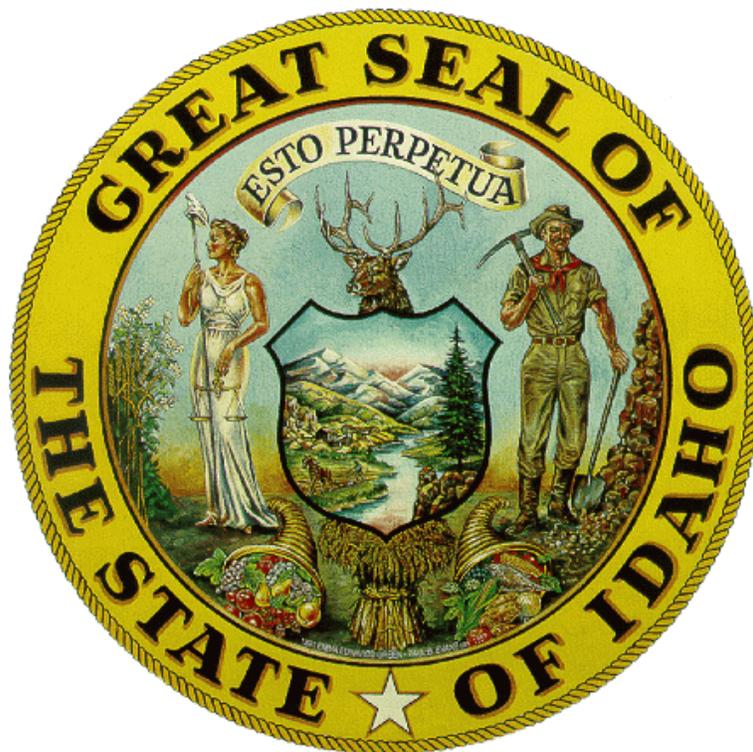


DIVISION OF BUILDING SAFETY

IDAHO HEATING, VENTILATION AND
AIR CONDITIONING BOARD
VIDEOCONFERENCE MEETING

OCTOBER 19, 2011



IDAHO HEATING, VENTILATION AND AIR CONDITIONING BOARD

Agenda Item No. 01

Agenda

PRESENTER: Dan Brizee, Chairman

OBJECTIVE: Approve the agenda for the October 19, 2011 Idaho HVAC Board Videoconference meeting

ACTION: Consent

BACKGROUND:

**PROCEDURAL
HISTORY:**

ATTACHMENTS: October 19, 2011 Idaho HVAC Board meeting tentative Agenda



TENTATIVE AGENDA

NOTICE OF PUBLIC MEETING

**IDAHO HEATING, VENTILATION AND
AIR CONDITIONING BOARD
VIDEOCONFERENCE MEETING**

**Division of Building Safety
1090 East Watertower Street, Suite 150, Meridian, Idaho
1250 Ironwood Drive, Suite 220, Coeur d'Alene, Idaho
2055 Garrett Way, Building 2, Suite 7, Pocatello, Idaho
dbs.idaho.gov – (208) 332-7137**

***Wednesday, October 19, 2011
9:30 a.m. – 3:30 p.m. (MT)***

(Note: Meeting Time is 8:30 a.m. PT)

9:30 a.m. CALL TO ORDER – Dan Brizee, Chairman

- Roll Call & Introductions
- Open Forum

CONSENT AGENDA

1. Approval of the October 19, 2011 Agenda
2. Approval of the July 20, 2011 Board Meeting Minutes

ACTION AGENDA

3. HVAC Apprenticeship Curriculum –Rosie Rosco, CWI
4. Schedule 2012 Board Meeting Dates – Dan Brizee

INFORMATIONAL AGENDA

5. Schooling Update – Irene Vogel, PTE
6. Continuing Education – Jerry Peterson
7. Time Frame-Code Adoption Process, Journeyman Status, and Continuing Education – Dan Brizee

Noon - LUNCH BREAK (If needed)

1:00 p.m.

8. HVAC Program Manager Report – Jerry Peterson

- a. Energy Code Requirements and Implementation Dates
- 9. Operational Report – Steve Keys
- 10. Administrator Report
 - a. Financial Report – C. Kelly Pearce and Kirk Weiskircher
 - b. Administrator – C. Kelly Pearce

NEW/OLD BUSINESS

EXECUTIVE SESSION *(If needed)*

3:30 p.m. ADJOURN

All times, other than beginning, are approximate and are scheduled according to Mountain Time (MT), unless otherwise noted. Agenda items may shift depending on Board preference. 09/21/11r

IDAHO HEATING, VENTILATION AND AIR CONDITIONING BOARD

Agenda Item No. 02

Minutes

PRESENTER: Dan Brizee, Chairman

OBJECTIVE: Approve the minutes from the July 20, 2011 Idaho HVAC Board meeting

ACTION: Consent

BACKGROUND:

**PROCEDURAL
HISTORY:**

ATTACHMENTS: July 20, 2011 Idaho HVAC Board meeting draft minutes



**IDAHO HEATING, VENTILATION AND AIR CONDITIONING BOARD
VIDEOCONFERENCE MEETING**

Wednesday – July 20, 2011 – 9:30 a.m. (MT)

**Division of Building Safety
1090 East Watertower Street, Suite 150, Meridian, Idaho
1250 Ironwood Drive, Suite 220, Coeur d’Alene, Idaho
2055 Garrett Way, Building 2, Suite 7, Pocatello, Idaho**

***DRAFT MINUTES OF THE JULY 20, 2011 MEETING**

NOTE: The following report is not intended to be a verbatim transcript of the discussions at the meeting, but is intended to record the significant features of those discussions.

Acting Chairman Ted Sermon called the meeting to order at 9:30 a.m. (MT).

Board Members Present:

Ted Sermon, Vice Chairman
Bruce Graham
Tim LaMott
Bill Carter
Russ Goyen

DBS Staff Members Present:

C. Kelly Pearce, Administrator
Steve Keys, Deputy Administrator, Operations
Patrick Grace, Deputy Attorney General
Jerry Peterson, HVAC Program Manager
Kirk Weiskircher, Financial Specialist, Principal
Rod Freligh, Regional Manager, Region 1
Chris Jensen, Regional Manager, Region 3
Renee Bryant, Administrative Assistant 2/Board Secretary

Board Members Absent:

Dan Brizee, Chairman
Jon Laux

In the absence of Chairman Dan Brizee, Vice Chairman Ted Sermon served as Acting Chairman at this meeting.

Ron Whitney was introduced as the newly appointed Regional Manager, Region 2, for the Division of Building Safety.

◆ **Open Forum**

HVAC Testing Requirements – Ben Seitz, Northwest Service Technologies, briefly explained the current requirements to become an HVAC journeyman and contractor versus an Electrical journeyman and contractor. To bring cohesiveness to the HVAC and electrical trades as it pertains to licenses, Mr. Seitz asked the Board to consider reviewing the prerequisites of the HVAC journeyman and contractor exams.

The Division is in the process of restructuring the HVAC license qualifications and will bring recommendations to the Board at a future Board meeting.

◆ **Approval of July 20, 2011 Agenda**

MOTION: Tim LaMott made a motion to approve the July 20, 2011 Agenda as presented. Bill Carter seconded. All in favor, motion carried.

◆ **Approval of May 18, 2011 Board Meeting Minutes**

Jerry Peterson noted a correction on page four under “Energy Code Requirements and Implementation Dates”. The second paragraph should read in part, “...six inspectors from local jurisdictions.” rather than “...representatives from six local jurisdictions.”

MOTION: Tim LaMott made a motion to approve the May 18, 2011 Board Meeting Minutes as amended. Bill Carter seconded. All in favor, motion carried.

◆ **Notice of Violation**

Brady Rowser – NOV HVC1104-0006 – Prior to the meeting, Brady Rowser was in contact with Renee Bryant, via telephone, and withdrew his appeal.

Rod Law – NOV HVC1104-0004 – Rod Law represented himself, HVAC Program Manager Jerry Peterson represented the Division of Building Safety, Bill Fletcher was a witness for Rod Law, and Deputy Attorney General Patrick Grace was the facilitator.

The original NOV was based upon three violations; HVC .01 “Unlicensed Contractor”, HVC .03 “Unlicensed Individual”, and HVC .06 “Failure to Permit or Pay Fees”. A permit cannot be issued to a non-licensed contractor. Therefore, prior to the appeal hearing, HVC .06 “Failure to Permit or Pay Fees” was dismissed and a request was made to refund \$100 to Rod Law.

Patrick Grace explained the ground rules, instructions, and entered the exhibits into record. All parties provided testimony and argument on NOV HVC1104-0004. The Board unanimously voted to uphold NOV HVC1104-0004 and the charges for HVC .01 “Unlicensed Contractor”, and HVC .03 “Unlicensed Individual”.

MOTION: Russ Goyen made a motion to allow the NOV to stand in regard to HVC .01 “Unlicensed Contractor”, and HVC .03 “Unlicensed Individual”. Tim LaMott seconded. All in favor, motion carried.

