



**High Performance
Lighting Improvement Project
Prepared for**

Town of Mason

New Hampshire

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Carl Edin
May 13, 2019





May 13, 2019

Ms. Liz Fletcher
Town of Mason
16 Darling Hill Road
Mason, NH 03048

Re: 2019 High Performance Lighting Improvement Project

Dear Liz,

Enclosed you will find our turnkey energy saving lighting proposal.

By implementing these cost savings measures Town of Mason: DPW, Fire Department, Police Department, Town Hall and Library will achieve the following benefits:

- Reduced operating cost
- Reduced owning cost by removing inefficient incandescent, HID and T12 technology along with standard CFL and T8 technology
- Utilization of high efficiency T8 & LED technology
- Standardization of lighting components
- Improved light quality and quantity
- Eversource Incentive (pending approval)
- Excellent payback/ROI

We look forward to working with you to reach your goals of lighting improvements and energy conservation. After reviewing, please contact me at (207) 767-1313 or (207) 400-4767 to answer any questions.

Sincerely,
Carl Edin
Project Developer





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Project Process Recap





Benefits of a Turnkey Lighting Upgrade

- Complete cost analysis: room by room survey of existing system compared to a new proposed system, providing kW and kWh savings projections
- Product specification: high efficiency equipment being specified to reduce energy and maintenance cost
- Turnkey Installation/Project Management:
 - Providing detailed information of work to be completed
 - Overseeing of Installation with sub-contractors
 - Proper disposal of all waste-(hazardous and non-hazardous) with certificates of recycling provided
 - Weekly updates-communication with customer on progress of project completion
 - Pre and Post walkthrough's with Eversource for final approvals
- Customer benefits:
 - With the exception of scheduling, Town of Mason is able to focus on other pressing matters.
 - Cost savings will be achieved in a much quicker time frame

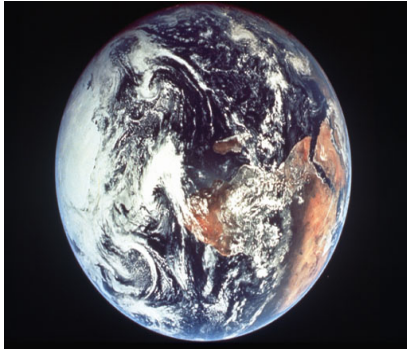
Warranty information

Lamps	3-5 years
Ballast	5 years
Fixtures	5-10 years
Controls	5 years
Labor	90 days
Labor Workmanship	1 year

EMC's Assurance

As a "turnkey" Energy Service Company, (ESCO) EMC will design and project manage the installation of proven energy saving technologies as well as provide periodic follow up to assure complete customer satisfaction.





Environmental Impact

May 2019

The **37,740 kWh** saved annually by this project equates to the following positive environmental impacts:

- **3 households** is the average number of houses that can now be powered from this project. The average U.S. household consumes 11,280 kWh annually.
- **2,604 fewer gallons of oil** need to be imported, reducing our dependence on foreign oil.
- **23 tons of CO₂**
Carbon Dioxide is considered a greenhouse gas and is a major contributor to global warming.
- **457 lbs of SO₂**
Sulfur Dioxide- some major health effects associated with this pollutant are: asthma, respiratory illness and aggravation of existing cardiovascular disease.
- **232 lbs. of Nox**
Nitrogen Oxides are considered contributors to acid rain and ground level ozone (or smog).
- **16 lbs. of visible particulate**



Supporting Information

Room by Room Savings Analysis

DPW

Fire Department

Police Department

Town Hall & Library

Street Lights





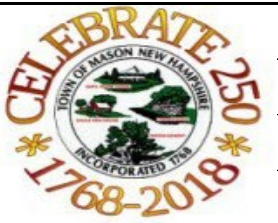
Town of Mason: Department of Public Works
Room by Room Savings Analysis



