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**IOWA UTILITIES BOARD**  
**General Counsel and Policy Sections**

Docket Nos.: WRU-2014-0013-0004

Utility: Altoona Tower Condominiums,  
LLC f/k/a Ironwood  
Development, LC and  
Professional Property  
Management, Inc.

File Date/Due Date: January 9, 2015-N/A

Memo Date: January 16, 2015

**TO:** The Board

**FROM:** Parveen Baig, Cecil Wright

**SUBJECT:** Request for Waiver of 199 IAC 20.3(1)"b" and Approval of Pilot  
Project

**I. Background**

On September 11, 2014, Ironwood Development, LC (n/k/a Altoona Tower Condominiums, LCC) and Professional Property Management, Inc. (collectively, Applicants), filed with the Utilities Board (Board) a request to waive the individual metering requirements in 199 IAC 20.3(1)"b" to allow master metering at an apartment complex with two multioccupancy buildings in Altoona, Iowa. Applicants state that they have a long track record of designing and managing energy efficient and cost effective residential rental properties and Applicants want to utilize energy savings strategies at the apartment buildings in Altoona. According to Applicants, the energy saving strategies at the two apartment buildings will require master metering of the two buildings.

On September 30, 2014, the Consumer Advocate Division of the Department of Justice (Consumer Advocate) filed a response not opposing the waiver request. On October 1, 2014, MidAmerican Energy Company (MidAmerican) filed a response to the waiver request and requested additional information. On October 8, 2014, Applicants filed a response to MidAmerican's request for more information.

On October 29, 2014, the Board issued an order requesting additional information about the request for waiver to allow master metering at the apartment buildings. On November 7, 2014, Applicants filed a response to the Board's order and requested a conference to discuss the issues raised concerning the request to master meter the two apartment buildings.

On November 13, 2014, the conference was held. At the conference, the parties agreed that master metering should be allowed to provide electric energy to

the two apartment buildings as a pilot project and that Applicants would submit a proposal for the pilot project which would include a special rate. On January 9, 2015, Applicants filed a preliminary proposal for a pilot project. In support of the filing, Applicants indicate that there has been no agreement on the appropriate rate structure for the master meters. Applicants indicate that they will submit additional information including the rate to be charged by February 27, 2015. Applicants state that both MidAmerican and Consumer Advocate agree to the preliminary proposal for the pilot project.

Applicants state that the two apartment buildings in Altoona are the most energy efficient multifamily housing project built in Iowa to date; however, the energy strategies used in the construction of the buildings are not financially feasible unless the property owner can recoup the energy savings through a master meter. The parties to this docket agree that data should be collected to determine whether the energy efficiency strategies adopted for these buildings result in energy savings even though individual tenants are not financially responsible for electric usage. Applicants state that MidAmerican and Consumer Advocate reviewed and offered comments on the pilot project and have consented to the preliminary report. The report may be revised or supplemented and the parties will work in good faith to submit additional information by February 27, 2015. Applicants request that once the information to be filed by February 27, 2015, has been reviewed, the Board approve the pilot project and order the first annual report with data about the energy savings at the two apartment buildings be filed by June 30, 2016.

## **II. Pilot Project**

Applicants state that the pilot project has two objectives: (1) Determine whether comprehensive energy efficient building design, operation, and maintenance metered under a master meter provides an effective solution to the "split incentive" issue for multifamily residences; and (2) Address whether tenant's energy consumption is influenced when the electric utility costs are included as an unidentified portion of the rent. Applicants indicate that additional objectives may be added at a later date.

### **1. Split Incentive**

Applicants explain that achieving energy efficiency savings in rental housing presents unique challenges. In rental situations where the tenant pays for energy service, the tenant does not purchase or install the energy efficient fixtures and appliances and is not responsible for properly maintaining those fixtures and appliances. Meanwhile the landlord has no financial incentive to purchase and install energy efficiency fixtures and appliances since the tenant would reap any savings from reduced energy costs. Under these circumstances energy efficient fixtures and appliances are rarely purchased and installed by the landlord.

Applicants suggest that allowing the landlord to master meter an apartment building would allow the landlord to benefit from purchasing, installing, and maintaining energy efficient fixtures and appliances by a reduction in energy costs to the landlord. In the case of the Altoona apartments, Applicants plan to invest \$292,050 for energy efficient fixtures and appliances for the two apartment buildings. Applicants would receive a payment of \$103,815 from MidAmerican for installation of the energy efficient fixtures and appliances; however, Applicants would receive no direct benefit from installing the energy efficient fixtures and appliances. Without some other economic incentive, Applicants state that purchasing and installing the energy efficient fixtures and appliances is not economically feasible.

