



West Windsor-Plainsboro Regional SD

Energy Savings Improvement Program (ESIP):
Energy Savings Plan

October 29, 2019

Life Is On



WW-P Core Team



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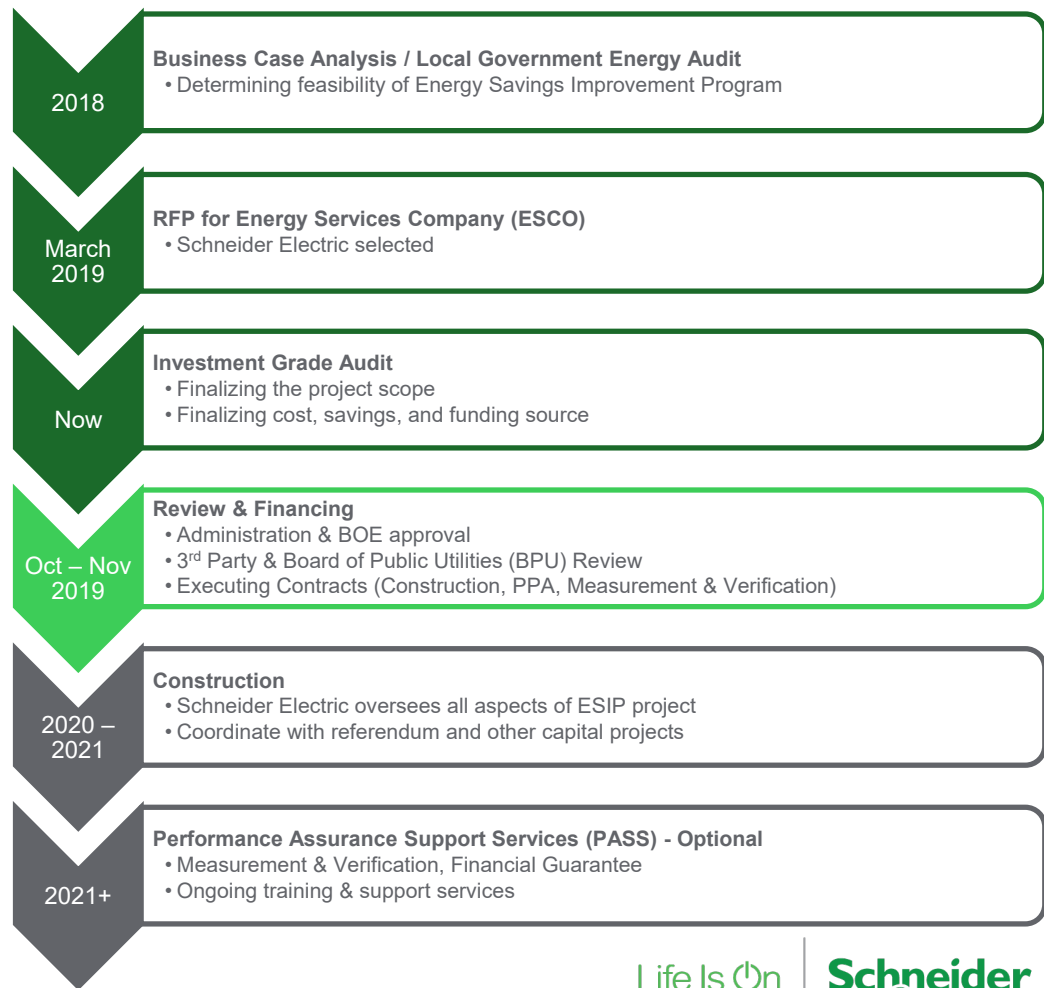
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*Responsible for a successful
project from start to finish*

ESIP Process

Objectives:

