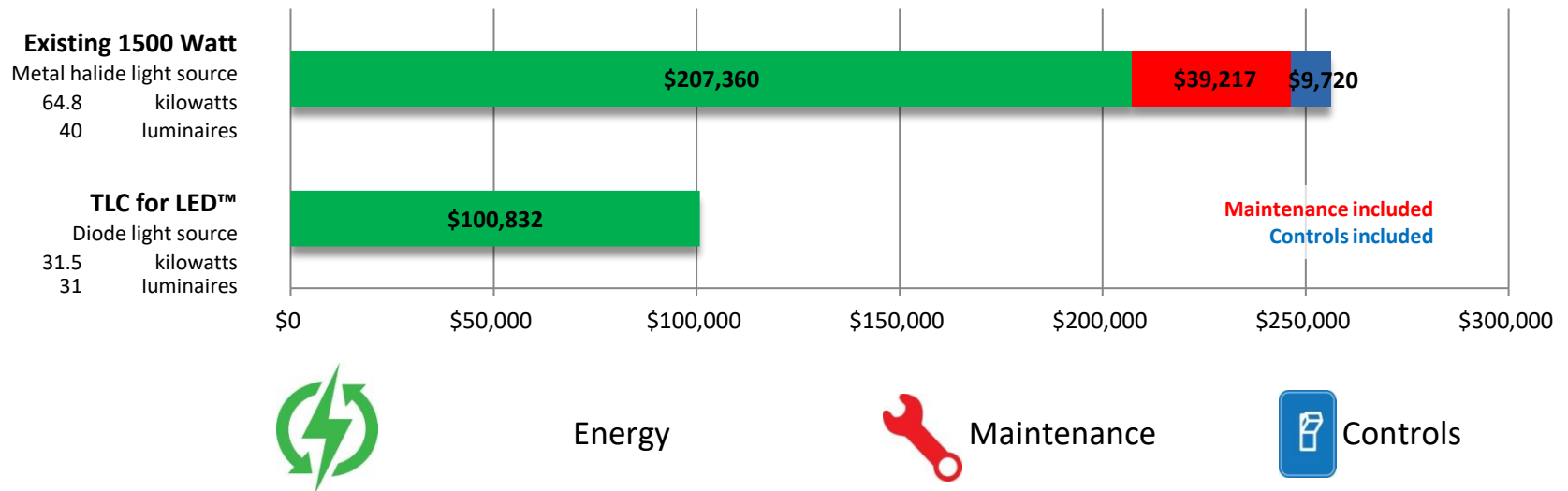


25-Year Cost of Ownership Comparison

Hunnewell Multipurpose Field

Prepared For:
Jay McHale
 August 31, 2021



How is this possible? Musco's 40 years of developing systems, light control, and application expertise puts more available lumens per watt on the field. Our services team provides all on/off operation, monitoring, and maintenance.

For your budget . . . for the environment

Musco LED



25-Year Ownership Savings

\$155,465



CO2 reduction

230 tons**

** Equivalent to taking **48** cars off the road for one year

Assumptions	Hunnewell Grass Multipurpose Field 50/30
Annual operating hours	400
Energy:	
Energy cost per kilowatt hour	\$0.10
Demand charge per kilowatt hour	\$11.00
Maintenance:	
Group relamp - cost per luminaire	\$266
Spot maintenance over 25 years	\$3,750
Controls:	
Labor - turning lights on & off	\$0.00
Lights on extra time without controls	15%



	TLC for LED	Typical
kW totals	31.51	64.80
Energy totals	\$100,832	\$207,360
Maintenance	0.00 \$	39,217
Controls	0.00 \$	9,720
Totals	100832 \$	256,297
Qty of luminaires	31	40
CO2	217	447

	Field 1	Field 2	Field 3	Field 4	Field 5
kW Totals:	31.51	0	0	0	0
TLC luminaire totals:	31	0	0	0	0

Field 6

0

0

Field 7

0

0

Field 8

0

0

Input fields in yellow

Facility name **Hunnewell Multipurpose Field**
 Scoreboard project # **198552**
 Field description & footcandle levels **Hunnewell Grass Multipurpose Field 50/30**
 Prepared for **Jay McHale**
 Energy cost per kWh **\$0.10**
 Annual operating hours **400**

