



**TEXAS DEPARTMENT OF  
HOUSING & COMMUNITY AFFAIRS**  
*Building Homes. Strengthening Communities.*

Training Department  
Energy Assistance Section

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## State Guide

# Weatherization Assistant- NEAT

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## LEARNING OBJECTIVES

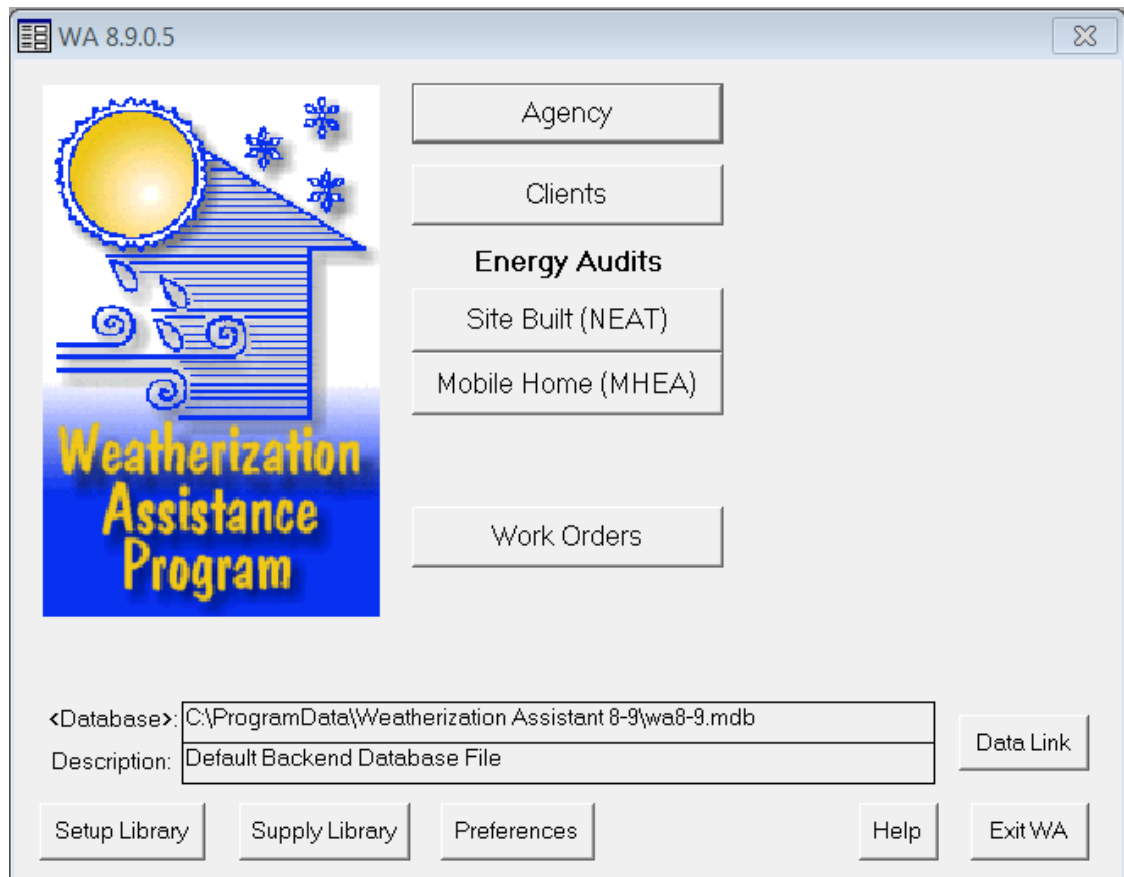
In this section you will learn:

- ▶ What is in Weatherization Assistant
- ▶ How to navigate the software
- ▶ Best Practices
- ▶ Modeling for specific entries
- ▶ Evaluating an audit
- ▶ Setting up and maintaining the Libraries
- ▶ Creating Work Orders

## NAVIGATION AND THE MAIN MENU

### *Starting the Weatherization Assistant*

Place your mouse on the icon and double click to access the WAP Assistant. The main Menu will appear.



NOTES:

## AGENCY SECTION

Click on “Agency” and the Agency Menu will appear.

Agency Name: TDHCA State: TX

Agency Information: Contacts (2) Cost Centers (0) Surveys (0) Clients (6) Audits (8) Work Orders (5) Libraries (3) Status History

Agency Name: TDHCA Address: \_\_\_\_\_  
 State: TX City: \_\_\_\_\_  
 Agency Type: Other State: \_\_\_\_\_  
 Federal Grant #: \_\_\_\_\_ Zip Code: \_\_\_\_\_  
 EIN: \_\_\_\_\_ Phone Number: \_\_\_\_\_  
 Other ID Num: \_\_\_\_\_ Fax Number: \_\_\_\_\_  
 Comment: \_\_\_\_\_ EMail: \_\_\_\_\_  
 Web Page URL: \_\_\_\_\_

Default agency to associate with new Client, Work Order, Library, and Supply records. Checking this will automatically UNcheck this box for all other Agency records (ie. Only one Agency record can be the Default record).

AGENCY: by Name [dropdown] | 1 of 2 | New Copy Del

REPORT: Select Report [dropdown] | Preview Print Snapshot File

Select Clients: 0 selected

Enter your agency name and Texas. These are the only required fields.

Click on the tab marked “Contacts.” The following information will appear.

NOTES:

## Contacts

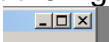
When you first open this page you will see “Auditor, Your” and “Administrator, Your” as two contacts that have been already entered. These should be deleted.

Enter your name and a user name, by hitting the “New” button.

Check Auditor in the boxes below the contact name.

Also, enter your company name. You can use an acronym rather than the full spelling.

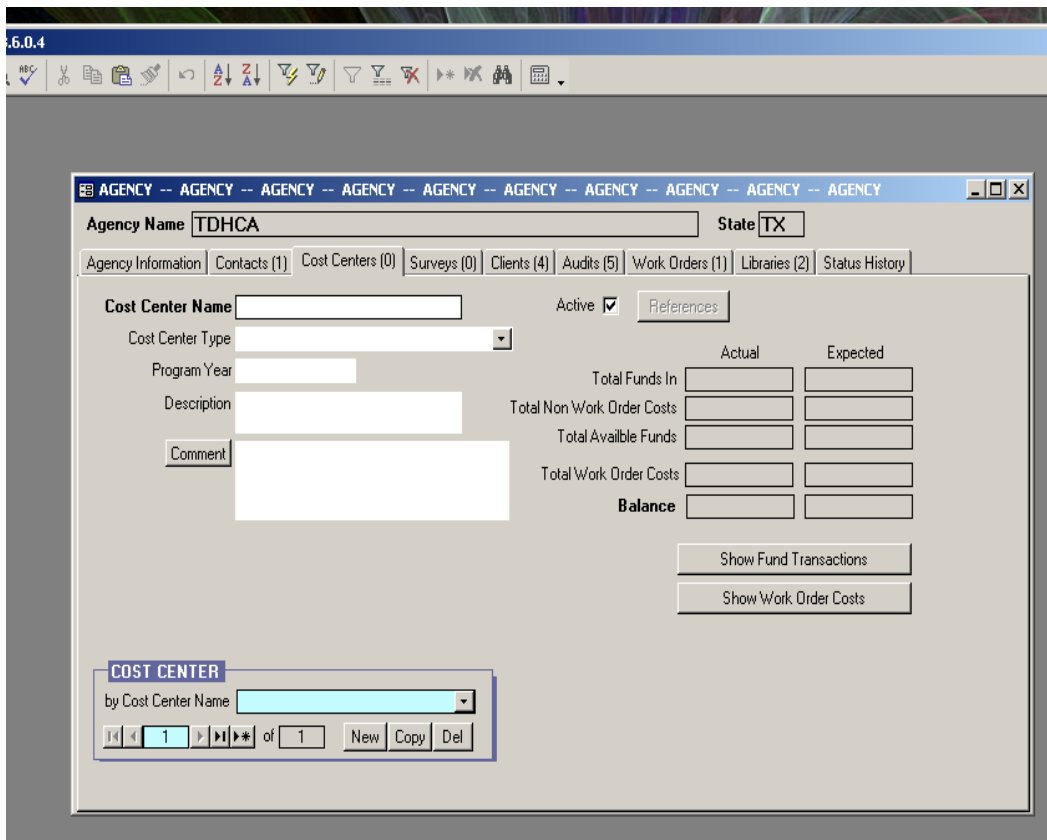
You may add contractors/crews if desired (but not necessary).

No other tabs are required to be filled out. You may now close out the Agency menu by clicking the x button at the top right hand of the page. 

**Any box that has a bold outline** indicates a field that **must be completed** in order to move to the next screen.

NOTES:

### COST CENTER



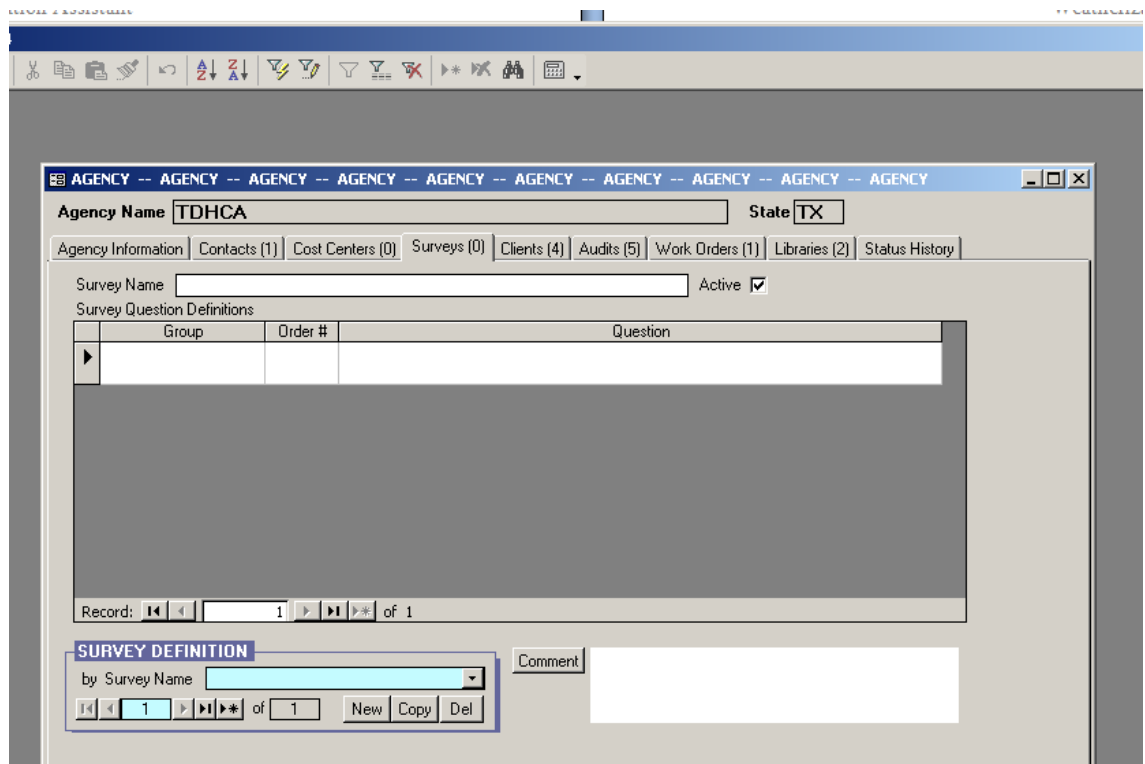
The Cost Center Tab can be used to track expenses for the weatherization grant your agency may have.

You may enter the contract data in the fields found at the right hand of this screen.

Should a Sub-recipient have more than one type of WAP funding (ARRA, Regular DOE, or LIHEAP) simply click on the “New” button found at the bottom of page to add a second or third funding source.

This information is not necessary to complete an Energy Audit.

## SURVEYS

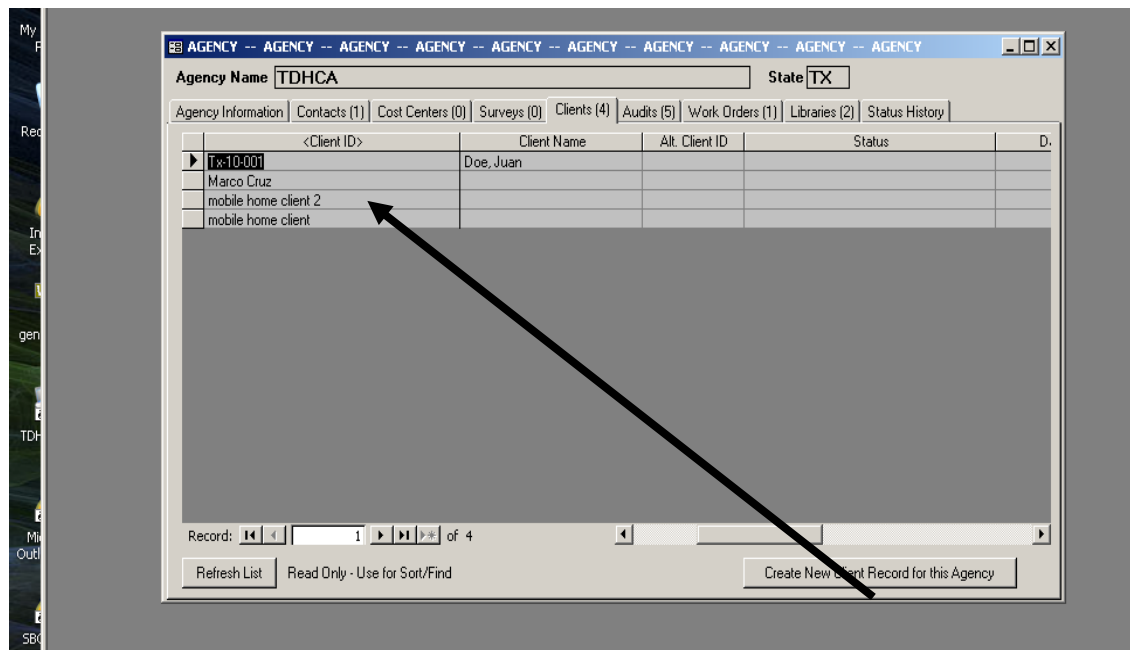


Survey information is not necessary to complete an Energy Audit. This information may be useful in gathering information from the clients.

NOTES:



## CLIENTS

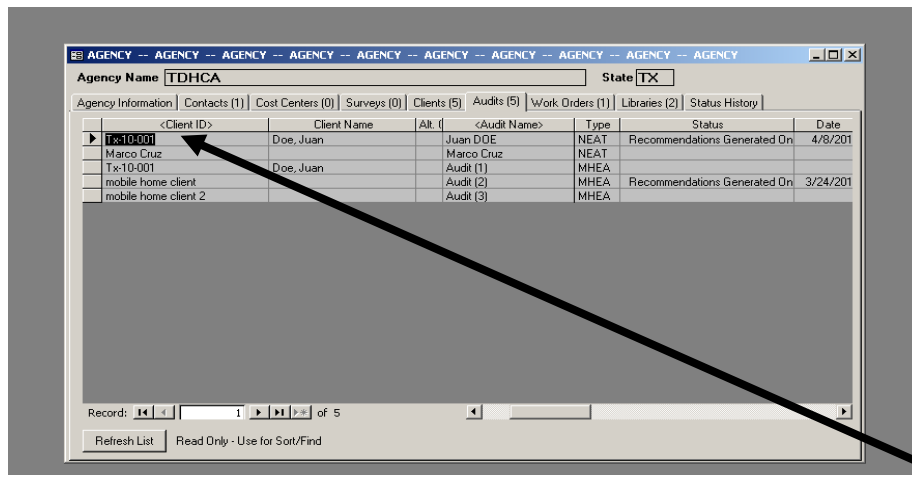


This page displays existing client records.