ACTION: Deputy Attorney General Patrick Grace will draft a Final Order for Acting Chairman Ted Sermon’s signature, and provide a copy to Rod Law.

ACTION: The Division will refund the \$100 civil penalty fee on HVC .06 “Failure to Permit or Pay Fees” to Rod Law.

◆ **Wood Stove Installation-Statute Change**

For clarification of Idaho Code § 54-5003 “Definitions”, it was the recommendation to the Board to change the verbiage from “solid-fuel burning furnaces” to “solid-fuel burning appliances”. Appliances would include a wood burning furnace and provide a clear enforcement tool for installations.

MOTION: Russ Goyen made a motion to accept the proposed statute change as presented. Bill Carter seconded. All in favor, motion carried.

◆ **Gas Meters-Rule Changes**

1 Inch Minimum Stub Outs – 07.07.01.005.01(f) – This topic has been discussed at previous Board meetings. There is no reference to “termination” in the International Fuel Gas Code (IFGC). Therefore, IDAPA 07.07.01.005.01(f) “405.2. Point of Termination” is an improper reference and should be removed in its entirety. Any concerns or changes in regard to the point of termination should be brought before the Board by the utility companies.

MOTION: Russ Goyen made a motion to accept the deletion as proposed and written. Bill Carter seconded. All in favor, motion carried.

Snow and Ice Protection – 07.07.01.005.01(e) – This issue has been covered in detail at prior Board meetings. Meter and meter protection is under the jurisdiction of the utility companies. IDAPA 07.07.01.005.01(e) “405.1. Installation in Areas of Heavy Snowfall” is an improper reference; lacking in clarity and definition of snow and ice protection. The recommendation to the Board is to remove the rule in its entirety.

MOTION: Tim LaMott made a motion to approve the deletion as proposed and written. Bruce Graham seconded. All in favor, motion carried.

◆ **Housekeeping – Rule Changes**

Colored Inspection Tags – All required inspection tags are non-color specific, except inspection tags for unacceptable HVAC installations, which are red. For consistency across the trades, and to eliminate the sheer number of different tags, the recommendation to the Board is to remove the color reference, and change the tag type from “unacceptable” to “Notice of Correction”.

Bonding – A bond is required for the length of a license. Current IDAPA rules 07.07.01.021.01 and 07.07.01.022.01 do not expressly provide for such. The recommendation is to change the type of bond from “performance” to “compliance” and to specify that the bond be effective for the duration of the licensing period.

DBS was asked to provide adequate notification to HVAC contractors of the changes to the bond requirements. Suggested procedures for notification were post notification alert on the Division’s website, use DBS voice mail/e-mail batch systems, and/or add to renewal letters.

ACTION: When effective, the Division will notify HVAC contractors of the changes to the bond requirements by using any and/or all of the above suggestions.

MOTION: Bill Carter made a motion to approve the proposed rule changes on inspection tags and bonding. Bruce Graham seconded. All in favor, motion carried.

◆ **HVAC Curriculum Review**

Chris Miller, College of Western Idaho (CWI), stated the Apprenticeship Curriculum Review project was given to CWI to manage. The HVAC apprenticeship curriculum has been updated. The Board was asked to review the curriculum; providing recommendations to CWI prior to the October Board meeting.

ACTION: The topic “HVAC Apprenticeship Curriculum” will be placed on the October 2011 Agenda as an action item.

◆ **Dual Apprenticeship Required Schooling**

There are many common topics taught the first year of the HVAC, Electrical, and Plumbing Apprenticeship programs. Ted Sermon stated apprentices who become multi-licensed journeymen should only be required to take the commonly taught topics in the apprenticeship training once.

The topic needs to be addressed among the HVAC, Electrical, and Plumbing Boards; however, anyone with comments/opinions is asked to contact Ted Sermon.

◆ **International Green Construction Code (IGCC)**

Shawn Martin with the International Code Council provided an overview, via PowerPoint, of the scope of the IGCC.

◆ **Manual J and D Requirements**

Every DBS HVAC/Plumbing inspector has been through Manual J and D training. There are many jurisdictions throughout Idaho that do not have building departments, nor require building plans. Currently, DBS is not in a position to fully enforce the Manual J and D requirements on a statewide basis. Therefore, Jerry Peterson suggested, and the Board agreed, a “soft start process” would begin January 1, 2012. Local jurisdictions will be able to enter into an agreement with DBS to have their Manual J, S, and D submittals reviewed and included in the HVAC inspections.

ACTION: The Division will communicate to all involved parties its ability to inspect/ calculate plan review submittals by local jurisdictions that require building plans.

◆ **Continuing Education**

The Division will begin the process of outlining HVAC contractor continuing education requirements, i.e., how many hours per year, topics, places to obtain qualified education, etc. Chris Miller, CWI, requested to be included in the process; bringing forth several suggestions for courses. Ted Sermon asked Jim Conan, Vice President of Eastern Idaho HVAC Contractors Association, to contact Mr. Peterson with ideas before the October Board meeting.

ACTION: The topic “Continuing Education” will be placed on the October 2011 Agenda as an informational item.

◆ **Energy Code Update**

DBS is charged with the development of an energy compliance database. Although the Division is in full support of the energy code adoption, there are statutory limitations on its ability to enforce the code.

As requested at the February 2011 HVAC Board meeting, and until further notice, the topic “Energy Code Requirements & Implementation Dates” will be an informational item on all regularly scheduled HVAC Board Meeting Agendas.

ACTION: The topic “Energy Code Update” will be placed on the October 2011 Agenda as an informational item.

◆ **HVAC Program Manager Report**

Home Energy Audits – An association has been created among individuals providing home energy audits. Jerry Peterson continues to work with the association.

National Energy Code Conference – Jerry Peterson will attend the National Energy Code Conference in Salt Lake City, Utah, the week of July 25th.

◆ **Operational Report**

Operational Structure – DBS is moving from a centralized to regional structure. With the continuation of staff reduction, the Division will be required to restrict inspections to certain areas on given days, especially the outlying areas. Management will work with the regional managers to define those days.

HVAC Program Manager – Steve Keys congratulated Jerry Peterson for bridging the gap on the energy and HVAC code issues.

◆ **Administrator Report**

Personnel – When Administrator Pearce was appointed to DBS in 2007, there were 152 authorized full-time positions. Upon the completion of the layoff process, the Division will have fewer than 100 employees.

Statewide Layoff Policy – The Division’s layoff policy has changed from geographical regions to statewide. The new policy offers DBS the ability to identify the areas of need for inspectors to fulfill the inspection responsibilities across the state of Idaho.

Assigned Work Stations – In the past, inspectors have worked from their residences. DBS has contracted with IDOL to rent work stations at 12 of their facilities throughout Idaho. The Division’s three locations will provide accommodations to inspectors as well. The majority of inspectors will commute, by personal transportation, to their assigned facilities. Work hours will be 8:00 a.m. to 5:00 p.m., Monday through Friday, excluding holidays. During non-business hours, state vehicles will be parked at the designated facilities.

Inspections by Zip Code – With the use of electronic systems, staff can now search inspections by zip code; calculating the areas of need for inspectors.

Chairmen Meeting – In June, a meeting was held with the chairmen of each board housed under DBS to explain the Agency’s statewide layoff process and vision.

Chinese Government and U.S. Projects – The Chinese government has stock in the following Idaho-based projects: Hoku, solar cell plant in Pocatello; Southeast Idaho Energy Corp., fertilizer plant outside American Falls; electric bus manufacturer plant, Treasure Valley area; and industrial park, south of Boise airport.

To report back to the Governor, Kelly Pearce asked the board members for their thoughts to potential Chinese investments in the United States. The majority of members had no negative opinion on the issue.

Public Works Projects -- Permits and Building Inspections – Statutorily, DBS is responsible for the issuance of permits and building inspections on state public works projects in Idaho.

The first of July, the Division sent letters on the statutory requirements to state agencies involved in public works defined buildings and state agencies that independently generate their own buildings outside the public works activity. The changes will apply to projects beginning after July 1, 2011.

Project DOX – It is under consideration by the Division of Public Works to use Project DOX for their plan reviews. Boise State University has been trained on DOX and has begun to use the system on their plans.

Public Service Announcement (PSA) – DBS Public Information Officer Bill Hatch created a PSA for the HVAC Board. The PSA has been distributed to radio stations statewide, and is available on the Division’s website.

- ◆ **New/Old Business**
There was no new/old business to discuss.
- ◆ **Executive Session**
An Executive Session was not required.

MOTION: Tim LaMott made a motion to adjourn the meeting. Russ Goyen seconded. All in favor, the meeting adjourned at 12:50 p.m. (MT).

TED SERMON, ACTING CHAIRMAN
HEATING, VENTILATION AND
AIR CONDITIONING BOARD

C. KELLY PEARCE, ADMINISTRATOR
DIVISION OF BUILDING SAFETY

DATE

DATE

*These DRAFT minutes are subject to possible correction and final approval by the Idaho HVAC Board. 09/16/11rb

IDAHO HEATING, VENTILATION AND AIR CONDITIONING BOARD

Agenda Item No. 03

HVAC Apprenticeship Curriculum

PRESENTER: Rosie Rosco, CWI

OBJECTIVE: To create a standard curriculum for Electrical, HVAC, and Plumbing Licensure Apprenticeship programs in the state of Idaho.

