

**NC Dept of Insurance
Office of the State Fire Marshal – Engineering Division
1202 Mail Service Center, Raleigh, NC 27699-1202
919-661-5880**

**Energy Requirements –
Heating/Cooling Existing Screened and Enclosed Porches and Decks with Mini Split System**

Code: 2015 NC Existing Building Code
Section: 811 & 908

Date: October 21, 2015

Code: 2012 NC Energy Conservation Code
Section: 101.4.3

Code: 2012 NC Residential Code
Section: N1101.1.3

The following scenarios and answers address questions concerning existing residential exterior decks and porches that are enclosed with mesh screens, vinyl/plastic enclosures or glass where the owner plans to install a mini split system to heat and/or cool the space and identifies which provisions would apply with respect to energy conservation requirements based on the selected code for compliance.

Scenario 1:

An existing screened porch that has mesh screening is having a vinyl/plastic screen system installed and a mini split system is being installed to heat and/or cool the space. Are building thermal envelope provisions required?

Answer:

- a. With respect to the **2012 NC Energy Conservation Code (NCECC)**, it is dependent on whether the space meets or does not meet the criteria for “conditioned space” as defined in the 2012 NCECC. The 2012 NCECC defines “conditioned space” as subject to being able to maintain a space temperature within the space at 50 degrees F or higher during the heating season or 85 degrees F or lower during the cooling season, or communicates directly with a conditioned space.

For consideration as not being a “conditioned space”, given the space is enclosed and provided with a barrier to isolate the space from the outdoors, then sizing of the HVAC system should consider this as part of the design basis for the load calculation and be sized accordingly to not be capable of maintaining indoor temperatures (a space temperature within the space at 50 degrees F or higher during the heating season or 85 degrees F or lower during the cooling season) sufficient to trigger application of the thermal envelope provisions for “conditioned space”. For the purposes of load calculations to size appliances so as not to create a “conditioned space”, the outdoor design temperatures used as the design basis for sizing equipment would be selected per ACCA Manual J for the outdoor design temperatures and the indoor design temperatures would be selected to be less than 50 degrees F during the heating season and greater than 85 degrees F during the cooling season, as appropriate. This would allow some flexibility for tempering of the air within the enclosed space which would be beneficial for humidity control and freeze protection without triggering the building thermal envelope requirements.

If the design indoor temperatures are selected as 50 degrees F or above for heating or 85 degrees F or below for cooling, then the space would be considered “conditioned space” and the applicable thermal envelope requirements would apply, as appropriate.

- b. With respect to **Chapter 11 of the 2012 NC Residential Code**, it defines “conditioned space” as an area or room within a building being heated or cooled, containing uninsulated ducts, or with a fixed opening directly into an adjacent conditioned space. Application of this definition would trigger the building thermal envelope requirements, as applicable.
- c. With respect to the **2015 NC Existing Building Code**, the provisions of Section 811 would apply. These provisions apply to energy conservation in Alteration Level 2 work (work area is less than 50% of the building area) and the energy provisions of the 2012 NCECC invoked to by this section apply to the elements of the building being altered. Since the only alterations are replacement of the screening and the mini split being installed, the provisions of the 2012 NCECC pertaining to HVAC would only apply since the proposed work does not involve alterations to the building thermal envelope.

Scenario 2:

An existing screened porch that has mesh screening is being enclosed with glass and a mini split system is being installed to heat and/or cool the space. Are thermal envelope provisions required?

Answer:

- a. With respect to the **2012 NC Energy Conservation Code (NCECC)**, it is dependent on whether the space meets or does not meet the criteria for “conditioned space” as defined in the 2012 NCECC. The 2012 NCECC defines “conditioned space” as subject to being able to maintain a space temperature within the space at 50 degrees F or higher during the heating season or 85 degrees F or lower during the cooling season, or communicates directly with a conditioned space.

