

SECOND ANNUAL ENERGY MANAGEMENT REPORT

TOWN OF LITTLETON, NH
2015-2016

Compiled by the Energy Conservation Committee

Table of Contents

- Overview Page 3
- Expenditure by Sector Pages 4-10
- Expenditure by Department Pages 11-13
- Departmental Reviews Pages 14-30

OVERVIEW

First, the good news - actual expenditures on energy line items in 2015 dropped by \$15K, or 6%, compared to 2014. This total includes spending on heating, electricity, water, sewer, and transportation by the various departments.

Major factors contributing to these savings included:

- Lighting retrofits at several municipal buildings
- Lower overall oil/gas prices, and
- Conscientious energy management by the departments

Voters have supported energy improvements by approving several appropriation requests in recent years.

EXPENDITURES BY SECTOR

EXPENDITURES BY SECTOR

- Nearly 40% of the 2015 energy expenditures went to transportation costs (gasoline and oil for municipal vehicles). The next largest amount of spending was on electricity, followed by heating fuels (oil, propane, and wood pellets) with comparatively small amounts spent on water and sewer.

See figures 1-5 for details.

- Electrical sector costs were again dominated by streetlights, which accounted for about \$39K out the \$83K total (47%). It is anticipated that expenditures on streetlight will be reduced in the future concurrent with a more aggressive conversion to LED technology. Additional electrical sector cost savings should also be realized in 2016 at most municipal buildings with the completion of the lighting retrofit project.
- Heating sector costs were down about 6% compared to 2014 and transportation down 11.6%, while electricity use was up 4.6%

ENERGY EXPENDITURE BY SECTOR

(percentages in 2015)

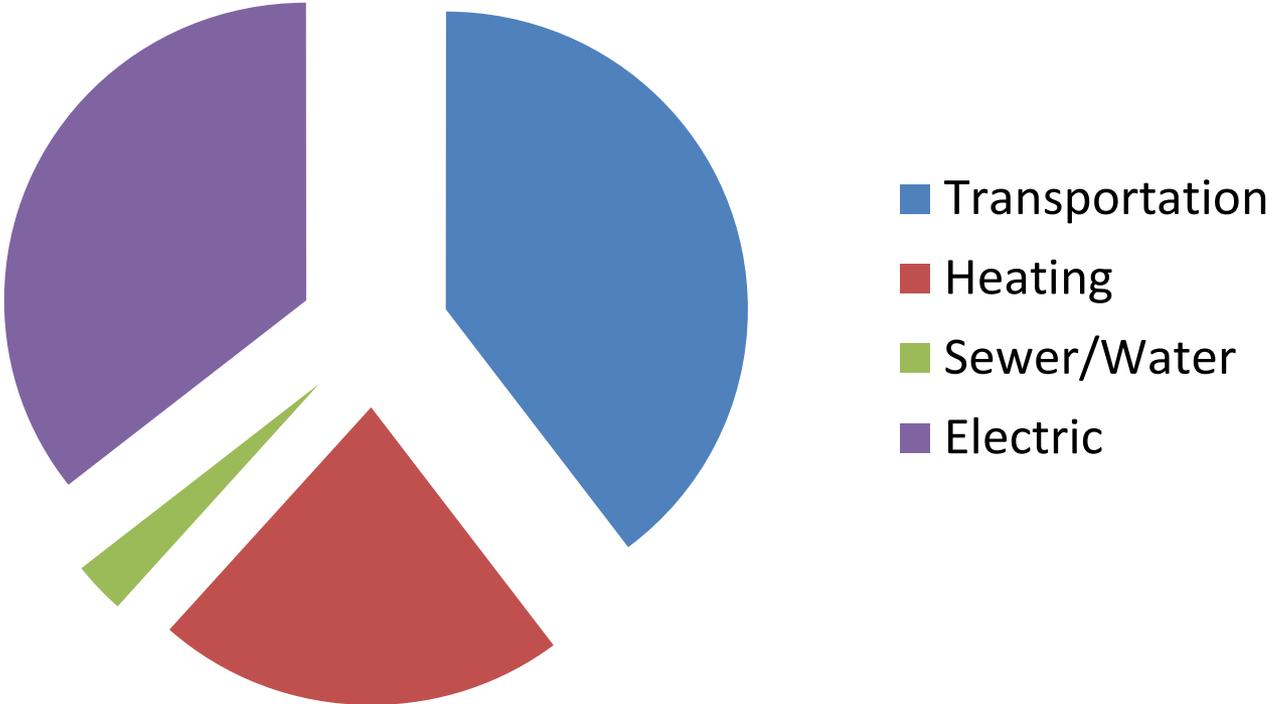


Figure 1

Transportation Fuel Costs

(Based on 2015 expenditures, in dollars)

