0301

CITY OF BLOOMINGTON, COMMON COUNCIL JACK HOPKINS SOCIAL SERVICES FUNDING COMMITTEE

2014 GRANT APPLICATION

AGENCY INFORMATION

Lead Agency Name	Monroe County United Ministries, Inc.
Is Lead Agency a 501(c)(3)	◯ yes ◯ no
Number of Employees	
Full -time	17
Part-time	11
Volunteers	
Address	827 West 14th Court
	Bloomington, Indiana
Zip Code	47404
Phone	812-339-3429
Agency E-mail	mcum@mcum.org
Website	http://www.mcum.org
President of Board of Directors	Mary Ellen Brown

Executive Director	Meri Reinhold
Title	Executive Director
Phone	812-339-3429 x11
E-Mail	mcum@mcum.org

Name of Person to Present Proposal to the Committee (If not the Executive Director**)**	Katie Broadfoot
Title	Development Associate
Phone	812-339-3429 x18
E-Mail	fundraising@mcum.org
Name of Grant Writer	Katie Broadfoot
Phone	812-339-3429 x18
E-mail	fundraising@mcum.org

Agency's Mission Statement (150 words or less**)**

Monroe County United Ministries is a nurturing organization serving working families and those in distress by assisting with emergency needs and subsidized childcare. We provide quality education and a safe place for children, basic needs assistance for the poor and community service opportunities.

PROJECT INFORMATION

Project Name	Energy Efficiency Improvements for MCUM Childcare Facility
Is this a collaborative project?	◯ yes ◯ no
If a collaborative project, list name(s) of non-lead agency partner(s)	
Address where project will be housed	827 West 14th Court, Bloomington, Indiana 47404
Total Cost of Project	$50,990
Requested JHSSF Funding	$50,990
Other Funds Expected for this Project (Source, Amount and Confirmed or Pending)	MCUM development staff are researching other funding options for parts of this project, pending Jack Hopkins funding, and the agency is prepared to cover remaining expenses to the project as it is critical that this energy overhaul is completed as soon as possible.
Number of Total Clients Served by this Project in 2014	130+
Total Number of City Residents Served by this Project in 2014	81; 100% in County
Is this a request for operational funds?	◯ yes ◯ no
If "yes," indicate whether the request is for a pilot project, bridge funding or a collaborative project.	◯ pilot ◯ bridge ◯ collaborative
Please indicate the period in which you intend to draw down funds, if granted	◯ July-September 2014 ◯ October-December 2014

Please describe when you plan to submit your claims for reimbursement and what steps precede a complete draw down of funds.

Monroe County United Ministries (MCUM) requests funding for Phase II of its Childcare Center energy overhaul. As a result of last year's project, MCUM has conducted a comprehensive energy audit and has received all necessary estimates to move forward. Jack Hopkins Social Services funding would be utilized to meet the recommendations from that audit including sealing the building for air leakage, and upgraded water heater, and energy management system, and energy efficient lighting. Once the grant agreement is signed, the work will commence. We expect the work to be completed within six weeks of starting and claims to be submitted soon after.
This is a straightforward project that should be easy to implement. Purchases will be made as funding is secured and made available. All work will be completed prior to December 2014.

If completion of your project depends on other anticipated funding, please describe when those funds are expected to be received.

Completion of this portion of the project does not depend on other anticipated funding if our full request is met, otherwise it will need to be scaled back.

Do you own or have site control of the property on which the project is to take place?

- ◯ yes
- ◯ no
- ◯ n/a

Is the property zoned for your intended use?

- ◯ yes
- ◯ no
- ◯ n/a

If "no," please explain.

If permits, variances, or other forms of approval are required for your project, please indicate whether the approval has been received. If it has not been received, please indicate the entity from which the permitting or approval is sought and the length of time it takes to secure the permit or approval.
NOTE: Funds will not be disbursed until all requisite variances or approvals are obtained..

N/A

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Due to limited funds, the Committee may recommend partial funding for a program. In the event the Committee is unable to meet your full request, will you be able to proceed with partial funding?

- ◯ yes
- ◯ no

If "yes," please provide an itemized list of program elements, ranked by priority and cost.

Priority #1 (Item and Cost)	Total weatherization of the childcare facility: $18,540; includes air sealing and duct work, insulation, and upgrading to a new water heater with corresponding timer. (Does not include $1,500 in project management, as MCUM has decided to manage the project)
Priority #2 (Item and Cost)	Install an energy management system with remote programming capabilities; Energy management system: $6,800, Wireless installation to operate energy management system: $900
Priority #3 (Item and Cost)	Upgrade to energy efficient lighting: $24,750
Priority #4 (Item and Cost)	
Priority #5 (Item and Cost)	
Priority #6 (Item and Cost)	
Priority #7 (Item and Cost)	

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PROJECT SYNOPSIS (250 words or less)

Please provide a brief overview of your project. Assume that this synopsis will be used in a summary of your proposal.

Monroe County United Ministries is continuing an energy overhaul of its Childcare Center, located at 827 West 14th Court. Previous inspections and a history of costly equipment repairs led to the conducting of an energy audit of the childcare facility and the resulting recommendations. This energy audit indicated a number of areas for improvement, with the most significant opportunity being air sealing, as the building leaks so much it could not be fully pressurized for testing. MCUM requests $50,990 in Jack Hopkins Social Services funding for this one-time project to improve its childcare facility. This grant would fund the following components of MCUM's energy overhaul:

1. weatherization of the childcare facility including: air sealing measures, insulation, and upgrading the water heater to a more efficient unit and installing a timer corresponding with hours of usage;
2. install an energy management system with remote programming capabilities; and
3. upgrade to energy efficient lighting.

Air sealing will also enable testing on duct work, which may reveal the need for further repair. The total energy overhaul will eliminate costly repair expenses and result in future energy savings, estimated at at least $18,000 over the next ten years.

CRITERIA

In the spaces below, please explain how your project meets the Jack Hopkins Funding criteria. Assume that your responses will be used in a summary of your proposal.

NEED (200 words or less)
Explain how your project addresses a previously-identified priority for social services funding as documented in the Service Community Assessment of Needs, the City of Bloomington, Housing and Neighborhood Development Department's 2010-2014 Consolidated Plan, or any other community-wide survey of social services needs.

The Service Community Assessment of Needs (SCAN) mentions MCUM, specifically (51), as an important service for children from low-income families that is a National Association for the Education of Young Children (NAEYC)-accredited United Way member agency. MCUM also holds the highest level in the Paths to Quality voluntary assessment (54), and is the only accredited center in Monroe County with a primary purpose to serve low income families.
The Consolidated Plan 2010-2014 lists the provision of childcare services as a high priority. As stated in the plan, a lack of “reliable, quality, affordable child care is one of the greatest barriers to women obtaining and keeping a job” (51).
A sound infrastructure is essential to providing quality, affordable childcare. Additionally, every dollar that can be saved with improved energy efficiency will more directly benefit the children served by MCUM's childcare program. MCUM’s energy overhaul project will ensure important community-wide needs are met in a secure environment, and that MCUM’s affordable, high-quality childcare program will continue to bring positive spillover effects into Monroe County for many years beyond the life of the project itself.

ONE-TIME INVESTMENT (100 words or less)
Jack Hopkins Funds are intended to be a one-time investment. If you are requesting operational funds, explain if the request is for pilot or bridge funding and please explain your plan for future funding.

Not applicable.

FISCAL LEVERAGING (100 words or less)
Describe how your project will leverage other resources, such as other funds, in-kind contributions, etc.

This project is necessary not only for the substantial energy cost savings to MCUM, but is essential to providing quality, affordable childcare in an environment with sound infrastructure. Especially critical is air sealing work to prevent heating and cooling energy loss. Last year we upgraded the heating and cooling systems, but to make the best use of the efficiencies, we must take these next steps. Savings to the monthly overhead will be substantial and allow more funds to be used for programming purposes. We will apply to other sources as they are available should the project not be fully funded by Jack Hopkins.

LONG-TERM BENEFITS (200 words or less)

Explain how your program will have broad and long-lasting benefits for our community.

This project ensures MCUM will not incur energy loss expenses to its childcare facility for some time, sustaining capacity for the provision of its high-quality childcare program. MCUM’s program can serve 97 children at a time and is licensed by the State of Indiana and accredited by the National Association for the Education of Young Children (NAEYC). Investing in high-quality early childhood education positively impacts children, their families, and the community far into the future. Arthur J. Rolnick writes, “careful academic research demonstrates that tax dollars spent on early childhood development provide extraordinary returns […] as high as 16% per year.” (Rolnick). Additionally, high-quality early childhood education helps prepare young children to succeed in school and become better citizens; they earn more, pay more taxes, and commit fewer crimes (Calman and Tarr-Whelan). MCUM’s childcare program is especially important in Monroe County, currently ranked first by StatsIndiana as Indiana's most impoverished county, because its allowance for better employment of parents, long-term benefits to the children served, and return on investment to taxpayers will help the local economy well beyond this grant's funding cycle.

Narrative

Monroe County United Ministries (MCUM) is one of only eight childcare centers in Monroe County accredited by the National Association for the Education of Young Children (NAEYC). MCUM holds the highest level in the Paths to Quality Voluntary Assessment and it is the *only* accredited center in Monroe County whose primary mission is to serve low-income families. MCUM's investment in young children benefits not only young preschoolers but the community as a whole. Studies show that high-quality childcare at an early age improves a child's later success in school and in life; benefits are seen in improved graduation rates, higher earning potential, reduced incarceration rates, and higher rates of civic participation. In addition to providing care for children, the MCUM childcare program strives to provide comprehensive services for families. In 2013, these efforts included flu shots and lead screenings, dental cleanings, Christmas assistance for interested families, and referrals to other services in the community.

Monroe County United Ministries (MCUM) requests $50,990 in Jack Hopkins Social Services funding to implement "Phase II" of its energy overhaul for its childcare facility to ensure MCUM is able to continue provision of its childcare program. MCUM's high-quality, affordable childcare program is available to Monroe County residents, primarily low-income, and has the capacity to serve 97 children at a time. Of the children enrolled in MCUM's childcare program in 2013, 95% lived in homes that were at the low-moderate income range or below, with 50% considered "extremely low income". Seventy percent of children came from homes with female heads of household, 46% were racial/ethnic minorities, and 55% received assistance to cover the cost of MCUM's childcare program. The average cost to a family in MCUM's program is $35 per child per week, while the full cost to MCUM to provide one week of high-quality childcare for one child is more than $200. MCUM's projected 2014 expense in energy usage is $23,000. Every dollar that can be saved through conservation and prevention of energy loss will go more directly to serving the children and families enrolled in the childcare program.

MCUM's childcare facility has extreme energy loss; so much that it could not be fully pressurized for testing at the time of MCUM's 2013 energy audit. Before December 2014, MCUM intends to undertake these remaining components of its energy overhaul project as funding allows: (1) total weatherization of the childcare facility, including: air sealing (including sealing drywall board joints above the hanging ceiling and adding insulation), upgrading the water heater to a more efficient unit and installing a timer corresponding with hours of usage; (2) installing an energy management system with remote programming capabilities; and (3) upgrading to energy efficient lighting. These changes will reduce current expenses and result in substantial energy savings in the future, and also will provide a learning environment with a sound infrastructure, which is essential to providing MCUM's high-quality, affordable childcare. The above changes will be implemented as soon as funds are made available and all claims for reimbursement will be in before December 2014.

MCUM's energy auditor estimated that over 16,000 cfm50 of improvement could be gained through air sealing. The building's minimum ventilation rate should be at or below 14,194 at cfm5; however, the leakage estimate for MCUM's childcare center is 26,059 at cfm50. The childcare facility's water heater is an older model (1975) and circulates water 100 percent of the time. Water heater consumption is estimated to be extremely high due to constant circulation for cooking, significant laundry usage, and incidental uses including hand washing. By upgrading to a heat pump and adding a timer corresponding with hours of use, MCUM can recoup energy and funds currently lost due to the continuous running of an outdated model. Installing an energy management system will allow better control over the eight zones within the childcare building. The new system will allow for precise scheduling within zones, maximize the use of MCUM's two-stage equipment, help identify areas of energy loss, and allow for remote access. Upgrades to energy efficient lighting will result in energy and cost savings to MCUM well into the future. In addition to furnaces and air conditioners replaced last year ("Phase I"), the proposed physical improvements represent a final and complete energy efficiency overhaul of MCUM's childcare facility that should reasonably last for the next ten years. MCUM has already received estimates for these projects and is prepared to begin approximately six weeks of work on this project as soon as funding is made available, submitting all claims well before the Jack Hopkins Social Services Funding deadline.

Outcome indicators that will demonstrate the immediate impact Jack Hopkins Social Services funding will have on MCUM include:

1) the 130+ children MCUM expects to serve in 2014, ~120 volunteers who donate their time to MCUM's childcare program per year, and the 17 staff members who work in the childcare facility who will all benefit from the more secure and efficient facility;
2) the 16,000 cfm50 of improvement that could be gained from air sealing, resulting in a monthly cost saving;
3) the time savings (~14 hours per day) of upgrading to a more efficient water heater on a timer, rather than letting it run for 24 hours per day;
4) monthly cost saving from more efficient lighting

Investing in energy savings has the potential for a significant positive impact on MCUM's budget, and therefore, capacity to offer essential services in the community. The cost of having inefficient and outdated equipment can be measured immediately, however. MCUM's utility expenses in the 2014 budget are estimated at $23,000. Higher efficiency equipment should allow MCUM to save over $18,000 over the next ten years in energy expenses, assuming utility costs remain constant. Since energy rates have doubled in the past ten years, ten-year savings could be up to $35,000. Every dollar saved through energy efficiency upgrades means one more dollar that can be channeled more directly to high-quality, affordable childcare for low income families in Monroe County – a very well-documented need in our community.

