Sustainability

March 21, 2022

Sustainability

Strategic Long-Term Goal (2019 - 2023)

- Promote sustainability and reduce the environmental footprint.

Leadership Council Potential Members

- Start with Students (Graduate Portrait and Six School Club)
- Strengthened with Staff
- Supported by Parents
- Connected to Key Partners
- Collaboration with Townships
- Board Representatives (Dr. Matt Mehalik and Mr. Joe Cassidy)

Action Plans (2021 – 2022)

- Bulb Replacement and Energy Awareness Messages
- Educator Corporation Partnership (ECP) K-12
- Paper Reduction
- Preventative Testing
- Propane Bus Extension
- Green Cleaning Products
- Leveraging Sapphire
- Leadership Council and Six-School Club
- HVAC Evaluation and Replacement

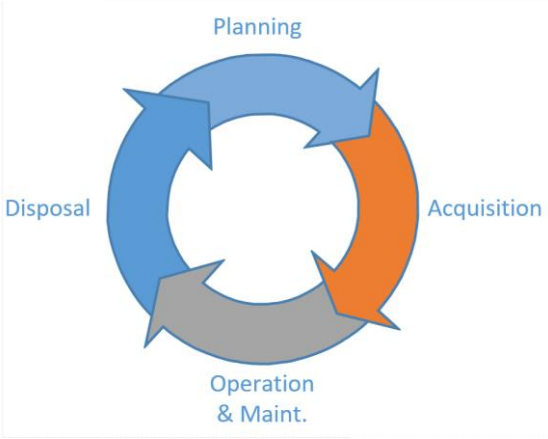
Sustainability Considerations
District HVAC Replacement Strategy

March 21, 2022

Meeting Agenda

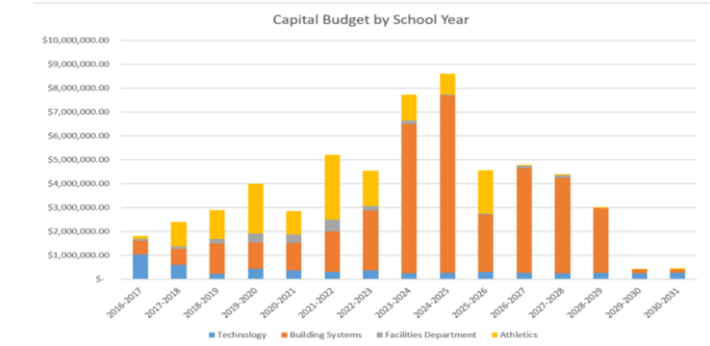
- Asset Life Cycle Management & Capital Funding Plan
- HVAC Replacement Strategy (District Overview)
  - Assessments
  - Decision Criteria
  - Options
- Implementing Our Strategy - MS
  - Understanding Current Equipment and Assessment
  - Repair History
  - Options
  - Initial Ideas
- Next Steps

Asset Life Cycle Mgmt & the CFP



	Equip. Age (yrs)	Systems	Current Yr. 19-20	1 20-21	2 21-22	3 22-23	4 23-24	5 24-25	6 25-26	7 26-27	8 27-28	9 28-29	10 29-30
High School	7-26	Boiler / Chiller / RTU / AHU	$100k (paid)								$2M - $4M		
Stadium	18	RTU								$200k - $500k			
Middle School	23	Boiler / DX					$3M - $5M						
Eden Hall	11	AHU / RTU									$750k		
Wexford Elem.	21	Boiler / DX / RTU			$150k			$2M - $4M					
Hance Elem.	18	Boiler / Chiller / RTU / AHU				$150k					$2M - $4M		
Richland Elem.	16-26	Boiler / Chiller / AHU						$2.5M - $4.5M					

