

STATE OF IOWA

BEFORE THE IOWA UTILITIES BOARD

IN RE:	:	
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MIDAMERICAN ENERGY COMPANY	:	Docket No. EEP-2012-0002
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**DIRECT TESTIMONY
OF
CHARLES B. REA**

- 1 **Q. Please state your name and business address.**
- 2 A. My name is Charles B. Rea. My business address is 106 East Second Street,
- 3 Davenport, Iowa 52801.
- 4 **Q. By whom are you employed and in what capacity?**
- 5 A. I am employed by MidAmerican Energy Company (MidAmerican). My title is
- 6 Manager, Regulatory Strategic Analysis.
- 7 **Q. Please describe the responsibilities of your current position.**
- 8 A. I and my group are responsible for the analytical activities associated with
- 9 energy efficiency at MidAmerican. This includes analysis of program savings,
- 10 spending, and budgets, and analysis of the cost-effectiveness of MidAmerican’s
- 11 energy efficiency programs. In addition, I have managerial responsibility for
- 12 MidAmerican’s load research program and I am responsible for special projects
- 13 in MidAmerican’s regulatory area that include, among other things, electric and

14 gas cost of service issues, analytical and pricing support for retail contracts, and
15 dynamic pricing programs.

16 **Q. Please describe your education and business experience.**

17 A. I received a B.A. in Computer Science for the University of Illinois at
18 Springfield in 1986 and a M.A. in Statistics and Operations Research from
19 Southern Illinois University at Edwardsville in 1990. I have been employed by
20 MidAmerican and its predecessor companies since 1990 and have worked in
21 electric system planning, forecasting, load research, marketing, and rates.

22 **Q. Have you testified before Iowa Utilities Board or other regulatory bodies
23 previously?**

24 A. Yes. I have testified in several dockets in Illinois and Iowa on various topics
25 including electric cost of service, retail access, uniformity of delivery service
26 tariffs, and energy efficiency. Most recently, I provided testimony in Illinois
27 Docket No. 12-0132 where I sponsored MidAmerican's energy efficiency
28 results for 2009-2011, and in South Dakota Docket No. GE12-005 where I
29 sponsored MidAmerican's 2013-2017 energy efficiency plan for South Dakota
30 that was approved by the South Dakota Public Utilities Commission on
31 November 20, 2012.

32 **Q. What is the purpose of your direct testimony?**

33 A. The purpose of my testimony is to discuss and describe the development
34 process for MidAmerican's proposed Iowa 2014-2018 Energy Efficiency Plan
35 (Plan), and to sponsor certain schedules related to total program budgets, total

36 expected energy savings, and total economic benefits of MidAmerican’s
37 proposed Plan.

38 **Q. What filing requirements contained in 199 IAC 35 does your testimony**
39 **address?**

40 A. My testimony addresses, in whole or in part, the following requirements as
41 found in 199 IAC Chapter 35:

- 42 • 35.8(1) "a"-“d” Assessment of Energy Capacity Savings Potential
- 43 • 35.8(1) “e” Proposed Performance Goals for Peak Demand
44 and Energy Savings
- 45 • 35.8(1) “e”(1) Description of Proposed Programs and Budgets –
46 Cost Effectiveness Tests
- 47 • 35.8(1) “e”(2) Description of Proposed Programs and Budgets –
48 Cost Effectiveness Thresholds
- 49 • 35.8(1) “e”(4) Description of Proposed Programs and Budgets –
50 Budget Levels
- 51 • 35.8(1) “f”(1) Optional Sensitivity Analysis
- 52 • 35.8(2) “a” Proposed Energy Efficiency Plan,
53 Programs, Budget, and Cost Allocation
- 54 • 35.8(2) “c” Annual Savings
- 55 • 35.8(2) “d” Plan and Program Budgets
- 56 • 35.8(2) “f” Monitoring and Evaluation Plan

57 **Q. What schedules are you sponsoring?**

58 A. I am sponsoring six schedules with this direct testimony.

59 Schedule 1 provides detailed annual budgets by program and spending
60 category for all programs in MidAmerican’s proposed Plan. These detailed
61 budgets also include budgeted full-time employee equivalents by job category
62 for each program.

