Wylie ISD LED Lighting Conversion: A Four-Campus Energy Savings White Paper

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Executive summary

Converting four Wylie ISD campuses to LED lighting cuts the district's lighting electricity bill by **$165,565 a year**, from $242,784 to $77,217, a **68% reduction**.

MHSC Lighting audited every fixture at Wylie High School, Wylie West Intermediate School, Wylie West Elementary School and Wylie West Early Childhood Center. Replacing legacy fluorescent, CFL and metal halide lighting with LED removes:

- **448 kW** of connected lighting load
- **1,251,048 kWh** of electricity use every year
- About **$1.66 million** in electricity cost over ten years at today's rates

The high school alone accounts for half of the savings, $83,204 a year. Every campus lands between 67% and 70% lower lighting energy use.

The problem with legacy school lighting

Most Texas school buildings still run lighting technology that is two or three generations old, and it costs districts money every school day.

- **T-12 and T-8 fluorescent troffers** fill classrooms and halls. T-12 lamps are obsolete and their magnetic ballasts add about 9W of waste per lamp.
- **T5 and T5HO high bays** in gyms draw 250W to 360W per fixture, including ballast.
- **Metal halide** parking poles, floods and wall packs draw 100W to 1,080W each, take minutes to reach full brightness and dim as they age.
- **CFL, PAR38 and incandescent** cans and lamps use three to ten times the power of an LED equivalent.

Because these fixtures run 14 hours a day inside and dusk to dawn outside, every watt removed is multiplied across thousands of operating hours a year.

Scope and method

MHSC Lighting documented every fixture on each campus by location, fixture type, lamp type, lamp count, lamp wattage and ballast load, then matched each one to an LED replacement.

Assumption	Value
Campuses	Wylie High School, Wylie West Intermediate, Wylie West Elementary, Wylie West Early Childhood Center
Interior hours	14 hours a day, 196 school days a year
Exterior and parking hours	12 hours a night, 365 nights a year
Utility rate	$0.1355/kWh (high school, intermediate, elementary); $0.1140/kWh (early childhood center)
Existing LED fixtures	Left in place, no cost or savings counted
Emergency fixtures	Converted with LED emergency driver kits to stay code-compliant

Savings are projections from MHSC's LED Lighting Conversion Analysis for each campus. They count electricity only, not maintenance, lamp replacement or utility rebates.

Results by campus

All four campuses cut lighting energy by two-thirds or more. The intermediate school posts the highest percentage and the high school the largest dollar figure.

Campus	Current cost / yr	LED cost / yr	Savings / yr	kW reduced	kWh reduced / yr	Reduction
Wylie High School	$122,192	$38,988	**$83,204**	229.45	614,054	68.1%
Wylie West Intermediate School	$43,758	$12,960	**$30,798**	78.15	227,290	70.4%
Wylie West Elementary School	$45,707	$15,094	**$30,612**	74.25	225,922	67.0%
Wylie West Early Childhood Center	$31,127	$10,175	**$20,951**	66.48	183,782	67.3%

Campus	Current cost / yr	LED cost / yr	Savings / yr	kW reduced	kWh reduced / yr	Reduction
Total, 4 campuses	**$242,784**	**$77,217**	**$165,565**	**448.33**	**1,251,048**	**68.2%**

Totals are the sums of the summary lines on the final page of each campus analysis.

Before and after

The photos below show the same spaces at Wylie ISD before and after the LED conversion: brighter, more even light with no dark patches between fixtures.

Gymnasium. T5 fluorescent high bays replaced with LED high bays.



Commons and cafeteria. Fluorescent troffers and CFL cans replaced with LED.



