SUSTAINABILITY INITIATIVES BY STUDENT ORGANIZATIONS FUNDING PROPOSAL

Name of Student Organization	Studio 72 Student LLC
Contact/Responsible Person	George Hardebeck
Contact Office Held/Title	Creativity + Innovation Facility Manager
Contact Email Address	Hardebeck@vt.edu
Contact Telephone Number	540-231-7472

Estimate Cost of this Proposal	$35,000	See Part III.C
Estimated Savings –	$6,604 annually	See Part III.D
Net Cost of this Proposal =	$28,396 payback period of 5.3 years.	

A. Please describe your sustainability initiative and attach supporting documentation.

Media Building Lighting Renovation

Our sustainability initiative is to update the Media Building, a historic land mark for the town of Blacksburg, with modern and efficient LED lighting. Not only will this project pay for itself in just under four years of operation, the costs are further abated by the need for immediate upgrade of existing infrastructure. The proposed lighting renovation also demonstrates Virginia Tech's commitment to both the preservation of historic buildings and the Destination Areas initiative. Finally, this work will demonstrate a marked improvement in the quality of life for the students, faculty, and staff who are participating in the revival of the building as the gateway between campus and the town of Blacksburg.

According to University records, the Media Building has not had a substantial lighting upgrade since the 1970s. In the spring semester of 2019, old fixtures and degrading electrical sheathing lead to the explosion of a ballast during a class being held in Media 206. This left the room without lighting for approximately 2 months. This last-minute repair left at least 3 classes without light for the remainder of the semester and led to emergency repairs rather than preventative maintenance. The electrician working on the repairs to the lighting in Media 206 suggested that a general overhaul of the ballasts and wiring for the building lighting should be considered immediately as it is only a matter of time before another explosion occurs. This is exceptionally worrisome in a building without a fire alarm or suppression system. When considered with the need for a general overhaul of the lighting fixture in the building, the purposed sustainability initiative would be greatly reduced in cost.

The Media Building was built in the 1930s as the original High School for the town of Blacksburg and carries a lot of town history with it. When it was acquired by the University it was given to University Relations and used predominately as office space for many years. Approximately two years ago it was turned over to the Creativity + Innovation District (C+I), part of the Destination Area initiative focusing on transdisciplinary education. C+I has lead the conversion of the building from office space to instructional and research space, incorporating 744 and 238 hours respectively over the last academic year. We envision the building not only as the home for the C+I district but the gateway between the town of Blacksburg and the Virginia Tech Campus. The building exists as part of the Virginia Tech Master Plan and is in line for a capitol renovation project. The budget spent upgrading the lighting will fulfill one of the project goals from the capitol renovation project and decrease the overall budget of that future work.

B. How does this initiative help to achieve the goals of the Virginia Tech Climate Action Committee Resolution and Sustainability Plan?

The Virginia Tech Climate Action Commitment and Sustainability Plan (VTCAC&SP) states that "Virginia Tech will be a leader in Campus Sustainability" and that sustainability is an important part of the university as "it pursues enhanced economic stability" and "environmental stewardship". This initiative demonstrates Virginia Tech leadership in sustainability by taking steps to convert a historical building into a modern working and teaching environment. The investment made by Tech will show how older buildings can be restored rather than demolished at significant environmental impact.

The Media Building initiative will also meet VTCAC&SP's goals of reducing GHG emissions to 295,000 tons by 2025. The renovation outlined here will displace 47,847kg of $C0_2$, 613g of N_20, 957g of CH_4, 41,860g NOx, and 90,536g of SOx. Lighting renovation in the Media Building helps Virginia Tech uses efficiency improvements to reach their stated GHG emission goals.

The VTCAC&SP also strives to involve students in the stewardship of campus sustainability. By accepting this proposal from the Studio 72 LLC the University engages students in the ownership of campus sustainability initiatives. Further, as the Media Building exists on the precipice between town and campus it demonstrates Virginia Tech's sustainability initiative to the greater Blacksburg and NRV community who may not participate with other areas of campus.

C. What is the cost of your proposal? Please describe in adequate detail the basis for your cost estimate.

The cost of the Media Building Lighting Renovation initiative will be $**35,000.** This total costs consists of contractor expertise, labor, materials, and contingency.

State Electric Supply Co has supplied the cost estimate for this project and has a long history of providing lighting renovation project management to the Virginia Tech community. This includes other Green RFP grants from previous years. The images and charts included can provide a full cost break down, projected energy efficiency improvements, and environmental impact. Material and supplies will cost **$13,393** while labor is estimated at **$12,130**.

Will your proposal produce cost savings for the University? If so, how much? Please describe in adequate detail the basis for your savings estimate.

The Media Building Lighting Renovation project will provide significant costs savings to the University in three distinct ways. By reducing the total kWh use at the Media Building from 94,225 to a projected 26,142 we reduce the energy dependence by 72% and save an estimated **$6,604 annually** in electrical costs. This leads to a pay back time of 3.9 years and a **10-year cash flow of $56,798** with maintenance savings included.

Additionally, the Media Building has not had a large-scale lighting renovation project since the 1970s, according to University records. The state of the lighting in the Media Building is poor and needs immediate repair, as is evident by the shorting and subsequent explosion of a lighting fixture during an active class section in the Spring of 2019. This is especially concerning in a building without a fire alarm or suppression system. This renovation project shows the University's dedication to preventative maintenance rather than emergency repairs. The state of the buildings lighting and immediate need for replacement should be considered when looking at the budget for this renovation.

Finally, the Media Building is on the list for a capitol renovation project that will modernize the building into the heart and center of the Creativity + Innovation District and a principle gateway between the campus and town of Blacksburg. This lighting renovation project should be considered as a deduction from the total cost of that future capitol renovation. State Electric Supply Company estimates the "cost of waiting" at 5 years, the anticipated wait time on the capitol renovation project, to be $41,160 dollars. This is an **additional savings of $41,160** off of a future

anticipated renovation project and part of the University's Master Plan.

