NEAT Recommended Measures

Agency: Demonstration Agency | State: US | Run On: 8/24/2005 10:14:05 | RunID: 1130265813 | Version: 8.2.7.6 8/29/05 | AuditID: -1909609271

Audit Name: 05_348SB | Audit Date: 8/22/2005

Client ID: 05_348 | Auditor: Admin

Weather File: SAMPLEUS.WX | Setup Library Name: Setup Library (Demo)

Comment: Typical 28'x30' one-and-a-half-story house. No attached garage. Long axis faces north/south.

Annual Energy and Cost Savings

Index	Recommended Measure	Components	Heating (MMBtu)	Heating ($)	Cooling (kWh)	Cooling ($)	BaseLoad (kWh)	BaseLoad ($)	Total (MMBtu)
1	Infiltration Redctn		12.2	122	0	0	0	0	12.2
2	Low Flow Showerheads		0.0	0	0	0	248	17	0.8
3	DWH Pipe Insulation		0.0	0	0	0	186	13	0.6
4	Smart Thermostat		5.3	53	0	0	0	0	5.3
5	DWH Tank Insulation		0.0	0	0	0	329	23	1.1
6	Lighting Retrofits	LT1	0.0	0	0	0	1437	101	4.9
7	Attic Ins. R-19	FA4	0.8	8	0	0	0	0	0.8
8	Attic Ins. R-19	FA1	5.8	58	0	0	0	0	5.8
9	Insulate and seal attic access		0.0	0	0	0	0	0	0.7
10	Wall Insulation	WLN-1	5.0	50	0	0	0	0	5.0
11	Wall Ins. R-13 Batt	FA2	1.7	17	0	0	0	0	1.7
12	IID		5.2	52	0	0	0	0	5.2
13	Sillbox Ins.	F1	0.5	5	0	0	0	0	0.5

Energy Saving Measure Economics

Index	Recommended Measure	Components	Measure Savings ($/yr)	Measure Cost ($)	Measure SIR	Cumulative Cost ($)	Cumulative SIR
1	Infiltration Redctn		122	250	3.4	250	3.4
2	Low Flow Showerheads		17	20	9.7	270	3.9
3	DWH Pipe Insulation		13	15	8.6	285	4.1
4	Smart Thermostat		53	75	7.0	360	4.7
5	DWH Tank Insulation		23	40	5.7	400	4.8
6	Lighting Retrofits	LT1	101	52	4.0	452	4.7
7	Attic Ins. R-19	FA4	8	32	3.3	484	4.6
8	Attic Ins. R-19	FA1	58	223	3.2	707	4.2
9	Insulate and seal attic access		7	30	3.0	737	4.1
10	Wall Insulation	WLN-1	50	241	2.6	978	3.8
11	Wall Ins. R-13 Batt	FA2	17	91	2.4	1069	3.6
12	IID		52	225	1.6	1294	3.3

Index	Recommended Measure	Components	Measure Savings ($/yr)	Measure Cost ($)	Measure SIR	Cumulative Cost ($)	Cumulative SIR
13	Sillbox Ins.	F1	5	53	1.2	1347	3.2
14	Address Wood Stove/Fireplace Present		0	55	0.0	1402	0.0
15	Adjust fan limit control settings		0	15	0.0	1417	0.0
16	Anticipator Adjustment Needed		0	20	0.0	1437	0.0
17	CO Monitor is Needed		0	70	0.0	1507	0.0
18	Fix Insufficient Clearance from Combustibles		0	15	0.0	1522	0.0
19	Fix Plumbling Leaks (Basement/Crawlspace)		0	75	0.0	1597	0.0
20	Fix Recessed Lights Present (Attic)		0	65	0.0	1662	0.0
21	Install Bathroom Exhaust Fan		0	270	0.0	1932	0.0

Materials

Index	Material	Type	Quantity	Units
1	Ceiling Insulation	Celluls,Blwn - R-19	448	SqFt
2	Wall Insulation	Celluls,Blwn	239	SqFt
3	Kneewall Ins.	Faced Batt - R-13	120	SqFt
4	Sill Insulation	Faced Batt - R-19	77	SqFt
5	IID		1	Each
6	Smart Thermostat		1	Each
7	Compact Fl.	38 Watt	4	Each
8	DHW Tank Insulation		1	Each
9	DHW Pipe Insulation		1	Each
10	Low Flow Shower Heads		1	Each
11	CO monitor (+)		1	Each
12	Bathroom exhaust fan (+)		1	Each
13	R-30 faced batt insulation (+)		1	Each

Pre/Post Retrofit Energy and Loads

	Pre Retrofit		Post Retrofit	
	Heating	Cooling	Heating	Cooling
Annual load (MBtu/yr)	64.0	0.0	40.7	0.0
Annual Energy (MBtu/yr)	86.3	0.0	49.8	0.0
Heat loss/gain (kBtu/hr)	49.3	17.4	34.8	12.8
Output required (kBtu/hr)(ton)	56.6	1.4	40.0	1.1

Annual Energy and Cost Savings (Adjusted)

Index	Recommended Measure	Components	Heating (MMBtu)	Heating ($)	Cooling (kWh)	Cooling ($)	BaseLoad (kWh)	BaseLoad ($)	Total (MMBtu)
1	Infiltration Redctn		14.4	144	0	0	0	0	14.4
2	Low Flow Showerheads		0.0	0	0	0	248	17	0.8
3	DWH Pipe Insulation		0.0	0	0	0	186	13	0.6

Index	Recommended Measure	Components	Heating (MMBtu)	Heating ($)	Cooling (kWh)	Cooling ($)	BaseLoad (kWh)	BaseLoad ($)	Total (MMBtu)
4	Smart Thermostat		6.3	63	0	0	0	0	6.3
5	DWH Tank Insulation		0.0	0	0	0	329	23	1.1
6	Lighting Retrofits	LT1	0.0	0	0	0	1437	101	4.9
7	Wall Insulation	WLN-1	5.9	59	0	0	0	0	5.9
8	Insulate and seal attic access		0.0	0	0	0	0	0	0.7
9	Wall Ins. R-13 Batt	FA2	2.1	21	0	0	0	0	2.1
10	Attic Ins. R-30	FA4	1.1	11	0	0	0	0	1.1
11	Attic Ins. R-30	FA1	7.9	79	0	0	0	0	7.9
12	IID		6.1	61	0	0	0	0	6.1
13	Sillbox Ins.	F1	0.6	6	0	0	0	0	0.6

Energy Saving Measure Economics (Adjusted)

Index	Recommended Measure	Components	Measure Savings ($/yr)	Measure Cost ($)	Measure SIR	Cumulative Cost ($)	Cumulative SIR
1	Infiltration Redctn		144	250	4.1	250	4.1
2	Low Flow Showerheads		17	20	9.7	270	4.5
3	DWH Pipe Insulation		13	15	8.6	285	4.7
4	Smart Thermostat		63	75	8.3	360	5.4
5	DWH Tank Insulation		23	40	5.7	400	5.5
6	Lighting Retrofits	LT1	101	52	4.0	452	5.3
7	Wall Insulation	WLN-1	59	241	3.1	693	4.5
8	Insulate and seal attic access		7	30	3.0	723	4.5
9	Wall Ins. R-13 Batt	FA2	21	91	2.8	814	4.3
10	Attic Ins. R-30	FA4	11	50	2.8	864	4.2
11	Attic Ins. R-30	FA1	79	353	2.8	1217	3.8
12	IID		61	225	1.9	1442	3.5
13	Sillbox Ins.	F1	6	53	1.4	1495	3.4
14	Address Wood Stove/Fireplace Present		0	55	0.0	1550	0.0
15	Adjust fan limit control settings		0	15	0.0	1565	0.0
16	Anticipator Adjustment Needed		0	20	0.0	1585	0.0
17	CO Monitor is Needed		0	70	0.0	1655	0.0
18	Fix Insufficient Clearance from Combustibles		0	15	0.0	1670	0.0
19	Fix Plumbling Leaks (Basement/Crawlspace)		0	75	0.0	1745	0.0
20	Fix Recessed Lights Present (Attic)		0	65	0.0	1810	0.0
21	Install Bathroom Exhaust Fan		0	270	0.0	2080	0.0

Materials (Adjusted)

Index	Material	Type	Quantity	Units
1	Ceiling Insulation	Celluls,Blwn - R-30	448	SqFt
2	Wall Insulation	Celluls,Blwn	239	SqFt
3	Kneewall Ins.	Faced Batt - R-13	120	SqFt
4	Sill Insulation	Faced Batt - R-19	77	SqFt
5	IID		1	Each
6	Smart Thermostat		1	Each

Index	Material	Type	Quantity	Units
7	Compact Fl.	38 Watt	4	Each
8	DHW Tank Insulation		1	Each
9	DHW Pipe Insulation		1	Each
10	Low Flow Shower Heads		1	Each
11	CO monitor (+)		1	Each
12	Bathroom exhaust fan (+)		1	Each
13	R-30 faced batt insulation (+)		1	Each

Heating Energy Consumption Comparison

Month	Day	Days in Period	Consumption		Degree Days	
			Actual	Predicted	Actual	Predicted
1	15	30	218	184	930	913
2	17	33	244	221	1177	1090
3	14	25	156	126	684	669
4	16	33	97	91	554	549
5	13	27	34	26	238	215
6	15	33	19	10	96	117
7	15	30	1	1	38	19
8	14	30	0	0	0	9
9	16	33	6	1	32	36
10	17	31	33	19	221	182
11	13	27	73	61	380	401
12	12	29	142	125	831	688
Total		361	1023	865	5181	4888
%Difference			-15.4		-5.7	

Approximate Manual J Component Contributions to Peak HEATING Load

Component Type	Component Name	Area or Volume (Inf)	Pre Retrofit Load (Btu/h)	Post Retrofit Load (BTU/h)
Wall	WLE-1	213	1132.7	1132.7
Wall	WLN-1	239	4338.9	1341.7
Wall	WLN-2	92	803.3	803.3
Wall	WLS-1	239	2076.6	2076.6
Wall	WLS-2	92	803.3	803.3
Wall	WLW-1	213	1850.3	1850.3
Window	WD1	16	509.2	509.2
Window	WD2	16	509.2	509.2
Window	WD3	16	509.2	509.2
Window	WD4	16	509.2	509.2
Window	WD5	8	254.6	254.6
Window	WD6	8	254.6	254.6
Door	DR1	20	408.7	408.7
Door	DR2	20	408.7	408.7
Attic	FA1	392	5366.1	778.2
Attic	FA2	120	1642.7	520.8
Attic	FA3	437	5287.1	5287.1
Attic	FA4	56	766.6	111.2
Foundation	F1	840	6895.4	6895.4
Infiltration	Inf	10320	14933.8	9333.6

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Component Type	Component Name	Area or Volume (Inf)	Pre Retrofit Load (Btu/h)	Post Retrofit Load (BTU/h)
Total heat loss	Tot	0	49260.1	34297.5
Duct loss	Duct	0	7389.0	5144.6
Output required	Output	0	56649.1	39442.1

Approximate Manual J Component Contributions to Peak COOLING Load

Component Type	Component Name	Area or Volume (Inf)	Pre Retrofit Load (Btu/h)	Post Retrofit Load (BTU/h)
Wall	WLE-1	213	314.4	314.4
Wall	WLN-1	239	1204.5	372.5
Wall	WLN-2	92	223.0	223.0
Wall	WLS-1	239	576.5	576.5
Wall	WLS-2	92	223.0	223.0
Wall	WLW-1	213	513.7	513.7
Window	WD1	16	336.0	336.0
Window	WD2	16	576.0	576.0
Window	WD3	16	963.2	963.2
Window	WD4	16	963.2	963.2
Window	WD5	8	168.0	168.0
Window	WD6	8	288.0	288.0
Door	DR1	20	113.5	113.5
Door	DR2	20	113.5	113.5
Attic	FA1	392	2779.9	454.3
Attic	FA2	120	851.0	291.9
Attic	FA3	437	2540.5	2540.5
Attic	FA4	56	397.1	64.9
Foundation	F1	840	0.0	0.0
Infiltration	Inf	10320	2463.4	1646.1
People	People	2	552.0	552.0
Appliances	Appl	1	1200.0	1200.0
Total Sensible	TotS	0	17360.6	12494.2
Ducts	Ducts	0	0.0	0.0
Total (with ducts)	TotW	0	17360.6	12494.2
Size (tons)	Size	0	1.4	1.0
Latent Load (inf)	LatentI	0	1685.7	1126.4
Latent Load (occ)	LatentO	0	460.0	460.0
Latent Load (tot)	LatentT	0	2145.7	1586.4
Total Load	Total	0	19506.3	14080.6
Size (tons)	Size	0	1.6	1.2

Special Notes

NOTE: Heat loss and Output required are only guides to sizing equipment.
NOTE: See NEAT User's Manual for further sizing details.
NOTE: Read cautions in NEAT User's Manual related to sizing results.
NOTE: (+) in the Materials list indicates there are more related User Defined Materials.

Comments

Type	Code	Comment
Wall	WLE-1	1st story east wall.
Wall	WLN-1	1st story north wall. Height of 9' includes joist space.

Type	Code	Comment
Wall	WLN-2	2nd story north wall.
Wall	WLS-1	1st story south wall. Height of 9' includes joist space.
Wall	WLS-2	2nd story south wall.
Wall	WLW-1	1st story west wall.
Infiltration		Target (post weatherization) blower door reading estimated assuming that wall insulation would not be installed because there is already a 1" batt installed. Infiltration reduction cost is a typical value.

Retrofit Measures NOT Considered

Electric vent damper

Electric vent damper IID

Flame retention burner

Thermal vent damper

NEAT Input Report

Client Information

Client ID	05_348	Alt. Client ID	
Client Name	Tanner, David		
Address	114 Athens		
Unit No.			
City	Anytown	State US	Zip 01234
County		Other Geo. Ident.	

