

APPA Internship Project

GIS Based Inventory and Depreciation Schedule for HVAC & Related Equipment

City of Gillette, Wyoming

General Questions

Project Title: GIS Based Inventory and Depreciation Schedule for HVAC & Related Equipment

Project Description:

Municipal Utilities experience planning and procurement challenges which tend to be atypical when compared to the private sector. Due to the use of public funds and availability of reserve accounts, staff often finds themselves managing preventative maintenance, forecasting repair budgets, and purchasing new equipment with less than optimal data and limited funds. HVAC equipment presents a significant challenge due to replacement costs and installation obstacles.

The proposed project seeks to identify a method of tracking and documenting historical data, current configurations, and ascertain future equipment needs. The complexity of the challenge can be ameliorated by the use of GIS technology. This robust technology will store all HVAC inventory data throughout the City's portfolio of buildings. Data will include: location, photographs, serial number, installation data, life expectancy, alerts for preventative maintenance, repair logs, and replacement equipment.

The City seeks grant funding to support an intern in performing various tasks associated with the project. Tasks include: creating an inventory of all HVAC equipment, locating the equipment within City facilities, researching life cycles and replacement costs of equipment, and interfacing with the Finance Department to determine depreciation schedule.

The City is currently in the process of completing assigned activities for EPA's Partnership for Local Action. In addition, the City has partnered with DOE for the Better Buildings Challenge. Results from this project will be incorporated into an Energy Action Plan currently being developed by an EPA provided intern.

Application Questions

Short project description:

The proposed project seeks to identify a method of tracking and documenting historical data, current configurations, and ascertain future equipment needs as they relate to HVAC equipment. The complexity of the project can be facilitated by employing GIS technology. This robust technology will store all HVAC inventory data throughout the City's portfolio of buildings. Data will include: location, photographs, serial number, installation date, costs, life expectancy, alerts for preventative maintenance, repair logs, and replacement equipment.

Statement of the Problem

Municipal Utilities experience planning and procurement challenges which tend to be atypical when compared to the private sector. Due to the use of public funds and availability of reserve accounts, staff often finds themselves managing preventative maintenance, forecasting repair budgets, and purchasing new equipment with less than optimal data and limited funds. HVAC equipment presents a significant challenge due to replacement costs and installation obstacles.

Project Objectives

1. Create an inventory of all HVAC and relate equipment
2. Log all historical data
3. Identify life cycles and replacement costs
4. Establish a depreciation schedule
5. Work with GIS Division to create mapping of locations and data

Methodology

1. Intern will gather all available HVAC historical data
 - a. Use of "as-built" plans
 - b. Facilities Maintenance documentation
 - c. Past contracts and billing
2. Intern will photograph, document and locate all equipment
 - a. Measurements will be taken and noted on hard copy maps
 - b. Information will be relayed to GIS for digitizing
3. Intern will research lifecycles of current equipment
 - a. Use of ASHRAE and other trade resources
4. Intern will research energy efficient replacement equipment and relate costs
5. Intern and Sustainability Coordinator will meet with Finance Department to develop depreciation schedule

Description of equipment/hardware/system to be used

1. ArcGIS

Anticipated deliverable(s) to DEED

1. Description and examples of how to use GIS to manage HVAC related equipment
 - a. Related “lessons learned”
2. Description of depreciation schedule

Anticipated relevance and transferability of project results

Using GIS to manage Municipal Utility assets is a relatively new concept. However, as a responsible utility, energy efficiency is a critical component of operations. As a result, the ability to properly plan, forecast, and budget for energy efficient replacement equipment is essential to managers. The City of Gillette anticipates other utilities will benefit from the lessons learned while attempting to leverage this valuable tool.