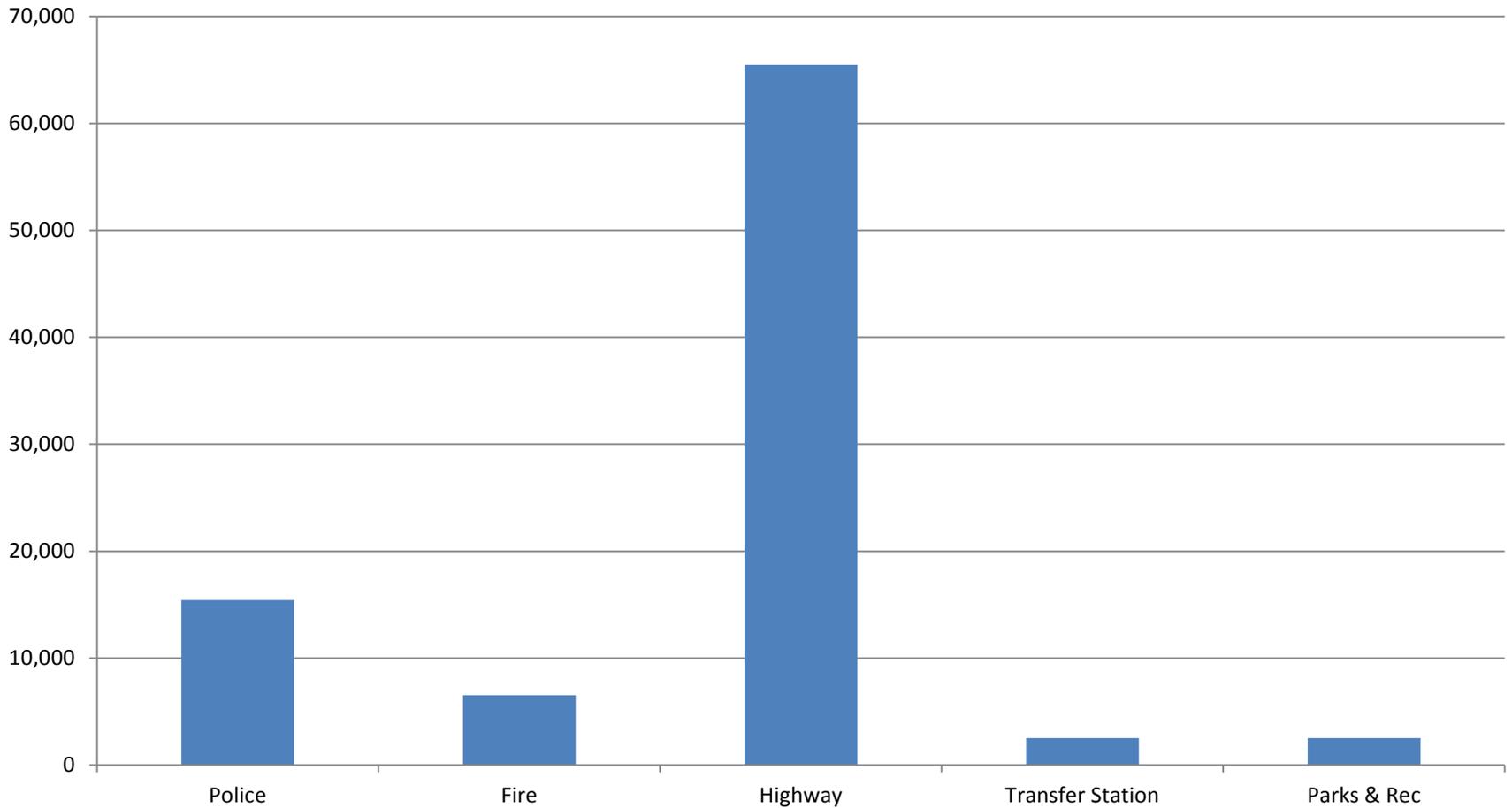


Figure 2

Cost of Electricity

(Based on 2015 expenditures, in dollars)

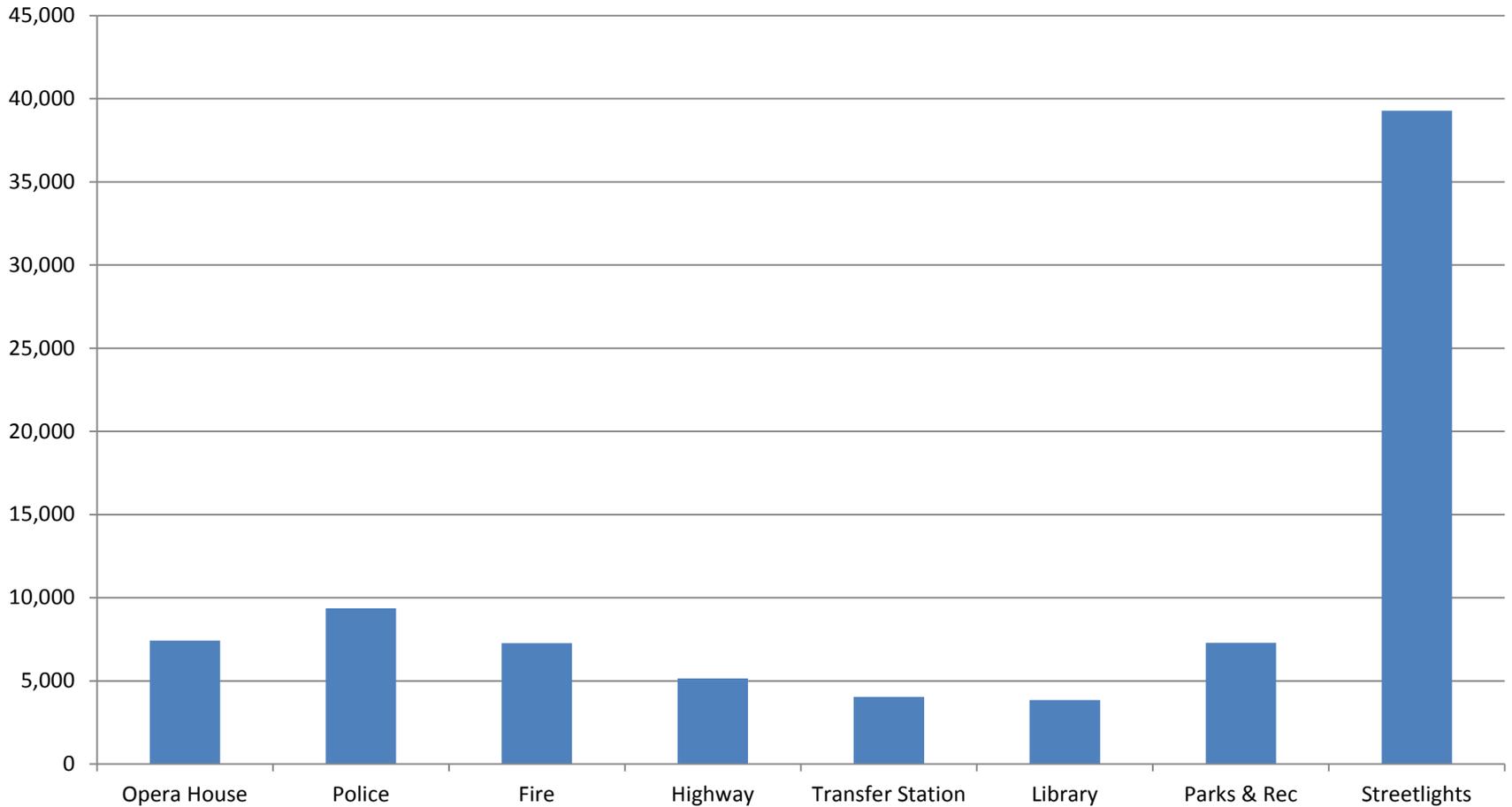


Figure 3

Cost of Heating (oil, propane)

(Based on 2015 expenditures, in dollars)