1. Review Energy Savings Plan
2. Approve submitting Plan to 3rd party reviewer and Board of Public Utilities



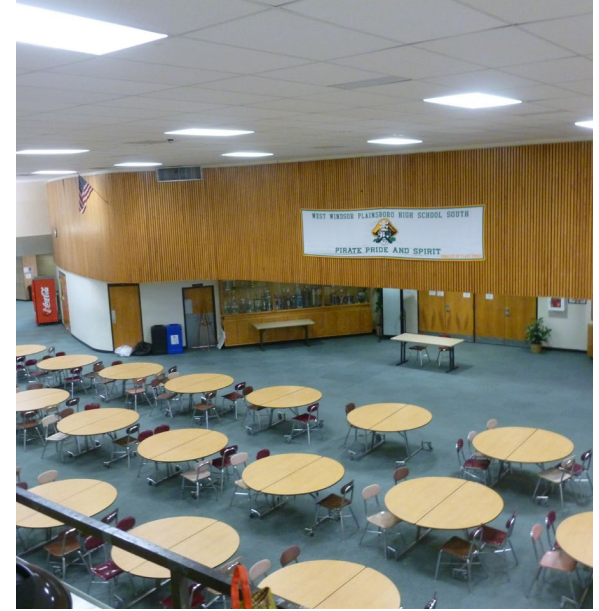
What does this project focus on?