E. Is this funding request an Ongoing or One-Time change **(please check one)?**

☑ **One-time** ☐ **Ongoing**

F. Is funding available for this request from another source? If yes, describe the funding (source, amount, etc.)
No

SUSTAINABILITY INITIATIVES BY STUDENT ORGANIZATIONS FUNDING PROPOSAL

Part IV- Requestors/Reviewers

Thomas Miller, thomas22@vt.edu, Studio 72Student LLC
Prepared By (Name of Contact for Student Organization) Date:

Lowell Jessee 1/2/20
George Hardebeck, Creativity + Innovation Facilities Manager, Hardebeck@vt.edu
Reviewed By (Name of Appropriate University Official) Date 11/5/2019

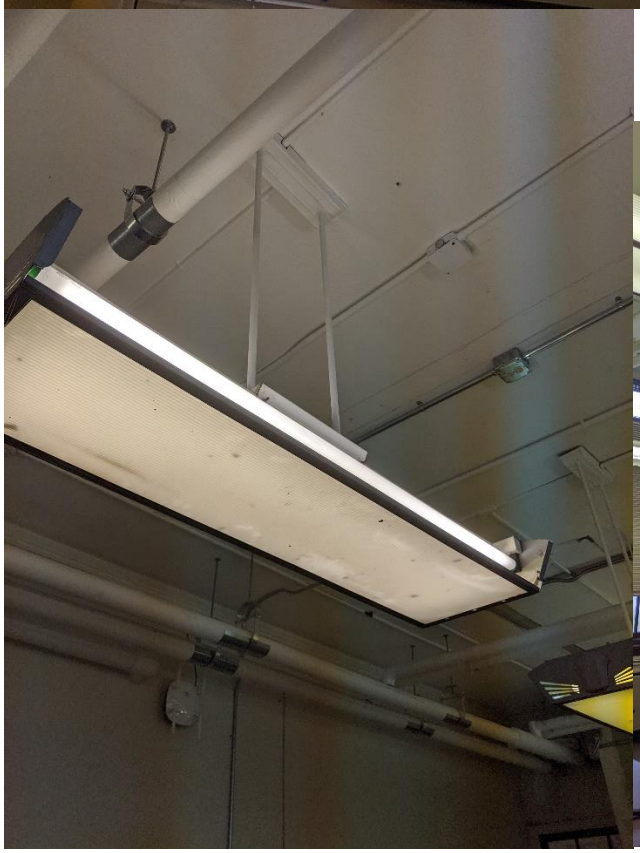
Denny Cochrane, Director of Sustainability, Facilities 1/2/20
Reviewed By (Name of Office of Sustainability Representative) Date

Part V – Supporting Documentation

A. Current State of Lighting in Media Building (Sample)

B. Bill of Material
C. TS Industrial Strip Spec Sheet
D. LBL4W Spec Sheet
E. EPANL LED Spec Sheet
F. State Electric Supply Fixture Conversion Proposal

