



## Change Request Ruling

**Change Request:** 4.3 Systems Providing both Space and Water Heating

**ID #:** CR-000005

**Submitted By:** Rod Croome

**Submitted On:** December 22, 2017

**Ruling Date:** April 16, 2018

**Ruling:** **Change Request Declined.** Combined space and water heating systems shall be tested according to CSA P.911 per the Technical Requirements.

**Reason for Change Request and Recommended Alternative:** My client ICON Homes Ltd installed a BAXI Luna Duo-Tec boiler with a high velocity HE-Z-70H-110V air handler. (Clarification: forced air space heating) The BAXI has a 95% AFUE rating and I request that it be used to qualify this home to NZR. Changing out this boiler to a CSA P9-11 will cost the builder \$5-6000 for boiler and associated piping. This home would otherwise reach NZR.

*(Additional comments from Tyler Hermanson: I support this change request because the combine heat and DHW requirements of 4.3 are too general. There are many ways equipment can be used for space heating and DHW and the CSA 9.11 standard is limited to tankless DHW equipment that only has an EF rating that is used to supply a fancoil system. NRCAN Technical procedures and Hot2000 guide have over 6 ways correctly modeling equipment combinations that supply both space and dhw. CSA P9.11 should be limited to the use of tankless DHW systems used for space heating with fancoil supply.)*

**Additional Comments / Actions:** The TC wanted further information on the 6 other ways of correctly modelling to see if one would apply - and to verify if this is a forced air space heating system, which it is.

Derek Satnik advised Rod that CSA P9-11 has some specific testing requirements that mimic different real-world temperatures, and that the problem is that combined DHW/HVAC systems not tested to P9-11 will often be running at part-load, inefficiently, so the 95% efficiency on the nameplate is basically not meaningful for most of the year. Basically, the 95% is based on a test they did, so what was the test? If the DHW system is 95% efficient when supplying shower water then that's helpful, but if we're using the same water to provide some supplemental heat in the shoulder season, then it will be running at part-load. If it hasn't been tested for that, then it will likely not have been designed to perform well in those situations, and likely will be inefficient. Andy Oding was telling me about tested units that were performing under 80% efficient.

We connected Rod with Chris McLellan @ NRCAN Equipment Division to help him model his boiler correctly. Eg: if NRCAN has a way to model it, or has a paper claiming that you need to represent it as 80% efficient even though the vendor says 95%. That way he can re-model the house, figure out it's GJ performance as accurately as is reasonably possible, and advise the builder appropriately on what they may need to do in order to improve the house to a NZR level.