Applicants believe that total energy use will be reduced at the apartment buildings if Applicants purchase and install the energy efficient fixtures and appliances and are allowed to install a master meter to benefit from the reduced energy costs. Applicants state that no studies have compared energy usage by tenants paying their own energy bills and tenants who pay for energy as an unidentified portion of rent. Since tenants will not be responsible for paying for energy usage, Applicants propose to implement a number of educational programs regarding energy conservation for the tenants as part of the pilot project.

## **2. Pilot Project Goal**

The pilot project is designed to determine whether master metering of multifamily buildings provides a cost effective solution to the "split incentive" issue. Applicants propose to purchase and install energy efficient fixtures and appliances that will reduce energy usage in the two apartment buildings by 35-40 percent. This reduction will be compared to baseline reference points as discussed below.

### **a. General Service Area Strategies**

- (1) Assemble exterior wall with materials for thermal performance and moisture integrity.
- (2) Wall assembly thermal resistance approaching R<sup>1</sup>-20 by using a spray foam insulation system.
- (3) Install high performance vinyl casement windows with low-e insulating glass. These exceed Energy Star requirements with a U<sup>2</sup>-factor of 0.27 and have the lowest operational leakage ratings.
- (4) Sliding glass doors with low-e insulating glass exceeding Energy Star<sup>3</sup> requirements with a U-factor of 0.28.

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<sup>1</sup> The R-value is a measure of thermal resistance used in building and construction. Under uniform conditions it is the difference across an insulator and the heat flux. The R-value depends on a solid material's resistance to conductive heat transfer.

<sup>2</sup> The U-factor is the overall heat transfer coefficient that describes how well a building element conducts heat or the rate of transfer of heat through one square meter of a structure divided by the difference in temperature across the structure.

<sup>3</sup> An international standard for energy efficient consumer products.

(5) There will be stepped daylighting control of lights in stairwell landings and occupancy control lights in offices, public spaces, restrooms, laundry rooms, storage areas, fitness areas, and other common use areas.

(6) Installation of high performance linear fluorescent and LED<sup>4</sup> lighting will provide low lighting power densities for public areas.

(7) Community rooms, fitness center, and common areas will be serviced by high efficiency air source heat pumps with a 16 SEER<sup>5</sup> and 9 HSPF<sup>6</sup> rating.

(8) There will be a total heat recovery ventilation system providing fresh air and exhaust air for the fitness center.

(9) Domestic water heating will be centralized, condensing high efficiency boiler coupled with an indirect heat exchange/storage tank system which operates at 92-94 percent efficiency.

(10) Low water flow shower heads will be installed as well as low flow aerators on kitchen and bathroom sink faucets to reduce water heating energy and save water.

(11) Building elevators will have energy efficient regenerative drive systems to reduce energy consumption.

#### **b. Residential Apartment Units Strategies**

(1) An attic blown-in insulation system provides an R-50 insulation value over residential apartment unit ceiling areas in contrast to the R-37 energy code requirement.

(2) LED solid state lighting using linear and compact fluorescent lamps will achieve low lighting power density of 0.43 per square foot.

(3) High efficiency, inverter driven, variable capacity, ducted mini-split air source heat pump systems provide heating and cooling for the residential apartments at HSPF of greater than 11 and SEER of 20 at part load conditions.

(4) Energy Star qualified low energy fans in bathrooms will be six times as efficient as a standard fan.

(5) Each apartment will have a full complement of Energy Star appliances.

(6) Energy Star rated ceiling fan and light assemblies will be installed in each apartment.

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<sup>4</sup> Light-Emitting Diode

<sup>5</sup> Seasonal Energy Efficiency Ratio

<sup>6</sup> Heating Seasonal Performance Factor

**c. Supplemental Energy Efficiency Strategies**

(1) Retractable insulating quilted window coverings for windows and sliding doors will reduce infiltration and glass transmission energy losses.

(2) Insulation and air and moisture barriers in ceilings and walls with extensive caulking and sealing of building joints will tightly seal the individual apartments and reduce outside air leakage.

(3) Nightlights will be upgraded to Energy Star Qualified Bathroom Exhaust Fan 4 watts with a 0.8 LED nightlight.

(4) Clothes dryers will be vent less and will condense moisture in the airstream exiting the dryer and discharge the moisture into the washer standpipe and will recirculate the air.