For consideration as not being a “conditioned space”, given the space is enclosed and provided with a barrier to isolate the space from the outdoors, then sizing of the HVAC system should consider this as part of the design basis for the load calculation and be sized accordingly to not be capable of maintaining indoor temperatures (a space temperature within the space at 50 degrees F or higher during the heating season or 85 degrees F or lower during the cooling season) sufficient to trigger application of the thermal envelope provisions for “conditioned space”. For the purposes of load calculations to size appliances so as not to create a “conditioned space”, the outdoor design temperatures used as the design basis for sizing equipment would be selected per ACCA Manual J for the outdoor design temperatures and the indoor design temperatures would be selected to be less than 50 degrees F during the heating season and greater than 85 degrees F during the cooling season, as appropriate. This would allow some flexibility for tempering of the air within the enclosed space which would be beneficial for humidity control and freeze protection without triggering the building thermal envelope requirements. If the design indoor temperatures are selected as 50 degrees F or above for heating or 85 degrees F or below for cooling, then the space would be considered “conditioned space” and the applicable thermal envelope requirements would apply, as appropriate.

- b. With respect to **Chapter 11 of the 2012 NC Residential Code**, it defines “conditioned space” as an area or room within a building being heated or cooled, containing uninsulated ducts, or with a fixed opening directly into an adjacent conditioned space. Application of this definition would trigger the building thermal envelope requirements, as applicable.

- c. With respect to the **2015 NC Existing Building Code**, the provisions of Section 811 would apply. These provisions apply to energy conservation in Alteration Level 2 work (work area is less than 50% of the building area) and the provisions of the 2012 NCECC invoked by this section apply to the elements of the building being altered. Since the alteration involves several components including the installation of HVAC, glazing and other components that may affect the building thermal envelope, the provisions of the 2012 NCECC pertaining to each component in the alteration would apply.

Scenario 3:

A mini split system is being installed to heat and/or cool an existing sunroom that was previously not heated and/or cooled. Are thermal envelope provisions required?

Answer:

- a. With respect to the **2012 NC Energy Conservation Code (NCECC)**, it is dependent on whether the space meets or does not meet the criteria for “conditioned space” as defined in the 2012 NCECC. The 2012 NCECC defines “conditioned space” as subject to being able to maintain a space temperature within the space at 50 degrees F or higher during the heating season or 85 degrees F or lower during the cooling season, or communicates directly with a conditioned space.

For consideration as not being a “conditioned space”, given the space is enclosed and provided with a barrier to isolate the space from the outdoors, then sizing of the HVAC system should consider this as part of the design basis for the load calculation and be sized accordingly to not be capable of maintaining indoor temperatures (a space temperature within the space at 50 degrees F or higher during the heating season or 85 degrees F or lower during the cooling season) sufficient to trigger application of the thermal envelope provisions for “conditioned space”. For the purposes of load calculations to size appliances so as not to create a “conditioned space”, the outdoor design temperatures used as the design basis for sizing equipment would be selected per ACCA Manual J for the outdoor design temperatures and the indoor design temperatures would be selected to be less than 50 degrees F during the heating season and greater than 85 degrees F during the cooling season, as appropriate. This would allow some flexibility for tempering of the air within the enclosed space which would be beneficial for humidity control and freeze protection without triggering the building thermal envelope requirements. If the design indoor temperatures are selected as 50 degrees F or above for heating or 85 degrees F or below for cooling, then the space would be considered “conditioned space” and the applicable thermal envelope requirements would apply, as appropriate.

- b. With respect to **Chapter 11 of the 2012 NC Residential Code**, it defines “conditioned space” as an area or room within a building being heated or cooled, containing uninsulated ducts, or with a fixed opening directly into an adjacent conditioned space. Application of this definition would trigger the building thermal envelope requirements, as applicable.
- c. With respect to the **2015 NC Existing Building Code**, the provisions of Section 811 would apply. These provisions apply to energy conservation in Alteration Level 2 work (work area is less than 50% of the building area) and the provisions of the 2012 NCECC invoked by this section apply to the elements of the building being altered. Since the only alteration is the mini split being installed, the provisions of the 2012 NCECC pertaining only to HVAC would apply since the work does not involve the building thermal envelope.

Keywords: