.2 Pressurization. ETS-free areas shall be at a positive pressure with respect to any adjacent or connected ETS areas.

Exceptions:

1. Dwelling units, including hotel and motel guestrooms, and adjacent properties under different ownership with separation walls that are structurally independent and that contain no openings. This exception shall apply only when
   a. the separation walls are constructed as smoke barriers in accordance with the requirements of applicable standards;
   b. the separation walls include an air barrier consisting of a continuous membrane or surface treatment in the separation wall that has documented resistance to air leakage—continuity of the barrier shall be maintained at openings for pipes, ducts, and other conduits and at points where the barrier meets the outside walls and other barriers; and
   c. interior corridors common to ETS and ETS-free areas are mechanically supplied with outdoor air at the rate of 0.1 cfm/ft^2 (0.5 L/s·m^2).
2. Adjacent spaces otherwise required to be held at negative pressure and posted with signs due to the presence of hazardous or flammable materials or vapors.

Informative Note: Examples of methods for demonstrating relative pressure include engineering analysis, pressure differential measurement, and airflow measurement.

5.17.3 Separation. Solid walls, floors, ceilings, and doors equipped with automatic closing mechanisms shall separate ETS areas from ETS-free areas.

Exception: Openings without doors are permitted in the separation where engineered systems are designed to provide airflow from ETS-free areas into ETS areas, notwithstanding eddies that may occur in the immediate vicinity of the boundary between the ETS and ETS-free areas and reverse flow that may occur due to short-term conditions such as wind gusts.

Informative Note: Examples of methods for demonstrating air motion are engineering analysis and the use of a directional airflow indicator at representative locations in the opening, such as on 1 ft (0.3 m) centers or at locations required for duct traverses in standard testing and balancing procedures, such as those described in ASHRAE Standard 111 [15].

5.17.4 Transfer Air. When air is transferred from ETS-free areas to ETS areas, the transfer airflow rate shall be maintained regardless of whether operable doors or windows between ETS-free and ETS areas are opened or closed. Acceptable means of doing so include fixed openings in doors, walls, or floors, transfer grilles, transfer ducts, or unducted air plenums with air pressure differentials in compliance with Section 5.17.2.

5.17.5 Recirculation. Air-handling and natural ventilation systems shall not recirculate or transfer air from an ETS area to an ETS-free area.

5.17.6 Exhaust Systems. Exhaust or relief air from an ETS area shall be discharged such that none of the air is recirculated back into any ETS-free area.