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TECHNICAL BULLETIN

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Topic: Greenhouses

Questions have arisen concerning the regulation of conditioned greenhouses under the *Energy Conservation Construction Code of New York State* (Energy Code). Section 101.4.2.5, Nonresidential farm buildings, provides that “the requirements of this code shall not apply to nonresidential farm buildings, including barns, sheds, poultry houses and other buildings and equipment on the premises used directly and solely for agricultural purposes.” The purpose of this memorandum is to clarify the application of this provision.

Residential Buildings

Freestanding greenhouses on the premises of residential occupancies which are used *exclusively* for agricultural purposes should be classified as nonresidential farm buildings, regardless of whether or not the contents are grown for commercial purposes. Agriculture is defined as the science or art of cultivating the soil, harvesting crops, and raising livestock. The definition of livestock allows for the inclusion of aviaries and fish ponds, in addition to more traditional farm animals. As this does not exclude ‘hobby’ farming, a greenhouse for personal use remains eligible for the nonresidential farm building exemption.

Greenhouses that are attached to residential occupancies are required to comply with the Energy Code, since the building of which they are a part is not used exclusively for agricultural purposes. Where a greenhouse-type structure is open to other portions of the dwelling, envelope compliance of the entire building may be demonstrated using systems analysis (chapter 4), total building envelope (section 502.2.2) or software (e.g., RES-check) approaches. Where a greenhouse addition is less than 500 square feet in area, is thermally isolated from the dwelling, and is served by a separate heating or cooling system or is controlled as a separate zone of the existing system, it is permitted to conform with Table 502.2.5. This table permits the glazing system to have a U-factor of 0.50, where the glazing area is in excess of 40 percent of the gross area of the walls and roof.

Commercial Buildings

As with residential occupancies, freestanding greenhouses on the premises of commercial occupancies which are used *exclusively* for agricultural purposes should be classified as nonresidential farm buildings, regardless of whether or not the contents are grown for commercial purposes.

Greenhouses that are attached to commercial occupancies or freestanding greenhouses used - in whole or part - for other than agricultural purposes are required to comply with the Energy Code. Thermal envelope compliance can be demonstrated using the prescriptive method in Section 802, the simulated performance method in Section 806, or ASHRAE 90.1, as provided in Chapter 7. Since the prescriptive methods in ASHRAE 90.1 and in Section 802 can only be used where the glazed area does not exceed 50 percent of the gross wall area of the

building, they will generally not be useable for freestanding greenhouses; Section 11 of ASHRAE 90.1 or Section 806 of the Energy Code will have to be used in these cases.

If a greenhouse is provided with limited heating, it may meet the definition of *semiheated space* in ASHRAE 90.1. In New York State, this is based on a heating system whose output capacity is greater than or equal to 3.4 Btu/h•ft² and less than 15 Btu/h•ft² in climate zones having 3,601 - 7,200 heating degree days or less than 20 Btu/h•ft² in climate zones have 7,201 - 10,800 heating degree days. Semiheated spaces are permitted to use lower performance glazing systems than conditioned spaces.

If the heating system has a output capacity greater than 15 or 20 Btu/h•ft² for the applicable climate zones, the building must comply with the requirements for conditioned space in ASHRAE 90.1 or Chapter 8 of the Energy Code.

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