Occupants

Number of: Occupants	2
Elderly	1
Disabled	0
Native American	0
Children	0
Primary Language	English

Dwelling

Dwelling Type	Site Built	Ownership	Owned
Primary Heat. Fuel	Natural Gas	☐ High Energy Use	
Secondary Heat. Fuel		☐ High Energy Burden	
☐ Previously Weatherized		Year Built	1952
Year			

Comment

Energy Index

Floor Area (sq ft)	1290	Total Heating (BTU/HDD/sq ft)	22.3
Heating Degree Days (base 65 F)	3400		

	Annual Cost	Estim. % for heating
Primary Heating Fuel	$978.00	100
Secondary Heating Fuel		

Contact Information

Contact Name	Home Ph	Work Ph	Cell Ph	Contact Type	Primary Applicant	Comment
Tanner, David	(111) 764-5687	(111) 764-3789	(111) 764-9902	Applicant/Person of Record	☑	
Tanner, John		(254) 567-8908		Applicant/Person of Record	☐	Son of primary applicant

Audit Information

Audit Information

Audit Name	05_348SB	**Number of Conditioned Stories**	1.5
Assigned To	Tor, Audrey	**Audit Floor Area (sq. ft.)**	1290
Current Status	Recommendations Generated On 10/25/2005	☑ **Billing Adjust**	
Comment	Typical 28'x30' one-and-a-half-story house. No attached garage. Long axis faces north/south.	☐ **Impute Cooling**	

Libraries

Setup Library	Setup Library (Demo)	**Setup Library Description**	This library is used for demonstration
Fuel Costs	Agency Fuel Prices		
Supply Library	Demonstration Supply Library	**Supply Library Description**	Supply library for demonstration
Weather File	SAMPLEUS.WX		

Photo Folder C:\Program Files\Weatherization Assistant 8273\photos

Audit Status History

Type	Status	Date	Changed By	Comment
NEAT Audit	Recommendations Generated On	8/24/2005	admin	
NEAT Audit	Audit Complete and Locked On	8/24/2005	Admin	
NEAT Audit	Site Visit Completed On	8/22/2005	admin	
NEAT Audit	Site Visit Scheduled For	8/19/2005	admin	

Walls

							Existing Insulation		Added Insulation		
Wall Code	Orient.	Area (sq ft)	Meas No.	Exposure	Exterior Type	Wall Type	Type	R-Value	Type	Addl. Cost	Comment
WLE-1	East	224	1	Exposed	Wood	Platform Frame	Blown Cellulose	13	Blown Cellulose		1st story east wall.
WLN-1	North	270	1	Exposed	Wood	Platform Frame	None		Blown Cellulose		1st story north wall. Height of 9' includes joist space.
WLN-2	North	98	1	Exposed	Wood	Platform Frame	Fiberglass Batts	3	Blown Cellulose		2nd story north wall.
WLS-1	South	270	1	Exposed	Wood	Platform Frame	Fiberglass Batts	3	Blown Cellulose		1st story south wall. Height of 9' includes joist space.
WLS-2	South	98	1	Exposed	Wood	Platform Frame	Fiberglass Batts	3	Blown Cellulose		2nd story south wall.
WLW-1	West	224	1	Exposed	Wood	Platform Frame	Fiberglass Batts	3	Blown Cellulose		1st story west wall.

Windows

Window Code	Wall Code	No. of Windows	Frame Type	Glazing Type	Leakiness	% Shaded	Window Size (inches) Width	Height	Retrofit Options	Addl. Cost	Comment
WD1	WLN-1	2	Wood or Vinyl	Single with Metal		0	24	48	Evaluate All		
WD2	WLS-1	2	Wood or Vinyl	Single with Metal		0	24	48	Evaluate All		
WD3	WLE-1	2	Wood or Vinyl	Single with Metal		20	24	48	Evaluate All		
WD4	WLW-1	2	Wood or Vinyl	Single with Metal		20	24	48	Evaluate All		
WD5	WLN-2	1	Wood or Vinyl	Single with Metal		0	24	48	Evaluate All		
WD6	WLS-2	1	Wood or Vinyl	Single with Metal		0	24	48	Evaluate All		

Doors

Door Code	Wall Code	No. of Doors	Door Type	Area (sq ft)	Storm Door Condition	Optional Dimensions (in) Width	Height	Comment
DR1	WLN-1	1	Wood Solid Core	20	Adequate			
DR2	WLS-1	1	Wood Solid Core	20	Adequate			

Unfinished Attics

No data was entered for this audit.

Finished Attics

Attic Code	Attic Area Type	Attic Floor Type	Area (sq ft)	Existing Insulation Type	Existing Insulation Depth (in)	Added Insulation Measure No.	Added Insulation Type	Added Insulation Max. Depth (in)	Addl. Cost	Comment
FA1	Outer Ceiling Joist	Unfloored	392	Fiberglass Batts	1	1	Cellulose Blown			
FA2	Kneewall		120	Fiberglass Batts	1					
FA3	Roof Rafter		437	Fiberglass Batts	1	2	Cellulose Blown	5.5		
FA4	Collar Beam	Unfloored	56	Fiberglass Batts	1	3	Cellulose Blown			

Foundations

Found. Code	Found. Type	Found. Insul. Options	Area (sq ft)	Ceiling R Value	Perim. Length (ft)	Perim. Exp. (%)	Meas. No.	Wall Height (ft)	Wall Exp. (%)	Wall R Value	Addl. Costs Floor Insul	Wall Insul	Comment
F1	Unintentionally Conditioned	Wall Only	840	0	116	100	1	8	25	0			

Heating Systems

System Code: HS1

Equipment Type: Forced Air Furnace

Fuel: Natural Gas

Location: Heated Space

Heat Supplied (%): 100

Primary System: ☑

Manuf.:

Model:

Comment:

Uninsulated Supply Duct

Length (ft):

Perimeter (in):

Location:

REQUIRED HEATING SYSTEM DETAILS

Input Units: No Input

Input Rating:

Output Capacity (kBTU/hr): 70

Steady State System Efficiency (%): 78

Condition: Fair

Smart Thermostat? ☐

Heat Pump HSPF:

Automatic Vent Damper

Present ? ☐

Recommended ? ☑

Flue Diameter (in): 6

Pilot Light / IID

IID ? ☐ Pilot Light ? ☑

On in Summer ? ☑

Power Burner ? ☐

Retention Head

Present ? ☐

Recommended ? ☐

System Retrofit

Options: Tuneup Performed

	Standard	High Efficiency
System AFUE	86	92
Labor Cost	$0.00	$600.00
Material Cost	$9,999.99	$1,200.00

Heating Systems (Continued

Heating Systems (Continued

OPTIONAL HEATING SYSTEM DETAILS

OPERATIONAL TESTS

Flue Gas Analysis

	Audit	Insp.
Combustion Air Inlet Temp (F)	70	70
Flue Gas Temp (F)	570	470
Net Stack Temp (F)	500	400
Percent Oxygen (%)	10	9
Percent Carbon Dioxide (%)	6	7
Smoke Number		
Steady State Efficiency (%)	74	78

Carbon Monoxide

	Audit	Insp.
In Flue (ppm)	30	10
Free Air Reading in Flue (ppm)	58	18

Heat Rise

	Audit	Insp.
Return Temp (F)	68	68
Supply Temp (F)	120	125
Temp Rise (F)	52	57
Listed/Rated Temp Rise (F)		

Comment: Tune-up performed.

VENT TESTS

Venting Information

Damper Type	None found
Damper Condition	Not applicable
Chimney Type	Masonry-Lined
Chimney Condition	Fair
Flue Type	Metal Single Wall
Flue Condition	Fair
Flue / Damper Diameter (in)	6
Combustion System Type	Unsealed
Combustion Air Intake	Adequate
Other Venting Related Problems	☐

Normal Operating Conditions Draft Measurements

	Audit	Insp.
Outdoor Temp (F)	30	25
Draft (Pa or Inches of Water)	6	8
Spillage Time (sec)	30	15

Comment:

INSPECTIONS

Other Items

Cracked Heat Exchanger	☐
Insufficient Clearance from Combustibles	☑
Electric Service Switch	Good
Gas Leak Present	☐
Fuel Shutoff Valve Not Present	☐
Drip Leg Not Present	☐
Any Other Heating System Problems	☐

Comment: Tell occupants to move clothes away from furnace.

THERMOSTAT DETAILS

Thermostat Type	Mechanical (mercury bulb)
Daytime Thermostat Setting (F)	72
Nighttime Thermostat Setting (F)	65
Relocate Thermostat	☐
Anticipator Current (amps)	0.2
Anticipator Setting (0-1)	0.4
Anticipator Adjustment Needed	☑

Comment:

Heating Systems (Continued

Heating Systems (Continued

OPTIONAL HEATING SYSTEM DETAILS (Continued)

FURNACE COMPONENTS

Limit Controls

Control Settings are Adjustable	☑	Fan On Setting (F)	95
Limit Control Not Working	☐	Fan Off Setting (F)	90
		High Limit Setting (F)	170

Burner and Pilot

Burner Type	Ribbon	Pilot Type	Standing Pilot (on in summer)
Burner Condition	Fair	Pilot Condition	Fair

Blower and Belt

Blower Type	Belt Drive	Belt Size	14
Blower Condition	Dirty	Belt Play (in)	0.5
Motor Current (amps)			
Belt Condition	Poor (but working)		

Accessories

Humidifier	None
Electronic Air Cleaner	None
AC Coil	Fair

Air Filter

Filter Size (length x width, in)	24 x 30
Filter Condition	Dirty

Comment: Adjust fan limit control settings.

Cooling Systems

No data was entered for this audit.

Ducts / Infiltration - Air and Duct Leakages

Ducts / Infiltration - Air and Duct Leakages

Evaluate Duct Sealing ? ☐ Duct Leakage Method

WHOLE HOUSE INFILTRATION REDUCTION WITH BLOWER DOOR

	Pre Infiltration Reduction	Post Infiltration Reduction/Target
Whole House Leakage (CFM)	4000	2500
at Pressure Differential (Pa)	50	50
Infiltration Reduction Cost ($)	$250.00	
Comment	Target (post weatherization) blower door reading estimated assuming that wall insulation would not be installed because there is already a 1" batt installed. Infiltration reduction cost is a typical value.	

Ducts / Infiltration Blower Door Readings (Optional)

No data was entered for this audit.

Ducts / Infiltration Zonal Pressure Readings (Optional)

No data was entered for this audit.

Ducts / Infiltration Pressure Balance Readings (Optional)

No data was entered for this audit.

Ducts / Infiltration Pressure Pan Readings (Optional)

No data was entered for this audit.

Base Load - Water Heater

Base Load - Water Heater

Existing Equipment

Manufacturer			
Model			
Fuel	Electric	Rated Input	
Location	Unintentionally Heated Space	Input Units	
Gallons	40	Insulation Type	Fiberglass
☐ Supply Pipe Insulation Present		Insulation Thickness (in)	1.5
Energy Factor		Label R Value	

Replacement Equipment

Manufacturer	
Model	
Fuel	
Rated Input	
Input Units	
Gallons	
Energy Factor	
Installation Cost	
Additional Cost	

Shower Heads

Number of Showerheads	1	Avg. GPM	3.2
Minutes of Shower Use Per Day	10		

Comment

Base Load - Water Heater (Continued)

Base Load - Water Heater (Continued)

OPTIONAL WATER HEATING SYSTEM DETAILS

OPERATIONAL TESTS

Flue Gas Analysis

	Audit	Insp.
Combustion Air Inlet Temp (F)	70	
Flue Gas Temp (F)	470	
Net Stack Temp (F)	400	
Percent Oxygen (%)	8	
Percent Carbon Dioxide (%)	7	
Smoke Number		
Steady State Efficiency (%)	79	

Carbon Monoxide

	Audit	Insp.
In Flue (ppm)	15	
Free Air Reading in Flue (ppm)	24	

Comment

VENT TESTS

Venting Information

Damper Type	None found
Damper Condition	Not applicable
Chimney Type	Masonry-Lined
Chimney Condition	Fair
Flue Type	Metal Single Wall
Flue Condition	Fair
Flue/Damper Diameter (in)	6
Combustion Air Intake	Adequate

☐ Any Other Venting Related Problems?

Normal Operating Conditions Draft Measurements

	Audit	Insp.
Outdoor Temp (F)	30	
Draft (Pa or Inches of Water)	6	
Spillage Time (sec)	20	

Comment

INSPECTIONS

Fuel Related

- ☐ Insufficient Clearance from Combustibles
- Electric Service Switch Condition: Not applicable
- ☐ Gas Leak Present
- ☐ Fuel Shutoff Valve Not Present
- ☐ Drip Leg Not Present

Water Related

- Hot Water Temp (F): 120
- ☐ Supply Temperature Adjustment Needed
- ☐ Pressure Relief Piping Needed
- ☐ Water Leak Present

☐ Other Water Heating Problem

Comment

Base Load - Refrigerator

No data was entered for this audit.

Base Load - Lighting Systems

Existing Incandescent	Replacement CFL

Light Code	Room	Location	Lamp Type	Quantity	Watts	Hours per Day	CF Watts	Addl. Cost	Comment
LT1			Standard	4	120	12	38		

Health & Safety

WHOLE HOUSE

- ☐ Smoke Detector is Needed
- ☑ CO Monitor is Needed

Carbon Monoxide Measurements

Room with Heating System (ppm)	8
Room with Water Heater (ppm)	8
Living Area (ppm)	4
Kitchen (ppm)	5

Comment

BUILDING SHELL

Attic
- ☑ Recessed Lights Present
- ☐ Chimney / Flue Shielding Incorrect
- ☐ Wiring Problems
- ☐ Ventilation Inadequate
- ☐ Water Leaks Present
- ☐ Moisture Problems Evident
- ☐ Vermiculite Present
- ☐ Other Problems

Walls
- ☐ Wiring Problems
- ☐ Water Leaks Present
- ☐ Moisture Problems Evident
- ☐ Lead Based Paint is Likely
- ☐ Asbestos in Siding is Likely
- ☐ Other Problems

Basement / Crawlspace
- ☐ Vapor Barrier Needed
- ☐ Wiring Problems
- ☐ Water Leaks Present
- ☑ Plumbing Leaks Present
- ☐ Moisture Problems Evident
- ☐ Other Problems

Comment

Health & Safety (Continued)

Health & Safety (Continued)

EQUIPMENT

Wood Stove / Fireplace

- [x] Wood Stove / Fireplace is Present
- [ ] Venting is Incorrect
- [ ] Combustion Air is Inadequate

Clothes Dryer

- [ ] Improper Venting

Cook Stove

CO Measurement Oven (ppm)	87
CO Measurement Burner 1 (ppm)	18
CO Measurement Burner 2 (ppm)	10
CO Measurement Burner 3 (ppm)	13
CO Measurement Burner 4 (ppm)	15

- [ ] Gas Leak Present

Exhaust Fans

Bathrooms	Kitchen	Air-to-Air Heat Exchanger
[x] Missing	[ ] Missing	[ ] Exists
[ ] Not Operational	[ ] Not Operational	[ ] Not Operational
[ ] Improper Venting	[ ] Improper Venting	

Comment CO measured values are as measured, not air-free.

