

MidAmerican Energy Company

First Annual Report of Carbon Reduction Cost Recovery Rider

**FILED WITH
Executive Secretary
November 23, 2011
IOWA UTILITIES BOARD
TF-2011-0134**

Background

On July 9, 2010, MidAmerican Energy Company (MidAmerican) filed with the Iowa Utilities Board (Board) a proposed tariff, identified as TF-2010-0085, to recover costs for analyses of and preparations for the possible construction of nuclear generating facilities in Iowa that could be beneficial in a carbon-constrained environment.

Recovery of such costs is authorized by House File 2399, which was passed by the General Assembly in 2010 and added a new section to the Iowa Code (i.e., § 476.6(22)). MidAmerican requested that the proposed tariff be effective October 1, 2010. No objections to the proposed tariff were filed. The Board issued an order dated August 6, 2010 approving the tariff. On August 25, 2010, MidAmerican filed tariff Sheet No. B-5.10 in Docket No. TF-2010-0116 to establish Rider CR rates to be applied to all kilowatt-hour sales in Iowa beginning October 1, 2010. The Board approved MidAmerican's filing on September 30, 2010.

Pursuant to § 476.6(22), MidAmerican is to file an annual report with the Board identifying and explaining expenditures intended for cost recovery through this rider, along with any other information required by the Board. At the conclusion of the cost recovery period, which can extend no more than 36 months in total, the statute requires that the Board conduct a contested case proceeding to evaluate the reasonableness and prudence of the cost recovery.

This report is submitted to fulfill MidAmerican's first annual report filing requirement. Following the passage of House Bill 2399, MidAmerican began booking expenditures in May 2010. This report includes expenditures from May 2010 through September 2011. MidAmerican began collecting Rider CR charges from customers in October 2010 following the Board's August 6 and September 30, 2010 orders. This report includes Rider CR revenues collected from October 2010 through September 2011.

Identification of Expenditures and Cost Recovery

The expenditures during the first reporting period to “undertake analyses of and preparations for the possible construction of nuclear generating facilities” in Iowa are summarized on Table 1. MidAmerican is proposing only to pass through the rider incremental costs¹ incurred for the feasibility analysis of a nuclear facility in the rider. MidAmerican also understands that under Iowa Code § 476.6(22), the Board will conduct a contested case proceeding at the conclusion of the cost recovery period (up to 36 months) to evaluate the reasonableness and prudence of the expenditures, including those for the first annual expenditures summarized on Table 1.

The expenditures incurred to analyze the feasibility of the construction of nuclear facilities in Iowa have been centered in the following general areas:

1. Assessment of physical characteristics of locations in Iowa for hosting a nuclear facility, and
2. Assessment of staffing, costs and technologies of nuclear alternatives, if reactor designs are feasible and deployed at an Iowa site.

The assessment of the physical characteristics of Iowa locations for hosting a nuclear facility and the evaluation of emerging nuclear technologies requires highly specialized skills. These skills have typically been procured from consultants with nuclear facility siting experience and knowledge of the assessment requirements. Individual evaluations have been completed in many safety and environmental areas using accepted nuclear industry siting processes and procedures. To date, no on-site physical testing has been completed.

While all new nuclear technologies have dramatically improved safety systems, the nuclear technology that may hold the most promise for deployment at a site in Iowa is one based upon small modular reactor technology (i.e., typically assumed as less than 300 MWe (net) per reactor). Such small modular reactors may pose significant promise for Iowa nuclear facilities due to the following reasons:

¹ For example, project costs for labor and labor loadings of existing MidAmerican employees as of the date of enactment of the legislation are not included in the expenditure schedule. However, incremental costs of additional expenses related to the nuclear feasibility analysis, including all of the labor and labor loading costs of incremental MidAmerican staff added after legislation passage, are included.

- The extensive use of passive safety features and inherent design benefits when compared to legacy reactor technologies should reduce public safety concerns,
- Small modular reactors have the potential to be deployed in a method more measured to load growth, fossil generation closures or conversions and transmission availability, and
- Lower capital costs of small modular reactors reduce rate shock for customers.