Line	Room	EMC CM Code	Count	Hours/Week	Hours/Year	Curr kW	Curr I/W	Curr Watts	Curr kWh	Prop kW	Prop I/W	Prop Watts	Prop kWh	kWh Svgs
001	1FL- Garage	SH2L4/LED2L4-10-L	1	40/52	2080	0.08	80.00	80.00	166.40	0.02	20.00	20.00	41.60	124.80
002	1FL- PO 1	S2L4/LED4-25-KIT	1	40/52	2080	0.08	80.00	80.00	166.40	0.03	25.00	25.00	52.00	114.40
003	1FL- Open	S2L4/LED4-25-KIT	1	40/52	2080	0.08	80.00	80.00	166.40	0.03	25.00	25.00	52.00	114.40
004	1FL- Break	W2L4/WPLED4-25-NF	1	40/52	2080	0.08	80.00	80.00	166.40	0.03	25.00	25.00	52.00	114.40
005	1FL- Break	W2L2/LED2L2-7-L	1	40/52	2080	0.06	56.00	56.00	116.48	0.01	14.00	14.00	29.12	87.36
006	1FL- RR	UC1L2/REMAIN	1	20/52	1040	0.03	32.00	32.00	33.28	0.00	0.00	0.00	0.00	33.28
007	EXT- Sand Pile	YL175MH-PE/CHLED40-NF	2	84/52	4368	0.41	205.00	410.00	1790.88	0.08	40.00	80.00	349.44	1441.44
008	EXT- Garage 2	I2L8HO/LED8-65-KIT	3	20/52	1040	0.71	238.00	714.00	742.56	0.20	65.00	195.00	202.80	539.76
009	EXT- Garage 2	S2L8HO/LED8-65-KIT	9	20/52	1040	2.14	238.00	2142.00	2227.68	0.59	65.00	585.00	608.40	1619.28
010	EXT- Garage 2	I2L8HO/LED8-65-KIT	1	20/52	1040	0.24	238.00	238.00	247.52	0.07	65.00	65.00	67.60	179.92
011	EXT- Garage 2	S2L8HO/LED8-65-KIT	2	20/52	1040	0.48	238.00	476.00	495.04	0.13	65.00	130.00	135.20	359.84
012	EXT- Garage 2	SH/REMAIN	7	20/52	1040	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
013	EXT- Green Barn	WP400S/WPLED64-NF	1	84/52	4368	0.46	460.00	460.00	2009.28	0.06	64.00	64.00	279.55	1729.73
014	EXT- Truck Stg	I2L8HO/LED8-65-KIT	6	84/52	4368	1.43	238.00	1428.00	6237.50	0.39	65.00	390.00	1703.52	4533.98
015	EXT- 1FL- Green Barn	FL500H/FLLED45-NF	1	84/52	4368	0.50	500.00	500.00	2184.00	0.05	45.00	45.00	196.56	1987.44
016	EXT- Truck Stg	FL400MH/FLLED133-NF	1	84/52	4368	0.46	455.00	455.00	1987.44	0.13	133.00	133.00	580.94	1406.50
017	EXT- Gas Pump	FL500H/FLLED45-NF	2	84/52	4368	1.00	500.00	1000.00	4368.00	0.09	45.00	90.00	393.12	3974.88
			41			8.23			23105.26	1.89				18361.41
										6.35				



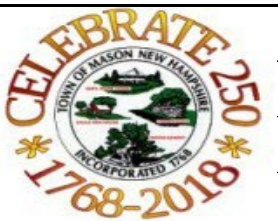
Town of Mason: Fire Department
Room by Room Savings Analysis