Itemized Costs

Description	Cost	Include in SIR?	Material	Energy Savings (mBTU/yr)	Units (of energy saved)	Life of measure (years)	Fuel Type Saved	Comment
Insulate and seal attic access	$29.60	[x]	R-30 faced batt insulation (+)	0.7	Annual MMBtu	20		
Adjust fan limit control settings	$15.00	[ ]						
Install Bathroom Exhaust Fan	$270.00	[ ]	Bathroom exhaust fan (+)					
CO Monitor is Needed	$70.00	[ ]	CO monitor (+)					
Fix Recessed Lights Present (Attic)	$65.00	[ ]						
Fix Plumbling Leaks (Basement/Crawlspace)	$75.00	[ ]						
Fix Insufficient Clearance from Combustibles	$15.00	[ ]						
Anticipator Adjustment Needed	$20.00	[ ]						
Address Wood Stove/Fireplace Present	$55.00	[ ]						

Utility Bills

Utility Bills

Billing Type	Billing Period	Billing Units	First Period Days	Base Temp	Base Load	Comment
Heating	Pre-Retrofit	Therms	30	65	28.9	

#	Month	Day	Usage	DegreeDays
1	1	15	247	930
2	2	17	276	1177
3	3	14	180	684
4	4	16	129	554
5	5	13	60	238
6	6	15	51	96
7	7	15	30	38
8	8	14	29	0
9	9	16	38	32
10	10	17	63	221
11	11	13	99	380
12	12	12	170	831

NEAT Heating System Summary

Client ID	05_348	Alt. Client ID	
Client Name	Tanner, David		

Heating Systems

System Code	HS1				
Equipment Type	Forced Air Furnace	Heat Supplied (%)	100	Primary System	☑
Fuel	Natural Gas	Manuf.		Model	
Location	Heated Space				
		Comment			

Uninsulated Supply Duct

Length (ft)	
Perimeter (in)	
Location	

REQUIRED HEATING SYSTEM DETAILS

Input Units	No Input
Input Rating	
Output Capacity (kBTU/hr)	70
Steady State System Efficiency (%)	78
Condition	Fair
Smart Thermostat?	☐
Heat Pump HSPF	

Automatic Vent Damper

Present ?	☐
Recommended ?	☑
Flue Diameter (in)	6

Pilot Light / IID

IID ?	☐	Pilot Light ?	☑
		On in Summer ?	☑

Power Burner ? ☐

Retention Head

Present ?	☐
Recommended ?	☐

System Retrofit

Options: Tuneup Performed

	Standard	High Efficiency
System AFUE	86	92
Labor Cost	$0.00	$600.00
Material Cost	$9,999.99	$1,200.00

Heating Systems (Continued

Heating Systems (Continued

OPTIONAL HEATING SYSTEM DETAILS

OPERATIONAL TESTS

Flue Gas Analysis

	Audit	Insp.
Combustion Air Inlet Temp (F)	70	70
Flue Gas Temp (F)	570	470
Net Stack Temp (F)	500	400
Percent Oxygen (%)	10	9
Percent Carbon Dioxide (%)	6	7
Smoke Number		
Steady State Efficiency (%)	74	78

Carbon Monoxide

	Audit	Insp.
In Flue (ppm)	30	10
Free Air Reading in Flue (ppm)	58	18

Heat Rise

	Audit	Insp.
Return Temp (F)	68	68
Supply Temp (F)	120	125
Temp Rise (F)	52	57
Listed/Rated Temp Rise (F)		

Comment: Tune-up performed.

VENT TESTS

Venting Information

Damper Type	None found
Damper Condition	Not applicable
Chimney Type	Masonry-Lined
Chimney Condition	Fair
Flue Type	Metal Single Wall
Flue Condition	Fair
Flue / Damper Diameter (in)	6
Combustion System Type	Unsealed
Combustion Air Intake	Adequate
Other Venting Related Problems	☐

Normal Operating Conditions Draft Measurements

	Audit	Insp.
Outdoor Temp (F)	30	25
Draft (Pa or Inches of Water)	6	8
Spillage Time (sec)	30	15

Comment:

INSPECTIONS

Other Items

Cracked Heat Exchanger	☐
Insufficient Clearance from Combustibles	☑
Electric Service Switch	Good
Gas Leak Present	☐
Fuel Shutoff Valve Not Present	☐
Drip Leg Not Present	☐
Any Other Heating System Problems	☐

Comment: Tell occupants to move clothes away from furnace.

THERMOSTAT DETAILS

Thermostat Type	Mechanical (mercury bulb)
Daytime Thermostat Setting (F)	72
Nighttime Thermostat Setting (F)	65
Relocate Thermostat	☐
Anticipator Current (amps)	0.2
Anticipator Setting (0-1)	0.4
Anticipator Adjustment Needed	☑

Comment:

Heating Systems (Continued

Heating Systems (Continued

OPTIONAL HEATING SYSTEM DETAILS (Continued)

FURNACE COMPONENTS

Limit Controls

Control Settings are Adjustable	☑	Fan On Setting (F)	95
Limit Control Not Working	☐	Fan Off Setting (F)	90
		High Limit Setting (F)	170

Burner and Pilot

Burner Type	Ribbon	Pilot Type	Standing Pilot (on in summer)
Burner Condition	Fair	Pilot Condition	Fair

Blower and Belt

Blower Type	Belt Drive	Belt Size	14
Blower Condition	Dirty	Belt Play (in)	0.5
Motor Current (amps)			
Belt Condition	Poor (but working)		

Accessories

Humidifier	None
Electronic Air Cleaner	None
AC Coil	Fair

Air Filter

Filter Size (length x width, in)	24 x 30
Filter Condition	Dirty

Comment: Adjust fan limit control settings.

NEAT Pressure Diagnostics

Client ID	05_348	Alt. Client ID	
Client Name	Tanner, David		

Blower Door Readings (Existing)

No data was entered for this audit.

Blower Door Readings (New)

Test Date	Conducted During	Equipment Used	Air Leakage Rate(cfm)	Building Pressure Differential (Pa)	Corrected CFM at 50 Pa	Comment
	(pick from list below)					

Conducted During list

Audit	Pre-Install
During Install	Post-Install
Inspection	Other

Zone Pressure Location list

Attic	Side Attic	Kneewall	Ceiling Joist Space
Exterior Wall	Interior Wall	Basement	Crawl Space
Attached Garage	Mobile Home Belly	Unheated Addition	Other

Zonal Pressure Readings (Existing)

No data was entered for this audit.

Zonal Pressure Readings (New)

Conducted During	Building Pressure Differential (Pa)	Zone Pressure Location	Zone Pressure (Pa)	Ducts Present	Comment
(pick from list)		(pick from list or describe)			

Pressure Balance Readings (Existing)

No data was entered for this audit.

Pressure Balance Readings (New)

Location	Initial Pressure (Pa)	Final Pressure (Pa)	Comment

Pressure Pan Readings (Existing)

No data was entered for this audit.

Pressure Pan Readings (New)

Register #	Location	Register Type	Initial Pressure (Pa)	Final Pressure (Pa)	Comment

NEAT Health and Safety Summary

Client ID	05_348	Alt. Client ID	
Client Name	Tanner, David		

Health & Safety

WHOLE HOUSE

- ☐ Smoke Detector is Needed
- ☑ CO Monitor is Needed

Carbon Monoxide Measurements

Room with Heating System (ppm)	8
Room with Water Heater (ppm)	8
Living Area (ppm)	4
Kitchen (ppm)	5

Comment:

BUILDING SHELL

Attic
- ☑ Recessed Lights Present
- ☐ Chimney / Flue Shielding Incorrect
- ☐ Wiring Problems
- ☐ Ventilation Inadequate
- ☐ Water Leaks Present
- ☐ Moisture Problems Evident
- ☐ Vermiculite Present
- ☐ Other Problems

Walls
- ☐ Wiring Problems
- ☐ Water Leaks Present
- ☐ Moisture Problems Evident
- ☐ Lead Based Paint is Likely
- ☐ Asbestos in Siding is Likely
- ☐ Other Problems

Basement / Crawlspace
- ☐ Vapor Barrier Needed
- ☐ Wiring Problems
- ☐ Water Leaks Present
- ☑ Plumbing Leaks Present
- ☐ Moisture Problems Evident
- ☐ Other Problems

Comment:

Health & Safety (Continued)

EQUIPMENT

Wood Stove / Fireplace

- [x] Wood Stove / Fireplace is Present
- [ ] Venting is Incorrect
- [ ] Combustion Air is Inadequate

Clothes Dryer

- [ ] Improper Venting

Cook Stove

CO Measurement Oven (ppm)	87
CO Measurement Burner 1 (ppm)	18
CO Measurement Burner 2 (ppm)	10
CO Measurement Burner 3 (ppm)	13
CO Measurement Burner 4 (ppm)	15

- [ ] Gas Leak Present

Exhaust Fans

Bathrooms	Kitchen	Air-to-Air Heat Exchanger
[x] Missing	[ ] Missing	[ ] Exists
[ ] Not Operational	[ ] Not Operational	[ ] Not Operational
[ ] Improper Venting	[ ] Improper Venting	

Comment: CO measured values are as measured, not air-free.

Heating Systems

System Code: HS1
Equipment Type: Forced Air Furnace
Fuel: Natural Gas
Location: Heated Space
Heat Supplied (%): 100
Primary System: ☑
Manuf.:
Model:
Comment:

Uninsulated Supply Duct
Length (ft):
Perimeter (in):
Location:

REQUIRED HEATING SYSTEM DETAILS

Input Units: No Input
Input Rating:
Output Capacity (kBTU/hr): 70
Steady State System Efficiency (%): 78
Condition: Fair
Smart Thermostat? ☐
Heat Pump HSPF:

Automatic Vent Damper
Present ? ☐
Recommended ? ☑
Flue Diameter (in): 6

Pilot Light / IID
IID ? ☐ Pilot Light ? ☑
On in Summer ? ☑

Power Burner ? ☐

Retention Head
Present ? ☐
Recommended ? ☐

System Retrofit
Options: Tuneup Performed

	Standard	High Efficiency
System AFUE	86	92
Labor Cost	$0.00	$600.00
Material Cost	$9,999.99	$1,200.00

Heating Systems (Continued

Heating Systems (Continued)

OPTIONAL HEATING SYSTEM DETAILS

OPERATIONAL TESTS

Flue Gas Analysis

	Audit	Insp.
Combustion Air Inlet Temp (F)	70	70
Flue Gas Temp (F)	570	470
Net Stack Temp (F)	500	400
Percent Oxygen (%)	10	9
Percent Carbon Dioxide (%)	6	7
Smoke Number		
Steady State Efficiency (%)	74	78

Carbon Monoxide

	Audit	Insp.
In Flue (ppm)	30	10
Free Air Reading in Flue (ppm)	58	18

Heat Rise

	Audit	Insp.
Return Temp (F)	68	68
Supply Temp (F)	120	125
Temp Rise (F)	52	57
Listed/Rated Temp Rise (F)		

Comment: Tune-up performed.

VENT TESTS

Venting Information

Damper Type	None found
Damper Condition	Not applicable
Chimney Type	Masonry-Lined
Chimney Condition	Fair
Flue Type	Metal Single Wall
Flue Condition	Fair
Flue / Damper Diameter (in)	6
Combustion System Type	Unsealed
Combustion Air Intake	Adequate
Other Venting Related Problems	☐

Normal Operating Conditions Draft Measurements

	Audit	Insp.
Outdoor Temp (F)	30	25
Draft (Pa or Inches of Water)	6	8
Spillage Time (sec)	30	15

Comment:

INSPECTIONS

Other Items

Cracked Heat Exchanger	☐
Insufficient Clearance from Combustibles	☑
Electric Service Switch	Good
Gas Leak Present	☐
Fuel Shutoff Valve Not Present	☐
Drip Leg Not Present	☐
Any Other Heating System Problems	☐

Comment: Tell occupants to move clothes away from furnace.

THERMOSTAT DETAILS

Thermostat Type	Mechanical (mercury bulb)
Daytime Thermostat Setting (F)	72
Nighttime Thermostat Setting (F)	65
Relocate Thermostat	☐
Anticipator Current (amps)	0.2
Anticipator Setting (0-1)	0.4
Anticipator Adjustment Needed	☑

Comment:

Heating Systems (Continued)

Heating Systems (Continued)

OPTIONAL HEATING SYSTEM DETAILS (Continued)

FURNACE COMPONENTS

Limit Controls

Control Settings are Adjustable	☑	Fan On Setting (F)	95
Limit Control Not Working	☐	Fan Off Setting (F)	90
		High Limit Setting (F)	170

Burner and Pilot

Burner Type	Ribbon	Pilot Type	Standing Pilot (on in summer)
Burner Condition	Fair	Pilot Condition	Fair

Blower and Belt

Blower Type	Belt Drive	Belt Size	14
Blower Condition	Dirty	Belt Play (in)	0.5
Motor Current (amps)			
Belt Condition	Poor (but working)		

Accessories

Humidifier	None
Electronic Air Cleaner	None
AC Coil	Fair

Air Filter

Filter Size (length x width, in)	24 x 30
Filter Condition	Dirty

Comment: Adjust fan limit control settings.