To access an existing individual client record, place the mouse on the client record and double click.

Although you may create a new client record at this level, it is preferable to create a new client record under the client menu found on the main page. The creation of a new client record will be covered later in this manual.

## AUDITS



<Client ID>	Client Name	Alt. (	<Audit Name>	Type	Status	Date
Tx-10-001	Doe, Juan		Juan DOE	NEAT	Recommendations Generated On	4/8/2011
Marco Cruz			Marco Cruz	NEAT		
Tx-10-001	Doe, Juan		Audit (1)	MHEA	Recommendations Generated On	3/24/2011
mobile home client			Audit (2)	MHEA		
mobile home client 2			Audit (3)	MHEA		

Record: 1 of 5

Refresh List Read Only - Use for Sort/Find

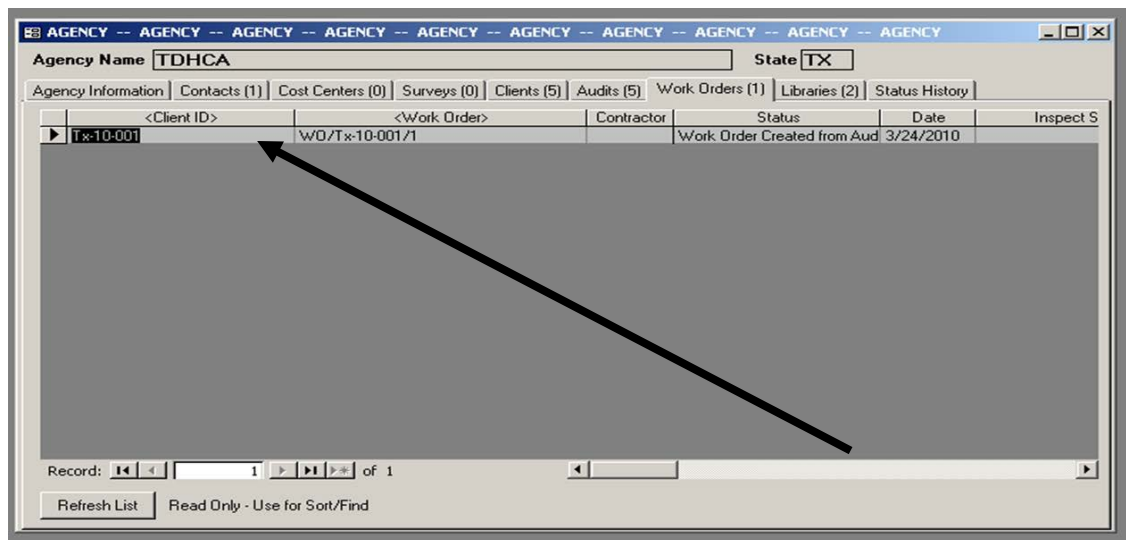
This page provides a list of Energy Audits that are currently in the data base.

To access client information, place the mouse on the Client ID and double click.

To access an audit, return to the home page and click on the NEAT or MHEA button.

### NOTES:

## WORK ORDERS



This page displays work orders that have been created.

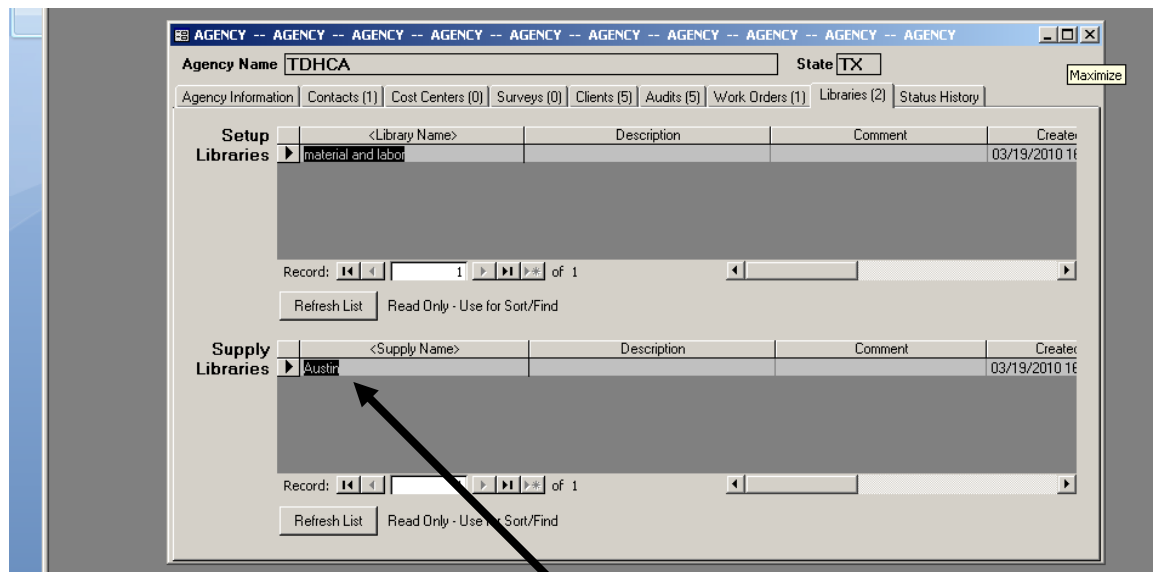
To access an existing work order, place the mouse on the work order and double click.

Although you may access the work orders from this page, it is preferable to access the work orders under Work Orders found on the Main Page.

**The completion of work orders will be covered later in this manual.**

NOTES:

## LIBRARIES



This page provides a list of the Setup and Supply Libraries that are currently in the data base.

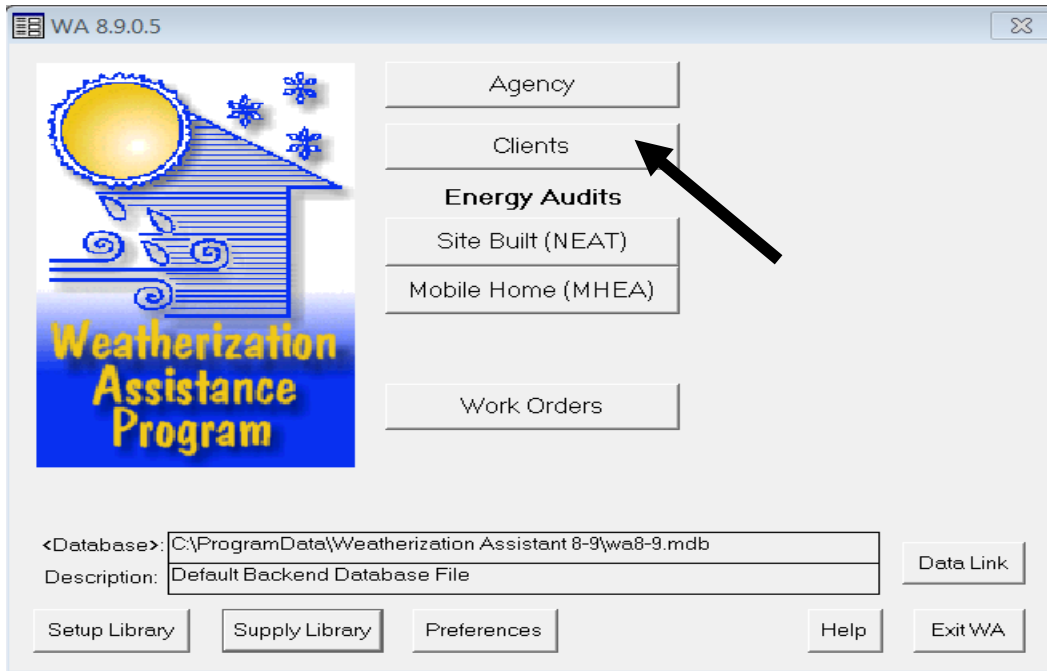
Libraries can be accessed from this page; however it is preferable to access the libraries under the “Set up” and “Supply” Library buttons found on the Main Page.

To access existing libraries, place the mouse on the library name and double click.

Libraries must be setup in order to run an audit.

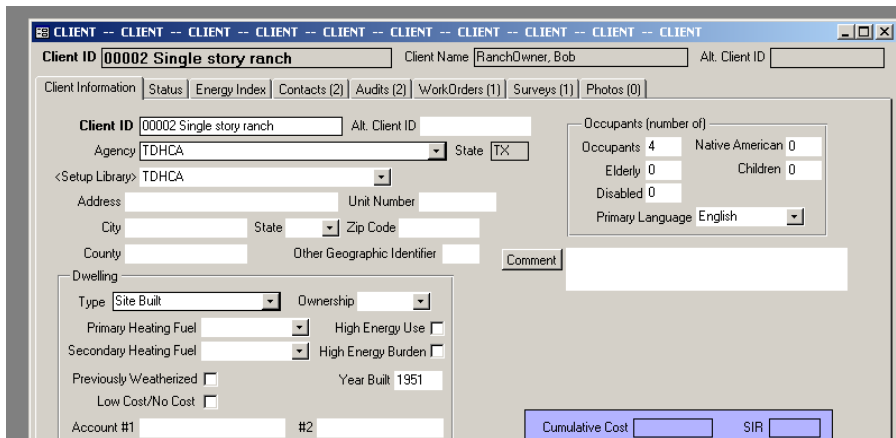
**Creating Libraries will be covered later in this course.**

# CLIENT SECTION



Click on the “Client” button

The “Client Information” page will be displayed.



**Enter a client ID number/Enter the Alternative Client ID.**

- The **Client ID** has three parts:
  - 1) The two digit current year (i.e. 10 for 2010).
  - 2) A two-letter abbreviation of the County where the unit is located (i.e. TR for Travis County).
  - 3) A four-digit number assigned by your agency. It can be any number not to exceed four digits. (i.e. 0001, 0002, 0003 etc.)
- **Alternate Client ID Name:**

The Name may be a premise number or the apartment complex/building name that your agency uses to identify the audit. Examples of audit name: Sunnyvale Suites.
- Enter address and county information
- Dwelling Unit Type:

Select the dwelling type of the unit to be modeled by using the drop down box.

Enter the remaining information using the client application. The only two required fields are:

- Type
- # of Occupants

Typically the “Status” and “Energy Index” pages are not used by Auditors.

## Contacts

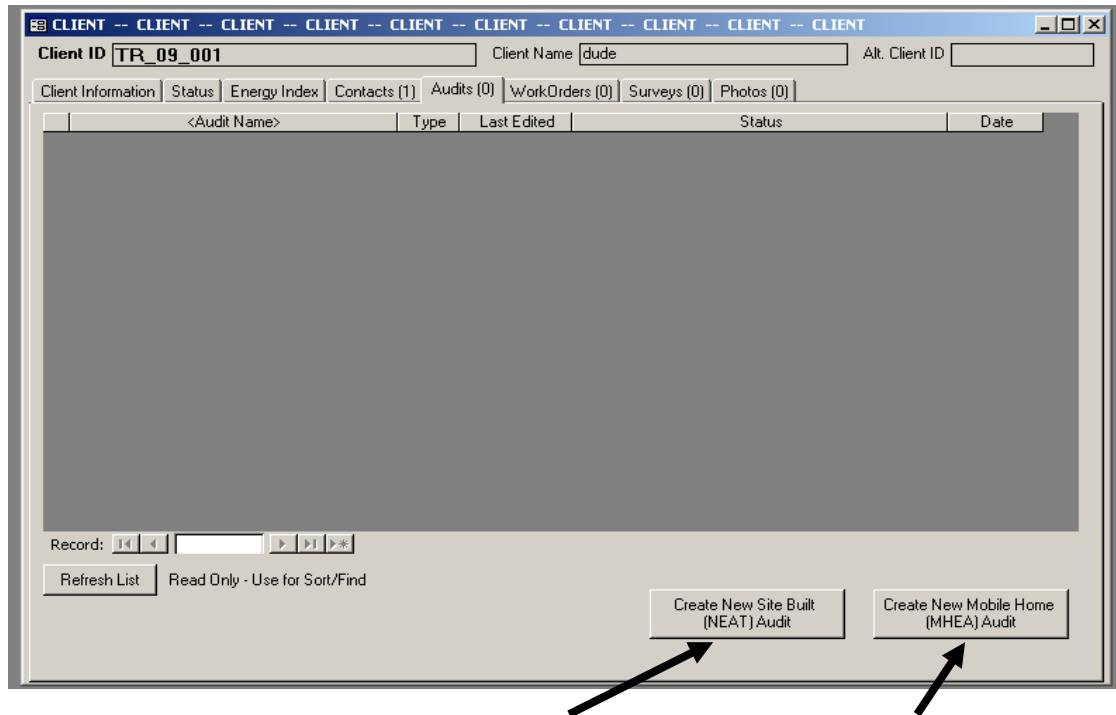
Click on the tab marked “Contacts.” The following information will appear.

Enter the client’s name and information. Then check the Primary Applicant checkbox, as the client is the person who applied for weatherization. Make sure the contact type field is the “Applicant / Person of Record.”

Click on “Copy Client Address” to quickly transfer the information from the previous “Client Information” tab enter other information as applicable.

If the client has a second contact number or person, you must click “New” button and enter the information of the secondary contact person. For any secondary contact person, do NOT check the Primary Applicant check box. Use the appropriate contact type from the drop down box.

## AUDITS - CREATE NEW SITE BUILT (NEAT) AUDIT



### START AUDITS FROM THIS PAGE:

In order to create new Audit, click:

- Create New Site Built (NEAT) Audit
- Create New Mobile Home (MHEA) Audit

When you begin the audit from one of these buttons, all client information is attached to the audit and appears on the audit screens. This is why it is NOT recommended to start an audit from the main menu page.

**WARNING: Starting a new audit from the main menu page may put you at risk of over writing a previous audit.**



## ENERGY AUDIT SECTION

Click **Site Built** (we will cover Mobile Home Audits later).

