



**Informative Clarification:  
Definition and Reclassification of an  
Orphaned Natural Draft Water Heater Converted  
to a Stand-Alone Natural Draft Water Heater**

A natural draft water heater is typically the weakest drafting combustion appliance in homes. The term “orphaned” water heater was coined to identify those water heaters that once shared a chimney with another combustion appliance – usually a furnace that has since been replaced by a sealed combustion or direct vent heating system. When the water heater is left vented into the chimney alone, it is considered “orphaned.” In this situation, the chimney was originally sized to accommodate the BTU heat input of both the heating system and the water heater. When the only heating appliance still vented into the chimney is the natural draft water heater, the chimney is often oversized for the BTU heat input of the natural draft water heater, reducing its ability to provide sufficient draft for the appliance.

The following definitions are provided as an informative clarification to BPI’s existing standards:

- A natural draft water heater vented into an oversized chimney is considered an **orphaned natural draft water heater**. Building Performance Institute (BPI) Building Analyst Professional Standards define the Combustion Appliance Zone (CAZ) depressurization limit for an orphaned natural draft water heater as -2 Pa.
- A natural draft water heater vented into a properly-sized chimney in accordance with NFPA 31 for oil-fired units, NFPA 54 for gas-fired units, NFPA 58 for propane-fired units and NFPA 211 for solid-fueled units or the venting tables of a chimney liner manufacturer is considered a **stand-alone natural draft water heater**.

An **orphaned natural draft water heater** can be reclassified as a **stand-alone natural draft water heater** if a chimney liner properly sized for the BTU input of the natural draft water heater is installed to improve the draft of the appliance. The chimney liner must comply with NFPA 31, 54, 58 and 211 or the venting tables of the chimney liner manufacturer. Under this new classification, a stand-alone natural draft water heater is allowed the same CAZ depressurization limit as an individual boiler or furnace (-5 PA).

**SUMMARY:** The installation of a properly-sized chimney liner changes the classification of an orphaned natural draft water heater to a stand-alone natural draft water heater. This change of classification allows a CAZ depressurization limit of -5 PA for this appliance.

## **Additional Clarification of Combustion Appliance Zone (CAZ) Depressurization Limits**

Re: Informative Clarification: Definition and Reclassification of an Orphaned Natural Draft Water Heater Converted to a Stand-Alone Natural Draft Water Heater

### **Combustion Appliance Zone (CAZ) Depressurization Limit for Orphaned Natural Draft Water Heater**

#### **-2 PA CAZ Depressurization Limit:**

*A natural draft water heater vented into an oversized chimney is considered an orphaned natural draft water heater and is subject to a CAZ depressurization limit of -2 PA.*

The CAZ depressurization limit of -2 PA was set to ensure that negative pressures within the CAZ do not overcome the negative pressures within the vent. There may be instances where an orphaned water heater passes spillage while the CAZ depressurization limit is exceeded; however, this is not always the case. The -2 PA CAZ depressurization limit for orphaned natural draft water heaters is based on studies that indicate the need for this specific limit.

Examples of an oversized chimney may include:

- 6" > square clay lined chimney (8" is most common)
- 6" > round 'B' vent
- 6" > round Metalbestos vent

**Clarification:** If the natural draft water heater has been left as a single combustion appliance vented into an oversized chimney, as in the above examples, it is considered an orphaned natural draft water heater. Therefore, the CAZ depressurization limit for this appliance is -2 PA.

### **CAZ Depressurization Limit for Orphaned Natural Draft Water Heater Converted to a Stand-Alone Water Heater with Properly-Sized Chimney**

#### **-5 CAZ Depressurization Limit:**

In order for a natural draft water heater to be reclassified as a stand-alone combustion appliance subject to the same -5 PA CAZ depressurization limit as an individual natural draft furnace or boiler, the following criteria must be met:

- 1) *A natural draft water heater vented into a properly-sized chimney in accordance with NFPA 31 for oil-fired units, 54 for gas-fired units, NFPA 58 for propane-fired units, NFPA 211 for solid-fueled units, or the venting tables of a chimney liner manufacturer, is considered a stand-alone water heater.*

**Clarification:** NFPA 31, 54, 58 and 211 or the venting tables of a chimney liner manufacturer will specify the diameter, horizontal and vertical lengths, as well as vent configuration according to BTU input of the combustion appliance.

- 2) *An orphaned natural draft water heater can be reclassified as a stand-alone water heater if a chimney liner properly sized for the BTU input of the natural draft water heater is installed (must comply with NFPA 31, 54, 58 and 211 or the venting tables of the chimney liner manufacturer).*

**Clarification:** The definition of a chimney liner is a solid or corrugated metal vent pipe which can be passed through a conventional or oversized chimney. The installed liner will bring the existing chimney into compliance with NFPA 31, 54, 58 and 211 or the venting tables of a chimney liner manufacturer, thus allowing it to support an appliance of lesser BTU input.