

Tunkhannock Area School District



DRAFT

Summary of Feasibility Study Presentation October 12, 2022



D'HUY Engineering, Inc.



Acknowledgement



D'HUY Engineering, Inc.

D'Huy Engineering, Inc. would like to thank the TASD for our relationship as your trusted advisor and working with us in preparing the Feasibility Study.

We would also like to thank the TASD Board of School Directors along with Mr. Paul Dougherty, Mr. John Shepulski, and the respective building staff for helping us with background information, and for guiding us through the facilities.

Presentation Summary



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In preparing this study, a limited condition survey of the specific building components listed below was performed, and a priority list of specific improvements was compiled. The items of work and costs noted in this report address the existing conditions only and do not include additions or renovations.

Items Included in This Study:

SCHOOL	ITEM
Administration Building	Steam Heating System Concerns and Boilers
Tunkhannock Primary Center	Replace UVs and Air Handlers and provide Air Conditioning
	Replace Exterior Windows
	Replace Existing Ceiling Panels
	Replace Lighting and Ceilings
Tunkhannock Intermediate Center	Replace Boilers
	Provide Air Conditioning for Cafeteria
	Replace Domestic Hot Water Heater
Tunkhannock Area High School	Provide Air Conditioning in Cafeteria, Auditorium, and Gym
	Pool Equipment Repairs and Structural Issues
	Central Plant Equipment

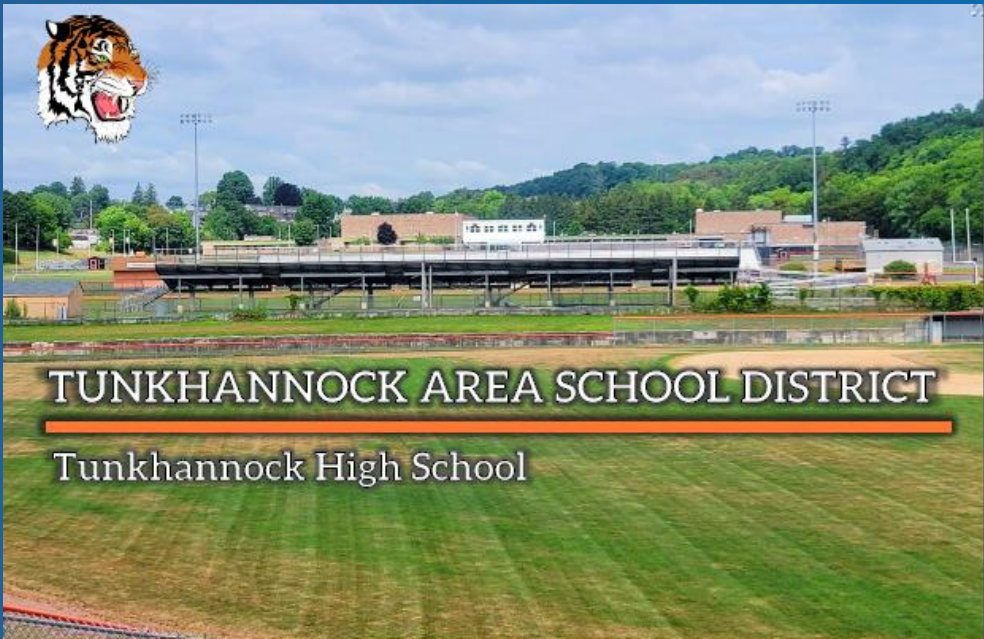
Representative Building Condition Photographs



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- The following presentation includes photos of select representative conditions for each facility.
- The photos should be reviewed in the context of the entire report including the written narrative.

Sample Facilities Profile Narrative



TUNKHANNOCK AREA SCHOOL DISTRICT

Tunkhannock High School

Address:	Grade:
135 Tiger Drive	8-12
Tunkhannock, PA 18657	
Total Building Gross Sq. Ft:	Total No. of Students:
201,000	896 (2021/2022)
Originally Built:	Renovation:
1969	2002

2

Tunkhannock High School


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GENERAL HVAC BUILDING SUMMARY

7

Tunkhannock High School


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Tunkhannock High School was originally constructed in 1969, it is an all-e with no air conditioning. The majority of mechanical equipment appears t upgrades of system components over the years. The mechanical sys consists of unit ventilators that provide outside air from louvers in the ex with return air from the classrooms and electrically heated. For this stu were explored at the District's request:

Item 1 - Replace the Cafeteria HVAC System

This option would remove the existing unit ventilators in the Cafeteria. C ventilators are:

- Inability to provide cooling/AC.
- No humidity control and limited air distribution control
- Nuisance noise disrupting the learning environment.

