DALHOFF ASSOCIATES, LLC



NEATShell User's Manual

April 28, 2007

NEATShell User's Manual

© Dalhoff Associates, LLC 533 Marshall Circle, Verona Wi 53593 Phone 608.845.6551 gkdalhoff@compuserve.com

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Chapter

Introduction to NEATShell

EATShell mediates data transfer between your existing weatherization tracking system and NEAT. Data which are common to both applications are instantiated and passed transparently and seamlessly between the two applications.

NEATShell makes it practical for the auditor, who is familiar with the building, the recommended weatherization measures, and on-site measurements (such as blower door and CO testing) to automate the data entry for audit-recommended measures and to permit direct entry for all other field measurements and recommendations.

These capabilities expedite data entry while simultaneously eliminating duplicate data entry, minimizing paper records and record handling, and reducing the potential for errors

Integration between weatherization audits and the National Energy Audit Tool (NEAT)

- House data are instantiated in NEAT automatically if NEAT has not yet been run for that house. These data include Weatherization ID number, client name, address, house type, square footage, volume, heating fuel, and blower door readings. Thus no duplicate data entry is required, and the Weatherization ID number is used automatically for the Job Identifier in NEAT.
- In addition, the totals for infiltration measure costs, health and safety measure costs, and itemized costs are passed directly to NEAT. It is no longer necessary for the auditor to manually total these and enter them into NEAT.
- Costs used by the NEAT audit are automatically passed to NEAT using the costs currently used by the tracking system. When costs change in the tracking system, those costs are automatically and seamlessly updated in NEAT. Flat-rate, crew-based, or custom costs can be used.
- Recommended measures are automatically passed to the tracking system using the tracking system measure identifiers. Units of measurement are automatically reconciled between the

tracking system and audits (e.g., square-footage of insulation is automatically converted to pounds of insulation for blown cellulose measures.)

• NEATShell provides a summary report of all recommended measures for a building.

Connectivity

- Auditors can access the tracking system data in any of three ways:
 - 1) while connected to the tracking system computer via local area network,
 - 2) direct access tracking system if it is installed on the same computer,
 - 3) using a disconnected computer wherein data transfer is accomplished using a USB drive.
- Auditors can conduct audits and update any data regardless of whether or not they are in contact with the tracking system computer. All data are automatically synchronized the next time the tracking system is available to the computer (or USB drive) with NEATShell.

Backup copies of the major tracking system data tables are stored on the auditor's computer. These can be accessed in the event that the tracking system computer becomes inoperable

System Requirements

- NEATShell is an MS Windows-based application. It has been developed and tested extensively using Windows XP. It has been demonstrated to run on Windows 98. No problems are anticipated for use on Windows 2000.
- Weatherization Assistant Version 7.4.3.3 is currently supported.
- Even though NEATShell reads and writes to MS ACCESS databases used in NEAT and some tracking system software, MS ACCESS is NOT required to operate NEATShell.

NEATShell can be adapted to work with other audits, including the MHEA audit bundled in the Weatherization Assistant.

NEATShell can be further customized to meet the particular needs of your agency. Installation and support packages are available.



Installation and Setup



EATShell installations can be tailored to operate in several different modes, depending on whether the tracking system is installed on the same PC as the audit, or available on a LAN, or entirely disconnected from the PC with the tracking system. NEATshell is installed using a file called Setup.exe.

Installation Procedure

First, run Setup on the PC that the auditor uses.

Installation Specifications	×
NEATShell Installation	
How is this computer used?	
The WX tracking system can be accessed or run by this user from	
Weatherization Assistant can be accessed or run by this user from	
How will you transfer data to the tracking system computer?	-i I
O this computer is networked to the tracking system computer	
O I will use a USB drive or ZIP disk or other method to transfer data	
6	
	-
Cancel Next	

Figure 2.1 NEATShell Installation screen

One or both of the checkboxes can be selected, depending upon whether or not the tracking system can be accessed directly from the auditors's PC (on a LAN or if both the tracking system and audit are installed on the same computer).

If the second checkbox is selected, then one of the selections for data transfer must be selected. If USB or ZIP disk is selected, the user must create a folder on that drive and select it in the lower text box.

Installation Specifications
NEATShell Installation
How is this computer used?
✓ The WX tracking system can be accessed or run by this user from
Weatherization Assistant can be accessed or run by this user from
How will you transfer data to the tracking system computer?
O this computer is networked to the tracking system computer
 I will use a USB drive or ZIP disk or other method to transfer data
Cancel Next

Setup
Create or specify an existing directory on the USB drive or ZIP disk by dicking on the folder icon near the bottom of the form.
Select WAMS Directory Create Folder Delete Image: De
OK Cancel
C:\Documents and Settings\Gregory Dalhoff\Desktop
Figure 2.2 Setup for USB drive

Now, select 'Next'. The user will be advised that paths to the tracking system and/or the audit must be selected in the next form, the Setup/Preferences Form.

Specify Client Tracking System			ć
pecify Audit(s)			
Single Family Dwelling - Housing Type: H			
Audit Executable	<u> </u>	Version	~
Parameter File	# 4	Weather	4
Mobile Home - Housing Type: M			
Audit Executable	Ċ	Version	*
Parameter File	44 J	Weather	44
Multi-Family Dwelling - Housing Types: A,D,T,F,O	-		
Audit Executable	Ġ	Version	*
Parameter File	#4	Weather	44
gency Information]		
Auditor Name			
Agency Name	A4		

Figure 2.3 Setup/Preferences screen

Next, if the tracking system is accessible from this PC, then click on the folder icon on the first line and navigate to the tracking system executable (e.g., WAMS.mdb).

If the audit is installed on this PC, then continue with the following three steps:

1) tell NEATShell where to find it. Here again, click on the folder icon at the line beginning 'Audit Executable.' Navigate to the audit.



NEATShell assumes the default directory for Weatherization Assistant.

NEATShell currently supports a single audit, but is capable of supporting up to three separate audits.

INSTALLATION AND SETUP

- 2) Select the Version of NEAT, the parameter file, and your weather zone.
- 3) Enter the auditor name and agency name.

Specify Client Tr	acking System	C:\WAMS_Sample\WAMS.mdb				6
Specify Audit(s) ellina - Housin	n Tune: H				
Audit Executab	ole C:\Program	Files\Weatherization Assistant 743\wa.mde	6	Version	NEAT	~
Parameter F	ile Standard		#	Weather	DESMOIIA.WX	#
Mobile Home - H	Housing Type: N	1				
Audit Executab	ile 🗌		õ	Version		v
Parameter F	ile 🗌		#4	Weather		种
Multi-Family Dwe	lling - Housing	Types: A,D,T,F,O				
Audit Executab	le		6	Version		~
Parameter F	ie 🗌		种	Weather	- NE	#4
Agency Informa	ition					
Auditor Name	Burns					
Agency Name	Any CAA	A				

Figure 2.4 Editing the Setup/Preferences screen

Next, you will need to specify whether the audit will be used to specify baseload measures. If these are checked, then these measures must be set to be considered by the audit. Conversely, if these are unchecked (essentially meaning that the user enters these along with repair and health/safety measures, then the audit must be set so that it does not consider the measures.

