

## Residential New Construction Program

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### 1. Program Description

This program promotes the construction of energy-efficient new housing, addressing both the building shell and the equipment used inside the building. The program provides builders with financial incentives to offset the higher cost of energy-efficiency construction and equipment. In addition, the program provides home owners with energy-efficient new homes certificates, which are recognized by the real estate community as evidence that the buildings are highly energy efficient.

The program is delivered through a program contractor, supported by a trade ally network of home builders and building inspectors. The program is marketed as the Residential New Homes program. MidAmerican will implement the program in South Dakota beginning in 2010.

### 2. Operations

The program has two tracks for certification: an EnergyAdvantage<sup>®</sup> track defined by MidAmerican and an ENERGY STAR<sup>®</sup> track tied to the U.S. Environmental Protection Agency ENERGY STAR program. Builders choosing the EnergyAdvantage track follow a prescriptive builder option package (BOP) of specific energy-efficient shell and equipment measures. Builders choosing the ENERGY STAR track work within the framework of the nationally accredited Home Energy Rating System (HERS) to receive a qualifying HERS rating.

This program is delivered principally through key developers and building contractors. Rebates are provided directly to builders, so they are responsible for filling out program applications. Many builders pass rebates along to home buyers in the form of lower home purchase costs.

Builders also are responsible for promoting the program, using the New Homes certification and other MidAmerican support to help differentiate energy-efficient homes in the broader housing market. Builders also work with home buyers to understand the features and benefits of high-efficiency construction and equipment.

Key steps in program participation include:

- Meeting program specifications, by following the prescriptive builder option package for the EnergyAdvantage track or the HERS rating process for the ENERGY STAR track,
- Filling out program applications,
- Working with MidAmerican to verify compliance with program specifications, by using MidAmerican's verification contractor for the EnergyAdvantage track or by gaining HERS certification for the ENERGY STAR track,
- Providing home buyers with MidAmerican New Homes certification and
- Processing rebate checks, which are provided to the home builder.

The program contractor provides a range of support functions to manage the program, including processing applications, tracking program data, answering questions from builders and equipment subcontractors, certifying EnergyAdvantage participants and coordinating rebate distribution with MidAmerican's accounts payable department.

MidAmerican staff and additional contractors also provide additional support in the form of research and development into new measures, promotion and monitoring and evaluation.

### **3. Value Proposition**

Customers participating in this program receive the following benefits:

- A *comprehensive construction incentive* to reduce the cost and payback of energy-efficiency measures installed by the owner or developer,

- ***Lower monthly energy bills*** due to the higher level of energy efficiency in the home. On average, compared to standard new housing, although usage is very much occupant-driven, MidAmerican's EnergyAdvantage and ENERGY STAR participants will likely use 15 to 25 percent less energy,
- The ***potentially higher resale value*** of the home due to MidAmerican energy-efficient certification and higher-quality home construction and heating/cooling equipment,
- ***MidAmerican energy-efficient home certification*** and endorsement of measures installed through this program. All MidAmerican energy-efficient homes are certified to meet MidAmerican's strict guidelines for energy efficiency,
- ***Independent verification*** by MidAmerican that selected measures were installed by the subcontractor,
- ***Assurance*** that the builder is building a higher quality energy-efficient home and
- ***Increased comfort*** due to the energy-efficient features of the prescribed measures that keep out excessive heat, cold and noise and ensure consistent temperatures between and across rooms, making the homes more comfortable.

#### **4. Customer Targets**

This program targets developers and future owners of residential homes. The program has been designed to accommodate different building types, including single-family homes, town homes, multifamily apartment buildings and manufactured homes, as well as different development approaches including production developers, custom developers and speculative developers.

Table 1 outlines customer eligibility requirements.