ACTION: Vote to approve, disapprove, or recommend changes to the updated HVAC apprenticeship curriculum.

BACKGROUND: In 2010, Irene Vogel, PTE, offered to assemble a committee to review the current curriculum of the Electrical, HVAC and Plumbing apprenticeship programs for changes/updates. A list of prospective individuals from each trade was generated by the Division. In January 2011, Administrator Pearce requested the chairmen of the Electrical, HVAC, and Plumbing Boards review and endorse the list prior to it being sent to Ms. Vogel.

At the July meeting, Chris Miller, College of Western Idaho (CWI), stated the Apprenticeship Curriculum Review project was given to CWI to manage. The HVAC apprenticeship curriculum has been updated. The Board was asked to review the curriculum; providing recommendations to CWI prior to the October Board meeting.

PROCEDURAL HISTORY:

ATTACHMENTS: HVAC Apprenticeship Curriculum – Years 1-4



HVAC Apprenticeship Curriculum Review

Final Report

**Submitted by the Idaho State Division of Professional Technical Education
October, 2011**

The Idaho State HVAC Board and the Idaho State Division of Building Safety requested that the Idaho State Division of Professional Technical Education conduct a review, and revise if needed, the Idaho State HVAC Apprenticeship Curriculum. The curriculum was previously approved by the HVAC Board in 2009. IDPTE requested that the College of Western Idaho lead the review process. Chris Miller, CWI HVAC Instructor, created the new document and solicited input from the committee listed below.

Curriculum Review Committee

Mark Smith, LCSC Instructor

Greg Backus, Union

Gene Miller, EITC Instructor

Chris Miller, CWI Instructor

Scott Schlagel, CWI Industry Rep

Bruce Graham, Board Member

Arrty Rude, NIC Instructor

Tim LaMott, Industry Rep, Boise

Jerry Peterson, DBS

Dustin Dancliff, ISU Instructor, no contact information given

School Representatives who were consulted as well:

ISU, Joe Fleishman

CWI, Rosie Rosco

EITC, Ken Erickson

LCSC, Linda Stricklin

NIC, Marie Pricel

CSI, Christy Horton/John Miller

Final Determination:

IDPTE suggests no changes to the document which was approved in 2009. Respectively submitted is a document that meets all of the criteria previously listed and is intended as a clarification of the content & objectives being presented by the six PTE schools statewide.

Heating, Ventilation, Air Conditioning Apprenticeship Program (HVAC)
State of Idaho PTE
Developed June, 2005

REQUEST TO HVAC BOARD
FOR CURRICULUM REVISION APPROVAL
November 30, 2007
Approved May 27, 2008

HVAC Year One

Total Minimum Hours – 144

- Basic math – Module 1
12 hours
 - Whole numbers
 - Addition and subtraction
 - Fractions
 - Decimals
 - Measurement of
 - Lines
 - Area
 - Volume
 - Weights
 - Angles
 - Pressure
 - Vacuum
 - Temperature
 - Trade related math – 6 hours

- Basic safety, hand and power tools – Module 2
18 hours
 - Ladders and stairs
 - Fall protection
 - Electrical – lockout-tagout
 - Tools
 - Hand
 - Power
 - Materials
 - Use
 - Handling
 - Storage
 - Cranes
 - Scaffolds
 - Trenching / excavation
 - Personal protective equipment
 - Performance of basic construction tasks safely
 - What to do in case of an accident
 - Confined spaces
 - Basic rigging
 - MSDS
 - Basic hand and power tools
 - Purpose and use of
 - Wrenches
 - Saws
 - Hammers
 - Drills

- Measuring instruments
 - Instructions on safe use and maintenance
 - Oxy acetylene torches

- Fuel piping and venting – Module 3
60 hours
 - Installation of fuel piping according to code and industry standards
 - Installation of venting according to code and industry standards
 - Installation of combustion air according to code and industry standards
 - Installation of make up air according to code and industry standards
 - IFGC
 - Solid fuels
 - Gas
 - Oil

- Energy sources – Module 4
6 hours
 - Principles of different fuel sources
 - Electric
 - Oil
 - Gas / LP
 - Hydro / water / geothermal

- Basic systems overview – Module 5
12 hours
 - Drives and connections
 - Types of ducts
 - Types of returns
 - HVAC components
 - Types of equipment

- Introduction to code – Module 6
6 hours
 - How to access information related to HVAC industry
 - (International Fuel Gas Code will be covered in the Fuel Gas Module)
 - International Mechanical Code
 - National Electrical Code
 - International Residential Code

- Intro to applied science – Module 7
24 hours
 - Properties and characteristic of magnetism and pressure and their measurement
 - Theory of atoms
 - Pressure
 - Vacuum
 - Basic elements
 - Applied math – 6 hours

- Customer Service – Module 8
3 hours
 - Cleanliness
 - Site
 - Personal
 - Industry paperwork
 - Professional appearance
 - Timeliness

- Work ethic
- Communication skills

HVAC Year Two

Total Minimum Hours – 144

- Appliance installation – Module 1
24 hours
 - Installation of fuel source heating appliances
 - Lighting
 - Electrical
 - Clearances
 - Access
 - Reading manufacturers' engineering specifications
 - Water heaters
- Introduction to blueprints and specifications – Module 2
24 hours
 - Introduction of how plans represent finished building
 - Parts of blueprints
 - Symbols
 - Gridlines
 - Submittals
 - Construction basics
 - Blueprints specific to HVAC
- Basic electricity – Module 3
60 hours
 - Power generation and distribution
 - Applied math – 9 hours integrated throughout topic
 - Electrical components
 - DC circuits
 - AC circuits
 - Branch circuits
 - Series and parallel circuits
 - Current flow
 - Electrical safety
 - Engineering notation
 - Motors
 - Metric system conversion
 - Fusing / disconnects
 - Wire sizing and types
 - Meter use
 - Ohm's law
 - Identification of common electrical components
- Indoor air quality – Module 4
15 hours
 - Introduction to indoor air quality, effects on health and comfort
 - Guideline for IAW survey
 - Equipment and methods for testing and achieving good indoor air quality
 - Ventless heaters
 - UV lighting

- Residential Load Calculations – Module 5
21 hours
 - Calculation to determine heat gain / loss

HVAC Year Three

Total Minimum Hours – 144

- Basic controls – Module 1
30 hours
 - Circuit diagram analysis for electrical and microprocessor-based controls
 - Electro-mechanical
 - Schematic fundamentals
 - Control theory
 - Solid state components
- System air flow and duct sizing – Module 2
30 hours
 - Calculate air flow / distribution
 - Calculate load
 - Duct sizing
 - Equipment sizing
- Basic air condition and refrigeration – Module 3
30 hours
 - Heat transfer
 - Refrigeration
 - Pressure / temperature relationship
 - Description of air conditioning components and accessories
 - HVAC specific tools
 - Basic refrigeration cycle
 - Refrigerant recovery
 - Types and characteristics of refrigerants
 - Basic components
 - Equipment efficiencies (relating to new standards)
 - Refrigeration welding
- Introduction to Hydronics – Module 4
6 hours
 - Operating principles
 - Piping systems
 - Preventative maintenance
 - Components
 - System overview
- Basic sheet metal – Module 5
39 hours
 - Sheet metal ducting layout and design
 - Basic duct work fabrication
 - SMACNA standards
 - Introduction to sheet metal process
 - Build fittings
 - Principles of layout
 - Soldering / welding
- Introduction to service – Module 6
9 hours

- System evaluation
 - Superheat
 - Subcool
- Lubrication
- Changing filters
- Cleaning coils
- Cleaning blowers
- Cleaning condensate drains
- Heating and cooling equipment maintenance

HVAC Year Four

Total Minimum Hours – 144

- Introduction to testing and air balance – Module 1
12 hours
 - Air properties, psychrometric principles and charts
 - Air balance tools, instruments and testing methods
- Introduction to HVAC control strategies – Module 2
6 hours
 - Introduction to pneumatic controls
 - Introduction to direct digital controls
- Advanced air conditioning and heat pumps – Module 3
39 hours
 - Heat pumps
 - Commercial cooling components and operation
 - Evaporative coolers
 - DX systems
 - Chillers
- Advanced service – Module 4
24 hours
 - Troubleshooting
 - Instrumentation
 - Air side
 - Hydronic
 - Electrical
 - Combustion
 - Refrigeration
 - Controls
 - Heating and cooling advanced service and repair (from original list)
 - Overview of industry certifications (that apprentices are prepared to take at this time)
- System integration and design (Project format) – Module 5
12 hours
 - Compilation of all HVAC installation instruction (from original list)
 - Design
 - Installation
 - Operation
- Code review – Module 6
42 hours
 - Review of current codes
- Project management – Module 7

