

**The New Normal:
Increased Savings from HVAC Quality
Installation and Maintenance Programs**

**HVAC SAVE
(System Adjustment & Verified Efficiency)**



What is HVAC SAVE?

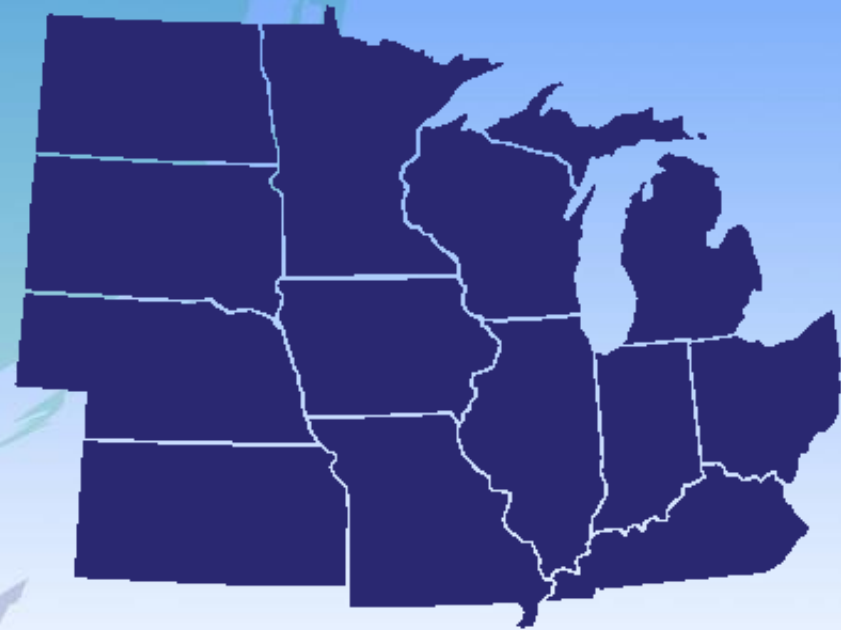
- HVAC initiative with an emphasis on tested and verified savings
- 1 day training and certification- technical skills, contractor mindset, and practical applications
- HVAC performance testing resulting in system diagnostic data
- QI on new construction & change outs, equipment performance tune ups, performance based duct improvements
- Sponsored by MidAmerican, Alliant, and Cedar Falls Utilities

HVAC SAVE Objectives

- Elevate the work performance standards of the HVAC community
- Create a screening tool for homeowners to identify Quality Contractors
- Arm quality contractors with a set of practices and tools to verify a quality install
- Allow Utilities to meet regulatory mandates on energy efficiency
- Get better data on field installations and tune-ups
- Change the culture
- Seeing the Invisible BTU

MEEA's Mission

MEEA is a nonprofit organization bridging the gap between energy efficiency policy development and program implementation



ESI

ESI is the implementation partner for HVAC SAVE

- Deliver the training curriculum, and instruction
- Configure the software
- Contractor outreach and support
- Report on realized savings and other program results

HVAC SAVE Elements

Training and Certification

- MEEA created HVAC SAVE certification and partnered with ESI
- Develops pool of trained and certified HVAC professionals

Field Performance Testing and Software Tool

- Web based
- Measure, adjust, verify, and report
- www.hvacssavesoftware.com

HVAC SAVE Overview

1. Contractors take initial system measurements

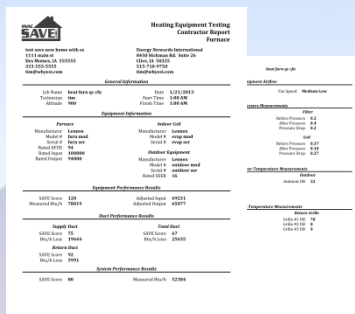
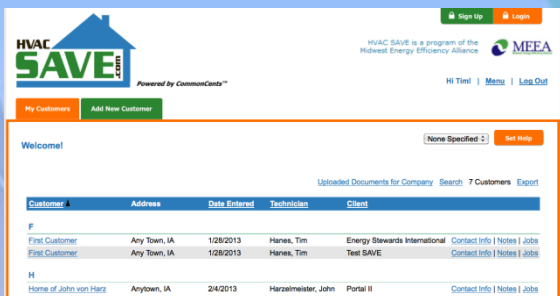