**Table 1  
Customer Eligibility Parameters**

	<b>Electric Comprehensive Homes</b>	<b>Gas Comprehensive Homes</b>
<b>Customer Class</b>	Customers served under all residential electric rates are eligible for electric measures	Customers served under natural gas residential rates are eligible for natural gas measures
<b>Customer Status</b>	Homeowners and developers	Homeowners and developers
<b>Building Type</b>	Single-family homes (conventional and custom); Town homes (slab on grade construction); Manufactured homes; Multi-family homes	Single-family homes (conventional and custom); Town homes (slab on grade construction); Manufactured homes; Multi-family homes
<b>Building Vintage</b>	New construction	New construction
<b>Geography</b>	Installed in MidAmerican South Dakota electric territory	Installed in MidAmerican South Dakota gas territory

## 5. Trade Ally Targets

The single-family and town home components rely primarily on the following trade allies for program delivery:

- Home builders,
- Home energy raters,
- Real estate firms and
- Real estate developers.

The builder's role is to construct the home to comply with MidAmerican's prescriptive BOP requirements or to meet the HERS requirements. Some builders have been proactive in this market, building only MidAmerican energy-efficient homes. The role of real estate firms is to educate and convince home purchasers of the additional value and benefits created by MidAmerican energy-efficient home certification, such as reduced energy bills, increased comfort and higher property values. Real estate developers build subdivisions of single-family homes and town home developments that comply with MidAmerican's program requirements.

Builders also work with additional subcontractors responsible for installing the shell measures (e.g., insulation, windows) and equipment measures (e.g., air conditioners, furnaces, water heaters, lighting) required to meet program requirements.

The manufactured home component relies on modular home manufacturers for program delivery. They support the program in two ways: (1) producing manufactured homes to comply with MidAmerican energy-efficient manufactured home requirements; and (2) educating customers on the added benefits and value of a MidAmerican energy-efficient certified manufactured home over a conventional manufactured home.

## **6. Eligible Measures**

Attachment B4-1 provides a copy of the brochure MidAmerican uses to promote its 2007 Iowa Residential New Construction program. The brochure defines the measures required to meet MidAmerican's prescriptive BOP for EnergyAdvantage certification in the Iowa program. Measures covered in the BOP address insulation, ducts, windows, doors, infiltration, HVAC equipment, water heat equipment and appliances. Builders choosing the ENERGY STAR track address similar building systems, equipment and measures, but are allowed to make trade offs among systems (for example, installing more wall insulation but less attic insulation).

MidAmerican expects the BOP and HERS requirements for the South Dakota program to address measures similar to those listed in Attachment B4-1. MidAmerican will work with builders and public officials to ensure that South Dakota requirements reflect local market conditions, especially the existing building code in Minnehaha County. MidAmerican also performs an annual review of qualifying equipment to ensure that program requirements evolve to meet changing market conditions.

## **7. Financial Incentives**

The program offers lump-sum financial incentives upon successful completion of construction and verification by MidAmerican. Incentives are paid on a per-home basis, payable upon successful completion and verification that the home construction complies with program requirements. Incentives vary based on whether MidAmerican provides utility service for the heating system, cooling system or both systems. In addition, there is a separate incentive structure for customers installing geothermal heat pumps.

MidAmerican expects the financial incentives for the South Dakota program to be similar to those provided in Attachment B4-1. However, to the extent that program eligibility requirements need to change to match local market conditions, financial incentives also may need to change. In addition, MidAmerican performs an annual review of qualifying equipment so that rebate levels can evolve to meet changing market conditions.

## **8. Promotion**

This program will rely on direct contacts with builders and developers to promote the program, including direct mailings, personal visits and attendance at home shows and other industry events. MidAmerican will develop a brochure that outlines the program's features, benefits, eligibility requirements and financial incentives, and send copies to builders and other targeted trade allies. In addition, MidAmerican will highlight the program in bill inserts provided to all residential customers and conduct limited newspaper and Internet advertising.

## **9. Participation**

Table 2 provides program participation assumptions.