Does the facility have demand charges? **No**
 Demand charges **\$ 11.00**
 Months of demand **8**

Musco TLC for LED data

TLC **TLC for LED™ 1500**
 Poletop luminaire quantity **0**
 TLC **TLC for LED™ 1200**
 Poletop luminaire quantity **23**
 TLC **TLC for LED™ 900**
 Poletop luminaire quantity **0**
 TLC **TLC for LED™ 600**
 Poletop luminaire quantity **0**
 TLC **TLC for LED™ RGBW**
 Poletop luminaire quantity **0**
 BallTracker™ luminaire quantity **8**
 kW demand per luminaire **1.43**
 kW demand per luminaire **1.17**
 kW demand per luminaire **0.89**
 kW demand per luminaire **0.58**
 kW demand per luminaire **0.64**
 kW demand per BallTracker™ luminaire **0.575**
 Total system kW **31.51**

Typical Metal Halide Floodlighting

Lamp wattage **1500 W**
 Luminaire quantity **40**
 kW demand per luminaire **1.62**
 Useful lamp life hours **3000**
 Total system kW **64.8**

Controls

Energy savings **15%**
 Labor rate per hour **\$0.00**
 # on/off cycles per year **0**
 Labor hours per cycle **0**

Maintenance

Lamp replacement cost **\$266**
 Warranty duration (in years) **25**
 Spot maintenance over warranty duration **\$3,750**

25-year cost calculations

	Musco TLC for LED	Typical or Prior
Energy	\$31,510	\$64,800
Demand charges	\$69,322	\$142,560
Energy total	\$100,832	\$207,360
Maintenance (relamping & spot)		\$39,217
Controls		\$9,720
Total	\$100,832	\$256,297
25-Year CO2	217	447

Input fields in yellow

Facility name
 Scoreboard project #
 Field description & footcandle levels
 Prepared for
 Energy cost per kWh
 Annual operating hours

Does the facility have demand charges? No
 Demand charges 0
 Months of demand 0

Musco TLC for LED data

TLC TLC for LED™ 1500
 Poletop luminaire quantity 0
 TLC TLC for LED™ 1200
 Poletop luminaire quantity 0
 TLC TLC for LED™ 900
 Poletop luminaire quantity 0
 TLC TLC for LED™ 600
 Poletop luminaire quantity 0
 TLC TLC for LED™ RGBW
 Poletop luminaire quantity 0
 BallTracker™ luminaire quantity 0
 kW demand per luminaire 1.43
 kW demand per luminaire 1.17
 kW demand per luminaire 0.89
 kW demand per luminaire 0.58
 kW demand per luminaire 0.64
 kW demand per BallTracker™ luminaire 0.575
 Total system kW 0

Typical Metal Halide Floodlighting

Lamp wattage 1000 W
 Luminaire quantity 0
 kW demand per luminaire 1.08
 Useful lamp life hours 10000
 Total system kW 0

Controls

Energy savings 15%
 Labor rate per hour \$0.00
 # on/off cycles per year 0
 Labor hours per cycle 0

Maintenance

Lamp replacement cost \$266
 Warranty duration (in years) 25
 Spot maintenance over warranty duration \$3,750

25-year cost calculations		
	Musco TLC for LED	Typical or Prior
Energy	\$0	\$0
Demand charges	\$0	\$0
Energy total	\$0	\$0
Maintenance (relamping & spot)		\$0
Controls		\$0
Total	\$0	\$0
25-Year CO2	0	0