Finally,

Click 'Update'

Click 'Exit'

NEATShell is now installed on this machine. If the tracking system is installed on a PC that is inaccessible from the auditor computer, then repeat the process on the tracking system PC.

INSTALLATION AND SETUP

What is changed on my computer?

A folder called 'C:\NEATShell' is created on all computers. This is used to store information on some of NEATShell's settings.

If the audit is installed on this computer AND the tracking system can be accessed from this computer (either on a network or both the tracking system and audit are installed on the same computer), then the NEATShell.exe program as well as another settings file are also added here.

If the audit is installed on this computer and the auditor transfers files via a USB drive, then the NEATShell.exe program and the additional settings file are installed on a folder on the USB drive (usually in a folder called NEATShell).

The auditor's copy of the client data, recommended measures data, and the list of available measures are also stored in the same location as the NEATShell.exe program. These are called 'client.lds, recmea.lds, and mealist.lds.

An executable 'LiveSupport.exe' is stored at the same location as the NEATShell.exe program.

There are NO changes to the system registry.

Finally, a shortcut called 'wa.lnk' is added to the folder where the Weatherization Assistant audit software is installed.

INSTALLATION AND SETUP

Chapter

3

Running NEATShell

EATShell has a single master menu, with several selections.

NEAT Shell	
NEAT Shell	Audit/Tracking-System Integration
	 Browse or Edit Databases Settings and User Preferences Check for Updates
Developed by:	Exit
Greg Dalhoff Dalhoff and Associates 533 Marshall Circle Verona, WI 53593 608-845-6551	Exit Without Saving Changes
gkdalhoff@compuserve.com	Version 2006.10.10 Copyright (C) 2004-2006 Dalhoff Associates, LLC

Figure 3.1 Main NEATShell menu screen

The main selection is **Browse or Edit Databases** which will be discussed in this section.

The Settings and User Preferences pops up the same form as Figure 2.2.

Check for Updates will update the NEATShell program (see support manual for an explanation).

Exit will save changes. If the tracking system is connected, then it will also synchronize data with the tracking system .

Exit Without Saving Changes will drop all changes to data from the current session.

<u>Starting NEATShell</u>

Click the NEATShell icon on the Desktop. The user will see a number of screens similar to the following:



Figure 3.2 Synchronizing

During this time, NEATShell attempts to connect with the tracking system. If it finds it, then it will post any changes to the tracking system and then retrieve a new copy of the client data and recommended measures. If the tracking system is not available, it simply loads the client data and recommended measures from the data stored on the auditor's computer.

Following synchronization, the user is presented with the main menu screen (Figure 3.1).

<u>If the user is simply updating the tracking system</u> from a USB drive, then the user selects **Exit**. The tracking system is now updated with changes that the auditor made and the USB drive is updated with a new copy of the client data and recommended measures.

<u>If the user is planning on running the audit</u>, then he/she selects **Browse or Edit Databases**. The **Materials Specification** screen (Figure 3.3) is shown. This is the main screen used when add a new audit to the database.

This screen is divided into two parts: the top is shows the data that are important to conducting an audit. These data are linked to the client data in the tracking system. The user can edit Weatherization ID, Structure Information, CFM50, and CO data. The user cannot add clients in this field or edit the Energy Assistance ID, phone number or address. These must be edited in the tracking system.

The lower part of the screen shows recommended measures, and is linked to the recommended measures of the tracking system. The measures can be entered by the auditor and are automatically entered when the audit is run.

At the very bottom are four buttons, labeled Run Audit, View Report, Finished, and Help. NEATShell saves a temporary backup file whenever any of these are pushed.

Also on the same line are arrow buttons, a '+' sign, a '-' sign. These are discussed in the next section.

Materials Specification	-	_	-	_	_	_	_	_	-	-	-	_	_		-)@
lient Information															3
Job Location															
Energy Assistance ID AnyLHPid	9	Name	Home	r	Simpson										
Weatherization ID AnyWXid	٩,	Address	742 E	vergreen Te	rrace						Q				
Phone 888-555-6528	9	City	Spring	gfield				Q	ZIP	5555	9				
Structure Information	✓ DV		~	CFM 50	House	Garage	Attic Leakage	CO Htg Sys	Wtr Htr	Stove	Other				
Stories 2 2 Occ. 5	¢	BTI		Pre-Wx	7,080			39	17						
Sg Ft 1,450 Volume 1	5,000	Zone		Post-W>	3,500				_		_				
S SEQ WorkItem	FC ME	EA Area	Qty	Units	Materials	3	La	abor		Total		Unit Mat'ls	Unit Labor	UnitTotal	-
A 2410 Attic insulation (per lb.) (100%)	F C	3 800	1280	Lb		285.44	_	217	.6		503.04	0.223	0.17	0.35	33
A 2810 Sidewall insulation (per lb.) (100%)	FW	/1 500	500	LP LP		111.5		14	5		256.5	0.223	0.29	0.51	3
A 5210 Bandjoist insulation (6"x16") (100%	FB	I 54	53	Sqft		15.9		15.3	37		31.27	0.3	0.29	0.5	19
A 5335 Lrawispace insulation - wet spray - 0 6020 Weatherstrip with a carrier	FF	1 600	900			42.9		10	5U 21		63.9	21.45	10.5	21.0	.3 L 95
0 7060 Lumber 1x12	F	•	12			18		7.5	i6		25.56	1.5	0.63	2.1	3
0 8680 Carbon monoxide detector	F C	2	3	3		150		7.8	9		157.89	50	2.63	52.6	33
A 9120 Furnace replacement - 92%	F FR	RH	1	Each		1442.5		69	16		2138.5	1442.5	696	2138	.5
Location A1															1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Workitem Notes															
Workitem Workitem Notes Run Audit 🎒 View Report	🕨 Fini	ished									<>> <>	• •	+	- 🕘 He	lp

Figure 3.3 Materials Specification screen

An Example of a Typical Session of Entering Information and Conducting an Audit

During normal operation, the user would select Browse or Edit Databases from the opening screen.