All the unit ventilators are nearly 20 years old and are at the end of their u Society of Heating, Refrigerating and Air Conditioning Engineers (ASHR life expectancy of the equipment of this type is 15 years (2015 ASHR Applications; Chapter 37 Table 4).

Refer to the below picture of the cafeteria unit ventilators:

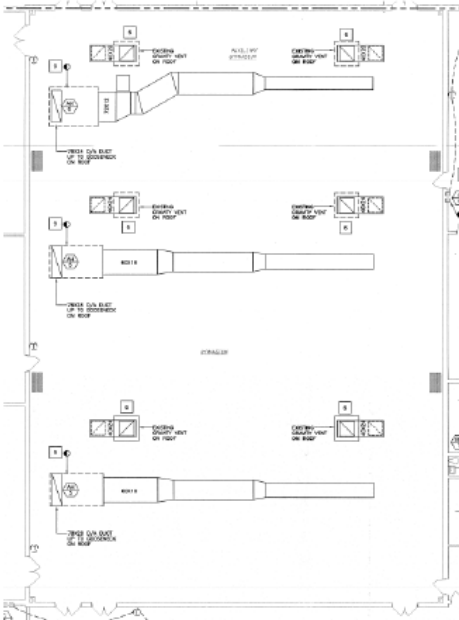


Cafeteria Unit Ventilators

We have assumed the new HVAC system would consist of a new roof fired heater and DX-cooling coil that deliver air from ductwork located a The existing ceiling and lights would remain. New support would be add

EXISTING DRAWINGS

GYMNASIUM



Select Representative Conditions High School



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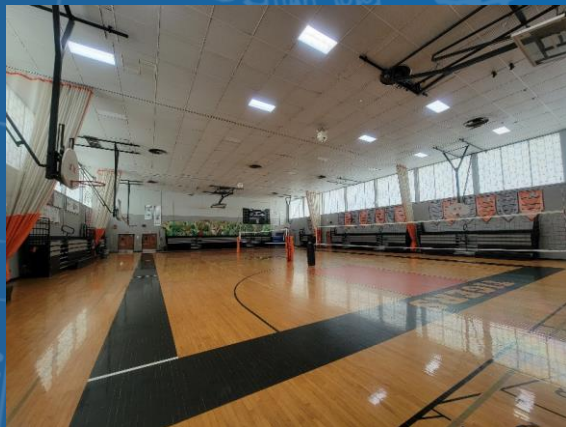
Corroded Steel Decking in Pool M.E.R.



Electric Pool Heater



Corroded Steel Column



Gymnasium



Cafeteria Unit Ventilators



Auditorium AHU's

Select Representative Conditions Intermediate School



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Existing Boilers



Existing Hot Water Generator



Existing Cafeteria AHU

Select Representative Conditions Primary School



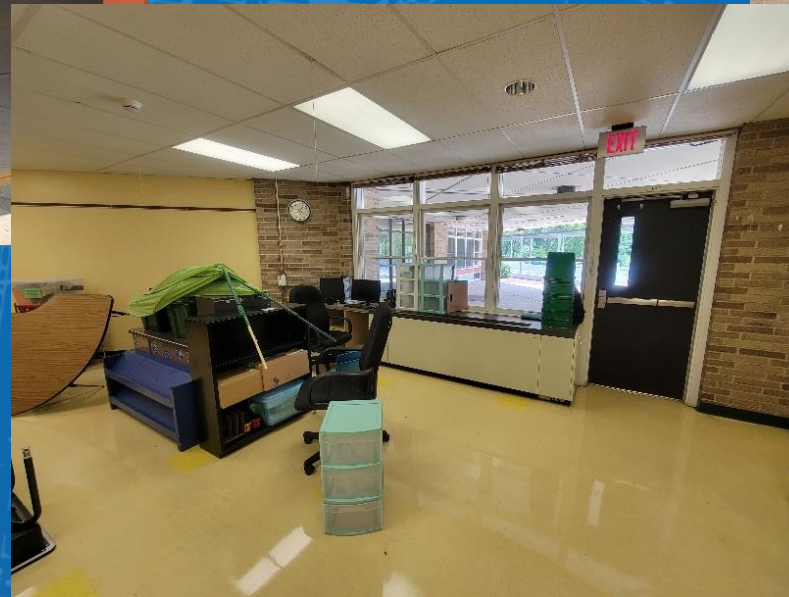
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Exterior Classroom Storefront



Exterior Classroom Storefront & Ceiling Panels



Classroom Corridor Unit Ventilator

Priorities By Facility



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DEI D'HUY Engineering, Inc.