63 Schedule 2 provides savings targets for kWh, peak demand kW, therms,
64 and peak day therms for each program by year.

65 Schedule 3 provides cost effectiveness test results for all five cost-
66 effectiveness tests conducted in MidAmerican’s analysis. These results are
67 provided by program and in total.

68 Schedule 4 provides summary information for each measure included in
69 MidAmerican’s proposed Plan. It includes participation by year for each
70 measure, average savings levels, customer costs, incentives, total savings
71 targets, cost effectiveness results, total net benefits, and useful life information.

72 Schedule 5 provides a description of the modeling data and assumptions
73 used by MidAmerican in the development of its proposed Plan.

74 MidAmerican’s planning model is provided in Confidential Schedule 6,
75 and is filed confidentially because of the inclusion of avoided energy and
76 capacity costs. This model is a fully functioning non-proprietary Excel
77 spreadsheet-based model that provides all of the data and assumptions needed
78 for the analysis of MidAmerican’s proposed Plan.

79 **Q. Describe how this Plan was developed.**

80 A. MidAmerican’s Plan, which is a mix of existing and new programs, was
81 developed using a bottom-up approach for existing programs and a top-down

82 approach for new programs. For existing programs, individual measures were
83 analyzed for potential savings and cost-effectiveness, participation levels were
84 developed, and incentive budgets and savings targets were developed for each
85 measure and accumulated into programs. For new programs, program
86 strategies were developed and high level participation, savings, and spending
87 targets were developed in concert with MidAmerican's program
88 implementation partners and with assistance from ICF International. These
89 targets are the basis for the budgets and savings forecasts for the new programs.

90 MidAmerican relied upon the following data and information for the
91 development of its proposed Plan:

- 92 • Measure level cost and savings data from the 2014-2023 Iowa Statewide
93 Assessment of Energy Efficiency Potential, which is provided in
94 Volume III of this filing.
- 95 • Historical participation levels in MidAmerican's current programs.
- 96 • Historical custom project data from MidAmerican's non-prescriptive
97 programs.
- 98 • Data concerning the efficiency levels of various measures historically
99 installed by MidAmerican's customers.
- 100 • Avoided energy and capacity costs as discussed by MidAmerican
101 witnesses O. Dale Stevens, Brian Wiese, and Jennifer Long.
- 102 • MidAmerican class load research data from 2011.
- 103 • Expected rate levels by customer class for 2013.

- 104 • Input from MidAmerican program managers and program
105 implementation contractors.
- 106 • Input from MidAmerican’s consultant, ICF International.
- 107 • Input from MidAmerican’s impact review conducted by Tetra Tech.

108 **Q. How did MidAmerican include the participation of interested outside**
109 **parties in the development of this Plan?**

110 A. In April 2012, MidAmerican made a presentation to the Iowa Industrial Energy
111 Group to solicit participation and interest in its energy efficiency planning
112 process. Participation from all outside parties was solicited at MidAmerican’s
113 first stakeholder collaborative meeting held in Des Moines on May 15, 2012.
114 At this meeting, MidAmerican communicated its guiding principles for the
115 development of this Plan and discussed the results of the Assessment.
116 MidAmerican also described some of the challenges it expected to face in the
117 development of the Plan. MidAmerican solicited program ideas from
118 participants in that meeting and provided tools to communicate program ideas
119 to MidAmerican and a timeline for the submission of those ideas consistent
120 with MidAmerican’s internal timeline for plan development.

121 Program suggestions were submitted by a number of parties including
122 the Office of Consumer Advocate, Environmental Law and Policy Center,
123 Trees Forever, Iowa Community Action Association and Krell Energy
124 Efficiency. Meetings and conversations were held with these parties during the
125 summer and fall of 2012, and a second stakeholder collaborative meeting was
126 held in Des Moines on December 5, 2012 to discuss the state of MidAmerican’s

127 plan development at that time and MidAmerican's expectations for budgets,
128 savings targets, and program changes.

129 **Q. Please describe how participation targets in the Plan were developed.**

130 A. Participation targets for MidAmerican's proposed Plan were developed
131 primarily by analyzing participation trends in existing programs from 2004
132 through 2011, and 2012 for selected programs. These trends were projected
133 forward for 2014 through 2018 for the Plan going forward.

134 For programs that did not have sufficient historical participation or for
135 new programs, participation targets were developed primarily with input from
136 MidAmerican's program managers and program implementation contractors.

137 **Q. Please describe how savings targets in the Plan were developed.**

138 A. Savings targets for MidAmerican's proposed Plan were developed primarily by
139 applying the participation targets mentioned above to savings algorithms
140 developed either from the Assessment or from various Energy Star data
141 sources. Where possible, MidAmerican used savings estimates directly
142 available from billing or metering analyses from customers participating in
143 MidAmerican's current programs.

144 For programs where data did not exist in readily usable forms either
145 from the Assessment or from other historical objective sources, savings targets
146 were developed primarily with input from MidAmerican's program managers
147 and program implementation contractors.

148 **Q. How do the savings goals in this Plan compare to forecasted sales?**

149 A. Electric incremental savings goals start at 1.14% of total expected Iowa retail
150 sales in 2014, drop down to 0.99% of total forecasted sales in 2015 and drop
151 again to 0.92-0.93% of forecasted sales for 2016-2018. Natural gas savings
152 goals start at 0.80% of total expected Iowa eligible retail sales in 2014, drop
153 down to 0.68% of total forecasted eligible sales in 2015 and rise back up to
154 0.75% of total eligible forecasted sales by 2018.

155 **Q. How do the savings goals in this Plan compare to the savings potential in**
156 **the Statewide Assessment of Energy Efficiency Potential?**

157 A. The cumulative electric savings goal for MidAmerican's proposed Plan in 2018
158 is 1,053,832,230 kWh, which is approximately 47% of the total electric
159 economic potential in 2018 as determined by the Assessment. The cumulative
160 natural gas savings goal is 22,111,643 therms, which is approximately 28% of
161 the total natural gas economic potential in 2018.

162 **Q. Please describe how incentive budgets were developed.**

163 A. Incentive budgets were developed on a measure by measure basis. For most
164 measures in the proposed Plan, incentives were developed based on the
165 following guidelines:

- 166 • Incentives must cover at least 25% of the incremental customer cost of
167 each measure.
- 168 • Incentives should buy down the cost of each measure such that the
169 payback period after incentives for the customer is no more than 25% of
170 the useful life of the measure.

171 The cost of assessments and measures that are direct installed in
172 assessments are paid at 100% regardless of program, so there is no cost to the
173 customer for those services. In addition, certain study and development costs
174 incurred by program implementation contractors in the course of providing
175 services to customers and MidAmerican, particularly in the areas of project
176 design, are also paid 100%.

177 Incentive budgets were developed in this manner on a measure by
178 measure basis, and were rolled up to determine incentive budgets for each
179 program.

180 **Q. Please describe how administrative cost budgets in the Plan were**
181 **developed.**

182 A. Administrative budgets are based on actual administrative costs incurred in
183 2011 for the various programs escalated through the proposed Plan at 2.5% per
184 year. Program budgets were reviewed by MidAmerican program managers and
185 adjustments were made on a program by program basis based on program
186 manager input.

187 **Q. Please explain the cost-effectiveness thresholds for the proposed Plan.**

188 A. MidAmerican conducts five separate cost-effectiveness tests on each of the
189 proposed programs in this Plan. These tests are:

- 190 • Participant test – Do the benefits received by customers participating in
191 this program outweigh the costs they incur?
- 192 • Ratepayer Impact Test – Do the benefits that accrue to customers that
193 do not participate in these programs outweigh the costs they incur?

- 194 • Utility Test – Do the benefits in terms of avoided energy and capacity
195 costs realized by the utility outweigh the cost to the utility of operating
196 the programs?
- 197 • Total Resource Cost Test – Do the total benefits in terms of avoided
198 energy and capacity costs realized by the utility and its customers
199 outweigh the total cost of achieving those benefits?
- 200 • Societal Test – Do the total benefits in terms of avoided energy and
201 capacity costs realized by the utility and its customers outweigh the total
202 cost of achieving those benefits once externalities and the specific
203 societal test discount rate are considered?