A. Current State of Lighting in Media Building (Sample)



B. Bill of Material

11/1/2019

VIRGINIA TECH MEDIA BUILDING INSTALLATION BILL OF MATERIAL REPORT

Org. Ln.	Area	Space	Original Luminaire Type	Original Luminaire Quantity	Status	Manufacturer Name	Quantity Per Space	Manufacturer Part Number	Description
1	2nd Floor	S2 Stairs	4ft, 4 Lamp, F40 T12 Susp. Wrap	1	Upgrade	SLG	1	TS-4-46-G1-4K	4' Surface Mt. Narrow Strip, 35w, 4600 Lumens, 4000k
2	2nd Floor	CR2 Corridor	4ft, 4 Lamp, F40 T12 Susp. Wrap	3	Upgrade	SLG	3	TS-4-46-G1-4K	4' Surface Mt. Narrow Strip, 35w, 4600 Lumens, 4000k
3	2nd Floor	CR2 Corridor	2x2, 2 Lamp U Tube F40 Prismatic	1	Upgrade	Lithonia	1	LITEPANL2234L40K	2x2 LED Flat Panel 4000k, 3479 Lumens, 30.8watts
4	2nd Floor	S22 Stairs	2x4, 4 Lamp, F40 T12 Prismatic	2	Upgrade	Lithonia	2	EPANL2440L40K	2x4 LED Flat Panel, 4000k, 4351 LUmens, 38.9 Watts
5	2nd Floor	204 Classroom	4ft, 2 Lamp, F40 T12 Susp Wrap	12	Upgrade	SLG	12	TS-4-46-G1-4K	4' Surface Mt. Narrow Strip, 35w, 4600 Lumens, 4000k
6	2nd Floor	200 Hallway	4ft, 2 Lamp, F40 T12 Susp Wrap	8	Upgrade	SLG	8	TS-4-46-G1-4K	4' Surface Mt. Narrow Strip, 35w, 4600 Lumens, 4000k
7	2nd Floor	202 Hallway	100w A19 Incandescent	1	Upgrade	Philips	1	PHL9BR30LED827-22DIM120	9w BR30 LED Lamp
8	2nd Floor	202A Office	4ft, 2 Lamp, F40 T12 Susp Wrap	6	Upgrade	SLG	6	TS-4-46-G1-4K	4' Surface Mt. Narrow Strip, 35w, 4600 Lumens, 4000k
9	2nd Floor	202C Office	4ft, 4 Lamp, F40 T12 Susp. Wrap	6	Upgrade	SLG	6	TS-4-46-G1-4K	4' Surface Mt. Narrow Strip, 35w, 4600 Lumens, 4000k
10	2nd Floor	202D Office	4ft, 4 Lamp, F40 T12 Susp. Wrap	3	Upgrade	SLG	3	TS-4-46-G1-4K	4' Surface Mt. Narrow Strip, 35w, 4600 Lumens, 4000k
11	2nd Floor	201 Hallway	100w A19 Incandescent	2	Upgrade	Philips	2	PHL9BR30LED827-22DIM120	9w BR30 LED Lamp
12	2nd Floor	201A Office	4ft, 4 Lamp, F40 T12 Susp. Wrap	3	Upgrade	SLG	3	TS-4-46-G1-4K	4' Surface Mt. Narrow Strip, 35w, 4600 Lumens, 4000k
13	2nd Floor	201B Office	4ft, 4 Lamp, F40 T12 Susp. Wrap	3	Upgrade	SLG	3	TS-4-46-G1-4K	4' Surface Mt. Narrow Strip, 35w, 4600 Lumens, 4000k
14	2nd Floor	201C Office	4ft, 4 Lamp, F40 T12 Susp. Wrap	3	Upgrade	SLG	3	TS-4-46-G1-4K	4' Surface Mt. Narrow Strip, 35w, 4600 Lumens, 4000k
15	2nd Floor	201C Office	4ft, 2 Lamp, F40 T12 Susp Wrap	6	Upgrade	SLG	6	TS-4-46-G1-4K	4' Surface Mt. Narrow Strip, 35w, 4600 Lumens, 4000k
16	2nd Floor	201E Classroom	4ft, 2 Lamp, F40 T12 Susp Wrap	9	Upgrade	SLG	9	TS-4-46-G1-4K	4' Surface Mt. Narrow Strip, 35w, 4600 Lumens, 4000k
17	2nd Floor	Cust. Closet 2	100w A19 Incandescent	1	Upgrade	Philips	1	PHL9BR30LED827-22DIM120	9w BR30 LED Lamp
18	2nd Floor	203A	2x4, 3 Lamp, F32 T8 Prismatic	4	Upgrade	Philips Advance	4	ADVIOPA4P32LWN35I	3 or 4 Lamps T8 LED Certified Ballast
19	2nd Floor	203A			Upgrade	Philips	12	9.5T8MAS48840IF16P101	4' 9.5w T8LED Lamp 4000k, 473990
20	2nd Floor	203B	2x4, 3 Lamp, F32 T8 Prismatic	4	Upgrade	Philips Advance	4	ADVIOPA4P32LWN35I	3 or 4 Lamps T8 LED Certified Ballast
21	2nd Floor	203B			Upgrade	Philips	12	9.5T8MAS48840IF16P101	4' 9.5w T8LED Lamp 4000k, 473990
22	2nd Floor	203	4ft, 2 Lamp, F40 T12 Susp Wrap	1	Upgrade	SLG	1	TS-4-46-G1-4K	4' Surface Mt. Narrow Strip, 35w, 4600 Lumens, 4000k
23	1st Floor	105 Office	2x4, 4 Lamp, F32 T8 Prismatic	2	Upgrade	Lithonia	2	EPANL2440L40K	2x4 LED Flat Panel, 4000k, 4351 LUmens, 38.9 Watts
24	1st Floor	105A Office	2x4, 4 Lamp, F32 T8 Prismatic	2	Upgrade	Lithonia	2	EPANL2440L40K	2x4 LED Flat Panel, 4000k, 4351 LUmens, 38.9 Watts
25	1st Floor	105C Office	2x4, 4 Lamp, F32 T8 Prismatic	3	Upgrade	Lithonia	3	EPANL2440L40K	2x4 LED Flat Panel, 4000k, 4351 LUmens, 38.9 Watts
26	1st Floor	105B Office	2x4, 4 Lamp, F32 T8 Prismatic	3	Upgrade	Lithonia	3	EPANL2440L40K	2x4 LED Flat Panel, 4000k, 4351 LUmens, 38.9 Watts
27	1st Floor	103 Classroom	2x4, 4 Lamp, F40 T12 Prismatic	6	Upgrade	Lithonia	6	EPANL2440L40K	2x4 LED Flat Panel, 4000k, 4351 LUmens, 38.9 Watts
28	1st Floor	103 Classroom	4ft, 2 Lamp, F40 T12 Susp Wrap	8	Upgrade	SLG	8	TS-4-46-G1-4K	4' Surface Mt. Narrow Strip, 35w, 4600 Lumens, 4000k
29	1st Floor	101 Classroom	4ft, 4 Lamp, F40 T12 Susp. Wrap	9	Upgrade	SLG	9	TS-4-46-G1-4K	4' Surface Mt. Narrow Strip, 35w, 4600 Lumens, 4000k
30	1st Floor	101 Classroom	4ft, 2 Lamp, F40 T12 Susp Wrap	6	Upgrade	SLG	6	TS-4-46-G1-4K	4' Surface Mt. Narrow Strip, 35w, 4600 Lumens, 4000k
31	1st Floor	102 Classroom	4ft, 2 Lamp, F40 T12 Susp Wrap	12	Upgrade	SLG	12	TS-4-46-G1-4K	4' Surface Mt. Narrow Strip, 35w, 4600 Lumens, 4000k
32	1st Floor	102 Classroom	100w A19 Incandescent	1	Upgrade	Philips	1	16A21PER927-22PE26WG	16w A21 LED Lamp
33	1st Floor	102C Classroom	4ft, 4 Lamp, F40 T12 Susp. Wrap	3	Upgrade	SLG	3	TS-4-46-G1-4K	4' Surface Mt. Narrow Strip, 35w, 4600 Lumens, 4000k
34	1st Floor	A7 Closet	100w A19 Incandescent	1	Upgrade	Philips	1	PHL9BR30LED827-22DIM120	9w BR30 LED Lamp
35	1st Floor	CR1 Corridor	100w A19 Incandescent	1	Upgrade	Philips	1	16A21PER927-22PE26WG	16w A21 LED Lamp
36	1st Floor	CR1 Corridor	4ft, 4 Lamp, F40 T12 Susp. Wrap	5	Upgrade	SLG	5	TS-4-46-G1-4K	4' Surface Mt. Narrow Strip, 35w, 4600 Lumens, 4000k
37	1st Floor	Women RR	4ft, 4 Lamp, F40 T12 Susp. Wrap	2	Upgrade	Lithonia	2	LBL4W6500LM80CRI40KMIN1ZTMVOLT	4' LB Style Wrap Wide, 4000k 6500 Lumens,50watts