The screenshot displays the 'NEAT AUDIT' software interface. The main window title is 'NEAT AUDIT -- NEAT AUDIT -- NEAT AUDIT -- NEAT AUDIT -- NEAT AUDIT -- NEAT AUDIT -- NEAT AUDIT'. The 'Audit Information' tab is active, showing the following fields:

- Audit Name:** Audit (8)
- Client ID:** TR\_09\_001
- Client Name:** dude
- Alt. Client ID:** (empty)
- Conditioned Stories:** (empty)
- Floor Area (sq ft):** (empty)
- Agency Name:** TDHCA
- Agency State:** TX
- Auditor:** (empty)
- Libraries and Other Options:**
  - <Setup Library>:** TDHCA
  - <Fuel Cost Library>:** (empty)
  - <Supply Library>:** TDHCA
  - Weather File:** (empty)
  - Billing Adjustment:**
  - Impute Cooling:**
- Economics Summary:**
  - Measures Recommended:** 0
  - Total Initial Cost (\$):** (empty)
  - Cumulative SIR:** (empty)
- AUDIT:**
  - by Audit Name:** (empty)
  - by Client ID:** (empty)
  - by Client Name:** (empty)
  - by Alternate Client ID:** (empty)
- REPORT:**
  - Select Report:** Recommended Measures
  - Buttons:** Preview, Print, Snapshot File

Provide the information requested, keeping in mind that the fields surrounded in bold black borders are required fields.

- **Audit Name:** You may want to use the street address; in this way you will be able to search for a client by: address, name, audit number (Client ID) or Alternative Client ID.
- **Setup Library:** Using the drop down box select the setup library you wish to use on this dwelling unit.
- **Fuel cost Library:** Using the drop down box select the cost the client is paying.

In order to determine the cost a client has paid over the past year, obtain the clients 12 months billing history for gas and electric.

Use the following formulas to determine the cost per kWh and mcf.

Total electricity amount paid for the year divided by total kWh used

$\text{total \$} / \text{total kWh} = \text{cost per kWh}$

Or

Total natural gas amount paid during the last 12 months divided by total ccf used in the last 12 months.

$\text{total \$} / \text{total ccf used} \times 10 = \text{mcf}$

- **Supply Library:**

Using the drop down box select the supply library you wish to use on this dwelling unit.

- **Weather File:**

Using the drop down box, select the city that is closest to the unit you will be modeling.

The “Status” tab is generally not used by Auditors.

The next sections are fairly data entry intensive and will require the specific information about the house, structure, windows, doors, and measurements as taken from the Auditor out in the field.

## Shell

Click on “Shell” to begin entering your wall codes.

**DO NOT Use These Buttons to Enter Doors and Windows. Use the Doors and Windows Tabs At the Top of the Page**

## Walls

Use Wall Codes that make sense to you and your agency. For example, some agencies label the North wall N. Others are N1, or North.

If you select either Balloon Frame or Platform Frame, then a Stud Size field will appear that you must fill out.

Choose the Exterior Type from the drop down box (for example Wood). Next is “Exposed To” and select from the drop down box. Use the F1 key for descriptions of each.

Remember, if at any time you become confused about what to put in a particular field, press the **F1 key** for the **HELP** screen.

Enter the Gross Area in square feet. Typically, measures go in the order they are entered. For example, the first wall you enter will have a measure number of 1 and so on. If there is existing insulation, please enter the type and R-Value.

If you intend to add insulation, specify the type. Use comments to add additional detail about a particular wall or to further discuss the insulation or anything unique about this particular set of data.

Use the “New” or “Copy” button to enter additional Walls.



You must enter the square footage of each wall.

### **Mini-Math Refresher: Gross Area Field**

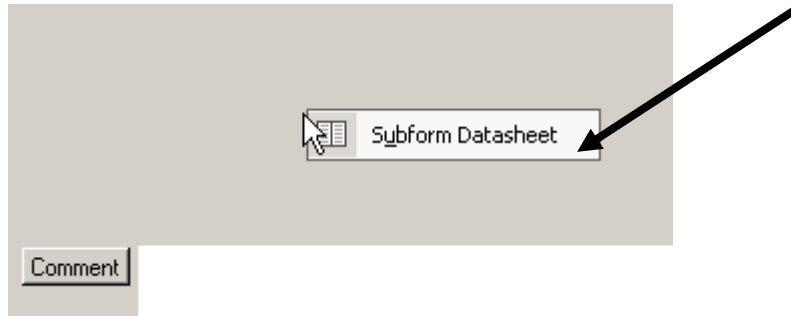
Square footage is Length X Width.

A 12 foot wall with 8 feet high=  $12 \times 8 = 96$  sq. ft.

**General Policy:** Insulate wall cavities to R-13, or maximum structurally allowable.

**NEAT Modeling Guidance:** Enter **all** sidewalls and their specifics into the audit. **DO NOT** skip walls that are already insulated.

When finished with all wall entries, place your mouse in the gray area above the comments box and right mouse click. Click on the button:



This will give you a spreadsheet of all walls entered. Check for accuracy. You can make changes from this format. Simply click on the box and make the corrections.

Walls (8)   Windows (11)   Doors (4)   Unfinished Attics (1)   Finished Attics (0)   Foundations (1)										
Code	Wall Type	Stud Size	Exterior	Exposed To	Orientation	(sq ft)	Measure #	Exist Insl.	Exist R	
▶ W1	Platform Fram	2 x 4	Brick o	Outside {/	North	336	1	Fiberglass Batt	13	
W2	Platform Fram	2 x 4	Brick o	Buffered {	North		1	Fiberglass Batt	13	
W3	Platform Fram	2 x 4	Brick o	Buffered {	South		1	Fiberglass Batt	13	
W4	Platform Fram	2 x 4	Brick o	Buffered {	East		1	Fiberglass Batt	13	
W5	Platform Fram	2 x 4	Brick o	Outside {/	West		1	Fiberglass Batt	13	
W6	Platform Fram	2 x 4	Brick o	Outside {/	East	80	1	Fiberglass Batt	13	
W7	Platform Fram	2 x 4	Brick o	Outside {/	South	144	1	Fiberglass Batt	13	
W8	Platform Fram	2 x 4	Brick o	Outside {/	East	208	1	Fiberglass Batt	13	
*		2 x 4								

Measure #	Exist Insl.	Exist R	Add Insl	Add \$	<Comment>
1	Fiberglass Batt	13	None		
1	Fiberglass Batt	13	None		
1	Fiberglass Batt	13	None		
1	Fiberglass Batt	13	None		
1	Fiberglass Batt	13	None		
1	Fiberglass Batt	13	None		
1	Fiberglass Batt	13	None		
1	Fiberglass Batt	13	None		

To return to the form view, right mouse click again and click subform datasheet box again.

## Windows

Click on “Windows” to begin entering your Window codes.

The screenshot shows the NEAT AUDIT software interface. At the top, there are tabs for 'Walls (0)', 'Windows (0)', 'Doors (0)', 'Unfinished Attics (0)', 'Finished Attics (0)', and 'Foundations (0)'. The 'Windows (0)' tab is active. Below the tabs, there are several input fields: 'Window Code' (with a red arrow pointing to it), 'Window Type', 'Frame Type', 'Glazing Type', 'Interior Shading', 'Exterior Shading (%)', and 'Leakiness'. There are also sections for 'Average Size' (Width and Height in inches) and 'Number on this Wall' (Wall Code and Number). At the bottom, there is a 'WINDOW' list with a table showing 1 window, and a 'Comment' field. On the right side, there is a 'Run Audit' button and a 'Last Run On' field.

Use Window Codes that make sense to you and your agency. For example, some agencies label the windows in numerical order all around the perimeter of the house. Others label the windows based on the orientation of the wall, for example 1WN = the 1<sup>st</sup> window on the north wall.

Use the drop down boxes to select Window, Frame, and Glazing Type (single pane, double pane, etc.) and interior shading devices (drapes, etc.).

For Exterior Shading percent, you might consider the following rule of thumb:

Enter the approximate percentage of window area frequently shaded by eaves (typically 25%), porches (typically 100%), or other physical exterior barriers, such as trees, may require a different percentage. If the window, for example, is shaded half the day, enter 50%. Do not include the percent (%) sign.

If at any time you become confused about what to put in a particular field, press the F1 key for the HELP screen.

Enter the actual size measured for width and height of window. Decide which wall the window is on and how many identical windows are on this same wall. It is preferred to enter each window individually, since it is rare that each one is identical in size, leakiness, or condition, etc.

It is recommended that you select “**Evaluate All**” under Retrofit Options to allow the Audit Program to select the best recommended measure.

Use the “New” or “Copy” button to enter additional Windows. Use “Copy” for similar windows.



### Mini-Math Refresher: Windows Field

Windows must be entered in inches.

To record total inches, all foot measurements need to be converted to inches. One foot equals 12 inches.

Example: Window is: 2'6" x 4'8"

*Width conversion:*  $2 \times 12 = 24 + 6 = 30$  inches

*Height conversion:*  $4 \times 12 = 48 + 8 = 56$  inches

**General Policy:** All window replacement must be modeled with the NEAT Audit. Replace a window as an energy conservation measure if the measure meets a minimum 1.0 SIR. As specified in the TDHCA best practice found on the TDHCA website, Auditors must seek TDHCA approval prior to installing windows as a repair measure. For specifics on how to handle window replacements in NEAT refer to the window repair and replacement best practices on the [TDHCA website](http://www.tdhca.state.tx.us/community-affairs/wap/docs/WAP-BP-Windows.pdf). (<http://www.tdhca.state.tx.us/community-affairs/wap/docs/WAP-BP-Windows.pdf>)

### NEAT Modeling Guidance: To model the window

- 1) As an **energy conservation measure** use the "Shell, Windows" tab. select "Retrofit Option", "**Evaluate All**".
- 2) As a **window repair measure**, model windows using the "**Itemized Cost**": tab: Check "**Include in SIR**" box. Savings must be entered as 0. The cumulative building SIR must be a minimum of 1.0 in order to complete the Repair measures. Auditors gather photos and seek TDHCA approval prior to installing windows as a repair measure.
- 3) Windows entered as a repair measure must not have any savings assigned to the measure.
- 4) To model a **broken window pane or sash lock**, model the pane by **adding the cost** of the pane or sash lock into the total cost to be entered **in the Duct/Infiltration** tab.

### Doors

Click on "Doors" to begin entering your Door codes.

The screenshot shows the NEAT software interface with the 'Doors' tab selected. The 'Door Code' field is highlighted with a red box and an arrow pointing to it from the text above. The interface includes various input fields for door details, a 'Run Audit' button, and a list of doors at the bottom.

Navigation tabs: Audit Information | Status | Shell | Heating (1) | Cooling (1) | Ducts/Infiltration | Baseloads | Health & Safety | Itemized Costs (4) | Utility Bills (0) | Photos (0) | Measures (12)

Sub-tabs: Walls (16) | Windows (12) | **Doors (3)** | Unfinished Attics (1) | Finished Attics (0) | Foundations (1)

Form fields:

- Door Code:
- Door Type:
- Area (sq ft):
- Storm Door Condition:
- Leakiness:
- Replacement Door Required:
- Additional Cost (\$/door):
- Optional Dimensions: Width (in)  Height (in)
- Number on this Wall: Wall Code  Number

Buttons: Run Audit, Last Run On 12/4/2014 at 11:36 AM

DOOR list:

by Door Code	Comment
1	

Navigation: 14 | < 1 > | of 3 | New Copy Del



Use Door Codes that make sense to you and your agency. For example, some agencies label the doors as 1, 2, 3, etc. Others label the doors based on the orientation of the wall, for example 1DN = the 1<sup>st</sup> door on the north wall.

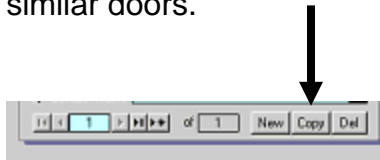
Use the drop down boxes to select the Door Type and Storm Door Type (or none if applicable). In this section, indicate the Area of the door in square feet.

Select the Wall code to indicate which wall this door is located on and the number of doors on this same wall.

If at any time you become confused about what to put in a particular field, press the F1 key for the HELP screen.

Use comments to further describe the door, if necessary.

Use the “New” or “Copy” button to enter additional Doors. Use “Copy” to enter similar doors.



### Mini-Math Refresher: Doors Field

Under “Optional Dimensions” doors must be entered in inches; verses square feet in the “Area” box. All that is required is the Area.

Example: Door is 3-0, 6-8

*Width conversion:*  $3 \times 12 = 36$  inches

*Height conversion:*  $6 \times 12 = 72 + 8 = 80$  inches

To convert inches to square feet; simply multiply the width” X length” and divide by 144”= square feet.

Using the above door:

$36 \times 80 = 2880$  divided by 144 = 20 sq ft

**General Policy:** All door replacements must be modeled in the NEAT audit. For more information see the best practices for door replacement and repair on the [TDHCA website](http://www.tdhca.state.tx.us/community-affairs/wap/docs/WAP-BP-DoorRepairReplacement.pdf). (<http://www.tdhca.state.tx.us/community-affairs/wap/docs/WAP-BP-DoorRepairReplacement.pdf>)

## Unfinished Attics or Finished Attics

Use Attic Codes that make sense to you and your agency.

For example, U1 or UA1 for Unfinished Attic #1.

Use the drop down boxes to select the Attic Type (floored, unfloored, etc.)

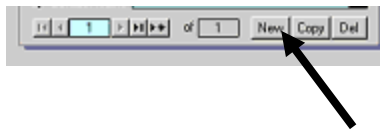
In this section indicate the Joist Spacing in inches and Area of the Attic in square feet.

If there is existing insulation, select it with the drop box. If you intend to add insulation, describe it in the “Added Insulation” section.

If at any time you become confused about what to put in a particular field, press the F1 key for the HELP screen.

Use comments to further describe the attic, if necessary.

Use the “New” or “Copy” button to enter additional Attics.



Follow the same procedure as outlined above for “Finished Attics.”

### **Mini-Math Refresher: Attics Field**

Attics must be entered in square feet for area

Attics typically line up with the footprint of the house.

Example: The house is 25 feet wide by 40 feet long.

Area is length X width.  $25 \times 40 = 1000$  square feet

**General Policy:** Insulate to R-38 or 30 (as defined by your climate zone) if the existing insulation is less than R-30. Insulate vertical areas to maximum structurally allowable. Seal applicable key junctures. If Knob and Tube exists and is active in the attic follow the instruction outlined in the best practice located on the [TDHCA website](http://www.tdhca.state.tx.us/community-affairs/wap/docs/WAP-BP-KnobTubeWiring.pdf). (<http://www.tdhca.state.tx.us/community-affairs/wap/docs/WAP-BP-KnobTubeWiring.pdf>)

**NEAT Modeling Guidance:** Enter the amount of existing insulation. **DO NOT** specify how much insulation to add. NEAT will select the most cost-effective

amount to add. Note: When NEAT selects R48, it is recommending ADDING R-48 to whatever exists. If you have an existing R-10, the end result would be R-58. If NEAT is recommending more insulation than you want to install, just use the added R-value field to specify a lesser amount. This will usually be cost-effective and may allow measures with lower SIRs to be considered. Insulation must not be entered in to the audit as an itemized cost. All insulation measures in the set up library must be active and considered for installation.

If your local code calls for a higher insulation level than NEAT—then you may mandate the compliant level. However, be aware that this mandate may cause measures to drop off. For more details see the NEAT Energy Savings Entries Best Practice on the [TDHCA website](http://www.tdhca.state.tx.us/community-affairs/wap/docs/WAP-BP-NEATMandatedEntries.pdf). (<http://www.tdhca.state.tx.us/community-affairs/wap/docs/WAP-BP-NEATMandatedEntries.pdf>)

## Foundations

Click on “Foundations” to begin Foundation Code.