9 hours

- Personnel management
- Communication skills
- Materials management
- Resource scheduling
- Cost management awareness
- Inter-trade relations
- Work ethics

HVAC Apprenticeship Curriculum

June 2011

Idaho State Division of Professional Technical Education

HVAC Year One

Total Hours: Minimum = **144**

▪ Basic math – Module 1

Minimum: 12 hours

- Whole numbers
- Addition and subtraction
- Fractions
- Decimals
- Measurement of
 - Lines
 - Area
 - Volume
 - Weights
 - Angles
 - Pressure
 - Vacuum
 - Temperature
- Trade related math

Objectives:

Perform addition, subtraction, multiplication, and division calculations of whole numbers
Perform addition and subtraction calculations of common fractions
Perform multiplication and division calculations of common fractions
Perform addition, subtraction, multiplication, and division calculations of decimal fractions
Perform ratio and proportion calculations
Perform percent, percentage, and discount calculations
Perform angular, length, and converted temperature measure calculations
Perform area calculations
Perform volume calculations
Perform estimates and billing calculations

▪ Basic Safety Hand and Power Tools – Module 2

Minimum: 18 hours

- OSHA 10 hour construction training
- Tools
 - Basic hand and power tools
 - Soldering and brazing

Objectives:

Describe potential excavation site hazards (1hr)
Explain proper personal protective equipment use (1hr)
Describe proper material handling, storage, use, and disposal
Describe ladder, stairway and scaffold hazards and proper use
Describe jobsite electrical hazards and proper lockout/tagout use
Describe proper refrigerant and pressure vessel usage and storage
Identify MSDS properties for refrigerants (1hr)
Describe proper hand and power tool use
Describes soldering and brazing methods

▪ Fuel gas piping and venting – Module 3

Minimum: 60 hours

- Installation of fuel piping according to code and industry standards
- Installation of venting according to code and industry standards
- Installation of combustion air according to code and industry standards
- Installation of make- up air according to code and industry standards
- IFGC requirements

Objectives:

Identify International Code administrative and enforcement rules
Define key terms as applied to the IFGC
Describe the building structural safety requirements for fuel gas equipment installation
Examine fuel gas equipment combustion, ventilation and dilution air requirements
Identify fuel gas equipment location, access and service space requirements
Describe proper appliance condensate disposal and clearance reduction methods
Perform gas pipe sizing exercises
Identify proper gas pipe installation methods
Describe proper gas pipe inspection, testing and purging procedures
Describe chimney and vent types and construction
Examine chimney installation requirements
Examine gas vent installation requirements
Describe gas appliance category I, II, III and IV characteristics
Identify proper gas vent connector installation requirements
Describe category I venting principals
Perform single appliance category I vent sizing exercises
Perform multiple appliance category I vent sizing exercises
Determine capacity penalties for offsets in common vent and vent connectors
Examine specific fuel gas appliance installation requirements
Describe mechanical equipment location, access and service space requirements

▪ Introduction to code – Module 4

Minimum: 6 hours

How to access information related to HVAC industry

- Idaho Code and Administrative rules
- International Mechanical Code

Objectives:

Describe Idaho HVAC code and Administrative Rules requirements
Identify International Mechanical Code general chapter requirements
List International Mechanical Code HVAC specific equipment sections

▪ Energy sources – Module 5

Minimum: 9 hours

- Principles of different fuel sources
- Fuel Oil
- Electric
- Gas / LP
- Hydro / geothermal*
- Wind / solar*

Objectives:

Explain natural, LP gas, and fuel oil combustion characteristics
Describe the development and application of geothermal heat pump systems
Describe the development and application of renewable energy systems

▪ Basic systems overview – Module 6

Minimum: 12 hours

- Warm air furnaces
- Split system air conditioners
- Commercial air conditioning systems
- Forced air duct systems

Objectives:

Describe mid-efficiency and high efficiency furnace operation

Describe the typical configuration of residential split air conditioning systems

List the various types of commercial air conditioning systems and their application

Describe the configuration of four common duct systems

▪ Intro to applied science – Module 7

Minimum: 24 hours

- History of HVAC/R
- Temperature measurement and conversion
- Thermodynamics
- Pressure / vacuum
- Refrigeration cycle and components
- Basic elements of matter
- *Applied math* – 6 hours

Objectives:

Describe a brief modern history of HVAC

Describe energy types and their properties

Perform energy conversion calculations

Perform sensible, latent and total heat calculations

Differentiate between saturated, superheated, and subcooled refrigerant

Explain atmospheric, absolute, and gauge pressure relationship

Convert gauge pressure, absolute pressure and vacuum

Diagram a basic refrigeration cycle identifying pressure, temperature and state of refrigerant

List the type and function of the four major refrigeration components

▪ Customer Service – Module 8

Minimum: 3 hours

- Cleanliness
 - Site
 - Personal
- Professional appearance
- Timeliness
- Work ethic
- Communication skills

Objectives:

Describe good customer communication procedures

HVAC Year Two

Total Hours: Minimum = **144**

▪ Appliance installation – Module 1

Minimum hours: 24

- Oil and fuel gas appliance installation
- Split and packaged air conditioning system installation
- Forced-air system installation
- NEC – electrical code as applied to HVAC installation
- IFGC, IMC, IRC code requirements for HVAC installation

Objectives:

- Explain HVAC electrical branch circuit sizing and installation factors
- Interpret HVAC manufacturer electrical name plate data
- Explain combustion air and venting requirements for Category I, III and IV appliances
- Describe gas appliance installation, start-up and checkout procedures
- Describe oil appliance installation, start-up and checkout procedures
- Describe sheet metal, fiberglass and flex duct installation procedures
- Identify split and packaged air conditioning unit components
- Explain split and packaged air conditioning unit installation guidelines

▪ Introduction to blueprints and specifications – Module 2

Minimum hours: 24

- Site plans, floor plans and elevation drawings
- Mechanical, plumbing and electrical drawings
- Specifications
- Shop drawings and submittals
- Takeoff procedures
- As-built drawings

Objectives:

- Read blueprints and architect plans
- Interpret mechanical, plumbing and electrical drawings
- Interpret specification documents and apply to plans
- Interpret shop drawings and apply to plans and specifications
- Describe a submittal and its derivation, routing and makeup
- Develop cut lists for duct runs from shop drawings
- Interpret as-built modifications on HVAC mechanical plans
- Perform an HVAC equipment and material takeoff

▪ Basic electricity – Module 3

Minimum hours: 60

- Basic electrical theory
- Electrical safety
- Series and parallel circuits
- AC and DC theory
- HVAC electrical control devices
- HVAC electrical load devices
- HVAC electrical schematic diagrams
- Power generation and distribution
- HVAC branch circuits
- Applied math – 9 hours integrated
 - Ohm's Law
 - Engineering notation
- Single-phase, three-phase and ECM Motors
- Single-phase motor starting components

Objectives:

- Examine basic electrical theory
- Explain series circuit characteristics
- Explain parallel circuit characteristics
- Calculate electrical circuit values
- Analyze series/parallel circuits
- Describe electrical meter operation
- Measure electrical circuit values
- Identify electrical symbols

- Draw basic HVAC electrical circuit diagrams
- Interpret basic HVAC schematic diagrams
- Interpret advanced HVAC schematic diagrams
- Explain AC circuit characteristics
- Describe power distribution transformer systems
- Calculate HVAC branch circuit conductor, breaker and disconnect sizes
- Examine basic motor theory
- Draw single phase motor diagrams
- Explain single-phase motor starting relay operation
- Calculate motor capacitor replacement values
- Explain three-phase motor operation
- Explain ECM motor operation

- Indoor air quality – Module 4

Minimum hours: 15

- Pollutants and pollutant pathways
- Prevention, control and remediation strategy
- Tools and testing
- Energy recovery ventilation systems*
- Filters and humidifiers*
- IAQ checklists
- Home energy/IAQ evaluation*

Objectives:

- Describe indoor air quality factors as related to HVAC
- Identify various indoor air quality pollutant and pollutant pathways
- Describe indoor air quality evaluation and measurement tools
- Explain appropriate prevention, control and resolution strategies for IAQ issues
- Determine guidelines for involving professionals in IAQ issues

- Residential load calculation – Module 5

Minimum hours: 21

- Calculations to determine residential heat gain / loss*

Objectives:

- Examine importance of heat load calculation in building design
- Differentiate sensible, latent and total heat gain/loss
- Determine U values and R values for various building construction components
- Calculate Btu gain/loss values using HTM and temperature difference factors
- Determine heating and cooling load temperature difference and daily range values
- Explain the relationship between house orientation and solar heat gain
- Perform building component area and volume calculations from blueprints
- Perform winter/summer infiltration calculations using Manual J procedures
- Perform heat gain calculations using Manual J procedures
- Perform heat loss calculations using Manual J procedures
- Determine sensible, latent and total heat house block and room values

HVAC Year Three

Total Hours: Minimum = **144**

- Basic controls – Module 1

Minimum: 30 hours

- Basic electro-mechanical control devices
- Gas, oil, electric and hydronic heating controls
- Manufacturer wiring diagram analysis