11/1/2019

VIRGINIA TECH MEDIA BUILDING INSTALLATION BILL OF MATERIAL REPORT

Org. Ln.	Area	Space	Original Luminaire Type	Original Luminaire Quantity	Status	Manufacturer Name	Quantity Per Space	Manufacturer Part Number	Description
38	1st Floor	104 Classroom	4ft, 2 Lamp, F40 T12 Susp Wrap	10	Upgrade	Lithonia	10	LBL4-LP840	4' LB Style Wrap, 4000k,4000 Lumens, 32.4watts
39	1st Floor	Men RR	4ft, 4 Lamp, F40 T12 Susp. Wrap	2	Upgrade	Lithonia	2	LBL4W6500LM80CRI40KMIN1ZTMVOLT	4' LB Style Wrap Wide, 4000k 6500 Lumens,50watts
40	1st Floor	S11 Stairs	100w A19 Incandescent	1	Upgrade	Philips	1	PHL9BR30LED827-22DIM120	9w BR30 LED Lamp
41	Ground	G11 Stairs	4', Wall Mt, 1 Tube 40w T12	1	Upgrade	Rab Lighting	1	TSLED4-36/D10	Wall Mount 4' LED Fixture, 4000k, 36w, 4000 Lumens
42	Ground	G11 Stairs	2x4, 4 Lamp, F40 T12 Prismatic	1	Upgrade	Lithonia	1	EPANL2440L40K	2x4 LED Flat Panel, 4000k, 4351 LUmens, 38.9 Watts
43	Ground	002 Office	4ft, 3 Lamp, F40 T12 Susp. Wrap	2	Upgrade	Philips Advance	2	ADVIOPA4P32LWN35I	3 or 4 Lamps T8 LED Certified Ballast
44	Ground	002 Office			Upgrade	Philips	6	9.5T8MAS48840IF16P101	4' 9.5w T8LED Lamp 4000k, 473990
45	Ground	001 Classroom	2x4, 4 Lamp, F40 T12 Prismatic	9	Upgrade	Lithonia	9	EPANL2440L40K	2x4 LED Flat Panel, 4000k, 4351 LUmens, 38.9 Watts
46	Ground	004 Office	4ft, 3 Lamp, F40 T12 Susp. Wrap	3	Upgrade	Philips Advance	3	ADVIOPA4P32LWN35I	3 or 4 Lamps T8 LED Certified Ballast
47	Ground	004 Office			Upgrade	Philips	9	9.5T8MAS48840IF16P101	4' 9.5w T8LED Lamp 4000k, 473990

Provided By: Chris Caldwell
CEP-OS™

390 Arbor Dr
Christiansburg, VA 24073

STATE ELECTRIC SUPPLY COMPANY
CUSTOMER FOCUSED. QUALITY DRIVEN

C. TS Industrial Strip Spec Sheet

SLG LIGHTING GENERATION 1 & 2

PROJECT: _____
CATALOG #: _____
FIXTURE TYPE: _____
NOTES: _____

TS Industrial Strip Gen 1 & 2

The ***TS Industrial Strip Gen 1 & 2*** provide higher delivered lumens, greater energy efficiency, and reliable fixture performance for industrial and commercial applications.

APPLICATIONS
Warehouses, Retail stores, and Fabrication areas, etc.

REPLACEMENT
1 Lamp T8 32W, 2 Lamp T8 32W, 3 Lamp T8 32W,
4 Lamp T8 32W, 2 Lamp T5HO 54W

SPECIFICATIONS

HOUSING
Body consists of fabricated 22ga steel

AMBIENT TEMPERATURE
Suitable for use in -40°C to 40°C (-40°F to 104°F)

MOUNTING
Surface mount, Chain mount, Wire Guards and Row Connector for TS G1 only

EFFICACY
Up to 132 lumens per watt (see individual wattage data)

CCT AND CRI
4000K and 5000K CCT available; 80 CRI

OPTICS
Frosted acrylic lens.

Specifications continued on Page 2

PERFORMANCE INFORMATION

SERIES NUMBER	WATT	LUMENS	CCT
TS 4 29 G1 4K	23W	2,990	4000K
TS 4 29 G1 5K	23W	2,989	5000K
TS 4 46 G1 4K	35W	4,620	4000K
TS 4 46 G1 5K	35W	4,690	5000K
TS 8 59 G1 4K	46W	5,980	4000K
TS 8 59 G1 5K	46W	6,026	5000K
TS 8 85 G1 4K	65W	8,580	4000K
TS 8 85 G1 5K	65W	8,645	5000K
TS 8 97 G1 4K	75W	9,750	4000K
TS 8 97 G1 5K	75W	9,825	5000K
TS 4 60 G2 4K	45W	6,100	4000K
TS 4 60 G2 5K	45W	6,050	5000K
TS 8 80 G2 4K	60W	8,379	4000K
TS 8 80 G2 5K	60W	8,000	5000K
TS 8 100 G2 4K	80W	10,333	4000K
TS 8 100 G2 5K	80W	10,550	5000K

Due to continuous product improvements, specification and/or equipment updates may change without notice.

10643 W. Airport Boulevard, Suite #400 | Houston, Texas | 713-389-5680 | sales@slgus.com

D. LBL4W Spec Sheet

LITHONIA LIGHTING®

Catalog Number
Notes
Type

FEATURES & SPECIFICATIONS

INTENDED USE — LBL LED wraparound provides a digital lighting platform to deliver general ambient lighting for surface-mount applications. The LED system delivers long life and excellent color to ensure a quality, low-maintenance lighting installation. Ideal for closets, storage rooms, hallways, stairwells and offices.

CONSTRUCTION — Metal parts are die formed from code-gauge steel. Prismatic diffuser is 100% acrylic with sonically welded luminous ends. Continuous side flanges on fixture body provide light trap and continuous diffuser support to prevent accidental opening and simplify maintenance.

Finish: Five-stage iron phosphate pretreatment assures superior paint adhesion and rust resistance.

Painted parts finished with high-gloss, high-reflectivity baked white polyester enamel (low VOC).

OPTICS — Curved prismatic diffuser with linear side prisms and highly transmissive overlay minimizes lamp image and provides high-angle brightness control. Luminous end plates soften appearance for improved aesthetics.

ELECTRICAL — Long-life LEDs, coupled with high-efficiency drivers, provide superior quantity and quality of illumination for extended service life. 90% LED lumen maintenance at 50,000 hours (L90/50,000). The LEDs have a CRI of 82.

eldoLED driver options deliver choice of dimming range and choices for control, while assuring flicker-free, low-current inrush, 89% efficiency and low EMI.

Step-level dimming option allows system to be switched to 50% power for compliance with common energy codes while maintaining fixture appearance.