Energy Efficiency
Cost Savings



Capital Needs
Maintenance Issues



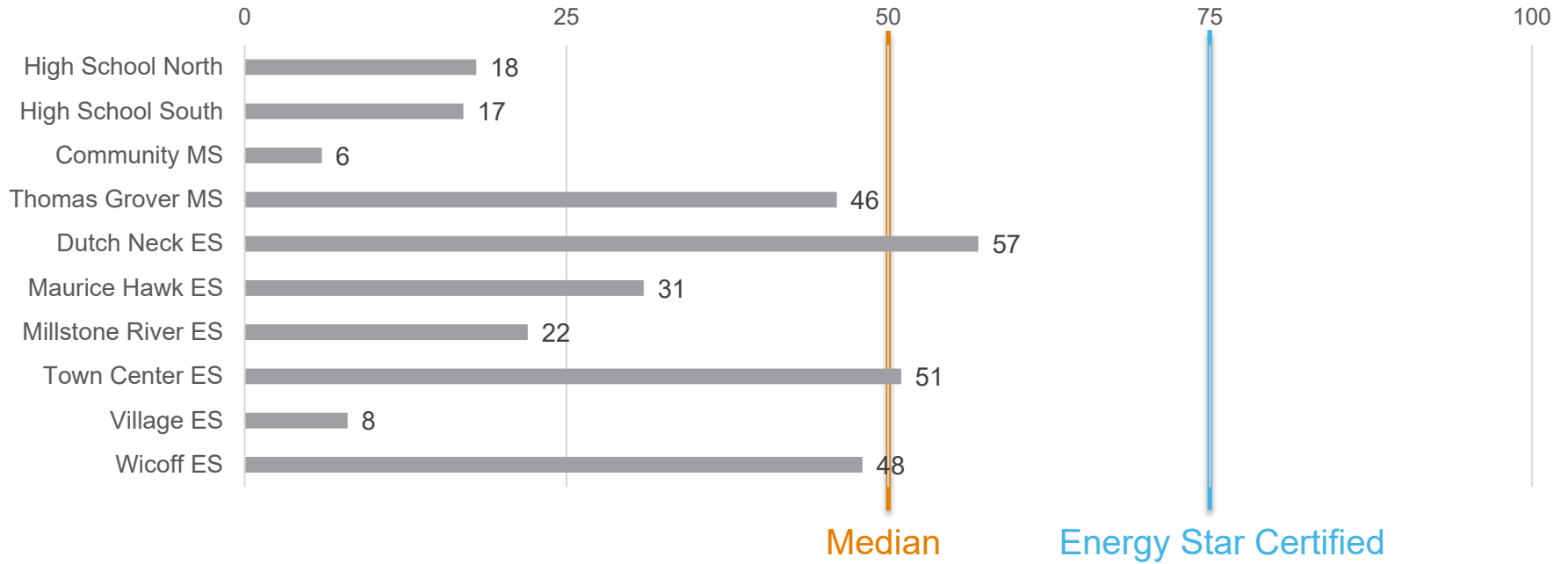
Indoor Air Quality
Occupant Comfort

Energy Star Benchmarking

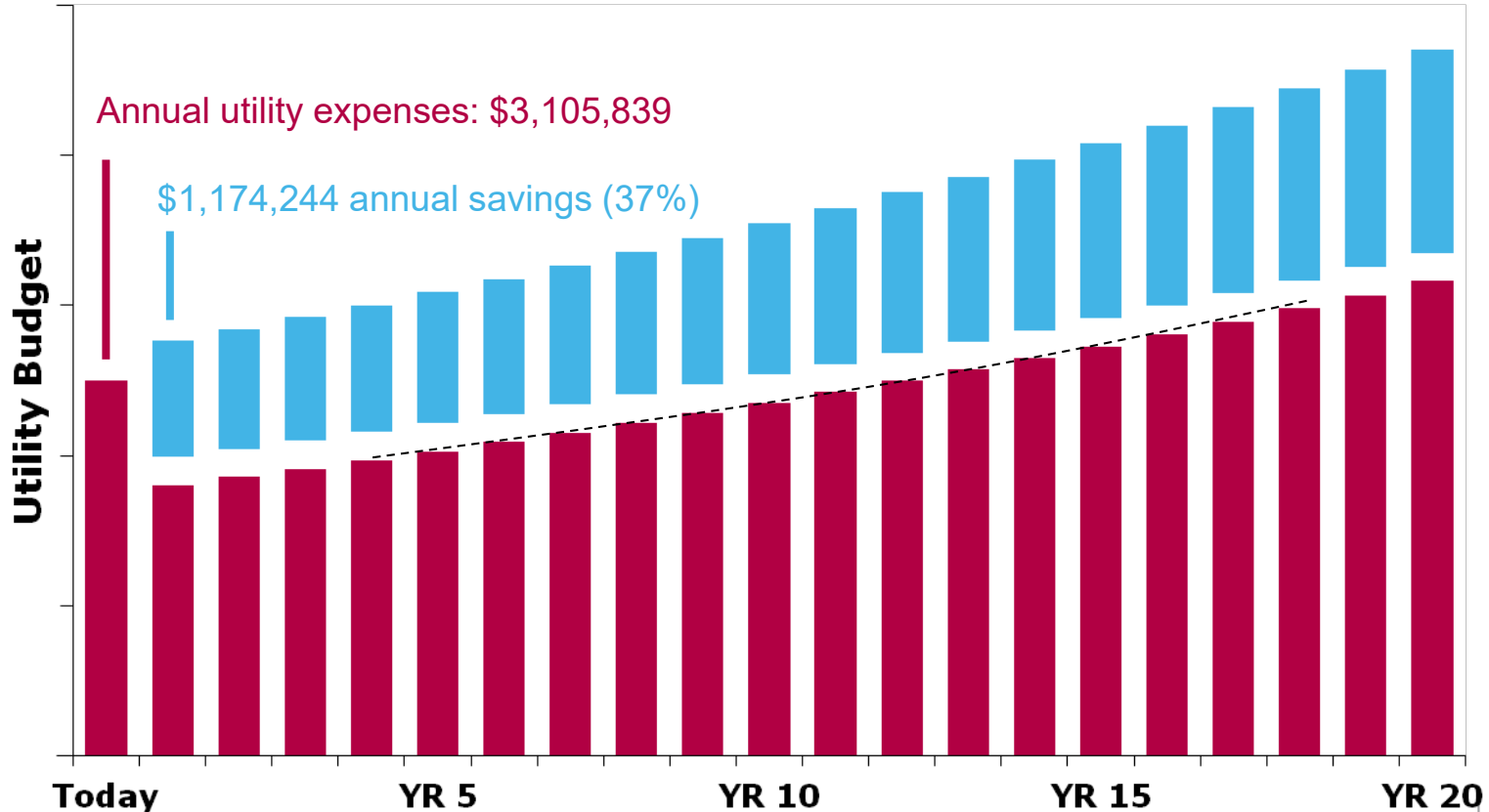
Establishing an energy efficiency baseline for each school