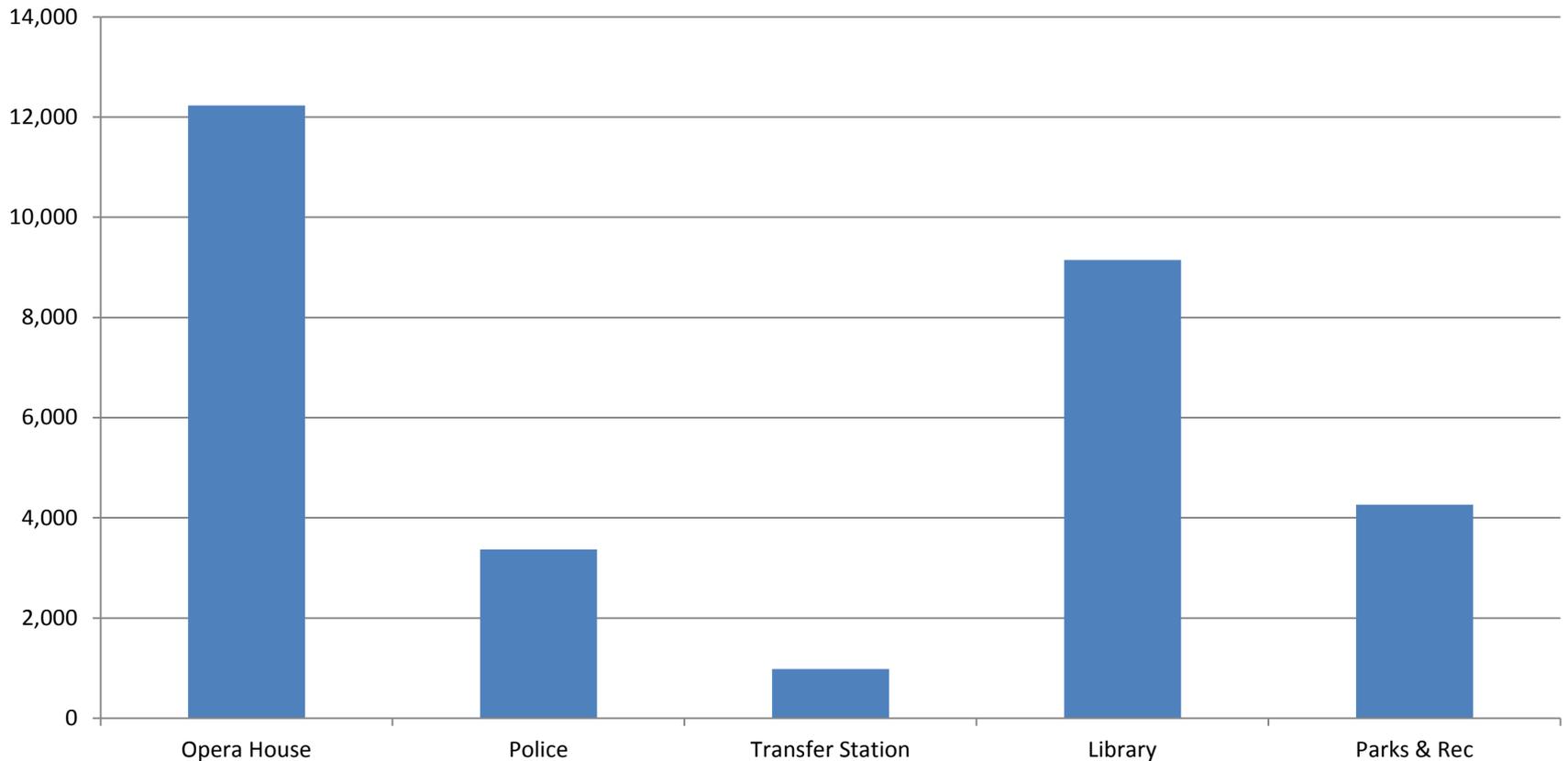


Figure 4

Cost of Water & Sewer

(Based on 2015 expenditures, in dollars)

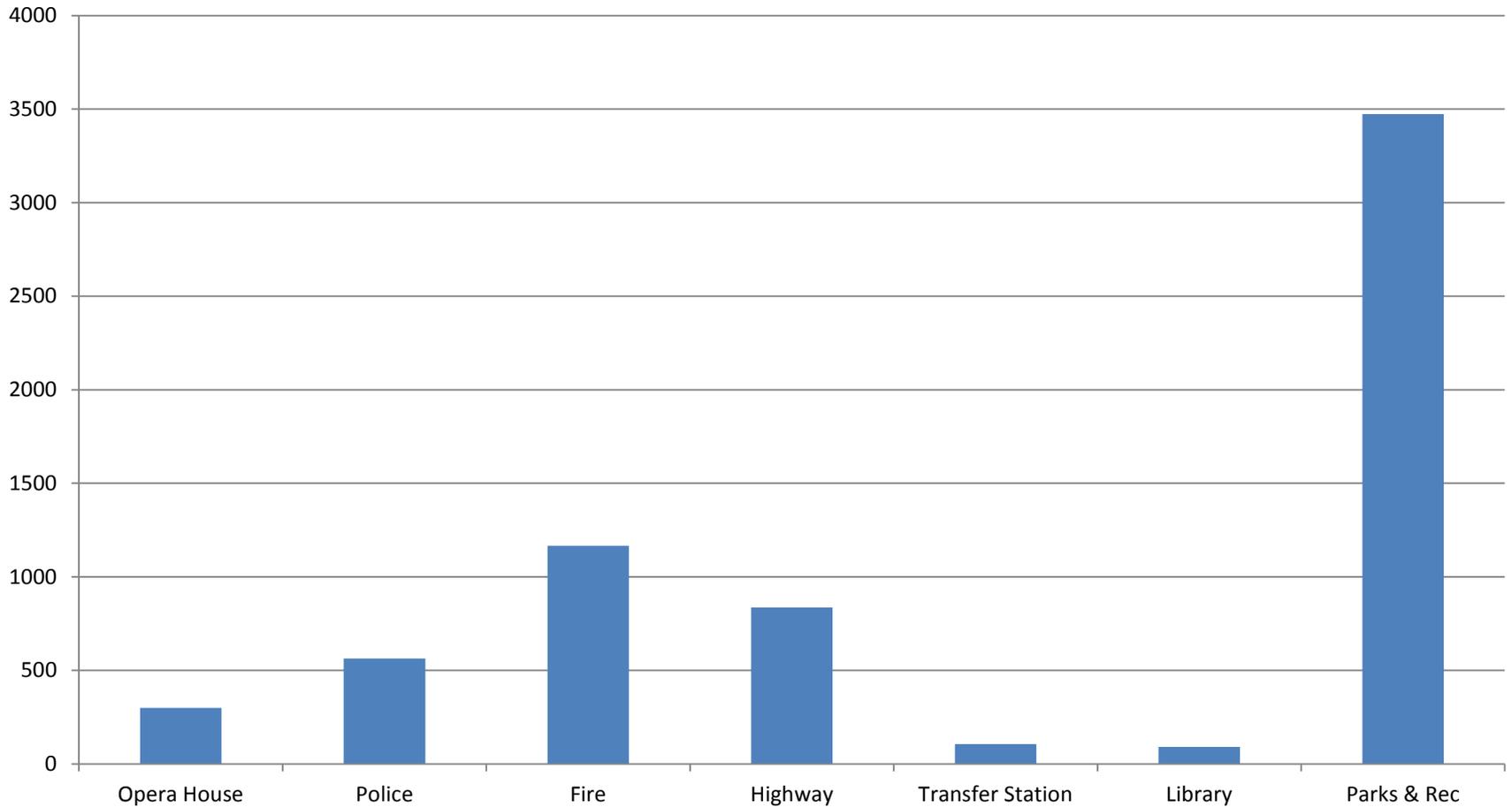


Figure 5

EXPENDITURES BY DEPARTMENT

EXPENDITURES BY DEPARTMENT

(See figure 6)

- By far, the least expensive department regarding energy costs was the Transfer Station, which accounted for only 3% of 2015 expenditures.
- The Highway Department was the most energy intensive (37% of the 2015 expenditures), primarily because of costs associated with its fleet of vehicles.
- Note: when making comparisons, not all departments have transportation costs (i.e., Opera House & Library). Consumption at each building will be presented later.

COST BY DEPARTMENT

(Based on 2015 expenditures, in dollars)