PROJECTED JACK HOPKINS BUDGET

Project Category	Cost
Air sealing (includes insulation & duct testing)	$18,540
Energy management system	$6,800
Wireless installation to operate energy management system	$900
Energy efficient lighting	$24,750
Total	**$50,990**

Support and Estimates

We have included the October 2013 diagnostic audit as support for the necessity of these improvements to MCUM's energy system and for estimates of the cost of elements of this project. The auditor's estimates of air sealing, duct work, insulation, and the water heater heat pump are contained within this report. As the chart on the following page shows, the "weatherization" recommendations were estimated at $22,200 at prevailing wage rate, however the thermostat ($2,160) is included as part of the energy management system, and MCUM's executive director has agreed to manage the project, eliminating the project management fees ($1,500). Those subtractions bring the total to $18,540 (listed as "Priority #1 on the Application). Also enclosed is a letter from Dan Killion of Sherlock Homes Inspection Service Inc. with his recommendations based on the audit's findings. Mr. Killion's contact information is in this letter should the committee need his endorsement for any part of MCUM's energy overhaul.

Monroe County United Ministries									
	Auditor Pre-Blower Door	28,059							
updated 2/25/13	Minimum Ventilation Rate	14,194							
	70% MVR	9,936			max air sealing hours:		161.23		
	Opportunity CFM	16,123			Contractor Post Blower Door:				
	Contractor Post Blower Door	0							
	Auditor Post Blower Door	0			Client:	NAME		Address:	ADDRESS
		Unit	Shell Co	Approved	Quantity	Cost / Material	Method	Quantity / Labor	Estimate
	AIR SEALING								
Opportunity	Blower Door Directed Air Sealing: Locate & seal all accessible by passes		x		161.23	$10.00	TBD	161.23	$9,511.17
Contractor	Blower Door Directed Air Sealing: Locate & seal all accessible by passes				0.00	$10.00	TBD	0.00	
Final Auditor	Blower Door Directed Air Sealing: Locate & seal all accessible by passes				0.00	$10.00	TBD	0.00	
	Manager Adjusted Blower Door Directed Air Sealing: Locate & seal all accessible by passes					$10.00	TBD	0.00	$0.00
	Contractor Performed Diagnostic Testing		x			$300.00	Per Unit	300.00	$0.00
	Duct Work Air Sealing								
	Seal distribution lines with mastic/UL181 tape in excess of 1.5 Estimated if Needed		x		30	$5.00	Per Unit	15.00	$884.85
	Attic Air Sealing								
	Curb, insulate and air gasket attic access lid		x		3	$30.00	Per Unit	3.00	$236.97
	INSULATION								
	Attic Cellulose Insulation								
	Cellulose insulation attic per sq ft where low and cover ducts		x		8000	$0.47	Square Feet	40.00	$5,719.60
	Water Heater								
	Install new water heater					$425.00	Per Unit	0.00	$0.00
	Install heat pump water heater Estimate				1	$1,600.00	Per Unit	12.00	$2,187.88
	HVAC								
	HVAC Repair								
	Install programmable set back thermostat Estimate	x			8	$190.00	Per Unit	8.00	$2,160.00
	Electrical								
	Install new energy efficient lighting. Estimates should be sought					$0.00	Per Unit	0.00	$0.00
									Estimate
	TOTAL Contractors								$20,700.47
	SHERLOCK								
	BILLING & PROJECT MANAGEMENT FEE				1	$1,500.00	Per Unit		$1,500.00
	TOTAL Sherlock								$1,500.00
									Estimate
	TOTAL Weatherization								$22,200.47

(Subtract thermostat expense)

(Subtract project management fees)

$22,200
- $2,160
- $1,500
$18,540

Also included, *and intended for supplemental purposes*, are signed estimates for Priority #2 and Priority #3 from Bloomington Heating and Cooling for the energy management system and energy efficient lighting.

WEATHERIZATION PROGRAM

3901 E. Hagan St., Ste F
Bloomington, IN 47401

812-339-7513

SHERLOCK HOMES INSPECTION SERVICE, INC.

Date: 10/15/13

Monroe County United Ministries
Meri Reinhold
827 West 14th Court
Bloomington, Indiana 47404

RE: Your Recent Energy Evaluation

Dear Meri

We would like to thank you for allowing Sherlock Homes to perform an energy evaluation on the building located at 827 West 14th Court Bloomington, Indiana 47404

Attached is the Audit report, recommended work scope and estimated pricing for this project. Please spend some time reviewing the information.

The report indicates that the biggest opportunity for improvement is air sealing. The building is so leaky it could not be fully pressurized for testing. It is estimated that over 16,000 cfm 50 of improvement maybe gained. Because the building could not be fully pressurized duct leakage testing was not performed. There is an estimate provided if duct sealing is necessary. At a minimum air sealing should be performed.

The attic is insulated with fiberglass batts. There are some low spots and a few places where insulation is missing altogether. Insulation should be added AFTER air sealing is completed.

There are eight HVAC systems. All eight have 90+% AFUE sealed combustion furnaces. There are two new AC units and the six remaining older units. It is our understanding that the six older units will be replaced soon. Consideration should be given to installing programmable thermostats on all units.

The water heater is an older 82 gallon electric unit that has a circulating loop that appears to run 100% of the time. The water heater energy consumption was not metered but suspected to be very high due to the constant circulation, cooking needs, and significant laundry demands. Consideration should be given to upgrading the water heater to a heat pump unit and putting the circulating pump on a timer that corresponds to the hours of usage.

Water heating and lighting is likely a major source for the buildings baseload consumption. Baseload makes up almost 60% of the total usage and seasonal load 40%. Consideration should be given to replacing the florescent lighting fixtures with more efficient energy star fixtures.

To gain a significant overall savings both baseload and seasonal measures will have to be implemented. Based upon the best information we have available you could anticipate between a 20% to 25% total savings if these measures were implemented.

Let me know if you have questions.

Dan Killion
Sherlock Homes Inspection Service Inc.
812-339-5962 Ext: 202

BLOOMINGTON

HEATING-COOLING-REFRIGERATION-ELECTRICAL

812-824-4850

PROPOSAL

Bloomington Heating, Cooling, & Electrical
1801 E. Smithville Rd.
Bloomington, IN 47401
812-824-4850, fax: 824-6217

No. 1
Date: 11/25/2013
Sheet No. 1

Submitted to:
Meri Reinhold
827 W 14th St Ct.
Bloomington, IN 47404
mcum@mcum.org

Work to be performed at:
MCUM
Daycare
Bloomington, IN 47404

We hereby propose to furnish the materials and perform the labor necessary for the completion of:

Option #1: Replace the following lighting in the daycare facility: 90:2x4 lay-in fluorescents with *Simkar* ETY24E44-41UI (LED) fixtures (3770 lumens & 44watt per fixture); 13 outside sconces with LED bulb only model LED6115-00-UL-4SCW-N (21 watts, 1796 Lumens), 28: 6" recessed cans with Juno IC22W w/Nicor DLR56 trim (730 Lumens, 13.4watts), 2: 12" square recessed fixtures(lamp only replacement) #LED 8028E57, 42: 2 bulb wrap around style fixtures with lamps only# LED6115-00-UL-4SCW-N(1717 lumens, 17 watts per lamp). We provide fixtures and lamps plus labor to install. 5yr warranty on lamps and fixtures.

Installed price $24,750.00
Discounted price for cash or check.....$23,950.00

NOTE: It looks like you may be able to recover$4850.00 in rebates from Energizing Indiana. I think these may double if work is performed before Dec15th? I am waiting for response from *Energizing Indiana*

Option#2: Replace existing 82 gallon electric water heater with a 80 gallon *AO Smith* brand model *Voltex* PHPT80 electric heat pump water heater 2.3*EF* energy factor. Includes: timer and piping reconfiguration. 10yr warranty. Installed price $2,699.00
NOTE: Discounted price for cash or check.....$2,499.00

With payments as follows: Total amount due within 30 days of completion, 5% penalty and loss of discount for late payment.

Any alteration or deviation from above specifications involving extra labor or materials will be executed only upon written orders and will become an extra charge over and above the estimate cost. All agreements contingent upon strikes, accidents or delays beyond our control. Owner to carry fire, tornado and other necessary insurance upon above work. Workers compensation and public liability insurance on above work to be taken out by Bloomington Heating & Cooling.
NOTE: This proposal may be withdrawn by us if not accepted within 30 days. Submitted by Bloomington Heating & Cooling

Kevin Merriman (owner/manager) R. Vargas office mgr.

Acceptance of Proposal

The above prices, specifications and conditions are satisfactory and are hereby accepted. Bloomington Heating is authorized to do the work as specified. Payment will be as outlined above. Unless stated

BLOOMINGTON
HEATING-COOLING-REFRIGERATION-ELECTRICAL
824-4850

ESTIMATE

Bloomington Heating, Cooling, & Electrical
1801 E. Smithville Rd.
Bloomington, IN 47401
812-824-4850, fax: 824-6217

No. 1
Date: 11/12/2012
Sheet No. 1

Submitted to:
Monroe County United Ministries
827 W. 14th Court
Bloomington, IN 47404
(812) 339-2897

Work to be performed at:
same location

We hereby propose to furnish the materials and perform the labor necessary for the completion of:

Option #1: Install six 120,000 BTUH, 96% efficient Tempstart two-stage/variable speed gas furnace model F9MVT1202422A. Install 3" PVC ventilation pipes and terminate at backside of roof. Connect furnaces to existing gas line, electrical circuits, ductwork, and drain. Install seven 5 ton 15.5 SEER Tempstar two-stage air conditioners, model TXA660GKA. Install seven indoor evaporator coils, model END4X60C24A. Connect air conditioning systems to the existing refrigerant linesets. Flush and pressure test refrigerant linesets. Additionally, includes all necessary labor, materials, supplies, and equipment removal/disposal. Warranted for one year labor, one year parts, 5 year compressor, and 10 year heat exchanger.

Estimated price $54,000.00

NOTE: Each furnace installation is estimated at $3653. Each air conditioning system installation is estimated at $4588.

Option #2: Install Ecobee EB-EMS-02 energy management system complete with 8 internet capable, touchscreen, programmable thermostats.

Estimated price $6800.00

NOTE: Price does not include WiFi internet installation which will be required.

Option #3: Install eight Samuvox UV Bio-Wall Quatro units.

Estimated price $12,700.00

R. Vargas Office mgr.

Any alteration or deviation from above specifications involving extra labor or materials will be executed only upon written orders and will become an extra charge over and above the estimate cost. All agreements contingent upon strikes, accidents or delays beyond our control. Owner to carry fire, tornado and other necessary insurance upon above work. Workers compensation and public liability insurance on above work to be taken out by Bloomington Heating & Cooling.

Diagnostic Audit

847 West 14th Street, Bloomington, IN

Inspection Date:
14 October 2013

Prepared For:
Monroe County United Ministries

Prepared By:
Sherlock Homes Inspection Svc., Inc.

Report Number:
131014MF

Auditor:
Matt Fisher

Reviewed By: Dan Killion

Address: 847 West 14th Street, Bloomington, IN
Client: Monroe County United Ministries

Report Overview

THE CONDITIONS AT THE TIME OF INSPECTION

Home Type:	☑Site Built	☐Modular	☐Mobile	
Weather Conditions:	☑Clear	☐Snow	☐Rain	☐Overcast
Outside Temperature:	60 to 65 Degrees			
Building Is:	☑Occupied	☐Vacant		
Soil Conditions:	☐Wet	☐Damp	☐Snow Covered	☑Dry
Present at Inspection:	☑Owner	☐Tenant	☐Landlord	☐Other
Building Faces:	☐North	☐South	☐East	☑West

Contractor Assigned: None at this time

Table 1 Summary/Updated Through Audits

Information Needed:	List	
Type of visit (select)	1st Site Visit & Diagnostic Audit	
Estimated Age	15 to 20 years	
Area of Living Space	13,224	
Pre WX Blower Door	26059 cfm50 @ 15 pascals	
Post WX Blower Door	0	
% of Improvement	0%	
Minimum Ventilation Rate	14194	
Pre WX Pressure Pan Avg Supply	#DIV/0!	
Post WX Pressure Pan Avg Supply	#DIV/0!	
% of Improvement	#DIV/0!	
Pre WX Pressure Pan Avg Return	#DIV/0!	
Post WX Pressure Pan Avg Return	#DIV/0!	
% of Improvement	#DIV/0!	
Prior to Weatherization	**INCHES**	**R-VALUE**
Estimated Ceiling Insulation	6-8"	R30 to R38
Estimated Rim Joists Insulation	NA	N/A
Foundation Wall Insulation	NA	N/A
Slab Insulation	0"	R0
Central Air	Yes	
Number of window A/C	None	
Auditor Information		
Energy Education Provided	Yes	
Energy Education Provided by	Matt Fisher	
1st site Visit Auditor	Matt Fisher	
Work Scope Auditor	Matt Fisher	

Address: 847 West 14th Street, Bloomington, IN
Client: Monroe County United Ministries

CONVENTIONS USED IN THIS REPORT

For your convenience, the following conventions have been used in this report.