The screenshot shows the NEAT AUDIT software interface. The title bar reads "NEAT AUDIT -- NEAT AUDIT -- NEAT AUDIT -- NEAT AUDIT -- NEAT AUDIT -- NEAT AUDIT -- NEAT AUDIT -- NEAT AUDIT". The main window has a menu bar with "Audit Name", "Client ID", "Client Name", and "Alt. Client ID". Below the menu bar is a navigation bar with tabs for "Audit Information", "Status", "Shell", "Heating (0)", "Cooling (0)", "Ducts/Insulation", "Baseloads", "Health & Safety", "Itemized Costs (0)", "Utility Bills (0)", "Photos (0)", and "Measures (0)". The "Foundations (0)" tab is selected. The main content area is divided into sections for "Foundation Code", "Floor", "Sill", and "Foundation Wall". Each section has input fields for various parameters and a dropdown for "Added Insulation Type". A "Run Audit" button is visible on the right side. At the bottom, there is a "FOUNDATION" list with a "Comment" field and a "New Copy Del" button.

Use Foundation Codes that make sense to you and your agency. For example, some agencies label the Foundations as F1, or CS1 for Crawlspace 1 or Slab1, etc.

Use the drop down boxes to select the Foundation Type. Pressing F1 with your cursor in the “Foundation Type” box will bring up a list of Foundation Type definitions.

Some of the boxes will disappear based on which Foundation Type is selected. For example, the Foundation Wall section goes away if you selected “Exposed Floor” as your Foundation Type.

If at any time you become confused about what to put in a particular field, press the F1 key for the HELP screen.

Use comments to further describe the foundation or any unique factors if necessary.

Use the “New” or “Copy” button to enter additional Foundations. Use “Copy” to enter similar or nearly identical Foundations.



**General Policy:** Insulate foundation walls or floors that define the heating envelope. Insulate the interior side of exterior walls of unintentionally conditioned crawlspaces. Insulate box sills and inaccessible crawl spaces when the measure meets a minimum SIR of 1.0.

**NEAT Modeling Guidance:** All buildings **must have** foundation details entered into the audit.

- 1) Model floor insulation only if the area below does not have plumbing and heating system distribution ducts running through it.
- 2) Model un-insulated box sills for insulation if not modeling for wall insulation.
- 3) Do not deactivate floor insulation in the set up libraries.
- 4) Floor insulation cannot be modeled as an itemized cost.
- 5) All floor measures must be active in the setup library in order to be considered. **Do not deactivate** floor insulation measures in order to avoid installing this measure.



Notice the box that says "Primary System." If there is more than one Heater present; make sure that the Primary box is only checked one time.

**Adjust the "Heat Supplied {%" box if there are multiple heaters. They cannot all be 100%.**

The number and type of boxes to fill in will change, once the Fuel type is selected. See example below for a Forced Air Gas furnace.

**General Policy:** Replace heating systems under the conditions listed below.

- 1) Natural Gas Forced Air Furnaces: Replace if existing atmospheric unit has an SSE less than or equal to 75% and has less than a 5 year life expectancy. Inspect units with SSE greater than 75% and more than a 5-year life expectancy. Replacement must be ENERGY STAR qualified.
- 2) LP Forced Air Furnaces: Replace if existing atmospheric unit has a SSE less than or equal to 75% and the existing unit has less than a 5-year life expectancy. Inspect units with SSE of greater than 75%.

**Replacement must be ENERGY STAR<sup>®</sup> .**

- 3) Unvented Space Heaters: See DOE Program Notice 08-4 (Space Heater Policy).
- 4) Wood: (as primary system): Replacement units are considered a Health and Safety measure. All replacement units must meet applicable local codes and EPA requirements. Installations must conform to the NFPA 211. Smoke detectors must be installed in buildings with wood heating systems.

**NEAT Modeling Guidance:** Model heating systems for replacement as an energy conservation measure in the Heating tab if the existing unit meets the criteria for replacement described above in the General Policy.

1. When modeling a gas forced air heating system for replacement, model only the replacement unit.
2. In the Heating tab: System Retro: Evaluate All.
3. Enter the actual AFUE of the replacement system.
4. Enter the actual cost for the heating system replacement.

When the heating system must be replaced:

1. Model it first as an energy conservation measure as shown above.
2. If the heating system SIR is  $<1.0$ , and the system has Health and Safety concerns such as high carbon monoxide or a cracked heat exchanger, model the heating system as a Health and Safety measure in the Itemized Cost tab. The cumulative building SIR must be a minimum of 1.0 in order to complete the H&S measures. Do not include in the SIR and do not estimate savings.



### Modeling for “Evaluate Replacement with Heat Pump”

Audit Information | Status | Shell | Heating (1) | Cooling (1) | Ducts/Infiltration | Baseloads | Health & Safety | Itemized Costs (9) | Utility Bills (0)

System Code: H1      Heat Supplied (%): 100      Primary System:

Equipment Type: Forced Air Furnace      Manufacturer:      Uninsulated Supply Ducts (0)

Fuel: Electricity      Model: AR42-1

Location: Heated Space

Required Heating System Details

ELECTRIC RESISTANCE HEATING SYSTEM DETAILS

Output Units: kBtu per Hour

Output Capacity: 42

Replacement System

Options: Evaluate Replacement with Heat Pump

HSPF: 10

Labor Cost (\$): \$600.00

Material Cost (\$): \$1,395.00

Enter HSPF and Costs for entire unit here.

In Cooling Tab, name the Equipment Type- “Heat Pump” this will link the two together under the total cost.

Audit Information | Status | Shell | Heating (1) | Cooling (1) | Ducts/Infiltration | Baseloads | Health & Safety

AC Code: AC 1

Equipment Type: Heat Pump

Manufacturer: GOODMAN

Model: CKL42-1A

Floor Area Cooled (sq ft): 1258

Capacity (kBtu/hr): 42

SEER: 9

Required Retrofits

Replacement Required:

Tune-up Mandatory:

**General Policy:** Replace existing unit under the conditions listed below.

1. Replace if existing is rated as a 12 SEER or less.
2. Inspect the unit if the unit is rated at 13 SEER
3. Repair or Replace unit if coils have a leak.
4. Repair or Replace unit if the unit's condenser is damaged.

**NEAT Modeling Guidance:**

1. Model the Air Conditioning unit by entering the required data. Install the unit if the NEAT ranks the replacement with an SIR or one or greater.
2. Air Conditioning units cannot be modeled under the itemized cost tab
3. Heat Pump must be modeled under heating and cooling tabs of the NEAT Audit.

For more information refer to the unit replacement best practices on the [TDHCA website](http://www.tdhca.state.tx.us/community-affairs/wap/docs/WAP-BP-UnitReplacement.pdf). (http://www.tdhca.state.tx.us/community-affairs/wap/docs/WAP-BP-UnitReplacement.pdf)

**NOTES:**

## COOLING

Click on “Cooling” to select your cooling sources.

The screenshot shows the NEAT AUDIT software interface. The 'Cooling' tab is selected, indicated by an arrow. The interface includes the following elements:

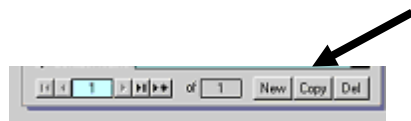
- Navigation Tabs:** Audit Information, Status, Shell, Heating, Cooling (0), Ducts/Infiltration, Baseloads, Health & Safety, Itemized Costs (0), Utility Bills (0), Photos (0), Measures (0).
- Form Fields:**
  - AC Code: [Text Box]
  - Equipment Type: [Dropdown Menu]
  - Manufacturer: [Text Box]
  - Model: [Text Box]
  - Floor Area Cooled (sq ft): [Text Box]
  - Capacity (kBtu/hr): [Text Box]
  - SEER: [Text Box]
  - Year Manufactured: [Text Box]
- Required Retrofits Section:**
  - Replacement Required:
  - Tune-up Mandatory:
- Buttons:** Run Audit, Last Run On, Not Run, at.
- COOLING SYSTEM Section:**
  - by AC Code: [Dropdown Menu]
  - Comment: [Text Box]
  - Navigation: 1 of 1, New, Copy, Del.

Once you select “Equipment Type”, the “Replacement Required” and “Tune Up Mandatory” checkboxes will become available under “Required Retrofits.”

There is also an “Include in SIR” box as well. Check whichever boxes are applicable to this particular cooling source. Always allow NEAT to evaluate replacement or tune-up first. If it does not show up, and must be done (with documentation) then you can check one and re-run.

The boxes you check **will affect** where the cooling system gets displayed on the Recommended Measures report.

At the bottom of the page, click on “New” or “Copy” to add additional cooling sources.



## Best Practices: Evaporative Coolers

Please refer to the Evaporative Coolers Best Practices at [WAP Best Practices page](http://www.tdhca.state.tx.us/community-affairs/wap/docs/WAP-BP-EvaporativeCoolers.pdf) (<http://www.tdhca.state.tx.us/community-affairs/wap/docs/WAP-BP-EvaporativeCoolers.pdf>)

### *DUCTS/INFILTRATION*

Click on “Ducts / Infiltration” to enter information about Air and Duct Leakage.

The screenshot shows the 'Ducts/Infiltration' tab selected in the software interface. The 'Air and Duct Leakages' section is active, with sub-tabs for 'Optional Blower Door and Zonal Pressures (0)', 'Optional Pressure Balance (0)', and 'Optional Pressure Pans (0)'. The 'Evaluate Duct Sealing' checkbox is unchecked. The 'Whole House Blower Door Measurements' section has two columns: 'Before Weatherization (Existing)' and 'After Weatherization (Target or Actual)'. Each column has input fields for 'Air Leakage Rate (cfm)' and 'at House Pressure Difference (Pa)'. The 'Costs' section has an input field for 'Infiltration Reduction (\$)' and a 'Comment' text area. A 'Refresh Tightness Limit' button is at the bottom left, and a note at the bottom right says 'Enter information on the Audit Information tab see the minimum recommended CFM'.

Most Texas agencies are not using the “Optional Blower Door” or “Optional Pressure” tabs. You may choose to fill those pages out based on your particular agency’s policies.

Use the “Comment” box to enter air sealing directives for crews. These can easily be dropped onto the work order. Estimate the total cost for dollar amount.

**NEAT Modeling Guidance:** In the "Duct/Infiltration" tab,

1. Enter the blower door CFM50 reading or estimate in "Pre-Infiltration Reduction".
2. In the "Post-Infiltration Reduction" enter the post CFM50 estimate.
3. Enter total estimated air sealing cost. This information generates a baseline SIR for the building. For actual sealing work follow the procedures in the Weatherization Field Guide.

For more information refer to the duct test targets best practices at [TDHCA website](http://www.tdhca.state.tx.us/community-affairs/wap/docs/WAP-BP-DuctTestTargets.pdf). (http://www.tdhca.state.tx.us/community-affairs/wap/docs/WAP-BP-DuctTestTargets.pdf)

The screenshot shows the NEAT software interface with the following data entered:

- Audit Name:** Audit (4)
- Client ID:** SL-2010-003
- Client Name:** [Empty]
- Alt. Client ID:** [Empty]
- Tab:** Ducts/Infiltration
- Sub-tab:** Air and Duct Leakages
- Evaluate Duct Sealing:**
- Duct Leakage Method:** Duct Blower Measurements
- Whole House Blower Door Measurements:**
  - Before Weatherization (Existing): Air Leakage Rate (cfm) at House Pressure Difference (Pa) 50: **1**
  - After Weatherization (Target or Actual): Air Leakage Rate (cfm) at House Pressure Difference (Pa) 50: **2**
- Duct Operating Pressures:**
  - Before Duct Sealing: Supply (Pa) **3**, Return (Pa) **3**
  - After Duct Sealing: Supply (Pa) **4**, Return (Pa) **4**
- Duct Blower Measurements:**
  - Before Duct Sealing (Existing):
    - Total Fan Flow (cfm): **5**
    - Outside \* Fan Flow (cfm): **6**
    - at Duct Pressure (Pa): 25
    - House Pressure WRT Outside (Pa): 25
  - After Duct Sealing (Target or Actual):
    - Total Fan Flow (cfm): **7**
    - Outside \* Fan Flow (cfm): **8**
    - at Duct Pressure (Pa): 25
    - House Pressure WRT Outside (Pa): 25
- Costs:**
  - Infiltration Reduction (\$): **9**
  - Duct Sealing (\$): **10**
- Refresh Tightness Limit:** The minimum recommended CFM at 50pa is: 1352 CFM
- Run Audit:** Last Run On 2/25/2011 at 12:24 PM

## BASELOADS

Click on “Baseloads” to enter data for Water Heaters, Refrigerators, and Lighting Systems

The screenshot shows the 'Baseloads' tab in the Weatherization Assistant - NEAT software. The interface is divided into several sections:

- Client Information:** Audit Name: Mac Brown, Client ID: TXA02, Client Name: Doe, Juan, Alt. Client ID: [blank].
- Navigation:** Audit Information, Status, Shell, Heating (2), Cooling (1), Ducts/Infiltration, **Baseloads**, Health & Safety, Itemized Costs (4), Utility Bills (0), Photos (0), Measures (12).
- Water Heating (1) | Refrigerators (1) | Lighting Systems (0)**
- Existing Equipment:**
  - Manufacturer: RHEEM MFG. CO., Model: 6E728
  - Fuel: Electricity, Rated Input: 4.5
  - Location: Heated Space, Input Units: kW
  - Size (gal): 47, Energy Factor: 0.87, Recovery Efficiency (%): 98.0
- Replacement:**
  - Pick from Library: [dropdown menu]
  - Manufacturer: GE, Model: 1
  - Fuel: Electricity, Rated Input: [blank], Input Units: kBtu, Size (gal): 50
  - Energy Factor: 2.2, Recovery Efficiency (%): 98.00
  - Installation Cost (\$): \$1,500.00, Additional Cost (\$): [blank]
- Shower Heads:**
  - Number of ShowerHeads: 2, Avg. GPM: 5
  - Shower Use (min/day): 45
- Buttons:** Run Audit, Last Run On: 1/27/2010 at 9:29 AM, New, Del, Optional Water Heater Details, Operational Tests, Vent Tests, Inspections.

### Replacement Water Heater

Replacement for Water Heater must be entered into the “Supply Library” in advance. You may enter the information under the “Supply Library” “Hot Water Equipment” Tab. This information will be uploaded in the “Replacement Library” found on the right hand portion of the “Water Heating” tab. Simply Pick from the Library.

**NOTE:** Be sure to enter energy details in supply library.

**General Policy:** Insulate existing water heater tanks with less than R-10 insulation to a minimum of R-10 unless the manufacture’s instructions do not allow. Install showerheads and flow restrictors. Insulate hot and cold water pipes within 6 feet of the water heater.