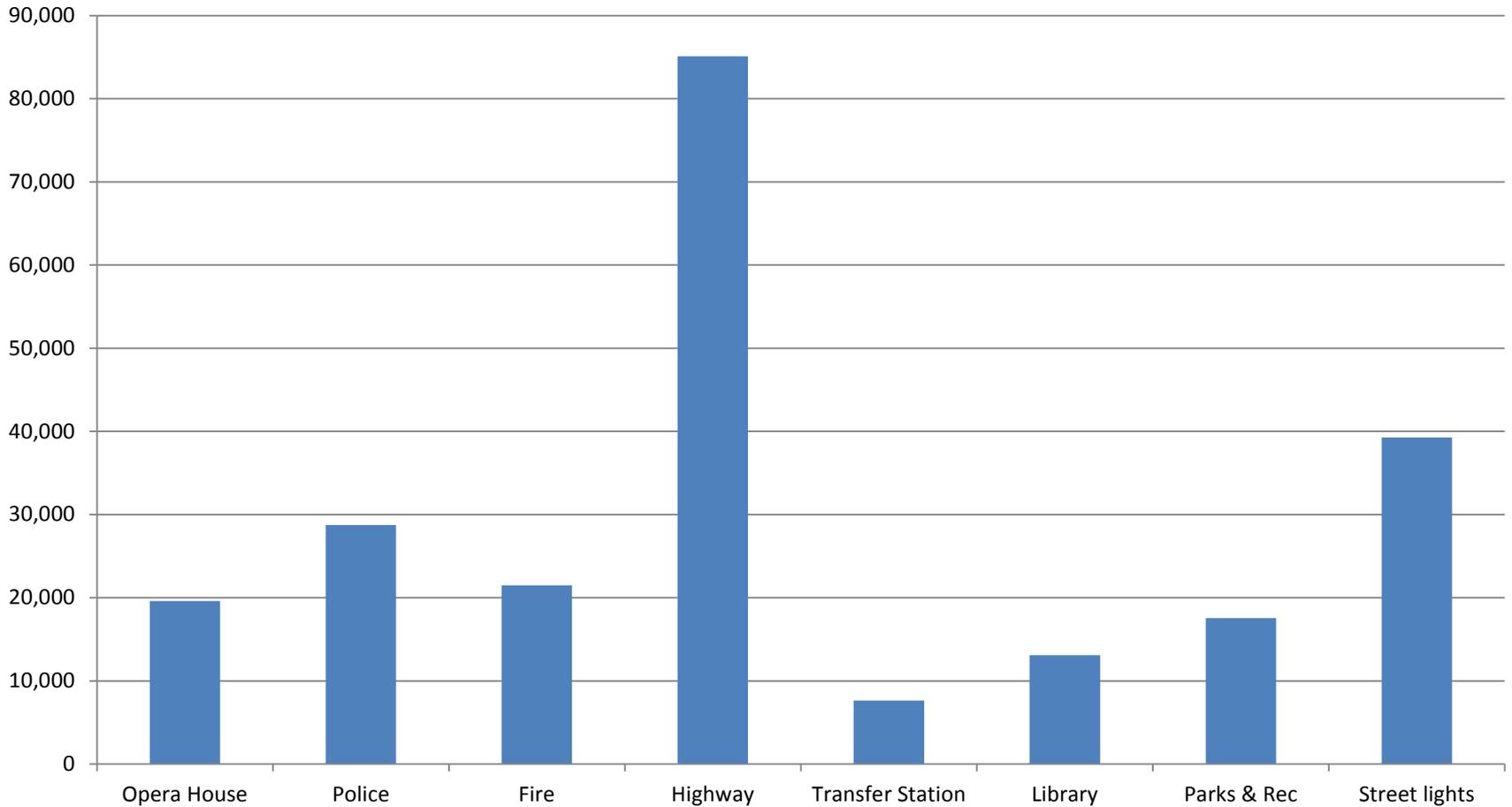


Figure 6

DEPARTMENTAL REVIEWS

Trends at the Opera House

- Energy consumption has been generally trending upwards as building usage has been increasing in recent years.
- Electric costs are expected to start going down starting in the summer of 2016 due to a lighting retrofit.
- Propane consumption was down in 2015-16 due in part to the replacement of two front doors and better thermostat management.