Major Concern: a system or component which is considered significantly deficient or is unsafe. Significant deficiencies need to be corrected and, except for some safety items, are likely to involve significant expense.

Safety Issue: denotes a condition that is unsafe and in need of prompt attention.

Repair: denotes a system or component which is missing or which needs corrective action to assure proper and reliable functioning.

Improve: denotes a system or component that is performing its intended function, but its operation, and/or installation is less than ideal. Further evaluation and/or repairs maybe needed.

Monitor: denotes conditions present that are defective and/or have limited life expectancies, but have not and may not contribute to a significant defect or repair at this time.

Environmental Concern: denotes a condition that may affect the health or well-being of the occupants.

MAJOR CONCERN / SUMMARY

The list of items below are taken from the inspection report accompanying this summary; and in the inspector's opinion, constitute major concerns and/or issues that may prevent weatherization. A major concern is generally held to mean an item identified as either significantly affecting the residence, may prevent weatherization at this time, and/or can be considered a potentially expensive repair or replacement. This summary page should not be considered a complete list of deficiencies within the residence. Items needing further evaluation may also be listed. Environmental concerns may not be listed in this summary. If your report reflects environmental concerns you should seek further information and/or testing from a qualified professional.

Implementing weatherization measures prior to addressing deferral issues may be hazardous to the building and/or occupants.

THE SCOPE OF THE INSPECTION

All accessible components designated for inspection in the Building Performance Institute Building Analyst Standards are inspected, except as may be noted in this inspection report.

Not all improvements will be identified during this inspection. The Energy Audit should not be considered a guarantee or warranty of any kind.

Please refer to the *Moisture Assessment Form* attached to this report for information which may limit the implementation of weatherization measures.

Address: 847 West 14th Street, Bloomington, IN
Client: Monroe County United Ministries

FIRST SITE VISIT:

Energy Education Provided:

The following items were discussed by the Auditor with the building occupant.

1. **Importance of keeping up the monthly furnace filters changes.**
2. **CFL installation and low flow aerator / showerhead use will save significant energy costs over time.**
3. **Insulating water lines near the water heater will save significant energy costs over time.**
4. **Setting back the thermostat at night or while away from home will save significant energy over time.**
5. **Maintaining good drainage conditions around the building will help prevent deterioration of the building components.**
6. **Maintaining the building claddings and/or skirting will help to prevent deterioration of the installed weatherization components.**

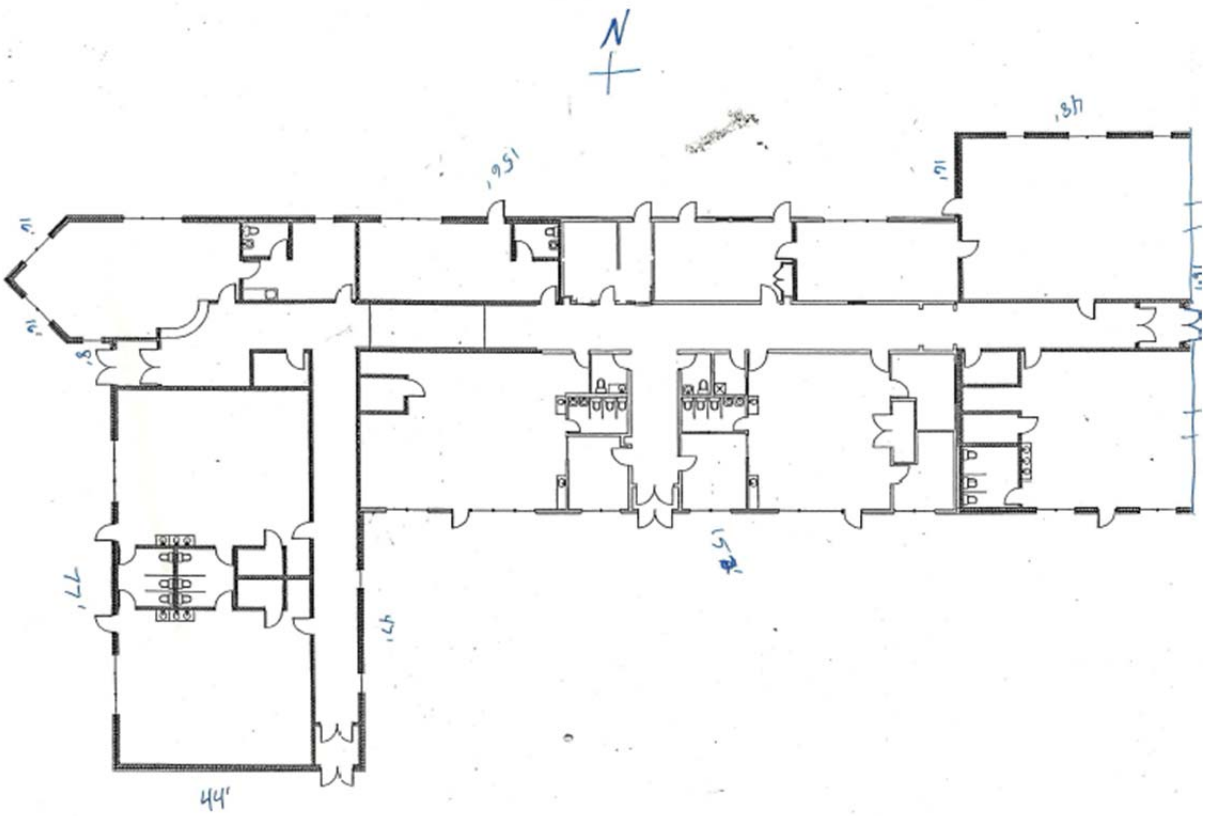
FIRST SITE VISIT COMMENTS:

1. **Potential energy improvements are listed herein throughout this report for the Homeowner's consideration. As with all building systems, and particularly with energy-saving systems, materials tend to degrade and become less effective over time. Insulation settles, caulking cracks, and air infiltration and thermal loss become problematic and thus more difficult to prevent. The Homeowner should consider all appropriate energy improvements to their home as direct and efficient methods to reduce energy costs.**

2. **Air infiltration and duct leakage diagnosis is not possible without a Diagnostic Audit. It is possible for any building, no matter what age, to be in need of air sealing measures. Without further testing, no assumptions can be made or recommendations given in regards to air leakage or building tightness for this dwelling.**

Address: 847 West 14th Street, Bloomington, IN
Client: Monroe County United Ministries

FLOOR PLAN



Address: 847 West 14th Street, Bloomington, IN
Client: Monroe County United Ministries

ELEVATIONS OF HOME

FRONT

REAR

LEFT

RIGHT

Address: 847 West 14th Street, Bloomington, IN
Client: Monroe County United Ministries

CLIENT INTERVIEW

Does the Client have Comfort Complaints?	☐Yes	☑No							
	Rooms that are too hot:	☐Yes	☑No	Location:					
	Rooms that are too cold:	☐Yes	☑No	Location:					
Does the Client have Energy billing concerns?									
	Heating costs are too high.	☑Yes	☐No	See baseload, next page					
	Cooling costs are too high	☑Yes	☐No	See baseload, next page					
Heating & Cooling									
	Frequency of HVAC Servicing	☐Bi-annually	☐Annually	☑Other					
	Frequency of filter changes	☐Quarterly ☐Monthly	☐Bi-annually ☐Annually	☑Other					
	Thermostat Settings:	Winter	68-75	Summer	68-75				
Other Information									
	Number of Occupants	☐1	☐2	☐3	☐4	☐5	☐6	☐7	☐8
	IAQ issues / Allergies:	☐Yes	☑No						
	Unvented Space heater	☐Yes	☑No						
	Programmable thermostat	☐Yes	☑No						
	Years At Current Residence	☐Less than 5yrs	☐5 to 9 yrs.	☑More than 10					
	Number of Solid Fuel Appliances	☑N/A	☐1	☐2	☐3	☐4			

Address: 847 West 14th Street, Bloomington, IN
Client: Monroe County United Ministries

Monroe County United Ministries, Inc. 8:54 AM
Custom Transaction Detail Report 10/14/2013
October 2012 through September 2013 Accrual Basis

	Date	Num	Name	Account	Class	Amount	
Oct '12 - Sep 13							
	01/01/2013	Ps	Vectren	5100 · Utilities	Preschool Childcare	341.63	12
	10/03/2012	PS	Vectren	5100 · Utilities	Preschool Childcare	52.10	9
	11/01/2012	PS	Vectren	5100 · Utilities	Preschool Childcare	98.25	10
	12/01/2012	PS	Vectren	5100 · Utilities	Preschool Childcare	339.39	11
	02/04/2013	PS	Vectren	5100 · Utilities	Preschool Childcare	341.63	1
	03/03/2013	PS	Vectren	5100 · Utilities	Preschool Childcare	861.78	2
	04/01/2013	PS	Vectren	5100 · Utilities	Preschool Childcare	459.50	3
	05/01/2013	PS	Vectren	5100 · Utilities	Preschool Childcare	166.72	4
	06/03/2013	PS	Vectren	5100 · Utilities	Preschool Childcare	77.47	5
	07/09/2013	PS	Vectren	5100 · Utilities	Preschool Childcare	91.40	6
	08/05/2013	PS	Vectren	5100 · Utilities	Preschool Childcare	92.88	7
	09/01/2013	PS	Vectren	5100 · Utilities	Preschool Childcare	89.59	8
Oct '12 - Sep 13						3,012.34	

	Date	Num	Name	Account	Class	Amount	
Oct '12 - Sep 13							
	10/23/2012	PS	Duke Energy	5100 · Utilities	Preschool Childcare	522.39	9
	11/11/2012	PS	Duke Energy	5100 · Utilities	Preschool Childcare	533.80	10
	12/19/2012	PS	Duke Energy	5100 · Utilities	Preschool Childcare	596.51	11
	01/19/2013	PS	Duke Energy	5100 · Utilities	Preschool Childcare	605.01	12
	02/19/2013	PS	Duke Energy	5100 · Utilities	Preschool Childcare	659.12	1
	03/19/2013	PS	Duke Energy	5100 · Utilities	Preschool Childcare	609.09	2
	04/19/2013	PS	Duke Energy	5100 · Utilities	Preschool Childcare	671.69	3
	05/19/2013	PS	Duke Energy	5100 · Utilities	Preschool Childcare	763.24	4
	06/15/2013	PS	Duke Energy	5100 · Utilities	Preschool Childcare	1,004.95	5
	07/19/2013	PS	Duke Energy	5100 · Utilities	Preschool Childcare	1,286.06	6
	08/01/2013	PS	Duke Energy	5100 · Utilities	Preschool Childcare	970.48	7
	09/19/2013	PS	Duke Energy	5100 · Utilities	Preschool Childcare	1,283.78	8
Oct '12 - Sep 13						9,506.12	

Address: 847 West 14th Street, Bloomington, IN
Client: Monroe County United Ministries

Baseload Calculator

BILLS	Gas		Electric	
Month	$	Therms	$	KWH
January	$341.63	Unknown	$659.12	Unknown
February	$861.78	Unknown	$609.09	Unknown
March	$459.50	Unknown	$671.69	Unknown
April	$166.72	Unknown	$763.24	Unknown
May	$77.47	Unknown	$1,004.95	Unknown
June	$91.40	Unknown	$1,286.06	Unknown
July	$92.88	Unknown	$970.48	Unknown
August	$89.59	Unknown	$1,283.78	Unknown
September	$52.10	Unknown	$522.39	Unknown
October	$98.25	Unknown	$533.80	Unknown
November	$339.39	Unknown	$596.51	Unknown
December	$341.63	Unknown	$605.01	Unknown
Totals	$3,012.34	0.00	$9,506.12	0

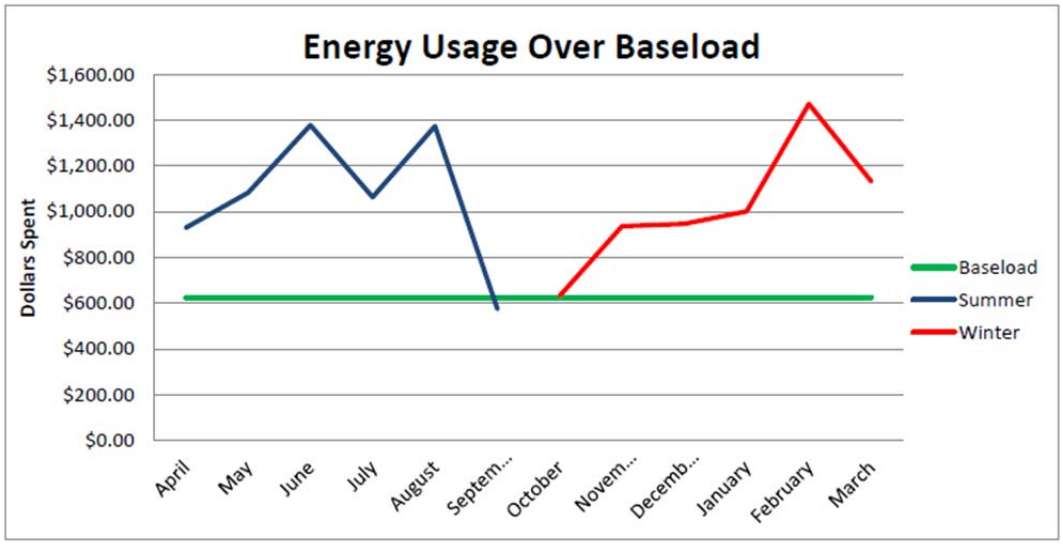
Baseload Calculation

	Gas			Electric	
	$	Therms		$	KWH
three low bills	$52.10	#NUM!		$522.39	#NUM!
	$77.47	#NUM!		$533.80	#NUM!
	$89.59	#NUM!		$596.51	#NUM!
average	$73.05	#NUM!		$550.90	#NUM!
Total $ Baseload	$73.05	+	$550.90	=	$623.95