Line	Room	EMC CM Code	Count	Hours/Week	Hours/Year	Curr kW	Curr I/W	Curr Watts	Curr kWh	Prop kW	Prop I/W	Prop Watts	Prop kWh	kWh Svgs
001	EXT- Wall	WP250MH/WPLED57-NF	2	84/52	4368	0.59	295.00	590.00	2577.12	0.11	57.00	114.00	497.95	2079.17
002	EXT- Wall	FL42CF/FLLED18-NF	1	84/52	4368	0.04	44.00	44.00	192.19	0.02	18.00	18.00	78.62	113.57
003	EXT- Front	WP250MH/WPLED57-NF	1	84/52	4368	0.30	295.00	295.00	1288.56	0.06	57.00	57.00	248.98	1039.58
004	EXT- Front	WM3L40C/LED3L2C-NL	2	84/52	4368	0.24	120.00	240.00	1048.32	0.01	6.00	12.00	52.42	995.90
005	EXT- Stair	FL2L15CF/LED2L15PAR38-NL	1	84/52	4368	0.03	34.00	34.00	148.51	0.03	30.00	30.00	131.04	17.47
006	1FL- Fire Bays	I2L4-8F-T8/LED2L4-12-N	14	20/52	1040	0.59	42.00	588.00	611.52	0.34	24.00	336.00	349.44	262.08
007	1FL- PO 1	W2L4-T8/LED2L4-10-L	1	20/52	1040	0.04	42.00	42.00	43.68	0.02	20.00	20.00	20.80	22.88
008	1FL- PO 1	SH2L4/LED2L4-10-L	1	20/52	1040	0.08	80.00	80.00	83.20	0.02	20.00	20.00	20.80	62.40
009	1FL- PO 2	W2L4-T8/LED2L4-10-L	1	20/52	1040	0.04	42.00	42.00	43.68	0.02	20.00	20.00	20.80	22.88
010	1FL- RR	SM60/LED6A-NL	1	20/52	1040	0.06	60.00	60.00	62.40	0.01	6.00	6.00	6.24	56.16
011	1FL- Shop	S2L4-T8/LED2L4-10-L	1	20/52	1040	0.04	42.00	42.00	43.68	0.02	20.00	20.00	20.80	22.88
012	1FL- Shop	SM42CF/LED6A-NL	1	20/52	1040	0.04	44.00	44.00	45.76	0.01	6.00	6.00	6.24	39.52
013	1FL- Stair	RS26CF/LED6A-NL	2	20/52	1040	0.06	28.00	56.00	58.24	0.01	6.00	12.00	12.48	45.76
014	2FL- Stair Stg	S1L2-T8/LED1L2-7-L	1	10/52	520	0.03	32.00	32.00	16.64	0.01	7.00	7.00	3.64	13.00
015	2FL- Stair	PS14CF/LED6A-NL	1	20/52	1040	0.02	16.00	16.00	16.64	0.01	6.00	6.00	6.24	10.40
016	2FL- Day Rm	W2L4-T8/LED2L4-10-L	12	20/52	1040	0.50	42.00	504.00	524.16	0.24	20.00	240.00	249.60	274.56
017	2FL- Kit	I2L4-8F-T8/LED2L4-10-L	2	20/52	1040	0.08	42.00	84.00	87.36	0.04	20.00	40.00	41.60	45.76
018	2FL- RR	FAN14CF/LED6A-NL	1	20/52	1040	0.02	16.00	16.00	16.64	0.01	6.00	6.00	6.24	10.40
019	2FL- Stg	PS18CF/LED6A-NL	2	10/52	520	0.04	20.00	40.00	20.80	0.01	6.00	12.00	6.24	14.56
020	2FL- Coat Stg	W2L4-T8/LED2L4-10-L	1	10/52	520	0.04	42.00	42.00	21.84	0.02	20.00	20.00	10.40	11.44
			49			2.89			6950.94	1.00				5160.38
										1.89				



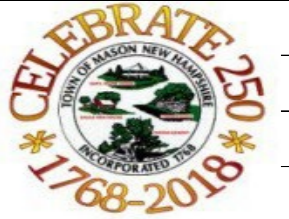
Town of Mason: Police Department
Room by Room Savings Analysis