MHEA Recommended Measures

Agency	Demonstration Agency	State	US	Run On	9/26/2005 8:33:03
				Version	8.2.7.6 8/29/05
RunID	1127737983				
AuditID	-645827041				
Audit Name	05_353MH	Audit Date	9/22/2005		
Client ID	05_353	Auditor	Admin		
Weather File	SAMPLEUS.WX	Setup Library Name	Setup Library (Demo)		
Comment	New comments				

Annual Energy and Cost Savings

#	Recommended Measure	Components	Heating (MMBtu)	Heating ($)	Cooling (kWh)	Cooling ($)	BaseLoad (kWh)	BaseLoad ($)	Total (MMBtu)
1	General Air Sealing		13.8	229	1	0	0	0	13.8
2	Roof Cellulose Loose		71.6	1193	855	60	0	0	74.5
3	Setback [heating]		4.6	77	0	0	0	0	4.6
4	DWH Pipe Insulation		0.0	0	0	0	223	8	0.8
5	DWH Tank Insulation		0.0	0	0	0	531	18	1.8
6	Belly Fiberglass Loose		8.8	146	-2	0	0	0	8.7
7	Glass Storm Windows		11.9	199	-6	0	0	0	11.9
8	Refrigerator Replacement		0.0	0	0	0	922	65	3.1
9	Tune Heating System (5%)		3.3	55	0	0	0	0	3.3

Energy Saving Measure Economics

#	Recommended Measure	Components	Measure Savings ($/yr)	Measure Cost ($)	Measure SIR	Cumulative Cost ($)	Cumulative Savings ($/yr)	Cumulative SIR
1	General Air Sealing		229	250	6.6	250	229	6.6
2	Roof Cellulose Loose		1252	701	23.0	951	1482	18.7
3	Setback [heating]		77	75	10.4	1026	1559	18.1
4	DWH Pipe Insulation		8	15	4.5	1041	1567	17.9
5	DWH Tank Insulation		18	40	4.0	1081	1585	17.4
6	Belly Fiberglass Loose		146	555	3.4	1636	1731	12.6
7	Glass Storm Windows		198	1124	1.8	2760	1929	8.2
8	Refrigerator Replacement		65	620	1.2	3380	1993	6.9
9	Tune Heating System (5%)		55	125	1.1	3505	2048	6.7
10	Fix Wiring Problems (Attic)		0	120	0.0	3625	2048	0.0

Materials

Index	Material	Quantity	Units

Index	Material	Quantity	Units
1	General air sealing (setup cost)	1	Each
2	Roof Insulation	43	Bag
3	Setback thermostat	1	Each
4	DWH Pipe Insulation	1	Each
5	DWH Tank Insulation	1	Each
6	Floor Insulation	15	Bag
7	Glass storm windows	141	SqFt
8	Refrigerator	1	Ea
9	Heating system tune up	1	Each

Pre/Post Retrofit Energy Consumption

Pre Retrofit			Post Retrofit		
Heating (MMBtu)	Cooling(kWh)	BaseLoad(kWh)	Heating(MMBtu)	Cooling(kWh)	BaseLoad(kWh)
153.1	2161.3	2817.9	39.1	1313.3	1141.7

Annual Energy and Cost Savings (Adjusted)

#	Recommended Measure	Components	Heating (MMBtu)	($)	Cooling (kWh)	($)	BaseLoad (kWh)	($)	Total (MMBtu)
1	General Air Sealing		12.4	207	1	0	0	0	12.4
2	Roof Cellulose Loose		64.7	1078	855	60	0	0	67.6
3	Setback [heating]		4.2	70	0	0	0	0	4.2
4	DWH Pipe Insulation		0.0	0	0	0	223	8	0.8
5	DWH Tank Insulation		0.0	0	0	0	531	18	1.8
6	Belly Fiberglass Loose		7.9	132	-2	0	0	0	7.9
7	Glass Storm Windows		10.8	179	-6	0	0	0	10.7
8	Refrigerator Replacement		0.0	0	0	0	922	65	3.1

Energy Saving Measure Economics (Adjusted)

#	Recommended Measure	Components	Measure Savings ($/yr)	Measure Cost ($)	Measure SIR	Cost ($)	Cumulative Savings ($/yr)	SIR
1	General Air Sealing		207	250	6.0	250	207	6.0
2	Roof Cellulose Loose		1137	701	20.9	951	1345	16.9
3	Setback [heating]		70	75	9.4	1026	1414	16.4
4	DWH Pipe Insulation		8	15	4.5	1041	1422	16.2
5	DWH Tank Insulation		18	40	4.0	1081	1440	15.8
6	Belly Fiberglass Loose		132	555	3.0	1636	1572	11.5
7	Glass Storm Windows		179	1124	1.6	2760	1751	7.4
8	Refrigerator Replacement		65	620	1.2	3380	1815	6.3
9	Fix Wiring Problems (Attic)		0	120	0.0	3500	1815	0.0

Materials (Adjusted)

Index	Material	Quantity	Units
1	General air sealing (setup cost)	1	Each
2	Roof Insulation	43	Bag
3	Setback thermostat	1	Each

Index	Material	Quantity	Units
4	DWH Pipe Insulation	1	Each
5	DWH Tank Insulation	1	Each
6	Floor Insulation	15	Bag
7	Glass storm windows	141	SqFt
8	Refrigerator	1	Ea

Heating Energy Consumption Comparison

Month	Day	Days in Period	Consumption		Degree Days	
			Actual	Predicted	Actual	Predicted
1	29	30	250	348	1108	1008
2	27	29	293	305	968	919
3	30	31	182	220	715	715
4	28	29	141	85	350	317
5	31	33	65	54	238	194
6	29	29	47	2	96	37
7	30	31	36	0	38	5
8	31	32	35	0	0	17
9	28	28	36	0	32	47
10	30	32	57	80	246	283
11	29	30	106	191	680	603
12	31	32	181	296	905	879
Total		366	1429	1581	5376	5024
%Difference			10.6		-6.5	

Approximate Manual J Component Contributions to Peak Heating Load

Component Type	Pre Retrofit Load (Btu/h)	Post Retrofit Load (BTU/h)
Wall	5160.0	5160.0
Floor	6120.7	2546.0
Roof	34065.1	3088.0
Windows	9233.2	4449.4
Doors	620.3	551.3
Infiltration	15415.3	7656.4
Duct Loss	7061.5	2345.1
Total	77676.0	25796.2

Special Notes

ManualJ sizing based on 70F indoor and 3F outdoor temp
10 Base case duct loss fraction
10 Retrofit case duct loss fraction
Sizing estimate are general guidelines only
Sizing estimate should be review by qualified heating contractor
(+) in the Materials list indicates there are more related User Defined Materials
Cumulative Expenditure Exceeds Limit of 2500 Dollars

Comments

Type	Code	Comment
Itemized	Fix Wiring Problems	In kitchen dropdown ceiling at lights.

MHEA Input Report

Client Information

Client ID	05_353	Alt. Client ID	
Client Name	Anderson, Grace		
Address	210 North Illinois Ave		
Unit No.			
City	Anytown	State US	Zip
County		Other Geo. Ident.	

Occupants

Number of: Occupants	2
Elderly	0
Disabled	0
Native American	0
Children	0
Primary Language	English

Dwelling

Dwelling Type	Mobile Home	Ownership	
Primary Heat. Fuel	Propane	☐ High Energy Use	
Secondary Heat. Fuel		☐ High Energy Burden	
☐ Previously Weatherized		Year Built	
Year			

Comment

Energy Index

Floor Area (sq ft)		Total Heating (BTU/HDD/sq ft)	
Heating Degree Days (base 65 F)			
	Annual Cost	Estim. % for heating	
Primary Heating Fuel			
Secondary Heating Fuel			

Contact Information

Contact Name	Home Ph	Work Ph	Cell Ph	Contact Type	Primary Applicant	Comment
Anderson, Grace				Applicant/Person of Record	☑	

Audit Information

Audit Information

Audit Name	05_353MH
Assigned To	Tor, Audrey
Current Status	Recommendations Generated On 10/27/2005
Comment	New comments

Length	60
Width	15
Height	7
Wind Shielding	Normal Shielding
Home Leakiness	Medium

☑ **Billing Adjust**
☐ **Water Heater Closet**

Libraries

Setup Library	Setup Library (Demo)	**Setup Library Description**	This library is used for demonstration
Fuel Costs	Agency Fuel Prices		
Supply Library	Demonstration Supply Library	**Supply Library Description**	Supply library for demonstration
Weather File	SAMPLEUS.WX		

Photo Folder

Audit Status History

Type	Status	Date	Changed By	Comment
	Audit Complete and Locked On	9/26/2005	admin	
	Recommendations Generated On	9/26/2005	admin	
	Site Visit Completed On	9/22/2005	admin	
	Site Visit Scheduled For	9/21/2005	admin	

Walls

Walls

Wall Stud Size	2 x 4
Orientation of Long Wall	South
Type of Wall Ventilation	Not Vented
UninsulatableArea (sqft)	0
Added Cost	0

Insulation Type Thickness

Batt/Blanket (in)	3.5
Loose Fill (in)	0
Foam Core (in)	0

Carport/Porch Roof

Length (ft)	18
Width (ft)	12
Orientation	South

Comment

Windows

Code	Type	Glazing Type	Shading		Leakiness	Avg Size (in)		Number Facing				Comment
			Interior	Exterior		Width	Height	N.	S.	E.	W.	
WD1	Slider	Single	Blinds or Shades	None		42	36	0	0	4	0	
WD1 (5)	Slider	Single	Blinds or Shades	None		42	36	0	0	4	0	
WD2	Fixed	Single	None	None		42	36	3	0	0	1	
WD3	Slider	Single	None	Carport or Porch		42	36	0	0	0	1	
WD4	Door Window	Single	None	None		24	24	0	0	1	0	

Doors

Code	Type	Storm Door	Replacement Required	Avg Size (in)		Number Facing				Comment
				Width	Height	N.	S.	E.	W.	
DR1	Standard Manufactured Home Door	☐	☐	36	82	0	0	1	1	
DR1 (3)	Standard Manufactured Home Door	☐	☐	36	82	0	0	1	1	

Ceiling

Ceiling

Roof Type	Bowstring
Roof Color	White or Reflective
Height of Roof (in)	8

Insulation Type Thickness

Batt/Blanket (in)	0
Loose Fill (in)	0
Foam Core (in)	0

Pitched Roof Added Insul. (in)	12
Addded Cost	0
Cathedral Ceiling (%)	0
Step Wall Orientation	No Step Wall

Comment

Floor

Floor Joist Direction: Lengthwise

Is There a Skirt? ☐

Floor Wing Description

Floor Joist Size	2 x 6	Batt Insulation Thickness (in)	2
		Batt/Blanket Insulation Location	Between Joists
		Loose Insulation Thickness (in)	0

Floor Belly (Center) Description

Floor Joist Size	2 x 6	Batt Insulation Thickness (in)	2
Belly Cavity Configuration	Rounded	Batt/Blanket Insulation Location	Attached Under Joi
Condition of Belly	Average	Loose Insulation Thickness (in)	0
Maximum Depth of Belly Cavity (in)	9		

Comment

Walls (Addition)

No data was entered for this audit.

Windows (Addition)

No data was entered for this audit.

Doors (Addition)

No data was entered for this audit.

Ceiling (Addition)

No data was entered for this audit.

Floor (Addition)

No data was entered for this audit.

Heating - Primary

Equipment Type	Furnace
Fuel Type	Propane
Capacity (kBtu/hr)	60
Efficiency (%)	75
Efficiency Units	Steady State
Duct Location	Floor
Duct Insulation Location	Below Duct
Percent Total Heat Supplied (%)	100

Comment

Heating - Primary (Continued)

Heating - Primary (Continued)

OPTIONAL HEATING SYSTEM DETAILS

OPERATIONAL TESTS

Flue Gas Analysis

	Audit	Insp.
Combustion Air Inlet Temp (F)		
Flue Gas Temp (F)		
Net Stack Temp (F)		
Percent Oxygen (%)		
Percent Carbon Dioxide (%)		
Smoke Number		
Steady State Efficiency (%)		

Carbon Monoxide

	Audit	Insp.
In Flue (ppm)		
Free Air Reading in Flue (ppm)		

Heat Rise

	Audit	Insp.
Return Temp (F)		
Supply Temp (F)		
Temp Rise (F)		
Listed/Rated Temp Rise (F)		

Comment

VENT TESTS

Venting Information

Damper Type
Damper Condition
Chimney Type
Chimney Condition
Flue Type
Flue Condition
Flue / Damper Diameter (in)
Combustion System Type
Combustion Air Intake
Other Venting Related Problems ☐

Normal Operating Conditions Draft Measurements

	Audit	Insp.
Outdoor Temp (F)		
Draft (Pa or Inches of Water)		
Spillage Time (sec)		

Comment

INSPECTIONS

Other Items

Cracked Heat Exchanger ☐
Insufficient Clearance from Combustibles ☐
Electric Service Switch
Gas Leak Present ☐
Fuel Shutoff Valve Not Present ☐
Drip Leg Not Present ☐
Any Other Heating System Problems ☐

Comment

THERMOSTAT DETAILS

Thermostat Type
Daytime Thermostat Setting (F)
Nighttime Thermostat Setting (F)
Relocate Thermostat ☐
Anticipator Current (amps)
Anticipator Setting (0-1)
Anticipator Adjustment Needed ☐

Comment

Heating Primary (Continued)

Heating Primary (Continued)

OPTIONAL HEATING SYSTEM DETAILS (Continued)

FURNACE COMPONENTS

Limit Controls

Control Settings are Adjustable	☑	Fan On Setting (F)	
Limit Control Not Working	☑	Fan Off Setting (F)	
		High Limit Setting (F)	

Burner and Pilot

Burner Type		Pilot Type	
Burner Condition		Pilot Condition	

Blower and Filter

Blower Condition	
Motor Current (amps)	

Air Filter

Filter Location	
Filter Size (length x width, in)	
Filter Condition	

Accessories

Humidifier	
Electronic Air Cleaner	
AC Coil	

Comment

Heating - Secondary

No data was entered for this audit.