5. Contractor tests out work completed



4. Contractor makes repairs

2. Measurements recorded into CommonCents



3. CommonCents provides printouts for homeowners and contractors on recommended repairs

Program Participation

- 75 + Training Events
- Over 500 HVAC Companies
- Over 2300 Certified Individuals
- Over 60000 quality installations
- Over 125,000 “Jobs” in the software

Energy Savings

Energy Savings

- Typical Equipment Performance 72%
 - Minimum Equipment SAVE Score 85%
 - Average Equipment SAVE Score 94%
 - Tune-Up Minimum 10 Point Improvement
- Typical Duct System Performance 70%
 - Goal 12 Point Improvement
- Peak Demand Impact
 - Demand Caused by Cooling Equipment reduced by up to 50%

Customer Benefits

- Provided with real measured data to make educated decisions
- Participating contractor list to aid in choosing a contractor
- Measured performance so they know that they got what they were promised
- Piece of mind provided by third party QA



HVAC SAVE EQUIPMENT RATING

*The Heating Equipment Installed By
Wyckoff Heating & Cooling
at*

*123 Main St.
Des Moines, IA*

Has Achieved a SAVE Equipment Rating of

EXCELLENT



Contractor Benefits and Testimonials

- Reputation Building
- Utility promotion
- Reduce Warranty costs
- Rebate Income
- Enables a system-level 'whole house' look

“When we started it was an eye opening experience. Now we have performance information that tells us when our installation process is truly complete.”

“We perform these tests for our new homes programs anyway. The software makes it a lot more convenient and the rebate income is gravy.”





Heating Equipment Testing Contractor Report Furnace

test save new home with es
1111 main st
Des Moines, IA 555555
333-555-5555
tim@whyesi.com

Energy Stewards International
8450 Hickman Rd. Suite 26
Clive, IA 50325
515-710-9750
tim@whyesi.com

General Information

Job Name	heat furn qc cfu	Date	1/21/2013
Technician	tim	Start Time	1:00 AM
Altitude	900	Finish Time	1:00 AM

Equipment Information

Furnace		Indoor Coil	
Manufacturer	Lennox	Manufacturer	Lennox
Model #	furn mod	Model #	evap mod
Serial #	furn ser	Serial #	evap ser
Rated AFUE	94	Outdoor Equipment	
Rated Input	100000	Manufacturer	Lennox
Rated Output	94000	Model #	outdoor mod
		Serial #	outdoor ser
		Rated SEER	16

Equipment Performance Results

SAVE Score	120	Adjusted Input	69231
Measured Btu/h	78019	Adjusted Output	65077

Duct Performance Results

Supply Duct		Total Duct	
SAVE Score	75	SAVE Score	67
Btu/h Loss	19644	Btu/h Loss	25635
Return Duct			
SAVE Score	92		
Btu/h Loss	5991		

System Performance Results

SAVE Score	80	Measured Btu/h	52384
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test save new home with es

heat furn qc cfu

Equipment Airflow

Measured CFM	1290	Fan Speed	Medium Low
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Static Pressure Measurements

Equipment		Filter	
Suction Pressure	0.4	Before Pressure	0.2
Discharge Pressure	0.37	After Pressure	0.4
Total ESP	0.77	Pressure Drop	0.2
Duct			
Supply		Coil	
Supply Pressure Drop	0.1	Before Pressure	0.37
Return Pressure Drop	0.2	After Pressure	0.10
Total Pressure Drop	0.3	Pressure Drop	0.27

Equipment & Outdoor Temperature Measurements

Equipment		Outdoor	
Supply DB	125	Ambient DB	32
Return DB	69		
ΔT	56		

Register & Grille Temperature Measurements

Supply Register		Return Grille	
Register #1 DB	110	Grille #1 DB	70
Register #2 DB	0	Grille #2 DB	0
Register #3 DB	0	Grille #3 DB	0