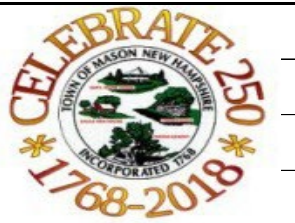
Line	Room	EMC CM Code	Count	Hours/Week	Hours/Year	Curr kW	Curr I/W	Curr Watts	Curr kWh	Prop kW	Prop I/W	Prop Watts	Prop kWh	kWh Svgs
001	1FL- Entry	SM2L14CF/LED2L6A-NL	1	40/52	2080	0.03	32.00	32.00	66.56	0.01	12.00	12.00	24.96	41.60
002	1FL- PO1	SM2L40/LED2L6A-NL	2	40/52	2080	0.16	80.00	160.00	332.80	0.02	12.00	24.00	49.92	282.88
003	1FL- Meeting	SM2L40/LED2L6A-NL	2	40/52	2080	0.16	80.00	160.00	332.80	0.02	12.00	24.00	49.92	282.88
004	1FL- PO2	SM2L40/LED2L6A-NL	2	40/52	2080	0.16	80.00	160.00	332.80	0.02	12.00	24.00	49.92	282.88
005	1FL- RR	FAN14CF/LED6A-NL	1	40/52	2080	0.03	32.00	32.00	66.56	0.01	6.00	6.00	12.48	54.08
006	1FL- RR	WM3L40G20/LED3L6-G20-NL	1	40/52	2080	0.12	120.00	120.00	249.60	0.02	18.00	18.00	37.44	212.16
007	1FL- Stair	SM2L14CF/LED2L6A-NL	1	40/52	2080	0.03	32.00	32.00	66.56	0.01	12.00	12.00	24.96	41.60
008	1FL- Kit	SM2L14CF/LED2L6A-NL	1	40/52	2080	0.03	32.00	32.00	66.56	0.01	12.00	12.00	24.96	41.60
009	1FL- PO 1	SMLLED/REMAIN	1	40/52	2080	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
010	1FL- PO 1	SM2L14CF/LED2L6A-NL	1	40/52	2080	0.03	32.00	32.00	66.56	0.01	12.00	12.00	24.96	41.60
011	1FL- Stg	SMLLED/REMAIN	1	20/52	1040	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
012	1FL- RR	SM2L40/LED2L6A-NL	2	20/52	1040	0.16	80.00	160.00	166.40	0.02	12.00	24.00	24.96	141.44
013	1FL- RR	WM3L40G20/LED3L6-G20-NL	1	20/52	1040	0.12	120.00	120.00	124.80	0.02	18.00	18.00	18.72	106.08
014	1FL- Open	SM14CF/LED6A-NL	1	40/52	2080	0.02	16.00	16.00	33.28	0.01	6.00	6.00	12.48	20.80
015	1FL- Evidence	SM2L14CF/LED2L6A-NL	1	10/52	520	0.03	32.00	32.00	16.64	0.01	12.00	12.00	6.24	10.40
016	LL- Stair	WS14CF/LED6A-NL	1	20/52	1040	0.02	16.00	16.00	16.64	0.01	6.00	6.00	6.24	10.40
017	LL- Open	W2L4-T8/LED2L4-10-L	2	20/52	1040	0.12	60.00	120.00	124.80	0.04	20.00	40.00	41.60	83.20
018	LL- Corr 1	W2L4-T8/LED2L4-10-L	1	20/52	1040	0.06	60.00	60.00	62.40	0.02	20.00	20.00	20.80	41.60
019	LL- Elec	PS14CF/LED6A-NL	1	10/52	520	0.02	16.00	16.00	8.32	0.01	6.00	6.00	3.12	5.20
020	LL- Holding 1/2	RS14CF/LED6A-NL	2	10/52	520	0.03	16.00	32.00	16.64	0.01	6.00	12.00	6.24	10.40
021	LL- Garage	PSLED/REMAIN	1	20/52	1040	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
022	LL- Garage	PS75/LED11A-NL	1	20/52	1040	0.08	75.00	75.00	78.00	0.01	11.00	11.00	11.44	66.56
023	EXT- Entry	WS40/LED6A-NL	2	84/52	4368	0.08	40.00	80.00	349.44	0.01	6.00	12.00	52.42	297.02
024	EXT- Right	FL64/FLEED18-NF	1	84/52	4368	0.06	64.00	64.00	279.55	0.02	18.00	18.00	78.62	200.93
025	EXT- Back	WPLED/REMAIN	1	84/52	4368	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
026	EXT- Back	WM14CF/LED6A-NL	1	84/52	4368	0.02	16.00	16.00	69.89	0.01	6.00	6.00	26.21	43.68
027	EXT- Ramp	WM14CF/LED6A-NL	1	84/52	4368	0.02	16.00	16.00	69.89	0.01	6.00	6.00	26.21	43.68
			34			1.58			2997.49	0.34				2362.67
										1.24				