Designed before installed: the indoor field lighting layout

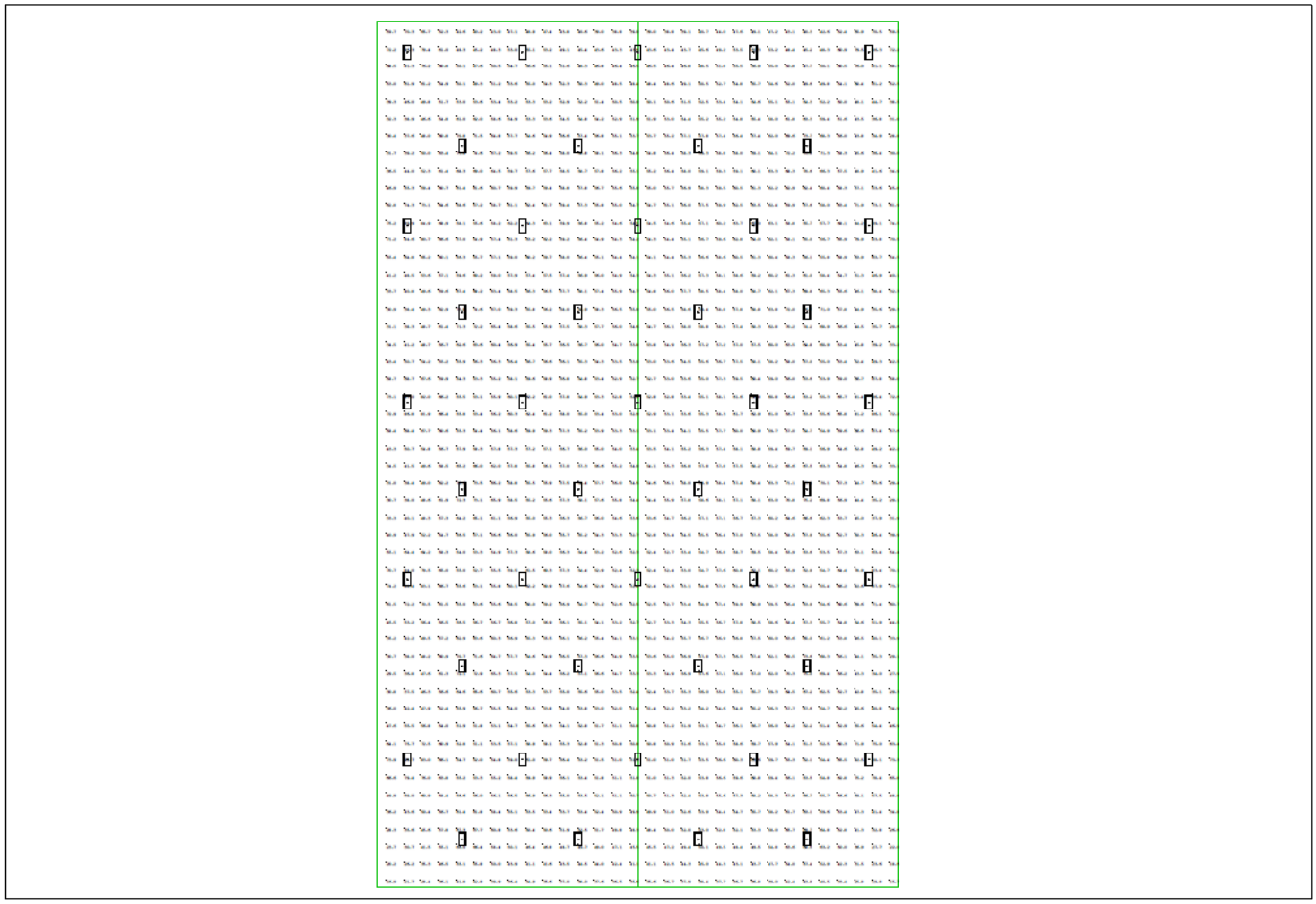
MHSC designs every space on paper before a single fixture is ordered. For the high school's indoor athletic field, that layout shows an average of **55.43 foot-candles** across the playing surface from **45 LED high bays**.

Each lighting layout follows the same process:

1. **CAD floor plan.** The building's CAD/DWG drawings, site photos and field measurements set the room's exact dimensions, wall heights and roof pitch.
2. **Fixture placement.** Each LED fixture is placed on the plan at its real mounting height, and the software calculates light levels on a grid of points across the floor.
3. **3D renders.** The same model is rendered in 3D so the district can see how the space will look and spot dark areas before work starts.
4. **Adjust, then install.** Fixture counts, spacing and wattage are tuned until the target light level is met, and the final layout becomes the installation plan for the electricians.

This means the district knows the light levels, fixture count and energy use before installation, not after.