Tunkhannock Area School District Capital Improvements Recommendations DEI Project No. 041001

Item Ref No.	Building	Item Description	PRIORITY	OPTIONS	Project Estimated ESSER III and Current Bond Cost Including 30% Indirect Costs	Project Estimated Future Bond Cost Including 30% Indirect Costs	Footnotes	Energy Savings	
								Yes	Air Conditioning Requires Additional Energy Cost
1	Admin	Convert to natural gas by replacing Boilers, Burners, and Pumps. Replace existing steam boiler infrastructure with a dual fuel boiler plant and hydronic pumps. Back feed existing hydronic loop. Note, condensing boilers are not recommended for this installation due to the 180 degree hydronic loop temperature requirement of the existing components. Existing boilers are 4.2 million BTUH input (each). Select terminal equipment to be replaced as part of this conversion. Gym AHU's are not scheduled to be replaced.	7	1	\$ 1,016,600.00			✓	
2	Admin	Extend Natural Gas to Building.	6	N/A	\$ 26,741.00		1	✓	
3	Tunkhannock High School	Replace (4) unit ventilators in Cafeteria and provide air conditioning with gas-fired rooftop units with DX. Include hot gas reheat coils. Estimated size is 40 tons of cooling.	9	1, 2, 3		\$ 320,000.00		✓	✓
4	Tunkhannock High School	Replace Pool electric heater with natural gas heater.	9	1, 2, 3		\$ 325,000.00		✓	
5	Tunkhannock High School	Structural repairs in the Pool Equipment Room due to excessive corrosion observed on masonry block and steel, stairs and steel decking.	9	1, 2, 3	\$ 325,000.00				
6	Tunkhannock High School	Retrofit/replace (6) air handlers that serve the Auditorium with gas-fired and DX units. Provide rooftop units with hot gas reheat coils. Estimated size is 40 tons.	8	1, 2, 3		\$ 780,000.00		✓	✓
7	Tunkhannock High School	Provide low return air duct for Pool. Drop ductwork within mechanical room and install grille in shared wall between mechanical room and natatorium.	8	1, 2, 3	\$ 130,000.00			✓	
8	Tunkhannock High School	Replace fire alarm system	8	1, 2, 3	\$ 940,680.00				
9	Tunkhannock High School	Provide new UV filter for Pool.	8	1, 2, 3	\$ 97,500.00				
10	Tunkhannock High School	Extend natural gas service to Campus.	6	N/A	\$ 206,635.00		1	✓	
11	Tunkhannock High School	Retrofit/replace (3) air handlers that serve the Gymnasium and provide air conditioning with gas-fired and DX units. Install new, packaged rooftop units and back feed existing ductwork.	6	1, 2, 3		\$ 422,500.00		✓	✓
12	Tunkhannock High School	Provide new hot water boiler and air-cooled chiller, 4-pipe distribution system to the all new HVAC systems listed (Gym, Auditorium, & Cafeteria).	6	N/A		\$ 2,340,000.00		✓	✓
13	Tunkhannock Intermediate Center	Replace Boiler Burners. Recommend dual fuel, 5,500,000 BTUH input for each boiler.	7	2	\$ 130,000.00			✓	
14	Tunkhannock Intermediate Center	Replace Boilers. Recommend dual fuel, 5,500,000 BTUH input for each boiler.	7	1		\$ 650,000.00		✓	
15	Tunkhannock Intermediate Center	Replace domestic hot water heater.	7	1, 2	\$ 97,500.00			✓	
16	Tunkhannock Intermediate Center	Provide cooling for the Cafeteria. Modify or replace existing air handling system and add DX cooling. Estimated to be 40 tons of cooling.	7	1, 2	\$ 260,000.00			✓	✓
17	Tunkhannock Intermediate Center	Retrofit/replace (2) air handlers that serve the Auditorium and provide air conditioning with gas-fired and DX units.	7	1, 2	\$ 500,500.00			✓	✓
18	Tunkhannock Intermediate Center	Extend natural gas service to Building.	6	N/A	\$ 77,792.00		1	✓	
19	Tunkhannock Primary Center	Replace existing unit ventilators and AHU's with new gas-fired DX rooftop VAV units, central boiler and hot water reheat piping. does not include low voltage systems upgrades.	7	1		\$ 7,384,000.00		✓	✓
20	Tunkhannock Primary Center	Remove and Replace Exterior Ceiling Panels with new subframing, Dryvit Exterior Finish System (DEFS) Soffit.	7	1		\$ 468,000.00			
21	Tunkhannock Primary Center	Replace classroom windows.	7	1		\$ 1,170,000.00		✓	
22	Tunkhannock Primary Center	Extend natural gas service to Building.	6	N/A		\$ 48,620.00	1	✓	
23	Tunkhannock Primary Center	Retrofit/replace (2) air handlers that serve the Cafeteria and provide air conditioning with gas-fired and DX units.	6	1		\$ 227,500.00	*	✓	✓
24	Tunkhannock Primary Center	Replace ceilings and lighting	6	1		\$ 1,107,600.00		✓	
25	Athletic Fields	Replace stadium lighting with LED lights.	7	1, 2		\$ 338,000.00		✓	
26	Athletic Fields	Provide lighting for the soccer field.	6	1		\$ 650,000.00			
26	Athletic Fields	Provide lighting for the baseball field.	6	1, 2		\$ 812,500.00	1		
27	Athletic Fields	Provide lights for the softball field	6	1		\$ 975,000.00			
28	Athletic Fields	Resurface tennis courts	6	1, 2		\$ 383,000.00			
			Total:		\$ 3,808,948.00	\$ 18,803,720.00	*		