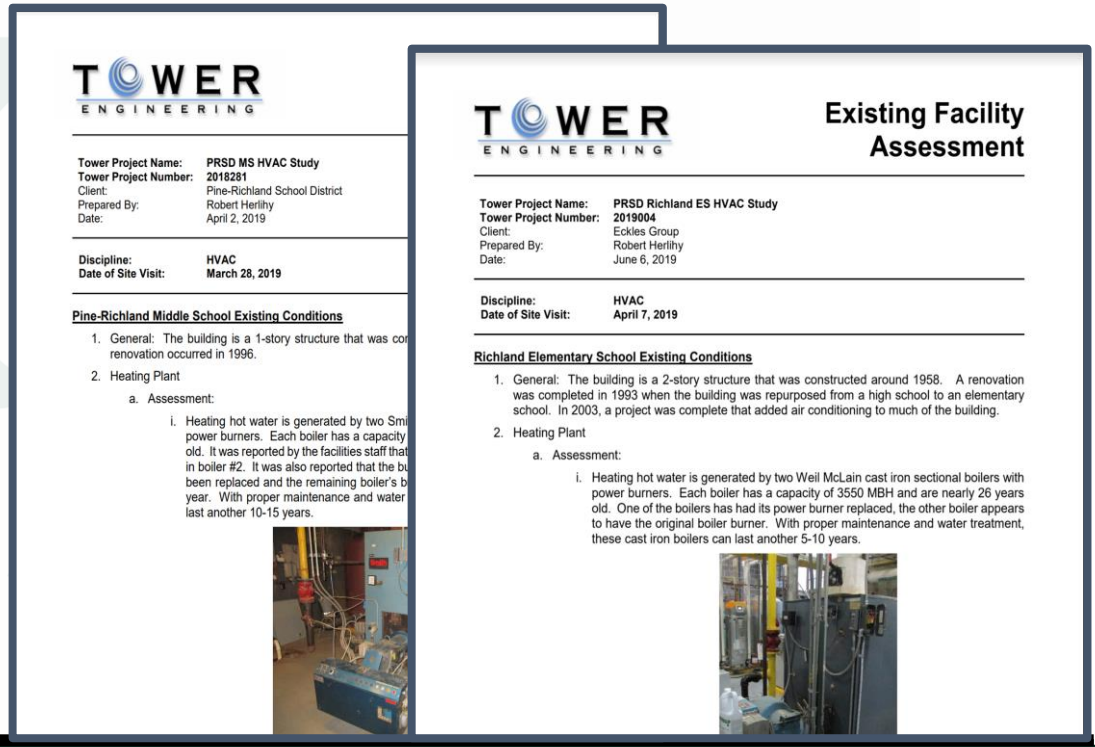
Capital Funding Plan - Current



HVAC Replacements - Strategy

Professional Assessments

- 2019 - MS & Richland Elem.
- 2022 - Hance & Wexford Elem.
- Age / Design Life
- Condition
- Useful Life Estimates
- Replacement Options (Adv/Disadv)
- Constructability
- Costs



TOWER ENGINEERING

Tower Project Name: PRSD MS HVAC Study
Tower Project Number: 2018281
Client: Pine-Richland School District
Prepared By: Robert Herlihy
Date: April 2, 2019

Discipline: HVAC
Date of Site Visit: March 28, 2019

Pine-Richland Middle School Existing Conditions

1. General: The building is a 1-story structure that was cor
   renovation occurred in 1996.
2. Heating Plant
   a. Assessment:
      i. Heating hot water is generated by two Smi
      power burners. Each boiler has a capacity
      old. It was reported by the facilities staff that
      in boiler #2. It was also reported that the bu
      been replaced and the remaining boiler's b
      year. With proper maintenance and water
      last another 10-15 years.

TOWER ENGINEERING

Existing Facility Assessment

Tower Project Name: PRSD Richland ES HVAC Study
Tower Project Number: 2019004
Client: Eckles Group
Prepared By: Robert Herlihy
Date: June 6, 2019