First, the user must find the client in the database. This can be done by clicking any of the magnifying glass icons in the Client Information section. If the client has not been assigned a Weatherization ID by the tracking system user, then the Energy Assistance ID is usually used to navigate to the correct client

	cion										
lient Information											
Job Location		\frown									
Energy Assistance ID	AnyLHPid	Name	Homer	Simpson							
Weatherization ID	[Addres	s 742 Evergreen Te	жасе					٩		
Phone	888-555-6528	S City	Springfield			9	ZIP 5	5555	9		
Structure Information	Heat Src. P	✓ DWH Src F	CFM 50) House Garage	Attic Leakage	CO Htg Sys	Wtr Htr	Stove	Other		
Stories 2 🗘	Occ.	5 ¢ BTL	Pre-Wx	7,080		39	17				
Sq Ft 1,45	0 Volume	15,000 Zone	Post-W/	× 3,500							
S SEU	Workltem	FU MEA Area	Uty Units	Materials	Lab	or		l otal		Unit Mat'ls Unit Labor	Unit I otal
Location											
location lotes Vorkitern lotes											
Location Votes Workitem Notes	View Report	()* Finished							00	0 (b 🔶	- 🌒 Help

Figure 3.4 Searching for the client

Clicking on the magnifying glass (search icon) will bring up a search screen (Figure 3.5) that allows the user to type in an identifier (in our case, this is the Energy Assistance ID). Once the correct ID has been located, click OK.

0							
Search for AFN							
an							
	• •	*					
AFN	ACN	AD1	ADD	AHA	ALA	APT	AR(^
▶ AnyLHPid	11111111		742 Evergreen Terrace		Homer J. Simpson		
<							>
							Cancel

Figure 3.5 Search screen

Next, assign a Weatherization ID if there is not already one entered. Do this by clicking in the Weatherization ID box (do not click the search icon since you are entering a new ID).



When *entering a new tracking system id* or when *changing an existing id*, remember to click in the box.. If you are *searching for a pre-existing id*, then you would click on the search icon.

Warnin	ng 🛛 🔊
⚠	Before proceeding, verify that the name and address are correct. Are they correct?
	Yes No

The user will be presented with a screen to enter the Tracking System ID:

Assign Weatherization ID						
Enter/modify Tracking System ID:						
	-					
	Cancel					
	Cancer					

Figure 3.6 Screen to Assign or Edit a Weatherization ID

Enter a unique ID and then click 'OK'.



Notice that the 'OK' button is not enabled. It will remain that way until a unique Weatherization ID is entered.

Next, you will see a screen asking if you want to apply the new ID to recommended measures with the old ID number. Since you are creating a new ID, click 'Yes'. The purpose of this box is to allow the user to change a Weatherization ID, in case there was an error when it was originally entered. If measures had been entered with the incorrect ID number, and the user wants to change the ID, then clicking 'Yes' will assign the new ID to the recommended measures with the old ID. This way the user does not have to re-enter all of the measure data just because of an error in assigning the Weatherization ID.



Figure 3.7 Prompt for applying the new ID to recommended measures

In case the audit had been run with the incorrect ID, the user is reminded to change the Job Identifier in NEAT:



Figure 3.8 Reminder to change the Job ID in the audit

After the Weatherization ID is entered, the 'Run Audit' button is enabled. Continue entering basic house information that is required by the audit (Figure 3.9).

lient Information												(
Job Location												
Energy Assistance ID	AnyLHPid	A Name F	lomer	Simpson								
Weatherization ID	AnyWXid	Address 7	42 Evergreen Terr	race					9			
Phone	888-555-6528	🔍 City S	Springfield			9	ZIP 5	5555	9			
tructure Information			CFM 50	Hause Cares	Attic	CO Uba Cura	Side Uni	Channe	Other			
Ise Type H 💙	Heat Src. P	DWH Src P	×	House Galage	Leakage	Hig Sys	wunu	Slove	Utriel			
Stories 2 🗘	Occ. 5 :	≎ BTL	Pre-Wx	7,080		39	1/					
Sq Ft 1,45	i velume 1	S,000 Zone	T OSCOWA	3,500								
S SEQ	WorkItem	FC MEA Area	Qty Units	Materials	La	abor		Total		Unit Mat'ls Unit Labor	UnitTotal	
S SEQ	Workitem	FC MEA Area	Qty Units	Materials	La	abor		Total		Unit Mat'ls Unit Labor	UnitTotal	
S SEQ	WorkItem	FC MEA Area	Qty Units	Materials	L	abor		Total		Unit Mat1s Unit Labor	UnitTotal	

Figure 3.9 Basic house information

Now that the house information is completed, it is time to begin entering information on health and safety measures, infiltration reduction measures, and repair measures. None of these items are specifically recommended by the audit, so they must be entered by the auditor. NEATShell makes this very easy to do, and it is better to enter these now, before running the audit because NEATShell will total the costs of measures in each of these categories and enter the totals into Weatherization Assistant.

Click on the '+' sign in the lower right (see Figure 3.9). This pops up an Add Item search box. Type the name of the Workitem (not the measure code, which in this case is the 'SEQ' number). When the item has been identified, click 'OK'.

Add Item						-	
earch for WorkItem	1						
um							
	• •	×					
FIL	SEQ	WorkItem	CAT	MEA	OQTY	HRS	1
	6710	Lockset - keyed	R00.00			0	2
	6720	Lockset - passage	R00.00			0	2
	7050	Lumber 1x10	R00.00			0	2
•	7060	Lumber 1x12	R00.00			0	20
	7010	Lumber 1x2 (all lumber per ft)	R00.00			0	2
	7020	Lumber 1x4	R00.00				2
()							>
				C	ок	Can	cel

Figure 3.10 Add Item screen

Enter a quantity in the Qty box, and then 'Enter' or 'Tab'. The screen would now look like this:

Materials Specifica	tion															-08
<u>F</u> ile																
Client Information																٢
Job Location																
Energy Assistance ID	88-02143	9	Name	Homer		Simpson										
Weatherization ID	Test	9	Address	742 E v	ergreen Ter	race						9				
Phone	888-555-6528	9	City	Springfi	ield				9	ZIP 5	5555	9				
Structure Information				-	CFM 50			Attic	CO	5.6.10		0.1				
Hse Type H 🗸	Heat Src. P	✓ D\	VH Src P	*	Destude	House	uarage	Leakage	Htg Sys	wunu	Stove	Uther				
Stories 2 C	Occ.	5 0	BTL	_	Pre-wx Poetada	7,080			39	1/						
SqFt 1,018	3 Volume	15,000	Zone		T USC WA	3,500										
Recommended Meas	ures															
					S. 1. 20. 11		9765									
S SEQ	WorkItem	FC ME	EA Area	Qty	Units	Materia	ls 10	La	abor	EC	Total	OF FC	Unit Mat'ls U	nit Labor	UnitTotal	212
V 7060 Lumber 1x12				12			18		1.	06		29.96	1.5	0.63		2.13
Leasting																
Notes																
Workitem Notes																~
	1	C 2														
😽 Run Audit 🧲	View Report	🚺 Fini	shed										• •	+	- 0	Help
													🔍 Brow	vse	🔍 Browse	

Figure 3.11 Recommended Measures after adding an item

The user can add Workitem Notes for any given measure in the lower section of the Recommended Measures screen (the big oval in Figure 3.12). The Workitem Notes also extract the measure name and square footage from the audit, placing them in brackets at the beginning of the note. The evaluator must add all comments **after** the bracketed comment from NEAT. The Location Notes are taken from the components in the Audit, and are not user-editable.