CONTROLS — Pair the LBL with the fixture mount Sensor Switch LSXR sensor for additional energy savings when the space is unoccupied. The LSXRHL sensor dims the fixture down to a low-level setting when there is no occupancy. This option is ideal for stairwells, back rooms, and closets due to the low occupancy level in those spaces.

Optional nLight® embedded controls continuously monitor system performance, allow for constant lumen management / compensation function, facilitate simple "plug-and-play" network and controls upgrading via Cat-5 cable. Ballast disconnect provided where required to comply with US and Canadian codes.

LISTINGS — CSA certified to meet U.S. and Canadian standards. Damp listed.

DesignLights Consortium® (DLC) Premium qualified product. Not all versions of this product may be DLC Premium qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.

WARRANTY — 5-year limited warranty. Complete warranty terms located at www.acuitybrands.com/CustomerResources/Terms_and_conditions

Note: Actual performance may differ as a result of end-user environment and application.

All values are design or typical values, measured under laboratory conditions at 25 °C.

Specifications subject to change without notice.

Low-Profile Curved-Basket LED Wraparound

LBL4

4' LENGTH, NARROW HOUSING

LED

A+ Capable Luminaire

This item is an A+ capable luminaire, which has been designed and tested to provide consistent color appearance and out-of-the-box control compatibility with simple commissioning.

- All configurations of this luminaire meet the Acuity Brands' specification for chromatic consistency
- This luminaire is part of an A+ Certified solution for nLight® control networks when ordered with drivers marked by a shaded background*
- This luminaire is part of an A+ Certified solution for nLight control networks, providing advanced control functionality at the luminaire level, when selection includes driver and control options marked by a shaded background*

To learn more about A+, visit www.acuitybrands.com/aplus.

*See ordering tree for details

E. EPANL LED Spec Sheet

LITHONIA LIGHTING®

Catalog Number	
Notes	
Type	

EPANL LED

1'x4', 2'x2', and 2'x4'

FEATURES & SPECIFICATIONS

INTENDED USE — The EPANL Series LED Edge-Lit Flat Panel provides a fully luminous appearance across the face of the lens. This provides a soft, glare-free solution that is visually comfortable within the space. Suitable for many lighting applications including schools, offices and other commercial spaces, retail, convenience stores, hospitals and healthcare facilities. **Certain airborne contaminants can diminish the integrity of acrylic and/or polycarbonate.** Click here for Acrylic-Polycarbonate Compatibility table for suitable uses.

CONSTRUCTION — Built to last with an aluminum frame for strength and durability, the seamless frame prevents light leak in the corners. The satin white lens provides excellent shielding and fully luminous appearance. EPANL's low-profile design provides increased installation flexibility especially in restricted plenum spaces. The back plate includes integral T-bar clips for installation into 15/16" T-grid ceilings. Clips for 9/16" T grid installation are available. See Accessories section on bottom of page. This must be ordered as a separate item. Fixture may be mounted and wired in continuous rows.

CONTROLS — Optional integrated nLight® controls make each luminaire addressable - allowing it to digitally communicate with other nLight enabled controls such as dimmers, switches, occupancy sensors and photocontrols. Connection to nLight is simple. It can be accomplished with integrated nLight AIR wireless or through standard Cat-5 cabling. nLight offers unique plug-and-play convenience as devices and luminaires automatically discover each other and self-commission, while nLight AIR is commissioned easily through an intuitive mobile app.

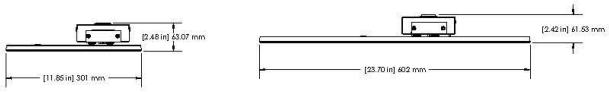
ELECTRICAL — Long-life LEDs, coupled with a high-efficiency driver, provide superior illumination for extended service life. High Efficiency EPANL maintains 97.7% of lumens at 60,000 hours (L97/60,000). 0-10V dimming driver, dims to 1% or 10% and contains non-isolated dimming leads.

LISTINGS — CSA certified to meet US and Canadian standards. DesignLights Consortium® (DLC) Premium qualified product and DLC qualified product. Not all versions of this product may be DLC Premium qualified or DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified. Intended for indoor use only. Damp location listed. IC rated. IP5X rated.

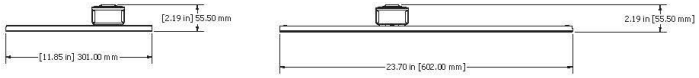
WARRANTY — 5-year limited warranty. Complete warranty terms located at: www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx

Note: Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25 °C. Specifications subject to change without notice.

Configurable fixture dimension



Stock fixture dimension



ORDERING INFORMATION Lead times will vary depending on options selected.

Example: EPANL 2X4 4000LM 80CRI 35K MIN1 MVOLT E10WCP NLTAIR2 RIO

Series	Width and Length	Lumens		CRI	Color Temperature	Minimum Dimming Level[1]
		Standard Lumens:	High Efficiency Lumens:			
EPANL LED Flat Panel	1x4 1'x4'	1500LM 1500 Lumens 3000LM 3000 Lumens 4000LM 4000 Lumens 4800LM 4800 Lumens 6000LM 6000 Lumens	4000LMHE 4000 Lumens	80CRI 80 CRI	35K 3500K 40K 4000K 50K 5000K	MIN10 Dims to 10%[2] MIN1 Dims to 1%
	2x2 2'x2'	2000LM 2000 Lumens 3400LM 3400 Lumens 4000LM 4000 Lumens 4800LM 4800 Lumens	3400LMHE 3400 Lumens			
	2x4 2'x4'	3000LM 3000 Lumens 4000LM 4000 Lumens 4800LM 4800 Lumens 5400LM 5400 Lumens 6000LM 6000 Lumens 6800LM 6800 Lumens	4000LMHE 4000 Lumens			

Ordering continued on next page.