Discipline: HVAC
Date of Site Visit: April 7, 2019

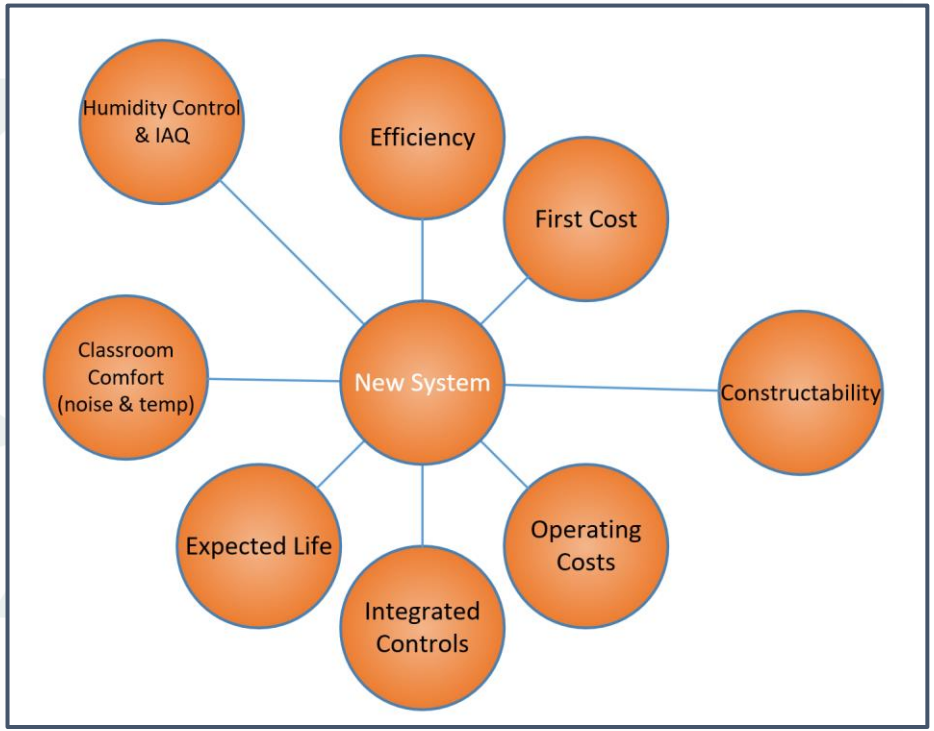
Richland Elementary School Existing Conditions

1. General: The building is a 2-story structure that was constructed around 1958. A renovation was completed in 1993 when the building was repurposed from a high school to an elementary school. In 2003, a project was complete that added air conditioning to much of the building.
2. Heating Plant
   a. Assessment:
      i. Heating hot water is generated by two Weil McLain cast iron sectional boilers with power burners. Each boiler has a capacity of 3550 MBH and are nearly 26 years old. One of the boilers has had its power burner replaced, the other boiler appears to have the original boiler burner. With proper maintenance and water treatment, these cast iron boilers can last another 5-10 years.

HVAC Replacements - Decision Criteria

Evaluating Alternatives

- Determine requirements
- Identify constraints and impacts
- Re-use existing components vs. all new
- Examine new technologies and environmental impact
- Forward focus (life cycle, total cost of ownership, future budgeting)
- Assign a weighting system