The user can navigate through the measures using the four arrow buttons in the lower right corner. As we have already seen, the '+' sign is used for adding a measure, the '-' for deleting the current measure.

Stories 2 ± 0 Worktern FC MEA Area Qty Units Materials Labor Total Unit Mathe Unit Labor Unit Total X SEQ Worktern insulation (per lb.) (100%) F Cl. 288 374 Lb 83.402 63.58 146.582 0.27 0.07		mation															
Energy Assistance (D) B8-02143 Name Home Simpson Weatherization (D) Test Address 742 Evergreen Terrace City Springfield City Sprie City Sprin	Job Location	1															
Weatherization ID Test Address 742 Evergreen Terrace Address Phone 888-555-6528 City Springfield 2 Jp 55555 4 Structure Information F Heat Src P DWH Src P House Garage Attic C0 Hse Type H Heat Src P DWH Src P House Garage Attic C0 Stories 2 0 cc. 5 BTL Pre-Wx 7,080 39 17 10 S g R1 1.018 Volume 15,000 Zone PostWx 3,500 10 10 10 10 mit Matts Unit Labor UnitTotal Kecommended Measures Volume 15,000 Zone 23 0.17 0 A 2310 Attic insulation (per lb.) (1003) F C1 28 374 Lb 83.402 63.58 146.982 0.223 0.17 0 A 2410 Attic insulation (per lb.) (1003) F C1 28 39 15 14.985 24.45 43.605 0.223 0.17 0 A 2410 A	Energy As:	sistance ID	88-02143	<u>_</u>	Name	Homer		Simpson									
Structure Information City Springfield Zpr 55555 City Hase Type H Heat Src P DWH Src P House Garage Atric Control Contro	Weath	erization ID	Test	9	Address	742 Ev	ergreen Ter	race						9			
Structure Information CFM 50 Attic Leakage CO Hg Sys Wtr Htr Stove Other Stories 2 0 cc. 5 BTL Pre-WX 7,080 39 17 10 10 10 10 10 10 10 10 10 10 17 10 <t< th=""><th></th><th>Phone</th><th>888-555-6528</th><th>9</th><th>City</th><th>Springf</th><th>field</th><th></th><th></th><th></th><th>9</th><th>ZIP 5</th><th>5555</th><th>9</th><th></th><th></th><th></th></t<>		Phone	888-555-6528	9	City	Springf	field				9	ZIP 5	5555	9			
Hse Type H V Heat Src P V DWH Src P V Stories 2 0cc. 5 BTL Pre-WX 7,080 39 17 10 Sq Ft 1,018 Volume 15,000 Zone Post-WX 3,500 39 17 10 Recommended Measures Post-WX 3,500 10 10 101k Matts Unit Matts U	Structure Inf	ormation			-		CFM 50		121	Attic	CO		20				
Stories 2 ↓ Occ. 5 ↓ BTL Pre-Wx 7,090 39 17 Sq Ft 1,018 Volume 15,000 Zone Post-Wx 3,500 39 17 Recommended Measures I A 210 Attic insulation (per lb) (1002) F Cl 288 374 L B at 02 63.58 146.982 0.223 0.17 0.0 A 2210 Attic insulation (per lb) (1002) F Cl 288 374 L 59.995 45.05 104.145 0.223 0.17 0.0 A 2210 Poored stic insulation (per lb) (1002) F Cl 168 255 24.65 43.605 0.223 0.27 0.17 0.0 A 2210 Poored stic insulation (per lb) (1007) F VI 1056 Lb 53.995 45.05 104.145 0.223 0.21 0.0 A 2210 Pioored stic insulation (per lb) (1003)	Hse Type	н 🗸	Heat Src. P	✓ DW	'H Src P	*		House	Garage	Leakage	Htg Sys	WtrHtr	Stove	Uther			
Sq Ft 1.018 Volume 15,000 Zone Post-Wx 3,500 Recommended Heasures S S EEQ Work/Item FC MEA Area Qty Units Materials Labor Total Unit Mat's Unit Labor UnitTotal I A 210 Attic insulation (per lb.) (1002) F Cl 288 374 Lb 83.402 63.58 146.982 0.223 0.17 0. A 2410 Attic insulation (per lb.) (1002) F Cl 166 265 Lb 59.995 45.05 104.145 0.223 0.17 0. A 2510 Floored attic insulation (per lb.) (1007 F SI 300 85 Lb 18.955 24.65 43.605 0.223 0.27 0. A 2510 Floored attic insulation (per lb.) (1007 F SI 228 259 Lb 57.757 54.39 112.147 0.223 0.21 0. Q 3040 Box around scuttle opening (1"x12' F I 1 <	Stories	2 🗘	Occ. 5 (*	BTL		Pre-Wx	7,080			39	17					
S SEQ WorkItem FC MEA Area Qtv Units Materials Labor Total Unit Matts Unit Labor Unit Total II A 2310 Attic insulation (per lb.) (1002) F Cl 288 374 Lb 83.402 63.58 146.982 0.223 0.17 0. A 2410 Attic insulation (per lb.) (1002) F Cl 166 265 Lb 59.905 44.05 104.145 0.223 0.17 0. A 2510 Disord attic insulation (per lb.) (1007 F Cl 288 374 Lb 83.402 63.58 146.982 0.223 0.17 0. A 2510 Disord attic insulation (per lb.) (1007 F Cl 30.08 51 18.955 24.465 43.605 0.223 0.21 0. A 2510 Disord attic insulation (Attic) (per II F Size 259 Lb 57.757 54.39 112.147 0.223 0.21 <th>Sq Ft</th> <th>1,018</th> <th>Volume 1</th> <th>5,000</th> <th>Zone</th> <th></th> <th>Post-Wx</th> <th>3,500</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>	Sq Ft	1,018	Volume 1	5,000	Zone		Post-Wx	3,500									
A 2410 Attic insulation (per lb.) (1002) F Cl 166 265 Lb 59.095 45.05 104.145 0.223 0.17 0 A 2510 Floored attic insulation (per lb.) (1007) F SI 300 85 Lb 18.955 24.65 43.605 0.223 0.29 0 A 2510 Floored attic insulation (per lb.) (1007) F SI 228 259 Lb 57.757 54.39 112.147 0.223 0.21 0.0 A 2510 Sidewall insulation (per lb.) (1007) F SI 1056 1056 Lb 235.488 3062.44 541.728 0.223 0.21 0.0 A 2810 Sidewall insulation (per lb.) (1007) F VI 1056 1056 Lb 235.488 3062.44 541.728 0.223 0.21 0.0 0 3040 Box around scuttle opening (1*x12* F II 1 14 7.08 21.88 14 7.88	I A 2310 A	ttic insulatio	n (per lb.) (100%)	F CI	288	374	LЬ		83.402		63.5	8		146.982	0.223	0.17	0.0
A 2510 Floored attic insulation (per lb.)(100; F SI 300 85 Lb 18.955 24.65 43.605 0.223 0.29 0. A 2710 Ceiling starts insulation (Attic) (per ll F SI 228 259 Lb 57.757 54.39 112.147 0.223 0.21 0. A 2810 Sidewall insulation (per lb.) (100; F VI 1056 Lb 235.488 306.24 541.72 0.223 0.29 0. 0 3040 Box around scuttle opening (1*x12; F II 1 14 7.88 21.88 14 7.88 2 0.23 0.29 0. 0 3040 Box around scuttle opening (1*x12; F II 1 14 7.88 21.88 14 7.88 2 0.3060 Attic access w/s F A 1 9.5 5.25 14.75 9.5 5.25 14.75 9.5 5.25 14.75 9.5 0.46 1.36 0.46 1.36 0.46 1.36 <	A 2410 A	ttic insulatio	n (per lb.) (100%)	F CI	166	265	Lb		59.095		45.0	15		104.145	0.223	0.17	0.3
A 2710 Ceiling slants insulation (Attic) (per II F SI 228 259 Lb 57.757 54.39 112.147 0.223 0.21 0 A 2810 Sidewall insulation (per Ib) (100%) F VI 1056 1056 Lb 2335.488 306.24 541.728 0.223 0.23 0.29 0. 0 3040 Box around scuttle opening (1°x12' F II 14 7.88 218.88 14 7.88 2 0.23 0.23 0.29 0. 0 3050 Atic access w/s F A 1 9.5 5.25 14.75 9.5 5.25 14 0 3080 Atic access insulation (6x15) per sc F II 1 1.5 0.46 1.96 1.5 0.46		loored attic i	nsulation (per lb.) (100	F SI	300	85	LЬ		18.955		24.6	5		43.605	0.223	0.29	0.5
A 2810 Sidewall insulation (period) (100%) F W1 1056 Lb 236488 306.24 541.728 0.239 0.29 0 0 3040 Box around southle opening (1"x12" F II 14 7.88 21.88 14 7.88 21 0 3050 Attic access w/s F A 1 9.5 5.25 14.75 9.5 5.25 1 0 3080 Attic access insulation (6x15) per st F I 1.5 0.46 1.96 1.5 0.46	A 2510 F	eiling slants	nsulation (Attic) (per II	F SI	228	259	Lb		57.757		54.3	19		112.147	0.223	0.21	0.4
O 3040 bit access w/s F A 1 9.5 5.25 14.75 9.5	A 2510 F A 2710 C	idewall insul	ation (per lb.) (100%)	FW	. 1056	1056	Lb		235.488		306.2	.4 10		21.99	0.223	7.99	0.8
0 3080 Attic access insulation (6x15) per sc F II 1 1.5 0.46 1.96 1.5 0.46	A 2510 F A 2710 C A 2810 S	low around a	June opening (1 A12	F A		i i			95		5.2	5		14 75	95	5.25	14
	A 2510 F A 2710 C A 2810 S O 3040 E O 3050 A	lox around s attic access (WS			1			1.5		0.4	6		1.96	1.5	0.46	1
	A 2510 F A 2710 C A 2810 S		uttle opening (1"x12"	F II F A		1			14 9.5 1.5		7.8 5.2 0.4	18 15 16		21.88 14.75 1.96	14 9.5 1.5	7.88 5.25 0.46	
	A 2510 F A 2710 C A 2810 S O 3040 E O 3050 A O 3080 A Leocition B Notes	lox around s utic access i utic access i Attic Ins. R-3	ws nsulation (6x15) per so D. 288 sq ft] Docum	F II	cific infor	mation a	bout this me	easure here	. This info	rmation will b	e assigned	to this SE	Q number	if the aud	it is rerun for	this house.	