The design of the current emerging commercial small modular reactor technologies is less than five years old. Therefore, the evaluation of these small modular reactors for deployment at an Iowa site has required MidAmerican to engage with small modular reactor vendors, nuclear regulators and nuclear industry organizations for a technology assessment. In addition, a business plan assessment of the cost to construct, staff, operate and maintain these new small reactor designs has also been initiated.

MidAmerican began billing under the Carbon Reduction Cost Recovery Rider effective on October 1, 2010 consistent with the Board's orders in Docket Nos. TF-2010-0085 and TF-2010-0116. Through September 30, 2011, a total of \$5,573,862.24 has been billed to MidAmerican customers through the rider. Rider CR recoverable costs for the period through September 30, 2011 total \$2,300,932.80. Details of Rider CR recoverable costs are identified on Table 1 at the end of this report. MidAmerican is proposing to retain recoveries in excess of expenditures for the first period as expenditures during the period October 2011 through September 2012 may exceed Rider CR revenue.

Explanation of Expenditures

In Table 1, the MidAmerican Incremental Labor and Expenses Subtotal includes the incremental costs paid by MidAmerican for labor, labor loadings and expenses. For labor and labor loadings, the costs are limited to new MidAmerican staff hired after the date of enactment of the legislation or support staff from MidAmerican Energy Holdings Company that performed work specifically on the nuclear feasibility assessment. These nuclear tasks are associated with managing a particular aspect of the nuclear effort or providing a specific expertise. Business expenses charged to this line item are those non-labor incremental expenses incurred by all MidAmerican staff (incremental and existing) associated with the nuclear feasibility assessment required under HF 2399. Separately noted on Table 1 are \$722,600.03 of labor and labor

loadings incurred by MidAmerican on the nuclear feasibility assessment but not passed through the CR rider; because they were not assessed as incremental costs.

Nuclear Site Characterization expenses on Table 1 involve the evaluation of land parcels in Iowa to identify preferred sites for a nuclear facility. This assessment begins with the entire state of Iowa for consideration and provides a systematic, industry accepted process to characterize and select a site or sites. The initial phases of this assessment has utilized the Electric Power Research Institute (“EPRI”) report, “*Siting Guide: Site Selection and Evaluation Criteria for an Early Site Permit*” as guidance. The EPRI siting guide references US Nuclear Regulatory Commission (NRC) siting requirements consistent with those references provided in US NRC Regulatory Guide 4.7. The evaluation criteria in this guidance document are in the following general areas:

- **Health and Safety:** including geology, seismology, hydrology and meteorology,
- **Environmental:** including local ecology,
- **Socioeconomic and Land Use,** and
- **Engineering and Cost:** including construction characteristics, transportation and transmission access and land rights.

To date the major expenses in this category are for industry expertise in completing the initial phases of this assessment. Since no on-site investigations have been completed to date, the assessment is not complete.

One of the issues in determining site suitability is the consideration of socioeconomic impacts. This is being addressed by developing a robust estimate of the construction labor force and operational staffing needed for deployment and assessing the impact on the local communities. Expenses billed under Nuclear Business Planning on Table 1 include the estimation of staffing and capital expenditures for small modular reactors including the timing of these staffing needs and expenditures. Because the deployment and design of small modular reactors is different from the large reactors in operation or currently under construction; industry experts, nuclear regulatory commission staff and small modular reactor vendors have been engaged to assess how staffing and expenditures for small modular reactor deployment will differ from large

nuclear generating units. This evaluation is fluid as small modular reactor vendors continue to assess their designs.

Expenditures for a Nuclear Technical Assessment of the small modular reactors are also shown on Table 1. The initial technical assessment benchmark includes evaluations of the four active small modular reactor designs in areas such as passive safety systems integration, security requirements, operation expectations and nuclear licensing. The four active small modular reactor vendors all have differing physical designs under development of different generation capacity which would impact how the units are constructed, operated and deployed at a site. This technical assessment will continue as the small reactor vendor designs continue to evolve and as the nuclear regulatory commission evaluates the licensing requirements.