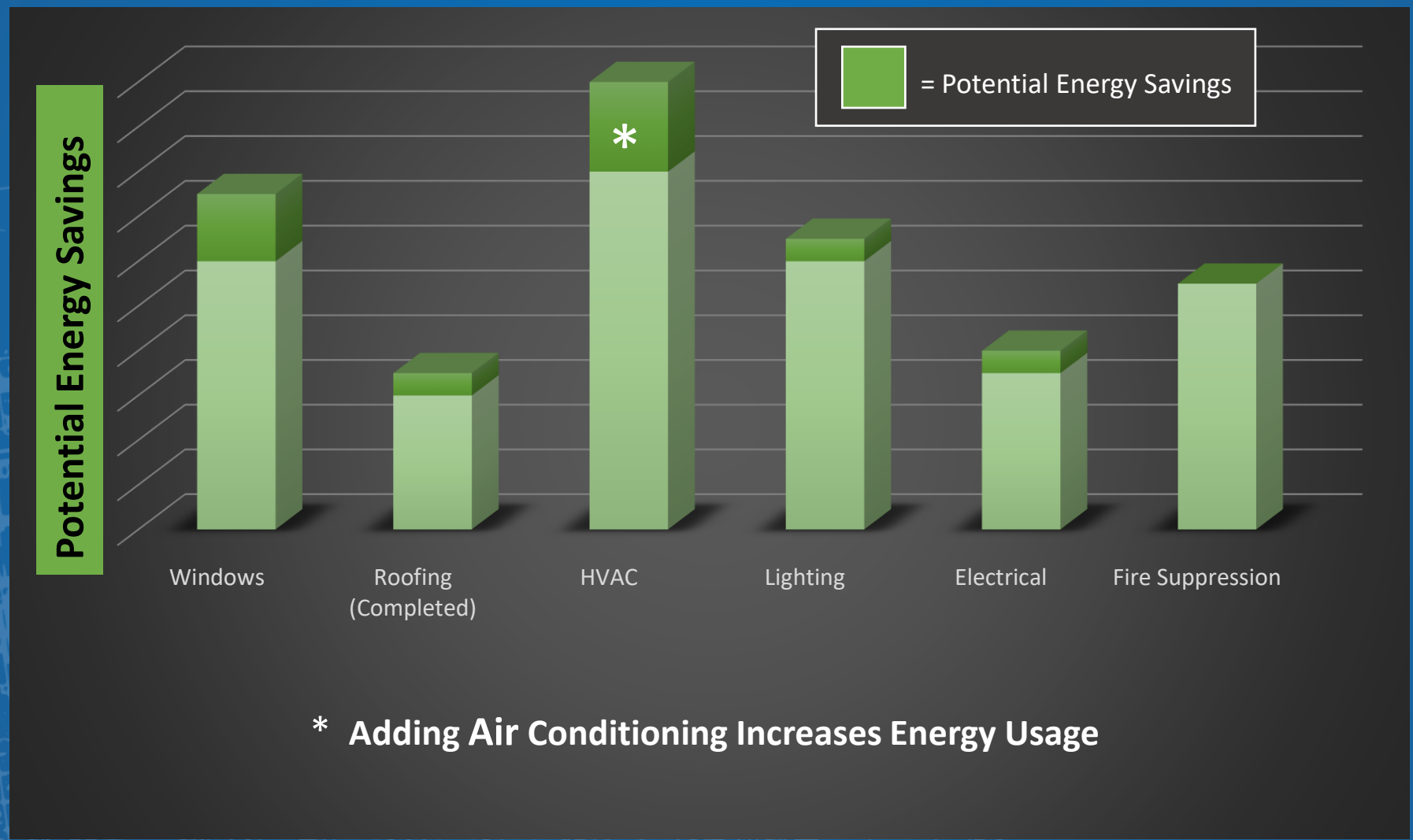
* This item includes other high priority items listed above. The total cost should be adjusted depending on the projects selected.