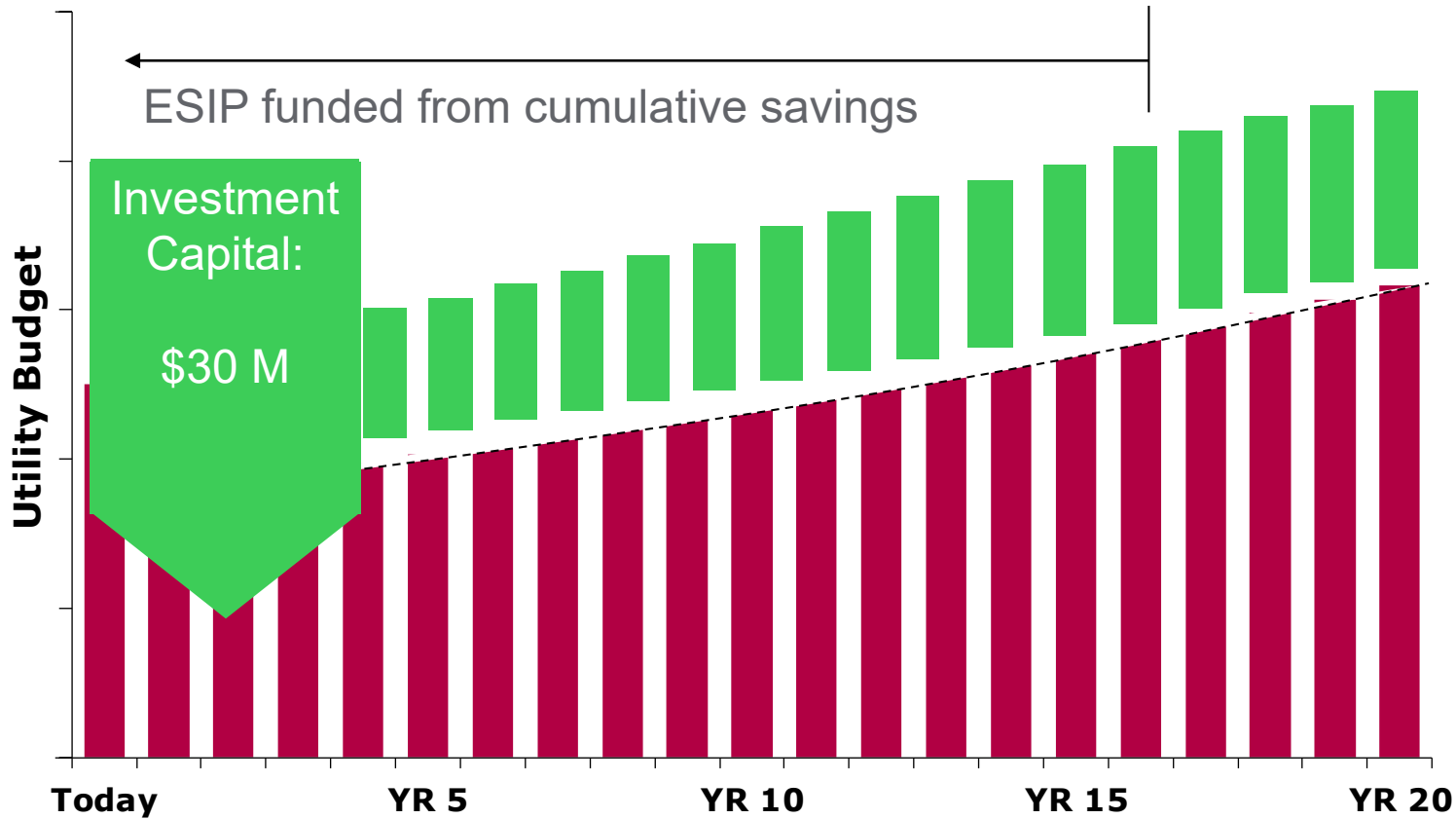
ENERGY STAR Scores



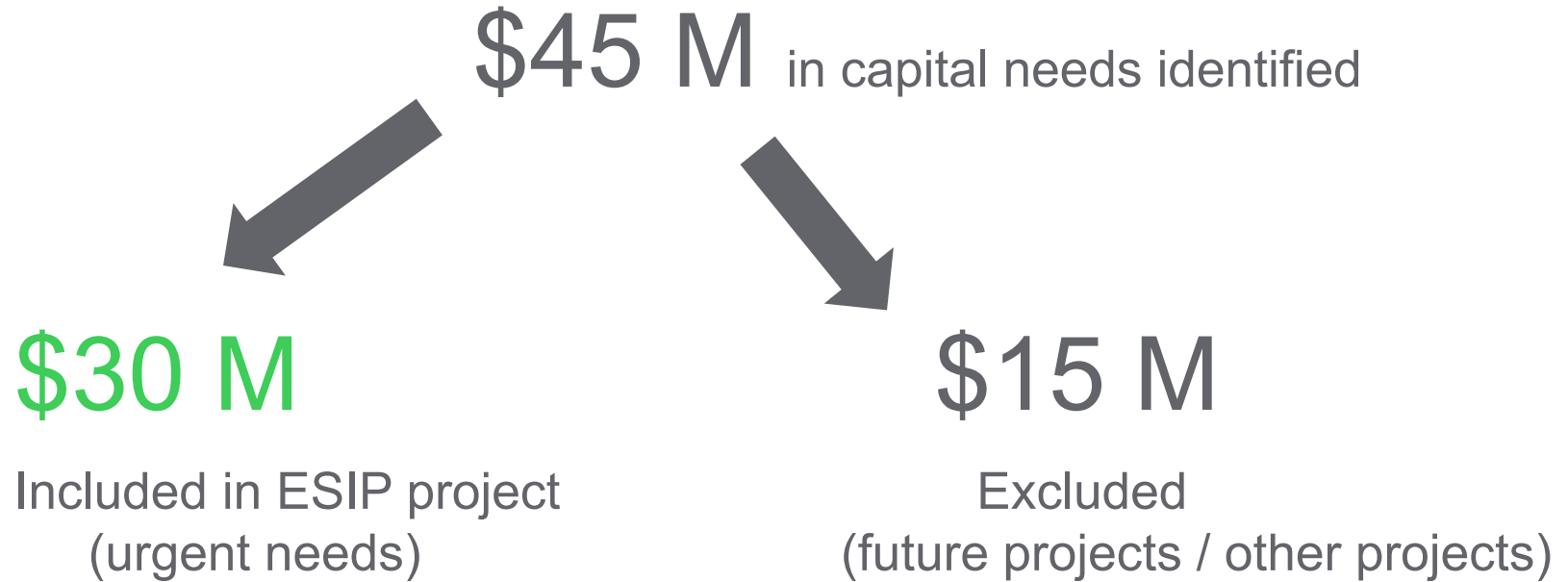
Projected Savings






Savings > Investment



Capital Needs Assessment



Energy Conservation Measures (ECMs) (1 of 2)

	HSN	HSS	CMS	GMS	DN	MH	MR	TC	V	W	SS	B&G	Maint
Learning Environment													
 Interior Lighting Improvements													
Exterior Lighting Improvements													
Occupancy Sensors for Lighting													
Multipurpose Room Lighting Control Fix													
Air Sealing Improvements													
Building Automation Systems													
 BAS Upgrade to Common Front End													
Kitchen Hood Control													
Variable Frequency Drives													
Whole School Metering													
School Addition Metering													
Equipment Evaluation Study													
Efficiency													
 Water Fixture Improvements													
Cooling Tower Submeters													
Walk-in Refrigeration Controls													
Pipe Insulation													
High Efficiency Transformers													



ECM Included in Project



ECM Excluded

Energy Conservation Measures (ECMs) (2 of 2)

HSN HSS CMS GMS DN MH MR TC V W SS B&G Maint



Infrastructure

HVAC System Replacement																			
Chiller/Cooling Tower Replacement																			
RTU Replacement																			
Boiler Replacements																			
IT Cooling Upgrade																			
Domestic Hot Water Heater Replacement																			



Sustainability

Solar Power Purchase Agreement																			
Sustainable Jersey for Schools																			
Combined Heat and Power																			
