



## COMPREHENSIVE SAVINGS FROM LED LIGHTING PROJECTS

ANNUAL COST AVOIDANCE	<b>\$506,531 per year</b>
ANNUAL ENERGY REDUCTION	<b>3,341,361 kWh per year</b>
10 YEAR ENERGY COST AVOIDANCE	<b>\$5,065,310 ten year cost avoidance</b>

### 2020-2021 LED Lighting Project Locations

- Wilbur Cross
- Wexler Grant
- Mauro Sheridan
- Edgewood
- COOP
- Fair Haven



New Haven Public Schools  
Facilities Department



NEW HAVEN PUBLIC SCHOOLS



# New Haven Public Schools LED Lighting Upgrade Projects

February 2021

## OVERVIEW

### General

Serving as Facilities Managers and on behalf of the New Haven Public Schools, GoTo Services (GTS) will oversee the LED lighting upgrade project for six New Haven Public School locations. These projects will be financed interest-free and will be paid through energy savings on the district's United Illuminating bill.

### Incentives

All six school projects will take advantage of the state funded Energize Ct. program designed to incent energy conservation projects. The program is administered through the United Illuminating Co for the New Haven territory. For the LED energy conservation measures, the Energy Opportunities (EO) program requirements were submitted for consideration and approved. This provided the GTS facilities management team to upgrade six different school locations without dipping into limited capital funds but instead paying for each school project using the EO 'on-bill-financing' option.

This no interest financing is paid for by the savings generated by the LED upgrade and added to the monthly bill for a 48 month term. After the projects are 100% paid, they come off the bill and the savings are fully realized. The EO program also provides generous financial incentives to perform these types of projects since they drastically reduce demands on the grid. These incentives provide motivation to replace older inefficient equipment with new high efficiency products and typically range from 30 – 50 percent of the total installed cost of the project, depending on the UI assessment of the actual equipment being installed. The incentive average for these six projects is 42%. The incentive amount is then deducted from the total amount financed for each location.

### Third Party UI experts

UI conservation and load management experts worked with GTS/NHPS to identify the best savings opportunities. Once a project is identified, UI prepares the EO letters of agreement which specify the entire scope of the project, and each and every fixture being installed to assure the project meets the parameters required for the program. To do this, GTS management team submitted a detailed audit of each location that included manufacturer cut sheets and DLC listing numbers for each bulb/fixture, warranty details and pricing. Once accepted by UI, the EO agreement letter specifies the annual savings and incentive amounts for the project. Upon project completion a final UI inspection of the school is performed to verify all the conservation measures and associated equipment has been installed consistent with the EO application. Then, and only then, UI issues payment to the third party installer.

### Increased Energy demands due to COVID-19

Per the recommendation of the 3<sup>rd</sup> party engineering company, Fuss & O'Neill, the Facilities Department has adjusted the run times of HVAC equipment wherever possible. Prior to COVID-19, equipment run times were 6AM-9PM and equipment was shut down on weekends unless the building was being occupied.

The new HVAC run times are 4AM-10PM (18 hours/day) and will now operate on the weekends despite building occupancy. This equates to an *additional* 51 hours of run time per week, per school. This is 68% increase in operational hours.



**GOALS: Financial, Visual & Environmental**

- Reduce the carbon footprint of the NHPS
- Drastically lower lighting utility bills
- Reduce lighting maintenance demands by eliminating fluorescent tube lights and ballasts
- Create a more inviting and aesthetically pleasing environment for staff and students
- Take advantage of generous utility incentives to maximize ROI
- Lessen financial impact of HVAC adjustments due to COVID-19 ventilation recommendations.

**20-21 PROJECT COST & SAVINGS SUMMARY (COMPLETED ON 2/10/21)**

		Date signed	Total Cost	Incentive	Annual Dollars Saved	Annual kWh Saved	Total LED tubes/ fixtures	Notes
<i>Edgewood</i>	Exterior	11/18/2020	\$7,283	\$3,192	\$1,197	7,981	8	<i>On bill financing \$85.23 x 48 months</i>
<i>Fair Haven</i>	Interior	11/18/2020	\$294,404	\$132,482	\$57,263	381,758	14,875	<i>On bill financing \$3373.38 x 48 months</i>
<i>Mauro Sheridan</i>	Exterior	11/18/2020	\$12,956	\$5,589	\$2,096	13,973	23	<i>On bill financing \$153.48 x 48 months</i>
<i>Wexler Grant</i>	Interior	11/18/2020	\$92,337	\$37,550	\$14,081	93,874	4,669	<i>On bill financing \$1141.40 x 48 months</i>
<i>COOP</i>	Interior	11/11/2020	\$171,079	\$73,680	\$27,630	184,200	8,055	<i>On bill financing \$2029.15 x 48 months</i>
<i>Wilbur Cross</i>	Interior	11/11/2020	\$274,305	\$98,031	\$36,762	245,078	16,926	<i>On bill financing \$3672.38 x 48 months</i>
<b>TOTALS</b>			<b>\$852,364</b>	<b>\$350,524</b>	<b>\$139,029</b>	<b>926,864</b>	<b>44,556</b>	

**COST AVOIDANCE (\$)**

The projects listed above remain budget neutral for four years as the cost of the project is paid for by savings on the school’s utility bills. After the projects are paid off, the cost savings will fully be reflected on the bill.

**Annual cost avoidance for the all six projects: \$139,029/yr**

**Total 10 year cost avoidance for all six projects: \$1,390,290**

**ENERGY CONSERVATION (kWh)**

The NHPS is showing their commitment to the environment and carbon footprint reduction by taking these energy conservation initiatives.

**Annual kWh avoidance for all six projects: 926,864 kWh/yr**

**10 year kWh avoidance for all six projects: 9,268,640 kWh**

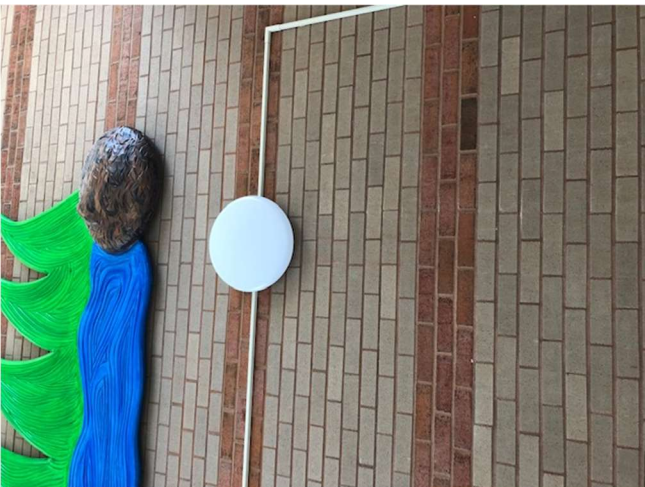
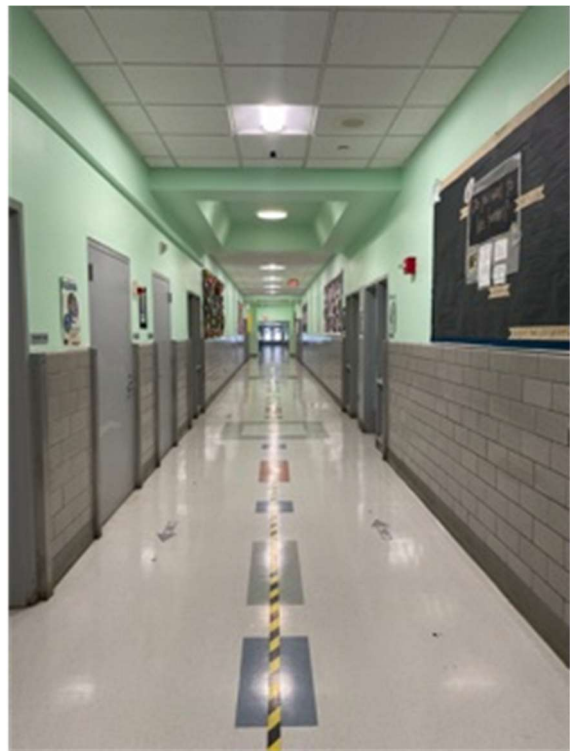
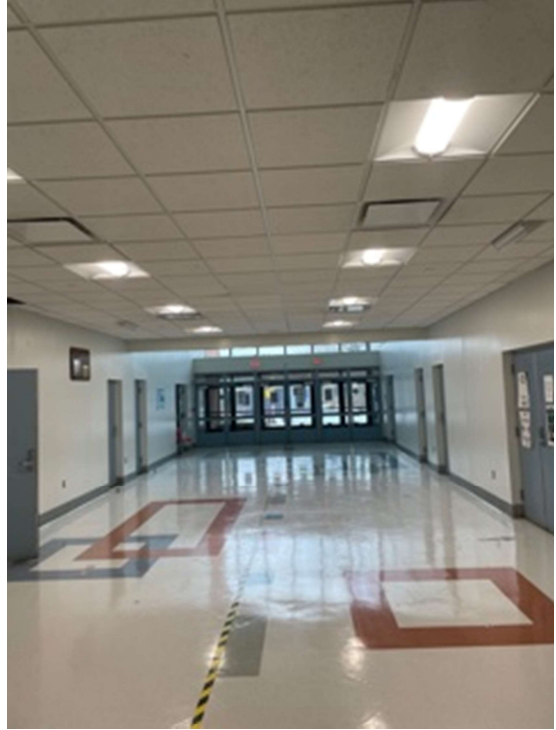