F. State Electric Supply Fixture Conversion Proposal

STATE ELECTRIC SUPPLY CO.
CUSTOMER FOCUSED, QUALITY DRIVEN

Building Name
Virginia Tech Media Building

Proposal Name
Media Building LED Fixture Conversion

A Proposal For
George Hardebeck
Student Green RFP
Vigrinia Tech

Friday, November 1, 2019

390 Arbor Dr
Christiansburg, VA

Friday, November 1, 2019

George Hardebeck
Student Green RFP
Vigrinia Tech

Blacksburg VA 24061

Chris Caldwell
CEP-OS™
390 Arbor Dr
Christiansburg, VA
Phone: 540-320-7269
Email: chris.caldwell@stateelectric.com

STATE ELECTRIC SUPPLY CO.
CUSTOMER FOCUSED, QUALITY DRIVEN

390 Arbor Dr
Christiansburg, VA

Executive Summary

Project Overview

Cost of Project	
Project Cost ($)	25,523
Incentives ($)	0
Net Cost of Project ($)	**25,523**
Annual Operating Savings	
Energy Savings ($)	6,604
Maintenance Savings ($)	1,627
Total Annual Operating Savings ($)	**8,232**
Operating Savings Over 10 Years	
Energy Savings ($)	66,041
Maintenance Savings ($)	16,279
Total Operating Savings Over 10 Years ($)	**82,320**
Payback Period (years)	3.9
Net Present Value ($)	38,599
Internal Rate of Return (%)	50.25

Financial Summary

Total Project Cost ($)	Net Project Cost ($)	10 Yr Operating Savings ($)	Payback Period (yrs)
25,523	25,523	82,320	3.9

Upgrade Summary

Total Cost ($)	Total Incentives ($)	Net Cost ($)	Total Energy Savings ($) [1,2]	Maintenance Savings ($)	10 Yr NPV ($)[3]	Payback Period (yrs)
25,523	0	25,523	66,041	16,279	38,599	3.9

1. *Energy cost ($) = 0.0970/kWh; Annual energy cost escalation (%) = 0.00*
2. *Energy savings are for the 10-year analysis period*
3. *Assumed Cost of capital (%) = 6.00*
4. *Product Tax Rate (%) = 0.00*
5. *Service Tax Rate (%) = 0.00*

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Financial Analysis by Efficiency Measures (EM)

EM Name	EM Type[1]	kWh/yr Savings	Operating Savings ($)[2,3]	Total Cost ($)	Net Cost ($)	Payback Period (yrs)
Keyless 100w Incandescant Replacement	ILC	4,855	6,778	44	44	0.1
Surface Mt - Susp - 3L T8LED Solution	ILC	49,577	60,090	9,176	9,176	1.9
2x2 / 2x4 LED Flat Panel Layin Fixture	ILC	13,527	15,245	2,667	2,667	2.0
Wall Mount 4' Fixture	ILC	122	206	175	175	N/A

1. *ILC=Integrated Lighting and Controls, ALU=Advanced Lighting Upgrade, ALC=Advanced Local Controls, LC=Local Control*
2. *Operating savings includes energy savings and maintenance savings*
3. *Energy cost ($) = 0.0970/kWh; Annual energy cost escalation (%) = 0.00*
4. *Product Tax Rate (%) = 0.00*
5. *Service Tax Rate (%) = 0.00*

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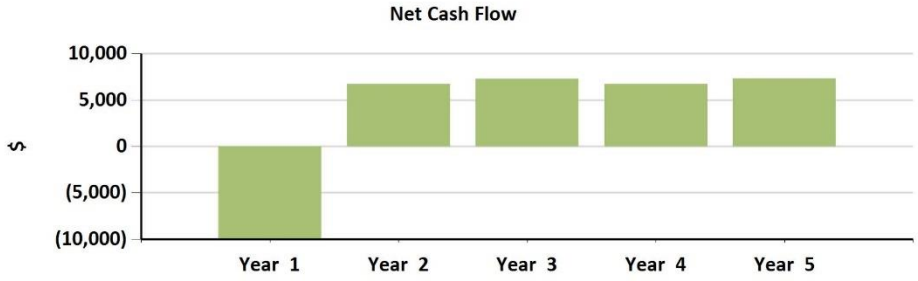
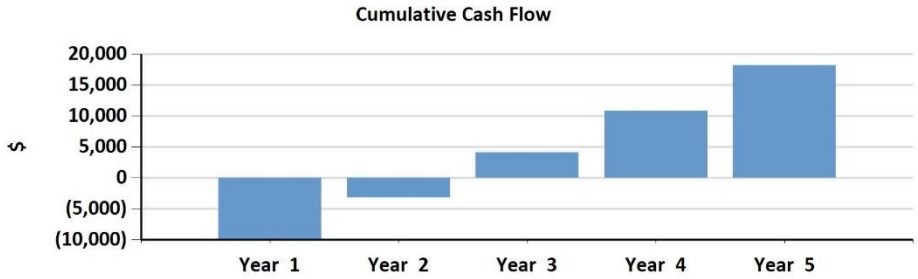
Cash Flow Analysis

10 Year Cash Flow Analysis ($)

	Year 1	Year 2	Year 3	Year 4	Year 5
Product Costs	13,393	-	-	-	-
Services	12,130	-	-	-	-
Energy Savings	6,604	6,604	6,604	6,604	6,604
Maintenance Savings	8,977	155	703	131	733
Net Cash Flow	**(9,942)**	**6,759**	**7,307**	**6,735**	**7,337**
Cumulative Cash Flow	**(9,942)**	**(3,183)**	**4,124**	**10,859**	**18,196**





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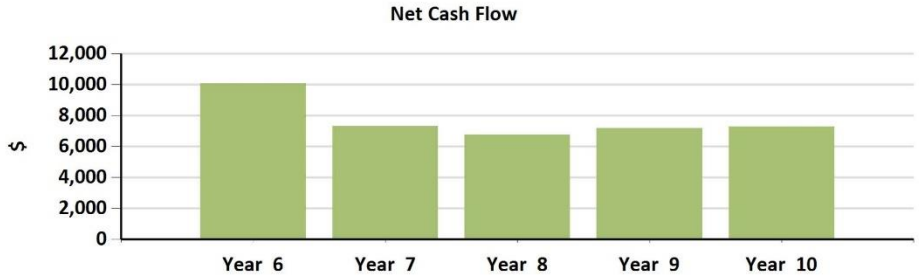
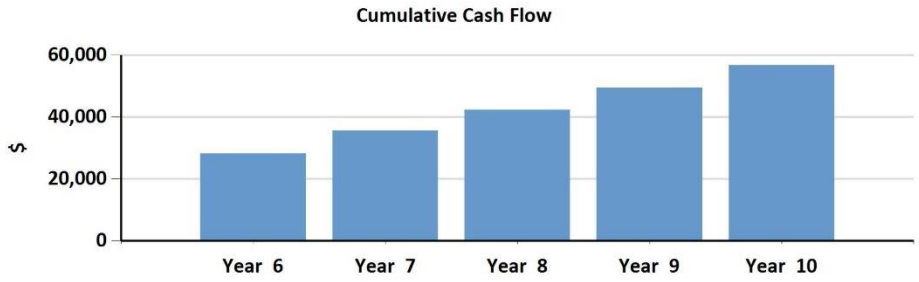
10 Year Cash Flow Analysis ($)