1 Gas Service Extension is required for the HVAC and Pool unit Rems. This is a 10 year utility tariff cost.

Assess Priorities, Life Cycle & Decision Making



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Conversion to Natural Gas Considerations



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OPERATING ENERGY VS. ACTUAL COST

					Adjusted Cost for Efficiency	
Electric	<u>1KWH</u> 0.003412 MMBTU		<u>\$0.115</u> KWH		\$33.70 MMBTU	2.2 times more than Gas
Fuel Oil	<u>1 Gallon</u> 0.14 MMBTU		<u>\$3.19</u> Gallon		\$22.78 MMBTU	1.9 times more than Gas
Natural Gas	<u>1 Therm</u> 0.1 MMBTU		<u>\$1.22</u> Therm		\$12.20 MMBTU	

Option 1



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Implement all Projects on the Improvements List

Energy Savings

A. Pool Renovations (Structural & HVAC) \$877,500

B. HS Gym, Auditorium, Cafeteria HVAC Renovations & Fire Alarm Renovation (Excludes New Central Plant) \$2,663,180

C. IC HVAC Renovations for Cafeteria & Auditorium & New Boilers/Hot Water Heater \$1,508,000

D. Primary Center Renovations \$10,129,600

E. Athletic Fields – Lighting Upgrades & Tennis Court Resurfacing \$3,360,500

F. Administration – Replace Boilers \$1,016,600

TOTAL: \$19.56 Million



Option 2



D'HUY Engineering, Inc.

ESSER III + Remaining Bond + \$3.0 Million Capital/Bond (\$6.29 Total)

Energy Savings

A. Pool Renovations (Structural & HVAC)	\$877,500
B. HS Gym, Auditorium, Cafeteria HVAC Renovations (Excludes New Central Plant)	\$1,722,500
C. IC HVAC Renovations for Cafeteria & Auditorium and convert Boiler Burners/HW Heater to dual fuel	\$988,000
D. Resurface Tennis Courts	\$585,000
E. Replace HS Fire Alarm System	\$940,680
F. Replace Administration Steam Boilers with new HW Boilers	<u>\$1,016,600</u>



TOTAL: \$6,130,280
Remaining Capital: \$159,720

Option 3



D'HUY Engineering, Inc.

ESSER III + Remaining Bond (\$3.29 Million)

Energy Savings

A. Pool Renovations (Structural & HVAC)

\$877,500

B. HS Gym, Auditorium, Cafeteria HVAC Renovations & Fire Alarm Renovation (Excludes New Central Plant)

\$2,663,180



TOTAL:

\$3.54 Million *

(* Requires \$250,000 capital)

Next Steps



D'HUY Engineering, Inc.

- The Board, Administration and DEI are to develop the timelines and phasing for the plan that is selected for implementation by the Board.
- The Administration and Board will develop a specific plan that addresses the needs of the District.
- DEI is privileged to be a partner of the TASD's development and implementation of the Facilities Study.

"We shape our buildings, thereafter they shape us."

Winston Churchill