HVAC Options - Explanation / Discussion

Horizontal Univent

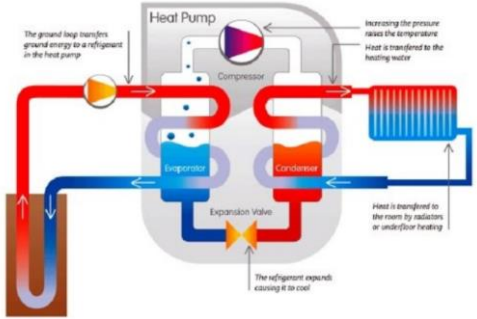
Rooftop Units

VAV Package Units

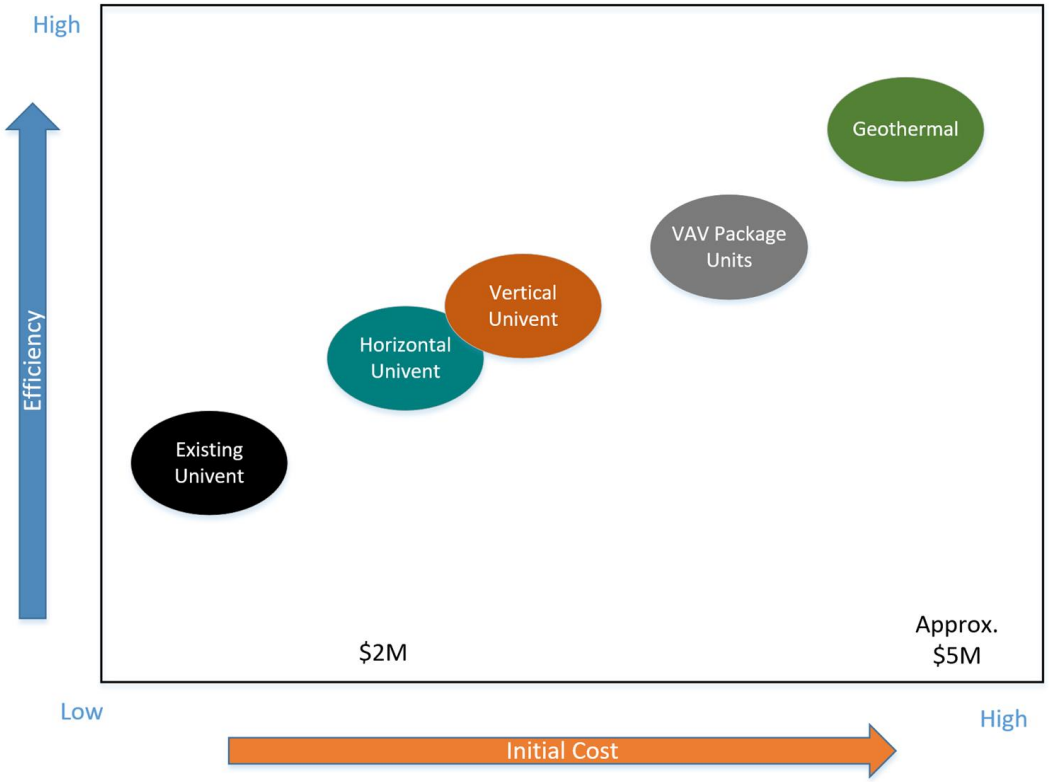
Geothermal

Other Tech?

Vertical Univent



HVAC Options - Costs (Initial, Operating, & Env.)



Operating Costs – Being Evaluated

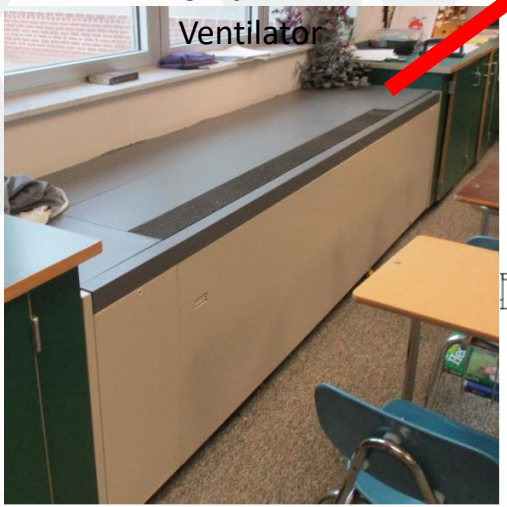
Env. Costs (including incentives) – Being Evaluated

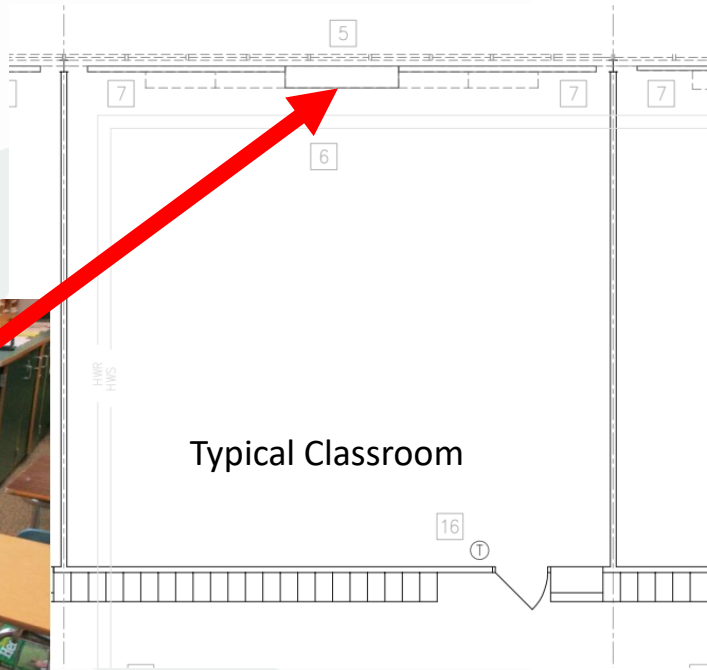
MS HVAC System

PR Middle School

- Unit Ventilators in Classrooms (45 ea.)
  - Boiler Heating Loop (shared)
  - DX Cooling (individual)

- Common Areas and Offices
  - Rooftop Package Units (24 ea.)
  - Air Handling Units





MS HVAC System - Operational Status

Current Operation & Repair History

- Heating Mode - simple system w/ redundancy
- Cooling Mode
  - Unreliable on hot days
  - Poor humidity control (impacts IAQ)
  - Frequent repairs May through August
  - Downtime vs. repair cost (part availability)
  - Units getting louder with age
- Controls - no central interface
- Ventilation & Filtration
  - Outside air dampers (increased ventilation = higher energy and repair costs)
  - Not MERV 13 compatible
  - Supply/return air localized to the unit

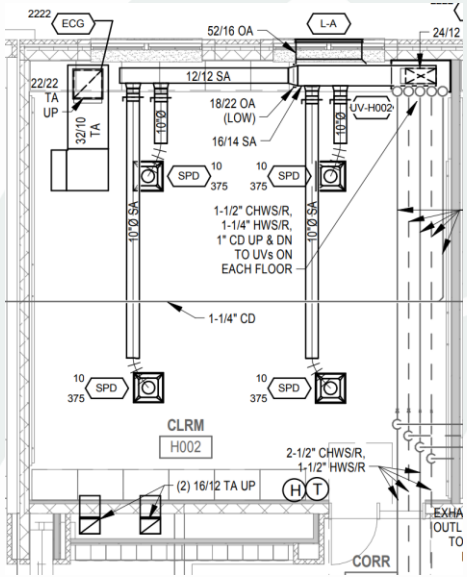
MS HVAC Options - Limiting Factors

Limitations / Considerations

- Existing unit ventilators are centered in room along windows - cabinetry modification costs.
- Space between the roof deck supports and the top of the suspended ceiling is not adequate for large ductwork (VAV option advantages are reduced/eliminated).
- Repairing existing equipment does not address concerns with dehumidification. New horizontal unit ventilators are only slightly better.
- Size and complexity of the geothermal option need to be assessed more.
- Cost must be considered individually and overall since four schools require upgrades in the near term.
- Other areas still being evaluated.

MS HVAC Options - Initial Ideas

Based on current analysis, we feel the Vertical Unit Ventilator option best-fits our needs at the Middle School.



Next Steps

- Spring/Summer ‘22 - Complete Assessments for Hance and Wexford Elem.
- Summer/Fall ‘22 - Review Assessments and Evaluate options
  - Middle School - choose option and build a bid package
  - Establish order for remaining schools
  - Conduct analysis of options for all schools
- Winter ‘22-‘23 - Bid Middle School project for a completion window of summer ‘23

HVAC & Sustainability

QUESTIONS?

HVAC

- **Middle School HVAC Engineering Study** Completed (Spring 2019) with Need for Selected Option (Fall 2022) for Bid (Winter 2022 – 2023) and Implementation (Summer 2023) at Estimated $2.5M - $4.0M
- Conduct **Wexford Elementary HVAC Engineering Study** (Summer 2022) with Need for Selected Option (Fall 2022) for Bid (Winter 2023 – 2024) and Implementation (Summer 2024) at Estimated $XM
- **Richland Elementary HVAC Engineering Study** Completed (Spring 2019) with Need for Selected Option (Fall 2022) for Bid (Winter 2024 – 2025) and Implementation (Summer 2025) at Estimated $2.5M - $4.0M
- Conduct **Hance Elementary HVAC Engineering Study** (Summer 2022) with Need for Selected Option (Fall 2022) for Bid (Winter 2025 – 2026) and Implementation (Summer 2026) at Estimated $XM