



Energy Performance Contract Project Summary

Prepared for:

MONTANA
TECHNOLOGICAL UNIVERSITY

Prepared by:

Ameresco, Inc.

7 West 6th Avenue
Suite 605, Power Block

May 7, 2021

Mr. Layne Sessions
Director of Physical Facilities – Montana Technological University
1300 W. Park St
Butte, MT 59701

RE: Lighting Project Summary

Layne,

Thank you for your support throughout the lighting audit, we appreciate you and your team accommodating us and helping make the audit a smooth and efficient process. Based on our audit findings we have prepared a project focused on improving the lighting at both the Montana Technological University and Highlands College campuses for your consideration.

The following pages highlight the costs, savings, and financial payback for your project. Please let us know if you have any questions about your project, otherwise here are the next steps:

- Submit project to Montana University System Board of Regents for review and approval
- Submit project to Montana Department of Environmental Quality for review and approval
- Complete Montana Board of Investments INTERCAP loan application or private loan application
- Execute an Energy Services Agreement to initiate construction

Ameresco is excited to move forward with Montana Technological University on this project!

Thank you,



Matt Thompson, CEM
Account Executive
mthompson@ameresco.com
(406) 581-1595



Brian A. Solan, PE
Business Leader
bsolan@ameresco.com
(406) 461-7432

Scope of Work

The scope of work is focuses on improving the learning environment, saving energy, and reducing maintenance expenses, specific scope includes:

Campus LED Lighting Retrofit

- Provide and install new LED lighting fixtures and LED retrofits to replace existing technologies
- Existing historic fixtures will remain and be retrofitted with LED lamps wherever possible
- Existing parabolic and select prismatic 2x2 and 2x4 troffers to be replaced with LED fixture “door kits” to provide updated aesthetic and improved lighting levels

Notes:

1. Proposed lighting color temp = 4,000K (Natural White)
2. Existing LED lamps and lighting controls to remain as-is
3. NorthWestern Energy leased exterior lighting is excluded from the project
4. NorthWestern Energy E+ lighting rebates are estimated based on current incentive rates
5. See full list of buildings in the lighting audit summary included in the appendix
6. See new lighting spec sheets for basis of design in the appendix
7. Final lighting selections may vary based on availability and pricing at the time of construction

Project Cost

DEQ Cost & Pricing Tool

Project Cost Categories	EPC Maximum % of Total Project Cost	EPC Maximum % Markup	Actual Final EPC Calculated % of Total Project Cost	Actual Final EPC Cost with Markup	Actual Final EPC Cost without Markup	Actual Final EPC Markup Cost	Actual Final EPC % Markup	Totals	Notes
Investment Grade Audit and Project Proposal			0.85%					\$ 20,000	Negotiated
Implementation Costs									
1 Pre-Construction Fees and Costs									
A Design and Other Engineering	6-10%	0.00%	1.59%	\$ 37,302	\$ 37,302	\$ -	0.00%		Calculated
B Pre-Construction Services	2-5%	0.00%	1.99%	\$ 46,627	\$ 46,627	\$ -	0.00%		Calculated
C Other Pre-Construction Costs	1-3%	0.00%	0.40%	\$ 9,325	\$ 9,325	\$ -	0.00%		Calculated
1T Pre-Construction Cost Subtotal			3.97%		\$ 93,254	\$ -	0.00%	\$ 93,254	Sum A, B, C
2 Construction Fees and Costs									
D LED Lighting	N/A	4.0-8.0%	71.16%	\$ 1,670,808	\$ 1,554,240	\$ 116,568	7.50%		Calculated
E Design-Build Subcontractors	N/A	4.0-8.0%	0.00%	\$ -	\$ -	\$ -	0.00%		Calculated
F Direct Purchase Equipment	N/A	4.0-8.0%	0.00%	\$ -	\$ -	\$ -	0.00%		Calculated
G ESP Construction Labor	N/A	4.0-8.0%	0.00%	\$ -	\$ -	\$ -	0.00%		Calculated
H Construction Management	3-6%	0.00%	3.70%	\$ 86,862	\$ 86,862	\$ -	0.00%		Calculated
I Project Engineering	1-3%	0.00%	1.69%	\$ 39,711	\$ 39,711	\$ -	0.00%		Calculated
J General Conditions	1-3%	0.00%	1.17%	\$ 27,553	\$ 27,553	\$ -	0.00%		Calculated
K Construction Completion	1-2%	0.00%	0.41%	\$ 9,600	\$ 9,600	\$ -	0.00%		Calculated
L Other Construction Costs	1-2%	0.00%	2.15%	\$ 50,546	\$ 50,546	\$ -	0.00%		Calculated
2T Construction Cost Subtotal			80.29%		\$ 1,768,512	\$ 116,568	6.59%	\$ 1,885,080	Sum D-L
3 Implementation Costs Subtotal								\$ 1,978,334	Sum 1T+2T
4 Profit	6-9%		8.85%	\$ 207,725				\$ 207,725	Calculated
5 Estimated Project Cost								\$ 2,186,059	Sum 3 + 4
6 Contingency	2-5%	0.00%	4.99%	\$ 117,250	\$ 117,250	\$ -	0.00%	\$ 117,250	Calculated
7 Measurement and Verification	2-5%		1.04%	\$ 24,503				\$ 24,503	Calculated
8 TOTAL PROJECT COST								\$ 2,347,812	Sum IGA + 5 + 6 + 7

