

MEETING DATE: November 5, 2012 ITEM NUMBER:

TYPE OF ITEM: Report

PRESENTED BY: Rapid City Public Libraries Board

SUBJECT/AGENDA TITLE: Downtown Library Energy Efficiencies and Green Initiatives Report

EXECUTIVE SUMMARY:

Introduction

The following report on the Downtown Library Facility and Operation's Energy Efficiencies and Green Initiative outlines the internal activities the libraries have implemented, which are designed to increase energy efficiency, reduce energy waste, lower peak electric demand, and improve air quality through fewer power generation emissions.

Energy management enables RCPL to lead by example for patrons and other organizations for the potential to reduce energy waste. The Facilities Supervisor works together with community partners to implement the organization's energy management strategies.

RCPL makes internal efforts to wisely use its resources through sustainable principles and employee awareness. Staff and internal departments work together to implement RCPL's internal initiatives.

FISCAL IMPACT: \$33,292 Energy Savings

BACKGROUND AND ISSUE ANALYSIS:

CONSERVATION, ENERGY EFFICIENCY and GOING GREEN

Paperless Newsletter and Notification Options

Patrons who subscribe to e-Newsletters forego printed newsletters, help reduce RCPL's paper and postage costs while also saving patrons time, increasing convenience and reducing solid waste. Based on postage and printing costs of \$.30 per newsletter, e-Newsletter participants helped RCPL save a projected \$14,400 since 2011, eliminating the use of 24,000 sheets of paper used in production.

In 2010 RCPL implemented automatic call and email reminders to patrons about overdue books. This avoided using approximately 13,000 sheets of paper and envelopes, as well as saving \$5,720 in postage costs.

Recycling

- **Paper** is recycled by A to Z shredding. Recycling containers are located in all offices and work areas as well as in patron area of the facility. In 2011, RCPL recycled 6,084 pounds of paper.
- **Plastic and Aluminum Beverage** containers are recycled by the City. Receptacles for plastic and cans are placed throughout the libraries, in both public and staff areas (inside and outside). Facilities staff also recycle cans/plastics from other trash receptacles.
- **Printer Ink and Toner Cartridge Recycling** – The Business Office takes all ink and toner cartridges to Office Max, who recycles the cartridges at no additional charge.
- **Battery recycling containers**
- **Cardboard and newspaper**
- **Fluorescent bulbs**

Printing

- In 2010 and 2011, the library undertook and completed a green printing initiative wherein printers were eliminated for centralized as well as replaced energy efficient, green printing printers were used for the same

type of toner. This created savings by purchasing only one type of toner and saved energy. The cost to run a printer is about \$18 per month. Therefore, the elimination of 17 printers saved the Library about \$3,672 last year. (<http://www.blackhillspower.com/pdf/SDTariff.pdf>)

Janitorial and Chemical Products

- **Low VOC and non-acid** cleaning chemicals
- **Multi-use green** cleaning chemicals
- Use of **recycled paper products**
- **Manual towel dispensers** (saving of batteries)

Energy/Green Efficiency Equipment Upgrades and Operations

- **Lighting , HVAC Systems, Water/Sewer and Structure:** Total Approximate Annual Savings: \$9,500

Several energy efficiency improvements to lighting, HVAC, water/sewer and structure systems and equipment have been or are in the process of being completed, with anticipated annual savings through lower energy consumption.

- **Lighting:** *Approximate savings \$1,500 annually*
 - Occupancy sensors for office and meeting room lights
<http://synergylightingusa.com/occupancy-sensors-save-electricity-leviton-energy-savings/>
 - Replacement of parking area lighting with high-efficiency fixtures.
 - Updated and replaced lighting switches
- **HVAC:** *Approximate savings of \$5,000 annually*
 - Updated procedure for starting and shutting down HVAC systems and facility lights
 - **Air Handler**
 - Energy-efficient motor starter drives installed on both air handlers
 - Variable speed electric motors
 - Seal damper replacements
 - Chiller coil replacement on Air Handler 1
 - Digital thermostats installed
 - Air handler 1 New VFD (variable speed driver)
 - Air handler 2 New VFD (variable speed driver)
 - Electronic actuators installed replaced pneumatic
 - **Boilers**
 - New Pumps
 - Chemical treatment for longevity of system
 - Replaced boilers 1 and 2, closed loop system
 - **Chiller Unit**
 - Replaced with unit 75% more efficient
 - Replaced pumps/cooling coil
 - **Rooftop Units**
 - Replaced RTU 1 with new higher efficient model
- **Water / Sewer**
 - Installed rain sensor for irrigation system
 - Installed water-conserving units on toilets and sinks (water use decreased by approximately 30%) <http://www.toiletabc.com/toilet-water-conservation.html>
- **Structure:** *Approximate savings of \$1,500 annually*
 - Replaced garage door with insulated one
 - Re-glazed all windows, seals, and building joints
 - Installed air curtain at downtown public entry to prevent cold air infiltration
 - Replaced front entry doors with insulated glass

In 2012, the following HVAC efficiency project will be completed:

- Climate Controls installing state of the art control systems for 3 rooftop units.
 - Cost: \$1,800 as a pilot project for Climate Controls
 - Approximate Annual Savings: \$1,500

Insight into how facilities use energy can help identify efficiency opportunities. At RCPL, control systems have been and are being installed to automate heating, ventilation and air conditioning (HVAC) systems in order to identify and resolve operations issues and reduce energy usage. Building automated systems (BAS) are installed at the Downtown Library building. In 2012, CIP requests were submitted to replace equipment at the Downtown Library.

Maintenance and Repair Schedule and Budget

The RCPL Facilities Maintenance and Repair Schedule and Budget are reviewed on an annual basis to provide a budget roadmap of capital improvements to RCPL’s facilities. Based on a 5-year horizon, the plan details existing facilities/equipment, new facility developments and equipment upgrade installations for more than 50,000 square feet of RCPL Downtown building space. The plan also provides profile and characteristic data for each existing piece of equipment, including age, type, original cost and replacement cost. This plan also provides for consistent preventative maintenance on the equipment.

FUTURE EFFICIENCIES AND INITIATIVES

Project	Comments	Estimated cost
Day lighting	System will leave lights off in sunlit areas	\$5,000 – \$10,000
Lighting upgrade	Completion of inefficient ballasts	\$2,000 – \$3,000
Window replacement	Energy efficient glass to replace original 1972 windows	\$25,000 - \$65,000
Skylights	2-4 on the main floor	\$10,000 - \$20,000
Solar and wind power	Rooftop units for electricity generation	\$10,000 – \$40,000
Gray water system	Collection cistern for irrigation, toilets	\$5,000 - \$8,000
Air handler replacement	Replace original units dating from 1972	\$65,000 - \$120,000 for AH 1; \$25,000 - \$50,000 for AH 2
Air-intake system	Replace roof-mounted unit with energy –efficient model	\$3,000
Heat system controls	Replace old pneumatic controls with digital	\$4,000 – \$6,000