System

Average Register DB	110
Average Grille DB	70
ΔT	40



2013 Residential Application: Natural Gas Furnaces & Boilers

Who should apply:

Existing residential properties, using a SAVE-certified contractor - \$200 per furnace; \$400 per boiler

Who should NOT apply: Commercial/large multifamily facilities (5+ units/bldg) - Use Comm. Furnace/Boiler Application
Equipment not installed by a SAVE-certified contractor - NOT ELIGIBLE
New construction homes - NOT ELIGIBLE

Directions: Send the completed, signed form, itemized invoices, and SAVE Quick Check report to either energyservices@cfu.net or Cedar Falls Utilities, Attn: Energy Services, P.O. Box 769, Cedar Falls, IA 50613. Read page 2 before signing and submitting this form. Questions? Call Energy Services at 319-266-1761 or visit www.cfunet/save_energy.

Customer Information to be completed by applicant

Name on CFU Account: **tim** Building Type: Single-family Mobile Home Multifamily (2-4 units per building)
Installation address: **123 Main St** Property Type: Owner-occupied Rental

Where should CFU mail the rebate check? Installation address Other (specify) **123 Main St Any Town, IA 12345**

Natural Gas Furnace: \$200: 95% AFUE minimum
Natural Gas Boiler: \$400: 92% AFUE minimum

NEW HEATING SYSTEM INFORMATION - must be installed by a SAVE-certified contractor and meet CFU's sizing recommendation. Sizing must be conducted before unit is installed. Contact 319-266-1761 to schedule a CFU load calculation or find a SAVE-certified contractor. SAVE-certified contractors are also listed at www.hvacsave.com.

AHRI certified number OR **AHR1234F**
Manufacturer/Model Number: **Amana FURN0703C**

FURNACE: Does the furnace have an ECM motor?
 Yes No

BOILER:
Does the system also provide water heating energy for the home? Yes No
Does the system also provide in-floor heat for the home? Yes No

OLD HEATING SYSTEM INFORMATION
Was the old heating system: Broken Working No prior gas heat at property New construction

Fuel of old heating system: Natural gas Electricity Propane Other:

Approximate size and efficiency (or age) of old heating system (Btuh & AFUE): **90000 80**

Signatures to be completed by applicant & dealer

Applicant, Installer, & Dealer Certification: The undersigned agrees that the stated energy efficiency measure(s) is (are) installed and in operation at the job site address listed above, and that the information contained in this application is accurate and complete. I have read and agree to the Terms & Conditions on Page 2 of this application. I agree to indemnify, defend, hold harmless and release CFU from any claims, damages, liabilities, costs and expenses (including reasonable attorneys' fees) arising from or relating to the removal, disposal, installation or operation of any equipment or related materials in connection with the programs described in this application, including any incidental, special or consequential damages.



Applicant Signature _____ Date _____ Dealer signature _____

Installer Signature _____ Date _____ Installer Name (Print)* _____

*CFU will verify this name in the directory of SAVE-certified contractors available at www.hvacsave.com

Questions? Please call CFU at 319-266-1761 before your installation is complete. Once equipment is installed, CFU cannot assist you if the installation does not meet program rules.
(page 1 of 2)