(5) The cooking range with Convection Oven capability evenly circulates heated air around food, allowing lower oven temperatures and a 30 percent reduction in cooking time. This translates into a 20-30 percent reduction in cooking energy for a convection oven.

(6) High efficiency LED Solid State exterior/site lighting is proposed for all facility walkways, parking lots, building security and canopy lighting.

(7) Water efficiency strategies including low-flow toilets will operate at 0.8 gallons per flush, shower heads at 1.5 gallons per minute flow, and low flow aerators for kitchen and bathroom faucets.

**d. Management, Operation and Maintenance Strategies**

(1) Management will replace high efficiency fluorescent, CF<sup>7</sup> and LED lamps for tenants without charge. This will apply to a tenant's personal light fixtures as well as permanent apartment light fixtures.

(2) Permanent building and apartment light fixtures with pin type light bases will prevent lamp replacement with standard lamps.

(3) Management will inspect the HVAC equipment and change the heating/cooling equipment air filters four times a year.

**3. Master Metering at the Altoona Apartments**

Applicants propose that there be one master meter for both Altoona apartment buildings. The master meter will collect hourly data on the total electric energy used in both apartment buildings. The data will be used by MidAmerican to bill Applicants. In addition, each apartment building will have a general service/house meter to collect data on the energy use in common areas. Each individual apartment will be individually metered for the collection of data regarding individual tenant usage. MidAmerican will collect and analyze the data and the data will be made available to Applicants for use as part of the educational programs.

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<sup>7</sup> Compact Fluorescent

#### **4. Educational Programs**

(1) The tenant handbook will contain information regarding the energy efficiency strategies implemented at the apartment buildings and will provide tips and ideas to conserve energy.

(2) Applicants will provide a quarterly newsletter to each tenant which will include information from MidAmerican regarding energy use.

(3) Applicants plan to hold meetings semi-annually with tenants to discuss energy efficiency and to provide information regarding how tenants can maximize the efficient operation of the fixtures and appliances. MidAmerican will be invited to these meetings.

#### **5. Annual Report**

MidAmerican will submit a confidential report to Applicants each year. Applicants will review and comment on the report and then the report will be filed with the Board. The apartment buildings should be 90-95 percent occupied by June 1, 2015, and the first report will be filed on or about June 1, 2016. The report will contain data regarding total hourly load used in estimating cost of service, individual tenant's monthly energy consumption, and weather. The data will be collected and analyzed by MidAmerican and the report will show: (1) the average monthly use by tenants based on apartment size and number of occupants; (2) energy use comparison to the baseline references; and (3) a comparison of the average hourly load profile of the apartment buildings with the average of rental properties contained in MidAmerican's load research sample.

Data will be obtained by MidAmerican from each apartment and compared to several baseline references. One baseline reference will consist of the building energy system criteria that conform to current versions of the State of Iowa Energy Code; ASHRAE<sup>8</sup> Energy Standard 90.1 and National Appliance Energy Conservation Act. Actual energy use will be compared to a baseline of predicted energy use as determined by standard energy estimating methods and adjusted for weather, occupancy, and non-assigned energy loads. MidAmerican will also compare the data with data obtained from other multifamily buildings in the Des Moines, Iowa metro area.

The report will also include a summary and documentation of the educational programs provided by Applicants each year. Applicants will provide a comparison of the Altoona Tower's average tenants' baseline energy use during the reporting year as compared to previous years. This should provide some feedback on whether the educational programs have had any effect on the tenants' behavior.

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<sup>8</sup> American Society of Heating, Refrigerating, and Air-Conditioning Engineers

### **III. Legal Standards**

#### 199 IAC 20.3(1)"b"(4)

The amount of all electricity delivered to multioccupancy premises within a single building, where units are separately rented or owned, shall be measured on the basis of individual meter measurement for each unit, except in the following instances:

(4) Where individual metering is impractical. "Impractical" means: (1) where conditions or structural barriers exist in the multioccupancy building that would make individual meters unsafe or physically impossible to install; (2) where the cost of providing individual metering exceeds the long-term benefits of individual metering; or (3) where the benefits of individual metering (reduced and controlled energy consumption) are more effectively accomplished through a master meter arrangement.

If a multioccupancy building is master-metered, the end-user occupants may be charged for electricity as an unidentified portion of the rent, condominium fee, or similar payment, or, if some other method of allocating the cost of the electric service is used, the total charge for electric service shall not exceed the total electric bill charged by the utility for the same period.

