

HVAC Proposal:

1. Establish an independent HVAC licensing board.

2. The establishment of 12 HVAC technician endorsements:

Installation: Residential Air Conditioning, Heat Pumps, Gas Heating, Oil Heating, Commercial Air Conditioning, Commercial Refrigeration, residential gas piping and commercial gas piping. (total of 7 areas).

Service: Residential Air Conditioning and Heat Pumps, Gas Heating, Oil Heating, Commercial Air Conditioning, and Commercial Refrigeration, (total of 5 areas)

3. Establish HVAC Journeyman licenses

An HVAC Journeyman Residential Installation Technician shall have Residential Air Conditioning and Heat Pumps, Gas Heating and residential piping endorsements.

An HVAC Journeyman Commercial Installation Technician shall have Commercial Air Conditioning, Gas Heating and commercial piping endorsements.

An HVAC Journeyman Residential Service Technician shall have Residential Air Conditioning and Heat Pumps, Gas Heating endorsements.

An HVAC Journeyman Commercial Service Technician shall have passed the Commercial Air Conditioning and Heat Pumps, Gas Heating endorsements.

An HVAC Journeyman Commercial Refrigeration Technician shall have passed the Commercial Refrigeration endorsement.

4. Individual HVAC technicians to be tested for each endorsement and licensed only through the HVAC board.

5. No electrical trainee licenses are to be required and the trainee is removed from the Electrical Board jurisdiction.

6. HVAC Apprentices that have graduated from a state recognized apprentice training program be granted any and all of the 12 endorsements and up to Journeyman 5 status for
HVAC Journeyman Residential Installation technician
HVAC Journeyman Residential Service technician
HVAC Journeyman Commercial Installation technician
HVAC Journeyman Commercial Service technician
HVAC Journeyman Commercial Refrigeration technician
if training material is covered in the apprentice training - without further WA. State mandated testing.

7. HVAC Service trainees that have graduated or are currently enrolled in any HVAC school or technical college licensed by the WA. Workforce Training Board, be permitted to perform diagnosis and replace like-for-like components on non-permitted work.*

8. HVAC Service trainees that are field trained only, may be permitted to perform diagnosis and replace like-for-like components on non-permitted work if they pass the appropriate HVAC endorsement exam.

9. HVAC Installation trainees that have graduated or are enrolled in any HVAC school or technical college licensed by the WA. Workforce Training Board, or a currently being field trained

shall be permitted to work under the direct supervision of a HVAC Installation technician on all permitted work.*

If the work is residential, then it must be under the direct supervision of a HVAC Journeyman Residential Installation technician. Low voltage thermostat wiring may be installed by either the supervised HVAC trainee or by the HVAC Journeyman Residential installation technician.

If the work is commercial, then it must be under the direct supervision of a HVAC Journeyman Commercial Installation technician. Low voltage thermostat wiring may be installed by either the supervised HVAC trainee or by the HVAC Journeyman commercial installation technician

* State of Idaho – HVAC License current practice. See Carl Lohrenger, Plumbing and HVAC Bureau Chief. 208-332-7154.

10. All permitted HVAC Installations: All permitted installations prior to final sign-off by the inspector shall furnish commissioning data to verify that installation meets manufacturer's recommended operating parameters.

11. Hydronic heating systems and boilers systems should be licensed and administered by the Plumbing Department. Commercial chiller work shall be performed by a HVAC Journeyman Commercial Refrigeration and shall have appropriate factory training certificates issued by the manufacturer of the equipment.

12. A contractor performing Residential Service shall employ at least one (1) designated HVAC Journeyman Residential Service Technician.

13. A contractor performing Commercial Service shall employ at least one (1) designated HVAC Journeyman Commercial Service Technician.

14. A contractor performing Residential Installation shall employ at least one (1) designated HVAC Journeyman Residential Installation Technician.

15. A contractor performing Commercial Installation shall employ at least one (1) designated HVAC Journeyman Commercial Installation Technician.

16. A contractor performing Commercial Refrigeration service or installation shall employ at least one (1) designated HVAC Journeyman Commercial Refrigeration technician.

17. All electrical branch circuits for HVAC equipment other than controls and thermostat wiring shall be installed by electricians.

18. HVAC Testing shall be generated by the WA. state or shall use equivalent testing as provided by NATE, ICE or HVAC Excellence or others.