Address: 847 West 14th Street, Bloomington, IN
Client: Monroe County United Ministries

Graph Information

	59.8% Baseload	21.2% Summer	19.0% Winter
April	$623.95	929.96	
May	$623.95	1,082.42	
June	$623.95	1,377.46	
July	$623.95	1,063.36	
August	$623.95	1,373.37	
September	$623.95	574.49	
October	$623.95		$632.05
November	$623.95		$935.90
December	$623.95		$946.64
January	$623.95		$1,000.75
February	$623.95		$1,470.87
March	$623.95		$1,131.19



Address: 847 West 14th Street, Bloomington, IN
Client: Monroe County United Ministries

BUILDING PERFORMANCE IMPROVEMENT

You should feel comfortable in your own building. However, your building may have construction or design defects that cause you to use extra energy in an attempt to maintain that comfort. You can improve the comfort of your building and lower your energy consumption at the same time. We believe you deserve these and other benefits of a Green Building Energy Upgrade. Our goal is to help you understand and prioritize the energy and comfort improvements possible in your building. We employ building science principles and use sophisticated diagnostic equipment to detect the causes of the building's performance related problems. This systematic approach removes all the usual guesswork involved with contracting and allows us to quickly and accurately address the building performance issues.

This Assessment Report summarizes test results and explains technical terms and concepts. The report also includes a list of improvement recommendations. A representative from Sherlock Homes will be in contact with you to discuss this report and its results, as well as our recommendations for improvements to your home.

After we make improvements to your home,
you can expect immediate improvements in comfort, indoor air quality, and energy efficiency.

Energy Efficiency
It is our goal to identify specific areas where we can reduce your energy consumption. We tend to focus on the fundamentals first. By fully understanding how the building works as a system, we can identify areas of improvement that can have the biggest impact.

Indoor Air Quality
Many of the same factors that impact energy efficiency also impact air quality. By making your house operate properly as a system, we can reduce dust, mold, allergens, VOCs and other indoor air pollutants. In this report, we will identify humidity issues, pressure imbalances and other drivers that can lead to poor air quality.

Comfort
There is no reason to be uncomfortable in the building. Those cold and hot rooms are the result of design and/or construction flaws. Comfort issues are integrally tied to air quality as well as efficiency. A properly functioning building will consistently be at a comfortable temperature, which will also reduce humidity, and improve the efficiency of your heating systems.

Sherlock Homes Inspection Service Inc.

Address: 847 West 14th Street, Bloomington, IN
Client: Monroe County United Ministries

COMPLETED AT DIAGNOSTIC AUDIT

AUDIT COMMENTS:

This is a commercial building with block walls and brick veneer on a slab. The walls and floors will have significant loss due to a low R value; not much can be done about that. The biggest opportunity for weatherization is air sealing. There is so much leakage in fact, that the building could not be pressurized enough for proper duct testing. Once the building is sealed it is recommended that further testing be completed. The attic is decently insulated with fiberglass batts. There are some low spots and a few places where insulation is missing altogether. Insulation should be added AFTER air sealing is completed. There are eight HVAC systems. All eight have 90+% AFUE sealed combustion furnaces. There are two new AC units and the six remaining older units will be replaced soon. One of the easiest and biggest recommendations is for programmable thermostats to be installed and properly programmed right away. The water heater is an older 82 gallon electric unit that has a circulating loop that appears to run 100% of the time. The water heater energy consumption was not metered but suspected to be very high due to the constant circulation, cooking needs, and significant laundry demands. Consideration should be given to upgrading the water heater to a heat pump unit and putting the circulating pump on a timer that corresponds to the hours of usage. Baseload makes up almost 60% of the total usage and seasonal load 40%. To gain a significant overall savings both baseload and seasonal measures will have to be implemented.

AUDIT SUMMARY

This Audit Report recommends the following Wx improvements for this dwelling:

(Note: Not all recommendations will be listed. See the final work scope)

- ☑**Replace older AC units**
- ☑**Install programmable thermostats**
- ☑**Replace older water heater with a heat pump water heater unit**
- ☑**Install timer on water heater circulating pump**
- ☑**Blower door directed air sealing.**
- ☑**Insulate and air seal three attic hatches**
- ☑**Insulate attic low spots**
- ☑**Seal / mastic ducts as needed after air sealed to a point that accurate duct testing can be completed**
- ☑**Investigate lighting upgrade opportunities**
- ☑**Other necessary repairs including roof replacement**

Address: 847 West 14th Street, Bloomington, IN
Client: Monroe County United Ministries

Roof & Attic

DESCRIPTION OF ROOF & ATTIC

Sheathing Type:	☐Composite Board ☑Plywood ☐One-by ☐Spaced One By ☐Shake Shingles ☐Not Accessible
Roof Ventilation:	☐Ridge Vent ☑Soffit Vents ☑Gable End Vents ☐Power Attic Fan ☑Roof Bonnets ☐Other ☐Not Observed
Framing Type:	☑Rafters ☑Trusses ☐Not Accessible
Attic Viewed From:	☐Within Attic ☑Within Attic, Limited Access ☐Attic Access Only ☐Not Viewed
Attic View Limited By:	☐Cathedral Ceiling ☐No Attic Access ☐Low Attic ☑Insulation ☐Access Hole Too Small ☐Storage ☐Other

ROOF & ATTIC OBSERVATIONS

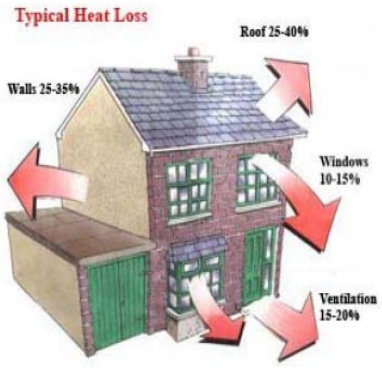
1. The attic insulation appeared to be adequate and properly installed.	☐Yes ☑No ☐Not Accessible
2. Attic bypasses appeared to be adequately air sealed.	☐Yes ☑No ☐Not Accessible
3. The attic knee walls and joist cavities appeared to be adequately insulated and air sealed.	☐Yes ☐No ☑N/A

Address: 847 West 14th Street, Bloomington, IN
Client: Monroe County United Ministries

Attic Insulating and Air Sealing

Proper amounts of insulation, installation quality, and adequate air-sealing generally represent the largest components of your heating load. To accurately analyze your building we utilize a combination of visual assessment and manual investigation, to track the movement of heat into, out of, and within your building. Proper air sealing throughout all accessible areas is the best place to start. Some insulation is always better than none; however insulation is inadequate if not accompanied by proper air sealing. The first order of business is to thoroughly air seal your building, after which increases the quantity and quality of insulation wherever possible will be cost-effective.

The pressure differentials in the table below tell you how connected the space identified is to the living space. Pressures closer to 0 are more connected to the inside, while pressures closer to 50 are more connected to the outside.



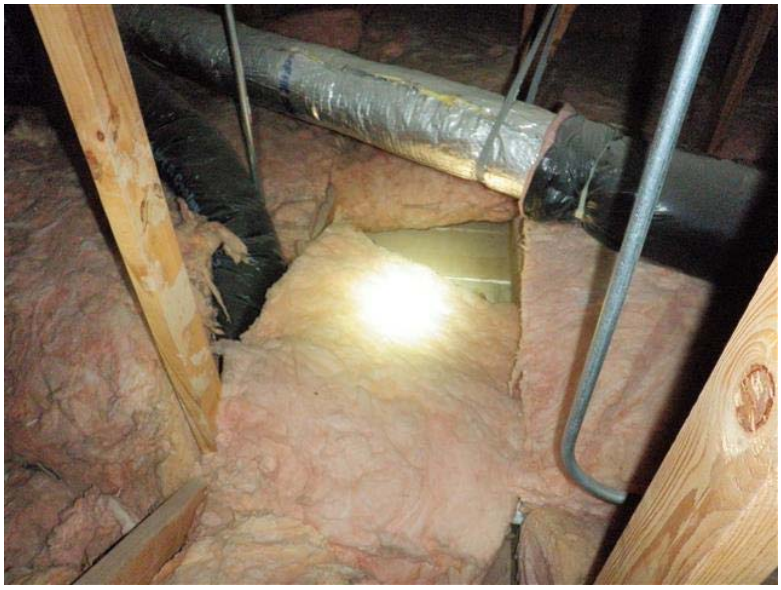
Attic/Ceiling Insulation	
Recommended R-Value	R-38 or Greater
Existing Insulation Type	☑**Fiberglass** ☐**Spray Foam** ☐**Vermiculite** ☐**Cellulose** ☐**Not Accessible** ☐**Other**
Existing Installation Quality	☐**Good** ☑**Average** ☐**N/A** ☐**Below Average** ☐**Poor** ☐**Not Accessible**
Approximate Existing Insulation R-Value	R30 to R38
Recommendation	**Add insulation in low areas**

Address: 847 West 14th Street, Bloomington, IN
Client: Monroe County United Ministries

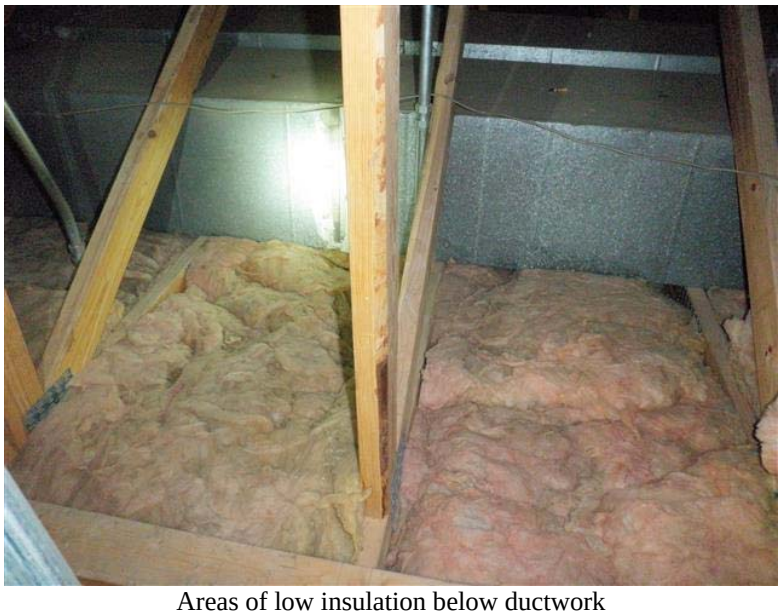
RECOMMENDATIONS / OBSERVATIONS

- **Improve:** There is an inadequate amount of insulation in the attic. The lack of insulation will contribute to energy loss and comfort complaints. Insulation levels are specified by R-value. R-value is a measure of insulation's ability to resist heat flow. The higher the R-value, the better the thermal performance of the insulation. The recommended level for most attics is to insulate to R-38 or about 10 to 14 inches, depending on insulation type.

  Location of condition: **There are some areas of low insulation and a few spots where there is no insulation. First all air sealing should be completed and then more insulation added to the low spots at a minimum. Ideally the added insulation would also be mounded over the ductwork.**



Area of missing insulation



Areas of low insulation below ductwork

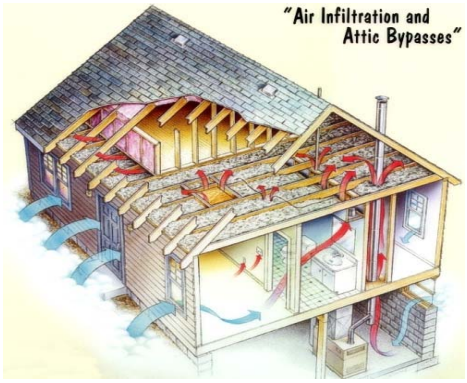
- **Improve:** The attic access hatch is not properly insulated or air sealed. The hatch should be insulated to an R38, curbing installed around the opening to prevent insulation from falling into the living area, and the hatch lid should receive a gasket.

Figure 5.1.3 - Example of properly insulated attic hatch

Location of condition: **Three hatches.**

Address: 847 West 14th Street, Bloomington, IN
Client: Monroe County United Ministries

- **Improve:** There are air by-passes present between the attic and living space. Attic bypasses are hidden air passageways that lead from the heated space into the attic. Because warm air rises, it is continuously moving up these passageways and escaping into the attic during cold weather. These bypass leaks can cut the effectiveness of attic insulation by 30 to 70 percent. The by passes should be sealed with a rigid material to help prevent air flow.