Heating - Replacement

Heating - Replacement

Equipment Type	None
Fuel Type	
Capacity (kBtu/hr)	
Efficiency (%)	
Efficiency Units	
Duct Location	
Duct Insulation Location	
Replacement Required	☐
Include Replacement Costs in Home Retrofit	☐

Comment

Cooling - Primary

AC Unit Type	Central Air Conditioner
Capacity (kBtu/hr)	12
Efficiency	10
Efficiency Units	SEER
Duct Location	Floor
Duct Insulation Location	Below Duct
Percent Cooled (%)	100

Comment

Cooling - Secondary

No data was entered for this audit.

Ducts / Infiltration - Air and Duct Leakages

Ducts / Infiltration - Air and Duct Leakages

Evaluate Duct Sealing ? ☐ Duct Leakage Method

WHOLE HOUSE INFILTRATION REDUCTION WITH BLOWER DOOR

	Pre Infiltration Reduction	Post Infiltration Reduction/Target
Whole House Leakage (CFM)	4200	2500
at Pressure Differential (Pa)	50	50
Infiltration Reduction Cost ($)	$250.00	
Comment		

Ducts / Infiltration Blower Door Readings (Optional)

No data was entered for this audit.

Ducts / Infiltration Zonal Pressure Readings (Optional)

No data was entered for this audit.

Ducts / Infiltration Pressure Balance Readings (Optional)

No data was entered for this audit.

Ducts / Infiltration Pressure Pan Readings (Optional)

No data was entered for this audit.

Base Load - Water Heater

Base Load - Water Heater

Existing Equipment

Manufacturer	BRADFORD WHITE CORPORATION		
Model	M-4-403T***N-12		
Fuel	Natural Gas	Rated Input	40
Location	Heated Space	Input Units	kBTU
Gallons	40	Insulation Type	Fiberglass
☐ Supply Pipe Insulation Present		Insulation Thickness (in)	1
Energy Factor	0.63	Label R Value	

Replacement Equipment

Manufacturer	
Model	
Fuel	
Rated Input	
Input Units	
Gallons	
Energy Factor	
Installation Cost	
Additional Cost	

Shower Heads

Number of Showerheads		Avg. GPM	
Minutes of Shower Use Per Day			

Comment

Base Load - Water Heater (Continued)

Base Load - Water Heater (Continued)

OPTIONAL WATER HEATING SYSTEM DETAILS

OPERATIONAL TESTS

Flue Gas Analysis

	Audit	Insp.
Combustion Air Inlet Temp (F)		
Flue Gas Temp (F)		
Net Stack Temp (F)		
Percent Oxygen (%)		
Percent Carbon Dioxide (%)		
Smoke Number		
Steady State Efficiency (%)		

Carbon Monoxide

	Audit	Insp.
In Flue (ppm)		
Free Air Reading in Flue (ppm)		

Comment

VENT TESTS

Venting Information

Chimney Type
Chimney Condition
Flue Type
Flue Condition
Flue/Damper Diameter (in)
Combustion Air Intake
☐ Any Other Venting Related Problems?

Normal Operating Conditions Draft Measurements

	Audit	Insp.
Outdoor Temp (F)		
Draft (Pa or Inches of Water)		
Spillage Time (sec)		

Comment

INSPECTIONS

Fuel Related

☐ Insufficient Clearance from Combustibles
Electric Service Switch Condition
☐ Gas Leak Present
☐ Fuel Shutoff Valve Not Present
☐ Drip Leg Not Present

Water Related

Hot Water Temp (F)
☐ Supply Temperature Adjustment Needed
☐ Pressure Relief Piping Needed
☐ Water Leak Present

☐ Other Water Heating Problem

Comment

Base Load - Refrigerator

Base Load - Refrigerator

Existing Equipment

Manufacturer: General Electric
Model: TBF14DR
Style:
Defrost:
Height (in):
Width (in):
Depth (in):
Size (cu ft): 14.2
Location: Heated Space

Label Annual Consumption

kWh / yr: 1488
Age: More than 15 years

OR

Metered Consumption

Metering Minutes:
Metering Reading (kWh):
Temperature (F):
☐ Manual Defrost
☐ Includes Defrost Cycle

Replacement Equipment

Manufacturer: AMANA
Model: 86851
Style:
Defrost:
kWh / yr: 789
Material Cost: $520.00
Other Cost: $100.00
Height (in):
Width (in):
Depth (in):
Size (cu ft): 17.8

Comment

Base Load - Lighting Systems

No data was entered for this audit.

Health & Safety

No data was entered for this audit.

Itemized Costs

Description	Cost	Include in SIR?	Material	Energy Savings (mBTU/yr)	Units (of energy saved)	Life of measure (years)	Fuel Type Saved	Comment
Fix Wiring Problems (Attic)	$120.00	☐						In kitchen dropdown ceiling at lights.

Utility Bills

Utility Bills

Billing Type	Billing Period	Billing Units	First Period Days	Base Temp	Base Load	Comment
Heating	Pre-Retrofit	Therms	30	65		

#	Month	Day	Usage	DegreeDays
1	1	29	250	1108
2	2	27	293	968
3	3	30	182	715
4	4	28	141	350
5	5	31	65	238
6	6	29	47	96
7	7	30	36	38
8	8	31	35	0
9	9	28	36	32
10	10	30	57	246
11	11	29	106	680
12	12	31	181	905

MHEA Heating System Summary

Client ID	05_353	**Alt. Client ID**	
Client Name	Anderson, Grace		

Heating - Primary

Equipment Type	Furnace
Fuel Type	Propane
Capacity (kBtu/hr)	60
Efficiency (%)	75
Efficiency Units	Steady State
Duct Location	Floor
Duct Insulation Location	Below Duct
Percent Total Heat Supplied (%)	100

Comment

Heating - Primary (Continued)

Heating - Primary (Continued)

OPTIONAL HEATING SYSTEM DETAILS

OPERATIONAL TESTS

Flue Gas Analysis

	Audit	Insp.
Combustion Air Inlet Temp (F)		
Flue Gas Temp (F)		
Net Stack Temp (F)		
Percent Oxygen (%)		
Percent Carbon Dioxide (%)		
Smoke Number		
Steady State Efficiency (%)		

Carbon Monoxide

	Audit	Insp.
In Flue (ppm)		
Free Air Reading in Flue (ppm)		

Heat Rise

	Audit	Insp.
Return Temp (F)		
Supply Temp (F)		
Temp Rise (F)		
Listed/Rated Temp Rise (F)		

Comment

VENT TESTS

Venting Information

Damper Type	
Damper Condition	
Chimney Type	
Chimney Condition	
Flue Type	
Flue Condition	
Flue / Damper Diameter (in)	
Combustion System Type	
Combustion Air Intake	
Other Venting Related Problems	☐

Normal Operating Conditions Draft Measurements

	Audit	Insp.
Outdoor Temp (F)		
Draft (Pa or Inches of Water)		
Spillage Time (sec)		

Comment

INSPECTIONS

Other Items

Cracked Heat Exchanger	☐
Insufficient Clearance from Combustibles	☐
Electric Service Switch	
Gas Leak Present	☐
Fuel Shutoff Valve Not Present	☐
Drip Leg Not Present	☐
Any Other Heating System Problems	☐

Comment

THERMOSTAT DETAILS

Thermostat Type	
Daytime Thermostat Setting (F)	
Nighttime Thermostat Setting (F)	
Relocate Thermostat	☐
Anticipator Current (amps)	
Anticipator Setting (0-1)	
Anticipator Adjustment Needed	☐

Comment

Heating Primary (Continued)

Heating Primary (Continued)

OPTIONAL HEATING SYSTEM DETAILS (Continued)

FURNACE COMPONENTS

Limit Controls

Control Settings are Adjustable	☑	Fan On Setting (F)	
Limit Control Not Working	☑	Fan Off Setting (F)	
		High Limit Setting (F)	

Burner and Pilot

Burner Type		Pilot Type	
Burner Condition		Pilot Condition	

Blower and Filter

Blower Condition	
Motor Current (amps)	

Air Filter

Filter Location	
Filter Size (length x width, in)	
Filter Condition	

Accessories

Humidifier	
Electronic Air Cleaner	
AC Coil	

Comment

Heating - Secondary

No data was entered for this audit.

Heating - Replacement

Heating - Replacement

Equipment Type	None
Fuel Type	
Capacity (kBtu/hr)	
Efficiency (%)	
Efficiency Units	
Duct Location	
Duct Insulation Location	

Replacement Required ☐ Include Replacement Costs in Home Retrofit ☐

Comment

MHEA Pressure Diagnostics

Client ID	05_353	Alt. Client ID	
Client Name	Anderson, Grace		

Blower Door Readings (Existing)

No data was entered for this audit.

Blower Door Readings (New)

Test Date	Conducted During	Equipment Used	Air Leakage Rate(cfm)	Building Pressure Differential (Pa)	Corrected CFM at 50 Pa	Comment
	(pick from list below)					

Conducted During list	
Audit	Pre-Install
During Install	Post-Install
Inspection	Other

Zone Pressure Location list			
Attic	Side Attic	Kneewall	Ceiling Joist Space
Exterior Wall	Interior Wall	Basement	Crawl Space
Attached Garage	Mobile Home Belly	Unheated Addition	Other

Zonal Pressure Readings (Existing)

No data was entered for this audit.

Zonal Pressure Readings (New)

Conducted During	Building Pressure Differential (Pa)	Zone Pressure Location	Zone Pressure (Pa)	Ducts Present	Comment
(pick from list)		(pick from list or describe)			

Pressure Balance Readings (Existing)

No data was entered for this audit.

Pressure Balance Readings (New)

Location	Initial Pressure (Pa)	Final Pressure (Pa)	Comment

Pressure Pan Readings (Existing)

No data was entered for this audit.

Pressure Pan Readings (New)

Register #	Location	Register Type	Initial Pressure (Pa)	Final Pressure (Pa)	Comment

MHEA Health and Safety Summary

Client ID	05_353	Alt. Client ID	
Client Name	Anderson, Grace		

Health & Safety

WHOLE HOUSE

- [x] Smoke Detector is Needed
- [ ] CO Monitor is Needed

Carbon Monoxide Measurements

Room with Heating System (ppm)	
Room with Water Heater (ppm)	
Living Area (ppm)	
Kitchen (ppm)	

Comment:

BUILDING SHELL

Attic
- [ ] Recessed Lights Present
- [ ] Chimney / Flue Shielding Incorrect
- [ ] Wiring Problems
- [x] Ventilation Inadequate
- [ ] Water Leaks Present
- [ ] Moisture Problems Evident
- [ ] Other Problems

Walls
- [ ] Wiring Problems
- [ ] Water Leaks Present
- [ ] Moisture Problems Evident
- [ ] Other Problems

Basement / Crawlspace
- [x] Vapor Barrier Needed
- [ ] Wiring Problems
- [ ] Water Leaks Present
- [ ] Plumbing Leaks Present
- [ ] Moisture Problems Evident
- [ ] Other Problems

Comment:

Health & Safety (Continued)

EQUIPMENT

Wood Stove / Fireplace

- ☐ Wood Stove / Fireplace is Present
- ☐ Venting is Incorrect
- ☐ Combustion Air is Inadequate

Clothes Dryer

- ☐ Improper Venting

Cook Stove

CO Measurement Oven (ppm)	
CO Measurement Burner 1 (ppm)	
CO Measurement Burner 2 (ppm)	
CO Measurement Burner 3 (ppm)	
CO Measurement Burner 4 (ppm)	

☐ Gas Leak Present

Exhaust Fans

Bathrooms	Kitchen
☑ Missing	☐ Missing
☐ Not Operational	☑ Not Operational
☐ Improper Venting	☐ Improper Venting

Comment

Heating - Primary

Equipment Type	Furnace
Fuel Type	Propane
Capacity (kBtu/hr)	60
Efficiency (%)	75
Efficiency Units	Steady State
Duct Location	Floor
Duct Insulation Location	Below Duct
Percent Total Heat Supplied (%)	100

Comment

Heating - Primary (Continued)

Heating - Primary (Continued)

OPTIONAL HEATING SYSTEM DETAILS

OPERATIONAL TESTS

Flue Gas Analysis

	Audit	Insp.
Combustion Air Inlet Temp (F)		
Flue Gas Temp (F)		
Net Stack Temp (F)		
Percent Oxygen (%)		
Percent Carbon Dioxide (%)		
Smoke Number		
Steady State Efficiency (%)		

Carbon Monoxide

	Audit	Insp.
In Flue (ppm)		
Free Air Reading in Flue (ppm)		

Heat Rise

	Audit	Insp.
Return Temp (F)		
Supply Temp (F)		
Temp Rise (F)		
Listed/Rated Temp Rise (F)		

Comment

VENT TESTS

Venting Information

Damper Type	
Damper Condition	
Chimney Type	
Chimney Condition	
Flue Type	
Flue Condition	
Flue / Damper Diameter (in)	
Combustion System Type	
Combustion Air Intake	
Other Venting Related Problems	☐

Normal Operating Conditions Draft Measurements

	Audit	Insp.
Outdoor Temp (F)		
Draft (Pa or Inches of Water)		
Spillage Time (sec)		

Comment

INSPECTIONS

Other Items

Cracked Heat Exchanger	☐
Insufficient Clearance from Combustibles	☑
Electric Service Switch	
Gas Leak Present	☐
Fuel Shutoff Valve Not Present	☐
Drip Leg Not Present	☐
Any Other Heating System Problems	☐

Comment

THERMOSTAT DETAILS

Thermostat Type	
Daytime Thermostat Setting (F)	
Nighttime Thermostat Setting (F)	
Relocate Thermostat	☑
Anticipator Current (amps)	
Anticipator Setting (0-1)	
Anticipator Adjustment Needed	☐

Comment

Heating Primary (Continued)

Heating Primary (Continued)

OPTIONAL HEATING SYSTEM DETAILS (Continued)