**NEAT Modeling Guidance:** Model water heater for replacement as an energy conservation measure under the Water Heating tab. The unit may also be replaced under Repair or Health and Safety if the following conditions exist;

### Replacement as a Repair

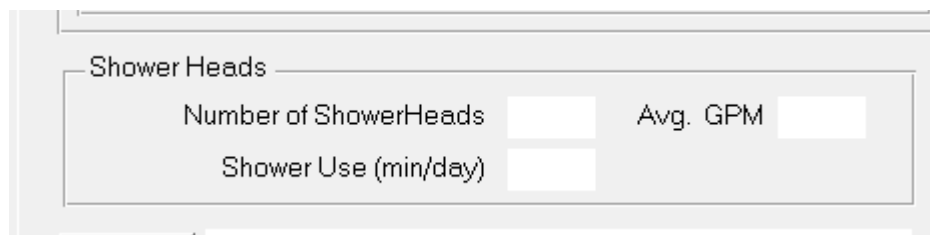
If the existing unit is leaking, replacement is based on ceasing the unit from running continuously,

1. Model the Water heater as a Repair measure in the Itemized Cost tab. Include in the SIR. The cumulative building SIR must be a minimum of 1.0 in order to complete the Repair measure

### Replacement under Health and Safety

1. Check for Carbon Monoxide level of >150 parts per million, and inspect for other Health and Safety Hazards.
2. Model the Water heater as a Health and Safety Measure in the Itemized Cost tab. Do not include in the SIR. The cumulative building SIR must be a minimum of 1.0 in order to complete the H &S measure

## SHOWER HEADS



Shower Heads	
Number of ShowerHeads	<input type="text"/>
Avg. GPM	<input type="text"/>
Shower Use (min/day)	<input type="text"/>

**General Policy:** Install 2.5 GPM or less showerheads and faucet aerators on every fixture rated above 2.5.

### NEAT Modeling Guidance:

- 1) Enter the number of showerheads to be replaced
- 2) Estimate the Average Gallon per Minute of the existing showerheads
- 3) Estimate the Shower Use (typically 15 minutes per person per day)

## Baseloads - Refrigerator

Water Heating (1) Refrigerators (1) Lighting Systems (1)

**Existing Equipment**

Manufacturer: GENERAL ELECTRI Model: GSH22JSXLSS  
 Style: Side by Side Defrost: Automatic  
 Size (cu ft): 22 Location: Heated Space

**Available Space Dimensions**

Height (in) Width (in) Depth (in)

**Consumption**

**Label/Database Annual Consumption**

kWh/yr Age: 5 to 9 years  
 Door Seal Condition: Fair - Some Wear

**OR**

**Metered Consumption**

Metering Minutes: 167 Manual Defrost   
 Meter Reading (kWh): 0.21 Includes Defrost Cycle

Adjusted Consumption (kWh/yr): 785.2 Refresh

**Replacement**

Pick from Library  
 Manufacturer: GE Model: GTH21KBXWW  
 Style: Top Freezer Defrost: Automatic

kWh/yr: 415 Size (cu ft): 21  
 Height (in): 66 Width (in): 32 Depth (in): 30  
 Installation Cost (\$): \$1,075.0  
 Additional Cost (\$):  
 Adjusted Consumption (kWh/yr): 456.5  
 Annual Savings (kWh/yr): 328.7

Comment

Adjusted consumptions and savings reported on this form assume that the refrigerators are in heated spaces.

All refrigerators must be metered for at least 2 hours. If any changes are made, remember to hit the “Refresh” button.

This refrigerator tab contains a database, you may access the database by selecting the manufacture and model #. The required information will automatically be updated. See refrigerator replacement form.

### Replacement Refrigerator

Replacement for the refrigerator with energy details must be entered into the “Supply Library” in advance. You may enter the information under the “Supply Library” “Refrigerator” Tab. This information will be uploaded in the “Replacement Library” found on the right hand portion of the “Refrigerator” tab. Simply pick from the Library.

**General Policy:** Meter the Refrigerator for a minimum of 2 hours; if you are using LIHEAP funding you may meter the Refrigerator for 30 minutes. Replacement units must be Energy Star Rated or best available. Refrigerators with water dispensers and ice makers are not allowed.



**NOTE:**

- 1) Unless there are special conditions, size the replacement refrigerator based on household size.
  - a. Install 15 cubic foot units in households with one or two persons.
  - b. Install 18 cubic foot units in households with three to five persons.
  - c. Install 21 cubic foot units in households with more than five persons.

**NEAT Modeling Guidance:** Enter the data for the existing refrigerator and select a possible replacement from your supply library. Replace the refrigerator if the measure meets a minimum 1.0 SIR.

**Baseloads - Lighting**

The screenshot displays the 'Baseloads' section of the NEAT software, specifically the 'Lighting Systems' tab. The interface includes the following elements:

- Client Information:** Audit Name: Mac Brown, Client ID: TX002, Client Name: Doe, Juan, Alt. Client ID: [empty].
- Navigation Tabs:** Audit Information, Status, Shell, Heating (2), Cooling (1), Ducts/Infiltration, Baseloads (selected), Health & Safety, Itemized Costs (4), Utility Bills (0), Photos (0), Measures (12).
- Sub-sections:** Water Heating (1), Refrigerators (1), Lighting Systems (0).
- Existing Incandescent Light:**
  - Light Code: [text input]
  - Room: [dropdown menu]
  - Location: [dropdown menu]
  - Lamp Type: [dropdown menu]
  - Quantity: [text input]
  - Size (watts): [text input]
  - Use (hours/day): [text input]
- Replacement Compact Fluorescent Light (CFL):**
  - CFL Size (watts): [text input]
  - Additional Cost (\$/bulb): [text input]
- Run Audit:** A button labeled 'Run Audit' with a status box showing 'Last Run On 1/27/2010 at 9:29 AM'.
- Table:** A table titled 'LIGHTING SYSTEM' with one entry. The entry is selected, and the table shows '1 of 1' items. Navigation buttons include 'New', 'Copy', and 'Del'.
- Comment:** A text area for entering a comment.

**Mini Math Refresher: Appliances and Lights:**

Watt (W) is a unit of power, while kWh is a unit of energy.

To convert watts to kW, move the decimal point 3 places to the left.

Example: The window A/C uses 10,200 watts.

$$10,200.00 = 10.2 \text{ kW}$$

If a light consumes energy at the rate of 60 W, and is on for 20 hours/day, the total energy consumption = Watts X hours =  $60 \times 20 = 1200 \text{ Wh/day}$

$$1200.00 \text{ watts/day} = 1.2 \text{ kWh/day}$$

Monthly usage would be  $1.2 \times 30 = 36 \text{ kWh/mo}$

Multiply this by the cost per kWh to get the monthly cost of using this light.

$$\text{Example: } 36\text{kWh/mo} \times .13/\text{kWh} = \$4.68/\text{month for that light.}$$

**Mathematical Client Education:**

From the above example, you can demonstrate to a client the energy savings from changing to CFLs. If a CFL uses  $\frac{1}{4}$  the energy of an incandescent bulb; then the same light, with a CFL of equal wattage, would cost only \$1.17/month. \$4.68 divided by 4 = \$1.17/month. A \$3.51 savings!

**General Policy:** Replace incandescent lights with Compact Fluorescent Lights (CFLs).

**NEAT Modeling Guidance:** enter the data requested. A suggested wattage will appear as a possible replacement. Replace lights used for a minimum of 4 hours that rank with an SIR of 1 or greater.

## ***HEALTH AND SAFETY***

Follow the Health and Safety guidelines as found in the Texas Weatherization Field Guide

**General Policy:** The most common home health hazards related to weatherization are:

- 1) Carbon Monoxide and improper combustion of appliances
- 2) Moisture accumulation
- 3) Electrical Wiring
- 4) Lead paint.

Depending on the severity of the conditions, subrecipients may or may not choose to weatherize the dwelling.

**NEAT Modeling Guidance:** Select all Health and Safety boxes that apply with relation to the whole house, equipment, and building shell tabs. The following data must be entered.

- 1) Cost
- 2) Do not check the SIR box
- 3) Do not estimate savings

## ***ITEMIZED COST***

This tab may be used to enter repair and Health and Safety items not listed under health and safety. Itemized Cost must not be used to estimate savings for items already offered under other tabs of the NEAT Audit, example window upgrades and air conditioning units. The Itemized cost must not be over used.

Common itemized cost entries are:

- 1) Vented heater replacement. Replacement of an unvented space heater. This serves as the primary heat source of the dwelling.
- 2) Vented heater replacement. Replacement of a heater that has high CO and does not rank with an SIR of one or greater. This serves as the primary heat source of the dwelling.
- 3) Replacement Water Heater- Replacement is due high carbon monoxide readings that cannot be resolved.

**NEAT Modeling Guidance:** Select from the user defined measure library of from the library of health and safety measures. You can also create your own allowable named measure if it is not one in the existing library.

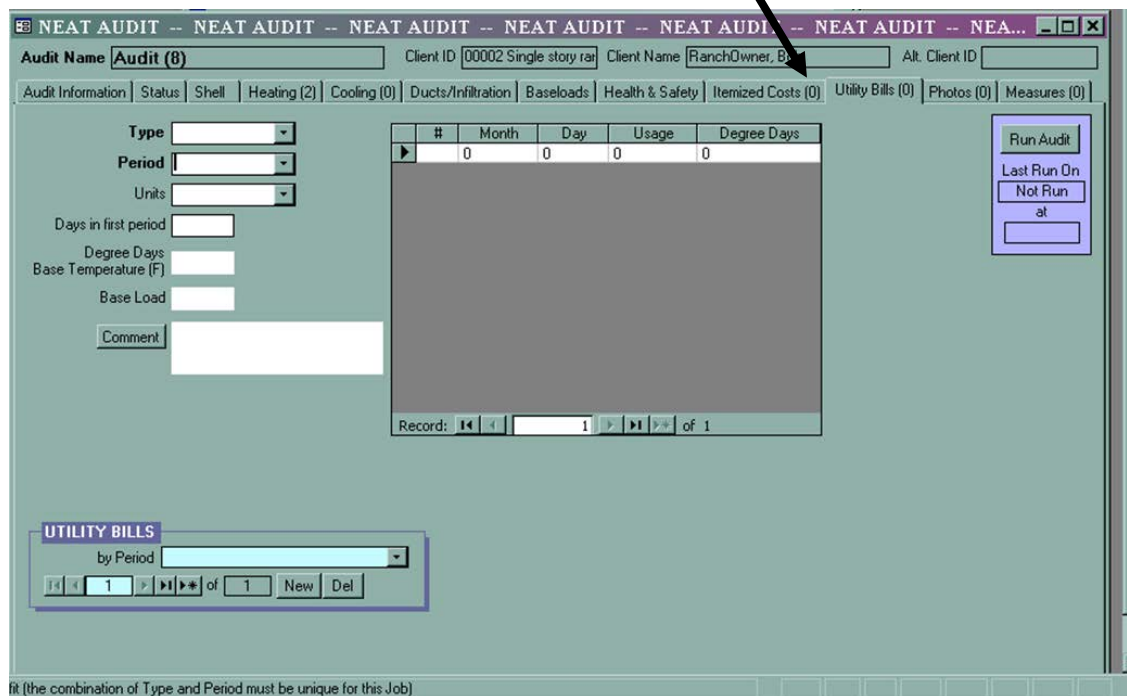
- 1) All repair costs must be included in the whole house SIR.
- 2) All health and safety items must be excluded from the whole house SIR

3) Do not estimate saving.

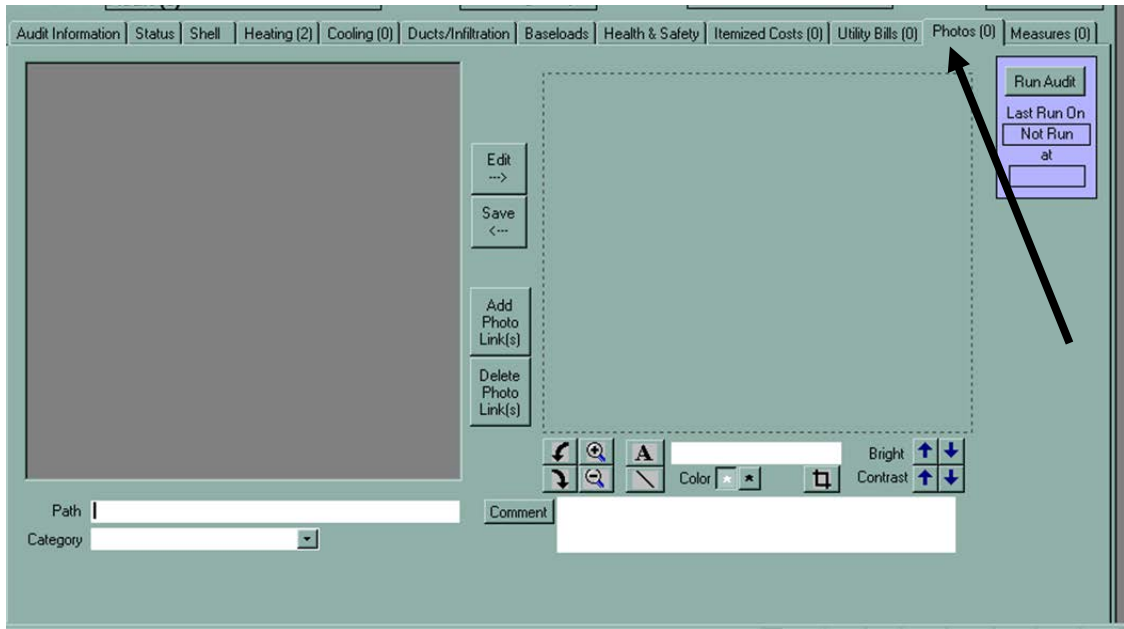
For more information refer to the authorizing weatherization repairs best practices on the [TDHCA website](http://www.tdhca.state.tx.us/community-affairs/wap/docs/WAP-BP-AuthorizingRepairs.pdf). (http://www.tdhca.state.tx.us/community-affairs/wap/docs/WAP-BP-AuthorizingRepairs.pdf)

**UTILITY BILLS AND PHOTOS**

Texas Agencies are not really using the “Utility Bills” Or “Photos” tab on this page.



**Photos** can be useful and your agency may decide to require the upload of photos; however, TDHCA does not require the use of the Photo feature with the Energy Audit program. Photos should be placed in client files.



NOTES:

## AUDIT REPORTS

### Run Audit

The screenshot shows the NEAT software interface with the following elements:

- Navigation tabs: Audit Information, Status, Shell, Heating (2), Cooling (0), Ducts/Infiltration, Baseline, Health & Safety, Itemized Costs (0), Utility Bills (0), Photos (0), Measures (0).
- Copy from User Defined Measures: [Dropdown menu]
- Copy from Library Health and Safety Measures: [Dropdown menu]
- Referenced User Defined Measure: [Text field]
- Clear Reference to User Defined Measure: [Button]
- Run Audit: [Button, highlighted with a red box and an arrow pointing to it from the 'Run Audit' section header]
- Last Run On: [Text field]
- Not Run at: [Text field]
- Measure Name: [Text field]
- Cost (\$): [Text field]
- Material: [Text field]
- Include in SIR:
- ITEMIZED COST: [Section header]
- by Description: [Dropdown menu]
- Comment: [Text field]
- Navigation: [Page 1 of 1, New, Copy, Del buttons]

You may run the audit at this point. It will prompt you if you are missing any information. If you forgot an item or need to make any changes after evaluating your report, changes may be made under any tab within NEAT and the audit may be re-run via the Run Audit button on in that tab.