19. Current license holders of 06A/ 06B shall be grandfathered as journeyman based on a minimum of 1 year substantiated work for each of the following endorsements.

HVAC Journeyman Residential Installation technician

HVAC Journeyman Residential Service technician

HVAC Journeyman Commercial Installation technician

HVAC Journeyman Commercial Service technician

HVAC Journeyman Commercial Refrigeration technician

Executive Summary

Scope of HVAC Work:

Currently there are 2 major divisions of HVAC work: Installation and Service.

Installation can be divided into Residential Air Conditioning, Heat Pumps, Gas Heating, Oil Heating, Commercial Air Conditioning, Commercial Refrigeration, residential gas piping and commercial gas piping. (total of 7 areas).

Service can be divided into Residential Air Conditioning and Heat Pumps, Gas Heating, Oil Heating, Commercial Air Conditioning, and Commercial Refrigeration, (total of 5 areas)

Current Requirements

The WAC 296-46B requires that HVAC and Refrigeration technicians doing field service be 06A or 06B electricians. Their work must be supervised at least 75% of each working day by an on site journey level electrician (01 or 06 specialty). A technician is licensed as an electrical trainee through the Electrical Department and must complete the following hours in order to be a candidate to take the 06A/06B electrical specialty examination.

Minimum number of working hours is

06A - 4000 hrs @ 75 % supervision

06B - 2000 hrs @ 100% supervision or 1000 hours @ 100% supervision

Upon qualifying hours, the trainee is allowed to sit for the 06a or 6b examination.

In practice, most of the required hours are fulfilled by installation activities and not by field service work.

Conclusions:

In practice, the 75% supervision model is **designed and works well for permitted INSTALLATION** work where at least 2 individuals are needed to install ductwork, piping and other installation tasks.

In practice, the 75% supervision model **DOES NOT WORK for non-permitted SERVICE work** – diagnosis /replacement of like-for-like components, for where only a single service technician is needed to do the work.

Past performance indicates trainees obtain field experience by performing installation work and not by performing field service work. This prepares the trainee for installation but does not necessarily prepare them for service work.

If the consensus of the Joint Legislative Task Force is to require a minimum standard of competency for HVAC service technicians, then the above supervision model is inadequate in preparing a technician to work in all of the 12 identified HVAC areas.

Discussion - Back ground information.

I. Nature of the work.

Primarily is involved in service of existing systems or in the installation of new systems. There are five division or endorsements each of the two major categories.

II. Current methods of instruction with advantages and disadvantages and approximate costs. – summary of current methods of instruction.

I. Nature of the Work**Self Policing Service Work.**

Service work, by its nature is self policing. The general practice of the HVAC trade is that if a systems fails after a technician has finished his servicing, then the technician usually is required by his employer to return and properly repair the equipment at no addition charge to the client. In other words, (s)he fixes it right for free.

Secondly, if an HVAC service technician has "call backs", it becomes increasing expense for the employer to send him out for non-billable rework.

As a service technician's skills are upgraded, there are a reduced number of "call backs" that he and his company experiences.

Installations inspections for minimum standards.

In permitted installations, the finished work should be inspected and reviewed by either a state, county or city inspector. This assures that installations meet minimum acceptable standards. To assure that the equipment has been installed properly, all permitted installations prior to final sign-off by the inspector should furnish commissioning data to verify that installation meets manufactures recommended operating parameters.

II. Review of Current methods of instruction.

The following is a brief summary of the generally accepted methods of training entry-level HVAC technicians. Although I believe that this information is accurate, I encourage your staff to verify my summaries.

Overall, one needs to be mindful that the field of HVAC is multi-faceted. Training can lead to numerous career opportunities, with learning and skill development occurring on a daily basis. A solid foundation in the fundamentals is the key to an HVAC technician's long term success.

Currently there are at least 4 general methods of training technicians, each with their own set of advantages and disadvantages.

1. Approved apprentice training programs are offered both by organized labor and merit organizations. All apprentice training programs must meet federal guidelines for apprentice training. Programs length varies from 4 to 5 years depending on the sponsoring organization. Programs are typically 1 or 2 evenings per week, 4- 6 hours with about 150 hrs per year of training. Apprentice programs taught by instructors, supplement the daily hands-on work with theoretical insights.