Propane Usage Trend: Opera House

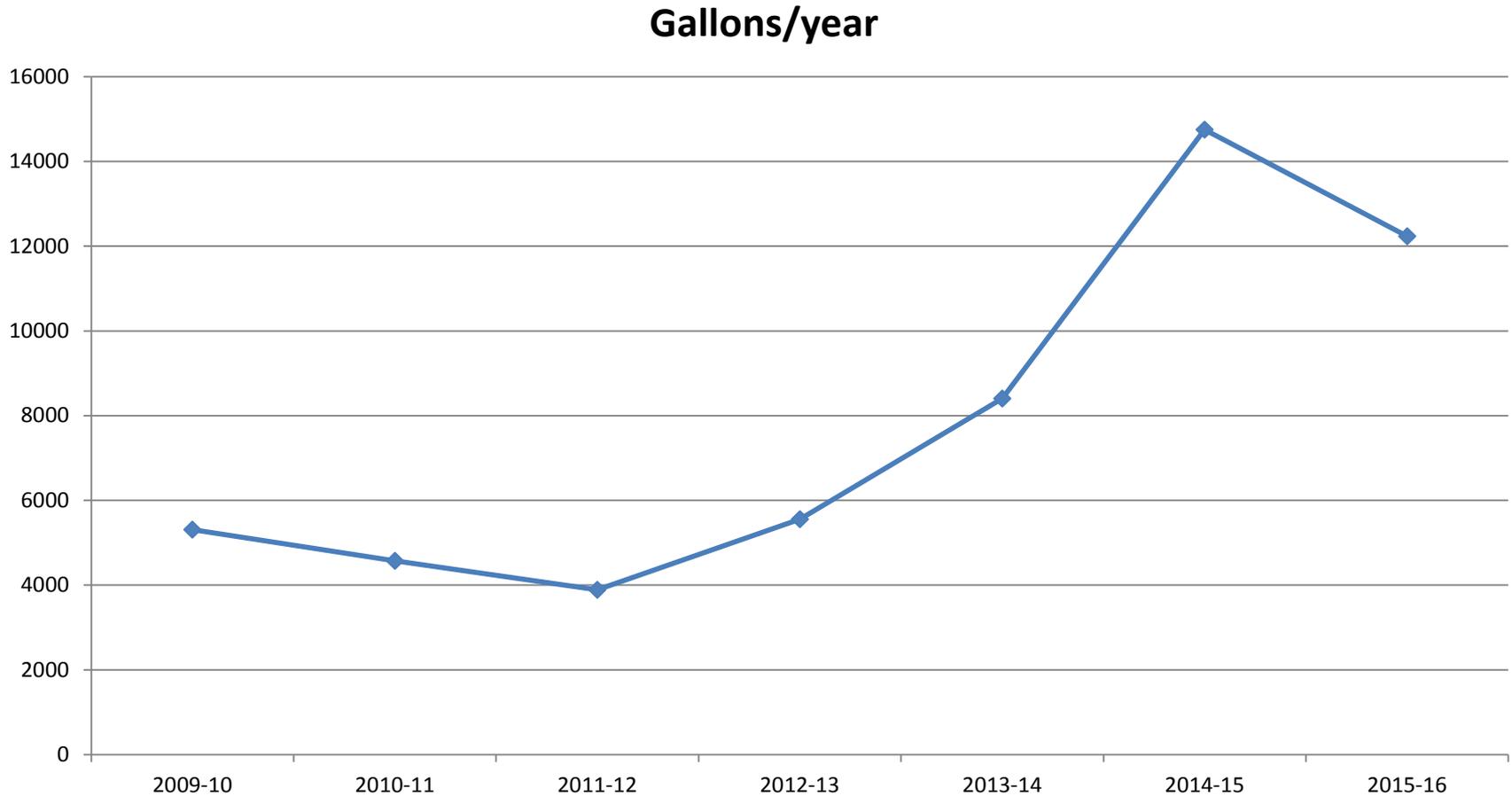


Figure 7

Electrical Usage Trend: Opera House

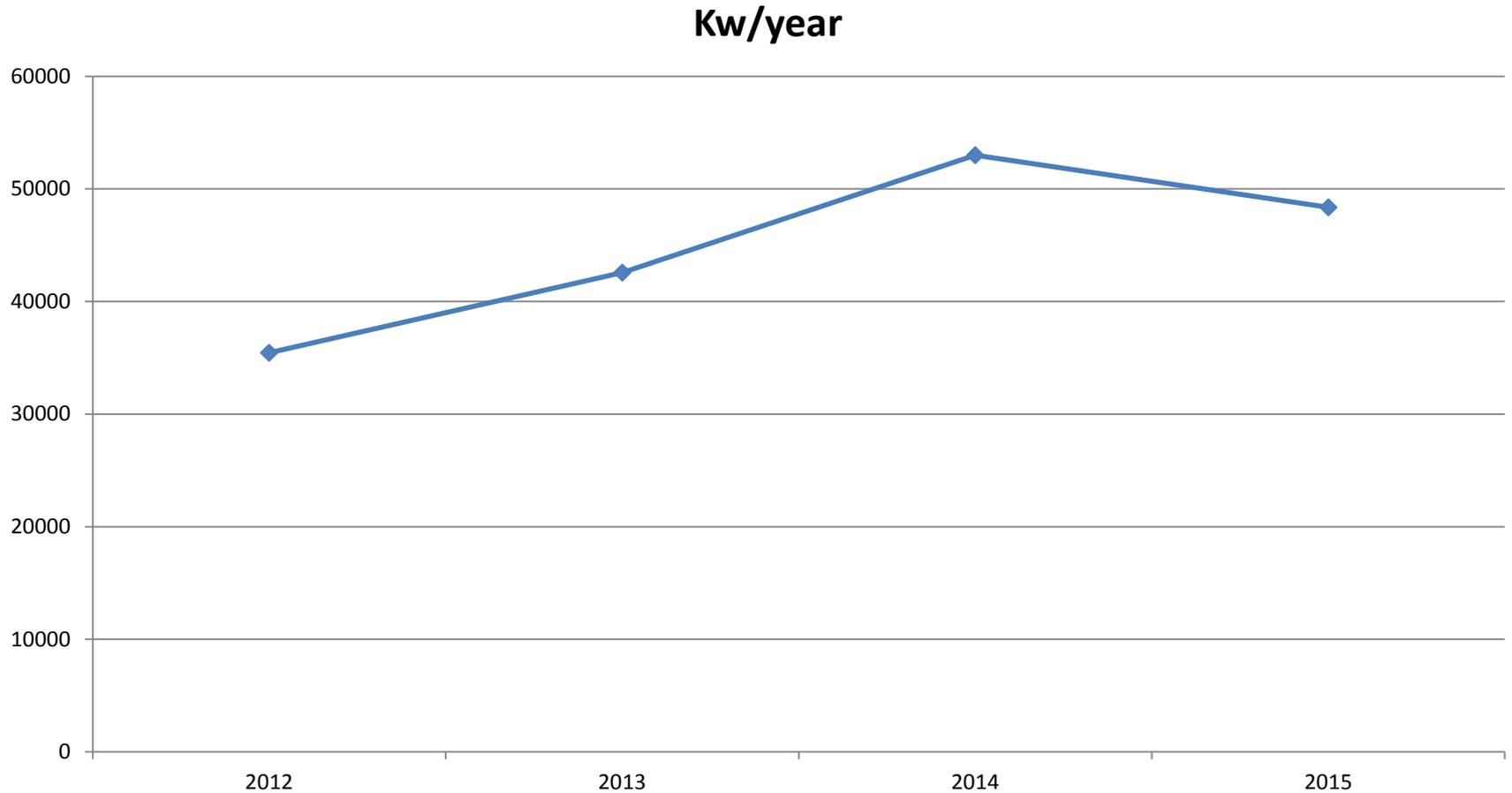


Figure 8

Improvement Opportunities : Opera House

- An energy audit conducted on the building in the spring of 2016 recommended insulating on the 2nd floor, the attic, and storage area.
- Various unresolved HVAC issues continue to negatively impact energy efficiency.
- Weatherization is needed around the stained glass windows.
- Window treatments in the Conference Room would improve energy savings and comfort.

Police Department

- Modest decreases in both electrical and heating consumption was noted in 2015.
- The decrease in electric usage may be due to better thermostat management.
- There is no spike in electrical during the air conditioning months, probably due to overall building energy efficiency.
- A long term goal would be to convert to a renewable energy source.