### Reading the Reports

The report that the auditor is most interested in is the Energy Saving Measure Economics table. This table can be divided into three parts

- 1) Repairs needed to complete the weatherization measures
- 2) The Weatherization Measures
- 3) Health and Safety items

The screenshot shows a software window titled "WA Report - [Recommended Measures]". It contains a table of measures with columns for Index, Recommended Measure, Components, Measure Savings (\$/yr), Measure Cost (\$), Measure SIR, Cumulative Cost (\$), and Cumulative SIR. Below this is a summary table titled "Energy Saving Measure Economics" with the same columns. The summary table is categorized into "Repairs", "WX Measures", and "H & S".

Index	Recommended Measure	Components	Measure Savings (\$/yr)	Measure Cost (\$)	Measure SIR	Cumulative Cost (\$)	Cumulative SIR
4	DWH Pipe Insulation		0.0	0	0	153	21
5	DWH Tank Insulation		0.0	0	0	270	38
6	Wall Insulation	WL1-N,WL2-S,WL3-E,WL4-W	3.6	148	382	54	0
7	Attic Ins. R-19	A1	2.0	80	289	40	0
8	Refrigerator Rplcmnt		0.0	0	0	804	113
9	Low-E Windows	WD3,WD1,WD2	0.7	28	157	22	0

Index	Recommended Measure	Components	Measure Savings (\$/yr)	Measure Cost (\$)	Measure SIR	Cumulative Cost (\$)	Cumulative SIR
1	Install sash lock		0	10	0.0	10	0.0
2	Replacement Door		0	300	0.0	310	0.0
3	Infiltration Redctn		88	200	3.7	510	1.5
4	Replace A/C	AC1	162	2100	0.9	2610	1.0
5	Low Flow Showerheads		35	4	104.2	2614	1.2
6	DWH Pipe Insulation		21	15	15.2	2629	1.3
7	DWH Tank Insulation		38	40	10.0	2669	1.4
8	Wall Insulation	WL1-N,WL2-S,WL3-E,WL4-W	202	1096	2.8	3765	1.8
9	Attic Ins. R-19	A1	121	741	2.5	4506	1.9
10	Refrigerator Rplcmnt		113	700	1.9	5206	1.9
11	Low-E Windows	WD3,WD1,WD2	50	640	1.2	5846	1.8
12	Install smoke alarm		0	20	0.0	5866	0.0

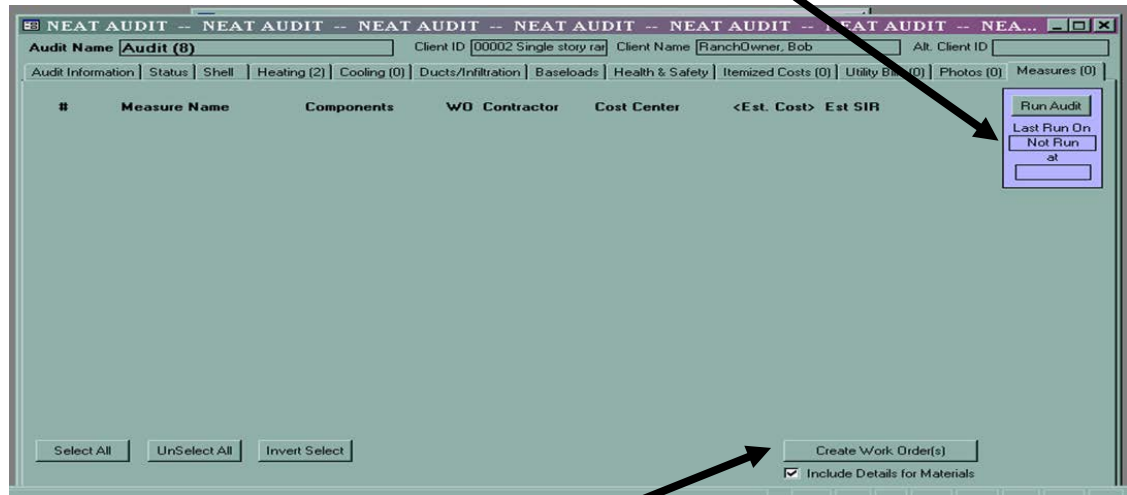
Audit Name: One-story ranch      Client: 00002 Single story ranch      Date: 3/9/2011      Page 1 of 3

- 1) Repairs needed to complete the weatherization measures do not provide savings any savings and do not have and should show an Cumulative SIR of 0
- 2) Each individual “**Measure SIR**” must have an **SIR of 1 or greater** to be eligible for installation. Infiltration Reduction is always first; all other weatherization measures should fall from highest SIR to lowest SIR. If they do not, this indicates that you mandated a measure to be performed; such as, “replace with Low-e” in windows, or specified an R-value under attic insulation to be added. These mandates may change much needed measures that NEAT would evaluate if left to do so. Notice that the Replace AC1 in the sample screen shot is a 0.9: this measure may NOT be done—it does NOT Rank!
- 3) Health and Safety items are assigned to the bottom of the table and do not have an SIR and do not contribute to the Cumulative SIR. The whole house “**Cumulative SIR**” must have an **SIR of 1 or greater**, or all weatherization work is ineligible. Excessive repair work will bring the

cumulative SIR below a 1, resulting in a package that does not meet DOE rules.

## Measures

The “Measures” tab in the Audit Section is one of the places that Work Orders can be created.



If the supply library has been previously populated, then click on the “Create Work Order” button. We will cover Work Orders in Module 7.

NOTES:

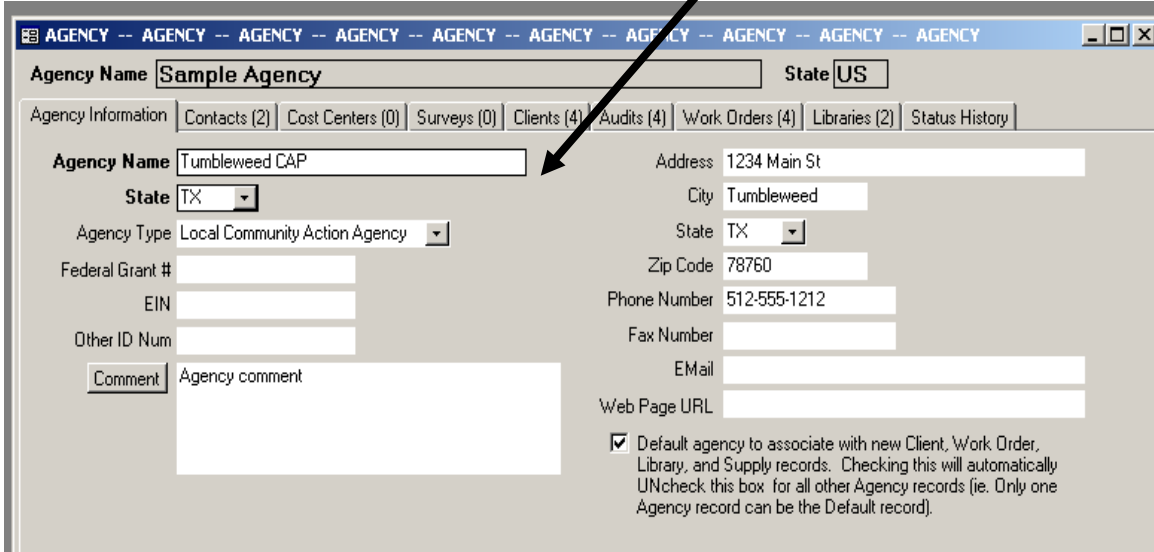


## INTEGRITY OF NEAT LIBRARIES

### Best Practices and Lessons-learned Capture Worksheet

#### HOW TO SET “LOG-ON GROUP AND PASSWORD” PROTECTION:

- Open the Weatherization Assistant
- Open **AGENCY**; make sure Agency information is entered; including address and phone number.



Agency Name  State

Agency Information | Contacts (2) | Cost Centers (0) | Surveys (0) | Clients (4) | Audits (4) | Work Orders (4) | Libraries (2) | Status History

Agency Name  Address

State  City

Agency Type  State

Federal Grant #  Zip Code

EIN  Phone Number

Other ID Num  Fax Number

Comment  EMail

Web Page URL

Default agency to associate with new Client, Work Order, Library, and Supply records. Checking this will automatically UNcheck this box for all other Agency records (ie. Only one Agency record can be the Default record).

- Go to **CONTACTS** tab and enter the person who will be in control of the libraries.
  - Click the **“Change LogOn Group and Password”** button. The box on the right bottom side.

The screenshot shows the 'CONTACTS' tab for the agency 'Tumbleweed CAP'. The 'Contact Name' is 'Administrator, Adam' and the 'User Name' is 'Adam'. The 'Active' checkbox is checked. The form includes fields for Name Detail (First: Adam, Last: Administrator), Company (Tumbleweed CAP), Address, City, State, Zip Code, Work Phone (512) 555-1212, Cell Phone (512) 555-3241, and Email (Adam@tumbleweed.gov). There are also checkboxes for Auditor, Contractor, Crew, and Supplier. At the bottom right, there is a button labeled 'Change LogOn Group and Password' and an 'Assigned' button. A red arrow points to the 'Change LogOn Group and Password' button.

- This screen shot will appear. From the top drop down box—select **“Admin”**. Enter in New Password and confirm; then hit the **“Apply New Password”** button. This person will be able to make changes to the Libraries.



- Repeat for another person who is designated library access.
- All others (auditors, contractors, etc) should only be able to data enter into NEAT, audits, and work orders; NOT change library costs.
  - To do this, enter each auditor name and contact information. Click “**Auditor**” box. Then go to “Change LogOn Group and Password” button.

NOTES:

Agency Name **Tumbleweed CAP** State **TX**

Agency Information | Contacts (3) | Cost Centers (0) | Surveys (0) | Clients (4) | Audits (4) | Work Orders (4) | Libraries (2) | Status History

Contact Name **User, John** User Name **John** Active  References

Name Detail - First **John** MI  Last **User** Work Phone **(512) 555-1212**

Company **Tumbleweed CAP** Address  Cell Phone **(512) 555-5678**

Auditor  EIN  Unit Number  Pager

Contractor  Title  City  Fax

Crew  State  Home Phone

Supplier  Zip Code  Email **John@tumbleweed.gov**

Web Page

Comment

AGENCY CONTACT

by Contact Name

by User Name

by Company

Change LogOn Group and Password

- o From top drop down box, select “**User**”. Enter New Password and confirm; then apply.

User Group and Password (User, John)

User Group **User**

Change Password

Note: Passwords are case sensitive

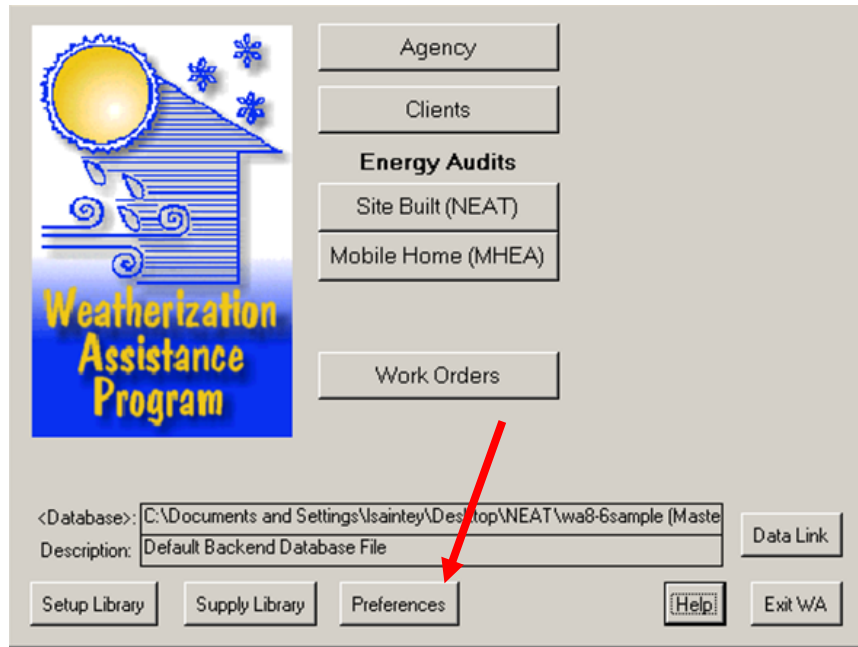
Confirm Old Password

New Password

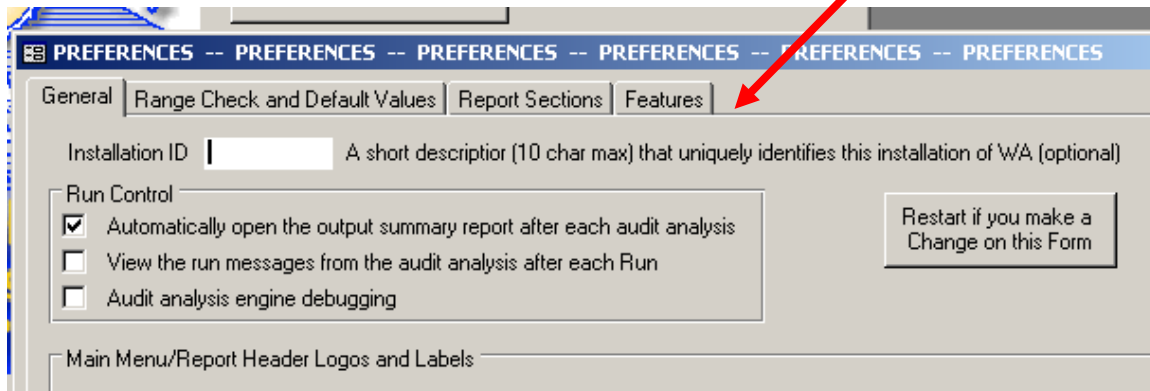
Confirm New Password

Apply New Password

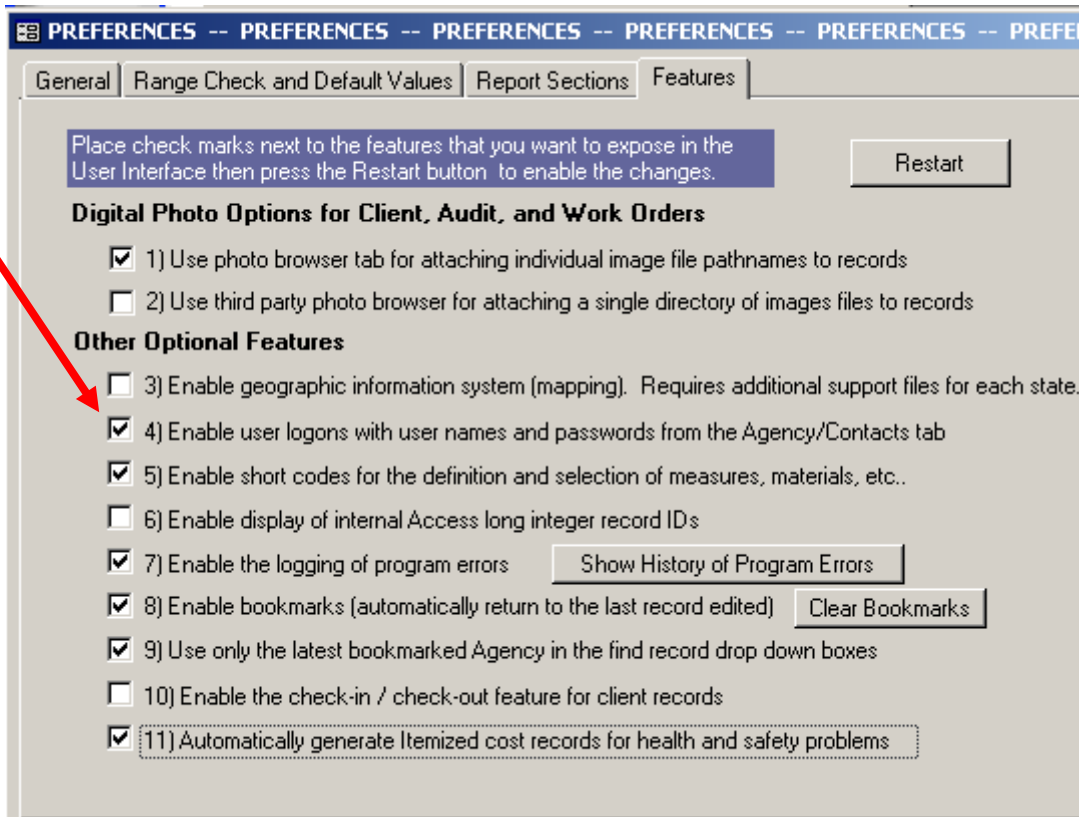
- o Repeat for process for any contractors--Checking the “**Contractor**” box.
- To implement this protection you now must go to the Main page and select the Preferences button.