Examples of typically apprentice programs in WA. would be Local 66's program, CITC's program and the apprentice program at Inland Empire - Spokane program.

Advantages: The apprentice is exposed to a wide range of topics both in the field and in the classroom. Apprentices work with real world equipment and installations. They are mentored by experienced journeyman. Many times, their assignments are involved with heavy labor.

For a student without prior mechanical experience, hands-on training is recognized as one of the best methods to learn and retain mechanical skills.

Most apprentices are recent high school graduates up to the mid twenty-age range.

Disadvantages. This is a time-based tenure. A student with above average mechanical skills or one who is highly motivated cannot advance at a faster pace. The apprentice program does not take into account life experience that a mature worker may have.

In many cases, a 1st year apprentice is paid ½ the rate of a journeyman and is used in a heavy labor-intensive manner. The mature worker usually has greater financial responsibilities than a recent high school graduate. The apprentice pay scales are not family supporting wages. The mature worker may not be as physically fit to perform manual labor tasks. Because of these factors, the apprentice program inherently discriminates against the middle-aged worker.

Enrollment: Organized labor - members only
Merit shop - open enrollment

Costs of the programs.

Organized labor trains their members at no direct cost to the apprentices provided that they remain working for organized labor contactors for a minimum of 10 years. If they leave organized labor and work for a non-organized labor contractor after receiving their training, there is a pro-rated pay back rate to the training organization. Since the apprentice is working during the years of training, there is little opportunity cost. If an apprentice attends a merit shop, there are tuition fees comparable to state funded technical schools.

2. Two Year Technical community college programs.

There are several HVAC programs in the state such as the ones found at Bates, Clover Park, Wenatchee, Bellingham, Walla-Walla and Perry Institute. Several schools use multiple of teaching methods, but are typically centered in a classroom environment supplemented by "labs". Most offer a 2 year college degree or certificate. Typically, with an emphasis on design and theory of systems taught with varying levels of "hands-on" fieldwork. Most of these programs are offered during the day.

Cost of programs: Public supported schools typically tuition charges are about \$6000 for the 2 years of training. The tuition covers roughly 20% of actual costs of training, with the difference supported by WA. state. (\$40000 – 50000 per student for actual costs.)*

Advantages: These schools provide a structured environment for in-depth training. These schools provide a broad view of the HVAC industry. For younger students, this also provides an opportunity for maturation.

Disadvantages: Students wishing to pursue hands-on service careers find that much of the material is design and not field service related.

Opportunity Costs: Many mature students who take community college will be turning away employment at actual wages of \$ 15 - \$20 hour - \$30 –40 K per year. Thus making a 2-year opportunity cost of \$60 - \$80 K. To break even with this cost they would have to receive a wage \$5 higher than their previous pre-student wage, and then work at least 1800 hours per year for 7 to 9 years at this higher wage. This pay back period discourages mature workers from entering the two-year course of study.

* This information was a ballpark figure obtained from faculty from Bates Tech. College and North Seattle C.C. on 12-11-08 at the ACCA meeting in Fife WA.

Enrollment: Open

3. One Year HVAC Certificate Programs.

These programs are similar to those offered at a two degree program. North Seattle Community College has recently implement such a program. Opportunity costs are roughly ½ of a two year program.

Enrollment: Open

Advantages and disadvantages are similar to the two year program, except the opportunity and actual costs are halved.

4 . Short term Hands-On training.

The B.R.Engelking Co. HVAC School conducts HVAC technician field service training. Classes are short term – 2 weeks to 3 months of evening classes, which are 90+% hands-on. No design, engineering or installation methods are taught, only field service.

Advantages: Classes are evenings allowing mature students to transition into this skill set without sacrificing current day employment. Narrow focus for students that only wish to become service technicians. Focused short-term training for career changes and career upgrades. School emphasis is field service fundamentals, which encompass the basics of all HVAC systems. Average age: 46. this school is ideal for mature students who are looking for opportunities in the HVAC services industries.

Disadvantages: Narrow focus for students only for field service technicians. Primary emphasis is residential and light commercial Air Conditioning, Heating and commercial refrigeration system.

Costs: Private school. Tuition dependent on courses taken, but typically range is \$2K to \$5K to have entry level skills. Opportunity costs: Zero since evening classes allow students to continue full time employment.

Enrollment: Open

Respectfully submitted,

Head Master Engelking
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