CEDAR FALLS UTILITIES

2013 RESIDENTIAL FURNACE AND BOILER REBATE PROGRAM TERMS & CONDITIONS

- Applicant must 1) be a current Cedar Falls Utilities (CFU) customer; 2) own the property where equipment is installed; and 3) CFU must supply the natural gas to the equipment for which the cash rebate is being paid. At the time of the installation, the equipment installer must be listed as a SAVE-certified contractor at www.hvacsave.com.
- If a new construction home qualifies for CFU's 5 Star Rate Discount for new construction, then the property is not eligible for the furnace or boiler rebates.
- Incentives are available on a first-come, first-served basis. CFU may modify or end any cash rebate program at any time without notice. Neither pre-approval of a project, nor any other action by CFU, entitles applicant to a rebate payment until and unless this application is approved by CFU. The most current rules of this program are on the application forms posted at www.cfunet. To evaluate your application, CFU will use the rules listed on the application form that was posted at www.cfunet on the day CFU receives your application.
- Purchase and installation must be completed between February 18, 2013 and January 31, 2014. Equipment or improvements must be installed and operating on the premises before you apply for a rebate. Unit must be paid in full; items on layaway or payment plans are not eligible until all payments have been made. Submit your application no later than March 31, 2014. Allow two to eight weeks for application review and funding of approved rebates. Incomplete applications may be delayed or rejected. CFU reserves the right to award rebates in the form of utility bill credits or directly mailed checks.
- CFU Energy Services department must complete a sizing calculation of each furnace or boiler prior to installation; equipment must not exceed the size listed in CFU's calculations. After installation is complete, submit a completed and signed rebate application with invoices and SAVE Quick Check report to Cedar Falls Utilities, Attn: Energy Services, P.O. Box 769, Cedar Falls, IA 50613. Reports, invoices, and applications may also be submitted electronically at energyservices@cfu.net. Itemized receipt(s) or paid invoice(s) showing the contractor/vendor name, date of purchase, installation address, manufacturer and model number of each furnace or boiler purchased, and total equipment cost must be submitted with the rebate application. The SAVE Quick Check report must be completed using the CommonCents software platform at <http://www.commoncents.cc>.
- CFU reserves the right to inspect and verify the installation; ask you to complete a customer survey; and/or meter the specified equipment or process, at no cost to the customer, in order to determine the actual energy saved for up to 12 months after the installation. CFU may publicize your participation in this program unless you request otherwise in writing. Rebate application information may be shared with state agencies or departments.
- Projects must comply with all applicable federal, state, and local codes, standards, and regulatory requirements. Limit one rebate payment per piece of qualifying equipment or project expense. All equipment must be new; used or rebuilt equipment is not eligible. Existing equipment must be removed and may not be resold.
- Cedar Falls Utilities:
 - 1) does not endorse any provider, manufacturer, product, labor or system design by offering this program;
 - 2) is not responsible for any tax liability arising from customer's receipt of a rebate payment;
 - 3) does not expressly or implicitly warrant the performance of installed equipment or contractor's quality of work (contact your contractor or vendor for warranty information);
 - 4) is not responsible for the proper disposal/recycling of any waste generated by this project;
 - 5) is not liable for any incidental or consequential damages caused by the installation of the equipment or for any damage caused by the malfunction of the installed equipment;
 - 6) does not guarantee that a specific level of energy or cost savings will result from the implementation of energy efficiency measures or the use of products funded under this program.

(page 2 of 2)

1/15/2013



Opportunities

- Quality install + existing system retrofit
- Additional savings opportunities identified through diagnostics
- Increased understanding of current install practices with access to diagnostic data
- Value in realized energy savings
- Scalable program: community, neighborhood, utility area
- Captures Data for Energy Star New Homes Program
- Centralized documents & data entered by contractors
- Performance based code compliance

Program Resources



HVACSAVE.com

- Searchable list of certified contractors (by zip code or utility)
- Consumer facing educational materials about program and money saving potential
- Co-branded marketing materials for utilities, contractors and communities
- Incentive information for other utility programs
- Contact information for utilities, program and contractors
- Industry white papers around analysis results
- Case studies

Lessons Learned

- Identify Industry Leaders
- Manufacturer / Supply House Involvement
- Customer Awareness
- Quality Assurance
- Staged Rollout

National Support for SAVE

Building America (NREL)

- Under GTI PARR
- Funding to collect and analyze SAVE field data
- Multi-year opportunity to do billing and energy use analysis

US EPA Grant

- Multi-year funding to develop outreach and marketing materials
- Develop consumer and contractor facing pieces
- Develop website that houses research, data and case studies



HVAC SAVE Team

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