Reasoning for Required Continuing Education To Maintain a HVACR License in the State of Arkansas
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Reasoning for
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Abstract:
The Arkansas HVACR Association supports consumer protection by promoting professionalism within the heating, ventilation, air conditioning, and refrigeration industry. Properly designed, installed, and maintained HVACR equipment may seem benign within a dwelling but poorly designed, installed, and maintained HVACR equipment can be a source of health and safety concerns and even dangers to the dwellers. Fossil fuels can be a source of carbon monoxide poisoning, fires, and explosions. Leaky duct work can increase air infiltration resulting in higher utility bills and increased exposure to pollen, pesticides and other pollutants. Poor ventilation and improperly sized air conditioning systems can fail to reduce humidity which may result in mold and mildew. Improperly, poorly, or untrained HVAC personnel may not know or understand certain codes and installation instructions which are designed to ensure the efficacy and efficiency of HVACR equipment operating as a system within a home. Proper ongoing training is essential to the professionalism of the HVACR industry and to the safe, efficient operation of HVACR equipment. A reasonable minimum of required continuing education that is readily available at an affordable cost to the licensed contractor is the best path to healthier, safer homes and businesses with lower utility bills.

Thesis:
Consumer protection is the most important duty of any regulation. With the advent of tighter homes, lax and common place methodologies are no longer safe. Proper design, installation, and service of HVACR equipment is critical to the safe and healthy enjoyment of a heating, ventilation, and air conditioning system. To assure homeowners and businesses of a safe and healthy environment, HVACR contractors / licensees must be well trained and up to date on the equipment; its design, installation, and maintenance. This requires continuing education mandated by the State to address pertinent issues, methods, codes, and regulations.

Introduction:
In the past many homes were not very well sealed against weather and wind. This created excessive amounts of outside air entering the house as un-intentional ventilation or air infiltration. During this time, HVAC contractors were required to perform Manual J Load Calculations and Manual D Duct Design and to follow manufacturers installation instructions as well as adhering to appropriate code; however, the failure to follow those rules to the letter frequently went unnoticed as the outside air / infiltration was so excessive as to provide sufficient air to overcome issues of carbon monoxide and polluted air as well as mold and mildew. Now that energy efficient homes do not provide unintentional ventilation, proper design, installation, and maintenance of HVACR equipment is critical.
Additionally, the new technology of “duct blasters”, has made us realize that ductwork has been installed to unintentional and unbelievably low standards and it is creating significant increases in pollutants and a higher utility bill.

**Positions:**

**Older homes had much higher unintentional air infiltration.**

Blower door tests provide quantifiable information as to the air infiltration in a home. Frequently referenced as Natural Air Changes per Hour or NACH, if all the air in the house were exchanged with outside air each hour, the NACH would be expressed as “1” or one air change per hour. If one-half or 50% of all the air in the house were exchanged with outside air each hour, the NACH would be expressed as “0.5” or ½ air change per hour. The higher the number, the more ambient air enters the house and the more the heating or air conditioning must work to maintain a comfortable temperature for the residents. Thus, the utility bill is higher and the comfort is lower. While this is unadvisable economically for the occupant, it also creates greater need for greater generation capacity and, by extension, creates significantly more green-house gas and a greater carbon foot print.

It is easy to see that heating outside winter air and cooling outside summer air is much more expensive and is not good private or public policy. Historically, we did not realize the effect of leaky homes unless we felt a draft in the winter. Co-incidentally, many HVACR dealers were installing systems without following the required procedures or code; however dealers and homeowners were unaware of the dangers of the improperly installed HVACR system because the same air that ran up the utility bill and reduced comfort was diluting the contaminated inside air. There was an unintentional yet beneficial symbiosis.

**Homes are much tighter than in the past:**

Today’s homes are much tighter than in the past, in part, due to the excellent work of RESNET, BPI, and the Arkansas Energy Office. The issue of a tight home has created the question, “Can a home be too tight?” While it is almost impossible to tighten or reduce air infiltration to the level that a house is too tight, new construction procedures can achieve a house that requires intentional ventilation. This is preferable to unintentional air infiltration in that the ventilated air can be filtered thus cleaner, pre-heated or pre-cooled by the exhaust air thus reducing the stress on the heat and air system and reducing the utility bill and increasing comfort. While advantageous, these tight homes require someone be able to make that determination and to design and install a ventilation method or system. This expertise is not something that has been taught in the past. It is also something that is commonly unknown and misunderstood. Since there is no way to naturally or intuitively make the determination, special equipment and training are required.

Tight homes are more susceptible to design errors. Defaults no longer work when sizing or selecting an air conditioner. Size matters and smaller is frequently better. Properly sized, frequently smaller tonnage, results in a better balance of humidity and temperature. Industry practice of installing one ton of air conditioning per 400 or 500 square feet of floor space simply does not work on modern homes. The houses are much tighter and the volume greater due to higher ceilings. If the rule of thumb method
is used, the unit will be too large, the unit will not sufficiently remove humidity, and the unit will cycle too often thereby reducing life expectancy of equipment and increasing the utility bill.

