

## **Hoven, SD Green Project Business Case**

### **Green Reserve Project Type**

The city of Hoven, SD water system improvements project is being funded in part through the Drinking Water State Revolving Fund Loan (DWSRF) Program. The town of Hoven currently provides water service to approximately 511 people. This project proposes to replace cast iron pipe water lines (ranging from 2-inch to 8-inch) with polyvinyl chloride (PVC) pipe and increase line sizes to a minimum of 6-inch diameter. Other improvements include new gate valves, service lines, curb stops and fire hydrants. Other components of this project include replacement of water meters with remote reading capabilities, and construction of a 180,000 gallon ground water storage tank. Because of the age and condition of the current distribution system, and considering the water loss rate of 24 percent, replacing the water lines is critical to improving the water distribution throughout the city. The project will also address unaccounted for water loss rate which is higher than the industry-accepted limit of 15 percent. Replacing the water distribution system can be considered 'green' for water efficiency.

### **Documents submitted and reviewed by the State:**

1. "Facility Plan for the Water System in Hoven, South Dakota," by Helms & Associates, March 2009.

### **List of eligible Green Project Reserve components:**

1. Line Replacement = \$1,529,075
2. Remote Read Water Meters = \$182,130
3. Total project cost = \$2,332,055
4. Total DWSRF Loan/Principal Forgiveness = \$750,000/\$750,000
5. Total project cost eligible for Green Project Reserve = \$750,000

### **Green Reserve Project – Categorical Project:**

The remote read water meter portion of this project is considered categorically green and will not be further discussed as part of this business case. The line replacement part of this project is not considered categorically green as defined by the *2010 Clean Water and Drinking Water State Revolving Fund 20% Green Project Reserve: Guidance for Determining Project Eligibility* (April 21, 2010).

### **Green Reserve Project – Business Case Evaluation:**

As stated in the USEPA April 21, 2010 Guidance for Determining GPR Eligibility, for traditional projects that are not categorically green, for the project, or components of the project, to be counted towards the 20% requirement, the State project files must contain documentation that a clear business case for the project (or portion) investment includes achievement of identifiable and substantial benefits that qualify as Green Project benefits. The documentation should reference to a preliminary engineering or other planning document that makes clear that the basis upon which the project (or portion) was undertaken included identifiable and substantial benefits qualifying for the Green Project Reserve.

### **Green Project Reserve Type:**

This project meets the water efficiency and energy efficiency components of the Green Reserve guidance.

**Technical Component Evaluation:**

The water distribution system in the city of Hoven needs improvement. The original water system was installed in the 1940's and consists of 2- to 8-inch cast iron pipe. This pipe is in poor condition. The only PVC line within the distribution system is from the local wells into the distribution system, and the Mid-Dakota Rural Water System supply line. The city's water is supplied by the Mid-Dakota Rural Water System and by two city wells. The water is metered by the Mid-Dakota Rural Water System prior to entering the city's distribution system. The city blends their well water with the Mid-Dakota water to meet high demands. Based on the 2006 water usage records, the city of Hoven experienced a 24 percent water loss. This project will replace all the cast iron lines within the distribution system and loop several dead-end lines. Only the replacement of the cast iron lines will apply toward the Green Project Reserve.

The City would like to replace the old cast iron water lines with polyvinyl chloride (PVC) pipe and increase the line sizes to a minimum of 6-inch. Other improvements include new gate valves, service lines, curb stops and fire hydrants. This project will improve the distribution of water throughout the city and reduce unaccounted for water loss rates to within the industry accepted standard of 15%.