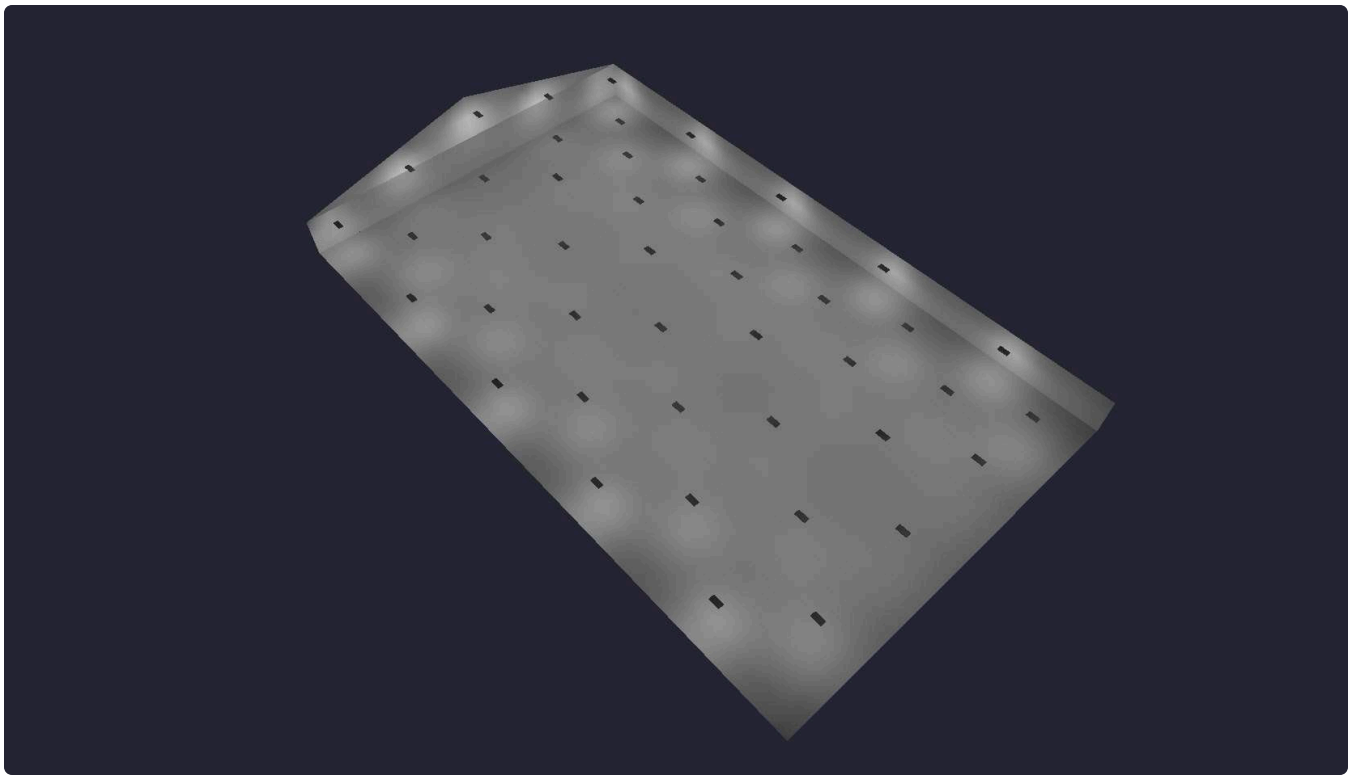
CAD plan view with photometric grid. The field drawn to scale from the CAD floor plan. Each box is one LED high bay, and each small number is the calculated light level, in foot-candles, at that point on the floor.