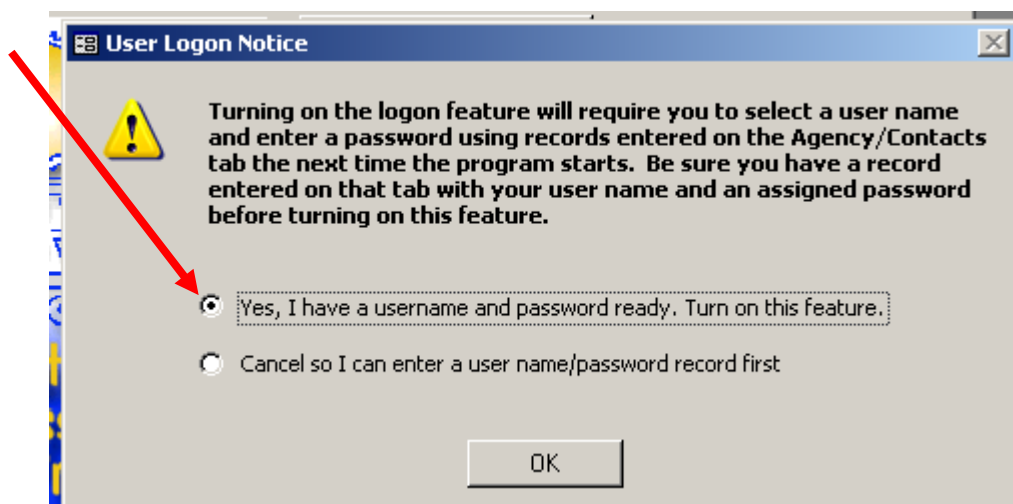
- Go to the “**Features**” tab:



- Click on **feature #4**:



You will receive this prompt. **BE SURE YOU HAVE SET UP LOGINS AND ALL KNOW THEIR PASSWORD BEFORE DOING THIS.**



Select “Yes” and hit OK. Now your libraries are protected and you are ready to create your libraries!

### CHECKING YOU SETUP LIBRARY:

#3

Name	Value	Units
Window A/C replacement SEER	14.5	Btu/wh
Central A/C replacement SEER	13	Btu/wh
Heat pump replacement SEER (Cooling)	13	Btu/wh
SEER used to impute cooling savings	13	na
Low flow shower head flow rate	2.5	gal/min
Refrigerator defrost cycle energy	0.08	kWh

#4

- From “Main page” select “Setup Library.”
  1. Click on “**Key Parameters.**”
  2. Click on “**Equipment**” (If no ‘equipment button, you are in MHEA, change to NEAT)
  3. Change the Window A/C replacement SEER, the Central A/C replacement SEET, Heat pump replacement SEER, and SEER used to impute cooling savings to actual replacement SEER values of “ENERGY STAR” equipment. (Example- from 13 SEER to 14.5 SEER). The higher the SEER value you are using, the better the chances are that it will rank.
  4. Verify the **gal/min** rate of your replacement **Low flow shower heads**. Many are using 1.5 gal/min shower heads. Using what you actually install may help your total SIR.
- Next, click on “**Windows**”

- Verify the actual “**U-Values and Solar Heat Gain Coefficients**” of the windows you are using for replacement. These need to be “Energy Star” products.
  - You can obtain this information off the label on the window, or
  - From the window vendor’s technical literature.

The default values are too high for current energy star rated windows.

The screenshot shows the 'SETUP LIBRARY' software interface. The 'Library Name' is 'Sample Setup Library'. The 'Windows' tab is selected, showing a table of window parameters. A red arrow points to the 'Replacement Window Solar Heat Gain Coefficient' value of 0.62, which is marked as 'na'.

Name	Value	Units
Replacement Window U-Value	0.46	Btu/F-sqft-hr
Replacement Window Solar Heat Gain Coefficient	0.62	na
Replacement LowE Window U-Value	0.32	Btu/F-sqft-hr
Replacement LowE Window Solar Heat Gain Coefficient	0.30	na
Retrofit Storm Window Emittance	0.82	na
Retrofit Storm Window Solar Heat Gain Coefficient	0.895	na
Retrofit Window Film Surface Emittance	0.84	na
Retrofit Window Film Solar Heat Gain Coefficient (incl frame)	0.49	na

- Next, click on the “**Fuel Costs**” tab.
    - DO NOT use the default pricings. Use the actual pricings for your providers.
    - If agency has multiple pricings, use the copy button to add each pricing OR combination pricings. Try to associate electricity and gas for each area together and remember to change Unit Cost for each. This will allow ‘dual price’ chooses for the auditor to select when performing an audit. Then use copy button for each new one.
- NOTE:** Natural Gas pricings, for NEAT, are in **Mcf**. Most bills are in Ccf.



SETUP LIBRARY -- SETUP LIBRARY -- SETUP LIBRARY -- SETUP LIBRARY -- SETUP LIBRARY

Library Name **Sample Setup Library** Rel

Setup Library Information | Key Parameters | Fuel Costs (5) | Fuel Price Indices | Library Measures

Fuel Cost Table Name **.16 ELECTRIC + 16.50 NAT GAS** Refer

Comment

	Fuel Type	In Units of	Unit Cost	Heat Content (MMBtu)
	Natural Gas	Mcf	16.500	1.000000
	Oil	Gallon	3.710	0.140000
	Electricity	kWh	0.160	0.003413
	Propane	Gallon	2.600	0.090000
	Wood	Cord	133.000	20.200000
	Coal	Ton	160.000	21.000000
	Kerosene	Gallon	3.710	0.130000
	Other	MMBtu	6.250	1.000000

- Remember to click on **“Make the changes”** Otherwise, all your work will not take.

Editing this Setup Library may change those results if you try to re-run those audits. If you want to archive the audits in a way that recommended measure results can be recreated, then you should copy the Setup Library and make changes only to the copy.

Cancel your changes so you can go back and make copy  
 Make the changes and don't prompt me with this message again

OK

- Now you are ready to make changes to the “Library Measures:”
  - However, before you do, click on the **“NEAT Insulation Types”** button.
    - Verify the types of insulation you are using for each area.

- If you are using other products, enter them in here, under each category.

Library Name:  References

Setup Library Information | Key Parameters | Fuel Costs (5) | Fuel Price Indices | Library Measures | User Defined Measures (0) | **NEAT Insulation Types**

Attic			Knee Wall		Wall		
Type	Name	Rs/Inch	Name	R-Value	Name	Value	Units
Type 1	<input type="text" value="Blown Cellulose"/>	<input type="text" value="3.75"/>	<input type="text" value="Fiberglass Batts"/>	<input type="text" value="13"/>	<input type="text" value="Blown Cellulose"/>	<input type="text" value="3.71"/>	<input type="text" value="R/in"/>
Type 2	<input type="text" value="Blown Fiberglass"/>	<input type="text" value="3.09"/>			<input type="text" value="Blown Fiberglass"/>	<input type="text" value="3.09"/>	<input type="text" value="R/in"/>
Type 3							<input type="text" value="R"/>
Type 4							
Type 5							
Type 6							

Floor			Sill		Foundation Wall	
Type	Name	Rs/Inch	Name	R-Value	Name	R-Value
Type 1	<input type="text" value="Fiberglass Batts"/>	<input type="text" value="3.33"/>	<input type="text" value="Fiberglass Batts"/>	<input type="text" value="19"/>	<input type="text" value="Rigid Foam Board"/>	<input type="text" value="12"/>
Type 2						
Type 3						

This will allow you to enter pricings for each in the “Library Measures.”

- Now go to the “**Library Measures**” tab. It is recommended that you go to the “**Setup Library Information**” tab and print out the “**Library Measure Costs**” from the **REPORT** section, before starting this task. You can write your actual pricing for each item on the print out. This will simplify and expedite this section.

**REPORT**

Select Report:

- Example of print out:



## Library Measure Costs

*Library Name* Sample Setup Library *Description*  
*Agency* Tumbleweed CAP *State* TX *Comment*  
*Supply Library* Sample Supply Library

NEAT	MHEA	#	Measure Type	Measure Nam	Active	Default Contracto	Default Cost Center	Life
<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	Building Insulation	Atticinsulation R11	<input checked="" type="checkbox"/>			20
#	Description	Type	Units	Unit\$	Comment			
1	Attic Insulation - Blown Cellulose - R-11	Insulation	SqFt	\$0.11				
2	Attic Insulation - Blown Cellulose - R-11	Labor	SqFt	\$0.22				
3	Attic Insulation - Blown Cellulose - R-11	Other	Each Atti	\$0.00				
1	Attic Insulation - Blown Fiberglass - R-11	Insulation	SqFt	\$0.14				
2	Attic Insulation - Blown Fiberglass - R-11	Labor	SqFt	\$0.22				
3	Attic Insulation - Blown Fiberglass - R-11	Other	Each Atti	\$0.00				
1	Attic Insulation	Insulation	SqFt	3,999.00	Not considered unless cost is specified			
2	Attic Insulation	Labor	SqFt	\$0.00				
3	Attic Insulation	Other	Each Atti	\$0.00				
1	Attic Insulation	Insulation	SqFt	3,999.00	Not considered unless cost is specified			
2	Attic Insulation	Labor	SqFt	\$0.00				
3	Attic Insulation	Other	Each Atti	\$0.00				
1	Attic Insulation	Insulation	SqFt	3,999.00	Not considered unless cost is specified			
2	Attic Insulation	Labor	SqFt	\$0.00				
3	Attic Insulation	Other	Each Atti	\$0.00				
1	Attic Insulation	Insulation	SqFt	3,999.00	Not considered unless cost is specified			
2	Attic Insulation	Labor	SqFt	\$0.00				
3	Attic Insulation	Other	Each Atti	\$0.00				

The next screen shot, shows how this information will translate into each measure type cost. Here is where you will enter actual costs for material, labor, and other. Start with measure #1 and work your way down to measure #43.

Library Name **Sample Setup Library** References

Setup Library Information | Key Parameters | Fuel Costs (5) | Fuel Price Indices | Library Measures | User Defined Measures (0) | NEAT Insulation Types

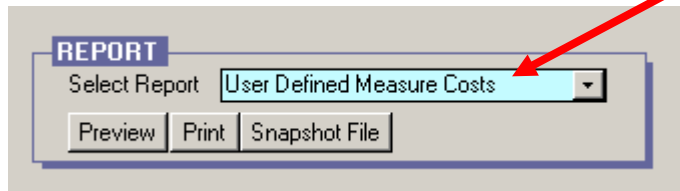
#	Measure Type	Measure Name	Active	Default Contractor	Default Cost Center	Life (yr)	Costs	
1	Building Insulation	Attic insulation R11	<input checked="" type="checkbox"/>			20	Costs	
2	Building Insulation	Attic insulation R19	<input checked="" type="checkbox"/>			20	Costs	
3	Building Insulation	Attic insulation R30	<input checked="" type="checkbox"/>			20	Costs	
4	Building Insulation	<b>Unit Costs for Measure: 3) Attic insulation R30</b>						
		Description	Type	Units	Unit\$			
5	Building Insulation	▶ Attic Insulation -Blown Cellulose - R-30	Insulation	SqFt	0.30			
6	Building Insulation		Labor	SqFt	0.60			
7	Building Insulation		Other	Each Attic	0.00			
8	Building Insulation	▶ Attic Insulation -Blown Fiberglass - R-30	Insulation	SqFt	0.33			
9	Building Insulation		Labor	SqFt	0.60			
10	Building Insulation		Other	Each Attic	0.00			

Record:  3  
NEAT -- NEAT -- NEAT -- N

**VIEW** Site Built (NEAT) Meas Record:  1 of 6

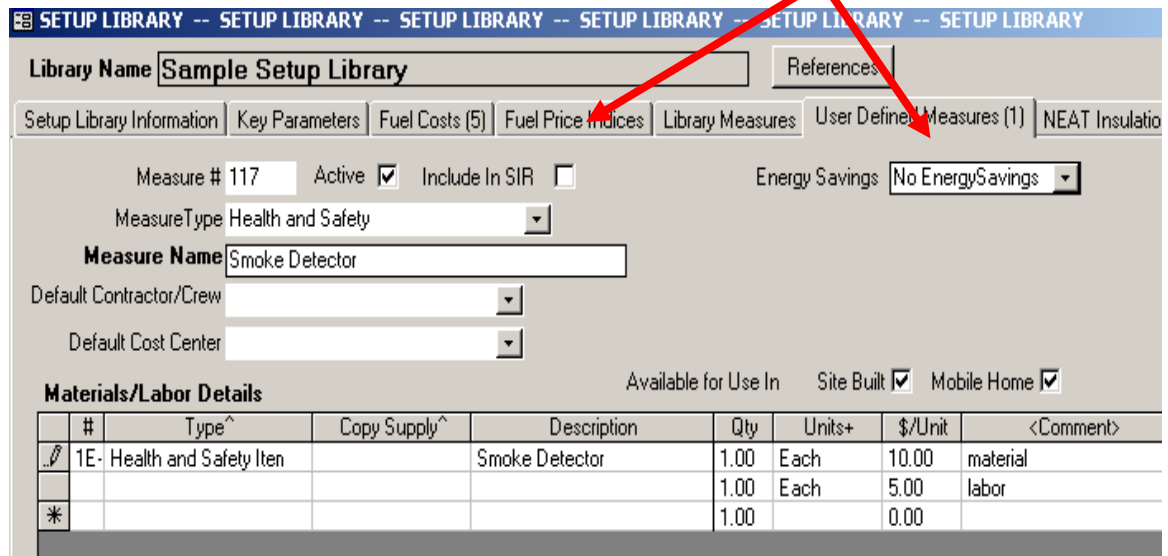
- Measures to pay attention to:
  - **Solar Screens.** If your agency is installing solar screens that block out 80% of heat gain or more, then you should click off the sun screen fabric box and click on **sun screen louvered**. You must have documentation in the files that the solar screen fabric is rated such.
    - If you are using a fabric **below 80%**, then click off sun screen louvered and click on **sun screen fabric**.
  - **A/C replacements.** The Btu descriptions are SET units—only enter the units that your agency installs that have the closet Btu to the values given. NEAT will adjust pricing and sizing to what is appropriate. Same goes for ton pricings.
- Use the checkbox in the Active column (third column) to turn off measures that are not used (with approval from The Department). You want to keep as many active as possible; however, measures such as vent dampers, IID, awnings may be deactivated.