204 By Board rule, 199 IAC 35.8(1)"e"(1), the primary test used to evaluate
205 cost-effectiveness of energy efficiency programs is the Societal Test.

206 **Q. Is MidAmerican’s proposed Plan cost-effective?**

207 A. Yes. MidAmerican’s proposed portfolio of programs are cost-effective, both in
208 total and separately for electric and gas. The Societal Test ratio for the
209 combined portfolio of programs is 2.28. The Societal Test ratio for electric
210 programs is 2.48, and is 1.74 for gas programs. Also, with the exception of the
211 low income programs and the gas component of the new Residential HVAC
212 Tune Up program, each proposed program within the portfolio is cost-effective
213 for both electric and gas.

214 Detailed cost-effectiveness information is provided in Schedule 3 by
215 program and Schedule 4 by measure.

216 **Q. Are there any components of the Plan that are not cost-effective?**

217 A. Yes. The following is a list of measures included in the Plan that are not cost-
218 effective and do not achieve a Societal Test ratio of 1.0 on an individual
219 measure basis:

- 220 • Residential Equipment – Refrigerators (SOC = 0.35)
- 221 • Residential Equipment – Freezers (SOC = 0.53)
- 222 • Residential Assessment– Windows (SOC = 0.26 to 0.37)
- 223 • Residential Assessment – Doors (SOC = 0.63)
- 224 • Residential Assessment – Smart Power Strips (SOC = 0.74)
- 225 • Residential New Construction – Gas Heat (SOC = 0.97)
- 226 • Residential HVAC Tune Up – Furnaces (SOC = 0.53)

227 **Q. Why is MidAmerican including this limited set of non-cost effective**
228 **measures in its proposed Plan?**

229 A. Many of the non-cost effective measures included in the Plan are measures that
230 MidAmerican believes will help customers realize substantial and meaningful
231 energy savings over and above the energy savings that MidAmerican will be
232 able to claim as a direct result of its programs. This is due primarily to what
233 MidAmerican believes is a high level of existing equipment stock that is below
234 current standards. Refrigerators, freezers, windows, and doors fall into this
235 group of measures.

236 Smart power strips, while not being cost-effective, serve as an
237 educational and behavioral change measure that can help customers’
238 understanding of the impact that “phantom load” has on their energy
239 consumption and is included in the plan for its educational value. The

240 remaining measures listed above are included in order to demonstrate to
241 customers how the quality installation of new and existing higher-efficiency
242 heating equipment reduces their energy consumption and helps improve the
243 overall comfort of their home.

244 **Q. Did you conduct an optional sensitivity analyses under 199 IAC 35.8(1)?"?**

245 A. No. MidAmerican's proposed standards do not differ from the energy and
246 capacity savings resulting from the current Plan by more than 25%.

247 **Q. Has MidAmerican included an Evaluation, Monitoring and Verification**
248 **(EM&V) plan for this proposed Plan?**

249 A. Yes. MidAmerican's EM&V plan is included in the Plan document provided in
250 Volume II of this filing.

251 **Q. Has MidAmerican included an accounting plan for this proposed Plan?**

252 A. Yes. MidAmerican's accounting plan is included in the Plan document
253 provided in Volume II of this filing.

254 **Q. Has MidAmerican developed a technical reference manual for this**
255 **proposed Plan?**

256 A. Yes. Appendix A of the Plan provided in Volume II contains MidAmerican's
257 technical reference manual (TRM).

258 **Q. What is a technical reference manual?**

259 A. MidAmerican's TRM is a document that outlines all of the information needed
260 to determine incentive payments, gross ex-ante savings, and cost-effectiveness
261 for each measure offered in the Plan. Statewide TRMs, some of which include
262 a variety of other information as well, have been developed in a number of

263 states. MidAmerican's TRM contains a separate page for each measure offered
264 in the Plan that provides the following information:

- 265 • Name of the measure.
- 266 • Baseline equipment to which the measure is compared in determining
267 energy savings.
- 268 • Useful life of the measure.
- 269 • Savings algorithms or deemed savings values used to determine gross
270 ex-ante savings for:
 - 271 ○ Annual kWh saved
 - 272 ○ Peak kW saved
 - 273 ○ Annual therms saved
 - 274 ○ Peak day therms saved
- 275 • Incremental cost algorithms used to determine the incremental cost of
276 each measure for the purposes of calculating cost-effectiveness for that
277 measure.
- 278 • Incentive formulas used to determine the incentive payable for each
279 measure installed.
- 280 • Estimates of the payback period (the number of years of energy savings
281 needed to recoup the cost of installing the measure) for each measure
282 both before and after incentives.
- 283 • The percentage of incremental cost that the incentive is expected to
284 cover.

285 **Q. Is a technical reference manual required in the Iowa filing requirements?**

286 A. No. A TRM is not required under the Iowa filing requirements for energy
287 efficiency plans.

288 **Q. Why has MidAmerican developed a technical reference manual and**
289 **included it in this filing?**

290 A. MidAmerican has developed and included a TRM for its proposed Plan for two
291 reasons. The first reason is related to transparency. MidAmerican believes it is
292 important for all stakeholders and interested parties to understand the
293 assumptions used in the development of its proposed Plan and to understand
294 how incentives, savings, and cost-effectiveness will be determined going
295 forward through the life of the Plan. MidAmerican believes that the TRM
296 included in this Plan largely accomplishes this goal.

297 The second reason is that the TRM provides a convenient way of
298 tracking changes to the Plan over time and communicating those changes to
299 stakeholders and interested parties. Much like a tariff book describes the rates,
300 terms, and conditions under which MidAmerican offers electric and gas service
301 to customers, the TRM outlines for each measure the incentives, energy
302 savings, and cost assumptions associated with its energy efficiency Plan. As
303 the Plan changes going forward because of changing codes and standards, new
304 technologies, changes in market conditions, or for a variety of other reasons,
305 changes will be made directly to the TRM and will be provided to all
306 stakeholders, thus allowing stakeholders and other interested parties to see the
307 up-to-date details of MidAmerican's Plan at any point in time.

308 **Q. Does MidAmerican support the development of a statewide technical**
309 **reference manual?**

310 A. Yes. MidAmerican believes that with the exception of incentive levels that can
311 be different for different utility providers, there is no reason why savings
312 assumptions, incremental cost assumptions, useful life assumptions, and
313 baseline assumptions for various energy efficiency offerings should be different
314 for different energy efficiency providers in Iowa. It is MidAmerican's
315 experience that having different assumptions for the items listed above for
316 providers operating in the same jurisdiction can introduce confusion and
317 uncertainty regarding what energy efficiency measures are offered and how
318 they are offered. Several states have developed statewide TRMs to ensure a
319 common set of assumptions for all providers in a state jurisdiction.
320 MidAmerican believes that a statewide TRM for Iowa would be very useful
321 going forward and MidAmerican supports the development of such a TRM.

322 **Q. Does this conclude your prepared direct testimony?**

323 A. Yes, it does.

February 01, 2013

IOWA UTILITIES BOARD

STATE OF IOWA

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IN RE:

MIDAMERICAN ENERGY COMPANY

Docket No. EEP-2012-0002

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AFFIDAVIT
OF
CHARLES B. REA

STATE OF IOWA)
) ss.
COUNTY OF SCOTT)

I, Charles B. Rea, being first duly sworn on oath, depose and state that I am the same Charles B. Rea identified in the Direct Testimony; that I have caused the Direct Testimony, to be prepared and am familiar with the contents thereof; and that the Direct Testimony, is true and correct to the best of my knowledge and belief as of the date of this Affidavit.

/s/ Charles B. Rea
Charles B. Rea

SUBSCRIBED AND SWORN TO before me this 31st day of, January, 2013.

/s/ Theresa Thompson
Notary Public in and for the State of Iowa
My commission expires on September 6, 2015