Electric Vehicle Charging Stations																			



Community Engagement

Energy Reduction Competition																			
Public Awareness Campaign																			
Energy University Conservation Curriculum																			



Rebates, Grants, & Incentives

Pay for Performance (P4P)																			
Smart Start																			
PJM EE Credit																			
Sustainable Jersey Grant																			

Included ECMs (1 of 2)

	Energy Conservation Measure (ECM)	Building(s)	Hard Costs	Annual Savings	Payback Period
	Core ECMs				
1	LED Lighting Upgrades - Interior, Exterior, and Sensors	All	\$ 4,446,165	\$ 342,327	13
2	Air Sealing Improvements	All except WES	\$ 354,032	\$ 26,466	13
3	Variable Speed Drives	HSS, DNES, MRES, TCES	\$ 176,611	\$ 73,616	2
4	Kitchen Hood Control	All except WES	\$ 85,039	\$ 14,004	6
5	Whole School Metering	VES	\$ 11,483	\$ -	
6	School Addition Metering	HSS, CMS, MHES, TCES	\$ 48,116	\$ -	
7	Water Fixture Improvements	All	\$ 329,626	\$ 43,757	8
8	Cooling Tower Submeters	DNES, TCES, VES	\$ 31,561	\$ 3,600	9
9	Walk in Refrigeration Controls	All except DNES and WES	\$ 66,994	\$ 7,720	9
10	Pipe Insulation	All except GMS	\$ 105,755	\$ 8,675	12
11	High Efficiency Transformers	All except WES	\$ 790,609	\$ 46,096	17
12	Solar Power Purchase Agreement (PPA)	All except CMS, TCES	\$ 94,000	\$ 279,293	0
13	Pay for Performance (P4P) Incentives	HSN, HSS, CMS, MHES, VES	\$ 124,430	\$ 120,391	1
14	Equipment Evaluation Study	All except HSN, MRES, WES	\$ 103,314	\$ -	
15	Combined Heat and Power (CHP) System	HSS	\$ 590,562	\$ 24,616	24