FURNACE COMPONENTS

Limit Controls

Control Settings are Adjustable ☑
Limit Control Not Working ☑
Fan On Setting (F)
Fan Off Setting (F)
High Limit Setting (F)

Burner and Pilot

Burner Type
Burner Condition
Pilot Type
Pilot Condition

Blower and Filter

Blower Condition
Motor Current (amps)

Air Filter

Filter Location
Filter Size (length x width, in)
Filter Condition

Accessories

Humidifier
Electronic Air Cleaner
AC Coil

Comment

Work Order

WORK ORDER INFORMATION

Work Order Name: WO/05_348/JT/1
Work Order Type: Weatherization
Audit Name: 05_348SB

Audit Date: 8/22/2005
Work Started Date: 9/5/2005
Work Completed Date: 9/7/2005
Inspection Date: 9/13/2005

CLIENT INFORMATION

Client Name: Tanner, David
Client ID: 05_348
Alt. Client ID:

Address: 114 Athens
Anytown, US 01234

CLIENT CONTACT INFORMATION

Tanner, David	(111) 764-5687	(111) 764-3789	(111) 764-9902	Applicant/Person of Record	☑	
Tanner, John		(254) 567-8908		Applicant/Person of Record	☐	Son of primary applicant

AGENCY INFORMATION

Agency: Demonstration Agency
Address: 725 Jefferson St.
Any City, US 11111

Agency Phone: (123) 456-7890
Fax: (234) 567-8901
Email Address: agencyemail@localisp.net

Agency Contact: Tor, Audrey

Work Phone:
Cell Phone:
Email Address:

CONTRACTOR / CREW INFORMATION

Company:
Address:
,
Contact: Contractor, John

Work Phone:
Cell Phone:
Email Address:

Company Name & License Number: _____

Contractor's Signature: _____

COMMENT

Measures

Measure 1 Infiltration Redctn — **Components** — **Inspected** ☐

Comment

#	Material / Labor	Description /Comment	Units	Estimated Qty	Estimated Unit Cost	Estimated Total	Actual Qty	Actual Unit Cost	Actual Total
1	Labor	Weatherize back door	Hour	1	$40.00	$40.00	1	$40.00	$40.00
2	Construction Materials/Hardware	Door sweep	Each	1	$25.00	$25.00	1	$25.00	$25.00
3	Miscellaneous Supplies	Caulk	Each	1	$10.00	$10.00	1	$10.00	$10.00
4	Labor	Seal penetrations under kitchen sink	Hour	1	$40.00	$40.00	1	$40.00	$40.00
5	Labor	Repair bypasses in attic	Hour	2	$40.00	$80.00	2	$40.00	$80.00
6	Insulation	Polystyrene board	SqFt	10	$0.50	$5.00	10	$0.50	$5.00
7	Labor	Patch drill hole in bathroom	Hour	0.25	$40.00	$10.00	0.25	$40.00	$10.00
8	Labor	Blower Door directed inspection	Hour	1	$40.00	$40.00	1.5	$40.00	$60.00
9	Labor	Additional time needed for BD inspection	Hour				1.25	$40.00	$50.00

Other Detail

Measure Sub Total: $250.00 **Sub Total:** $320.00

Field Notes:

Measure 3 DWH Pipe Insulation — Components — Inspected ☐

Comment

#	Material / Labor	Description /Comment	Units	Estimated Qty	Estimated Unit Cost	Estimated Total	Actual Qty	Actual Unit Cost	Actual Total
1	Insulation	DHW Pipe Insulation	Each	1	$5.00	$5.00	1	$5.00	$5.00
2	Labor	DHW Pipe Insulation	Each	1	$10.00	$10.00	1	$10.00	$10.00

Other Detail

Measure Sub Total: $15.00 Sub Total: $15.00

Field Notes:

Measure 5 DWH Tank Insulation — Components — Inspected ☐

Comment

#	Material / Labor	Description /Comment	Units	Estimated Qty	Estimated Unit Cost	Estimated Total	Actual Qty	Actual Unit Cost	Actual Total
1	Hot Water Equipment	DHW Tank Insulation	Each	1	$15.00	$15.00	1	$15.00	$15.00
2	Labor	DHW Tank Insulation	Each	1	$25.00	$25.00	1	$25.00	$25.00

Other Detail

Measure Sub Total: $40.00 Sub Total: $40.00

Field Notes:

Measure 7 Attic Ins. R-19 — **Components** FA4 — **Inspected** ☐

Comment

#	Material / Labor	Description /Comment	Units	Estimated Qty	Estimated Unit Cost	Estimated Total	Actual Qty	Actual Unit Cost	Actual Total
1	Insulation	Ceiling Insulation - Celluls,Blwn - R-19	SqFt	56	$0.19	$10.64	77	$0.19	$14.63
2	Labor	Ceiling Insulation - Celluls,Blwn - R-19	SqFt	56	$0.38	$21.28	56	$0.38	$21.28

Other Detail

Measure Sub Total: $31.92 **Sub Total:** $35.91

Field Notes:

Measure 8 Attic Ins. R-19 — **Components** FA1 — **Inspected** ☐

Comment

#	Material / Labor	Description /Comment	Units	Estimated Qty	Estimated Unit Cost	Estimated Total	Actual Qty	Actual Unit Cost	Actual Total
1	Insulation	Ceiling Insulation - Celluls,Blwn - R-19	SqFt	392	$0.19	$74.48	440	$0.19	$83.60
2	Labor	Ceiling Insulation - Celluls,Blwn - R-19	SqFt	392	$0.38	$148.96	440	$0.38	$167.20

Other Detail

Measure Sub Total: $223.44 **Sub Total:** $250.80

Field Notes:

Measure 9 Insulate and seal attic access — **Components** — **Inspected**

Comment

#	Material / Labor	Description /Comment	Units	Estimated Qty	Estimated Unit Cost	Estimated Total	Actual Qty	Actual Unit Cost	Actual Total
1	Insulation	R-30 faced batt insulation	Each	1	$9.60	$9.60	1	$32.00	$32.00
2	Labor	Labor for attic access work	Each	1	$20.00	$20.00	1	$20.00	$20.00

Other Detail

Measure Sub Total: $29.60 **Sub Total:** $52.00

Field Notes:

Measure 10 Wall Insulation — **Components** WLN-1 — **Inspected**

Comment

#	Material / Labor	Description /Comment	Units	Estimated Qty	Estimated Unit Cost	Estimated Total	Actual Qty	Actual Unit Cost	Actual Total
1	Insulation	Wall Insulation - Celluls,Blwn	SqFt	239	$0.26	$62.14	239	$0.26	$62.14
2	Labor	Wall Insulation - Celluls,Blwn	SqFt	238.6	$0.75	$178.96	238.6	$0.75	$178.96

Other Detail

Measure Sub Total: $241.10 **Sub Total:** $241.10

Field Notes:

Measure 11 Wall Ins. R-13 Batt — **Components** FA2 — **Inspected** ☐

Comment

#	Material / Labor	Description /Comment	Units	Estimated Qty	Estimated Unit Cost	Estimated Total	Actual Qty	Actual Unit Cost	Actual Total
1	Insulation	Kneewall Ins. -Faced Batt - R-13	SqFt	120	$0.26	$31.20	105	$0.26	$27.30
2	Labor	Kneewall Ins. -Faced Batt - R-13	SqFt	120	$0.50	$60.00	120	$0.50	$60.00

Other Detail

Measure Sub Total: $91.20 **Sub Total:** $87.30

Field Notes:

Measure 13 Sillbox Ins. — **Components** F1 — **Inspected** ☐

Comment

#	Material / Labor	Description /Comment	Units	Estimated Qty	Estimated Unit Cost	Estimated Total	Actual Qty	Actual Unit Cost	Actual Total
1	Insulation	Sill Insulation -Faced Batt - R-19	SqFt	77.37	$0.38	$29.40	77.37	$0.38	$29.40
2	Labor	Sill Insulation -Faced Batt - R-19	SqFt	77.37	$0.30	$23.21	77.37	$0.30	$23.21

Other Detail

Measure Sub Total: $52.61 **Sub Total:** $52.61

Field Notes:

Measure 14 Address Wood Stove/Fireplace Present — Components — Inspected ☐

Comment

#	Material / Labor	Description /Comment	Units	Estimated Qty	Estimated Unit Cost	Estimated Total	Actual Qty	Actual Unit Cost	Actual Total
1	Health and Safety Items	Labor	Each	1	$55.00	$55.00	1	$55.00	$55.00

Other Detail

Measure Sub Total: $55.00 — Sub Total: $55.00

Field Notes:

Measure 17 CO Monitor is Needed — Components — Inspected ☐

Comment

#	Material / Labor	Description /Comment	Units	Estimated Qty	Estimated Unit Cost	Estimated Total	Actual Qty	Actual Unit Cost	Actual Total
1	Health and Safety Items	CO monitor	Each	1	$40.00	$40.00	1	$40.00	$40.00
2	Labor	Labor	Hour	1	$30.00	$30.00	1	$30.00	$30.00

Other Detail

Measure Sub Total: $70.00 — Sub Total: $70.00

Field Notes:

Measure 18 **Fix Insufficient Clearance from Combustibles** — Components — Inspected ☐

Comment

#	Material / Labor	Description /Comment	Units	Estimated Qty	Estimated Unit Cost	Estimated Total	Actual Qty	Actual Unit Cost	Actual Total
1	Health and Safety Items	Labor	Each	1	$15.00	$15.00	1	$15.00	$15.00

Other Detail

Measure Sub Total: $15.00 Sub Total: $15.00

Field Notes:

Measure 19 **Fix Plumbling Leaks (Basement/Crawlspace)** — Components — Inspected ☐

Comment

#	Material / Labor	Description /Comment	Units	Estimated Qty	Estimated Unit Cost	Estimated Total	Actual Qty	Actual Unit Cost	Actual Total
1	Hot Water Equipment	Labor	Each	1	$75.00	$75.00	1	$75.00	$75.00

Other Detail

Measure Sub Total: $75.00 Sub Total: $75.00

Field Notes:

Measure 20 Fix Recessed Lights Present (Attic) — *Components* — *Inspected* ☐

Comment

#	Material / Labor	Description /Comment	Units	Estimated Qty	Estimated Unit Cost	Estimated Total	Actual Qty	Actual Unit Cost	Actual Total
1	Labor	Labor	Each	1	$65.00	$65.00	1	$65.00	$65.00

Other Detail

Measure Sub Total: $65.00 *Sub Total:* $65.00

Field Notes:

Work Order Grand Total: $1,254.87 *Grand Total:* $1,374.72

Work Order (Bid Form)

WORK ORDER INFORMATION

Work Order Name: WO/05_348/EASY/1
Work Order Type: Weatherization
Audit Name: 05_348SB

Audit Date: 8/22/2005
Work Started Date: 9/1/2005
Work Completed Date: 9/6/2005
Inspection Date: 9/13/2005

CLIENT INFORMATION

Client Name: Tanner, David
Client ID: 05_348
Alt. Client ID:

Address: 114 Athens
Anytown, US 01234

CLIENT CONTACT INFORMATION

Tanner, David	(111) 764-5687	(111) 764-3789	(111) 764-9902	Applicant/Person of Record	☑
Tanner, John		(254) 567-8908		Applicant/Person of Record	☐ Son of primary applicant

AGENCY INFORMATION

Agency: Demonstration Agency
Address: 725 Jefferson St.
Any City, US 11111

Agency Phone: (123) 456-7890
Fax: (234) 567-8901
Email Address: agencyemail@localisp.net

Agency Contact: Tor, Audrey

Work Phone:
Cell Phone:
Email Address:

CONTRACTOR / CREW INFORMATION

Company: Easy Construction, Inc.
Address: 264 Labor Lane, Unit # 5
Any Town, US 12345
Contact: Construction, Easy

Work Phone: (111) 345-6789 x45
Cell Phone: (111) 345-2345
Email Address: easyconstruction@localisp.net

Company Name & License Number: _____

Contractor's Signature: _____

COMMENT

Measures

Measure 2 Low Flow Showerheads — **Components** — Inspected ☐

Comment

#	Material / Labor	Description / Comment	Units	Estimated Qty	Estimated Unit Cost	Estimated Total	Actual Qty	Actual Unit Cost	Actual Total
1	Hot Water Equipment	Low Flow Shower Heads	Each	1					
2	Labor	Low Flow Shower Heads	Each	1					

Other Detail

Measure Sub Total: | Sub Total:

Field Notes:

Measure 6 Lighting Retrofits — **Components** LT1 — Inspected ☐

Comment

#	Material / Labor	Description / Comment	Units	Estimated Qty	Estimated Unit Cost	Estimated Total	Actual Qty	Actual Unit Cost	Actual Total
1	Lighting	Compact Fl. -38 Watt	Each Lamp	4					
2	Labor	Compact Fl. -38 Watt	Each Lamp	4					

Other Detail

Measure Sub Total: | Sub Total:

Field Notes:

Measure 15 Adjust fan limit control settings — Components — Inspected ☐

Comment

#	Material / Labor	Description / Comment	Units	Estimated Qty	Estimated Unit Cost	Estimated Total	Actual Qty	Actual Unit Cost	Actual Total
10	Unspecified	Misc Material	Each	1					
	Other Detail								

Measure Sub Total: | Sub Total:

Field Notes:

Measure 16 Anticipator Adjustment Needed — Components — Inspected ☐

Comment

#	Material / Labor	Description / Comment	Units	Estimated Qty	Estimated Unit Cost	Estimated Total	Actual Qty	Actual Unit Cost	Actual Total
1	Heating Equipment	Labor	Each	1					
	Other Detail								

Measure Sub Total: | Sub Total:

Field Notes:

Measure 21 Install Bathroom Exhaust Fan — **Components** — **Inspected**

Comment

#	Material / Labor	Description / Comment	Units	Estimated Qty	Estimated Unit Cost	Estimated Total	Actual Qty	Actual Unit Cost	Actual Total
1	Health and Safety Items	Bathroom exhaust fan	Each	1					
2	Labor	Labor	Hour	1					

Other Detail

Measure Sub Total: **Sub Total:**

Field Notes:

Work Order Grand Total: **Grand Total:**

Weatherization Assistant
Customized Reporting Feature
Reference Document

11/16/05

Introduction:

Versions of the Weatherization Assistance database software prior to 8.2.6 contained a set of static, predefined reports in the wa.mde database front-end file. The format of those existing reports and the number of available reports could not be changed by users of the Weatherziation Assistant. The desire for customized and user specific reports has been a stated objective since the first versions of Weatherization Assistant that stored data in a standard database file format. For this reason, and because the system used for development (MSAccess) has useful tools for visual query and report development, it was decided to make the Weatherization Assistant reporting module open source.