- Next, you will build your “**User Defined Measures.**” As before, it is recommended that you go to the “**Setup Library Information**” tab and print out the “**User Defined Costs**” from the **REPORT** section, before starting this task. You can write your actual pricing for each item on the print out.



“**User Defined Measures**” are for 2 categories: **Health & Safety and Repairs.** These items have “**No Energy Savings.**”

- Remember to NOT click “Include in SIR” for **H&S** items



NOTES:

Remember to click “Include in SIR” for repairs:

Library Name **Sample Setup Library** References

Setup Library Information | Key Parameters | Fuel Costs (5) | Fuel Price Indices | Library Measures | User Defined Measures (1) | NEAT Insulation Types

Measure # 1 Active  Include In SIR  Energy Savings **No Energy Savings**

Measure Type **General Repairs**

Measure Name **Roof Repair**

Default Contractor/Crew

Default Cost Center

Materials/Labor Details Available for Use In Site Built  Mobile Home

#	Type^	Copy Supply^	Description	Qty	Units+	\$/Unit	<Comment>
1	Construction Materials		Roof Repair	1.00	SqFt	3.00	
				1.00	Hour	20.00	
*				1.00		0.00	

- Lastly, go back to the “Main” page and click on the “Supply Library”. You must enter appliances into the following tabs. These are needed so that the auditor’s can select replacement appliances.
  - Enter the following information for **water heaters**:

SUPPLY -- SUPPLY -- SUPPLY -- SUPPLY -- SUPPLY -- SUPPLY -- SUPPLY --

Supply Name **Sample Supply Library**

General Information | Cooling Equipment (0) | Construction Materials/Hardware (0) | D  
Hot Water Equipment (1) | Insulation (0) | Labor (0) | Lighting (0) | Miscellaneous

Description **40 GAL GAS WATER HEATER**

Manufacturer **BRADFORD WHITE** Model **D4403S6FBN**

Units+ **Each** \$/Unit **\$498.00**

Comment **LABOR & MATERIALS**

EnergyDetails >>

Fuel Type **Natural Gas** Energy Factor **0.67**

Capacity **40** Recovery Efficiency **72**

Input Units **kBTU** Life (yr) **15**

Input

Be sure to click on the **Energy Details** button and enter in the fields. Use the “New” button to add the other replacement appliances.

- Next, **refrigerators** with energy details:

The screenshot shows the 'Sample Supply Library' entry for a refrigerator. The 'Description' field contains '18 CF REFRIGERATOR'. The 'Manufacturer' is 'FRIGIDAIRE', the 'Model' is 'FRT181L6JW', and the '\$/Unit' is '\$700.00'. The 'Units+' dropdown is set to 'Each'. The 'Comment' field contains 'DELIVERY, DISPOSAL, LABOR & UNIT COSTS'. The 'EnergyDetails >>' button is highlighted with a red arrow. The 'EnergyDetails' section includes the following fields:

Capacity (cuft)	18	Height (in)	67	Style	Top Freezer
kWhPerYear:	383	Width (in)	30	Defrost	
Life (yr)	15	Depth (in)	33	Model Year	2010
				Years Made	0

- You should also, enter pricings for **cooling equipment** and **heating equipment**. Remember to enter the “energy details.”
- If you enter all items into your “Supply Library” tabs, your auditors can pull pricings from here for their work orders.

**Recommendation:** Before starting, print out the “Library Measure Costs” and “User Defined Measure Costs” from the Report section, and write in all your agency pricings for each. Use the above step by step guide to build or check your libraries. When setting up “password protection” be careful NOT to set feature number 4 in preferences until you have setup logins and passwords. Assign one of the “Admin” persons to check and update libraries.

## CREATING WORK ORDERS

Once a NEAT or MHEA Audit has been completed, it automatically populates the weatherization measures. This list of measures can be found under the “Measures” tab, located at end of the menu.

Audit Name:  Client ID:  Client Name:  Alt. Client ID:

Audit Information | Status | Shell | Heating (1) | Cooling (2) | Ducts/Infiltration | Baseloads | Health & Safety | Itemized Costs (3) | Utility Bills (0) | Photos (0) | **Measures (12)**

#	Measure Name	Components	WO	Contractor	Cost Center	<Est. Cost>	Est SIR	
1	Repair roof		<input checked="" type="checkbox"/>			\$230.00	0.0	Costs
2	Infiltration Redctn		<input checked="" type="checkbox"/>			\$95.00	13.6	Costs
3	Door Replacement	DR2 (3)	<input checked="" type="checkbox"/>			\$483.00	1.7	Costs
4	Duct Insulation		<input checked="" type="checkbox"/>			\$294.59	13.1	Costs
5	DWH Pipe Insulation		<input checked="" type="checkbox"/>			\$15.00	11.6	Costs
6	Smart Thermostat		<input checked="" type="checkbox"/>			\$75.00	9.4	Costs
7	DWH Tank Insulation		<input checked="" type="checkbox"/>			\$40.00	7.7	Costs
8	Insulate and seal attic access		<input checked="" type="checkbox"/>			\$29.60	5.3	Costs
9	Wall Insulation	WL1-N,WL2-S,WL3-E,W	<input checked="" type="checkbox"/>			\$1,070.60	4.1	Costs
10	Floor Ins. R-30	F1	<input checked="" type="checkbox"/>			\$1,540.00	3.6	Costs
11	Attic Ins. R-30	A1	<input checked="" type="checkbox"/>			\$1,260.00	2.7	Costs
12	Perform draft test		<input checked="" type="checkbox"/>			\$13.00	0.0	Costs

Select All | UnSelect All | Invert Select | **Create Work Order(s)**

Run Audit  
Last Run On: 10/26/2015 at 1:17 PM

To “Create a Work Order,” click on the button at the bottom of this page.

Create Work Order

There are work orders previously generated from this Audit

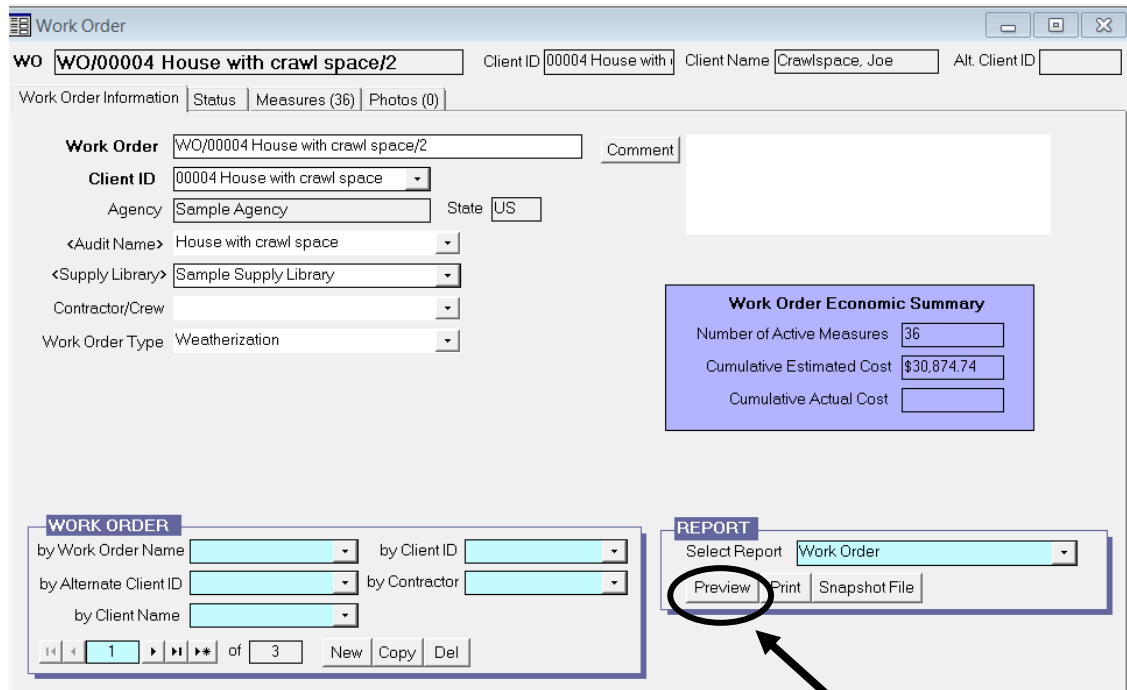
- SAVE the previously generated work orders and create new ones
- REPLACE the previously generated work orders with new ones
- CANCEL creation of work order

OK



You will be asked to save your work order, replace the current work order, or save the previous work order. Saving multiple work orders may be useful when working with multiple contractors.

Once you make a selection the number of work orders for this job will appear in a pop-up window. Select “OK” to complete your work order.



At the bottom of this page you may preview your work order in .pdf format for printing.

NOTES:

### Reading your work order

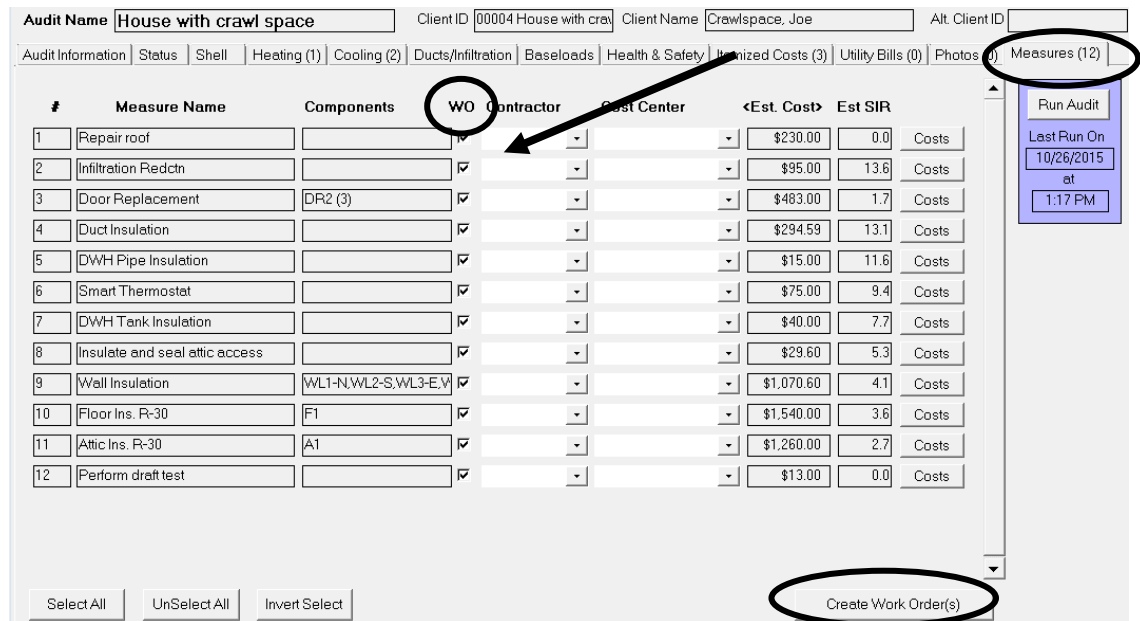
The work order will contain:

- Name of the Audit
- Client information
- All measures to be completed by the contractor

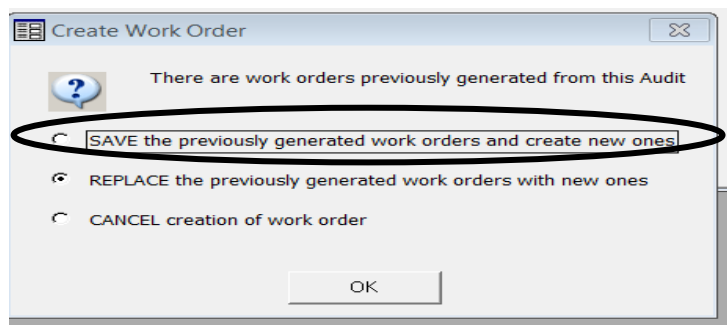
Comments entered while building the audit will populate on the work order. Use the Field Notes section to add additional notes for contractor clarification.

### MULTIPLE WORK ORDERS FOR MULTIPLE CONTRACTORS

If you have multiple contractors working on the same project, the Work Order feature allows the auditor to separate out contractor specific measures. The auditor may select each individual measure for contractor work orders by checking or un-checking the box under the heading WO.



Once the desired measures have been selected, you may create a new Work Order by selecting the button at the bottom of this tab. If this is going to be an additional work order you must select the “SAVE the previously generated work orders and create new ones” option.



You may preview the measures selected for this work order by clicking on the Preview button at the bottom of the page. You may also use the work order “Comment” box for additional installation information.

The screenshot displays the 'Work Order' application window. At the top, the work order ID is 'WO/00004 House with crawl space/2'. Below this, there are tabs for 'Work Order Information', 'Status', 'Measures (36)', and 'Photos (0)'. The main form contains several input fields: 'Work Order' (text), 'Client ID' (dropdown), 'Agency' (text), 'State' (text), '<Audit Name>' (dropdown), '<Supply Library>' (dropdown), 'Contractor/Crew' (dropdown), and 'Work Order Type' (dropdown). A 'Comment' box is also present. A blue box titled 'Work Order Economic Summary' contains three rows: 'Number of Active Measures' with a value of 36, 'Cumulative Estimated Cost' with a value of \$30,874.74, and 'Cumulative Actual Cost' with an empty field. At the bottom, there are two sections: 'WORK ORDER' with filters for 'by Work Order Name', 'by Client ID', 'by Alternate Client ID', 'by Contractor', and 'by Client Name'; and 'REPORT' with a 'Select Report' dropdown set to 'Work Order' and three buttons: 'Preview', 'Print', and 'Snapshot File'. The 'Preview' button is circled in black. A pagination bar at the very bottom shows '1 of 3' items and buttons for 'New', 'Copy', and 'Del'.