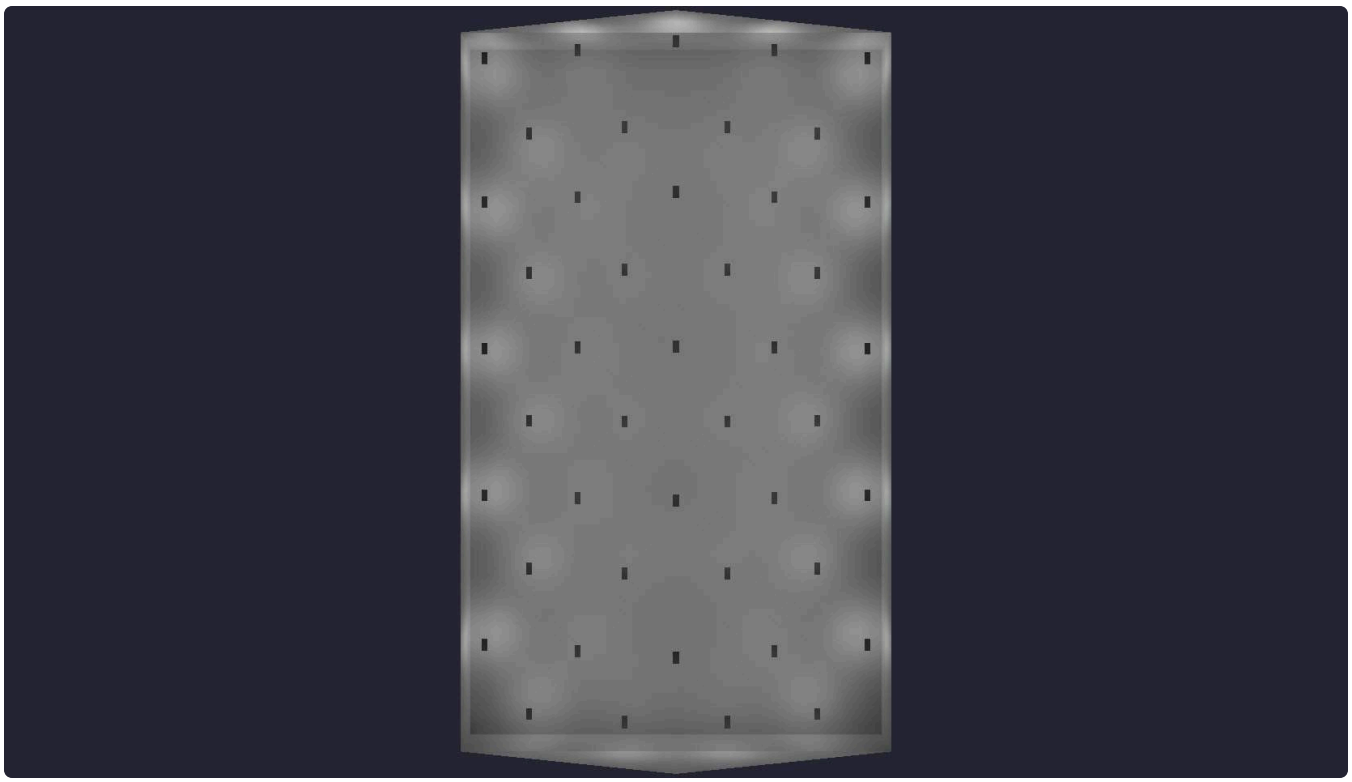
Design detail	Value
Fixture	LHB-ECO-320W LED high bay, 41,590 lumens each
Quantity	45
Total connected load	14,400 W
Average light level	55.43 fc (about 597 lux)
Mounting height	16–32 ft, following the pitched roof
Workplane height	2.5 ft
Room reflectance	Ceiling 0.80, walls 0.50, floor 0.20

The point-by-point plan view of the layout keeps the interior of the field between about 45 and 65 fc, with brighter zones under the outer rows near the walls. The three renders below come from the same design model.

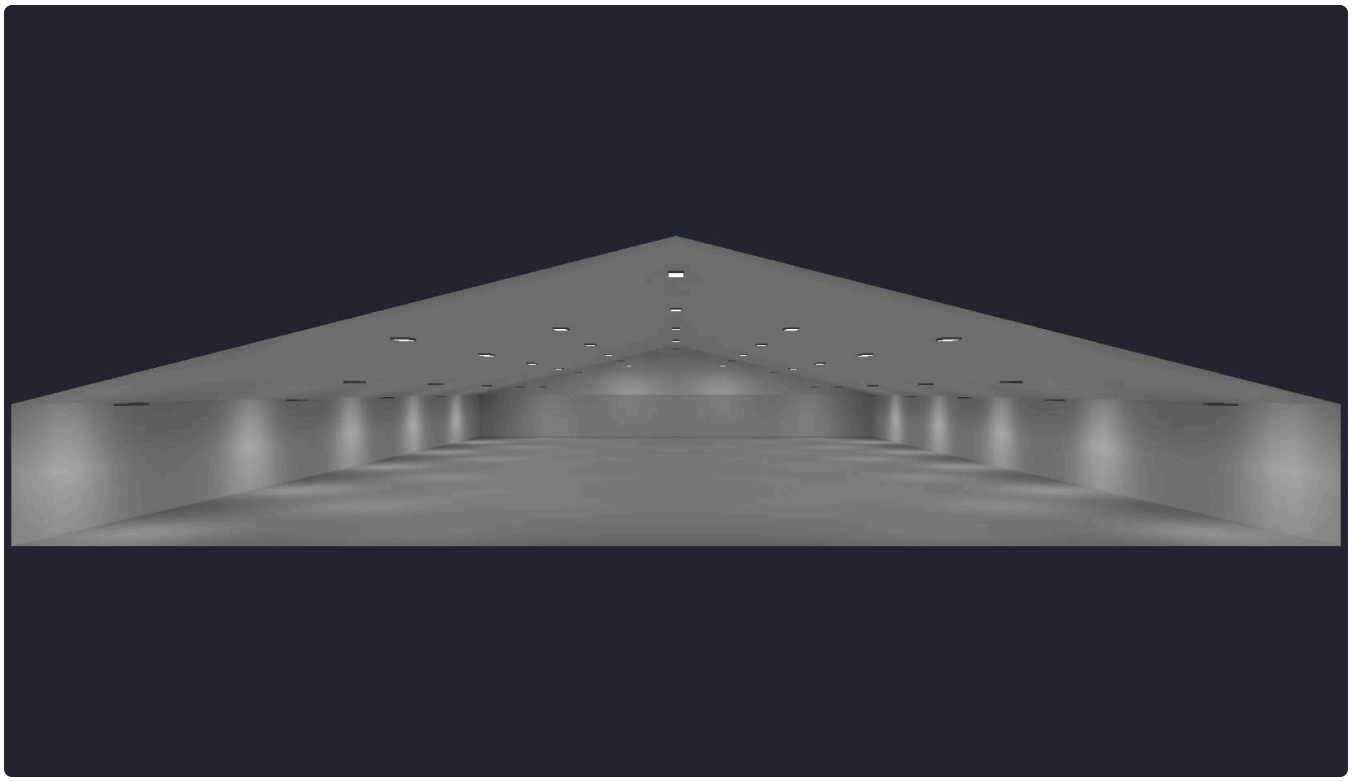
Render 1: angled view. Shows how the 45 fixtures sit under the pitched roof and how their light overlaps across the field. This view is used to confirm there are no dark bands between rows.