Starting with Version 8.2.6, all of the report objects, the queries used by those reports, and the Visual Basic source code modules used to generate reports were moved to a separate database file which can be modified by users. The only requirement to modify existing reports or create new reports is:

1) A copy of the Microsoft Access database program (Access97, and AccessXP have been tested to date)
2) A working knowledge of query and report development in that environment (a somewhat specialized skill that is becoming more common with time)

This document is written for Weatherization Assistant users who wish to modify existing reports or develop new ones. Note that all new or modified reports in the customized reporting database file can be selected and run from the main Weatherization Assistant user interface. This document explains the inner workings of the customized reporting database file which is available for download in source code form with the current Weatherization Assistant release. Included here are descriptions of the tables and other objects which can be copied/edited, or extended along with some detailed examples. There is not much hand holding when it comes to describing the basic features and operations of MSAccess, so you may need to refer back to the help material for that application depending on your experience.

Conventions:

This document contains a number of references to various systems, files, or objects which need to be clarified. So this is really a brief glossary.

wa.mde

This refers to the main front-end database file for the Weatherization Assistant application. This is a compiled MSAccess97 application which is linked to the Weatherization Assistant Backend database file as well as the Customized Reporting database file.

Backend

This refers to the database file containing all of the actual data collected on forms in wa.mde. It is stored in MSAccess97 MDB format for easy access but direct manipulation of the table data is discouraged due to the number of data cross checks built into the wa.mde forms. Each of the tables containing data is linked to the wa.mde front end and the waReport.mdb Customized Reporting database.

waReport.mdb

This refers to the open source customized reporting database file which is the subject of this document. In the normal distribution, this file is named waReport.mde since it is distributed in compiled format. It is in MSAccess97 format and contains linkages to the same Backend tables as wa.mde. The wa.mde front end is linked to the customized reporting database in either open source (mdb) or compiled (mde) format. The links to the backend tables in the reporting module are managed automatically by the wa.mde front end. The open source version of the customized reporting database file (mdb format) is available as a separate download from the Weatherization Assistance Program sponsored site on which the main program is posted.

Download Instructions:

The main distribution of Weatherization Assistant is a self extracting executable file which includes a copy of the current reporting database file in MDE format (compiled). Weatherization Assistant is distributed as a single file which follows the naming convention:

waXXXXSS.exe

where XXXX is the version number and SS an optional code for distributions to a specific state. In the same directory on the web where this distribution file is located you should also find another file named:

waReportXXXX.zip

This is the corresponding waReport.mdb file (zipped). It is an Access97 database file which was used to compile the waReport.mde file contained in the main installation file. It is necessary to download this file only if you plan to modify or add reports yourself.

Help Available:

This document is the main help provided for knowledgeable users wishing to develop their own reports. Some technical assistance may be available on a case-by-case basis. Contact the technical assistance for the Weatherization Assistant program for details. Please read the section on Handling Upgrades to learn about limitations and cautionary notes.

Requirements:

The Weatherization Assistant was developed in MSAccess97. Most of the instructions in this document are specific to that version. This is an older version of the software that may only be available from second hand sources (eBay). However, it is possible to use more recent versions of the program for report development. Refer to the section on using later versions of MSAccess for specific instructions.

Operations:

This section contains a description of the operation of the wa.mde Weatherization Assistant front end reporting. When the wa.mde front-end makes a list of available reports or calls for a specific report, it opens the customized reporting database file as another task on the Windows task bar. The report is then opened,

previewed, or printed from the customized reporting database. In this way, all the reports defined in the customized reporting file are immediately visible and can be called from the regular wa.mde user interface

The wa.mde file contains a link (Main Menu/Link Form) which stores the complete path name of the reporting database file. The reporting database can be in either MDE (compiled) or MDB (uncompiled/open) file formats. This last point is important as it gives you the ability to update and distribute reports in either format. The MDE format is compiled and can not be altered whereas the MDB file is open and can be altered by anyone with a copy of MSAccess installed on their computer.

Because the full path to the file is stored, the naming convention and location of the reporting database is not fixed. The reporting database file is referred to as waReport.mdb by convention in this document, but really it can be any file in either MDB or MDE format. It is recommended that the reporting database file be located on the same disk as the Weatherization Assistant front end file (wa.mde) on the local machine for best performance. The waReport.mdb (or mde) MUST be in Access97 file format. See the section on using AccessXP or Access97 for notes for details.

The waReport.mdb file contains all the report, query, and Visual Basic modules necessary to create the reports. It also has access to the same backend data as the wa.mde file through dynamically adjusted table linkages. When you use wa.mde to link to a new backend file, the the table linkages are refreshed in BOTH the wa.mde file and the currently linked waReport.mdb file. This ensures that waReport.mdb is linked to the same data as the wa.mde and it allows the waReport.mdb to be run independent of wa.mde for testing purposes.

When wa.mde calls for a report, it first tests to see if the DatesRequired field in tblzReport is checked. If so, the date range pop-up form is displayed and start/end dates are collected. Then tblzReportSetup in waReport.mdb is filled in by wa.mde. This table in the reporting database is how ALL parameters are passed from wa.mde to waReport.mdb. See the reference section on this table for details for each field. The configuration of tblzReport is crucial if you are adding a new report and want that report visible in the Weatherization Assistant user interface.

Calling for a report from wa.mde starts a new MSAccess task on the Windows task bar so users see a 'Report' entry on the task bar for each open report. Multiple reports can be open at the same time limited only by the memory resources on the host computer. When any report is closed, the associated Reporting task (instance of Access) is also closed. If the report includes external file references, then instances of the associated display application remain open and must be closed manually. Printing reports to paper leaves no extra tasks opened.

Reference for tblzReport (where waReport.mdb makes reports visible to wa.mde):

This section contains a complete listing of all of the fields in tblzReport. The first thing to realize is that new user developed report objects are ONLY visible to wa.mde IF there is an active record pointing to that report in this table. This way you can have several reports in various stages of development stored in the waReport.mdb file without having to expose them in the wa.mde user interface. You can also insert records and use the Active field to turn off those reports that you don't want visible to users.

Field Name	Description
UI	The User Interface code in which this report is visible. Note that this is typically set to the string 'ALL' indicating that the visibility of the report should not be restricted to a certain UI code.
Group	This is a drop-down selector indicating in which wa.mde form the report should be listed. The choices are: Agency: Agency form Client: The Client form NAudit: NEAT Audit form (site built) MAudit: MHEA Audit form (mobile home) FAudit: MFEA Audit form (multi-family WorkOrder: The Work Order form Library: The Setup Library form Supply: The Supply Library form
SortOrder	Controls the order of appearance in the drop down list of reports in wa.mde. The list of report entries gets sorted on this value for display only.
ReportNum	A report grouping can be made up of several individual Access report objects and/or external files. In this way you can create aggregate reports made from several objects. A unique index on the combination of the ReportID and ReportNum is defined for tblzReport, thus the combination of the ReportID and ReportNum fields must be unique. See the section on Aggregate Reports for more details.
ReportID	Each report grouping in tblzReport must have a unique ReportID index. This is the index used internally by the program to reference this particular group of reports By convention ReportIDs 1 through 100 are reserved for use by the wa.mde program. IMPORTANT: When adding custom reports (new records to tblzReport) be sure to use ReportIDs > 100. Most reports are single Access reports so each report has its own record in tblzReport. It is only in cases where several Access reports are combined into a single Aggregate report where the same ReportID is shared with several tblzReport records. See the section on Aggregate Reports for more details.
Active	This is a check box field indicating if a report record is active. You can selectively make reports visible in wa.mde using this flag. Only records with the Active check will be displayed in the drop down lists of available reports
Default	Within each Group, one record can be identified as the default report. This is the report which is automatically selected in the report selection drop down list when the form identified by the Group field is opened in wa.mde.
Description	This is the description of the report that is displayed in the drop down list. For aggregate reports, only the first record for the ReportID is used. This is a separate field from the title of the report although they are likely to be similar.
Title	This is the string which is used at the title area of the MSAccess report. This allows the use of a standard header where the title string at the top of the report gets replace with the string you enter here.

DatesNeeded	This check box determines if the date range dialog box should be displayed prior to opening the report. This date range dialog fills in the ReportDateRangeStart and the ReportDateRangeEnd fields in tblzReportSetup. See the field reference section for tblzReportSetup for more information.
Type	This drop down selection should be set to 'report' for MSAccess report objects and to 'file' for external files. External file types supported include any file types for which Window has a default viewer and printer defined.
Name	This field contains the object name for MSAccess report objects (Type = report) or the pathname of the external file (Type = file). If the Type = 'file' then this name can be a absolute pathname (e.g. c:\yourpath\yourfile.txt) or a are relative pathname (e.g. yourfile.txt). Relative pathnames are relative to the location of the waReport.mdb file.
OutFilePrefix	Snapshot is one of the output options for MSAccess reports. This string provides the file name prefix used in the generation of the snapshot (.snp) output files. Microsoft provides a free viewer for snapshot files.
PreviewPages	This is the number of pages displayed in the report Preview window. It only applies to Preview type output. Good choices are 2 for portrait type reports and 1 for landscape.
PreviewMax	If checked, the preview window size is maximized and the report takes up the whole application client area. It is a good choice to Preview reports maximized.

External Files:

You can specify the pathname to an external file as a report object. The only limitation is that the computer generating the report must have an application registered for the file extension you list. For example, if you can assume that every computer has software to handle MSWord files with the .doc extension, you can list the name of a .doc file as a report. In that case the Type field is set to 'file' and the Name field contains the path name to the .doc file. The path name can be an absolute path name or a name relative to the path where the waReport.mdb is installed. This may be the best way to include certain boiler-plate type information before or after a normal Access report.

Aggregate Reports:

Most reports will be comprised of a single MSAccess report object. In those cases a single record in tblzReport corresponds with a single MSAccess report object. In that case the record would have a unique ReportID and ReportNum = 1.

However, there may be instances where you would like several report objects and perhaps some external files (like a boiler-plate in MSWord for instance) previewed or printed as a group in a certain order. You can accomplish this by creating a group of records in tblzReport all sharing the same ReportID. In that case, the ReportNum controls the order of display and printing of the report elements. See the section on external files for more information about incorporating external files as a report or in a report group.

The table tblzReport contains a sample aggregate report that by default is turned off (InActive). It demonstrates how two Access reports and one external text file can be combined into a single aggregate report.

Note that if multiple Access reports are opened in preview mode, the Windows main task menu at the bottom

of the screen is used to switch between the different preview windows for the different. When any of the reports are closed, the reporting database closes and you return to the wa.mde front end.

Reference for tblzReportSetup (how wa.mde passes values to waReport.mdb):

This table contains just a single record which includes all of the parameters which were last passed between wa.mde and the waReport.mdb reporting database. These values are normally only written by wa.mde but they can be manipulated manually in cases where waReport.mdb is being tested independent of wa.mde. In some instances fields in this table need to be used in record selection criteria of named queries. In each of those cases, a public Visual Basic function has been provided in the basReportCalc module to simplify query development. Refer to existing queries in waReport.mdb for examples of how the functions are used to simplify query selection criteria. The reference of fields below shows the name of the public function where applicable.

Field Name	Description
Title	This is the string to be used as the title for the report being generated. It is copied from the tblzReport.Title field at the time the report is generated. basReportCalc.ReportTitle() as String
Period	String description of period ie. "6/1/04 to 6/31/04" . This is used in the report header. This is non-null only if the ReportDateRangeStart or ReportDateRangeEnd fields are non-null
ReportDateRangeStart	If the DatesNeeded check box is marked in tblzReport, then wa.mde will prompt for the start date and fill in the date here. basReportCalc.ReportStart() As Date
ReportDateRangeEnd	If the DatesNeeded check box is marked in tblzReport, then wa.mde will prompt for the end date and fill in the date here. basReportCalc.ReportEnd() As Date
ReportSubLabel	This is the the Report Center Label copied from wa.mde MainMenu/Preferences providing a general user configurable report header string. This overlaps the ReportSubLabelLeft and Right, so typically only one of the two is used.
ReportSubLabelLeft	This is the the Report Left Label copied from wa.mde MainMenu/Preferences providing a general user configurable report header string. This overlaps the ReportSubLabel, so typically only one of the two is used.
ReportSubLabelRight	This is the the Report Right Label copied from wa.mde MainMenu/Preferences

	providing a general user configurable report header string. This overlaps the ReportSubLabel, so typically only one of the two is used.
ProgramLogo1	This is the full path name to a bitmap (.bmp) file used for the graphic in the upper LEFT hand corner of the report header. It is also used as the LEFT hand side graphic for the wa.mde Main Menu and is set using the Main Menu/Preferences form in wa.mde.
ProgramLogo2	This is the full path name to a bitmap (.bmp) file used for the graphic in the upper RIGHT hand corner of the report header. It is also used as the RIGHT hand side graphic for the wa.mde Main Menu and is set using the Main Menu/Preferences form in wa.mde.
RecordID	This is the long integer identifier for the current record for the current form in wa.mde. Which record is used depends on the Group field in the tblzReport table. Here is the name of the table and the long integer ID associated Group RecordID is --- --- Agency Null, See ReportAgencyName below Client tblClient.ClientID NAudit tblNJob.JobID MAudit tblMJob.JobID FAudit tblFJob.JobID WorkOrder tblWorkOrder.WorkOrderID Library tblLib.LibID Supply tblSupply.SupplyID basReportCalc.RecordID() as Long
ReportAgencyName	The name of the associated tblAgency.AgencyName field regardless of the Group. basReportCalc ReportAgencyName() as String
ReportAgencyState	The name of the associated tblAgency.AgencyState field regardless of the Group. basReportCalc ReportAgencyState() as String
ReportID	The ReportID field from tblzReport for the report currently being generated

OutputType	What type of output is being called for: Preview = Access Report Preview window Print = Hard Copy to the Default Windows Printer Snap = An MSAccess snapshot file
LinkPath	The full pathname to the backend database file currently linked to the wa.mde AND the waReport.mdb database files. This pathname is used to dynamically maintain these links.