Example of sealing by passes

Location of condition: **Visible at the furnace piping penetrations.**

Address: 847 West 14th Street, Bloomington, IN
Client: Monroe County United Ministries

Guttering & Drainage

DESCRIPTION OF GUTTERING & DRAINAGE

Guttering Type:	☑Aluminum	☐Galvanized	☐Copper	☐Vinyl	☐None
Guttering Viewed From:	☑Ground	☐Edge Of Roof	☐2nd Story Window	☐Other	

GUTTERING & DRAINAGE OBSERVATIONS

1. **The guttering and downspouts appear to be in good condition and capable of directing water runoff well away from the foundation walls.** ☑Yes ☐No ☐N/A

2. **The elevations around the home appear to slope well away from the foundation walls thereby minimizing potential water penetration into the basement and/or crawl space.** ☑Yes ☐No

RECOMMENDATIONS / OBSERVATIONS

Address: 847 West 14th Street, Bloomington, IN
Client: Monroe County United Ministries

Air Leakage & Wall Insulation

DESCRIPTION OF INTERIOR FINISHES/WALL INSULATION

Wall/Ceiling Finish Material: ☑Drywall ☐Paneling ☐Lath & Plaster ☑Masonry ☐Stucco ☐Other

INTERIOR FINISHES & INSULATION OBSERVATIONS/COMPLETED AT 1ST SITE & DIAGNOSTIC AUDIT

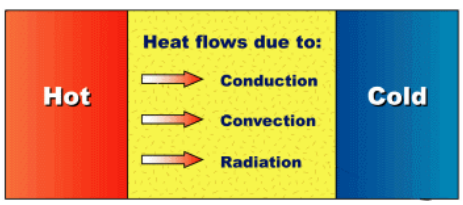
1. **Interior walls and ceiling finishes appear to show minimal evidence of air leakage.** ☐Yes ☑No

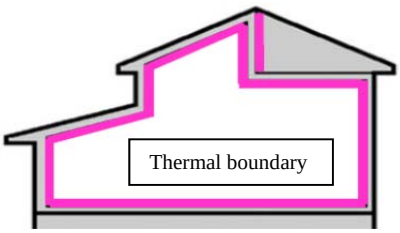
2. **Exterior walls appeared to be adequately insulated.** ☐Yes ☑No ☐Not Accessible

Wall Insulation	
Recommended R-Value Wall Cavity	**R-11 or Greater**
Observed Insulation Type	☐Fiberglass ☐Foam Board ☐Cellulose ☐Spray Foam ☐None ☑Not Observed
Estimated Installation Quality	☐Good ☐Average ☐Below Average ☐Poor ☑Not Observed
Estimated R-Value	R10 or Below
Recommendation	None

WALL INSULATION

Heat flows naturally from a warmer to a cooler space. In winter, the heat moves directly from all heated living spaces to the outdoors and to adjacent unheated attics, garages, and basements – wherever there is a difference in temperature. During the summer, heat moves from outdoors to the house interior. To maintain comfort, the heat lost in winter must be replaced by your heating system and the heat gained in summer must be removed by your air conditioner. Insulating ceilings, walls, and floors decreases the heating or cooling needed by providing an effective resistance to the flow of heat.





Address: 847 West 14th Street, Bloomington, IN
Client: Monroe County United Ministries

ENVELOPE LEAKAGE & INFILTRATION

The Blower Door test measures the leakiness of the building compared to the minimum ventilation rate, (MVR). Ideally the buildings leakage rate would be at or below the MVR. A higher number means that your building is draftier and uses/loses/wastes more energy. Envelope leakage can also affect other elements of your home such as indoor air quality and comfort. Refer to the table below for information regarding the buildings infiltration rate.
Envelope leakage is a major contributor to both high energy bills, and the inability to keep the building at a comfortable temperature. As heated air rises, it escapes out of holes in the building envelope, escaping into the attic and out of the building. This rising air creates low pressure in the lower part of the building which draws cold unconditioned air into the house from wherever the house is least sealed. When it is windy- which often coincides with those periods when heating is the most important- we see even greater rates of air change.

Replacement air is often drawn from unwanted areas such as crawlspaces, the garage, wall cavities, combustion appliance zones (CAZ), and chimneys. Air from these areas can increase moisture levels, bring dust and hazardous fumes into the living space, and cause a number of indoor air quality issues. Not only will tightening up the building decrease your heating load, it will also increase your building's efficiency and indoor air quality. Finding and eliminating sources of leakage will be the single most important challenge in the process of improving your building's comfort and efficiency. The areas we will achieve this most effectively include: air sealing, doors, and floor and ceiling joists accessible from the attic and crawlspace.

Table 2
Air Leakage & Pressure Differentials

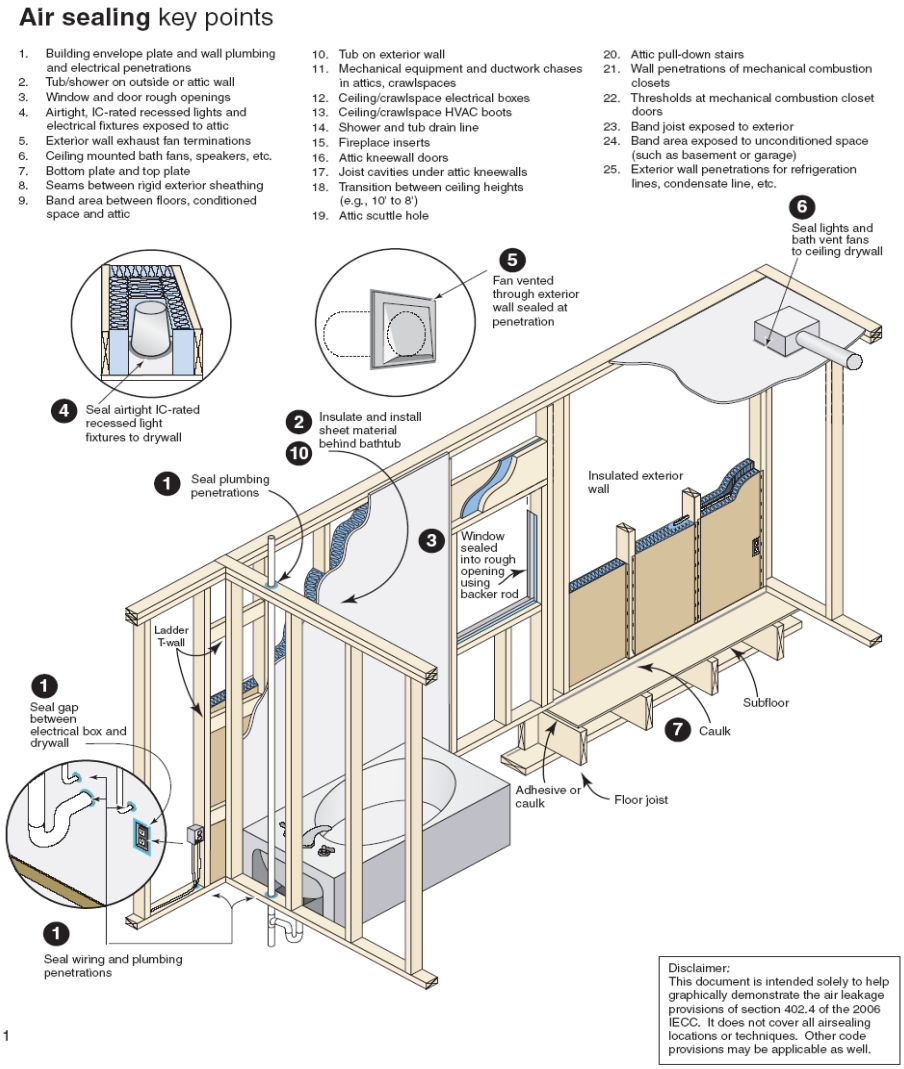
Blower Door @ CFM 50	Auditor	Cont Interim	Cont Final	Final Auditor
List:	26059		0	
Pressure Differentials @CFM50 Taken At	Auditor	Cont Interim	Cont Final	Final Auditor
Attic	NA			
Crawl	NA			
Knee Wall	NA			
Bulk head	NA			
Minimum Ventilation Rate	14,194		14,194	14,194
70 % MVR (lowest blower door reading can be)	9,936			
Opportunity for Improvement	16,123			
Contractors Final Improvement			16123	
Final Auditor Improvement				16123

Address: 847 West 14th Street, Bloomington, IN
Client: Monroe County United Ministries

RECOMMENDATIONS / OBSERVATIONS

- **Improve:** The wall does not appear to be adequately insulated. To maintain comfort, the heat lost in winter must be replaced by your heating system and the heat gained in summer must be removed by your air conditioner. Insulating the walls decreases the heating or cooling needed by providing an effective resistance to the flow of heat. Consideration should be given to insulating the walls.

Location of condition: **The walls appear to be solid masonry. This has a great thermal mass, but poor R value. It will be very costly to add insulation and refinish to the interior or exterior side of the exterior walls. Cost of repair will likely exceed benefit. The walls will likely remain a significant source of energy loss.**



Address: 847 West 14th Street, Bloomington, IN
Client: Monroe County United Ministries

HUMIDITY AND MOISTURE

What relative humidity should I have in my home? Seems like a simple enough question. However, the answer can sometimes be difficult to understand. The key is not to be too low and not to be too high. High enough to be comfortable, but low enough to avoid moisture problems associated with mold, corrosion, decay, and condensation.

Unfortunately, determining the correct range depends on where the home is located (climate), how the home is constructed (the thermal resistance of surfaces determines surface temperatures), the time of year (the month or season determines surface temperatures), and the sensitivity of the occupants.

With regard to health, individual sensitivities and susceptibilities vary greatly, and it is typically very difficult to generalize with respect to relative humidity and health. Having said it is difficult to generalize, we will do so anyway. Keeping relative humidity in the 25 percent to 60 percent range tends to minimize most health issues – although opinions vary greatly.

Comfort is of course different than health. When relative humidity drops below 25 percent there have been some reports in the medical literature of eye irritation in office workers using computers. Breathing difficulties have been reported in some individuals when relative humidity drops below 15 percent due to the mucus linings of the respiratory system desiccating. However, there is no medical consensus in this regard.

Consensus among microbiologists gives the critical relative humidity for adverse biological activity to occur on building envelope surfaces to be 70 percent. Where a relative humidity above 70 percent occurs at surfaces, mold growth, dust mite growth, decay, corrosion, etc. can occur. Therefore, conditions should be maintained within a building such that the critical 70 (or higher) percent relative humidity at a building envelope surface does not occur. Due to climate differences, interior conditions which must be maintained to avoid the critical relative humidity at a surface vary from region to region and time of year. They also vary based on the thermal resistance of the building envelope.

In a mixed climate, during the heating season, interior moisture levels should be limited to 45 percent relative humidity at 70 degrees. This limits the relative humidity adjacent to the interior surface of exterior walls to below 70 percent for the typical thermal resistance found in most building assemblies in this climate zone.

The goal of a weatherization project is to reduce the air exchanges and improve the thermal characteristics of the building. It is critical that a well-designed moisture management strategy is maintained to prevent potential issues related to health and comfort.