Figure 3.12 Measure list after a repair, health and safety, and an infiltration reduction measure are added

For purposes of this tutorial, we have added a repair measure, an infiltration reduction measure, and a health and safety measure.

Now, we are ready to run the audit. Click the Run Audit button in the lower left of the screen.

Measure Selection Options	
In some cases, the audit cannot distinguish between similar measures For these measures, the auditor must provide additional information to best fit the dwelling.	in the tracking system database. restrict the measures to those that
Attic Insulation Blown insulation where depth restrictions O Blown cellulose, labor costs based on an added depth of up to 4 in. O Blown cellulose, labor costs based on an added depth of 4 to 6 in. O Blown cellulose, labor costs based on an added depth of 6 to 10 in. O Blown cellulose, labor costs based on an added depth of 10 to 12 in. Roof rafters	Foundation and Crawlspace Insulation O Fiberglass batt, 3 1/2 in. per sq ft O Celotex, 1 in. per sq ft O Blueboard, 2 in. per sq ft O Wet Spray Cellulose R-11 O Wet Spray Cellulose R-19
 Blown cellulose per LB, labor costs based on an added depth of up to 6 in. Blown cellulose per SF, labor costs based on an added depth of up to 6 in. Blown cellulose FACIA, labor costs based on an added depth of up to 6 in. 	Wet Spray Cellulose R-30 Blown Cellulose (assumes R-28) Blown Fiberglass (assumes R-28) Floor Insulation
 Blown cellulose, 3 1/2 in. (note: NEAT will show this as FG Batt) Fiberglass batt, 16 in. center, 3 1/2 in. Fiberglass batt, 24 in. centers, 3 1/2 in. 	 Floor joist insulation, per pound Floor joist insulation, per square foot
Furnace Replacement 0 80% Efficiency Furnace 92% Efficiency Furnace 0 Boiler 0 Electric Resistance	Save Selections Continue

Figure 3.13 Measure Selection Options'

The user is presented with a 'Measure Selection Options' screen. The purpose of this screen is to tailor the measure costs to the audit. The audit uses only a single value of cost for a measure, but costs can vary depending on the amount of the measure installed. For example, labor costs increase very little with added insulation depth, but the material cost increases in proportion to the depth. This screen allows the auditor to 'fine tune' the costs of the installed measures to provide better estimates of the costs for the measures installed in this dwelling. If changes are made, the user can click the Save Selections button, which will make the current settings the default for future audits.

After pressing 'Continue', the Weatherization Assistant is automatically launched.