Town of Mason: Town Hall & Library
Room by Room Savings Analysis



Line	Room	EMC CM Code	Count	Hours/Week	Hours/Year	Curr kW	Curr I/W	Curr Watts	Curr kWh	Prop kW	Prop I/W	Prop Watts	Prop kWh	kWh Svgs
001	EXT- Walk	PT18CF/LED6A-NL	1	84/52	4368	0.02	20.00	20.00	87.36	0.01	6.00	6.00	26.21	61.15
002	1FL- Entry	SM14CF/LED6A-NL	1	28/52	1456	0.02	16.00	16.00	23.30	0.01	6.00	6.00	8.74	14.56
003	1FL- Open	PM8L4-16F/VLED1X4-19-KIT	3	28/52	1456	0.96	320.00	960.00	1397.76	0.06	19.00	57.00	82.99	1314.77
004	1FL- Recep	SMT3L4/VLED4-22-KIT	4	28/52	1456	0.52	130.00	520.00	757.12	0.09	22.00	88.00	128.13	628.99
005	1FL- Corr	SM40/LED6A-NL	1	28/52	1456	0.04	40.00	40.00	58.24	0.01	6.00	6.00	8.74	49.50
006	1FL- Children's	W4L4-T8/LED4L4-12-N	4	28/52	1456	0.45	112.00	448.00	652.29	0.19	48.00	192.00	279.55	372.74
007	1FL- Meeting	WSLED/REMAIN	4	28/52	1456	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
008	1FL- Town Clerk	W4L4-T8/LED4L4-10-L	2	40/52	2080	0.22	112.00	224.00	465.92	0.08	40.00	80.00	166.40	299.52
009	1FL- Selectman	CH5L14CF/LED5L6A-NL	1	40/52	2080	0.08	80.00	80.00	166.40	0.03	30.00	30.00	62.40	104.00
010	1FL- Front Stair	WS14CF/LED6A-NL	1	10/52	520	0.02	16.00	16.00	8.32	0.01	6.00	6.00	3.12	5.20
011	2FL- Front Stair	WS25C/LED2C-NL	1	10/52	520	0.03	25.00	25.00	13.00	0.00	2.00	2.00	1.04	11.96
012	2FL- Files	W4L4-T8/LED4L4-10-L	2	10/52	520	0.22	112.00	224.00	116.48	0.08	40.00	80.00	41.60	74.88
013	2FL- Files	WS25C/LED2C-NL	1	10/52	520	0.03	25.00	25.00	13.00	0.00	2.00	2.00	1.04	11.96
014	2FL- Corr 1	SM2L14CF/LED2L6A-NL	2	10/52	520	0.06	32.00	64.00	33.28	0.02	12.00	24.00	12.48	20.80
015	2FL- Historical	WS25C/LED2C-NL	4	10/52	520	0.10	25.00	100.00	52.00	0.01	2.00	8.00	4.16	47.84
016	2FL- Stg 1	SM40/LED6A-NL	1	10/52	520	0.04	40.00	40.00	20.80	0.01	6.00	6.00	3.12	17.68
017	2FL- Stair 2	SM40/LED6A-NL	1	10/52	520	0.04	40.00	40.00	20.80	0.01	6.00	6.00	3.12	17.68
018	1FL- RR	FAN60/LED6A-NL	1	10/52	520	0.06	60.00	60.00	31.20	0.01	6.00	6.00	3.12	28.08
019	LL- Stg	PS14CF/LED6A-NL	4	10/52	520	0.06	16.00	64.00	33.28	0.02	6.00	24.00	12.48	20.80
020	LL- Stg	PS60/LED6A-NL	3	10/52	520	0.18	60.00	180.00	93.60	0.02	6.00	18.00	9.36	84.24
021	EXT- Front	WM3L25C/LED3L2C-NL	2	20/52	1040	0.15	75.00	150.00	156.00	0.01	6.00	12.00	12.48	143.52
022	EXT- Ramp	WM14CF/LED6A-NL	1	20/52	1040	0.02	16.00	16.00	16.64	0.01	6.00	6.00	6.24	10.40
023	EXT- Ramp	FL14CF/LED6A-NL	1	20/52	1040	0.02	16.00	16.00	16.64	0.01	6.00	6.00	6.24	10.40
			46			3.33			4233.42	0.67				3350.67
										2.66				