Example 1: How to Alter an Existing Report?

Here is a step by step example of how to modify an existing report. The first step is to make copies of all the query and report objects. Avoid editing existing object since those object may change on the next upgrade and you would have difficulty merging the changes into existing objects. By creating new objects, upgrading to the next version is made much simpler because you simply copy your custom/new objects into the new waReport.mdb file.

Suppose you would like to add the Work Phone for the contractor assigned to the Open Work Order report visible from the Agency form. Here is an outline of steps to perform

1) Examine tblzReport and notice that rptAgencyOpenWorkOrders contains the report of interest

2) Make a copy of that report object. NOTE: pick a simple prefix for all of your copies (makes it easier to spot your customized objects when it comes time to migrate your changes to the next version). Suppose your prefix is "abc_" so copy

rptAgencyOpenWorkOrders -> abc_rptAgencyOpenWorkOrders

3) Notice that the report is based (Record Source) on the named query qry_rptAgencyOpenWorkOrders. So make a copy of that as well.

qry_rptAgencyOpenWorkOrders -> abc_qry_rptAgencyOpenWorkOrders

4) Now we can just work on the copies leaving the original objects unchanged. First, change the Record Source property of your copy of the report to your new copy of the query.

5) Now modify your copy of the query with the MSAccess query design tool. Add the WorkPhone field from tblContact to the list of fields reported by the query. Save your changes.

6) Modify the details section of your copy of the abc_rptAgencyOpenWorkOrders report object. Add a new text control linked to the new WorkPhone field in the query. Save your changes.

7) Test your new report manually. See the section on hints for testing. When your changes are working to your satisfaction, it is time to register the report in tblzReport.

8) The way to update tblzReport is to make a copy of the existing record for the work order report (ReportID = 21). Copy this to a new record and make the following changes:

ReportID = 101 (or some number > 100)
Description = "New Open Work Orders" (some unique description)
Name = abc_qry_rptAgencyOpenWorkOrders (the name of your new report object)

9) You might optionally disable the old copy of this report by turning off the Active flag for the previous version in tblzReport. That makes it invisible in the wa.mde front end.

10) Now the new report should show up in the wa.mde Agency form. If you don't see the new report, check to be sure you are linked to the correct reporting file using the wa.mde Link form. Test run it from there. If everything is working you are ready to distribute. If you are working with a version of Access other than Access97, you will need to save your work as an Access97 file for wa.mde to reference it correctly.

Example 2: How to Create a New Report:

The best way to create a new report is to start from an existing one. This way you get all the standard header controls and code to manage report open, close, and NoData events. Look at the code behind one of the reports to see the standard (fairly simple code) to hand the Open, Close, and NoData events. Let say you want to develop a new report based on the Client table to perform some economic summaries.

1) First create a query that contains the records you are interested in. In this case an existing query (qry_MeasureCost) shows the economics for each measure in each work order associated with each client. We can define a new query with this query as its source. The new query joins two tables and set the criteria including a date range and does the summary across work order measures. The new query has been left in the waReport.mdb for example purposes and is named abc_qrySampleClientSummary. This query summarizes the estimated and actual initial costs as well as the estimated and actual savings to investment ratios (SIR). NOTE: the query does not limit the work orders or client records considered by any status settings but it does limit the records with criteria for the Agency Name, State, and start/end dates.

2) Now develop the report object based (Record Source) on that query. In this case I started with a copy of the Open Work Order report, then deleted all the objects in the detail section leaving the standard report header and page footer unchanged. That is the quickest way to get a new report. Then I changed the Record Source property to the new query and created a simple page header and detail section. Report generation is a fairly involved process well beyond the scope of this document but the MSAccess help material may help you. The resulting report is saved as an example in the waReport.mdb database named abc_rptSampleClientSummary.

3) The final step is to register the new report in tblzReport so it is visible from wa.mde. Again the quickest method is to copy an existing record then make changes. In this case I copied the record for the Open Work Order report and modified the following:

ReportID = 102 (or something > 100)
SortOrder = 40 (so it shows up last in the list)
Description
Title
DatesNeeded (yes, checked)

The tlbzReport record is not checked Active since this record is in the table only for example purposes. Change the record to Active to test the report from the wa.mde Agency form.

Using AccessXP or Access97:

Although a copy of Access97 is recommended, you can use a more recent version of the MSAccess database software for report development with a little extra effort. AccessXP has been evaluated to date with Access2K and 2003 likely to have the same features (although untested).

The first step in using the newer software is to open the waReport.mdb file which should automatically prompt you to convert the file to the latest Access file format. Do the conversion saving the file with the name waReportXP.mdb or some similar name to distinguish it from the original file.

Now do your development with the file in the latest MSAccess version. You should be able to manually open reports using the backend data that you were linked to at the time you did the conversion. After you complete your development, use the Tools/Database Utilities/Convert/To Access97 File Format. You may get some warning messages the first time the new Access97 reporting database file is used. You can safely ignore the messages.

You are restricted to releasing your report updates in MDB (open source) format if you only have the most recent version. You need a full copy of Access97 in order to create an MDE file in that format.

Handling Upgrades:

There are a number of potential pit falls associated with updates that can be anticipated and accounted for. The basic problem is that development of the Weatherization Assistant will continue with likely changes to existing objects and new objects in waReport.mdb. Each distribution will have a waReport.mdb file available but it is up to users to migrate their changes to these new versions.

A potential conflict arises if you modify an existing object in your copy of waReport.mdb while that same object is updated between versions. The best way to avoid such conflicts is to follow the following principles:

1)Never modify an existing object, always make a copy and edit just the copy
2)Use a unique prefix for all new object names

An example might help to illustrate. Suppose you want to modify the Quarterly report (rptAgencyQuarterlyUnits) to suit a particular reporting requirement. First notice that this report is based on a set of queries.

qry_QuarterlyUnit
qry_QuarterlyUnitDetail
qry_QuarterlyUnitDetailOther
qry_QuarterlyUnitDetailOtherSum
qry_QuarterlyUnitDetailSum

The first order of business is to make copies of all these objects. To make it easier to spot the custom object you create, pick a simple prefix to use consistenty. Let's assume that your prefix is ABC, so do the following copies:

rptAgencyQuarterlyUnits	->	abc_rptAgencyQuarterlyUnits
qry_QuarterlyUnit	->	abc_qry_QuarterlyUnit
qry_QuarterlyUnitDetail	->	abc_ qry_QuarterlyUnit
qry_QuarterlyUnitDetailOther	->	abc_qry_QuarterlyUnitDetailOther
qry_QuarterlyUnitDetailOtherSum	->	abc_qry_QuarterlyUnitDetailOtherSum
qry_QuarterlyUnitDetailSum	->	abc_ qry_QuarterlyUnitDetailSum

Now change only the new copies. First make sure the references within the new objects consistently point to just the new copies of the queries and reports. Next you can make the custom changes to your copied objects. The main idea is that the original objects remain unchanged and all new objects have a consistent naming convention with your prefix. To complete this example you would also update tblzReport to enable the new report and perhaps disable the previous version. See the reference section for tblzReport for details.

Now comes the important part relative to upgrades. When a new Weatherization Schema is release, obtain a copy of the new waReport.mdb then import (File/Get External Data/Import) your customized objects with the easily identified prefix FROM the existing waReport.mdb TO the new version. Providing that no table objects or fields have been renamed or removed (should normally be the case), then all of your custom objects should import and run in the new version. The final step is to update tblzReport in the new version to reflect the changes you made in the previous version. Using ReportIDs > 100 for any records you add or modify will make the process simpler. The reference section for this table contains some hints on making that upgrade process easier.

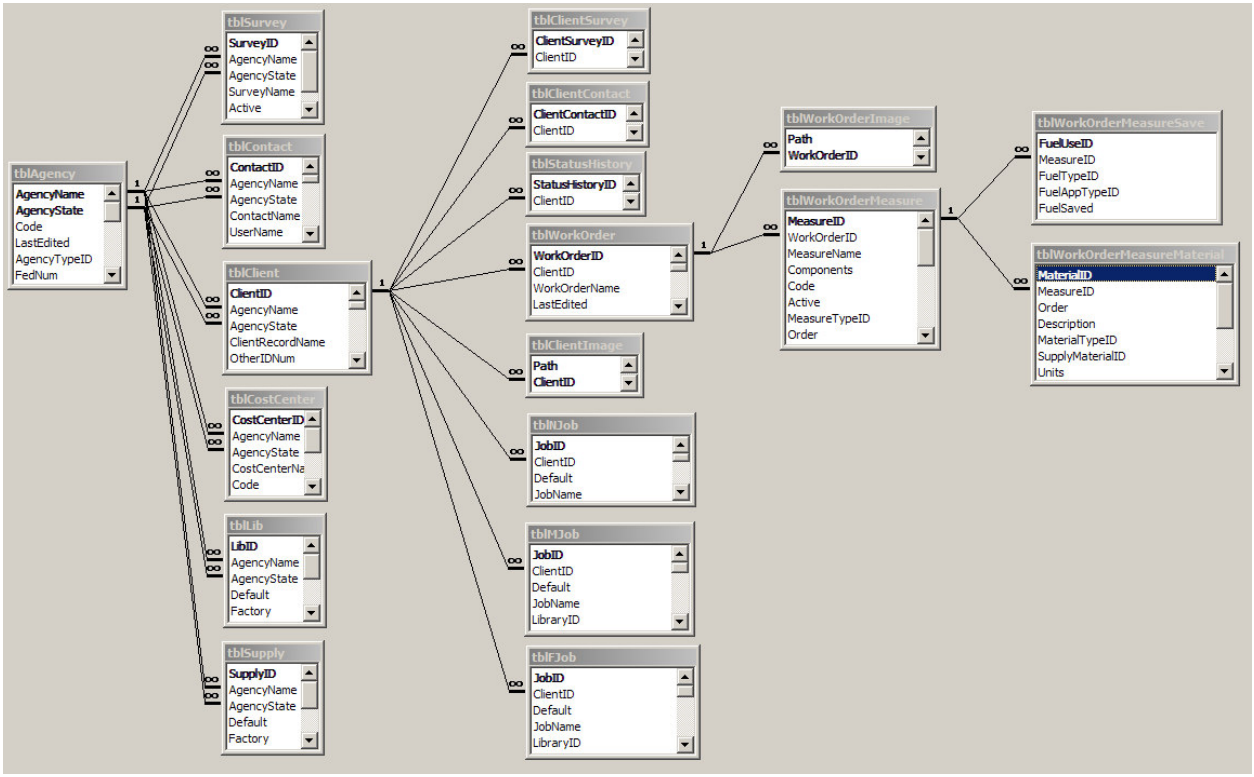
Testing During Development:

Here are some suggestions which may help during the development of new reports.

1) Use wa.mde to enter data into the backend database to provide your sample database. When you link to your waReport.mdb file in development, the table links are automatically refreshed. You can optionally use the Tools/Add Ins/Linked Table Manger to manage the links manually in the customized reporting database file.
2) Use wa.mde to call up your new report. Once the record is entered into tblzReport, the new report should show up in the appropriate drop down list of available reports. You may have to close and re-open the form where the drop down list of reports is displayed (to get a refresh on the drop down) if you keep wa.mde open.
3) An important point to remember is that you do not have to use wa.mde to open the report. If you open the waReport.mdb file directly you can open reports manually. The database window is not automatically displayed so press F11 on startup if you open waReport.mdb manually. The entries in tblzReportSetup from the last call using wa.mde are saved and can be reused. This may be a more convenient method for opening the report for testing numerous small changes.

Relationships View:

To better understand the existing queries and reports, it may help to look at the relationships view of the Weatherization Assistant backend database. The database has a hierarchical structure with defined relationships between the various tables containing the raw data. It is necessary to have a working understanding of these relationships when you design new queries and reports. The database relationships view is available in either the Backend MDB file or the Customized Reporting database MDB file. Here is the basic outline of the relationships at the highest level of the database starting with the Agency table. Many of the sub-tables are not shown in this view for the sake of clarity.


tblAgency
AgencyName
AgencyState
Code
LastEdited
AgencyTypeID
FedNum
tblSurvey
SurveyID
AgencyName
AgencyState
SurveyName
Active
tblContact
ContactID
AgencyName
AgencyState
ContactName
UserName
tblClient
ClientID
AgencyName
AgencyState
ClientRecordName
OtherIDNum
tblCostCenter
CostCenterID
AgencyName
AgencyState
CostCenterNa
Code
tblLib
LibID
AgencyName
AgencyState
Default
Factory
tblSupply
SupplyID
AgencyName
AgencyState
Default
Factory
tblClientSurvey
ClientSurveyID
ClientID
tblClientContact
ClientContactID
ClientID
tblStatusHistory
StatusHistoryID
ClientID
tblWorkOrder
WorkOrderID
ClientID
WorkOrderName
LastEdited
tblClientImage
Path
ClientID
tblNJob
JobID
ClientID
Default
JobName
tblMJob
JobID
ClientID
Default
JobName
LibraryID
tblFJob
JobID
ClientID
Default
JobName
LibraryID
tblWorkOrderImage
Path
WorkOrderID
tblWorkOrderMeasure
MeasureID
WorkOrderID
MeasureName
Components
Code
Active
MeasureTypeID
Order
tblWorkOrderMeasureSave
FuelUseID
MeasureID
FuelTypeID
FuelAppTypeID
FuelSaved
tblWorkOrderMeasureMaterial
MaterialID
MeasureID
Order
Description
MaterialTypeID
SupplyMaterialID
Units