**Properly sized and sealed ductwork is critical:**

Tight homes require smaller air conditioning systems and that can be confusing for a duct designer and installer. Defaults and practices are based on one ton of ac for each 400 or 500 square foot of home. A tight home may use 30% less so a home previously sized for three ton system may work fine with only two tons. This means that the duct system will carry 1/3 less air or cfm. The reduction in the size of ductwork is so different as to make the designer and installer refuse to reduce to the appropriate size. It just seems too strange and they do not trust the new design. That results in improper distribution of air and an imbalance of comfort with some rooms being more susceptible to mold and mildew.

When ductwork is not properly sealed, it puts the house in negative or positive pressure depending on the leaks being in the supply or return respectively. This imbalance of pressure brings air into the house though whatever means possible. A tight house with leaks on the supply duct can cause the fireplace or water heater to backdraft. This is especially serious if the fireplace is allowed to “burn down” just as the family is going to bed. The glowing embers create carbon monoxide. The lack of heat to create stack effect and the negative pressure in the house reverses the flow of smoke and carbon monoxide from up the chimney to down into the house, eventually being distributed by the return air. This phenomenon is not infrequent but unknown to the untrained HVAC dealer and installer. They do not realize the importance of a tight duct system to balancing air pressure and the proper venting of a combustion appliance. They would seem to be disconnected; however, the house is a system and the HVAC installer is critically important to comfort, economy, and health and safety.

Without the benefit of a “duct blaster”, a relatively new method of quantifying duct leakage, dealers and installers do not realize that their duct systems are leaky. Unlike a plumber whose leaky pipes are easily discernable, a duct installer thinks their systems is tight because there is no apparent visible way to know. The plumber sees water leaks. The duct installer does not see air leaks.

**Proper ventilation of bathrooms and kitchens is important:**

The “V” in HVAC is ventilation, yet the history and experience of ventilation for homes has been left to electricians. With the new Energy and Mechanical codes, mechanical ventilation is mandated and the HVAC contractor is the only trade that has ventilation in their name; therefore, it falls to the HVAC dealer and installer to design and install and service bathroom and kitchen ventilation. Bathroom ventilation must now be exhausted to the outside of the home, no longer in the attic which has been the construction industry standard for decades. Chef kitchens are increasingly popular. Exhaust vents greater than 400 cfm capacity are now required to have balancing mechanical ventilation to the same volume of the exhaust. The only trade licensed to do this work is the HVAC contractor/licensee, yet it is something that is new and must be taught.

**Education is the key to a properly trained dealer network and workforce**

As with many occupations, innovations have brought about increasingly complex applications that can only be designed, installed, and maintained by an increasingly technically skilled industry and workforce. It is no longer possible to attend a trade school or learn from the heritage employee and that be sufficient for a lifetime. Equipment and applications demand that the HVAC industry be dedicated to a
lifetime of learning to provide the consumer properly designed, installed, and maintained systems. It is a matter of protecting the investment and, more importantly, the health and safety of the homeowner or occupant. Since the health and safety of the consumer is at stake, it is incumbent that the HVACR dealer/contractor/workforce be properly and continually trained. Since health and safety are at stake, a systematic approach of required continuing education and training should be mandated by the State of Arkansas.

*Continuing education should be readily obtainable and affordable:*

At present, distributors and manufacturers of equipment provide education and training to their dealers. The training is held frequently and regionally in the supply house locations across the state. The fee is nominal, sometimes just the cost of providing a lunch for the attendees.

The Arkansas HVACR Association sponsors code training conducted by inspectors from the HVACR Licensing Board as well as general technical training. This training is free and frequently a dinner is supplied.

The Arkansas Energy Office sponsors training through the Arkansas HVACR Association, technical colleges, and other training organizations. They provide grants to reduce or eliminate fees to the contractor.

Technical colleges provide training through their regularly scheduled “for credit” HVAC classes. The fee is based on the credit hour charged by the college.

Training is not in short supply and distributors and manufacturers as well as other organizations will ramp up their offerings to provide any required training.

*Competency and training are assumed by consumers:*

Consumers assume that a person licensed to perform a service has met minimum expectations of the Licensing Authority and the State of Arkansas. Arkansans are trusting and most would consider it rude to do much more than ask for a reference. Obviously, references supplied by contractors are those that have not yet experienced a problem with the contractor’s work. While each person should take some responsibility to research/ask about those they hire, they should not be expected to examine the competency of their HVAC professional any more than they would ask to see the transcript of their dentist, doctor, or lawyer. They assume that a license affirms the knowledge, competency, and professionalism of the contractor.
Allied organizations have continuing education requirements:

One question that may be asked is if there are other similar or allied trades that have continuing education and, if so, how much is required? The following is copied from Arkansas laws and regulations:

**Electricians are required to have 8 hours annually established by the Arkansas Board of Electrical Examiners**

Laws
November 2014

17-28-311. Continuing education requirement. (a) No journeyman electrician license or master electrician license shall be renewed unless the licensee completes at least eight (8) hours of continuing education for each National Electric Code cycle. (b)(1) The Board of Electrical Examiners of the State of Arkansas shall promulgate rules to set standards for continuing education for licensees under this section. (2) The rules shall include, but not be limited to, provisions of the National Electrical Code, as in effect on January 1, 2005.