### **IV. Staff Analysis**

Board staff participated in the meeting with Applicants, MidAmerican and Consumer Advocate held on November 13, 2014. The result of that meeting was an agreement that a master meter could be installed at the two apartment buildings in Altoona as a pilot project. Applicants, MidAmerican, and Consumer Advocate were to discuss the pilot project and file a proposed pilot project for Board approval. The pilot project would include a special rate developed by MidAmerican. Staff granted extensions of time for the parties to complete the process of developing the pilot project. When the last extension was given, staff explained that some type of filing would need to be made for Board approval before another extension would be granted. Staff agreed to the pilot project because of the energy efficiency actions taken by Applicants and because Applicants assert that these actions will not be financially viable unless the buildings are master-metered. It is anticipated that analysis of the data produced by the pilot project will provide insight on the issue of whether a building with energy efficiency measures taken by the owner, where electric usage is included as an unidentified portion of the rent, will result in reduced energy usage by tenants

The filing made on January 9, 2015, contains a description of the pilot project and indicates that additional information will be filed on or before February 27, 2015. Staff has reviewed the filing and believes the filing lacks details and clarity in several areas. The main purpose of the pilot project is to assist the Board in determining whether certain multifamily residential buildings can be allowed to master meter on the basis of energy efficiency improvements.

The project should be designed to give the Board sufficient information, independently verifiable, to decide whether master metering should be allowed at multifamily buildings where the owner installs similar energy efficiency fixtures and appliances and charge for electric usage as an unidentified part of the rent. Staff's concerns and recommendations are discussed below. Staff has also drafted several questions for the Applicants.

The filing states that the parties may supplement the pilot project with additional objectives at a later date. It is important that pilot projects begin with stated and well defined goals so that data collection and analysis strategies can be defined clearly to deliver credible results. Staff recommends that the parties include any additional objectives for the project in the February 27, 2015 filing.

The filing indicates MidAmerican's rate design for the pilot will be filed with the February 27, 2015 filing. However, it is not clear whether MidAmerican will make a tariff filing to get approval from the Board. Staff has drafted a question to clarify this.

Generally pilot projects are a test run for the final product. The filing does not discuss any end time for the project. Staff suggests that the pilot project be initially approved for a three-year period. Staff hopes that this will provide sufficient time to gather information to determine if the goals of the pilot project have been met.

The filing indicates that tenants are expected to be in the building by June 2015 and the first report will be filed with the Board by June 2016. Assuming that it takes about eight weeks to analyze the data and write a report, the report, if filed in the month of June 2016, will contain data for ten months. Staff believes that it is prudent to analyze data for a minimum of one year so that the data collection period covers one full summer and one full winter season. Staff recommends that the Applicants file the first report after monthly data is available for a full 12 months.

The list of energy efficiency items proposed to be installed is impressive, but has problems. Some strategies are described in detail while other items are described poorly or with confusing statements. Also, some items may not result in much energy savings, and seem to be designed as promotional amenities. Energy savings features are not accompanied by specific estimates of energy savings or identification labels which tie back to an appendix with more details, including operating parameters. Also, Applicants have not described the methodology that will be used to determine on a disaggregated basis the effectiveness, of individual measures, or even of groups of energy efficiency measures.

MidAmerican has committed to providing enough data to determine average monthly use of apartments, by apartment size and number of occupants. MidAmerican has committed to comparing an hourly load profile of the entire buildings to a MidAmerican load research sample. Most important, MidAmerican will somehow compare each apartment to several baseline references, as well as

compared to predicted energy use "determined by standard energy estimating methods . . . ."

The proposed monitoring and evaluation of the project is not very detailed. As was noted earlier, the filing does not state clearly what type of data will be collected and what metrics will be used to analyze the data. Staff believes a monthly kWh usage is not the only metric sufficient to analyze the project. Staff believes Applicants should expand on the application with specific details for all of the items (appliances, technologies, building components or sub-systems) listed as contributing significantly to energy use (equaling five percent or greater). The details and estimates of energy use should be assembled in a separate document for ease of reference. Staff believes this type of information is essential to determine anticipated savings for the project as a whole as well as savings for individual apartments.

Staff recommends that the Board require MidAmerican explore the possibility of sub-metering a sample of apartments with recording meters capable of measuring and storing energy use at smaller than monthly time period (e.g., hourly, 15-minute interval). Depending on the costs involved, such meters could be installed on a ten percent sample to help identify savings attributable to specific major energy uses, such as, heating/cooling, lighting, cooking, and plug load.