		Humidity & Temperature in Your Home				
Location	**Relative Humidity % Please Select**	**Temperature F Pre-WX Please Select**	**Relative Humidity % Audit**	**Temperature F Pre-WX Audit**	**Relative Humidity % Final Audit**	**Temperature F Post WX Final Audit**
Outside Reference	55 to 60 %	50 to 60	55 to 60 %	50 to 60	Choose an item.	Choose an item.
Main Living Area	45 to 50 %	60 to 70	45 to 50 %	60 to 70	Choose an item.	Choose an item.
	☐Windows Open		☐Windows Open		☐Windows Open	

Address: 847 West 14th Street, Bloomington, IN
Client: Monroe County United Ministries

Windows & Doors

DESCRIPTION OF WINDOWS & DOORS

Window Type:	☐Wood	☑Metal	☐Vinyl	☐Clad	☐Combination	☐Other
Window Style:	☑Double Hung	☐Casement	☐Bi-pass	☑Hinged	☐Other	
Glass Type:	☐Single Strength	☑Thermo Seal		☐Storms	☐Combination	
Door Type:	☐Wood	☑Metal	☐Fiberglass	☐Vinyl	☐Clad	☐Combination

WINDOWS & DOORS OBSERVATIONS

1. **The windows & doors appear to show minimal air leakage.** ☑Yes ☐ No

RECOMMENDATIONS / OBSERVATIONS

Address: 847 West 14th Street, Bloomington, IN
Client: Monroe County United Ministries

Water Heater

DESCRIPTION OF WATER HEATER

Age of Tank 1:	☐**Less than 1 yr.**	☐**Less than 5 yrs.**	☐**5 to 10 yrs.**	☑**Over 10yrs**	
Water Heater location:	☐**Garage**	☑**Utility Room**	☐**Closet**	☐**Basement**	☐**Crawl Space**
	☐**Combination**	☐**Other**			
Capacity:	☐**30 Gallon**	☐**40 Gallon**	☐**50 Gallon**	☑**75 Gallon or more**	
Energy Source	☐**Gas**	☑**Electric**	☐**Geothermal**	☐**Other**	
Electric Units: KWH	☑**4500**	☐**5500**	☐**3500**	☐**Other**	

WATER HEATER OBSERVATIONS/COMPLETED AT DIAGNOSTIC AUDIT

1. The water heater appears to be in good condition and properly installed. ☑**Yes** ☐**No**

Water Heater Initial Check:				
				Auditor Check When performed
Mark the temperature dial on the water heater at its current temperature setting with a permanent marker.				☐Marked ☑Not Marked
Measure the hot water temperature at the nearest location.				☑Measured ☐Not Measured
Record temperature:				**125°Degrees**
Adjust temperature to 120 Degrees: ☐Home owner declined				☐Adjusted ☑Not Performed ☐Not Needed
Inspect to make sure that all water heaters have a properly installed pressure and temperature rated relief valve.				
Water heater				
☐TPRV missing	☐TPRV needs Extended	☐TPRV discharge up	☐TPRV Undersized ☐Other	☐Client to repair ☐Shell Contractor to repair

Water Heater	**Auditor**	**Contractor**	**Interim or Final**
Hot/cold inlet/outlet pipes properly connected	☑Yes ☐No ☐N/A ☐Needs Repair	☐Yes ☐No ☐N/A ☐Needs Repair	☐Yes ☐No ☐N/A ☐Needs Repair
Water piping insulated? Condition:	☑Yes ☐No ☐N/A ☐Needs Repair	☐Yes ☐No ☐N/A ☐Needs Repair	☐Yes ☐No ☐N/A ☐Needs Repair
Tank outside conditioned space needs insulated? Condition:	☐Yes ☑No ☐N/A ☐Needs Repair	☐Yes ☐No ☐N/A ☐Needs Repair	☐Yes ☐No ☐N/A ☐Needs Repair
Wiring servicing tank OK? Condition:	☑Yes ☐No ☐N/A ☐Needs Repair	☐Yes ☐No ☐N/A ☐Needs Repair	☐Yes ☐No ☐N/A ☐Needs Repair
Tank Leaking, replace? Condition:	☐Yes ☑No ☐N/A ☐Needs Repair	☐Yes ☐No ☐N/A ☐Needs Repair	☐Yes ☐No ☐N/A ☐Needs Repair

Address: 847 West 14th Street, Bloomington, IN
Client: Monroe County United Ministries

WATER HEATING SYSTEM

Next to heating the air in a home, water heaters are generally the largest energy users in the home. Water heaters typically use more than 15 percent of the total energy of a home.
Different types of water heating strategies are most practical for different homes.

Storage water heaters are the most common. Typical residential units range in size from 30 to 80 gallons, but smaller and larger tanks are available. Most are fueled by electricity, natural gas, propane or oil. Storage water heaters heat the water in the tank to the set temperature, turn off, and then turn on and off as needed to keep it hot and ready for use. When you use hot water, the unit comes on to heat the incoming cold water that replaces what you use.

Tank less water heaters, also called instantaneous water heaters" and "on-demand water heaters", do not store water. A gas burner or an electric element heats the water when there is a demand or a need for hot water. Hot water never runs out, as long as you don't exceed its designed "flow rate", and the temperature may be relatively low, around 105°F. Energy is saved, or more accurately, not wasted as there are almost no standby losses.

Solar water heaters use energy from the sun to heat water. During the day, the collector heats the water directly or indirectly by heating an exchange medium, such as glycol (which won't freeze), which transfers the heat to the water in the storage tank. This can be an extremely effective and economic approach to supplying 85% and more of a home's hot water needs.

RECOMMENDATIONS / OBSERVATIONS

- **Repair:** The water heater is old and may be approaching the end of its expected life. Water heating represents between thirteen and seventeen percent of residential energy consumption, making it the third largest energy end use in homes, behind HVAC and kitchen appliances. Generally, water heaters life expectancies range between 10 and 15 years. Factors such as hard water conditions can shorten this life expectancy. Older water heaters will be less efficient and will contribute to higher utility bills. Consideration should be given to replacing the unit with a more efficient unit. This report is recommending Electric Heat Pump water heaters.

Compare Life-Cycle Costs

Water Heater type	Efficiency (EF)	Installed Cost[1]	Yearly Energy Cost[2]	Life (Years)	Total Cost (Over 13 Years)[3]
Conventional gas storage	0.60	$850	$350	13	$5,394
High-efficiency gas storage	0.65	$1,025	$323	13	$5,220
Condensing gas storage	0.86	$2,000	$244	13	$5,170
Conventional oil-fired storage	0.55	$1,400	$654	8	$11,299
Minimum Efficiency electric storage	0.90	$750	$463	13	$6,769
High-eff. electric storage	0.95	$820	$439	13	$6,528
Demand gas (no pilot)[4]	0.80	$1,600	$262	20	$5,008
Electric heat pump water heater	2.20	$1,660	$190	13	$4,125
Solar with electric back-up	1.20	$4,800	$175	20	$7,072

1. Purchase costs include our best estimates of installation labor and do not include financial incentives.
2. Operating cost based on hot water needs for typical family of four and energy costs of 9.5¢/kWh for electricity, $1.40/therm for gas, $2.40/gallon for oil.
3. Future operating costs are neither discounted nor adjusted for inflation.
4. Estimates for tankless gas water heaters are based on the federal EF rating method, which may over-estimate the efficiency of tankless water heaters in houses.

Address: 847 West 14th Street, Bloomington, IN
Client: Monroe County United Ministries

- **Repair:** The water heater has a circulating loop that appears to run constantly. The pump should be connected to a timer so that circulation occurs only when needed.

Address: 847 West 14th Street, Bloomington, IN
Client: Monroe County United Ministries

Electrical Supply and Service

DESCRIPTION OF ELECTRICAL SUPPLY AND SERVICE COMPLETED AT DIAGNOSTIC AUDIT

Main Overload Protection: ☑**Circuit Breaker** ☐**Fuses**

Main Panel: Location: ☐**Basement** ☐**Garage** ☑**Utility Room** ☐**Mechanical Room** ☐**Storage Closet** ☐**Outside by the meter**

Service Entrance Type: ☐**Overhead** ☑**Underground**

ELECTRICAL SUPPLY AND SERVICE OBSERVATIONS

RECOMMENDATIONS / OBSERVATIONS

Electrical Panel Photo

Electrical Panel Photo

Address: 847 West 14th Street, Bloomington, IN
Client: Monroe County United Ministries

Electrical Branch Circuits

DESCRIPTION OF ELECTRICAL BRANCH CIRCUITS COMPLETED AT DIAGNOSTIC AUDIT

Type of Branch Circuit Wiring Visible: ☑**Romex** ☐**B/X** ☐**Conduit** ☐**Knob & Tube** ☐**Fabric Covered** ☐**Combination**

Type of Conductors Visible: ☑**Copper** ☐**Copper Clad** ☐**Aluminum** ☐**Combination**

ELECTRICAL BRANCH CIRCUITS OBSERVATIONS

1. **Primary light fixtures appear to have energy efficient bulbs.** ☑**Yes** ☐**No**
2. **There appeared to be a limited number of appliances in use.** ☑**Yes** ☐**No**
   (Refrigerators, freezers, televisions, etc.)

RECOMMENDATIONS / OBSERVATIONS

- **Improve:** Consideration should be given to installing newer fluorescent lighting. A light specialist should be contacted to determine the cost and savings related to ballast/bulb/fixture replacement.

Address: 847 West 14th Street, Bloomington, IN
Client: Monroe County United Ministries

Heating & Duct System

DESCRIPTION OF HEATING COMPLETED AT DIAGNOSTIC AUDIT

Type of System:	☑Natural Gas Forced Air ☐Baseboard ☐Heat Pump ☐Geothermal
Estimated Age:	☐Less Than 1 yr. ☑Less Than 5 yrs. ☐5 to 10 yrs. ☐Over 10yrs
Type of Duct Work Present:	☑Metal ☑Flexible ☑Rigid insulated ☐Asbestos ☐Metal Encased Asbestos ☐Metal Sealed at Seams With Asbestos ☐Other ☐N/A
Estimated R Value Duct:	☑R-4 ☐R-6 ☐Not insulated ☐Not Insulated Inside the Thermal Boundary ☐N/A

HEATING OBSERVATIONS/COMPLETED AT DIAGNOSTIC AUDIT

1. **The heating system appears to be in good operating condition.** ☑Yes ☐No ☐Not checked
2. **The visible air ducts appeared to be in good condition and adequately air sealed.** ☑Yes ☐No ☐Not checked

HVAC EQUIPMENT/COMPLETED AT DIAGNOSTIC AUDIT

Electric Furnace Inspection Form	
Furnace Configuration: ☐Up flow ☐Down flow ☐Horizontal Location: ☐Garage ☐Basement ☐Crawl Space ☐Attic ☑Mechanical Closets	
Furnace Manufacturer: Tempstar	8 units zoned throughout building.






Address: 847 West 14th Street, Bloomington, IN
Client: Monroe County United Ministries

HVAC EQUIPMENT/COMPLETED AT DIAGNOSTIC AUDIT

Gas Furnace/Inspection Form

Initial Health & Safety Inspection Audit			
Ambient C/O Level: 0 PPM	Gas Odor: ☐Yes ☑NO	Fire Hazard ☐Yes ☑NO	Mold/Moisture Issue: ☐Yes ☑NO
Initial Health & Safety Inspection Final Audit			
Ambient C/O Level: PPM	Gas Odor: ☐Yes ☐NO	Fire Hazard ☐Yes ☐NO	Mold/Moisture Issue: ☐Yes ☐NO
Brief Description of Issue:			

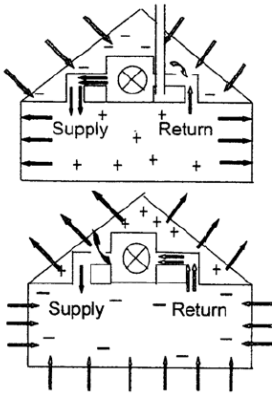
Equipment Information Furnace	
Furnace or CAZ location: ☐Garage ☐Utility Room ☑Mechanical Closets ☐Basement ☐Crawl Space ☐Attic ☐Other ☐Combination	
Fuel Type: ☑N Gas ☐P Gas ☐Electric ☐Geothermal ☐Oil ☐ Heat Pump	Furnace Type: ☐Draft Hood ☐80% ☑90% ☐Mobile Home ☐Other

Heat Exchanger			
	Auditor	**Technician Column**	**Interim or Final**
Is the furnace free of visual conditions that may indicate that the Heat Exchanger is cracked? ☐Visual Crack ☐Flame Roll Out ☐Excessively Dirty Burn ☐Excessive C/O ☐Other: *If a crack or hole is found the heat exchanger or furnace must be replaced.* *Not all of the heat exchanger will be viewable to the auditor. Opinions will not be conclusive.*	☑Yes ☐NO ☐N/A ☐Needs Repair ☐Not accessible	☐Yes ☐NO ☐N/A ☐Needs Repair ☐Not accessible	☐Yes ☐NO ☐N/A ☐Needs Repair ☐Not accessible
Condensing secondary heat exchanger clean? *Not all of the heat exchanger will be viewable to the auditor. Opinions will not be conclusive.*	☐Yes ☐NO ☐N/A ☐Needs Repair ☑Not accessible	☐Yes ☐NO ☐N/A ☐Needs Repair ☐Not accessible	☐Yes ☐NO ☐N/A ☐Needs Repair ☐Not accessible
Burners			
	Auditor	**Technician Column**	**Interim or Final**
☐Burners appear to clean and free of rust	☑Yes ☐NO ☐N/A ☐Needs Repair	☐Yes ☐NO ☐N/A ☐Needs Repair	☐Yes ☐NO ☐N/A ☐Needs Repair
☐Burner flame pattern appears to satisfactory	☑Yes ☐NO ☐N/A ☐Needs Repair	☐Yes ☐NO ☐N/A ☐Needs Repair	☐Yes ☐NO ☐N/A ☐Needs Repair
☐Air adjustment shutters are fully open if natural gas	☑Yes ☐NO ☐N/A ☐Needs Repair	☐Yes ☐NO ☐N/A ☐Needs Repair	☐Yes ☐NO ☐N/A ☐Needs Repair
☐Primary air openings adjusted properly if Propane	☐Yes ☐NO ☑N/A ☐Needs Repair	☐Yes ☐NO ☐N/A ☐Needs Repair	☐Yes ☐NO ☐N/A ☐Needs Repair

Address: 847 West 14th Street, Bloomington, IN
Client: Monroe County United Ministries

DUCT LEAKAGE & AIR DELIVERY

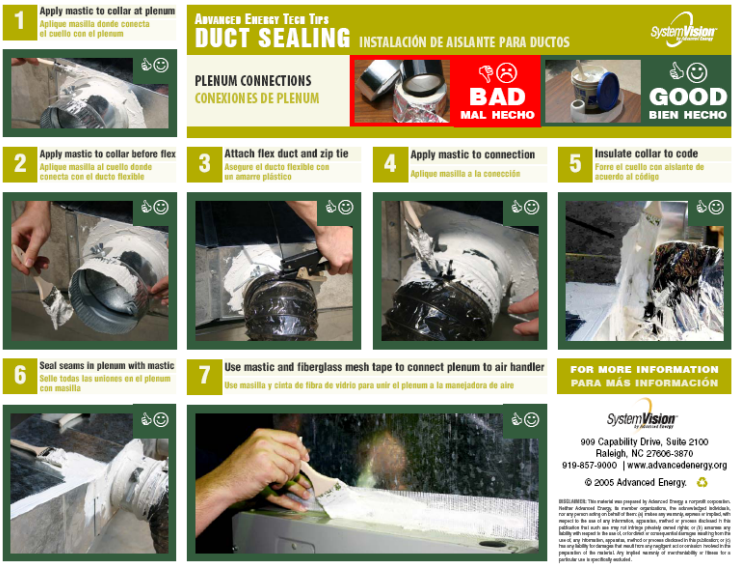
The U.S. Department of Energy determined that an average of 25% to 40% of heating and cooling energy is lost through duct system leakage. Duct leakage has a major impact on indoor air quality and energy efficiency. Return ductwork air leaks draw air into the house from crawlspaces, garages, and attics. This leakage can bring unconditioned air, dust, mold spores, insulation fibers and other contaminants into the building. Leaking supply ducts will tend to depressurize the home, drawing air from wherever is most accessible to try and balance the pressure. Often this air will come from interior walls, crawlspace, or even reversal of exhaust flues pulling combustion chemicals into the house.