Figure 3.14 Weatherization Assistant



Figure 3.15 Selecting the client in Weatherization Assistant

Go to the NEAT Audit. Click on the 'Job' box, then 'Paste' (or Control-V), and the Weatherization ID is pasted into the Job box. Now, press 'Enter' or click once on the 'Run' button. You will move to a record in the Weatherization Assistant that *is already filled out for your client!* NEATShell has passed all of the necessary house information to Weatherization Assistant and created the Job for you. In addition, the *current costs of all measures have been written into Weatherization Assistant!*

Now, select the Ducts & Infiltration tab. Here you can see that the blower door readings have already been passed to Weatherization Assistant. In addition, all infiltration measure costs have been totaled and automatically entered. There is no need to total these by hand.

Figure 3.16 Ducts & Infiltration tab

Next, press the Itemized Costs tab. Here you can see that Health and Safety items have been totaled and added. The same has been done for Repair and Other Items. In addition, Include in SIR box is checked for Repair and Other items. Here again, all this has been done automatically.

Weatherization Assistant			- 8 ×
File Edit View Insert Figmat Records Window Help	_	 	
IEAT Job <anywidd> Clent <former simpson=""> New Job Run Report Find New Job U Clent Find New Job U Clent Clent</former></anywidd>			
Long description of itemized cost item (must be unique for this Job)			

Figure 3.17 Itemized Costs tab

Next, click the Heating Systems tab. You will see that fuel type has been passed to Weatherization Assistant You will need to finish the heating system description on this tab, including assigning the measure costs. Note that in this example, we have a total replacement cost of \$2,600. We will come back to this number later in the tutorial.

Weatherization Assistant	_ 8 ×
Ele Edit View Insert Fyrmat Becords Window Help	
E NA1 Jube -compt/02/cb Cleanta - Choose - Simply on a second of the second of th	
Length of uninsulated duct work (ft) [Min 0 ,Max 500]	

Figure 3.18 Heating Systems tab



Note: Weatherization Assistant has a bug that prevents the correct labor cost from being entered for high efficiency furnaces. For high efficiency replacements, you should specify 'Replacement Mandatory' and put in a system efficiency of 92.

Due to this bug, measure costs for heating systems do not transfer properly from NEATShell, so the user has to enter these here.

Continue to run NEAT as usual, adding wall, window, attic, foundation, etc. Then preview the results.

V 7 8 B 🖉		∑ ¥ × × A								
Edit View Insert Fon	mat <u>R</u> ecords <u>W</u> indow <u>H</u> elp				dun IV A					
_						_	_	_	_	_
National Energ	v Audit Tool (NEA	T) Agency MATURA	Action Corporator				Pre Retrofit	Post R	etrofit	
Output Report	,	Run On 1/25/2006	10:41:24 Run I	1138250484		Hea	ting Coolis	g Heating	Cooling	
· · ·		Version 7.4.3.308	12/03 JobI	D 1138249348	Output required (kBtu/r	17)	76.1	0.0 17.6	0.0	
Job anyWX	d AuditDate	1/25/2006								
WeatherFile DESMO	Auditor IIA.WX ParawName	Standard								
Comment	1 b b/c tante				Approxim	ate Manual	J Compo	nent		
					Contributi	Communication	neuung	Dra Patra	Dan & Data ali:	_
Annual Energ	v and Cost Savings				Component Type	Component Name	Area or Volume (Inf)	Pre Retroju Load (Btu/h)	Load (BTU/h)	_
Index Recommended Measure	Components He (MMBtu)	ting Cooling (\$) (kWh) (\$	BaseLoad	d Total (S) (MMBau)	Wall Wall	W L1 W L2	200 300	4342.4 6513.6	1342.8 2014.2	
1 Infiltration Redotn 2 Replace Http System	12.1	69 0 41 0	0 0	0 12.1	Attle Foundation	A1 F1	800 600 11600	38336.0 4223.1 12732.9	1666.5 4223.1 8356.0	
3 Attb Ins. R-38	A1 40.8	235 0	0 0	0 40.8	Total heat loss Duct loss	Tot Duct	0	66148.1 9922.2	17602.6	
5 Foundation ins.	F1 5.5	32 0	0 0	0 5.5	Output required	Output	ō	76070.3	20243.0	
Energy Saving	Measure Economi	~c			Special N	otes				
Index Recommended	Components Measure	Measure Measure	Cumulative	Cumulative	NOTE: Read caute	ons in NEAT User's Manua	related to sizing resul	ts.		
Measure	Savings (\$/yr)	Cost (\$) SIR	Cost (\$)	SIR	NOTE: Read caute	User's Manual for further sinns in NEAT Liser's Manual	zing details. Imiated to sizing resul	te		
2 Infiltration Redicts	69	26 0.0 64 9.1	20	65						
3 Replace Htg. System 4 Attic Ins. R-38	41 A1 235	2600 0.2 503 7.0	26 89 31 93	0.4	Retrofit M	leasures NO	T Consid	ered		
5 Wall Insulation 6 Foundation Ins.	WL1,WL2 59 F1 32	257 3.4 442 1.1	34.49 3891	1.6 1.5	Electric vent damper					
7 Health and Safety Item except Htg Sys Repl	s 0	158 0.0	40.48	0.0	Evaporative cooler	,				
Mataniala					Floor insulation R11 Floor insulation R30					
Materials	-	-			High efffumace					
1 Celling insulation	Lype Celluis, Biwn - R-38	Quant	uy Unus 00 Sqft		Low E wholeve Refrigerator replacement					
2 Wall insulation 3 Foundation ins.	Blwn Cellulose	5	00 Sqft 40 Sqft		Replace AC					
4 Replacement Fulmac	50 kBtu Existing, 20 kBtu Post-ret.		1 Each		smart the mostat Storm windows					
	8/260				Sun screen fabric Sun screen louvered					
Pre/Post Retro	fit Energy and Load	ds			Thermal vent damper					
	Pre Retrofit	Post Retrofit	_		Window film					
Annual load (MBtu/vr)	Heating Cooling	Heating Cooling	r 0		Window replacement Window sealing					
Annual Energy (MBtu/yr)	93.9 0.0	18.1 0	0		Window shading			_		
lob: mywxia	Citent: Homer's impson	Date: 1/25/2006		ruge 1 of 1	Job: anywixid	Client:	nomer Simpson	Date:	1/23/2006	Page 2 of 2

Figure 3.19 NEAT results

Now, click close and exit Weatherization Assistant as usual.