- Troubleshooting electric control devices
- Residential air conditioning control systems
- Commercial and industrial air conditioning control systems
- Electronic control devices
- Electronic control module troubleshooting procedures

Objectives:

- Explain contactor, relay and overload operation
- Explain thermostat, pressure switch and transformer operation
- Describe standing pilot gas burner control systems
- Describe intermittent and direct ignition gas burner control systems
- Examine gas furnace manufacturer wiring diagrams
- Explain oil furnace primary control operation
- Describe electric furnace operating sequence
- Describe hydronic heating system controls
- Perform gas, oil and electric heating control system troubleshooting procedures
- Describe motor circuit troubleshooting procedures
- Examine packaged and split air conditioning systems wiring diagrams
- Identify commercial and industrial air conditioning system control methods
- Describe basic electronic control system troubleshooting procedures

- System air flow and duct sizing – Module 2

Minimum: 30 hours

- Basic principles of air flow
- Air distribution system components
- Air distribution system application and configuration
- Air flow calculation
- Primary equipment selection using Manual J and Manual S*
- Secondary equipment selection using manufacturer tables
- Basic duct system layout from floor plans
- Duct system sizing using Manual D*

Objectives:

- Describe basic air flow characteristics
- Explain duct system pressures
- Calculate duct system air flow
- Determine proper air flow requirements
- Describe air distribution system configurations
- Select primary heating/cooling equipment using Manual J and Manual S data
- Determine air-side component pressure drops from manufacturer tables
- Sketch a residential duct system layout using a home floor plan and Manual D tables
- Complete Manual D effective length, friction rate and duct sizing worksheets
- Perform Manual D duct sizing exercises

- Basic air conditioning and refrigeration – Module 3

Minimum: 30 hours

- Thermodynamics and heat transfer principals
- Refrigeration cycle operating principals
- Pressure / temperature relationship
- Refrigeration system components and operation
- Refrigerant properties and characteristics
- Refrigerant oils – types and application
- Refrigeration system access tools and procedures
- Refrigerant management- EPA Section 608*
- Refrigeration system recovery, evacuation and charging procedures

Objectives:

Explain latent, sensible and total heat differences
 Diagram refrigeration cycle conditions and components
 Explain pressure-enthalpy diagrams
 Examine compressor design and efficiency
 Explain water/air-cooled condenser operation and performance
 Examine metering device design and operation
 Describe evaporator types
 Identify proper refrigerant line sizing and installation practices
 Explain various refrigerant physical and chemical properties
 Explain refrigerant oil properties and application
 Describe proper refrigeration system access procedures
 Differentiate between recovered, recycled and reclaimed refrigerant
 Explain proper refrigerant recovery, evacuation and charging procedures

▪ Introduction to Hydronics – Module 4

Minimum: 6 hours

- Operating principles
- Piping systems
- Preventative maintenance
- Components
- System overview

Objectives:

Identify hydronic piping system types
 Describe hydronic heating system components
 Explain hydronic heating systems drain and fill procedures
 Diagram basic hydronic heating system control circuits

▪ Basic sheet metal – Module 5

▪ Minimum: 39 hours (If performing actual sheet metal layout & fabrication in a shop setting, it will take 39 hours to complete these objectives. If using construction paper to layout and fabricate in a classroom setting, less time is required to complete the objectives.)

- Sheet metal layout and processes
- Parallel line development and fabrication
- Radial line development and fabrication
- Triangulation development and fabrication
- Layout and fabricate various duct fittings

Objectives:

Define basic sheet metal layout terms
 Explain three methods of sheet metal layout development
 Explain parallel line development procedures
 Layout and fabricate the following sheet metal fittings: Pittsburgh seam and square elbow
 Layout and fabricate the following sheet metal fitting: 90 degree elbow and transition
 Explain radial line development procedures
 Layout and fabricate the following sheet metal fitting: symmetrical tapered duct
 Layout and fabricate the following sheet metal fitting: square to square tapered duct
 Explain triangulation development procedures
 Layout and fabricate the following sheet metal fitting: two-way offset transition
 Layout and fabricate the following sheet metal fitting: tapered duct section

▪ Introduction to service – Module 6

Minimum: 9 hours

- Air conditioning mechanical, electrical and refrigeration system analysis
- Gas heating system mechanical, electrical and combustion analysis

- Oil heating system mechanical, electrical and combustion analysis
- Electric heating system mechanical and electrical analysis
- Heating and cooling equipment maintenance procedures*

Objectives:

- Describe air conditioning system problems and prescribe corrections
- Describe gas heating system problems and prescribe corrections
- Describe oil heating system problems and prescribe corrections
- Describe electric heating system problems and prescribe corrections
- List gas, oil and electric heating and air conditioning maintenance procedures

HVAC Year Four

Total Hours: Minimum = **144**

- Introduction to Testing and Balancing – Module 1

Minimum: 12 hours

- Psychrometrics – Fundamentals of the Properties of Air
- Psychrometrics – Calculating the Performance of HVAC Equipment
- Testing and Balancing Tools*
- Basic Air & Water Testing and Balancing Procedures*

Objectives:

- Explain psychrometric properties
- Diagram psychrometric conditions
- Describe air flow and water flow measuring devices
- Explain basic air flow and water flow balancing procedures

- Introduction to HVAC Control Strategies – Module 2

Minimum: 6 hours

- HVAC Systems & Control Basics
- Electric Control Systems
- Pneumatic & DDC Control Systems

Objectives:

- Describe basic HVAC control principals
- Interpret basic HVAC pneumatic control diagrams
- Explain DDC control system basic operation

- Advanced Air Conditioning and Heat Pump Systems – Module 3

Minimum: 39 hours

- Commercial Air Conditioning Systems
- Packaged Unit Air Handling Systems
- Water Chillers
- Cooling Towers
- Basic Heat Pump Theory
- Heat Pump Components
- Heat Pump Charging Procedures
- Heat Pump Electrical Systems
- Heat Pump Defrost Systems
- Heat Pump Service Procedures
- Heat Pump Troubleshooting Procedures
- Water Source Heat Pump Design*
- Water Source Heat Pump Components
- Water Source Heat Pump Troubleshooting Procedures

Objectives:

- Explain commercial fan coil unit operation
- Examine package unit building system configurations
- Describe building chilled water system operation
- Describe induced and forced draft cooling tower operation
- Explain heat pump heating and cooling cycles
- Describe the purpose and operation of various heat pump components
- Prescribe heat pump charging procedures
- Examine heat pump manufacturer electrical wiring diagrams
- Differentiate heat pump time/temperature and demand defrost control systems
- Explain heat pump service checklist readings
- Interpret air source heat pump diagnostics
- Explain geothermal heat pump system applications
- Describe water-to-air and water-to-water heat pump operation
- Interpret water source heat pump diagnostics

▪ Advanced Service – Module 4

Minimum: 24 hours

- Air Conditioning Air Side Troubleshooting Procedures
- Air Conditioning Refrigeration Side Troubleshooting Procedures
- Air Conditioning Service Diagnostics
- Air Conditioning Electrical Schematics & Troubleshooting Procedures
- Gas Furnace Electrical Schematics & Troubleshooting Procedures
- Gas Furnace Service Diagnostics
- Electric Furnace Service Diagnostics
- Oil Furnace Service Diagnostics

Objectives:

- Prescribe air flow troubleshooting procedures
- Explain standard and high efficiency air conditioner operation
- Explain service checklist readings
- Determine variable load air conditioning operating conditions
- Prescribe refrigeration side troubleshooting procedures
- Troubleshoot residential and commercial control systems
- Interpret air conditioning manufacturer electrical wiring diagrams
- Perform interactive air conditioning technician service calls
- Prescribe gas furnace troubleshooting procedures
- Perform interactive gas furnace technician service calls
- Prescribe electric furnace troubleshooting procedures
- Prescribe oil furnace troubleshooting procedures

▪ System Integration and Design (Project format) – Module 5

Minimum: 12 hours

- Residential Comfort and Design Standards*
- Primary Equipment Selection and Sizing*
- Primary Equipment Installation and Operation*
- System Replacement and Retrofit*

Objectives:

- Describe residential comfort and design standards
- Examine residential equipment selection and sizing requirements
- List residential equipment installation and startup procedures
- Prescribe residential equipment retrofit procedures

Code review – Module 6

Minimum: 42 hours

- Review of International Fuel Gas Code (27 hrs)
- Review of International Mechanical Code* (9 hrs)
- Review of National Electrical Code (6 hrs)

Objectives:

Identify International Code administrative and enforcement rules
Describe the building structural safety requirements for fuel gas equipment installation
Examine fuel gas equipment combustion, ventilation and dilution air requirements
Identify fuel gas equipment location, access and service space requirements
Perform gas pipe sizing exercises
Identify proper gas pipe installation methods
Examine chimney and gas vent installation requirements
Perform single and multiple category I vent sizing exercises
Examine specific fuel gas appliance installation requirements
Describe mechanical equipment location, access and service space requirements
Identify proper supply, return and exhaust air system installation methods
Examine specific mechanical equipment installation requirements
Identify proper HVAC equipment branch circuit installation methods
Perform HVAC equipment branch circuit sizing exercises

▪ Project Management – Module 7

Minimum: 9 hours

- Personnel Management
- Communication Skills
- Project Control
- Inter-Trade Relations
- Work Ethics

Objectives:

Perform problem solving and decision making exercises
Perform active communication exercises
Describe proper project control methods

* Denotes curriculum areas that cover energy efficiency, environmental impact and green construction.