Household depressurization can also pull combustion products such as carbon monoxide from furnaces, water heaters and fireplaces into the house, which can lead to polluted indoor air and potentially harmful health effects. In the case of your home, the furnace ducts including their connections to the registers) are leaking excessively. Delivery system repair and/or replacement will significantly improve both system performance and indoor air quality.

There are a variety of factors that affect the balance and flow of your forced air system. Solutions to air flow problems are most often multi-faceted. Proper airflow has major impacts on comfort as well as energy efficiency and air quality. Common problems that affect airflow and balance include the following factors:

- **Duct Leakage Goal 1.5 Pascals@50**
- **Poor Design (too small, too long, constricted, etc.)**
- **Dirty or Dense Filter Media**
- **Improperly Sized Equipment**
- **Closed Dampers**
- **Poorly Selected Grilles**



Address: 847 West 14th Street, Bloomington, IN
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Table 4
Pressure Pan Table
Inserted at Diagnostic Audit

Building too leaky for accurate duct leakage measurements. Seal building and then test ducts.

RECOMMENDATIONS / OBSERVATIONS


Ductwork does appear to have all joints sealed with mastic.

Address: 847 West 14th Street, Bloomington, IN
Client: Monroe County United Ministries

Air Conditioning & Heat Pump

DESCRIPTION OF AIR CONDITIONING & HEAT PUMP COMPLETED AT DIAGNOSTIC AUDIT

Type of System: ☑Air Conditioner ☐Heat Pump ☐Geothermal ☐Other
Estimated Age: ☐Less than 1 yr. ☑Less than 5 yrs. ☐5 to 10 yrs. ☑Over 10 yrs
Limitations: ☑To prevent refrigerant loss, gauges NOT applied.

AIR CONDITIONING & HEAT PUMP OBSERVATIONS/COMPLETED AT DIAGNOSTIC AUDIT

1. **The air conditioner/heat pump appears to be in good operating condition.** ☑Yes ☐No ☐Not checked

HVAC EQUIPMENT/COMPLETED AT DIAGNOSTIC AUDIT

A/C or Heat Pump Consideration		
Existing A/C/Heat Pump Considerations	**Auditor**	**Technician Column**
☐Temp too cold to Check	☐Temp too cold to Check	☐Temp too cold to Check
d) Has the A/C been checked for proper operation and temperature drop across coil?	☑Yes ☐No ☐N/A ☐Needs Repair ☐Not checked	☐Yes ☐No ☐N/A ☐Needs Repair ☐Not checked
Return air at furnace: Degree F	Temperature difference: 68º F	Temperature difference: º F
a) Has existing a/c coil been cleaned and drain pan condition checked?	☑Yes ☐No ☐N/A ☐Needs Repair	☐Yes ☐No ☐N/A ☐Needs Repair
b) Is condensate drain piped to outside or open site drain? (not dumping into crawl or piped solid into sewer drain)	☑Yes ☐No ☐N/A ☐Needs Repair	☐Yes ☐No ☐N/A ☐Needs Repair
Auxiliary Drain Pan? Required if a unit is located above a living space	☐Yes ☐No ☑N/A ☐Needs Repair ☐Not checked	☐Yes ☐No ☐N/A ☐Needs Repair ☐Not checked

Address: 847 West 14th Street, Bloomington, IN
Client: Monroe County United Ministries

HVAC EQUIPMENT/COMPLETED AT DIAGNOSTIC AUDIT

Existing A/C/Heat Pump Considerations	**Auditor**	**Technician Column**
Insulated Vapor Pipe?	☑Yes ☐No ☐N/A ☐Needs Repair ☐Not checked	☐Yes ☐No ☐N/A ☐Needs Repair ☐Not checked
Piping Free of Kinks?	☑Yes ☐No ☐N/A ☐Needs Repair ☐Not checked	☐Yes ☐No ☐N/A ☐Needs Repair ☐Not checked
Thermostat		
Level and Secure?	☑Yes ☐No ☐N/A ☐Needs Repair ☐Not checked	☐Yes ☐No ☐N/A ☐Needs Repair ☐Not checked
Filter/Blower		
Filter Clean?	☑Yes ☐No ☐N/A ☐Needs Repair ☐Not checked	☐Yes ☐No ☐N/A ☐Needs Repair ☐Not checked
Blower Clean?	☑Yes ☐No ☐N/A ☐Needs Repair ☐Not checked	☐Yes ☐No ☐N/A ☐Needs Repair ☐Not checked
Outdoor unit		
Heat Pumps Elevated Above Snow Line? 4 inch minimum above anticipated snow line.	☐Yes ☐No ☑N/A ☐Needs Repair ☐Not checked	☐Yes ☐No ☐N/A ☐Needs Repair ☐Not checked
Unit Level?	☑Yes ☐No ☐N/A ☐Needs Repair ☐Not checked	☐Yes ☐No ☐N/A ☐Needs Repair ☐Not checked

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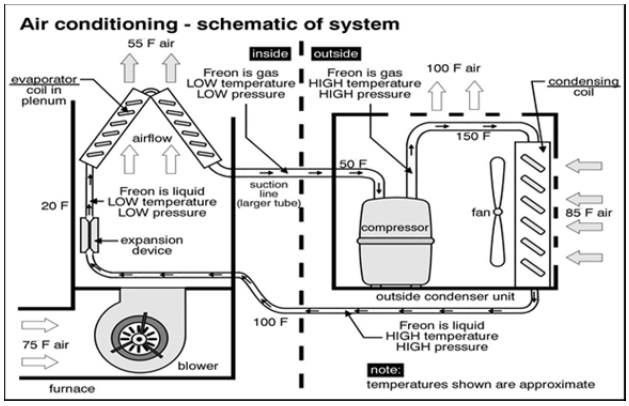
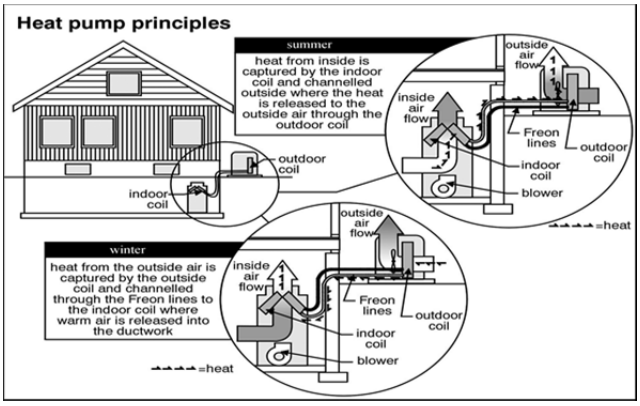
RECOMMENDATIONS / OBSERVATIONS





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Client: Monroe County United Ministries




Address: 847 West 14th Street, Bloomington, IN
Client: Monroe County United Ministries

Work Scope/Completed at Diagnostic Audit

WEATHERIZATION WORK ORDER	
PROGRAM: ***Hoosier Energy Weatherization***	
ACTIVITY LIST	
☑Other Necessary Repairs	☑Replace/Repair, General
☑General Heat Waste	☑Blower Door Directed Air Sealing ☑Water Heater System Treatment ☑Lighting
☑Client Education:	☑Given Mold Guide ☑Given Lead Guide ☑Given Information About Lighting ☑Given Information About Setting Back Thermostat
☑Insulation	☐Insulate Un-insulated Ceilings ☐Insulate Ducts Outside Thermal Boundary ☐Insulate Belly ☐Insulate Un-insulated Walls ☑Insulate Partially Insulated Ceilings ☐Insulate Box Sills ☐Insulate Foundation/Ducts
☑Other:	
	☑Major Air Sealing

Address: 847 West 14th Street, Bloomington, IN
Client: Monroe County United Ministries

Items Client Should Consider

Assigned To	Item	Other Necessary Repair	Repair Status	Auditor	Date	Time	Additional Comments
☑**HVAC Contractor**	**Install new AC units**	☐**Yes** ☐**No**	☐Item Repaired ☐Item not Repaired				
☑**HVAC Contractor**	**Install programmable thermostats and program appropriately.**	☐**Yes** ☐**No**	☐Item Repaired ☐Item not Repaired				
☑**HVAC Contractor**	**Install new heat pump water heater and timer for circulating pump**	☐**Yes** ☐**No**	☐Item Repaired ☐Item not Repaired				
☑ **Lighting Contractor**	**Install new fixtures, ballasts, and/or bulbs throughout the building**	☐**Yes** ☐**No**	☐Item Repaired ☐Item not Repaired				
☑**Shell Contractor**	**Blower door directed air Sealing. Seal all by-passes in attic to minimize air movement and/or bulk moisture transfer. Stop air sealing at 100CFM per man hour, or at Minimum ventilation rate.**	☐**Yes** ☐**No**	☐Item Repaired ☐Item not Repaired				

Address: 847 West 14th Street, Bloomington, IN
Client: Monroe County United Ministries

Items Client Should Consider

Assigned To	Item	Other Necessary Repair	Repair Status	Auditor	Date	Time	Additional Comments
☑**Shell Contractor**	**Insulate, curb, and gasket attic hatch. Insulate to R38.** 	☐**Yes** ☐**No**	☐Item Repaired ☐Item not Repaired				
☑**Shell Contractor**	**After initial air sealing retest for duct leakage and repair as needed before covering with insulation.**	☐**Yes** ☐**No**	☐Item Repaired ☐Item not Repaired				
☑**Shell Contractor**	**Insulate attic to R38 equivalent.** **Current Attic Estimate** **R value = 30-38** **Existing Insulation** **Depth = 6-8”** **Add Insulation** **Depth =6-8” in low spots. Cover ducts.** **Insulation type** ☑Blown in Cellulose ☑Fiberglass	☐**Yes** ☐**No**	☐Item Repaired ☐Item not Repaired				

Address: 847 West 14th Street, Bloomington, IN
Client: Monroe County United Ministries

Diagnostic Audit Photos






Address: 847 West 14th Street, Bloomington, IN
Client: Monroe County United Ministries

Diagnostic Audit Photos






Manometer Reading Photo

Address: 847 West 14th Street, Bloomington, IN
Client: Monroe County United Ministries

WEATHERIZATION COMPLETION FORM
Sherlock Homes Inspection Service Inc.

Address: 847 West 14th Street, Bloomington, IN

Date: Click here to enter a date.

The work listed in the final work scope has been completed by the weatherization program.

☐Yes ☐No

CLIENT APPROVAL

Signature of Client:_____

Print Name:_____ Telephone:_____

I have been made aware that the home is:

☐Above the Minimum ventilation rate and additional air sealing opportunities should be considered. Initial_____

☐Within 70 % of the minimum ventilation rate and fresh air ventilation should be considered. Initial_____

☐Below 70% of the minimum ventilation rate and continuous ventilation should be installed. Initial_____
I understand that installing continuous ventilation is beyond the scope of this weatherization program.

INSPECTOR OR CONTRACTOR

I hereby certify that all weatherization work activities have been completed in a satisfactory manner.