At this point, you are returned to the Material Specifications of NEATShell. Notice that the 'Run Audit' button now says 'Get Results'. Click it.

ient Information																	(
ob Location																	
Energy Assistance ID	88-02143	9	Name	Homer		Simpson											
Weatherization ID	Test	9	Address	742 E v	ergreen Terr	ace						9					
Phone	888-555-6528	9	City	Springf	ield				9	ZIP 5	5555	9					
itructure Information	-		-		CFM 50	Union	e	Attic	CO	5. A. 11.	Charlos	04					
lse Type H 👻	Heat Src. P	✓ D\	VH Src P	*		House	Garage	Leakage	Htg Sys	wana	stove	Uther					
Stories 2 🗘	Occ.	5 \$	BTL	_	Pre-Wx	7,080			39	17							
Sq Ft 1,018	Volume	15,000	Zone		FUSI-WX	3,500											
S SEQ \\ 0 6020 Weatherstrip 0 7060 Lumber 1x12 0 8680 Carbon mono	VorkItem with a carrier vide detector	FC MI F E F	EA Area 3	Qty 2 12 3	Units	Material	s 42.9 18 150	La	ibor 2 7.5 7.8	:1 i6	Total	63.9 25.56 157.89	Unit Mat'ls U 21.45 1.5 50	Init Labor 10.5 0.63 2.63	UnitTotal	31.95 2.13 52.63	
o ooo cabormono	AIDE DECECTOR	[tell is		5			150		7.0			107.00	50	2.03		32.03	
ocation																	
Votes Morkitem																	10001000
votes																	

Figure 3.20 Screen after closing Weatherization Assistant

Materials Specification				-0
Ele				
Client Information				۲
Job Location				
Energy Assistance ID AnyLHPid Q Nan	e Homer Simpson			
Vicestherinster ID AnvWXid Addres	742 Evergreen Terrace	q		
888-555-6528 Q	Springfield	9 55555 9		
Structure Information	CEM 50			
Heat Sto P Y DWH Sto	P V House Garage Leakac	Htg Sys Wtr Htr Stove Other		
Charles 2 A Dec 5 A DT	Pre-Wx 7.080	39 17		
Stolles 2 Volume 15 000 T	Post-Wy a roo			
Sq Pt 1,450 Volume 15,000 Zone	3,500			
Recommended Measures				
S SEQ WorkItem FC MEA Are	a Qty Units Materials	Labor Total	Unit Mat'ls Unit Labor	UnitTotal
A 2410 Attic insulation (per lb.) (100%) F CI 80	DO 1280 LB 285.44	217.6 503.04	0.223 0.17	0.393
J A 2810 Sidewall insulation (per lb.) (100%) F W 50	DO 500 LB 111.5	145 256.5	0.223 0.29	0.513
A 5210 Bandjoist insulation (6"X16") (100%, F Bi S	54 53 Sqft 15.9	100 37.27	0.3 0.29	0.59 -
D 6020 Weatherstrip with a carrier E P	2 429	210 210	21.45 10.5	21.95
0 7060 Lumber 1v12 F	12 18	7 56 25 56	15 0.63	213
0 8680 Carbon monoxide detector F C	3 150	7.89 157.89	50 2.63	52.63
A 9120 Furnace replacement - 92% F FRH	1 Each 1442.5	696 2138.5	1442.5 696	2138.5 🗸
Location WL1 WL2				
Nes Walking I-Wall Insulation, 500 sq ft-1 Add notes here. Th	nese will be assigned to the same measure if the audit	is rerun.		~
Notes				~
🛛 🥰 Run Audit 🛛 🎒 View Report 🕅 🕕 Finished			1 🕨 🏟 🛨	🗕 🕜 Help
			Srowse	🔺 Edit

Figure 3.21 Screen after pressing 'Get Results'

NEATShell now imports the measures recommended by Weatherization Assistant.

Note that the Quantity has been converted to the units called for in the tracking system – in our case the square footage of insulation has been converted to pounds of insulation.

Also note the codes in the first two columns of the Recommended Measures (circled red in Figure 3.21).

The second column shows if the measure is a (F)lat rate or (C)ustom measure (where the costs are specified for each job, as is typical for crew and contractor installations).

The first column is a code for the source of information and is specified as:

Code	Description
А	Audit-recommended measure
Е	Edited audit-recommended measure
Ι	Inserted measure that is usually called for by the audit
Ο	Other (all measures that the auditor entered, such as H&S, repair, infiltration reduction)

If a measure was recommended by the audit but later was edited by the auditor, it is assigned a code of 'E'.

If the auditor specifies a measure that is normally recommended by the audit, then it is assigned a code of T.



For both the 'E' and T' codes, the user is prompted to remove or keep these measures before running the audit. Keeping the measures would result in duplicate measure *if the audit called for the same measure*.

After this screen appears, the user will see one similar to Figure 3.22.

NEATShell 🛛 🛛	(
The total of NEAT Costs is \$3,465 compared to WAMS Costs of \$3,447	
ОК	

Figure 3.22 Comparison of NEAT and tracking system costs

This message indicates that the Audit costs are \$18 more than the tracking system values. In some cases, the difference is greater, and in those instances, it is likely that the Furnace Replacement costs used in NEAT do not match those in the tracking system. If this occurs, be certain that the tracking system default values are correct and be certain to enter the same values into NEAT.

Next, you can generate a list of the measures for this client. Press the View Report button, and you will be presented with a report such as the one in Figure 3.24.

Name: Homer Simpson Address: 742 Evergreen Terrace, Springfiel Phone: 888-555-6528	u veat	nenzau		пскеро			10/9 LIHE Wea	/2006 EAP File Nu atherization	1:35 Imber: Ar ID: AnyV	22 PM NyLHPid VXid
Mea Src Work Item	Component(s)	Units -	Quantity	—— Estimat Material	Labor	Total	Quantity	——— Actua Material	Labor	Total
2410 A Attic insulation (per lb.) (100%) Workitem Notes: [-Attic Ins. R-38. 800 sq ft]	A1	Lb	1,280	\$285.44	\$217.60	\$503.04		· · <u>· · · · · · · · · · · · · · · · · </u>		
2810 A Sidewall insulation (per lb.) (100%) Workitem Notes: [–Wall Insulation. 500 sq ft–]	WL1,WL2 Add notes here.	Lb These will b	500 be assigned	\$111.50 I to the sam	\$145.00 e measure	\$256.50 e if the audit	is rerun.			
5210 A Bandjoist insulation (6"x16") (100%) Workitem Notes: [-Sillbox Ins 54 sq ft-]	F1	Sqft	53	\$15.90	\$15.37	\$31.27				
5335 A Crawlspace insulation - wet spray - Workitem Notes: [–Foundation Ins 600 sq ft–]	F1	Lb	900	\$90.00	\$180.00	\$270.00		·		
6020 O Weatherstrip with a carrier Workitem Notes:			2	\$42.90	\$21.00	\$63.90		·		
7060 O Lumber 1x12 Workitem Notes:			12	\$18.00	\$7.56	\$25.56				
8680 O Carbon monoxide detector Workitem Notes:			3	\$150.00	\$7.89	\$157.89		·		
9120 A Fumace replacement - 92% Workitem Notes:	50 kBtu Existing 29 kBtu Post-ret. sized	Each	1	\$1,442.50	\$696.00	\$2,138.50				
Total Cost				\$2,156.24	\$1,290.4	\$3,446.66				
rkitem Notes: 	sized			\$2, 156.24	\$1,290.4	\$3,446.66				

Figure 3.23 List of recommended measures

Pressing the printer icon at the top will send this report to the printer.

