



Thompson Falls

NWE LED Street Light Project - MLCT

October 4, 2019

Blain Nicholls

**NorthWestern®
Energy**
Delivering a Bright Future

NorthWestern Energy is in the process of a four-year program to replace existing street lights with energy-efficient light-emitting diode (LED) lights. The project will include about 43,000 utility-owned streetlights to be replaced between 2019 and 2023 in communities in our Montana service territory.





- **Why LEDs – Energy Efficiency**

- LED streetlights use about 50 percent less electricity than traditional High-Pressure Sodium lights, last two to three times longer, and provide better light quality for motorists and pedestrians.
- When the nearly 43,000 streetlights are replaced in Montana, the estimated energy savings will total about 11.5 million kilowatt hours (kWh) per year. That's enough electricity saved to power about 1,280 homes per year.
- LED light source is very directional
- Diffusing/filtering (Dark Sky & Light Trespass)

- **Why Now**

- NorthWestern has been evaluating LED streetlights for several years.
- Recent price decreases have made them more cost effective.
- HPS products are being phased out by manufacturers.



- **Benefits** – lower wattage, lower maintenance, smart city technology ready – dimmable capable
- **Cost** – no upfront customer costs
- **Like for like fixture replacement**
 - LED “equivalent” identified for each standard offering HPS fixture
 - Dark Sky compliant fixtures added
- **Color of LED**
 - LED lights rated at 3000 Kelvin (K), which have hue/tone as warm white, vs LED lights with a higher K rating that are more blue/cool white.
 - 3000K is widely available and cost effective, and 2700K is becoming available
 - AMA & IDA recommend 3000K
 - Majority of US street lighting today 4000K

- **Project Timeframe**
 - Montana communities will see the switch between 2019 and 2022.
- **Will All Streetlights Be Replaced?**
 - No. The NorthWestern LED project will not affect “customer-owned” streetlights or ‘private’ lights. NorthWestern owned yard and area lighting will not be part of this LED project but will likely be upgraded once the initial project is completed.
- **Cost of Project**
 - The overall project is expected to cost about \$24 million. The project involves replacing existing street lighting heads on a one-to-one basis with equivalent LED products. The LED products will be selected to have similar light patterns and lumens. Generally, poles will not be replaced nor styles of lighting fixtures changed.

Cobra Head Street Light Offering

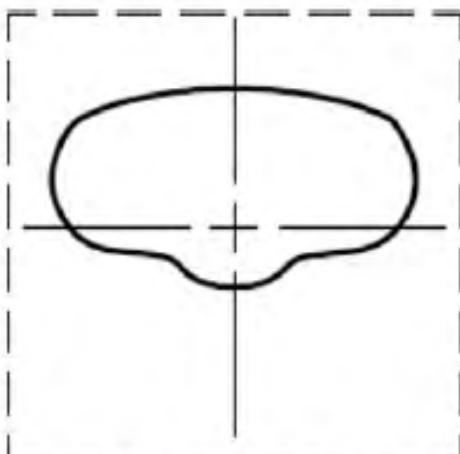
HPS



HPS Cobra head medium semi-cutoff



HPS Cobra head medium cutoff



ASYMMETRIC
DISTRIBUTION
(Type III)



LED



LED GE Flat Glass/Discrete LED



LED Eaton Discrete LED



Post Top Street Light Offering

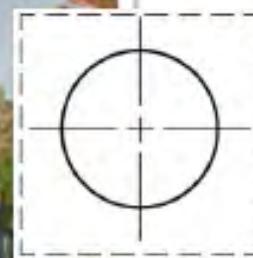
HPS



HPS Contemporary



Existing HPS Lexington

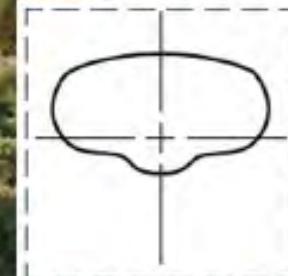


SYMMETRIC
DISTRIBUTION
(Type V)

LED



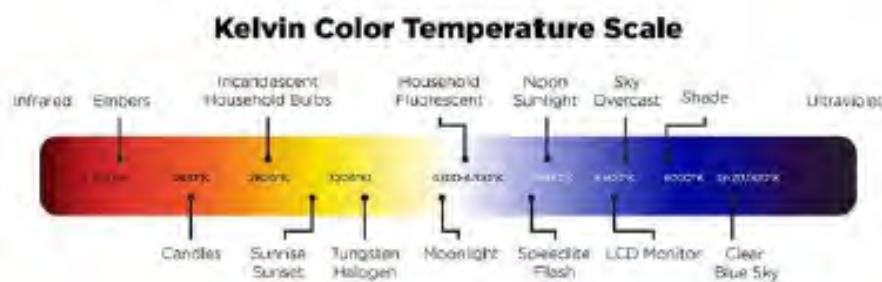
LED Dark Sky Friendly



ASYMMETRIC
DISTRIBUTION
(Type III)

NorthWestern Energy LED Street Lighting Advantages

- **LED street lights are generally 3000 K Color Temperature;** which is ‘warm white’ light and provides better visibility than ‘orange’ HPS.
- American Medical Association & International Dark Sky Association recommend 3000K lights for streetlights



Existing 2200 Kelvin HPS

3000 Kelvin

4000 Kelvin

Street Light Offering

HPS



HPS Cobra head medium semi-cutoff



HPS Cobra head medium cutoff

LED



LED GE Flat Glass/Discrete LED



LED Eaton Discrete LED



Ornamental Street Lights

HPS



HPS Contemporary



Existing HPS Acorn



Existing HPS Lexington

LED



Standard LED Eaton-Contemporary



Standard LED Offering



LED Dark Sky Friendly Evaluating



LED Acorn Acuity/AEL Options
B1-U5-G3, W/Down Reflector B-1-U4-G3



LED Acorn GE
B1-U2-G1
3,800 Lumens



Thank You!