As mentioned in the preceding paragraph, MidAmerican has committed to providing enough data to determine average monthly use of apartments, by apartment size and number of occupants. It is also mentioned that apartment data will be collected on an hourly basis. Again it is not clear what data will be collected for apartments in the "experimental group" and what data will be collected for the apartments in the "control group." Staff believes this information is very important to perform data analysis that provides credible results. Staff recommends that MidAmerican and Applicants provide details regarding this.

Under the preliminary proposal, it is not clear how the usage for the common areas will be monitored or measured. Staff believes that sub metering may be needed for the common areas to identify and isolate their usage from the total building usage to determine the actual apartment-only usage. Staff recommends that Applicants and MidAmerican explore the feasibility of this type of sub-metering.

Applicants propose to implement a number of educational programs regarding energy conservation for the tenants as part of the pilot project. It is not clear in the preliminary proposal what specific educational programs will be used. Staff recommends that Applicants be asked to provide a more detailed description of the educational programs. For example, Applicants should provide what information will be included in tenant handbooks. Also, Applicants should include in the annual reports specific details of the proposed programs that were actually implemented.

This project may turn out to be a standard-setter for master metering of energy efficient multifamily buildings and staff considers it prudent for the Board to err on the side of requiring more information. MidAmerican should be asked if this project raises to the level of importance that energy efficiency funds should be used to defray the costs of some of the metering and analysis.

Based on the above discussion staff recommends that the Applicants and MidAmerican answer the following questions and file the following additional information in the filing to be made on February 27, 2015:

1. MidAmerican and Applicants are required to provide a complete list of objectives for the project.
2. MidAmerican will need to file a proposed tariff with the new rate for the pilot project. Does MidAmerican expect other customers to be able to take service under this pilot project rate, or is this available to just the Applicants?
3. How long do Applicants and MidAmerican anticipate the pilot project will need to continue until there is sufficient data to address the goals of the project?
4. Is it possible for MidAmerican to estimate energy use by metering common areas and to provide sub-metering for those areas?
5. Applicants should provide specific details, where possible, for all of the items (appliances, technologies, building components or sub-systems, and other measures) listed as contributing significantly to energy use (equaling five percent or greater). The details should include anticipated energy savings of each item.
6. Is it possible, and feasible, for MidAmerican to meter a sample of apartments with recording meters capable of measuring and storing energy use at smaller than monthly time period (e.g., hourly, 15-minute interval). If the costs are reasonable, can such meters be installed on a ten percent sample to help identify savings attributable to specific major energy uses, including heating/cooling, lighting, cooking, and plug load?
7. MidAmerican should specify what type of data will be collected for individual apartments, common areas, and the total buildings for the “experimental group” as well as the “control group.”
8. MidAmerican should describe, develop, and identify a set of metrics and describe the methodology that will be used to analyze the data collected.
9. Are there any privacy issues that need to be addressed, if MidAmerican is going to obtain individual apartment energy usage and analyze the data?

10. Staff believes there are metrics that will provide a yearly average usage, Btu, per square foot per year. Is it possible for MidAmerican to provide this type of comparison for these apartment buildings?

11. Will the information provided by Applicants with regard to the educational programs indicate how many tenants attended these meetings?

Once the response to the above questions and the additional information, including the special rate, is filed, staff will then complete its review and have a final recommendation for the Board.

## V. Recommendation

Staff recommends that the Board direct General Counsel to prepare an order for Board review that directs Applicants and MidAmerican to file additional information on or before February 27, 2015.

### APPROVED

/ciw	See comments below	<u>/s/ Elizabeth S. Jacobs</u>	<u>1-23-15</u>
			Date
	See additional question	<u>/s/ Nick Wagner</u>	<u>1/22/15</u>
			Date
	See comment	<u>/s/ Sheila K. Tipton</u>	<u>1/23/2015</u>
			Date

*What will be used as a "control" in this pilot to demonstrate that master billing and the actions and plans that are implemented have resulted in savings? NAW 1/22/15*

*I am concerned about tenant privacy, and suggest the following questions: What specific steps will be taken to protect tenant privacy? Will tenant permission be sought to enable MidAmerican and Applicants to collect apartment-specific information on energy consumption? What steps will be taken to protect the tenant's personal information from public dissemination? SKT 1/23/2015*

*I too have a concern about what will be used as a "control" for this pilot. Something needs to be identified to show the comparison between "normal" and pilot. Also, shouldn't there be an end to the pilot? It's left open-ended. ESJ 1-23-15*