Utility Rebates	\$ 128,158
Net Project Cost	\$ 2,219,654
First Year Energy Savings	\$ 126,341
Average Annual Maintenance Savings	\$ 31,111
Simple Payback	14.1 years
Payback with Utility Rate Escalation	12.3 years

Cash Flow Summary – Fixed Interest Rate

Cash Flow Summary Section 1.1 Fixed														
Project Funding														
Turnkey Project Cost (TPC):		\$2,347,812												
Capital Contribution (CC):		(\$128,158)			Rebate Estimate based on 2020/2021 NWE Rebate Program									
Financed Project Cost Balance (TPC-CC):		\$2,219,654												
Financing Type:		TELP												
Financing Interest Rate [1]:		2.50%			2.50% Fixed w/ascending payment schedule to match available savings									
Program Term:		15												
Construction Period (CP) Interest [2]:		\$ 9,252												
Notes:														
[1] Indicative interest rate as of 5/5/2021														
[2] Construction period interest is included at same fixed rate														
[3] 3 years of measurement and verification (M&V) included in turnkey project cost														
(A) Year	Annual Costs				Annual Savings							Positive Annual Cash Flow		
	(B) Annual Debt Service <i>Variable Rate</i>	(C) Interest Rate	(D) Annual M&V Cost <i>0.0% Esc.</i>	(E) Total Annual Cost (B+C)	(F) Electric <i>2.4% Esc.</i>	(G) Fuel Oil <i>0.0% Esc.</i>	(H) Natural Gas <i>4.3% Esc.</i>	(I) Water/Sewer <i>1.0% Esc.</i>	(J) Total Annual Utility Savings (Sum of E - L)	(K) Annual O&M Savings <i>2.3% Esc.</i>	(L) Other 5	(M) Total Annual Savings (M+N+O)	(N) Net Annual Cash Flow (P-D)	(O) Debt As % of Savings (B/P)
1	\$157,452	2.500%	\$0	\$157,452	\$130,144	\$0	-\$3,804	\$0	\$126,341	\$31,111	\$0	\$157,452	\$0	100%
2	\$161,179	2.500%	\$0	\$161,179	\$133,320	\$0	-\$3,968	\$0	\$129,352	\$31,827	\$0	\$161,179	\$0	100%
3	\$164,993	2.500%	\$0	\$164,993	\$136,573	\$0	-\$4,139	\$0	\$132,434	\$32,559	\$0	\$164,993	\$0	100%
4	\$168,896	2.500%	\$0	\$168,896	\$139,905	\$0	-\$4,317	\$0	\$135,588	\$33,308	\$0	\$168,896	\$0	100%
5	\$172,890	2.500%	\$0	\$172,890	\$143,319	\$0	-\$4,503	\$0	\$138,816	\$34,074	\$0	\$172,890	\$0	100%
6	\$176,976	2.500%	\$0	\$176,976	\$146,816	\$0	-\$4,697	\$0	\$142,119	\$34,858	\$0	\$176,976	\$0	100%
7	\$181,158	2.500%	\$0	\$181,158	\$150,398	\$0	-\$4,900	\$0	\$145,499	\$35,659	\$0	\$181,158	\$0	100%
8	\$185,437	2.500%	\$0	\$185,437	\$154,068	\$0	-\$5,111	\$0	\$148,957	\$36,480	\$0	\$185,437	\$0	100%
9	\$188,235	2.500%	\$0	\$188,235	\$157,827	\$0	-\$5,331	\$0	\$152,496	\$37,319	\$0	\$189,815	\$1,580	99%
10	\$188,235	2.500%	\$0	\$188,235	\$161,678	\$0	-\$5,561	\$0	\$156,117	\$38,177	\$0	\$194,294	\$6,059	97%
11	\$188,235	2.500%	\$0	\$188,235	\$165,623	\$0	-\$5,801	\$0	\$159,823	\$39,055	\$0	\$198,878	\$10,643	95%
12	\$188,235	2.500%	\$0	\$188,235	\$169,664	\$0	-\$6,051	\$0	\$163,614	\$39,953	\$0	\$203,567	\$15,332	92%
13	\$188,235	2.500%	\$0	\$188,235	\$173,804	\$0	-\$6,311	\$0	\$167,493	\$40,872	\$0	\$208,365	\$20,130	90%
14	\$188,235	2.500%	\$0	\$188,235	\$178,045	\$0	-\$6,583	\$0	\$171,462	\$41,812	\$0	\$213,274	\$25,039	88%
15	\$188,235	2.500%	\$0	\$188,235	\$182,389	\$0	-\$6,867	\$0	\$175,522	\$42,774	\$0	\$218,296	\$30,061	86%
Totals:	\$2,686,626		\$0	\$2,686,626	\$2,323,576	\$0	-\$77,943	\$0	\$2,245,633	\$549,837	\$0	\$2,795,470	\$108,845	96%