Input fields in yellow

Facility name

Scoreboard project #

Field description & footcandle levels

Prepared for

Energy cost per kWh \$0.10

Annual operating hours

Does the facility have demand charges? No

Demand charges 0

Months of demand 0

Musco TLC for LED data

TLC TLC for LED™ 1500

Poletop luminaire quantity 0

TLC TLC for LED™ 1200

Poletop luminaire quantity 0

TLC TLC for LED™ 900

Poletop luminaire quantity 0

TLC TLC for LED™ 600

Poletop luminaire quantity 0

TLC TLC for LED™ RGBW

Poletop luminaire quantity 0

BallTracker™ luminaire quantity 0

kW demand per luminaire 1.43

kW demand per luminaire 1.17

kW demand per luminaire 0.89

kW demand per luminaire 0.58

kW demand per luminaire 0.64

kW demand per BallTracker™ luminaire 0.575

Total system kW 0

Typical Metal Halide Floodlighting

Lamp wattage 1500 W

Luminaire quantity 0

kW demand per luminaire 1.62

Useful lamp life hours 3000

Total system kW 0

Controls

Energy savings 15%

Labor rate per hour \$0.00

on/off cycles per year 0

Labor hours per cycle 0

Maintenance

Lamp replacement cost \$266

Warranty duration (in years) 25

Spot maintenance over warranty duration \$3,750

25-year cost calculations		
	Musco TLC for LED	Typical or Prior
Energy	\$0	\$0
Demand charges	\$0	\$0
Energy total	\$0	\$0
Maintenance (relamping & spot)		\$0
Controls		\$0
Total	\$0	\$0
25-Year CO2	0	0

Input fields in yellow

Facility name

Scoreboard project #

Field description & footcandle levels

Prepared for

Energy cost per kWh \$0.10

Annual operating hours

Does the facility have demand charges? No

Demand charges 0

Months of demand 0

Musco TLC for LED data

TLC TLC for LED™ 1500

Poletop luminaire quantity 0

TLC TLC for LED™ 1200

Poletop luminaire quantity 0

TLC TLC for LED™ 900

Poletop luminaire quantity 0

TLC TLC for LED™ 600

Poletop luminaire quantity 0

TLC TLC for LED™ RGBW

Poletop luminaire quantity 0

BallTracker™ luminaire quantity 0

kW demand per luminaire 1.43

kW demand per luminaire 1.17

kW demand per luminaire 0.89

kW demand per luminaire 0.58

kW demand per luminaire 0.64

kW demand per BallTracker™ luminaire 0.575

Total system kW 0

Typical Metal Halide Floodlighting

Lamp wattage 1500 W

Luminaire quantity 0

kW demand per luminaire 1.62

Useful lamp life hours 3000

Total system kW 0

Controls

Energy savings 15%

Labor rate per hour \$0.00

on/off cycles per year 0

Labor hours per cycle 0

Maintenance

Lamp replacement cost \$266

Warranty duration (in years) 25

Spot maintenance over warranty duration \$3,750

25-year cost calculations

	Musco TLC for LED	Typical or Prior
Energy	\$0	\$0
Demand charges	\$0	\$0
Energy total	\$0	\$0
Maintenance (relamping & spot)		\$0
Controls		\$0
Total	\$0	\$0
25-Year CO2	0	0

Input fields in yellow

Facility name

Scoreboard project #

Field description & footcandle levels

Prepared for

Energy cost per kWh \$0.10

Annual operating hours

Does the facility have demand charges? No

Demand charges 0

Months of demand 0

Musco TLC for LED data

TLC TLC for LED™ 1500

Poletop luminaire quantity 0

TLC TLC for LED™ 1200

Poletop luminaire quantity 0

TLC TLC for LED™ 900

Poletop luminaire quantity 0

TLC TLC for LED™ 600

Poletop luminaire quantity 0

TLC TLC for LED™ RGBW

Poletop luminaire quantity 0

BallTracker™ luminaire quantity 0

kW demand per luminaire 1.43

kW demand per luminaire 1.17

kW demand per luminaire 0.89

kW demand per luminaire 0.58

kW demand per luminaire 0.64

kW demand per BallTracker™ luminaire 0.575

Total system kW 0

Typical Metal Halide Floodlighting

Lamp wattage 1500 W

Luminaire quantity 0

kW demand per luminaire 1.62

Useful lamp life hours 3000

Total system kW 0

Controls

Energy savings 15%

Labor rate per hour \$0.00

on/off cycles per year 0

Labor hours per cycle 0

Maintenance

Lamp replacement cost \$266

Warranty duration (in years) 25

Spot maintenance over warranty duration \$3,750

25-year cost calculations

	Musco TLC for LED	Typical or Prior
Energy	\$0	\$0
Demand charges	\$0	\$0
Energy total	\$0	\$0
Maintenance (relamping & spot)		\$0
Controls		\$0
Total	\$0	\$0
25-Year CO2	0	0

Input fields in yellow

Facility name	
Scoreboard project #	
Field description & footcandle levels	
Prepared for	
Energy cost per kWh	\$0.10
Annual operating hours	