Included ECMs (2 of 2)

	Energy Conservation Measure (ECM)	Building(s)	Hard Costs	Annual Savings	Payback Period
	Heating, Ventilation, and Air Conditioning (HVAC) Systems				
	High School South				
16	Dedicated Outside Air System w/ Unit Ventilator Replacement	HSS	\$ 7,816,391	\$ -	
17	Chiller Replacements - Main Section	HSS	\$ 640,852	\$ 2,416	265
18	Unit Ventilator Replacement - Science Wing	HSS	\$ 1,025,398	\$ -	
19	Unit Ventilator Replacement - 1995 Addition	HSS	\$ 223,499	\$ -	
20	Building Automation System (BAS) Upgrade	HSS	\$ 557,448	\$ 45,258	12
24	Refurbish Air Handling Units Serving Gym	HSS	\$ 266,399	\$ 150	1776
19	Chiller Replacement - Science Wing	HSS	\$ 524,597	\$ 2,279	230
	Dutch Neck				
21	Unit Ventilator Replacement	DNES	\$ 412,242	\$ -	
22	Multipurpose Room	DNES	\$ 461,277	\$ 1,500	308
23	Replace Units in 300s	DNES	\$ 401,539	\$ 1,575	255
24	Replace Units in 401-405	DNES	\$ 134,177	\$ 1,425	94
25	Replace Units in Modular Classroom Section	DNES	\$ 256,260	\$ -	
26	Building Automation System (BAS) Upgrade	DNES	\$ 490,395	\$ 12,462	39
	Community MS				
27	Replace Two Rooftop Unites (RTUs) in 700/800 Wing	CMS	\$ 508,847	\$ -	
33	Boiler Replacement	CMS	\$ 419,549	\$ 3,689	114
28	Building Automation System (BAS) Upgrade	CMS	\$ 420,802	\$ 66,812	6
	Town Center				
29	Building Automation System (BAS) Upgrade	TCES	\$ 868,487	\$ 10,761	81
	Village				
30	Building Automation System (BAS) Upgrade	VES	\$ 791,378	\$ 35,356	22
	Grover MS				
31	Building Automation System (BAS) Upgrade	GMS	\$ 26,902	\$ -	

Project Summary

Financial Impact:

Total Savings: \$30,056,398 over term

\$1.1 M annually

Total Project Cost:

\$30,037,029

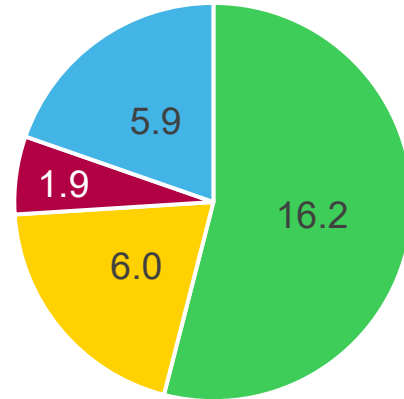
Capital Contribution by WW-P:

~ \$5.9 M total

<\$3M per year, FY 20/21 and FY 21/22

\$1.9 M in funding from rebates & incentives

Project Funding by Source (\$M):



- Efficiency Savings
- Solar Savings
- Incentives
- Capital

Project Impact

1. Address urgent capital needs
2. Improve indoor air quality, humidity control, comfort, and lighting
3. Reduce maintenance needs for staff & better comfort control through building automation system
4. Provide 42% of electric needs through an on site solar power purchase agreement (PPA)
5. Create unique educational opportunities through collaboration with school Green Teams
6. Cut WW-P's greenhouse gas emissions by 56%
7. No increase in taxpayer funding



Next Steps

November – December	BOE vote to award ESIP contracts / Authorize RFP for ESIP financing
	Execute contracts (construction, solar power purchase agreement, and optional measurement & verification contract)
	Finalize engineering
	Secure financing
2020 – 2021	Bidding, Construction, and Commissioning managed by Schneider Electric