	Year 6	Year 7	Year 8	Year 9	Year 10	Total
Product Costs	-	-	-	-	-	**13,393**
Services	-	-	-	-	-	**12,130**
Energy Savings	6,604	6,604	6,604	6,604	6,604	**66,041**
Maintenance Savings	3,474	709	136	577	684	**16,280**
Net Cash Flow	**10,078**	**7,313**	**6,740**	**7,181**	**7,288**	**56,798**
Cumulative Cash Flow	**28,275**	**35,588**	**42,328**	**49,509**	**56,798**	**56,798**





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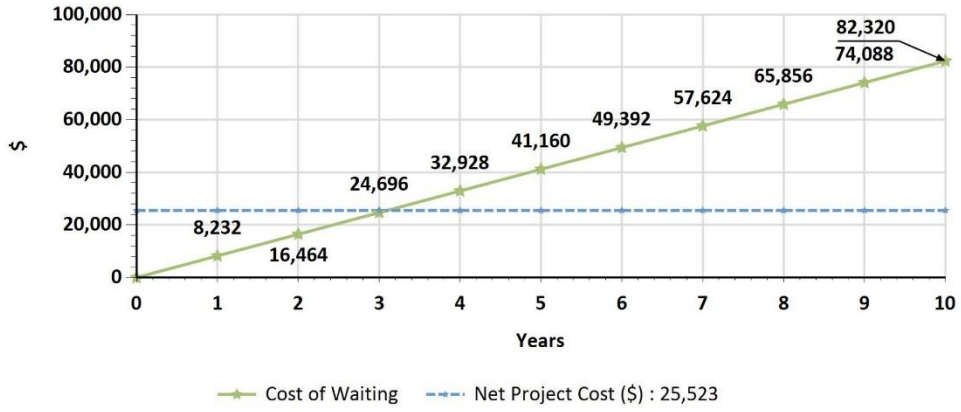
Cost of Waiting

Cost of Waiting

Monthly ($)	Yearly ($)	5 Years ($)	10 Years ($)	15 Years ($)	20 Years ($)
686	8,232	41,160	82,320	123,480	164,640



1. Cost of waiting includes energy savings and maintenance savings applied as an average annual amount over a 20 year analysis period

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Energy Usages and Costs

Annual Energy Usage

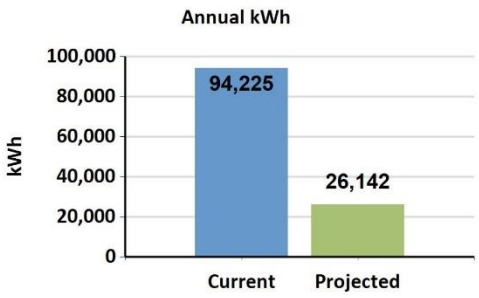
Current Usage (kWh)	Projected Usage (kWh)	Reduction (%)	Current Cost ($) [1,2]	Projected Cost ($) [1,2]	Savings ($)	Savings (%)
94,225	26,142	72	9,139	2,535	6,604	72

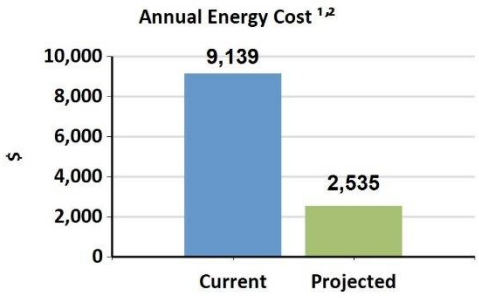
1. *Energy cost ($) = 0.0970/kWh; Annual energy cost escalation (%) = 0.00*
2. *Energy costs are averaged over 10 year analysis period*

Annual Energy Usage Reduction

Current Usage (kWh)	Projected Usage (kWh)	Reduction (kWh)	Reduction (%)
94,225	26,142	68,083	72

Energy Comparison





1. *Energy Cost ($) = 0.0970/kWh; Annual energy cost escalation (%) = 0.00*
2. *Energy costs are averaged over 10 year analysis period*

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Watts Summary

Existing Watts[1]	Proposed Watts[1]	Reduced Watts	Reduction (%)
20,796	5,921	14,876	72

1. The watts calculations in this table take into account existing fixtures that are being replaced, upgraded, and/or have new lighting controls being proposed for them

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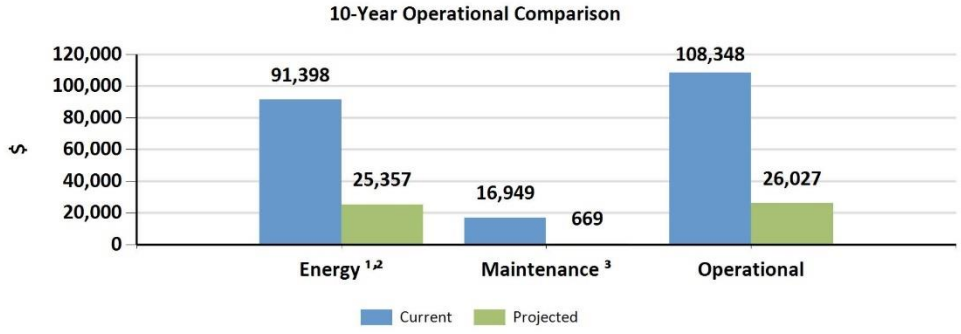
Operational Overview