**Realtors are required to have 6 hours annually**


The Arkansas Real Estate Commission shall establish an education program for real estate licensees to ensure that education is available and accessible to an applicant or a licensee. The education program is intended to fulfill the education requirements for a real estate license and to provide real estate courses intended to fulfill the education requirements for a real estate license.


(e) 11. Licensees must obtain six hours of continuing education annually to renew an active real estate license for the upcoming calendar year.

**Pest control persons are required to complete an Arkansas Cooperative Extension Service school every third year.**

CIRCULAR 6
ARKANSAS PEST CONTROL LAW
Arkansas State Plant Board

7. Keeping Abreast of Technology:

Each licensed operator, qualified operator and non-commercial applicator shall keep himself / herself abreast of changing pest control technology to assure a continuing level of competence and ability to
use pesticides safely and properly. The completion of a Cooperative Extension Service Pest Control School every third year shall be considered adequate to satisfy this requirement.

**Auctioneers are required to have 6 hours annually**

17-17-311. Continuing education.

(a) Except as provided in subsection (c) of this section, every application to the Auctioneer's Licensing Board for annual renewal of the license of an auctioneer shall be accompanied by proof that the applicant has satisfactorily completed six (6) hours of continuing education in approved programs within the preceding twelve-month period. No auctioneer's license shall be renewed unless the application for renewal is accompanied by the proof required in this section.

**Home Inspectors are required to have continuing education**


(a) The Arkansas Home Inspector Registration Board shall implement requirements for home inspectors to successfully complete continuing education annually as a condition to registration renewal.

**Summary:**

Technical and code training for HVACR professionals is important to protecting the investment and the health and safety of homeowners and occupants. Due to constantly changing technology and code, training must be continual throughout the career of a HVACR professional. Similar or allied trades are required to have continuing education. Consumers assume that persons with a license to do work in the State of Arkansas have provided evidence of their skill, training, and current expertise; therefore, consumers, especially the elderly, cannot be expected to police the competency of their contractors. Since it is of such importance to Arkansans, continuing education should be mandated to meet the reasonable expectations of the public and to protect health and safety.
Sample Proposed Wording For Legislation:

17-33-309. Continuing Education

Technical and code training is important to protecting the investment and the health and safety of homeowners and occupants. Each licensee shall keep himself / herself abreast of changing technology to assure a continuing level of competence and ability to design, install, and service heating, ventilation, air conditioning, and refrigeration equipment safely and properly. Training must be continual throughout the career of a HVCR professional; therefore, the Arkansas HVACR Licensing Board shall establish a continuing education program. Annual completion thereof shall be necessary for renewing a class “A”, “B”, “C”, “D”, and “E” license. Said continuing educational program shall consist of not more than 3 hours of code training and 3 hours of technical or business training. An additional 3 hours of code training may be substituted for the 3 hours of technical or business training. The Arkansas HVACR Licensing Board shall establish guidelines for assuring efficacy and availability of continuing education to include but not necessarily be limited to instruction provided by State, municipal, or county inspectors or other state approved officials; instruction provided by equipment and supply distributors and manufacturers; colleges and other institutions of education including state, for-profit, and non-profit organizations; as well as trade organizations involved in the HVACR industry. Application for annual renewal of license shall be accompanied by proof of completion of required approved training.

Or

17-33-309. Continuing Education

Technical and code training is important to protecting the investment and the health and safety of homeowners and occupants. Each licensee shall keep himself / herself abreast of changing technology to assure a continuing level of competence and ability to design, install, and service heating, ventilation, air conditioning, and refrigeration equipment safely and properly. Training must be continual throughout the career of a HVCR professional.

(1) The Arkansas HVACR Licensing Board shall establish a continuing education program.

(2) Annual completion thereof shall be necessary for renewing a class “A”, “B”, “C”, “D”, and “E” license.

(3) Said continuing educational program shall consist of not more than 3 hours of code training and 3 hours of technical or business training. An additional 3 hours of code training may be substituted for the 3 hours of technical or business training.

(4) The Arkansas HVACR Licensing Board shall establish guidelines for assuring efficacy and availability of continuing education to include but not necessarily be limited to instruction provided by State, municipal, or county inspectors or other state approved officials; instruction provided by equipment and supply distributors and manufacturers; colleges and other institutions of education including state, for-profit, and non-profit organizations; as well as trade organizations involved in the HVACR industry.

(5) Application for annual renewal of license shall be accompanied by proof of completion of required approved training.