Render 2: top-down plan view. Matches the CAD floor plan. It shows the staggered rows of high bays that the electricians use as the installation map, and how evenly light reaches the walls and corners.



Render 3: floor-level view. Shows the field from a player's eye height, looking down its length. This view is used to check glare and how bright the walls and far end of the field will feel in use.



Where the savings come from

Three fixture groups drive most of the savings on every campus: classroom troffers, gym high bays and exterior metal halide.

Wylie High School ($83,204/yr). The 200, 300 and 400 classroom sections hold more than 600 4-lamp T-8 troffers, cut to two 20W LED tubes each; the 200 & 300 section alone saves about $10,800 a year. T5 high bays in the big gym, small gym, Dawg House and indoor baseball area become 110W–160W LED high bays. 1,000W and 400W metal halide poles on the back drive become 200W–300W LED area lights.

Wylie West Intermediate School ($30,798/yr). 34 6-lamp T5 gym high bays become 160W LED high bays, and Rooms 1–18 alone save about $5,400 a year. This campus has the highest reduction, 70.4%.

Wylie West Elementary School ($30,612/yr). 1,000W metal halide parking poles become 300W LED, saving about $7,100 a year across three pole groups. Kitchen and office troffers become 40W LED flat panels.

Wylie West Early Childhood Center ($20,951/yr). 225 classroom and hall troffers save about $4,500 a year, and 171 kindergarten troffers save about $3,450. Exterior metal halide wall packs drop from 128W to 40W each.

Long-term impact

At today's utility rates, the conversion saves Wylie ISD about **$1.66 million over ten years**, before counting maintenance.

Horizon	Electricity saved	kWh avoided
1 year	$165,565	1,251,048
5 years	$827,825	6,255,240
10 years	$1,655,650	12,510,480

Savings beyond the electric bill:

- **Lower maintenance.** LED fixtures last several times longer than fluorescent and metal halide lamps, so custodial staff spend less time on lifts replacing lamps and ballasts.

- **Lower peak demand.** Removing 448 kW of connected load can also reduce demand charges where the district's rate includes them.
- **Safer campuses.** LED parking and exterior lighting is instant-on and does not dim with age, which improves visibility at drop-off, pickup and evening events.
- **Better learning spaces.** Classrooms get flicker-free 4000K–5000K light in place of aging fluorescent tubes.

The ten-year figures assume flat utility rates. Rising rates would increase the dollar savings.

Conclusion

For a district of four campuses, an LED conversion is one of the largest recurring budget savings available: $165,565 a year, every year, at Wylie ISD.

Other districts can follow the same path:

1. Request a campus-by-campus lighting audit that counts every fixture, lamp and ballast.
2. Review the savings analysis by campus and by area to set priorities.
3. Phase installation around the school calendar, starting with the highest-savings areas.
4. Apply for available utility rebates before installation begins.

About MHSC Lighting & Electrical

MHSC Lighting & Electrical is a lighting and electrical contractor based in College Station, Texas. It designs, audits and installs LED lighting for school districts, government facilities, retail and industrial clients.

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