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**WEXLER GRANT**  
BEFORE



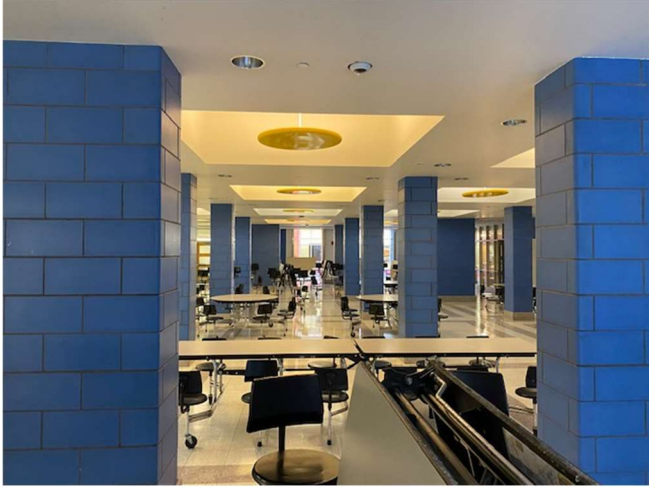
AFTER





NEW HAVEN PUBLIC SCHOOLS

FAIR HAVEN  
BEFORE



AFTER



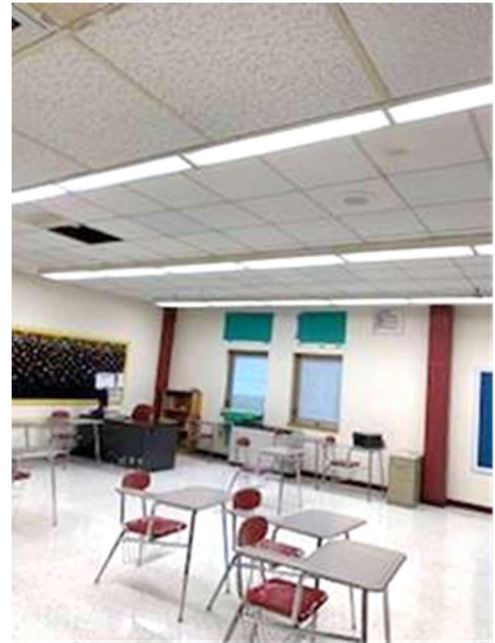


NEW HAVEN PUBLIC SCHOOLS

**WILBUR CROSS**  
BEFORE



AFTER



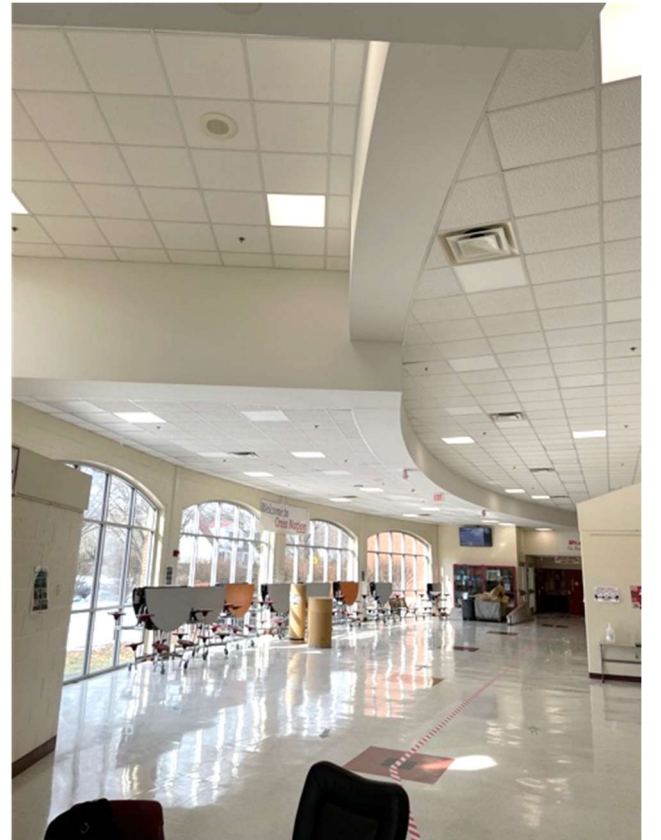


NEW HAVEN PUBLIC SCHOOLS

**WILBUR CROSS (continued)**  
BEFORE



AFTER





NEW HAVEN PUBLIC SCHOOLS



COOP  
BEFORE



AFTER





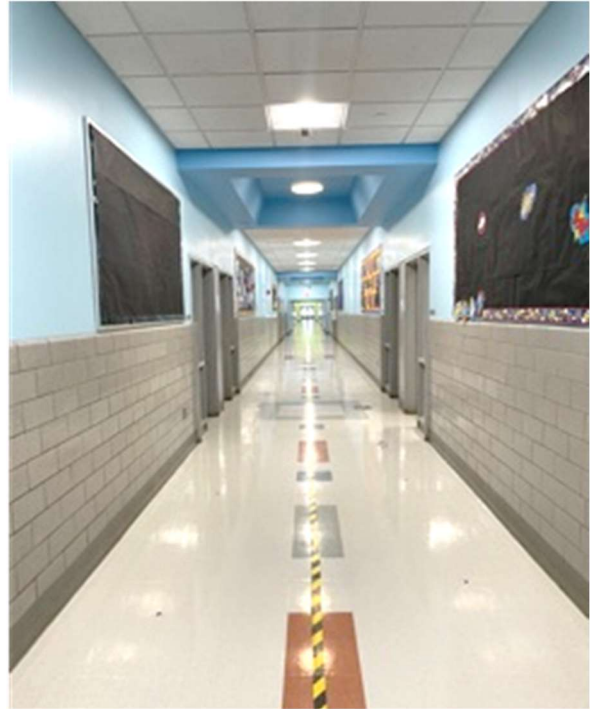


NEW HAVEN PUBLIC SCHOOLS

**WEXLER GRANT**  
BEFORE



AFTER





NEW HAVEN PUBLIC SCHOOLS



## Comprehensive List of LED Lighting Projects

		<i>Total Cost</i>	<i>Incentive</i>	<i>Annual Dollars Saved</i>	<i>Annual kWh Saved</i>	<i>Total LED tubes/fixtures installed</i>
<i>Barnard</i>	Exterior	\$55,294	\$8,771	\$4,108	33,949	18
<i>Barnard</i>	Interior	\$138,109	\$34,589	\$17,012	127,041	116
<i>Benjamin Jepson</i>	Exterior	\$31,468	\$8,842	\$3,242	29,472	57
<i>Betsy Ross</i>	Interior/Exterior	\$115,496	\$36,359	\$16,031	123,320	1,488
<i>Central Kitchen</i>	Interior/Exterior	\$48,984	\$13,879	\$6,428	49,452	507
<i>Clarence Rogers</i>	Interior	\$105,608	\$21,395	\$10,679	71,315	513
<i>Columbus</i>	Exterior	\$47,879	\$10,873	\$5,074	36,244	94
<i>Conte</i>	Exterior	\$27,676	\$8,569	\$4,570	28,564	58
<i>COOP</i>	Interior	\$171,079	\$73,680	\$27,630	184,200	8,055
<i>COOP</i>	Exterior	\$15,854	\$2,626	\$2,159	15,420	91
<i>Edgewood</i>	Exterior	\$7,283	\$3,192	\$1,197	7,981	8
<i>Fair Haven</i>	Interior	\$294,404	\$132,482	\$57,263	381,758	14,875
<i>Fieldhouse</i>	Interior	\$156,680	\$62,672	\$39,861	265,741	120
<i>Hill Central</i>	Exterior	\$18,827	\$3,877	\$1,809	12,923	35
<i>Hillhouse</i>	Exterior	\$114,292	\$40,266	\$18,791	134,220	187
<i>Hillhouse</i>	Interior	\$422,398	\$152,097	\$70,979	506,991	16,622
<i>Katherine Brennan</i>	Interior	\$122,665	\$31,139	\$15,569	103,796	527
<i>King Robinson</i>	Interior	\$275,601	\$110,500	\$47,801	158,682	5,040
<i>King Robinson</i>	Exterior	\$19,740	\$5,549	\$2,589	18,495	73
<i>Lincoln Bassett</i>	Interior	\$55,827	\$17,585	\$10,035	77,191	564
<i>Mauro Sheridan</i>	Exterior	\$12,956	\$5,589	\$2,096	13,973	23
<i>Nathan Hale</i>	Interior (gym)	\$14,391	\$3,692	\$4,308	23,323	24
<i>New Horizon</i>	Interior/Exterior	\$83,983	\$28,928	\$13,613	98,232	551
<i>Quinnipiac</i>	Exterior	\$10,442	\$4,177	\$2,266	20,598	19
<i>Quinnipiac</i>	Interior	\$54,148	\$18,989	\$9,494	57,879	3,404
<i>Ross Woodward</i>	Exterior	\$212,254	\$46,738	\$23,369	155,793	56
<i>Sound School</i>	Exterior	\$29,440	\$8,747	\$4,989	45,762	21
<i>Truman</i>	Interior	\$289,123	\$57,398	\$28,699	191,327	2,132
<i>Wexler Grant</i>	Interior	\$92,337	\$37,550	\$14,081	93,874	4,669
<i>Wexler Grant</i>	Exterior	\$53,077	\$8,630	\$4,027	28,767	133
<i>Wilbur Cross</i>	Interior	\$274,305	\$98,031	\$36,762	245,078	16,926
	<b>Totals</b>	<b>\$3,371,621</b>	<b>\$1,097,411</b>	<b>\$506,531</b>	<b>3,341,361</b>	<b>77,006</b>



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## Recognition for Energy Conservation

### Energy Star



**The NHBOE have received Energy Star Certification at nine of our schools:**

Truman • Betsy Ross • Nathan Hale • HSC • Wexler Grant • Conte • Ross Woodward  
Edgewood • Clinton Ave

### Green Circle Award



Connecticut's Department of Environmental Protection established the GreenCircle Award program in 1998 to recognize businesses, institutions, government agencies, individuals, and civic organizations who participated in energy conservation, transportation, pollution prevention or recycling related activities or projects that promoted natural resource conservation or environmental awareness.

The New Haven Board of Education were proud recipients of this award in 2016 for our energy conservation projects and energy conscious school construction.





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