

**ITEMS FOR 2009 ENERGY CONSERVATION CONSTRUCTION CODE OF NYS**

TECHNICAL SUBCOMMITTEE REVIEW

DIVISION OF CODE ENFORCEMENT AND ADMINISTRATION - DEPARTMENT OF STATE

11/19/2007

<b>SECTION</b>	<b>TITLE</b>	<b>SUMMARY</b>	<b>REASON FOR THE CHANGE</b>
101.4.3	Additions, alterations, renovations or repairs.	Change the exceptions to allow for replacement of insulation, as well as subsystems that are repaired but not replaced or changed in terms of energy use. These details clarify what is not subject to the code and encourages the use of common sense items such as storm windows.	This recaptures a New York State code provision which would be otherwise lost. This provision requires damaged insulation to be replaced and, exempts repairs that do not result in an increase in energy usage, but would not exempt repairs or renovations that increase energy use.
101.4.4	Change in occupancy	Buildings undergoing a change in occupancy that would result in an increase in demand for either fossil fuel or electrical energy shall comply with the provisions of this code .	This new provision of the code- IECC2006 looks at a change in the occupancy of a building, which causes the building to increase it's energy demand, in the same manner the code views an addition to a building. A change in occupancy which requires more energy to condition the building, IE. increased cooling load for computer server, cold storage, etc., would require the change of occupancy to comply with the Energy Code.
101.4.6	Change in space conditioning.	Any nonconditioned space that is altered to become conditioned space shall comply with the provisions of this code for an addition.	Brings the proposed Energy Code concurrent with NYS current procedures and practice. This creates "New" conditioned space in the same manners as a building addition.

SECTION	TITLE	SUMMARY	REASON FOR THE CHANGE
101.5.1	Compliance materials.	Removes specificity to “Version 4.0.1” of RESCheck, Allowing for all versions of RESCheck, <u>REM/Rate home energy rating and REM/Design Home energy analysis software, or worksheets and/or compliance material based on this software, or of other building energy modeling or home energy rating (HERS) software approved by the Secretary of State. In the case of energy modeling, the code official shall be permitted to accept an energy cost budget worksheet based on ASHRAE 90.1 and acceptable to the local jurisdiction to report on the results of the energy modeling.</u>	The Energy Code Subcommittee remarked that the specific reference to version 4.0.1 leads to confusion; users may assume the version 4.0.1 is the only allowable version of RESCheck. In a committee comparison between versions 4.0.1 and 4.1.2. the resultant difference between the versions was 2-3%. This change indicates that all versions of RESCheck Software may be used for compliance. This changes also allows for updated compliance methodologies (REM/Rate, REM/Design, (HERS) software).
101.5.2.4	Historic Buildings	Annotation adding provisions for historic buildings classified by <u>Local Governments</u> This change exempts landmarked building facade(s) only.	This change removes the blanket exemption for historic buildings classified as historic by local governments. This changes the exception which would apply to the Landmarked Façade only of a building, in cases of buildings classified as Historic by Local Governments.
402.1.5	Electric Resistance Heat.	Annotation adding provisions for REMRate and REMDesign to allowable software methodologies for electric resistance heating methods.  Also, remove reference to RESCheck New York Version 4.0.1	Allows additional methods of compliance alternatives for buildings heated using electric resistance heating.

SECTION	TITLE	SUMMARY	REASON FOR THE CHANGE
402.2.1	<p><del>Ceilings with attic spaces.</del> CHANGE TO <u>“Ceilings”</u></p>	<p>This proposal changes this section to read “Ceilings”. With the intent to allow a reduction of ceiling insulation where the insulating materials are carried to the exterior wall line.</p>	<p>Allows for insulation reduction regardless of attic, or non-attic condition.</p>
402.2.2	<p><del>Ceilings without attic spaces.</del> CHANGE TO <u>“Existing roof assembly”</u></p>	<p>This proposal changes this section to read “Existing roof assembly” With the intent to allow a reduction of ceiling insulation to R=30 within existing spaces which are limited in depth.</p>	<p>Allows insulation reduction for existing rafter conditions.</p>
402.2.10	<p>Thermally isolated sunroom insulation</p>	<p>Thermally isolated sunroom insulation. <u>Within sunrooms not heated by electric resistance heat</u> the minimum ceiling insulation R-values shall be R-19 in zones 1 through 4 and R-24 in zones 5 through 8. The minimum wall R-value shall be R-13 in all zones. New wall(s) separating a sunroom from conditioned space shall meet the building thermal envelope requirements.</p>	<p>This proposal would effectively cause a much higher standard for sunrooms where electric heat is being used. This would serve some areas of the state where municipal power systems are being pushed to their limits of low cost power. In other areas of the state this could be viewed as more restrictive for this common approach to heating small additions.</p>
402.2.10	<p>Thermally isolated room insulation</p>	<p>Adds limitations for sunrooms and in additions <u>not exceeding 500 square feet in area.</u></p>	<p>Retains NYS prescriptive provisions for Building Envelope requirements in New York State.</p>