Ideally, conducting 3 hour blocks of classroom instruction for each Performance Objective listed is suggested but will equal more than the minimum of 144 hours per year.

IDAHO HEATING, VENTILATION AND AIR CONDITIONING BOARD

Agenda Item No. 04

Schedule 2012 Board Meeting Dates

PRESENTER: Dan Brizee, Chairman

OBJECTIVE: Schedule 2012 Meeting Dates

ACTION: Vote to accept or reject the 2012 meeting dates as addressed under "Background".

BACKGROUND: The following 2012 dates were selected for the Board's consideration:
February 15th – May 16th – July 18th – November 7th

**PROCEDURAL
HISTORY:**

ATTACHMENTS: 2012 Board Meeting Calendar



DBS BOARD MEETINGS - 2012

TENTATIVE

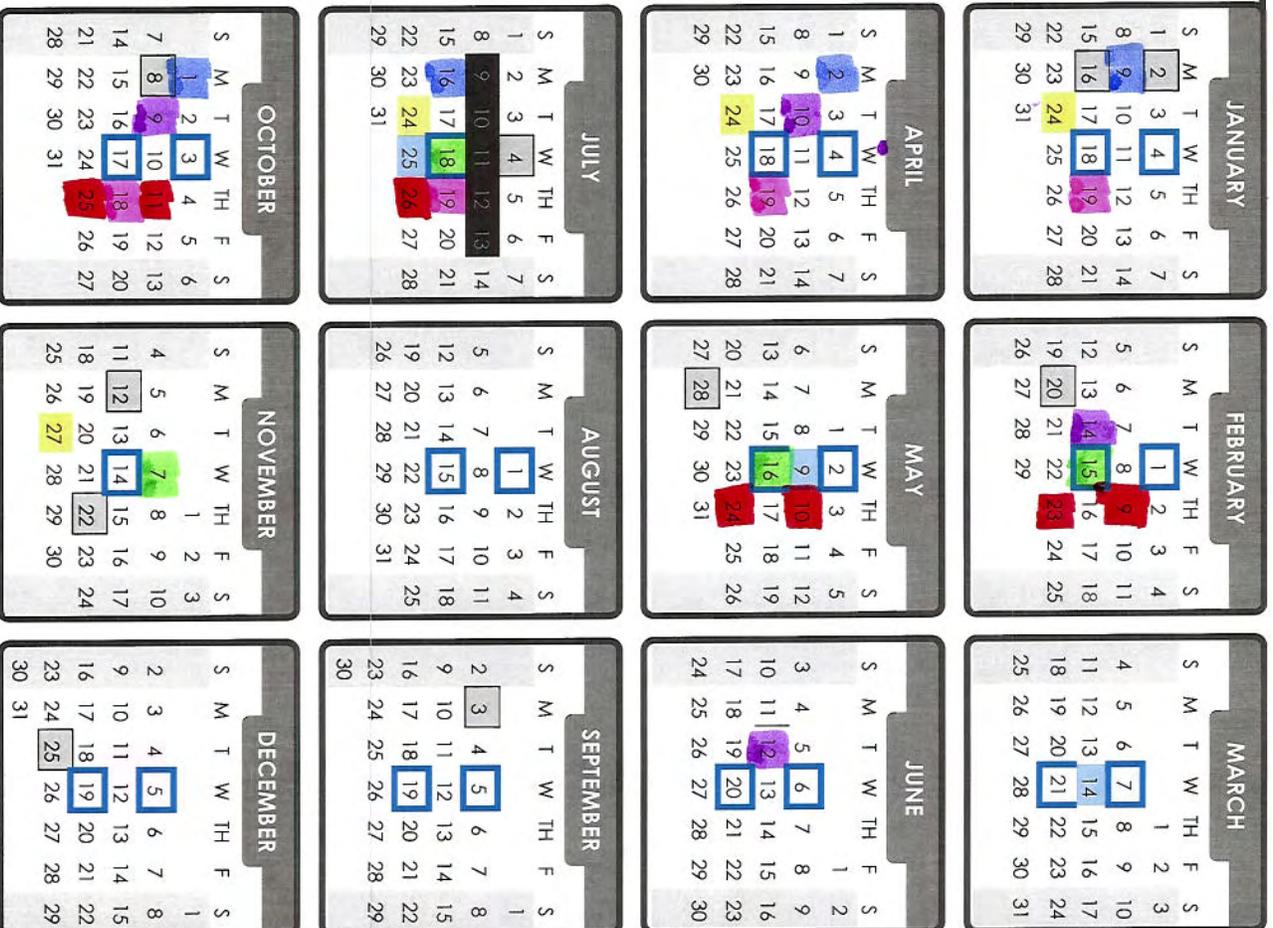
2012

Board Meetings will be held at each
 Division of Building Safety regional office
 either in person or through video conferencing

1090 E WATERTOWER ST SUITE 150 MERIDIAN, ID 836442	1250 IRONWOOD DR SUITE 220 COEUR D'ALENE, ID 83814	2055 GARRETT WAY BLD 2, SUITE 7 POCATELLO, ID 83201
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Idaho Building Code Board	Feb 14 - Apr 10 - Jun 12 - Oct 9
Idaho Electrical Board	Jan 19 - Apr 19 - Jul 19 - Oct 18
Idaho HVAC Board	Feb 15 - May 16 - Jul 18 - Nov 7
Manufactured Housing Board	JAN 24 APR 24 JUL 24 NOV 27
Modular Building Advisory Board	MAR 14 MAY 9 JUL 25
Idaho Plumbing Board	Feb 9 or 23 - May 10 or 24 Jul 26 - Oct 11 or 25
Public Works Contractors Licensing Board	Jan 9 - Apr 2 - Jul 16 - Oct 1

Holidays outlined & highlighted in gray
 Management meetings outlined in blue
 Unavailable dates blacked out



IDAHO HEATING, VENTILATION AND AIR CONDITIONING BOARD

Agenda Item No. 05

Schooling Update

PRESENTER: Irene Vogel, PTE

OBJECTIVE: To update the Board on Professional Technical Education's (PTE) current school activities, enrollments, etc.

ACTION: Informational

BACKGROUND:

ATTACHMENTS: No documentation



IDAHO HEATING, VENTILATION AND AIR CONDITIONING BOARD

Agenda Item No. 06

Continuing Education

PRESENTER: Jerry Peterson

OBJECTIVE: Create a continuing education program for the HVAC trade

ACTION: Informational

BACKGROUND: As addressed at the May 2011 HVAC Board meeting, the Plumbing program recently modeled their continuing education program after the Electrical program. Jerry Peterson would like to see an effort made to have an avenue that would provide consistent, ongoing training, i.e., blending code update, code-related training, and specific factory training, at low to no cost. Chairman Brizee expressed interest in having legislation go before the 2012 legislative session.

At the suggestion of Jerry Peterson, Russ Goyen agreed to inform local building officials and associations that the topic “continuing education” will be addressed at the July 20th HVAC Board meeting, and input would be greatly welcomed.

As stated at the July Board meeting, the Division will begin the process of outlining HVAC contractor continuing education requirements, i.e., how many hours per year, topics, places to obtain qualified education, etc. Chris Miller, CWI, requested to be included in the process; bringing forth several suggestions for courses. Ted Sermon asked Jim Conan, Vice President of Eastern Idaho HVAC Contractors Association, to contact Mr. Peterson with ideas before the October Board meeting.

ATTACHMENTS: No documentation



IDAHO HEATING, VENTILATION AND AIR CONDITIONING BOARD

Agenda Item 07 Time Frame-Code Adoption Process, Journeyman Status, and Continuing Education

PRESENTER: Jerry Peterson

OBJECTIVE: Determine the length of time needed to get the above items to/through legislature to become effective and enforceable.

ACTION: Informational

BACKGROUND:

**PROCEDURAL
HISTORY:**

ATTACHMENTS: No documentation



IDAHO HEATING, VENTILATION AND AIR CONDITIONING BOARD

Agenda Item No. 08

HVAC Program Manager Report

PRESENTER: Jerry Peterson

OBJECTIVE: Report the recent activities of the HVAC Program

ACTION: Informational

BACKGROUND: This topic is addressed at all regularly scheduled Idaho HVAC Board meetings.