This completes the audit.

Click 'Finished', and the 'Exit'.

NEATShell closes and updates the tracking system if it is available. If the tracking system is not online, then it saves changes to the auditor's PC.

Note that if you wish to lose ALL changes for this session, click Exit without saving changes.

Handling Unsuccessful Synchronizations

Occasionally you may get a message that says 'Update Error' (see below for an example). This can happen if the exact same recommended measure (for the same house) was added to WAMS directly by somebody using WAMS at the same time that the measure was being added to NEATShell. This should never happen, as the evaluator should be the only person adding measures on the house until the paper records are handed over to the WAMS operator.

It is also possible that the last time NEATShell successfully sent the data to WAMS, but the did not receive a message back from WAMS that the procedure was successful. If NEATShell is not notified by WAMS that the send was successful, it saves its own copy of the measure to try and resend the next time it synchronizes with WAMS. When NEATShell tries to resend the measure to WAMS the next time it synchronizes, it finds a duplicate in WAMS and so it causes the error message to occur. Theoretically, this should never happen, but it is possible that the communication from WAMS back to NEATShell failed.

Update T Error Me	ype: Inserted	Reconcile Action
The cha they wou relations date, ren	nges you requested to the table were not successful because uld create duplicate values in the index, primary key, or hip. Change the data in the field or fields that contain duplicate nove the index, or redefine the index	Cancel
		1. St
Field Name	Inserted Value	
Field Name FIL	Inserted Value AnyWXid	
Field Name FIL SEQ	Inserted Value AnyWXid 7060	
Field Name FIL SEQ WorkItem	Inserted Value AnyWXid 7060 Lumber 1x12	
Field Name FIL SEQ WorkItem CAT	Inserted Value AnyWXid 7060 Lumber 1x12 R00.00	

If you see the Error Message as shown above, which mentions 'duplicate values in the index, primary key, or relationship', then all you have to do is click on the Cancel button in the upper right, where it says Reconcile Action. You will see the data is now flagged as **<Unchanged>**. Then Click OK (see figure below).

poate	Error -		
A	Update Type:	Inserted	Reconcile Action
<u>.</u>	Error Message:		Skip
	The changes y they would cre relationship. C data, remove t	you requested to the table were not successful becaus ate duplicate values in the index, primary key, or Thange the data in the field or fields that contain duplica the index, or redefine the index	ate
Field Na	ame	Inserted Value	
Field Na FIL	ame	Inserted Value <unchanged></unchanged>	
Field Na FIL SEQ	ame	Inserted Value <unchanged> <unchanged></unchanged></unchanged>	
Field Na FIL SEQ WorkIte	ame	Inserted Value <unchanged> <unchanged> <unchanged></unchanged></unchanged></unchanged>	
Field Na FIL SEQ WorkIte CAT	ame	Inserted Value <unchanged> <unchanged> <unchanged> <unchanged></unchanged></unchanged></unchanged></unchanged>	

Note that you might have to repeat this a number of times: normally when this occurs, it happens for each of the measures in that particular house – so if your house has 15 recommended measures, you will likely see this messagebox 15 times.

If you get the Update Error message box and it says something other than '**duplicate values** in the index, primary key, or relationship', then you should call me because something else is the problem. In the past, every occurrence has been due to duplicates, so it is unlikely that you will encounter a different message.

Startup Message – Using Backup Copies

The following message may be seen upon starting NEATShell if your previous session ended abnormally. This can occur if the PC was powered off before closing NEATShell, or if your computer 'froze up' and had to be shut down, or if you do not have enough space on your drive to save the data files (this rarely occurs, but can happen if you have less than 25 MB available on your hard drive or on the USB drive).



NEATShell saves a backup copy whenever it is started. It also saves temporary files whenever the Run Audit button, the View Report, or the Finished buttons are pressed.

You can select any of the three buttons to restore data from your previous session: NEATShell will attempt to restore the selected backup but will fall back to any other available backup if it was unsuccessful.

The upper button uses the most recent backup, and is the **recommended** option.

The second option, Use temporary backup..., will restore any data that was saved if you had run (or attempted to run) the NEAT Audit in you previous session.

The third option will recover data that was used to start your previous session, but you will lose any changes you made in your last session. You can use select this option if you did not run the audit (or attempt to run the audit) in your previous session, or if you would like to lose the changes made during your previous session..

If you select the second option, but didn't actually run the audit (or did not attempt to run the audit) in your previous session, then you might find duplicate records. This is because the temporary backup was not posted to WAMS. If there are duplicate recommended measures, then these are handled as noted in the previous section **Handling Unsuccessful Synchronizations**, Selecting the first button (the recommended option) will help to avoid this situation.

Chapter

User Notes

This section summarizes the user notes from the previous section. In addition, a few circumstances not mentioned earlier are covered.

1) Different components should start with different prefixes. Use a unique prefix for different types of components, such as walls, windows, doors, attics, foundations, etc. This is the default for NEAT.

2) On installation, a few new fields are added to the WAMS tables. This is transparent to the user and causes no problems in WAMS.

3) WAMS users should set 1,2,3 for the contactor/crew flags (the CRO field) in WAMS in the MATTempTemplate. This way NEATShell knows what to expect and you don't have to reenter these with each new job.

4) WAMS has been changed slightly. On the screen where non-flate-rate measures are entered, the 'original cost' and 'changed cost' lines are no longer used. The costs for non-flat-rate measures are entered on the line for the total costs.

5) NEATShell get its estimated measure costs (the ones that are sent to NEAT before an audit is run) from four columns in the MatTempTemplate: RMAT, RLAB, OMAT, and OLAB.

RMAT and RLAB correspond to the per-unit (per pound or per item) flat-rate costs for materials and labor, respectively. OMAT and OLAB refer to the same costs for custom (non-flate-rate) measures.

NEATShell assumes that any measure in MatTempTemplate that has an RMAT with a number other than zero or blank is a flat-rate measure (otherwise it is considered a non-flat rate measure).

So, if any given measure is a **flat-rate measure**, you must be certain to have the costs set in RMAT (any non-zero cost), and you should have a cost (possibly zero) for RLAB.

So, if any given measure is a **custom (non-lat-rate measure)**, you must be certain to have the costs set in OMAT and OLAB (either of which could be a zero value).

6) You should enter final measure costs (after the job is completed) in WAMS as has been done in the past. You need to have updated WAMS so that the lines for original and changed costs are 'greyed out' (I think that you all have this change already). Note that the final costs can also be entered in NEATShell, in the Materials and Labor columns, if you prefer to have the auditor enter these.

7) The default MEA in the MatTempTemplate should be cleared of values like 'N30' for water heater measures, as these might not match the water heater type that is entered in the Client Information screen (DWH Src).