SECTION	TITLE	SUMMARY	REASON FOR THE CHANGE
402.2.11	<p>Specific Insulation Requirement</p> <p>Section added;</p> <p><u>Common, party and fire walls</u></p>	<p><u>402.2.11 Common, Party, and Fire Walls</u>  <u>Fire separations between dwelling units in Two-Family and Townhomes shall be insulated to no less than R-10 and the walls shall be air sealed in accordance with Section 402.4.1 of this Chapter.</u></p> <p>Code provision added for insulation and sealing of common, party and fire walls in Two Family and Townhouse construction. This section recaptures energy code language from prior energy code which requires the insulation and air sealing of common wall/party wall/fire construction for two family and town house construction.</p> <p>The following language is from the '91 NYS-ECCC. This was used as the basis for many staff and official interpretations to also include air sealing of these Common/Party/Fire Walls, and generally to detail with these problem areas just as one would detail an exterior wall. It met the 10-year simple payback in 1989 and 1991.</p>	<p>The residential building community has received many complaints from the field about the NYS Energy Code and IECC shortcomings with respect to the treatment (or lack thereof) of Common/Party/Fire Wall details in Low-Rise Multifamily dwellings. Two family and townhouse structures generally cannot meet an energy star rating, lacking this change. The problem is that these common walls are overlooked for their lack of insulation and air sealing, as they are not considered to be exterior walls or part of the Building Envelope for the purposes of the codes. We know, however, from past experience with the NYS-ECCC and in real-time performance testing of these common walls that they are often direct connections between the outside, unconditioned crawlspaces or basement, and unconditioned attics. This, as we know from performance-testing experience, results in tremendous air infiltration as well as conductive heat loss, since these walls are no longer insulated. Energy star Homes programs require air sealing of these walls as well. (Note – Pages 63-65, Energy star Thermal Bypass checklist, a requirement of the program)</p>

SECTION	TITLE	SUMMARY	REASON FOR THE CHANGE
403.9  403.9.2	Interior lighting  <u>Lighting Equipment</u>	<p><u>403.9.2 Lighting Equipment. A minimum of fifty percent of the lamps in permanently installed lighting fixtures shall be high efficacy lamps.</u></p> <p><u>HIGH-EFFICACY LAMPS: Compact fluorescent lamps, T-8 or smaller diameter linear fluorescent lamps, or lamps with a minimum efficacy of:</u></p> <ol style="list-style-type: none"> <li><u>1. 60 lumens per watt for lamps over 40 watts,</u></li> <li><u>2. 50 lumens per watt for lamps over 15 watts to 40 watts,</u></li> <li><u>3. 40 lumens per watt for lamps 15 watts or less.</u></li> </ol>	<p>In the Subcommittee's opinion, this change will affect a considerable amount of energy savings.</p> <p>Lighting is about 12% of primary residential energy, making this requirement a substantial energy saver. The overwhelming majority of residential lighting is incandescent--the least energy efficient of all light types. More efficient lighting options are available.</p>
501.1	Scope	<p><u>501.1 Scope. The requirements contained in this chapter are applicable to commercial buildings, or portions of commercial buildings. These commercial buildings shall meet either the requirements of ASHRAE/IESNA Standard 90.1, Energy Standard for Buildings Except for Low-Rise Residential Buildings, or the requirements contained in this chapter which apply only to buildings 50,000 square feet or less. For commercial buildings over 50,000 square feet, the building must meet the requirements of ASHRAE/IESNA 90.1. In either case, the provisions of Section 101.4 Applicability shall apply.</u></p>	<p>To condense the variety of different compliance paths for large buildings. A very substantial portion of large buildings are already following the 90.1 compliance path due to LEED and other "greening" trends, and this change would reduce conflicting provisions between the current compliance paths. Based upon the complexity of building over this size of 50,000 ft. sq. it is proposed here to allow for more uniformity of application for larger building by way of mandating one base code as the reference point of control.</p>