☐Yes ☐No

Signature of Inspector or Contractor: _____

Print Name: _____

WE VALUE YOUR FEEDBACK: (Check any that apply)

Sherlock Personnel:

☐Prompt to appointments ☐Courteous on phone and in person
☐Provided valued information ☐Demonstrated pride in workmanship
☐Other

Weatherization Contractors

☐Prompt to appointments ☐Courteous on phone and in person
☐Provided valued information ☐Demonstrated pride in workmanship
☐Other

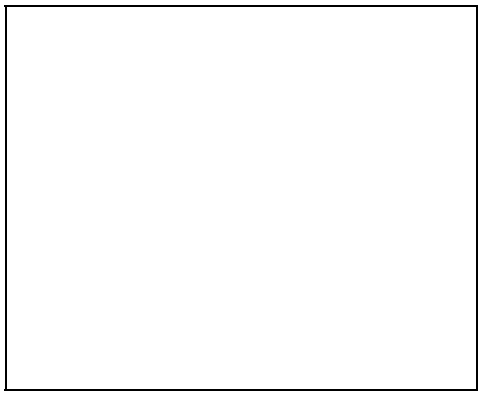
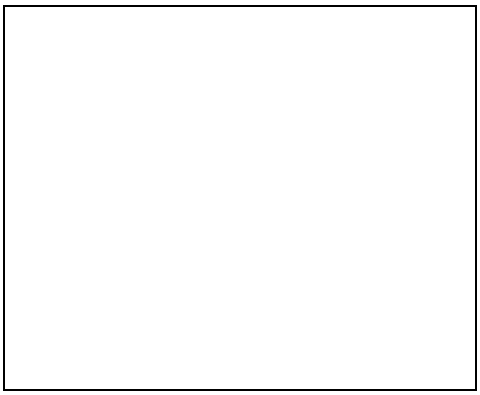
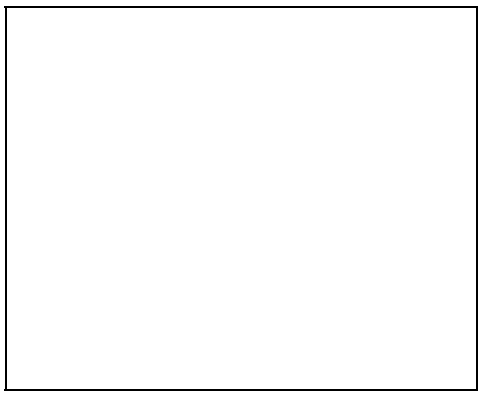
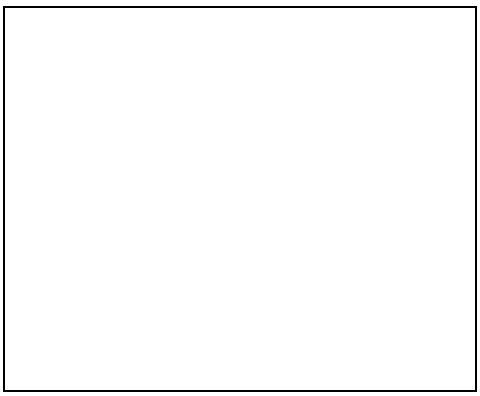
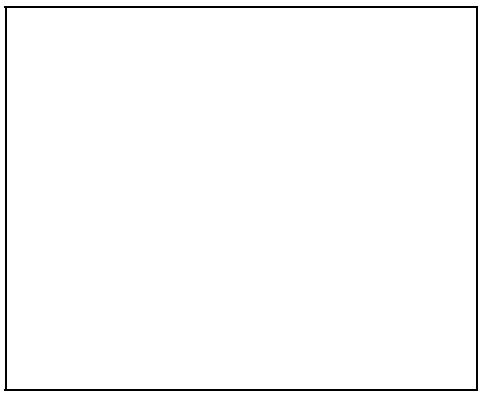
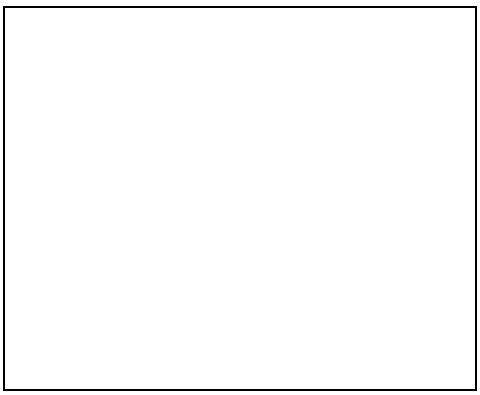
PLEASE USE THE SPACE BELOW OR ON THE BACK FOR ANY COMMENTS YOU WOULD LIKE TO ADD.

Address: 847 West 14th Street, Bloomington, IN
Client: Monroe County United Ministries

Final Audit Photos

Address: 847 West 14th Street, Bloomington, IN
Client: Monroe County United Ministries

Final Audit Photos

Final Manometer Reading Photo

Address: 847 West 14th Street, Bloomington, IN
Client: Monroe County United Ministries

GLOSSARY OF TERMS

ACH Air Changes per Hour - The number times in one hour the entire volume of indoor air in a house or room is replaced with outdoor air through ventilation and infiltration, usually measured in cubic feet per hour. Your house should have minimum whole house ventilation equal to 0.35 air changes per hour.

Air Infiltration - The amount of air leaking into the home through the walls, floor, and ceiling. Excessive amounts of air infiltration cause uncomfortable, drafty rooms and high energy bills. Common places of air infiltration include chimneys, attic access hatches, and plumbing and electrical penetrations.

Air Sealing - Sealing penetrations in the walls, floor, and ceiling where outside air enters the home. It's the most cost-effective way to improve the energy efficiency of a home.

Annual Fuel Utilization Efficiency (AFUE) - The measure of seasonal or annual efficiency of a residential heating furnace or boiler. It takes into account the cyclic on / off operation and associated energy losses of the heating unit as it responds to changes in the load, which in turn is affected by changes in weather and occupant controls.

Back drafting - The flow of air down a flue or chimney and into a house caused by low indoor air pressure that can occur when using several fans or fireplaces or if the house is very tight.

Base-load - For residential customers, the remaining energy consumption after energy used for seasonal use (cooling and heating) has been subtracted. It includes energy used for water heating, refrigeration, clothes dryer, lighting, electronics, and other. Baseload use is more or less constant each month, year round.

Blower Door - A device used by energy auditors and raters to pressurize a building to locate places of air leakage and energy loss.

Btu British Thermal Unit - The amount of heat required to raise the temperature of one pound of water one degree Fahrenheit; equal to 252 calories.

Building Envelope - The structural elements (walls, roof, floor, foundation) of a building that enclose conditioned space; the building shell.

Building Science - The study and practice of constructing buildings so they are durable, safe, and comfortable to be in, taking into account the building materials, the occupants, and the equipment and other items in the building.

Carbon Monoxide - A colorless, odorless but poisonous combustible gas with the formula CO. Carbon monoxide is produced in the incomplete combustion of carbon and carbon compounds such as fossil fuels (i.e. coal, petroleum) and their products (e.g. liquefied petroleum gas, gasoline), and biomass.

CFLs Compact Fluorescent Lights - A smaller version of fluorescent lamps that can directly replace standard incandescent lights. These lights consist of a gas filled tube and a magnetic or electronic ballast. The newer CFLs are vastly improved. They fit in most light fixtures and have warmer color tones and longer life. They will reduce the energy used by 75% over an incandescent bulb, and last 6-10 years.

CFM50 - The amount of cubic feet per minute (CFM) of air moving through a structure and measured at 50pascal pressure.

CFM natural - The cubic feet of air flowing through a house from indoors to outdoors during typical, natural conditions. This figure can be roughly estimated using a blower door.

Chimney (or Stack) Effect - The tendency of heated air or gas to rise in a duct or other vertical passage, such as in a chimney, small enclosure, or building, due to its lower density compared to the surrounding air or gas.

Convective Air Flow - Air movement where less dense (warmer) air is displaced by more dense (cooler) air. Often expressed by the phrase "hot air rises." Convective air flow can be useful if controlled, as in gravity hot air heating systems, but is more often a contributor to heat loss.

Degree Day - A unit for measuring the extent that the outdoor daily average temperature (the mean of the maximum and minimum daily dry-bulb temperatures) falls below or above an assumed base temperature, normally taken as 65 degrees Fahrenheit, unless otherwise stated. One degree day is counted for each degree below (for heating) or above (in the case of cooling) the base, for each calendar day on which the temperature goes below or above the base.

Distribution System (Heating and Cooling) - That part of a central heating system used to deliver heated transfer media to the living space, and return the cooled transfer media to the appliance for re-heating. In a forced air system this includes the blower, ducts, registers, dampers, and cold air returns. In a hot water system this includes circulators, supply lines, radiators, and return lines.

Ducts - The round or rectangular tube(s), generally constructed of sheet metal, fiberglass board, or a flexible plastic-and-wire composite, located within a wall, floor, and ceiling that distributes heated or cooled air in buildings. It is important that ducts be insulated and sealed properly when in unconditioned space to avoid unnecessarily high utility bills. The best practice would be to not put ducts in unconditioned space.

EER Energy Efficiency Ratio - The measure of the instantaneous energy efficiency of room air conditioners; the cooling capacity in Btu / Hr divided by the watts of power consumed at a specific outdoor temperature (usually 95 degrees Fahrenheit). While the SEER considers year long efficiency (kWh), EER is a measure of the maximum use at a given time (kW).

ENERGY STAR Qualified Products - Appliances and other products that meet strict energy efficiency guidelines set by the EPA and DOE. Products in more than 50 categories are eligible for the ENERGY STAR label. They use less energy, save money, help protect the environment, and are identified with the ENERGY STAR label.

Exfiltration - The movement of air out of a building. Often refers to warm air leaving a building due to pressurization, infiltration, wind, stack effect, and / or convective flow.

Heat Gain - The amount of heat introduced to a space from all heat producing sources, such as building occupants, lights, appliances, and from the environment, mainly solar energy.

Home Heating Index - The number of Btus of energy used by a home divided by its area in square feet, then divided by the number of heating degree days during the time period.

House as a System (Whole House System) - The approach to home design, building, remodeling, and weatherization that recognizes how all the features in a home are connected -and that changing one component can greatly affect another part of the house. It is based on the principles of building science and relies on diagnostics to verify results. Using this approach will improve not only the overall energy efficiency of the home, but also its comfort, indoor air quality, safety, durability and affordability.

Humidity - A measure of the moisture content of air; may be expressed as absolute, mixing ratio, saturation deficit, relative, or specific.

HVAC Heating, Ventilation, and Air-Conditioning System - All the components of the appliance used to condition interior air of a building.

IAQ Indoor Air Quality - The quality of indoor air relative to its acceptability for healthful human habitation. Assessing and improving, when necessary, the quality of indoor air is a major concern of home performance and weatherization. In particular, all by-products of major combustion appliances must be directly evacuated to the outdoors under all operating conditions.

Infrared Thermography - The science of using infrared imaging to detect radiant energy or heat loss in a building. The infrared camera or scanner electronically senses heat radiated by objects and converts that thermal energy into images visible to the human eye. Some scanners can automatically record these images on video. Used in conjunction with a blower door, the scanner can provide valuable data about air leakage sites and thermal bypasses.

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Kilowatt-hour (kWh) - The most commonly-used unit of measure telling the amount of electricity consumed over time. It means one kilowatt of electricity supplied for one hour. A kilowatt-hour is the equivalent of using ten 100-watt light bulbs for one hour.

Low-E Windows - Windows that are coated with a metallic glass (low emissivity) film to resist the flow of radiant heat.

Manual J - The standard method for calculating residential cooling loads developed by the Air-Conditioning and Refrigeration Institute (ARI) and the Air Conditioning Contractors of America (ACCA) based largely on the American Society of Heating, Refrigeration, and Air-Conditioning Engineer's (ASHRAE) "Handbook of Fundamentals."

Phantom Load - Any appliance that consumes power even when it is turned off. Examples of phantom loads include equipment chargers, appliances with electronic clocks or timers, appliances with remote controls, and appliances with wall cubes (a small box that plugs into an AC outlet to power appliances). Phantom loads can be a significant part of a household's electric use.

Pressure Pan Test – Commonly used to test duct leakage in conjunction with a blower door. Results above 1.5 Pascal's should be repaired. The U.S. Department of Energy determined that an average of 25% to 40% of heating and cooling energy is lost through duct system leakage. Duct leakage has a major impact on indoor air quality and energy efficiency.

Pressurization (Blower Door) Testing - A diagnostic technique that uses a blower door to locate areas of air infiltration by exaggerating the defects in the building shell. This test only measures air infiltration at the time of the test. It does not take into account changes in atmospheric pressure, weather, wind velocity, or any activities the occupants conduct that may affect air infiltration rates over a period of time.

Relative Humidity - A measure of the percent of moisture actually in the air compared with what would be in it if it were fully saturated at that temperature. When the air is fully saturated, its relative humidity is 100 percent.

R-Value - A measure of the capacity of a material to resist heat transfer. The R-Value is the reciprocal of the conductivity of a material (U-Value). The larger the R-Value of a material, the greater its insulating properties.

Therm - A unit of heat containing 100,000 British thermal units (Btu). 100,000 Btu's equals 29,307 watts.

Thermal Bypass - Similar to a convection loop, this structural heat loss is characterized by heated air traveling up exterior or interior stud cavities and leaking out the top of that cavity to the attic through joints and cracks in the framing, wiring, and plumbing holes, etc. These types of heat loss sources are sometimes the most difficult to locate.

U-Value (Coefficient of Heat Transmission) - The reciprocal of R-Value. The lower the number, the greater the heat transfer resistance (insulating) characteristics of the material.

Ventilation - The process of moving air (changing) into and out of an interior space either by natural or mechanically induced (forced) means.

Ventilation Air - That portion of supply air that is drawn from outside, plus any re-circulated air that has been treated to maintain a desired air quality.

Weatherization - Modifying a home or building to conserve energy. Methods include: sealing windows and door frames with caulking or gaskets, installing storm doors and windows, adding or increasing the insulation value, and upgrading appliances and equipment.