Cash Flow Summary – INTERCAP Variable Interest Rate

Cash Flow Summary Section 1.2 INTERCAP														
Project Funding														
Turnkey Project Cost (TPC):	\$	2,347,812	Rebate Estimate based on 2020/2021 NWE Rebate Program											
Capital Contribution (CC):		(\$128,158)												
Financed Project Cost Balance (TPC-CC):		\$2,219,654												
Financing Type:		MT BOI												
Financing Interest Rate [1]:		Custom	Overall MT Board of Investment Average of 3.888%. 10 Year Average of 1.9%. Current 2021 rate is 1.65%.											
Program Term:		15												
Construction Period (CP) Interest [2]:		\$6,846												
Notes:														
[1] Interest rate for February 16, 2021 to February 15, 2022														
[2] Construction period interest is included at year 1 rate														
[3] 3 years of measurement and verification (M&V) included in turnkey project cost														
(A) Year	Annual Costs				Annual Savings								Positive Annual Cash Flow	
	(B) Annual Debt Service <i>Variable Rate</i>	Interest Rate	(C) Annual M&V Cost <i>0.0% Esc.</i>	(D) Total Annual Cost (B+C)	(E) Electric <i>2.4% Esc.</i>	Fuel Oil <i>0.0% Esc.</i>	(F) Natural Gas <i>4.3% Esc.</i>	Water/Sewer <i>1.0% Esc.</i>	(M) Total Annual Utility Savings (Sum of E - L)	(N) Annual O&M Savings <i>2.3% Esc.</i>	(O) Other 5	(P) Total Annual Savings (M+N+O)	(Q) Net Annual Cash Flow (P-D)	(R) Debt As % of Savings (B/P)
1	\$168,167	1.650%	\$0	\$168,167	\$130,144	\$0	-\$3,804	\$0	\$126,341	\$31,111	\$0	\$157,452	-\$10,715	107%
2	\$171,288	1.900%	\$0	\$171,288	\$133,320	\$0	-\$3,968	\$0	\$129,352	\$31,827	\$0	\$161,179	-\$10,108	106%
3	\$174,442	2.150%	\$0	\$174,442	\$136,573	\$0	-\$4,139	\$0	\$132,434	\$32,559	\$0	\$164,993	-\$9,449	106%
4	\$178,915	2.500%	\$0	\$178,915	\$139,905	\$0	-\$4,317	\$0	\$135,588	\$33,308	\$0	\$168,896	-\$10,019	106%
5	\$183,454	2.850%	\$0	\$183,454	\$143,319	\$0	-\$4,503	\$0	\$138,816	\$34,074	\$0	\$172,890	-\$10,564	106%
6	\$188,721	3.250%	\$0	\$188,721	\$146,816	\$0	-\$4,697	\$0	\$142,119	\$34,858	\$0	\$176,976	-\$11,745	107%
7	\$192,057	3.500%	\$0	\$192,057	\$150,398	\$0	-\$4,900	\$0	\$145,499	\$35,659	\$0	\$181,158	-\$10,899	106%
8	\$195,425	3.750%	\$0	\$195,425	\$154,068	\$0	-\$5,111	\$0	\$148,957	\$36,480	\$0	\$185,437	-\$9,988	105%
9	\$198,826	4.000%	\$0	\$198,826	\$157,827	\$0	-\$5,331	\$0	\$152,496	\$37,319	\$0	\$189,815	-\$9,011	105%
10	\$202,260	4.250%	\$0	\$202,260	\$161,678	\$0	-\$5,561	\$0	\$156,117	\$38,177	\$0	\$194,294	-\$7,965	104%
11	\$205,726	4.500%	\$0	\$205,726	\$165,623	\$0	-\$5,801	\$0	\$159,823	\$39,055	\$0	\$198,878	-\$6,848	103%
12	\$209,224	4.750%	\$0	\$209,224	\$169,664	\$0	-\$6,051	\$0	\$163,614	\$39,953	\$0	\$203,567	-\$5,657	103%
13	\$212,754	5.000%	\$0	\$212,754	\$173,804	\$0	-\$6,311	\$0	\$167,493	\$40,872	\$0	\$208,365	-\$4,389	102%
14	\$219,909	5.500%	\$0	\$219,909	\$178,045	\$0	-\$6,583	\$0	\$171,462	\$41,812	\$0	\$213,274	-\$6,635	103%
15	\$227,189	6.000%	\$0	\$227,189	\$182,389	\$0	-\$6,867	\$0	\$175,522	\$42,774	\$0	\$218,296	-\$8,893	104%
Totals:	\$2,928,356		\$0	\$2,928,356	\$2,323,576	\$0	-\$77,943	\$0	\$2,245,633	\$549,837	\$0	\$2,795,470	-\$132,885	105%

