

Walla Walla Public Schools
February, 2017

Energy Overview

Energy Overview Notes

- Purpose: The purpose of this report is to identify the facilities and systems within the District that exhibit the greatest potential for improvement in the area of energy consumption.
- The main types of energy considered by the contributors are electricity and gas which represent a significant annual operating cost to the District.
- Wenaha Group collected information for this overview from a variety of sources including representatives from Pacific Power, Cascade Natural Gas, WWPS Facilities Staff and Energy Manager.

What Has Been Done?

- The Facilities Department and the District Energy Manager have a history of working together to identify potential energy improvement projects throughout the District and propose them for inclusion in annual maintenance budgets.
- Many of these projects have been implemented over the years and have resulted in nearly \$500,000 per year in reduced energy costs.
- The reduced energy costs achieved by these projects is usually enough to return the investment in 3-5 years.
- Even with these successes, there are many potential projects that do not get implemented due to limited budget and/or higher priority repairs.

Energy Related Building Components

- This report focused on a handful of building components known to have significant impact on energy usage and therefore most likely to provide a good return on investment for the District.

These components include:

- Lighting Fixtures
- Lighting Controls
- Airhandling Equipment
- Hydronic HVAC System Equipment
- HVAC Controls
- Window Systems

Availability of Incentive Funds

- Incentives are available through Pacific Power as well as Cascade Natural Gas to help with the costs of upgrading or replacing many of these energy related building systems and components.
- Prescriptive Incentives: Provides a per unit incentive for replacing an eligible component or system. Some common items with prescriptive incentives include:
 - Light Fixtures
 - VFD's (Variable Frequency Drives) for motors and pumps
 - High Efficiency Boilers
 - Windows
 - Roofing (Cool Roofs)
 - Insulation
- Custom Incentives: Provides incentive based on calculated energy savings for complex items such as HVAC controls upgrades or replacement projects.

Green Park Elementary School

Energy Efficient:

- New cooling tower
- LED lighting in common spaces
- VFD's on primary pumps
- Added vestibules and fans

Potential Improvements:

- Boilers original to 1995
- T-8 lighting in classrooms
- No lighting controls
- VFD's on remaining pumps and motors
- Needs roof soon and incentives available
- Needs heat pumps soon and incentives available



Sharpstein Elementary School

Energy Efficient:

- HVAC controls
- VFD's on primary pumps

Potential Improvements:

- Boilers original to 2000
- T-8 lighting throughout with metal halide in gym
- No lighting controls (time clocks on exterior)
- VFD's on remaining pumps and motors
- Comp roof needed soon and incentives available



Blue Ridge Elementary School

Energy Efficient:

- Lighting upgraded to T-8
- VFD's on motors and pumps
- Double pane windows

Potential Improvements:

- Boilers original to 1982
- Chiller original to 1982
- T-8 lighting could be upgraded to LED
- No lighting controls
- Radon issues cause ventilation system to run overtime



Garrison Middle School

Energy Efficient:

- VFD's on primary pumps (old versions)
- Some lighting controls (classrooms)

Potential Improvements:

- Lighting is mostly old style T-8 and needs upgrading throughout
- No lighting controls in common spaces
- VFD's on remaining pumps and motors
- 2 Boilers need upgrading
- 1 chiller needs upgrade
- Roofs needed soon and incentives available
- A lot of heat gain experienced at S. stairwell windows



Sea Tech Skills Center

Energy Efficient:

- Building is new and generally exhibits energy efficient components throughout

Potential Improvements:

- NA



Edison Elementary School

Energy Efficient:

- Building is new and generally exhibits energy efficient components throughout

Potential Improvements:

- NA



Lincoln High School

Energy Efficient:

- NA

Potential Improvements:

- All HVAC equipment needs upgrade
- Single pane windows
- Lighting upgrade needed
- Insulation needed
- Controls needed



Pioneer Middle School

Energy Efficient:

- Lighting upgraded to T-8
- New chiller
- New boiler
- New control system HVAC

Potential Improvements:

- No lighting controls
- No VFD's



Prospect Point Elementary School

Energy Efficient:

- Lighting upgraded to T-8
- AC Units new in 2000

Potential Improvements:

- Lighting upgrade to LED
- No lighting controls
- Single pane windows everywhere
- Uninsulated exterior walls
- DHW tanks are aged and not DDC controlled



Berney Elementary School

Energy Efficient:

- New boiler

Potential Improvements:

- No lighting controls
- No VFD's
- Needs new chiller
- No DDC controls (pneumatic now)
- Single pane windows



Walla Walla High School

Energy Efficient:

- New domestic HW heaters in kitchen/commons/both gyms
- LED lights in small gym

Potential Improvements:

- Lighting is mostly original
- Older inefficient boilers (3)
- No VFD's
- No lighting controls
- HVAC controls upgrade needed (portions still pneumatic)
- Single pane windows



Potential Improvements by Type:

Candidates for Boiler Upgrade:

- Garrison
- Blue Ridge
- Lincoln
- Wa-Hi
- Green Park
- Sharpstein

Candidates for **Moderate** Need Lighting Upgrade:

- Green Park
- Sharpstein
- Blue Ridge

Candidates for **High** Need Lighting Upgrade:

- Garrison
- Lincoln
- Prospect Point??
- Wa-Hi

Candidates for chiller upgrade:

- Blue Ridge
- Garrison
- Berney

Candidates for HVAC Controls upgrade:

- Lincoln
- Berney
- Wa-Hi

Potential Improvements by Type:

Candidates for Lighting Controls Installation:

- Green Park
- Sharpstein
- Blue Ridge
- Lincoln
- Pioneer
- Prospect Point
- Berney
- Wa-Hi

Candidates for Window Replacement:

- Lincoln
- Prospect Point
- Berney
- Wa-Hi

Candidates for VFD Installation:

- Lincoln
- Pioneer
- Berney
- Wa-Hi
- Green Park
- Sharpstein
- Garrison

Other Notes from Pacific Power:

- New building incentives available as well (efficiency beyond code)
- Suggested District-wide Exterior Lighting Upgrade
- Energy Star rated comp roof is now available
- 1990's vintage lighting can often be retrofit rather than replaced
- HID lighting in Wa-Hi big gym is prime for upgrade
- New incentives available to retro-fit HVAC packaged units
- If Wa-Hi receives renovation consider separate metering rather than current primary metering (current primary components are past useful life, District is currently responsible for transformers)
- "Cool Roofs" incentives are available for roof replacement projects
- Incentives available for window replacements (generally not as cost effective as other measures)

Additional Considerations:

- Geothermal Heating System
 - Wa-Hi has an existing well that reportedly produces 60-70 degree water. It is thought that this could make the campus a prime candidate for a ground loop hydronic system.
- Wa-Hi Irrigation Source
 - Approximately 33% of the campus is irrigated using the District owned well and 66% uses city water. Reconfiguring the system to eliminate city water could eliminate significant annual costs.
- Green Park Irrigation Metering
 - Installing separate metering for irrigation water could result in lower costs for water.