Does the facility have demand charges?	No
Demand charges	0
Months of demand	0

Musco TLC for LED data

TLC	TLC for LED™ 1500	
Poletop luminaire quantity	0	
TLC	TLC for LED™ 1200	
Poletop luminaire quantity	0	
TLC	TLC for LED™ 900	
Poletop luminaire quantity	0	
TLC	TLC for LED™ 600	
Poletop luminaire quantity	0	
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Poletop luminaire quantity	0	
BallTracker™ luminaire quantity	0	
kW demand per luminaire		1.43
kW demand per luminaire		1.17
kW demand per luminaire		0.89
kW demand per luminaire		0.58
kW demand per luminaire		0.64
kW demand per BallTracker™ luminaire		0.575
Total system kW	0	

Typical Metal Halide Floodlighting

Lamp wattage	1500 W
Luminaire quantity	0
kW demand per luminaire	1.62
Useful lamp life hours	3000
Total system kW	0

Controls

Energy savings	15%
Labor rate per hour	\$0.00
# on/off cycles per year	0
Labor hours per cycle	0

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Lamp replacement cost	\$266
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25-year cost calculations		
	Musco TLC for LED	Typical or Prior
Energy	\$0	\$0
Demand charges	\$0	\$0
Energy total	\$0	\$0
Maintenance (relamping & spot)		\$0
Controls		\$0
Total	\$0	\$0
25-Year CO2	0	0

Input fields in yellow

Facility name	
Scoreboard project #	
Field description & footcandle levels	
Prepared for	
Energy cost per kWh	\$0.10
Annual operating hours	

Does the facility have demand charges?	No
Demand charges	0
Months of demand	0

Musco TLC for LED data

TLC	TLC for LED™ 1500	
Poletop luminaire quantity	0	
TLC	TLC for LED™ 1200	
Poletop luminaire quantity	0	
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kW demand per BallTracker™ luminaire		0.575
Total system kW	0	

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Useful lamp life hours	3000
Total system kW	0

Controls

Energy savings	15%
Labor rate per hour	\$0.00
# on/off cycles per year	0
Labor hours per cycle	0

Maintenance

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Warranty duration (in years)	25
Spot maintenance over warranty duration	\$3,750

25-year cost calculations		
	Musco TLC for LED	Typical or Prior
Energy	\$0	\$0
Demand charges	\$0	\$0
Energy total	\$0	\$0
Maintenance (relamping & spot)		\$0
Controls		\$0
Total	\$0	\$0
25-Year CO2	0	0

Input fields in yellow

Facility name

Scoreboard project #

Field description & footcandle levels

Prepared for

Energy cost per kWh \$0.10

Annual operating hours

Does the facility have demand charges? No

Demand charges 0

Months of demand 0

Musco TLC for LED data

TLC TLC for LED™ 1500

Poletop luminaire quantity 0

TLC TLC for LED™ 1200

Poletop luminaire quantity 0

TLC TLC for LED™ 900

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TLC TLC for LED™ RGBW

Poletop luminaire quantity 0

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kW demand per luminaire 0.64

kW demand per BallTracker™ luminaire 0.575

Total system kW 0

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Luminaire quantity 0

kW demand per luminaire 1.62

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Energy savings 15%

Labor rate per hour \$0.00

on/off cycles per year 0

Labor hours per cycle 0

Maintenance

Lamp replacement cost \$266

Warranty duration (in years) 25

Spot maintenance over warranty duration \$3,750

25-year cost calculations		
	Musco TLC for LED	Typical or Prior
Energy	\$0	\$0
Demand charges	\$0	\$0
Energy total	\$0	\$0
Maintenance (relamping & spot)		\$0
Controls		\$0
Total	\$0	\$0
25-Year CO2	0	0

Luminaire Technology Information		
	kW Demand	Useful lamp hours
Musco Green Generation 1500-watt	1.564	5000
Musco Green Generation 1000-watt	1.12	12000
Metal halide 1500-watt	1.62	3000
Metal halide 1000-watt	1.08	10000
Quartz 1500-watt	1.5	2000
Quartz 1000-watt	1	2000
MPI 1000-watt	1	2000
HPS 1000-watt	1.07	24000