Propane Usage Trend: PD

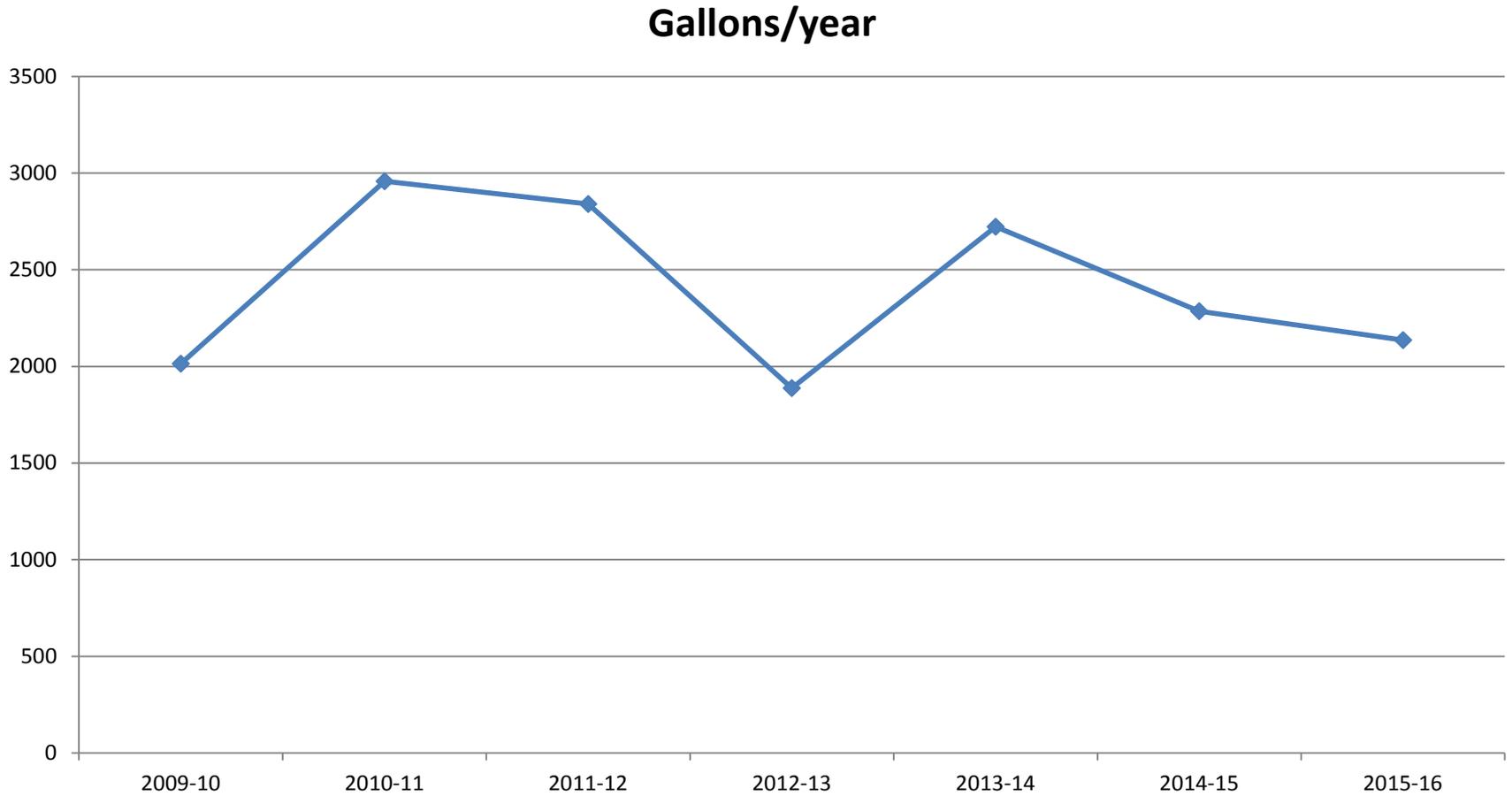


Figure 9

Electrical Usage Trend: PD

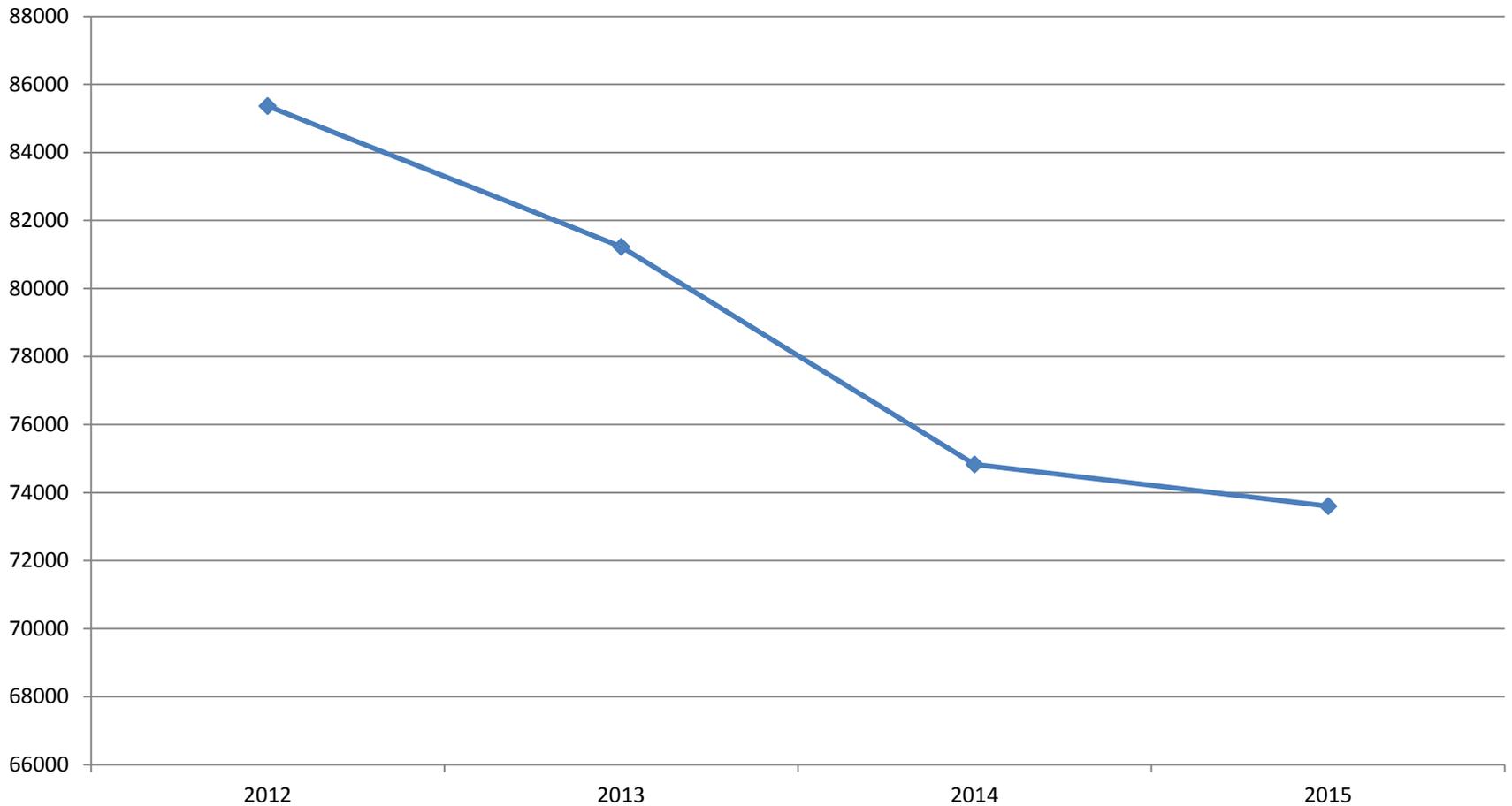


Figure 10

Transfer Station

- A 10% drop in electrical consumption has occurred since the lighting retrofit of 2015.
- Energy consumption is driven to some degree by the amounts of recycling received and processed, which has been trending upwards in 2016.
- Used motor oil continues as the primary heating source.
- The Transfer Station continues to operate in a highly efficient manner and there are no unresolved issues.

