

**How to Find an LED Equivalent Wall Pack to Replace a High Pressure Sodium Wall Pack:
Printable Worksheet**

1.) Determine the Wattage of Your HPS Wall Pack

Example: I have a 250w HPS fixture.

2.) Find the Mean Lamp Lumens of Your High Pressure Sodium Lamp

Use the table below to determine the *mean lamp lumens* of your HPS wall pack:

High Pressure Sodium (HPS) Mean Lumens and System Watts			
Lamp Type	Mean Lumens*	System Watts	Lamp Life
35w HPS	2,025	45	16,000
50w HPS	3,600	64	24,000
70w HPS	5,350	91	24,000
100w HPS	8,550	129	24,000
150w HPS	14,400	185	24,000
200w HPS	19,800	241	24,000
250w HPS	27,000	295	24,000
310w HPS	33,300	365	24,000
400w HPS	45,000	464	24,000
600w HPS	81,000	665	24,000
400w HPS	45,000	840	24,000

*Mean lumens measured at 50% of life. AccessFixtures.com

Example: The 250w HPS fixture throws 27,000 mean lamp lumens.

3.) Find the Visually Effective Lumens (VELs) of your High Pressure Sodium Lamp

Multiply the mean lamp lumens found in step two by the S/P ratio for the fixture (see following chart for S/P ratios).

$$VELs = \text{Mean lamp lumens} \times \text{S/P ratio}$$

Light Source	S/P Ratio
1700K Low Pressure Sodium (LPS)	0.25
2100K High Pressure Sodium (HPS) (35w or greater)	0.40
2100K High Pressure Sodium (HPS) (50w and above)	0.62
2700K Incandescent	1.36
3000K Fluorescent (830w)	1.29
3000K LED	1.21
3000K Quartz Halogen	1.50
3500K Fluorescent (735w)	1.24
3500K Fluorescent (835w)	1.41
3500K LED	1.41
4100 Fluorescent (741w)	1.54
4100 Fluorescent (841w)	1.65
4100K LED	2.04
4300K Metal Halide	1.49
5000K Fluorescent (850w)	1.96
5000K LED	1.80
6000K LED	2.00
6500K Fluorescent (865w)	2.20
6800K Mercury Vapor	0.80
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Example: 27,000 mean lamp lumens x 0.62 S/P ratio = 16,740 VELs

4.) Find the Luminaire Efficacy of the HPS Wall Pack

Use the following equation:

$$\text{Luminaire Efficacy (\%)} = \text{Emitted Lumens} / \text{Lamp Lumens}$$

Or, use the following chart:

Approximate Luminaire Efficacy of HPS and LED Wall Packs			
		HPS	LED
	Traditional Wall Pack	65%	83%
	Semi Cutoff Wall Pack	74%	62%
	Full Cutoff Wall Pack	43%	93%

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Example: The luminaire efficacy of a traditional HPS wall pack is 65%.

5.) Adjust for Mean Visible Luminaire Lumens

Multiply the VELs found in step three by the luminaire efficacy found in step four.

Mean Visible Luminaire Lumens = VELs x Luminaire Efficacy (%)

Example: 16,740 VELs x 65% = 10,881 mean visible luminaire lumens

6.) Calculate the Mean Visible Luminaire Lumens for the LED Replacement Wall Pack

Divide HPS wattage in half and find the closest LED match.

Example: 250w / 2 = 125w. Closest LED wattage is 126w.

Find initial light source lumens.

Example: A 126w LED throws 17,724 initial light source lumens.

Multiply initial light source lumens by 85%.

Example: 17,724 initial light source lumens x 85% = 15,065.4 mean lamp lumens

Use the S/P ratio chart to select the S/P ratio for the LED wall pack. Multiply S/P by the mean lamp lumens.

Example: 1.21 S/P x 15,065.4 mean lamp lumens = 18,229.13 VELs

Use the “Luminaire Efficacy of HPS and LED Wall Packs” chart to find the efficacy of the LED wall pack.

Example: The efficacy of a traditional LED wall pack is 83%.

Find mean visible luminaire lumens of the LED wall pack by multiplying its VELs by its efficacy.

Example: 18,229.13 VELs x 83% = 15,130.18 mean visible luminaire lumens

7.) Compare the Mean Visible Luminaire Lumens of the HPS and LED Wall Packs

Example: The 250w HPS wall pack threw 10,881 mean visible luminaire lumens. The 126w LED wall pack threw 15,130 mean visible luminaire lumens.

8.) If Desired, Calculate the Mean Visible Luminaire Lumens of Other LED Wall Packs

Repeat steps six and seven until you find the right LED wall pack for you.

Example: A 95w LED wall pack throws 11,348 mean visible luminaire lumens, which means it provides slightly more light than the 250w HPS fixture. This may be the best replacement.