**Table 2  
Participation**

	2008	2009	2010
<b>Electric Measures</b>			
Electric Heat Homes	-	-	-
AC Homes	-	-	2
<b>Natural Gas Measures</b>			
Gas Heat Homes	-	-	76

**10. Energy and Demand Savings**

Table 3 provides energy and demand savings goals.

**Table 3  
Cumulative Energy and Demand Savings**

	2008	2009	2010
<b>Electric Impacts</b>			
Annual Energy (kWh)	-	-	3,617
Peak Demand (kW)	-	-	5
<b>Natural Gas Impacts</b>			
Annual Energy (therms)	-	-	34,370
Peak-Day Demand (therms)	-	-	520

**11. Budget**

Table 4 provides program budget assumptions.

**Table 4  
Budget**

	<b>2008</b>	<b>2009</b>	<b>2010</b>
<b>Electric Budget</b>			
Planning & Design	\$0	\$0	\$0
Administration	\$0	\$0	\$1,000
Advertising & Promotion	\$0	\$0	\$0
Customer Incentives	\$0	\$0	\$1,000
Monitoring & Evaluation	\$0	\$0	\$0
Equipment	\$0	\$0	\$0
Installation	\$0	\$0	\$0
<b>Electric Total</b>	\$0	\$0	\$2,000
<b>Natural Gas Budget</b>			
Planning & Design	\$0	\$0	\$7,000
Administration	\$0	\$0	\$38,000
Advertising & Promotion	\$0	\$0	\$18,000
Customer Incentives	\$0	\$0	\$97,000
Monitoring & Evaluation	\$0	\$0	\$4,000
Equipment	\$0	\$0	\$0
Installation	\$0	\$0	\$0
<b>Natural Gas Total</b>	\$0	\$0	\$164,000
<b>Total Budget</b>			
Planning & Design	\$0	\$0	\$7,000
Administration	\$0	\$0	\$39,000
Advertising & Promotion	\$0	\$0	\$18,000
Customer Incentives	\$0	\$0	\$98,000
Monitoring & Evaluation	\$0	\$0	\$4,000
Equipment	\$0	\$0	\$0
Installation	\$0	\$0	\$0
<b>Total</b>	\$0	\$0	\$166,000

## 12. Cost-Effectiveness Results

Table 5 provides program cost-effectiveness results.

**Table 5**  
**Cost-Effectiveness Results\***

Lifecycle Societal Benefits (NPV)	\$ 1,838,164
Lifecycle Societal Costs (NPV)	\$ 1,539,465
Net Societal Benefits (NPV)	\$ 298,699
Benefit-Cost Ratio	1.19

\*Includes lifecycle cost and benefits of participation from 2010-12, to allow programs to reach full participation.