**Financial Component Evaluation:**

The project was chosen because it will reduce unaccounted-for water losses to an acceptable level. In addition, water quality will be improved throughout the entire system. The City pays Mid-Dakota Rural Water System \$0.40 per 1000 gallons of water. The in 2006 amount of water purchased was approximately 29,790,000 gallons, and the city pumped approximately 2,977,600 gallons for a total of 32,767,600 gallons of water distributed. Water sales for 2006 were for 24,761,400 gallons which is a difference of 8,006,200 gallons from what was distributed this represents a 24 percent water loss for the year. The water system study for Hoven assumes that the losses are a combination of water being lost from the distribution system, unmetered usage, and under reading meters. Using this assumption, the amount of water that will be recaptured yearly as a result of replacing the cast iron lines and water meters will be approximately 8,000,000 gallons. As a result, the city will realize a savings of \$3,200 per year as a result of the line replacement and water meter installation portion of the project.

**Green Reserve Project – Evaluation Conclusion:**

The State has determined that this business case identifies clear and substantial technical and financial benefits in accordance with USEPA guidance. As noted above, the green portion of the project will be \$750,000. The State contact is Mike Perkovich at 605-773-3128 or [mike.perkovich@state.sd.us](mailto:mike.perkovich@state.sd.us).

### 3.2 WATER DEMAND

To evaluate the City of Hoven's potential to meet the needs of the future, a review of past water usage records was completed. Records of water usage from 2004 through 2006 were obtained and utilized to create Table 3.2-1.

The sources and methods used to develop the information presented in Table 3.2-1 are described by the following:

- Water purchased per month is based on data provided by the City of Hoven.
- Water usage billed per month is based on data provided by the City of Hoven.
- Water pumped per month includes the amount of water purchased from Mid-Dakota Rural Water and water provided by the City's wells.

**Table 3.2-1 Water Use Records**  
Mid-Dakota Rural Water Usage

	2004	2005	2006		2004	2005	2006
Jan	1,952,000	1,880,000	1,846,000	Aug	3,896,000	3,547,000	3,215,000
Feb	1,006,000	1,754,000	1,747,000	Sep	2,958,000	2,172,000	2,900,000
Mar	2,316,000	1,575,000	1,587,000	Oct	1,897,000	2,138,000	2,467,000
Apr	1,894,000	1,946,000	1,981,000	Nov	1,921,000	1,852,000	1,972,000
May	2,414,000	2,099,000	2,790,000	Dec	1,730,000	1,664,000	2,329,000
Jun	2,338,000	2,182,000	3,082,000	Total	27,634,000	25,867,000	29,790,000
Jul	3,312,000	3,058,000	3,874,000				

City Well Water Usage

2004	2005	2006
3,661,600	1,280,500	2,977,600

Average daily usage for this report will be determined using water records from 2006. The City purchased 29,790,000 gallons of water from Mid-Dakota Rural Water. The City pumped an additional 2,977,600 gallons from the North Well. This is a total of 32,767,600 gallons. Water sales in 2006 were for approximately 24,761,400 gallons. The difference of just over 8,000,000 gallons is losses in the system and accounts for over 24% of the City's water usage. The typical reasons for losses in the system are leaks, slow or malfunctioning meters, fire fighting and water used at non-metered locations. There are some non-metered locations in the system that includes the City Hall and the City pool. Based on a recent conversation with City officials, the water meters need to be replaced. The City should try to keep the water loss below the generally accepted standard of 15%.

The Cass Clay Dairy Plant utilized 14,293,785 gallons of water in 2006. Using the total water purchased and pumped, the average daily usage would be 89,774 gallons, which is more than the available 60,000-gallon storage.

The maximum monthly community water usage in 2006 was 4,866,533 gallons, which results in a maximum daily usage of 156,985 gpd or 109.0 gpm or 307 gpd per capita.

A significant increase in water usage is noticeable during the growing months of May through September. It should be noted that above-average precipitation during these months typically lessens the increase in water usage just as the below-normal precipitation typically magnifies the increase in water usage.

### **3.3 PROJECTION OF WATER DEMAND**

Future water demand projections are the basis for establishing the water distribution system capacity and storage. These projections are based on historical data of per capita water flows and population projections to determine peak day and peak hour demands to ensure that the system is capable of meeting the future demands of the City. The future population of Hoven is expected to stabilize or show a slight decline. For this reason the present population is used for determining the future water demands and as discussed in