Questions?



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COBRAHEAD LIGHTS



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Montana Street Lights

Count Summary from ECIS Model Data

*Decision Point Discussion: Model Assumes changing out
all 42,864 company owned lights. Small Town Discussion.*

Total Street Lights 42,864 ECIS Data

	Total by Division	% Total
Billings Division	8,833	20.6%
Bozeman Division	3,161	7.4%
Butte Division	5,044	11.8%
Great Falls Division	11,554	27.0%
Helena Division	4,313	10.1%
Havre District	5,388	12.6%
Missoula Division	4,571	10.7%
Total	42,864	100.0%

	Large Towns	
GREAT FALLS	9,251	
BILLINGS	4,534	
HELENA	3,537	
MISSOULA	3,461	
BUTTE	3,011	
HAVRE	1,630	
BOZEMAN	1,444	
Total Large Towns	26,868	62.7%

	Next Level Towns > 250 lights	
GLASGOW	1038	FORT BENTON
CONRAD	710	ROUNDUP
LEWISTOWN	628	DILLON
HARDIN	627	LIVINGSTON
ANACONDA	625	DEER LODGE
COLSTRIP	586	HARLEM
MALTA	583	HAMILTON
CHINOOK	549	CHOTEAU
BELGRADE	509	LAUREL
	5,855	3,295
	13.7%	7.7%

	Bozeman
ABSAROKEE	86
BEARCREEK	13
BELFRY	25
BILLINGS	4,534
BRIDGER	80
BROADVIEW	43
COLSTRIP	586
COLUMBUS	194
DENTON	47
EDGAR	19
FROMBERG	71
GERALDINE	75
GEYSER	23
HARDIN	627
HARLOWTON	202
HOBSON	45
JOLIET	65
JUDITH GAP	24
LAUREL	280
LAVINA	19
LEWISTOWN	628
MARTINSDALE	27
MELSTONE	40
MOCCASIN	14
MOORE	40
PARK CITY	144
RED LODGE	238
REED POINT	17
ROUNDUP	465
RYEGATE	45
STANFORD	109
TWODOT	7
WINDHAM	1
Total Bozeman	3,161

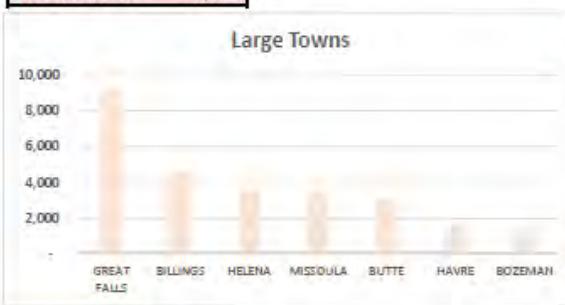
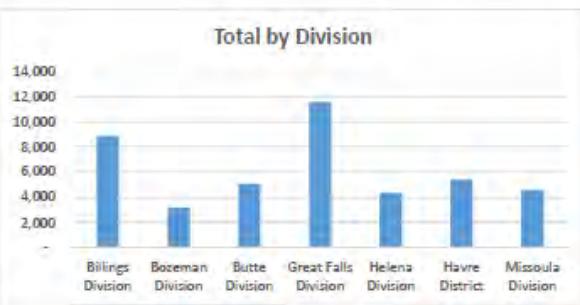
	Butte
ALDER	20
ANACONDA	625
BUTTE	3,011
DEER LODGE	346
DILLON	445
DRUMMOND	61
PHILIPSBURG	129
RAMSAY	1
SHERIDAN	79
TWIN BRIDGES	66
VIRGINIA CITY	46
WALKERVILLE	80
WHITEHALL	135
Total Butte	5,044

	Great Falls
AUGUSTA	39
BELT	162
BUTTE	3,011
BRADY	34
CARTER	19
CASCADE	61
CENTERVILLE	10
CHOTEAU	290
CONRAD	710
DUTTON	68
FAIRFIELD	212
FORT BENTON	470
GREAT FALLS	9,251
LOMA	25
NEIHART	16
POWER	31
RAYNESFORD	1
ULM	1
VALIER	152
VAUGHN	2
Total Great Falls	11,554

	Helena
BASIN	24
BOULDER	130
CLANCY	3
EAST HELENA	223
HELENA	3,537
JEFFERSON CITY	6
MONTANA CITY	2
TOWNSEND	176
WHITE SULPHUR SPRINGS	212
Total Helena	4,313

	Havre
BIG SANDY	105
BOX ELDER	44
CHESTER	162
CHINOOK	549
DODSON	46
FORT BELKNAP	216
GILD FORD	47
GLASGOW	1,038
HARLEM	332
HAVRE	1,630
HINGHAM	50
HINSDALE	49
INVERNESS	21
JOPLIN	52
KREMLIN	31
MALTA	583
NASHUA	130
RUDYARD	117
SACO	85
SAINT MARIE	84
ZURICH	17
Total Havre	5,388

	Missoula
ALBERTON	48
CORVALLIS	43
DARBY	65
HAMILTON	316
MISSOULA	3,461
PARADISE	21
PLAINS	131
SAIN T REGIS	42
SALTESE	15
STEVENSVILLE	112
SUPERIOR	127
THOMPSON FALLS	155
VICTOR	35
Total Missoula	4,571



TOTAL Billings 8,833

TOTAL Street Lights

42,864

Phases

