

**NC Department of Insurance
Office of the State Fire Marshal - Engineering Division
1202 Mail Service Center, Raleigh, NC 27699-1202
919-647-0000**

Exemption for Covers for Heated Pools and In-ground Permanently Installed Spas

Code: 2018 NC Energy Conservation Code
Section: C404.9.3 and R403.10.3

Date: July 1, 2019

Code: 2018 NC Residential Code
Section: N1103.10.3

Question: The wording of the exception for eliminating vapor retardant pool covers for heated pools and in-ground permanently installed spas is confusing with respect to considering the application of heat pumps to qualify for the exception. What does application of the exception require for compliance with respect to use of heat pump pool heaters?

Answer: The intent of the exception is that the vapor retardant pool cover can be eliminated if more than 70% of the energy for pool heating is derived from site-recovered energy or a solar energy source.

The terms “site-recovered energy” and “solar energy source” have been included in the 2018 NC Energy Conservation Code. These terms were not in the 2012 NC Code. The adopted 2018 language uses the terms as they are defined in the ASHRAE 90.1-2010 Standard which also contains somewhat similar requirements and an exemption for pool covers. The language therein provides for clarity of the intention of the NC language.

The ASHRAE 90.1-2010 Standard defines “site-recovered energy” as “waste energy recovered at the building site that is used to off-set consumption of purchased fuel or electrical energy supplies.”

The ASHRAE 90.1-2010 Standard defines “solar energy source” as “source of thermal, chemical, or electrical energy derived from direct conversion of incident solar radiation at the building site.”

Then the application that would possibly permit heat pumps to qualify for the exception would require that the “waste energy” rejected from the heat pump that would otherwise be released to the outdoor environment is used to heat the pool, i.e., heat recovery. The more routine application of using a heat pump pool heater to heat the pool using outdoor air as the heat reservoir (source) and dumping the heat to the pool (heat sink) **does not** qualify for the exception

as the general application in the normal use does not employ the use of “site-recovered energy” as defined above.

Double-bundle chillers providing cooling to the interior environment, or DX units that condition interior spaces and equipped with refrigerant-to-water heat exchangers to recover the heat of rejection are potentially valid sources, but the heat supplied by the recovered heat of rejection needs to exceed the 70% threshold.

Follow up Question #1:

Can 6 mil poly and similar poly sheets typically used for ground vapor retarders be used as pool covers?

Answer:

No. Pool covers need to be designed, manufactured, and installed per their installation instructions as pool covers. Unintended use of poly as a pool cover can be dangerous.

References:

For reference, the exception to the 2012 NCECC, section 403.9.3 and section 504.7.3 and the 2012 NC Residential Code, section N1103.8.3 is shown below and also the exception to ASHRAE 90.1-2010, section 7.4.5.2.

2012 NCECC, section 403.9.3 exception and section 507.4.3 exception and 2012 NC Residential Code section N1103.8.3 exception: Pools deriving over 70% of the energy for heating from site recovered energy, such as a heat pump or solar energy source computed over an operating season.

ASHRAE 90.1-2010, section 7.4.5.2 exception: Pools deriving over 60% of the energy for heating from site-recovered energy or solar energy source.

Keywords:

none