



# ENERGY TO CARE *SUCCESS STORY*

## Avera McKennan Hospital & University Health Center

Spark struck at ASHE meeting leads to the energy journey that reaps significant reward.

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## Avera McKennan Hospital and University Health Center

### Flagship Facility of the Avera Health System

**Location:** Sioux Falls, South Dakota | **Square Footage:** 717,623 sq. ft. | **Licensed Beds:** 525  
**McKennen Hospital originally opened in 1911**

#### Team:

- Jim Kent, facility manager, Avera McKennan
- Tom Bosch, vice president of hospitality, Avera McKennan

#### Avera Health System:

- Formed in 2000 by the Sisters of the Presentation of the Blessed Mary of Aberdeen, S.D. and the Benedictine Sisters of Yankton, S.D.
- Provides services throughout a five-state region
- South Dakota's largest employer

## Overview

What do a bull, two sisters, and hospital energy reductions have in common? Avera McKennan Hospital! This Catholic-based hospital was originally opened and operated by the Sisters of the Presentation of the Blessed Virgin Mary (Presentation Sisters) of Aberdeen, South Dakota. In 2000, the Presentation Sisters joined with the Benedictine Sisters of Yankton, South Dakota, to form Avera Health. Avera McKennan serves as the flagship hospital for the Avera healthcare system. The Pope recently published an encyclical (or a papal bull) highlighting the need to live in ways that show care for the earth. In fact, Avera has been focused on care for the earth from its inception. The sisters organized the hospital on three pillars: compassion, hospitality, and stewardship. Avera McKennan's energy journey not only helps reduce costs to invest back into patient care, but also helps the organization to live its values and the teaching of the founders.

The papal encyclical and the voice of the sisters are important in framing the energy journey. Avera's vice president of hospitality, Tom Bosch, cites the sisters' sincerity about sustainability as a major spark for his understanding of the importance of energy reductions. On the other hand, the spark for facility manager Jim Kent really struck at the American Society for Healthcare Engineering (ASHE) Region 6 conference in Rochester, Minnesota. Kent, who is heavily involved in ASHE, heard a presentation about the incredible energy and cost savings potential for hospitals across the country. He recognized the opportunity for Avera McKennan and thought to himself, "we may be smaller than others, but I can do my part." Kent understood the opportunity to put stewardship into action and, embodying the proverb "a wise man listens to advice," followed the suggestions he heard at the ASHE meeting.

Avera McKennan's story is unique in its simplicity. Avera McKennan followed the advice of ASHE to achieve their mission, and in doing so, made a dent in energy savings contributing to the organization ethos.

## Objectives

Avera McKennan did not start their journey with a stated energy reduction goal, though Kent had a 2 to 5 percent savings target in mind. Instead, the system was started with the plan to follow good advice to live the organization's values.

### The Game Plan:

Avera McKennan's game plan to save energy was simple:

- Get involved with ASHE
- Listen to the potential opportunities
- Implement suggestions
- Improve, continually

## Solutions

The Avera McKennan team has used various strategies to help reduce energy use.

**Performance improvement:** Every year various departments across Avera McKennan are challenged to come up with a performance improvement project. Kent realized that this existing organization-wide challenge could become an opportunity to institute energy reducing projects.

**Data improvement:** At the start of their journey, Avera McKennan was getting their energy data four to five months after use. This delay had material effects. For example, to deal with a temporary problem someone turned a boiler on manually, overriding its automated control. This action negated the energy savings instituted by having the boiler run optimally on automatic control. The loss in savings was not apparent until the account information arrived. Avera McKennan has whittled the delay down to two months and is hoping to have access to daily data at some point.

**Huddles:** Kent's team has instituted daily huddles to help ensure the team is acting as one. The huddle serves to let everyone know what is going on, reduce overrides of the building management system, and help ensure that energy savings strategies are understood and followed by the entire team. Communicating on a daily basis, for example, why HVAC equipment has been placed in override, helps ensure that equipment is returned safely to automatic operation as soon as possible.