SECTION	TITLE	SUMMARY	REASON FOR THE CHANGE
502.4.3	<p data-bbox="289 134 449 277"><del>502.4.3 Sealing of the building envelope.</del></p> <p data-bbox="289 302 449 375"><u>Continuous Air Barrier</u></p>	<p data-bbox="478 126 1146 670">Delete and substitute as follows:  <del>502.4.3 Sealing of the building envelope. Openings and penetrations in the building envelope shall be sealed with caulking materials or closed with gasketing systems compatible with the construction materials and location. Joints and seams shall be sealed in the same manner or taped or covered with a moisture vapor-permeable wrapping material. Sealing materials spanning joints between construction materials shall allow for expansion and contraction of the construction materials.</del>            SEE FOLLOWING PAGE</p>	<p data-bbox="1171 134 1751 906">Per the proponent; “This proposal is the same as is being proposed in the current IECC cycle and what has been adopted and implemented in Massachusetts since 1995. There are considerable energy, comfort and cost savings to be realized by providing the same kind of air barrier that is intended for Residential in commercial buildings, as substantiated by the accompanying NIST study. Further, there is a great deal of support from the ABAA and materials manufacturers, as well as several different types of air sealing material and dozens of products to address the market.” Except in unheated structures and as permitted by this section, a continuous air barrier shall be installed and shall have all the following characteristics. The section list alternative approaches to accomplish the change and the committee voted to make the list of options more clearly a subset of the main section.</p>

SECTION	TITLE	SUMMARY	REASON FOR THE CHANGE
502.4.3	<p>502.4.3 <del>Sealing of the building envelope.</del> <u>Continuous Air Barrier</u></p>	<p><u>502.4.3 Continuous Air Barrier. Except in unheated structures and as permitted by this section, a continuous air barrier shall be installed and shall have all the following characteristics:</u></p> <ol style="list-style-type: none"> <li><u>1. Continuous throughout the envelope with all joints and seams sealed and with sealed connections between all transitions in planes and changes in materials and at all penetrations.</u></li> <li><u>2. Joined and sealed in a flexible manner to the air barrier component of adjacent assemblies, allowing for the relative movement of these assemblies and components.</u></li> <li><u>3. Withstand positive and negative combined design wind, fan and stack pressures on the air barrier without damage or displacement, and shall transfer the load to the structure. It shall not displace adjacent materials under full load.</u></li> <li><u>4. Installed in accordance with the manufacturer's instructions and in such a manner as to achieve the performance requirements.</u></li> <li><u>5. Penetrations of the continuous air barrier shall be made in a way such that the integrity of the continuous air barrier is maintained.</u></li> </ol>	<p>SEE PRIOR PAGE</p> <p>502.4.3.1 Compliance for Continuous Air Barrier may be demonstrated using any one of the following three methods;</p> <ol style="list-style-type: none"> <li>1. Materials. Using individual materials that have an air permeability not to exceed 0.02 L/s-m2 under a pressure differential of 75 Pa (0.004 cfm/ft2 under a pressure differential of 0.3 in. water (1.57 lb/ft2)) when tested in accordance with ASTM E2178.</li> <li>2. Assemblies. Assemblies of materials and components shall have an average air leakage not to exceed 0.2 L/ s-m2 @ 75 Pa (0.04 cfm/ft2 under a pressure differential of 0.3" w.g. (1.57 psf)) when tested in accordance with ASTM E2357 or ASTM E1677. In addition these assemblies must meet the requirement for joints per Section 502.4.3:</li> <li>3. Building. Testing the completed building and demonstrating that the air leakage rate of the building envelope does not exceed 2.0 L/s-m2 @ 75 Pa (0.40 cfm/ft2 at a pressure differential of 0.3" w.g. (1.57 psf)) in accordance with ASTM E779 or an equivalent approved method.</li> </ol>