Appendix

- **Lighting Audit Summary by Building**
- **Lighting Data Sheets**

Lighting Audit Summary by Building

ECM #	Conservation Measure	ECM Cost \$	Estimated Utility Incentive \$	Net Cost \$	Guaranteed 1st Yr Energy Savings \$	Average Annual Maint. Savings \$	Simple Payback Yrs
MTU-L1 Allied Trades	- Lighting Retrofit (interior & exterior): This measure will retrofit or replace existing lighting with LED technology.	\$7,357	\$485	\$6,872	\$606	\$106	9.65
MTU-L2 Centennial Hall & Prospect Hall	- Lighting Retrofit (interior & exterior): This measure will retrofit or replace existing lighting with LED technology.	\$121,808	\$8,660	\$113,149	\$10,394	\$2,002	9.13
MTU-L3 Chancellor's Residence	- Lighting Retrofit (interior & exterior): This measure will retrofit or replace existing lighting with LED technology.	\$5,919	\$343	\$5,576	\$1,133	\$777	2.92
MTU-L4 Chemistry & Biology	- Lighting Retrofit (interior & exterior): This measure will retrofit or replace existing lighting with LED technology.	\$205,719	\$14,938	\$190,781	\$11,973	\$2,031	13.62
MTU-L5 Coverdale House	- Lighting Retrofit (interior & exterior): This measure will retrofit or replace existing lighting with LED technology.	\$653	\$25	\$628	\$125	\$95	2.86
MTU-L6 Engineer Hall	- Lighting Retrofit (interior & exterior): This measure will retrofit or replace existing lighting with LED technology.	\$44,989	\$2,146	\$42,843	\$2,508	\$420	14.63
MTU-L7 Engineer Lab & Classroom	- Lighting Retrofit (interior & exterior): This measure will retrofit or replace existing lighting with LED technology.	\$286,665	\$16,642	\$270,023	\$12,628	\$3,044	17.23
MTU-L8 Greenhouse (2)	- Lighting Retrofit (interior & exterior): This measure will retrofit or replace existing lighting with LED technology.	\$3,199	\$209	\$2,990	\$324	\$55	7.90
MTU-L9 Health Science Bldg	- Lighting Retrofit (interior & exterior): This measure will retrofit or replace existing lighting with LED technology.	\$52,201	\$2,941	\$49,261	\$6,005	\$785	7.25
MTU-L10 Heating Plant	- Lighting Retrofit (interior & exterior): This measure will retrofit or replace existing lighting with LED technology.	\$42,757	\$2,172	\$40,585	\$2,888	\$343	12.56
MTU-L11 Highlands College	- Lighting Retrofit (interior & exterior): This measure will retrofit or replace existing lighting with LED technology.	\$185,626	\$9,623	\$176,004	\$9,415	\$2,533	14.73
MTU-L12 Highlands College Parkig	- Lighting Retrofit (); This measure will retrofit or replace existing lighting with LED technology.	\$30,414	\$1,833	\$28,582	\$2,705	\$793	8.17
MTU-L13 HPER	- Lighting Retrofit (interior & exterior): This measure will retrofit or replace existing lighting with LED technology.	\$104,120	\$4,725	\$99,396	\$3,975	\$1,479	18.23