Town of Mason: Street Lights
Room by Room Savings Analysis

Line	Room	EMC CM Code	Count	Hours/Week	Hours/Year	Curr kW	Curr I/W	Curr Watts	Curr kWh	Prop kW	Prop I/W	Prop Watts	Prop kWh	kWh Svgs
001	EXT- Street Light	CH400S/CHLED53-NF	3	84/52	4368	1.38	460.00	1380.00	6027.84	0.16	53.00	159.00	694.51	5333.33
002	EXT- Street Light	CH250S/CHLED53-NF	3	84/52	4368	0.89	295.00	885.00	3865.68	0.16	53.00	159.00	694.51	3171.17
						2.27			9893.52	0.32				8504.50
										1.95				



Financial Investment

Cost Savings Summary





Town of Mason

Cost Savings Summary

Prepared by Carl Edin

May 13, 2019

Area	Savings		Maint	Energy	Total	Project	Estimated Eversource	Net Project	Payback	ROI
	kW	kWh	Savings	Savings	Savings	Cost	Incentive	Cost		
DPW	6	18,361	\$ 203.00	\$ 4,645.33	\$ 4,848.33	\$ 9,694.00	\$ 4,847.00	\$ 4,847.00	1.00	100.0%
Fire	2	5,160	\$ 244.00	\$ 913.32	\$ 1,157.32	\$ 5,264.00	\$ 2,632.00	\$ 2,632.00	2.27	44.0%
Police Department	1	2,363	\$ 176.00	\$ 408.80	\$ 584.80	\$ 1,650.00	\$ 825.00	\$ 825.00	1.41	70.9%
Town Hall & Library	3	3,351	\$ 230.00	\$ 606.53	\$ 836.53	\$ 3,194.00	\$ 1,597.00	\$ 1,597.00	1.91	52.4%
Street Lights	2	8,505	\$ 30.00	\$ 1,539.41	\$ 1,569.41	\$ 3,040.00	\$ 600.00	\$ 2,440.00	1.55	64.3%
TOTAL	14	37,740	\$ 883.00	\$ 8,113.39	\$ 8,996.39	\$ 22,842.00	\$ 10,501.00	\$ 12,341.00	1.37	72.9%
Notes:										
1. Blended rate varies between \$.173-.253/kWh										
2. Eversource Incentives to be applied for and pre-approved.										





Project Process Recap

- ✓ EMC to attain electric bills
- ✓ EMC to complete site survey
- ✓ EMC to generate cost-savings proposal
- EMC to submit applications to Eversource for incentive approvals
- Town of Mason to sign Eversource Customer Agreements as well as EMC Terms and Conditions.
- EMC to construct project
- EMC to coordinate post-utility walkthrough