SECTION	TITLE	SUMMARY	REASON FOR THE CHANGE
502.4.4 <u>Table 502.4.4</u>	<u>Hot gas bypass limitation.</u>	<u>Cooling systems shall not use hot gas bypass or other evaporator pressure control systems unless the system is designed with multiple steps of unloading or continuous capacity modulation. The capacity of the hot gas bypass shall be limited as indicated in Table 502.4.4.</u>	Specifies a limit to this manner of control requirements for AC systems. This requirement aligns the code the requirements of ASHRAE 90.1 2004.
502.5 <u>Table 502.5.1</u>	Vapor retarders	<p><u>502.5 Vapor retarders. Class I or II vapor retarders are required on the interior side of walls in zones 5, and 6, and 7, 8 and in Marine 4.</u></p> <p><u>Exceptions:</u></p> <ol style="list-style-type: none"> <li><u>1. Basement walls.</u></li> <li><u>2. Below grade portion of any wall.</u></li> <li><u>3. Construction where moisture or its freezing will not damage the materials.</u></li> </ol> <p><u>502.5.1 Class III vapor retarders. Class III vapor retarders shall be permitted where the conditions in Table <del>802.4.1</del> 502.5.1 are met.</u></p> <p><u>502.5.2 Material vapor retarder class. The vapor retarder class shall be based on the manufacturer's certified testing or a tested assembly. The following shall be deemed to meet the class specified:</u></p> <p><u>Class I: Sheet polyethylene, non-perforated aluminum foil</u></p> <p><u>Class II: Kraft faced fiberglass batts</u></p> <p><u>Class III: Latex paint</u></p>	<p>Provides much more flexibility for use of multiple vapor retarding materials. “This proposal is the same as is being proposed in the current IECC cycle with strong support by the builders and code officials.</p> <p>This change allows the use of Kraft faced fiberglass batts, and latex paint in instances where Class II and Class III Vapor Barriers are allowed.</p>

SECTION	TITLE	SUMMARY	REASON FOR THE CHANGE
502.5.2	Other buildings	<p>Added provisions for vapor barriers above high-moisture use spaces.</p> <p><u>502.5.2 Other Buildings. Where the roof assembly could be subject to damage from moisture and the proposed use will create elevated moisture levels within a building or space, such as swimming pools, gymnasiums, cooking areas and processing plants, the design professional shall be responsible for determining the application of a vapor retarder to protect the roof structure. This determination should be based on the climate zone and the projected interior humidity level in the building space below.</u></p>	<p>In addition to the code requirements for vapor barriers, this new section points to a need to focus the design professional's efforts in wet building environments.</p>
<u>503.2.5.1</u>	<u>Demand controlled ventilation</u>	<p><u>503.2.5.1 Demand controlled ventilation. Demand control ventilation (DCV) is required for spaces larger than 500 ft<sup>2</sup> and with a design occupancy for ventilation of greater than 40 people per 1000 ft<sup>2</sup> of floor area as established in Table 403.3 of the Mechanical Code of New York State</u></p>	<p>The purpose of this new code section is to require automatic ventilation controls based on occupancy loads in high occupancy spaces. This is also required in the ASHRAE standard thus making this a need to have a consistent approach.</p>
503.2.6	<del>Cooling with outdoor air</del> <u>Energy recovery ventilation systems.</u>	<p>Change to requirements for cooling with outdoor air, and exceptions to provisions for energy recovery ventilation systems. Major change is applicable system capacity is changed from 65,000 btu/hr to <u>5,000 btu/hr when system uses a minimum outside air supply of 70 percent or greater of the design supply air quantity.</u></p>	<p>Under certain conditions where vast amounts of energy will be saved, the national IECC approvals have lead to the acceptance of this practice as proposed. Provides specific exceptions to the requirements for energy recovery ventilation systems.</p>

SECTION	TITLE	SUMMARY	REASON FOR THE CHANGE
503.2.9.1	Air system balancing.	Change creates consistency with Section 503.4.2 requiring variable speed drives for VAV fans of 10 hp or greater. When Section 503.4.2 was changed, this section also should have been changed with HP requirements from 25 hp to 10 hp .	Given the availability of variable speed fan motors in the smaller sizes (down to 10 HP), the change requires the variable volume to be done by saving electrical energy as opposed to simply using a damper which achieves no energy savings.
503.4.3.3	Hydronic (water loop) heat pumps.	Change in requirements for hydronic heat pumps.	Requires a minimal 2 position valve for minimal efficiency in heat pumps exceeding 10 HP in size. Rationale: The purpose of this proposal is to arrange the code requirements for more uniform enforcement. This proposal better organizes the requirements within this section and provides some needed additional energy requirements for heat rejection equipment.
503.4.5.4	Supply-air temperature reset controls.	Added provisions for supply-air temperature reset controls.	Rationale: To reduce the necessity for simultaneous heating and cooling and to save energy.
505.1	General.	505.1 General. (Mandatory). This section covers lighting system controls, the connection of ballasts, the maximum lighting power for interior applications, and minimum acceptable lighting equipment for exterior applications. <u>For all new buildings, additions or substantial alterations exceeding 50,000 square feet in work area, ASHRAE 90.1 shall be used in place of this section.</u>	To align with Section 501.1 of this code The committee strongly agreed to limit in these cases to allow for AHRAE 90.1 to be the code basis.