MTU-L14 Library/Auditorium	- Lighting Retrofit (interior & exterior): This measure will retrofit or replace existing lighting with LED technology.	\$186,919	\$12,476	\$174,443	\$4,262	\$2,579	25.50
MTU-L15 Main Hall	- Lighting Retrofit (interior & exterior): This measure will retrofit or replace existing lighting with LED technology.	\$90,433	\$5,324	\$85,109	\$6,398	\$1,158	11.26
MTU-L16 Mill Building	- Lighting Retrofit (interior & exterior): This measure will retrofit or replace existing lighting with LED technology.	\$48,874	\$1,740	\$47,135	\$3,032	\$572	13.08
MTU-L17 Mining & Geology	- Lighting Retrofit (interior & exterior): This measure will retrofit or replace existing lighting with LED technology.	\$129,055	\$6,052	\$123,004	\$5,457	\$1,698	17.19
MTU-L18 Museum	- Lighting Retrofit (interior & exterior): This measure will retrofit or replace existing lighting with LED technology.	\$99,975	\$6,035	\$93,940	\$6,906	\$1,109	11.72
MTU-L19 Natural Resource Bldg	- Lighting Retrofit (interior & exterior): This measure will retrofit or replace existing lighting with LED technology.	\$224,846	\$0	\$224,846	\$11,862	\$2,575	15.57
MTU-L21 Outbuilding	- Lighting Retrofit (interior & exterior): This measure will retrofit or replace existing lighting with LED technology.	\$29,977	\$1,538	\$28,439	\$1,351	\$214	18.17
MTU-L22 Physical Facilities	- Lighting Retrofit (interior & exterior): This measure will retrofit or replace existing lighting with LED technology.	\$8,384	\$534	\$7,850	\$758	\$97	9.19
MTU-L24 Science & Engineering	- Lighting Retrofit (interior & exterior): This measure will retrofit or replace existing lighting with LED technology.	\$96,318	\$4,765	\$91,553	\$5,862	\$1,432	12.55
MTU-L25 Stadium Buildings	- Lighting Retrofit (interior & exterior): This measure will retrofit or replace existing lighting with LED technology.	\$15,462	\$9,986	\$5,476	\$880	\$84	5.68
MTU-L26 Student Apartments	- Lighting Retrofit (interior & exterior): This measure will retrofit or replace existing lighting with LED technology.	\$104,313	\$3,693	\$100,620	\$2,608	\$1,677	23.48
MTU-L28 Student Union Building	- Lighting Retrofit (interior & exterior): This measure will retrofit or replace existing lighting with LED technology.	\$99,777	\$5,377	\$94,400	\$7,342	\$2,052	10.05
MTU-L29 University Relations Center	- Lighting Retrofit (interior & exterior): This measure will retrofit or replace existing lighting with LED technology.	\$34,699	\$1,982	\$32,717	\$2,713	\$419	10.44
MTU-L30 Exterior Area Lighting	- Lighting Retrofit (exterior): This measure will retrofit or replace existing Parking lot and walkway lighting with LED technology.	\$87,352	\$3,920	\$83,432	\$2,230	\$983	25.97
Project Total		\$2,347,812	\$ 128,158	\$ 2,219,654	\$ 126,341	\$ 31,111	14.1