Electrical Usage Trend: Transfer Station

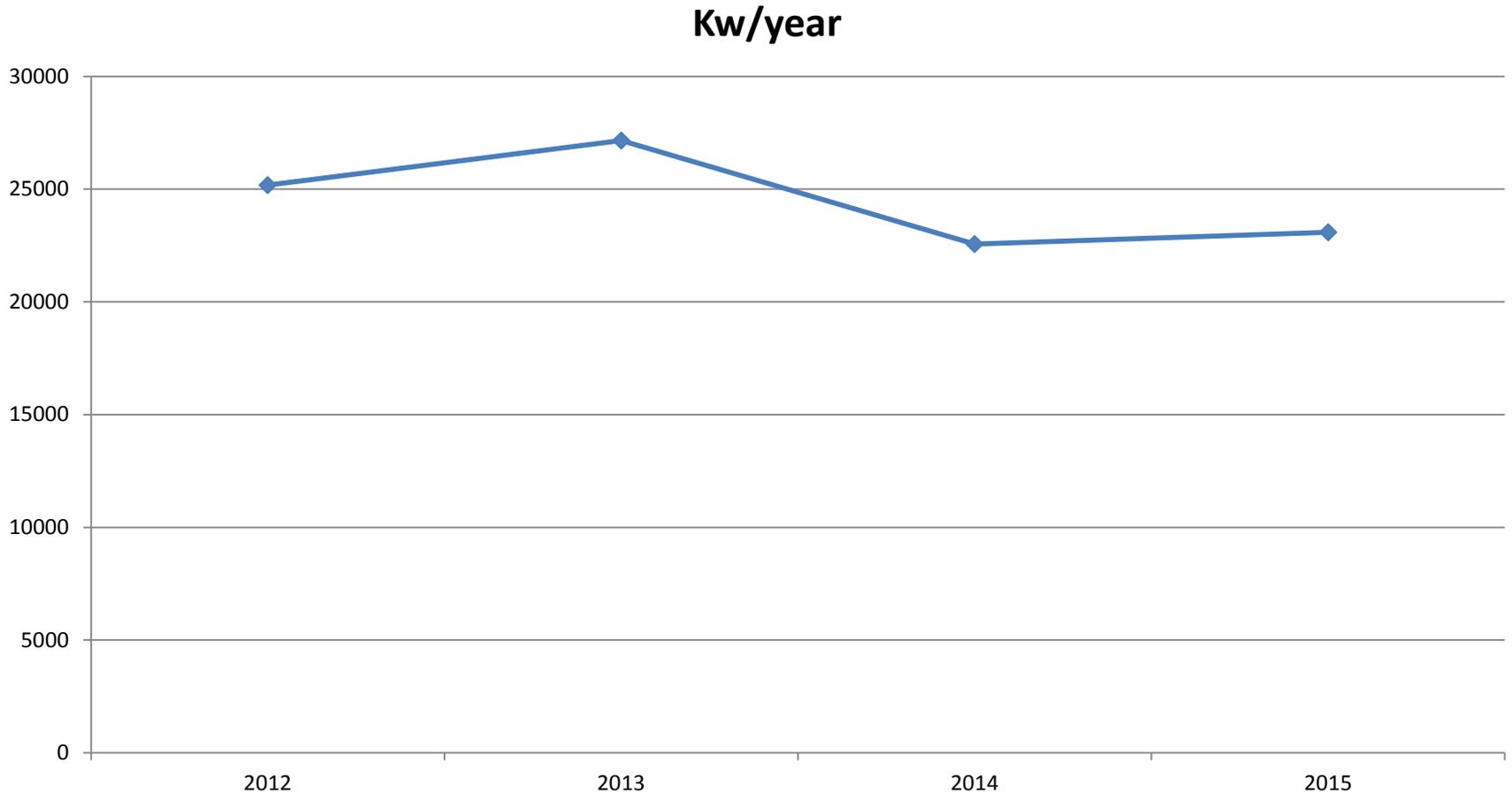


Figure 11

Public Library

- The library continues to make steady improvement in consumption.
- A nearly 25% reduction on heating cost was realized in 2015-16 compared to 2014-15.
- The downward trend in electric use continued.
- Two unresolved problem areas are:
 - Heat distribution within the building, and
 - Air loss around the windows