Attachment B4-1

2007 Iowa

Residential New Construction Rebate Schedule



## 2007 ENERGYADVANTAGE® NEW HOMES PROGRAM

Feature	Equipment	2007 MidAmerican BOP
<b>Cooling</b>	<b>Right-sized</b>	<b>Properly sized, recommend using ACCA Manual J or equivalent calculation</b>
	Electric, forced-air, central air conditioners	14 SEER or greater
	Electric, forced-air, air-source heat pumps	14 SEER or greater
	Electric, ground-source heat pumps (closed loop)	14.1 EER or greater
	Electric, ground-source heat pumps (open loop)	16.2 EER or greater
<b>Heating</b>	<b>Right-sized</b>	<b>Properly sized, recommend using ACCA Manual J or equivalent calculation</b>
	Natural gas, forced-air furnace	92 AFUE or greater
	Natural gas, boiler	90 AFUE or greater
	Electric, forced-air, air-source heat pumps	8.5 HSPF or greater
	Electric, ground-source heat pumps (closed loop)	3.3 COP or greater
	Electric, ground-source heat pumps (open loop)	3.6 COP or greater
<b>Thermostat</b>	Clock programmable thermostat	Setback with two or more temperature settings
<b>Ductwork</b>	Sheetmetal ducts Sheetmetal joints	R-8 or greater insulation in unconditioned spaces Duct sealing at each joint using mastic and/or UL 181 approved tapes, such as metal-backed tape
	All low-pressure supply and return ducts  Leakage	Duct sealing at each joint using mastic and/or UL 181 approved tapes, such as metal-backed tape  6% or less to unconditioned spaces
<b>Infiltration</b>	Natural air exchanges per hour (NACH)	0.45 or less NACH
	Mechanical ventilation	Strongly recommended if NACH is 0.31 or less
	Heat-recovery ventilator (HRV)	Optional
<b>Insulation</b>	Ceiling, insulation only	R-49 or greater
	Wood frame wall	R-19 or greater, or R-13 + 5
	Mass frame wall	R-15
	Floor, above unheated space	R-30 or greater
	Basement wall, insulation covering entire basement walls	R-10/13 or greater, basement does not need to be finished
	Basement, band/rim joist	R-19 or greater
	Slab	R-10 or greater under edge, back 4 feet
Crawl space	R-10 or greater - R-13 or greater cavity	
<b>Windows</b>	ENERGY STAR-qualified windows or better for the northern climate zone	.35 U-factor or less
	Windows rated by the National Fenestration Rating Council (NFRC)	Must have NFRC window stickers
	Maximum window area	18% or less of conditioned floor area
<b>Doors</b>		R-5 or greater
<b>Water Heaters</b>	Natural gas, up to 60 gallons	0.62 EF or greater
	Natural gas, 60 - 80 gallons	0.85 thermal efficiency or greater
	Electric	0.93 EF or greater
<b>ENERGY STAR® Products</b>	ENERGY STAR-qualified appliances, hardwired light fixtures, ceiling fans equipped with lighting fixtures, and/or ventilation fans (not including heating and cooling or windows)	Must have five installed ENERGY STAR-fixtures or appliances and supply documentation for each.

Questions? Please call 800-894-9599.

SEE REVERSE SIDE FOR INCENTIVES.

## 2007 ENERGYADVANTAGE® NEW HOMES PROGRAM REBATE LEVELS

**Builders have two options to qualify for EnergyAdvantage rebates.**

### Option 1 - EnergyAdvantage New Homes Program Specifications

This program option is available to new, unoccupied single-family homes in the Iowa service areas of MidAmerican Energy using energy provided directly by MidAmerican. For multifamily units, please call in advance for specifications.

**Builder must meet all requirements on reverse side, with no exceptions.**

<u>EnergyAdvantage Home</u>	<u>Rebate</u>
MidAmerican gas and electric	\$ 1,500
MidAmerican gas heat only	\$ 1,000
MidAmerican cooling only	\$ 500
Ground-source heat pump homes	\$ 1,000 plus additional rebate per the 2007 Residential Equipment rebate schedule

Rebate amounts will be prorated for homes less than 1,800 sf.

**Program eligibility expires for homes not verified by March 31, 2008. After this time homes must meet 2008 New Homes specifications.**

### Option 2 - ENERGY STAR®-Labeled Home

This program option is available to new, single-family homes in the Iowa service areas of MidAmerican Energy using energy provided directly by MidAmerican. For multifamily units, please call in advance for specifications.

**Builder must provide certification from a RESNET-certified HERS rater showing the home meets or exceeds ENERGY STAR standards.**

Specifications are available at [www.energystar.gov](http://www.energystar.gov).

<u>ENERGY STAR-Labeled Home</u>	<u>Rebate</u>
MidAmerican gas and electric	\$ 1,750
MidAmerican gas heat only	\$ 1,250
MidAmerican cooling only	\$ 500
Ground-source heat pump homes	\$ 1,000 plus additional rebate per the 2007 Residential Equipment rebate schedule

Rebate amounts will be prorated for homes less than 1,800 sf.

Questions? Please call 800-894-9599.  
[www.midamericanenergy.com/newhomes](http://www.midamericanenergy.com/newhomes)

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