Nuclear Support costs shown on Table 1 are currently for outside expertise to assist in nuclear support of data collection. As on-site data collection is initiated, some of this data, such as meteorological and some geotechnical data will be collected and documented under quality standards so that it can be verified and useful. These Nuclear Support costs to date have been associated with the development of a nuclear quality assurance program. To minimize costs, MidAmerican has taken an existing nuclear quality assurance program developed by MidAmerican Energy Holdings Company and updated it to current requirements with the assistance of outside nuclear experts. The nuclear quality assurance program addresses such issues as procedure development and control, procurement of materials and services that need quality assurance, record requirements, quality program auditing, training, staffing qualifications and surveillances.

Forward Looking Expenditures

During the next 12-month period, it is expected that MidAmerican's expenses will increase. The major reason for the increase in costs will likely be to facilitate on-site environmental investigations. To date, site selection has been based upon general state, regional or local information obtained from public sources. To more fully assess site feasibility, actual on-site data will need to be collected to ensure consistency with the publically available general information. These on-site data collections will be used to evaluate the following general site characteristics:

- Ecology,
- Cultural and archeological significance,
- Hydrology,
- Metrological conditions,
- Geotechnical conditions,
- Local industrial hazards,
- Flooding potential, and
- Emergency planning characteristics.

The objective of this data collection will not be to complete a full licensing application for a preferred site. Rather, a limited amount of data will be collected in an effort to identify potential site issues early on in the site selection process that may require significant mitigation expenditures to meet the NRC site regulatory requirements. These NRC requirements are listed throughout NRC Regulatory Guide 4.7.

Some of these assessments will require active, intrusive data collection, including potential geotechnical borings, well drillings, meteorological tower construction, and ecology and archeological sample taking. Such active on-site activities will require the permission of the impacted site landowners to allow the data collection activities and to retain the option to purchase the site(s), should nuclear generation prove feasible in Iowa. In addition, a public outreach effort will be necessary to inform the local community as to the intent and extent of the site evaluations. Included with the on-site data collection and evaluations will be incremental MidAmerican staff labor costs and expenses to ensure the activities are properly managed and the quality assurance of the data is established and maintained.

The feasible deployment of a small modular reactor at an Iowa site is also dependent upon a clear understanding of the only other proven, dispatchable, baseload generation alternative in a carbon constrained Iowa environment; one fueled by natural gas. MidAmerican recently initiated a study of the implications of relying on natural gas for baseload generation in Iowa in a carbon-constrained environment. This investigation will project the natural gas commodity price, pipeline delivery costs and risks associated with natural gas supplies during the expected life of an alternative nuclear facility. In addition, this assessment will evaluate the socioeconomic

impacts on the local site environment and the Iowa economy in terms of direct and indirect job creation and other economic indicators when fuel intensive (i.e., natural gas) and capital and labor intensive (i.e., nuclear) generation alternatives are compared.

Finally, the MidAmerican technical and business reviews for assessing Iowa nuclear feasibility initiated during the first year of the rider's implementation will continue during the next 12 months. Reactor vendors are expected to continue to refine their small modular reactor designs and cost estimates. Engagement with the nuclear regulators and research organizations, along with reactor vendors, other utilities and the public, is expected to continue as small modular reactor licensing and deployment policy continues to be formulated. These policies could have a significant impact on whether nuclear generation is feasible in Iowa or the United States in general.

Table 1

MidAmerican Energy Company Expenditures Associated with Carbon Reduction Rider	
	Cumulative Total
MidAmerican Incremental Labor and Expenses Subtotal	\$ 416,280.87
Purchase Orders (PO)	
Nuclear Site Characterization	\$ 1,082,064.64
Nuclear Business Planning	\$ 393,726.26
Nuclear Technical Assessment	\$ 153,441.97
Nuclear Support	\$ 255,419.06
PO Subtotal	\$ 1,884,651.93
Rider Costs Total	\$ 2,300,932.80
Rider Collections	\$ (5,573,862.24)
MEC Non-Rider Costs	\$ 722,600.03