Fuel Usage Trend: Library

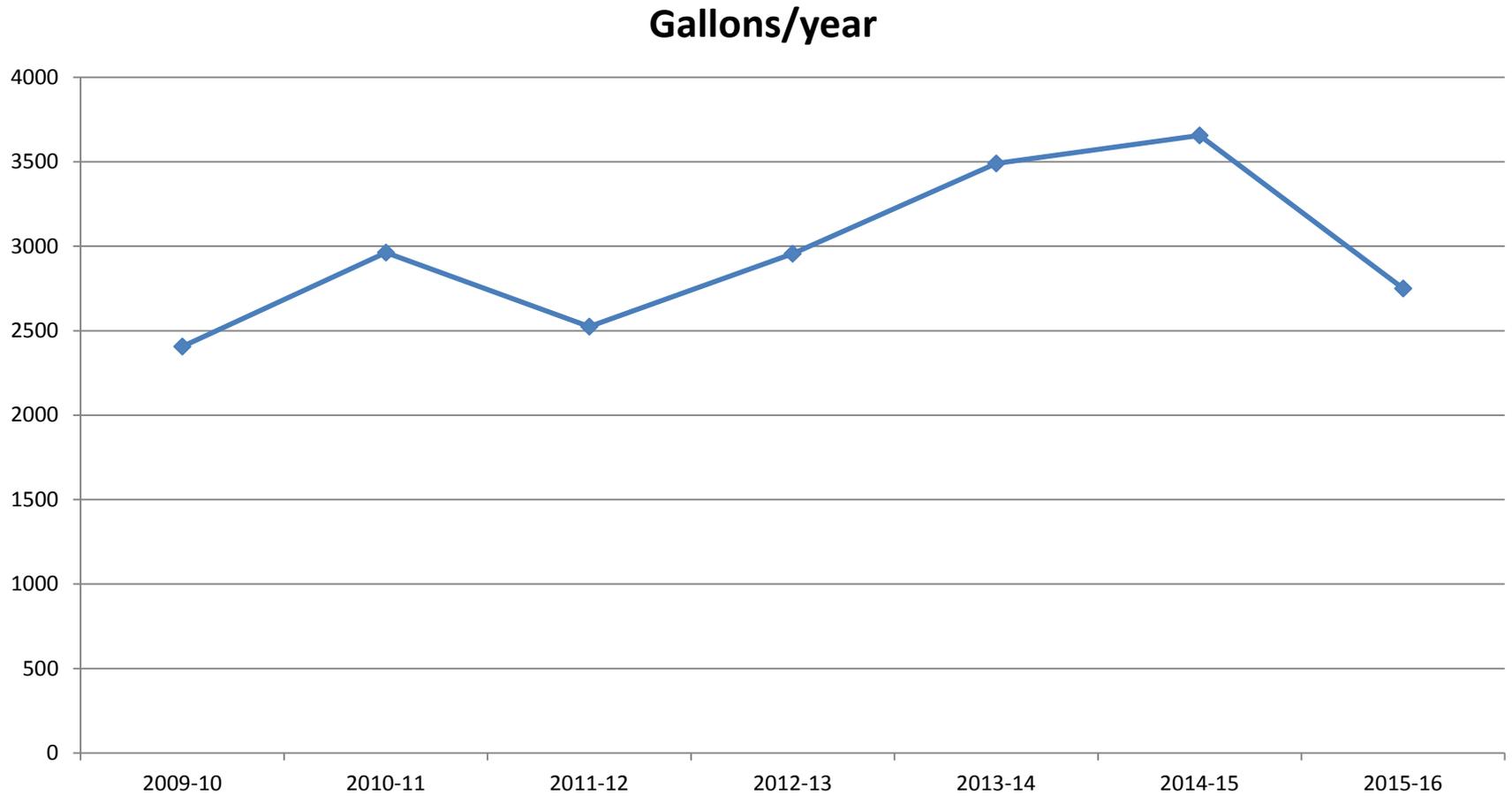


Figure 12

Electrical Usage Trend: Library

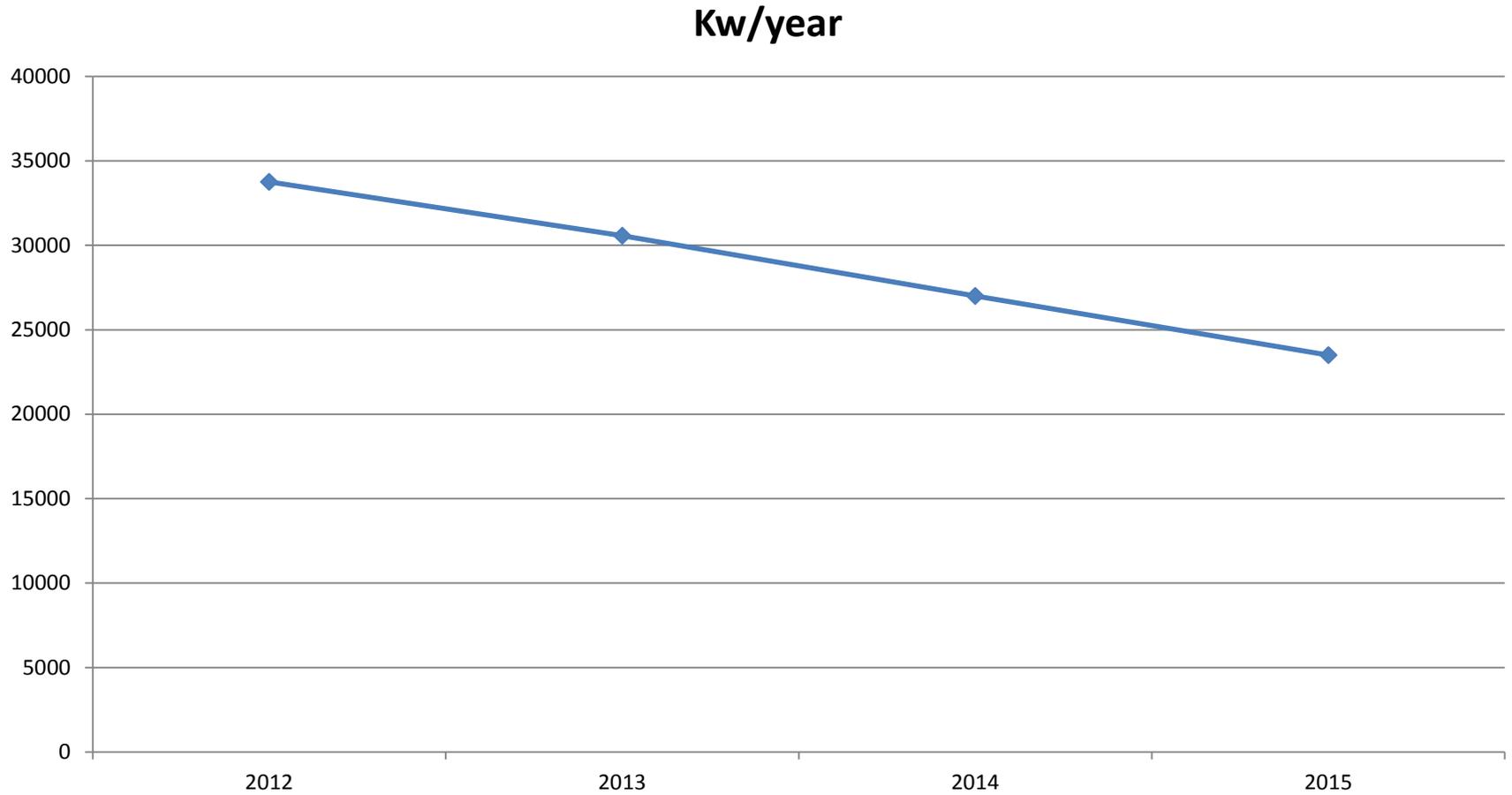


Figure 13

Parks and Recreation

- Reduced fuel and electricity use at the Main building have occurred since the office functions were moved to Daisy Bronson.
- An unresolved issue is the pool pump flow rate.
- Consideration should be given to the use of a pool liner v. resurfacing, and UV filtration v. the exclusive use of chemicals.

Fuel Usage Trend: Parks & Rec

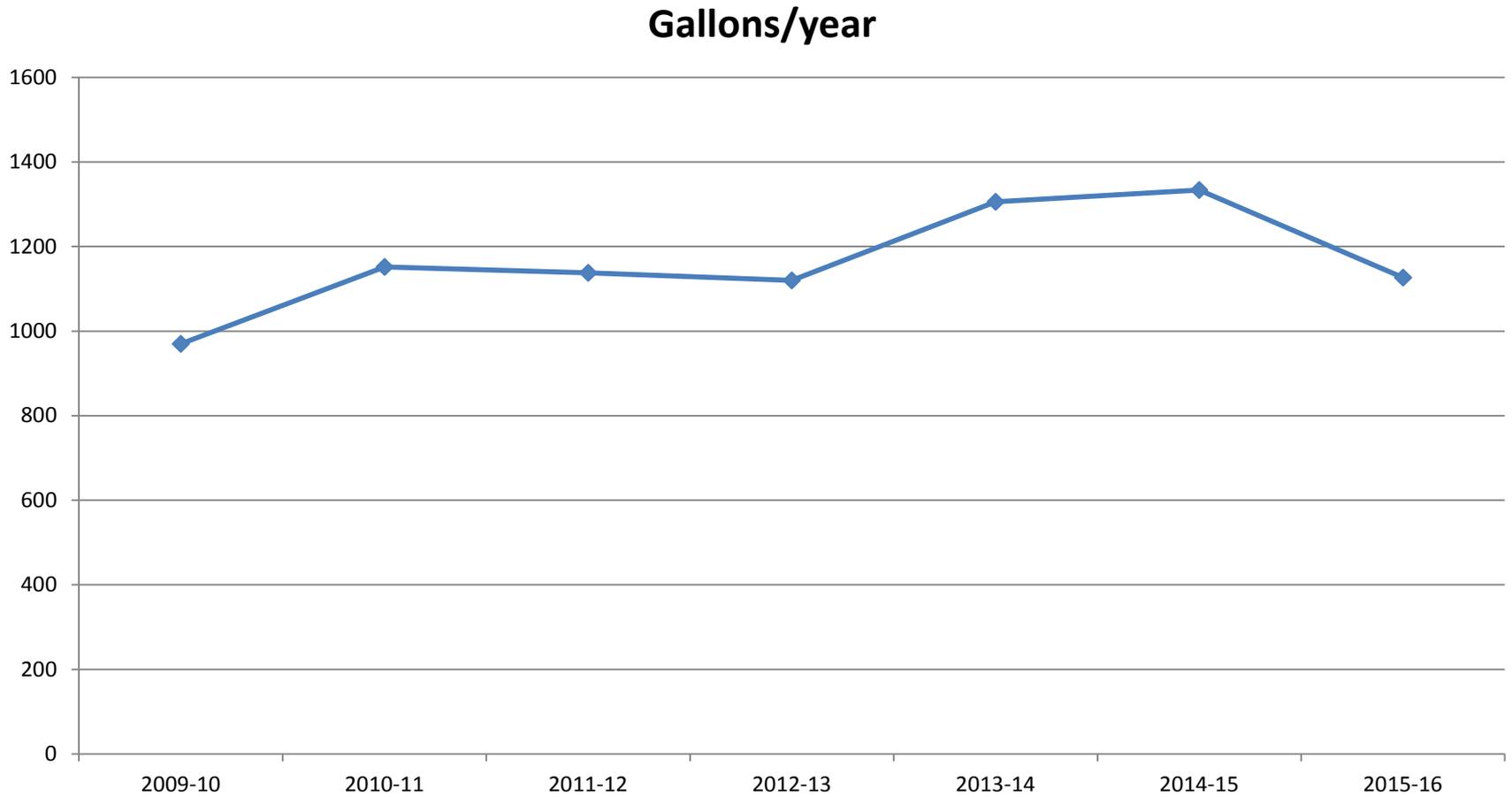


Figure 14

Fire Department

- A major lighting retrofit was completed in 2015.
- Action is underway to resolve a heat distribution problem at the fire house and to replace the aging oil burner with a propane system.
- Once installed, BTU meters will measure heat consumption at the fire house and highway garage. Right now it is impossible to determine how many pellets are being used at each building. Energy consumption will be reported next year.
- Some leaky or broken windows should be replaced, and the dryer should be vented to the outside.

Department of Public Works

- No energy baseline has been established yet for the highway garage built in 2015.
- The new garage has many energy efficiency features which should yield significant near and long term savings.
- As with the fire station, the installation of a BTU meter will enable wood pellet usage measurement. Energy consumption will be reported next year.