Additional topics for discussion:

- Energy Code Requirements and Implementation Dates
-

**PROCEDURAL
HISTORY:**

ATTACHMENTS: No documentation



IDAHO HEATING, VENTILATION AND AIR CONDITIONING BOARD

Agenda Item No. 09

Operational Report

PRESENTER: Steve Keys

OBJECTIVE: Provide an overview of the daily operations of the HVAC Program and DBS

ACTION: Informational

BACKGROUND: This topic is addressed at all regularly scheduled Idaho HVAC Board meetings.

**PROCEDURAL
HISTORY:**

ATTACHMENTS: No documentation



IDAHO HEATING, VENTILATION AND AIR CONDITIONING BOARD

Agenda Item No. 10a

Financial Report

PRESENTER: C. Kelly Pearce and Kirk Weiskircher

OBJECTIVE: Review the Idaho Heating, Ventilation and Air Conditioning Board's Financial Report

ACTION: Informational

BACKGROUND: This topic is addressed at all regularly scheduled Idaho HVAC Board meetings.

**PROCEDURAL
HISTORY:**

ATTACHMENTS: Financial Report





Division of Building Safety

IDAHO HVAC BOARD FUND

Fiscal Year 2012 Financial Statements

As of 08/31/2011

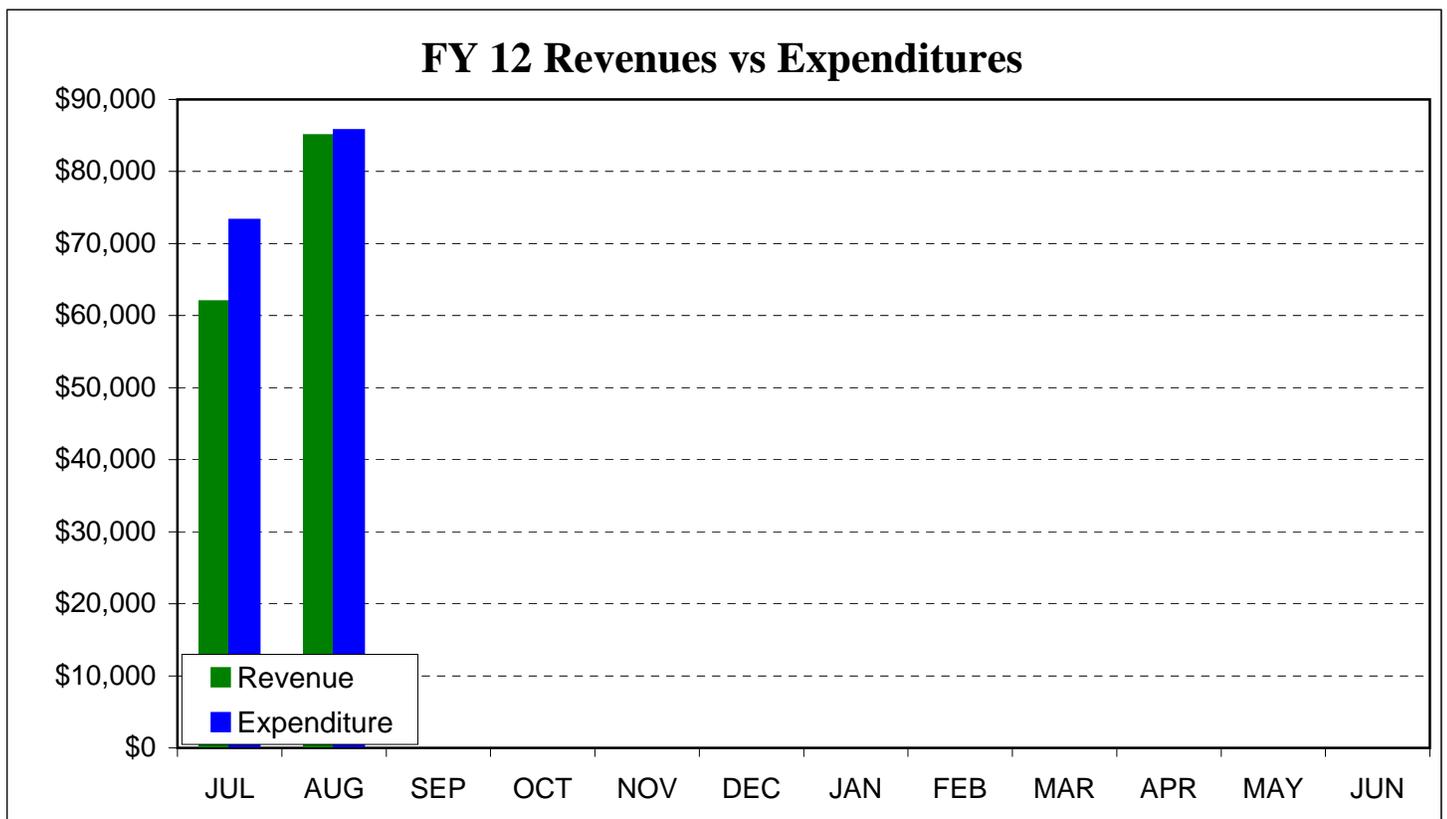
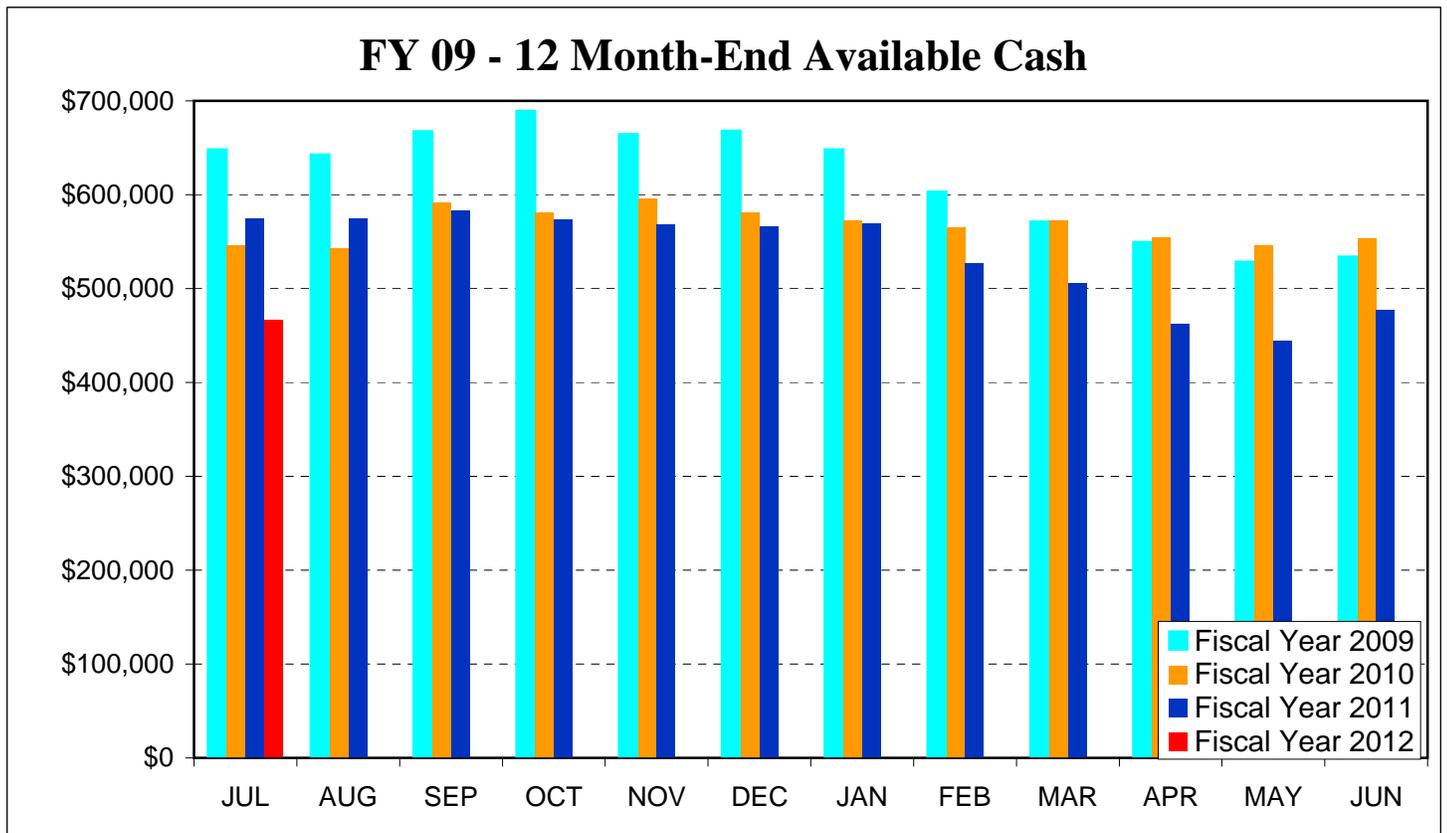
Statement of Revenues and Expenditures