**Capital process:** Avera McKennan has a robust capital process and provides specific guidance on the organization's investment thresholds to make it easier to invest. For example, a project that has a three-year or less simple payback is seen as a sure investment. A project with a five-year payback will require more justification before it is accepted.

**Strong relationships between facility development and facility management:** A strong relationship between facility development (i.e., construction) and facility management (i.e., operation) is important. Such strong relations reduce instances of energy saving measures being taken out of the design of new projects.

Avera McKennan has also been successful in introducing and maintaining energy savings technical solutions. Several projects have been instituted:

**Air handling unit discharge reset (and boiler outside air-temperature lockout):** When the outside air temperature is 55 degrees or warmer, the facility turns off the hot water boiler. In concert with turning off the hot water, the discharge air temperature on the air handlers is allowed to rise to 65 degrees, as there is no ability to reheat with the hot water boiler off.

The 65-degree temperature allows the equipment to meet the temperature requirements of the warmest space.

Zones are pneumatically controlled and do not provide temperature feedback, so assessing when the zone temperature was satisfied was tricky. To make sure areas did not become too cold, facility staff used a handheld temperature sensor on a Saturday soon after boiler shutoff to check for and troubleshoot any cold spots.

**Lighting projects:** Avera McKennan has completed several lighting projects including last year's project to replace about 200 parking ramp 100-watt high-pressure sodium (HPS) light fixtures to 55-watt LED fixtures. This year's project replaced almost 500 light fixtures. These projects have a four-year payback. Kent and his team ensure that each lighting replacement project includes both 24/7 fixtures and ones with lower utilization since the lower utilized fixtures will never be replaced if they are not bundled with the higher utilization and thus higher payback lights.

**Variable frequency drives:** Where possible, Avera McKennan installs variable frequency drives (VFDs) to take advantage of potential energy savings. VFDs allow the facility to slow down fan and pump speeds when appropriate thus saving energy.

**Equipment replacement:** When the facility needs to replace equipment, Kent uses the opportunity to make energy efficiency improvements. For example, a planned project will replace a 25-year-old chiller with a smaller, more energy efficient version that has higher efficiency at part load conditions. This principle is also applied to new construction, where only LED lighting is installed and innovative solutions like chilled beams are sought out.

**Challenges:**

Avera McKennan quickly discovered that perceptions matter. For example, they learned that telling people who didn't understand building operations that "the boiler is off" led to more temperature complaints. They have since become as intentional about how they communicate as they are about doing excellent projects.

## Results

Avera McKennan rode the bull to excellent results. They have reduced their energy use by 9 percent since 2010 despite the fact that their building was originally at 70 percent capacity and has since added MRI and other energy intensive procedures. Performance improvement projects at Avera McKennan are tracked and the entire energy saving initiative was recognized as a top project.

**Impact from ASHE:**

ASHE and the ASHE community have been important parts of Avera McKennan's journey. ASHE was the spark that turned Avera McKennan's unique history and mission into action as it relates to energy efficiency. Avera McKennan has found support in the ASHE community and has used ASHE ideas and resources throughout their journey.

Kent and Bosch have come to realize the importance of celebrating energy success with their team and so plan to apply for and hope to celebrate an Energy to Care award win with the entire facility management team.

Avera McKennan intends to continue following its formula. Specific important projects are planned to improve energy use and allow them to “keep their eyes on the bull.” Avera McKennan is excited about using Energy to Care’s competition features to spread energy saving wins across the organization.

**What’s Next:**

Kent is part of South Dakota Healthcare Association and wants to get other groups to join Energy to Care; he hopes that others will see this ongoing success story and join in the journey. As Bosch put it, “We represent different organizations and different entities, but we’re all, at the end of the day, trying to accomplish the same thing, and that is to care for those we are called to serve.”

*The Energy to Care program, sponsored by Johnson Controls, encourages hospitals across the country to reduce their energy consumption by 10 percent or more over their baseline energy consumption. Since 2009, hospitals participating in the Energy to Care program have tracked more than \$67 million in energy savings. This free program includes a robust energy-benchmarking tool in addition to the awards. ASHE congratulates these hospitals for their leadership in reducing energy consumption.*



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