Class	Budget	Fiscal Year To Date	YTD as a % of Budget *	Remaining Budget	Projected for Remainder of Year	Projected Year End Totals	Projected Total as a % of Budget
Revenues:	850,000	146,946	17.3%	703,054	685,000	831,946	97.9%
Expenditures							
Personnel:	710,000	108,783	15.3%	601,217	600,100	708,883	99.8%
Operating:	190,000	50,179	26.4%	139,821	140,000	190,179	100.1%
Capital:	31,000	-	0.0%	31,000	31,000	31,000	100.0%
Total Expenditures	931,000	158,962	17.1%	772,038	771,100	930,062	99.9%
Net for FY 2012	(81,000)	(12,016)			(86,100)	(98,116)	

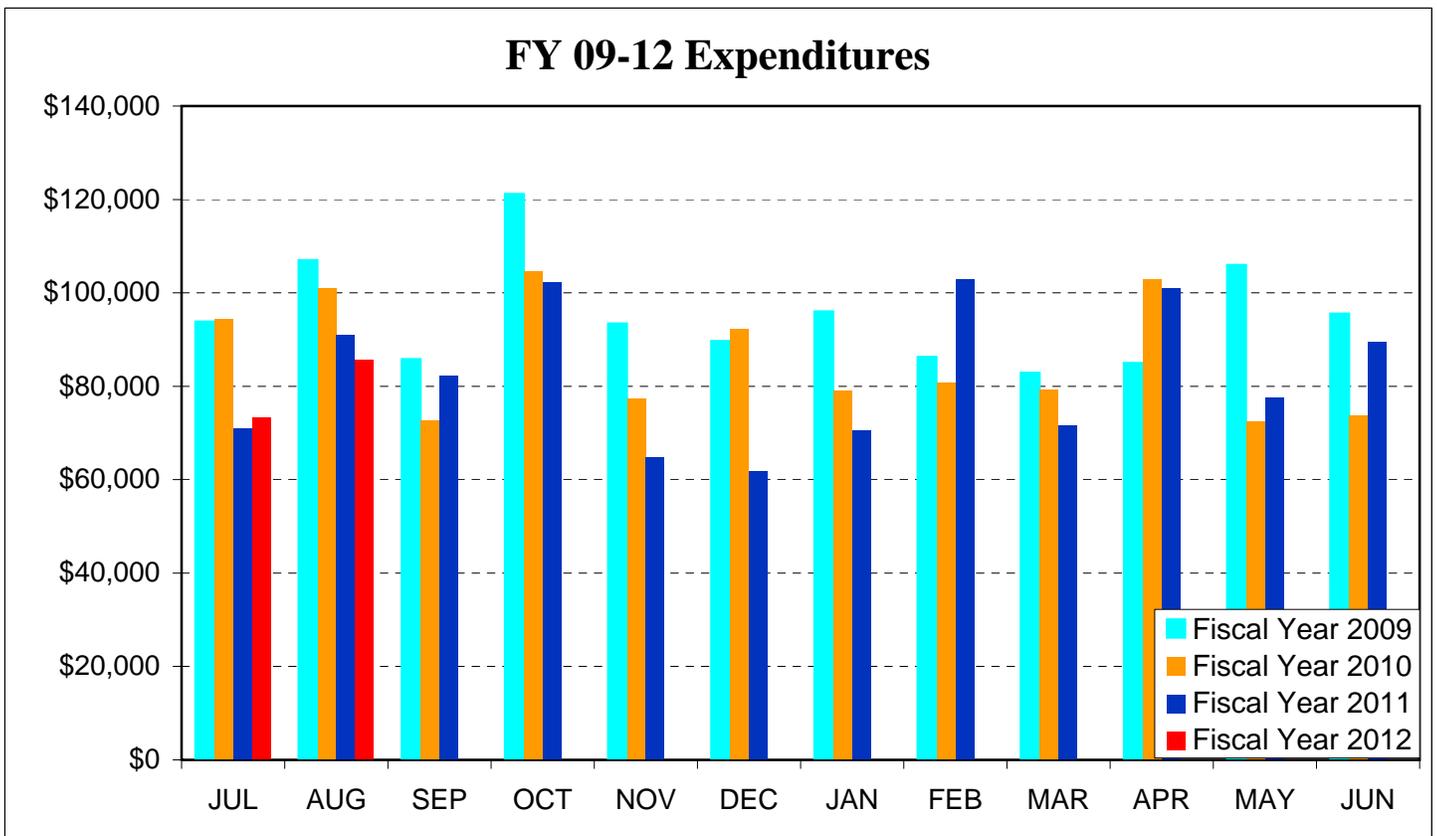
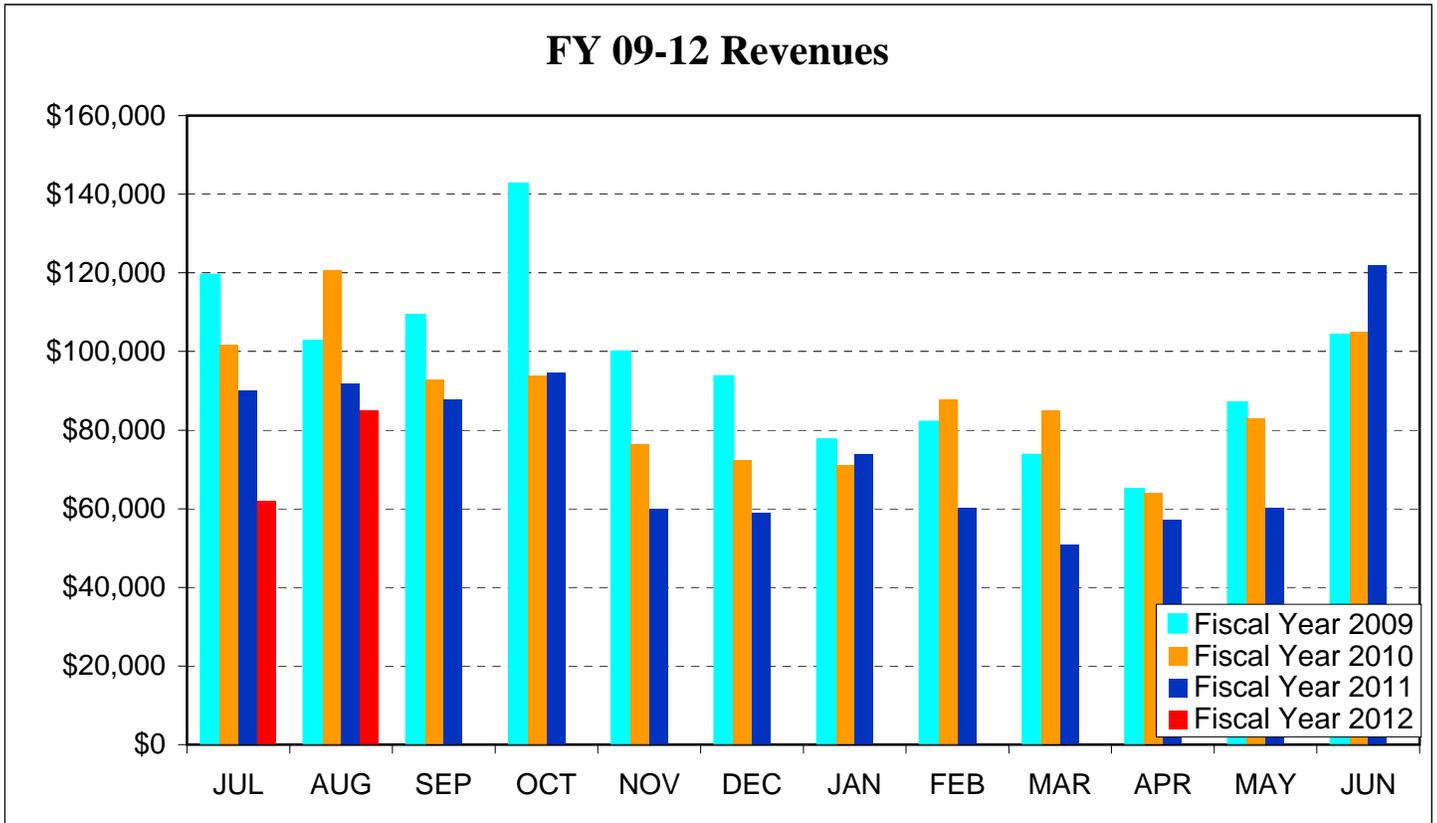
Statement of Cash Balance

Beginning Cash Available	Revenues	Expenditures and Encumbrances	Other Changes in Cash	Available Cash	Projected Change in Cash for Remainder of Year	Projected Year End Available Cash
475,098	146,946	(158,962)	(4,760)	458,322	(86,100)	372,222

IDAHO HVAC BOARD FUND



IDAHO HVAC BOARD FUND



IDAHO HEATING, VENTILATION AND AIR CONDITIONING BOARD

Agenda Item No. 10b

Administrator

PRESENTER: C. Kelly Pearce

OBJECTIVE: Provide an overview of the Division's current activities

ACTION: Informational

BACKGROUND: This topic is addressed at all regularly scheduled Idaho HVAC Board meetings.

**PROCEDURAL
HISTORY:**

ATTACHMENTS: No documentation