Operational Savings Summary

Operational Area	Current Annual ($)	Projected Annual ($)	Reduction (%)	Current 10 Year ($)	Projected 10 Year ($)	Reduction (%)
Energy [1,2]	9,139	2,535	72	91,398	25,357	72
Maintenance [3]	1,694	66	96	16,949	669	96
Total	**10,834**	**2,602**	**76**	**108,348**	**26,027**	**76**

1. *Energy cost ($) = 0.0970/kWh; Annual energy cost escalation (%) = 0.00*
2. *Energy costs are averaged over 10 year analysis period*
3. *Maintenance costs are averaged over 10 year analysis period*

Analysis Period Operational Savings Comparison



1. *Energy cost ($) = 0.0970/kWh; Annual energy cost escalation (%) = 0.00*
2. *Energy costs are averaged over 10 year analysis period*
3. *Maintenance costs are averaged over 10 year analysis period*

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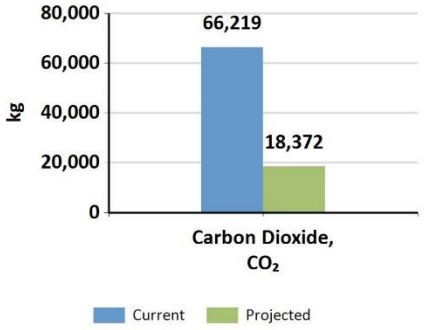
Environmental Impact

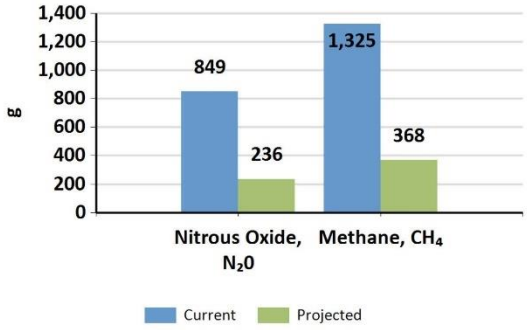
Greenhouse Gas Analysis

Greenhouse Gas Comparisons[1]

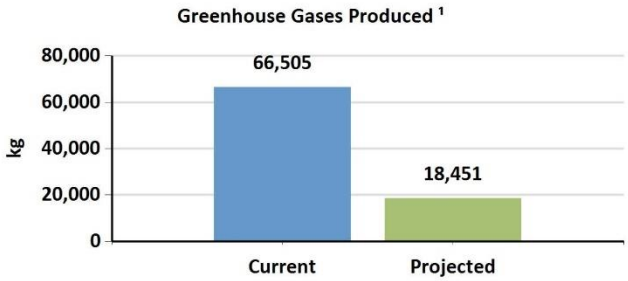
Greenhouse Gas	Current[1]	Projected[1]	Avoided	Environmental Effect
Carbon Dioxide, CO_2 (kg)	66,219	18,372	47,847	Greenhouse Gas, Global Warming
Nitrous Oxide, N_20 (g)	849	236	613	Greenhouse Gas, Global Warming
Methane, CH_4 (g)	1,325	368	957	Greenhouse Gas, Global Warming
Nitrogen Oxides, NOx (g)	57,933	16,073	41,860	Smog, Acid rain, Global Warming
Sulfur Oxides, SOx (g)	125,300	34,764	90,536	Acid rain

1. Average emission rates per kWh are based on estimates from eGrid 2012





Greenhouse Gas Comparables



Comparable Metrics

Barrels of oil consumed: 112

Urban forests (acre): 39

Fewer cars on the road: 10

Gasoline consumed (gallon): 5407

1. Average emission rates per kWh are based on estimates from eGrid 2012

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Bill of Materials

Additional Cost

Description	Cost ($)
Estimated Installation Labor	12,130.00
Misc. Lighting Controls	529.99
Misc. Strut - Fittings	800.00
Total	**13,459.99**

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Bill of Materials By Efficiency Measures

2x2 / 2x4 LED Flat Panel Layin Fixture

Part Number	Type	Short Description	Qty	Cost ($)	Extended ($)
LITEPANL2234L40K	Fixture	2x2 LED Flat Panel 4000k, 3479 Lumens, 30.8watts	1	59.33	59.33
LITEPANL2440L40K	Fixture	2x4 LED Flat Panel, 4000k, 4351 LUmens, 38.9 Watts	28	93.13	2,607.64
2x4 LED Flat Panel	Services	2x4 LED Flat Panel	28	0.00	0.00
2x2 LED Flat Panel	Services	2x2 LED Flat Panel	1	0.00	0.00
Total					**2,666.97**

Keyless 100w Incandescant Replacement

Part Number	Type	Short Description	Qty	Cost ($)	Extended ($)
PHL16A21PER927-22PE26WG	Lamp	16w A21 LED Lamp	2	8.00	16.00
PHL9BR30LED827-22DIM120	Lamp	9w BR30 LED Lamp	6	4.73	28.38
9w 65BR30 LED	Services	9w 65BR30 LED	6	0.00	0.00
16w A21 LED Lamp	Services	16w A21 LED Lamp	2	0.00	0.00
Total					**44.38**

Surface Mt - Susp - 3L T8LED Solution

Part Number	Type	Short Description	Qty	Cost ($)	Extended ($)
LITLBL4-LP840	Fixture	4' LB Style Wrap, 4000k,4000 Lumens, 32.4watts	10	125.80	1,258.00
LITLBL4W6500LM80CRI40KMIN1ZTMVOLT	Fixture	4' LB Style Wrap Wide, 4000k 6500 Lumens,50watts	4	216.00	864.00
SLGTS-4-46-G1-4K	Fixture	4' Surface Mt. Narrow Strip, 35w, 4600 Lumens, 4000k	107	61.11	6,538.77
PHL9.5T8MAS48840IF16P101	Lamp	4' 9.5w T8LED Lamp 4000k, 473990	39	8.67	338.13
ADVIOPA4P32LWN35I	Ballast	3 or 4 Lamps T8 LED Certified Ballast	13	13.65	177.45
3 Tube 9.5w T8LED Lamp - LW Ballast	Services	3 Tube 9.5w T8LED Lamp - LW Ballast	13	0.00	0.00

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Lithonia LBL Wide Body	Services	Lithonia LBL Wide Body	4	0.00	0.00
SLG 4' Narrow Wrap	Services	SLG 4' Narrow Wrap	107	0.00	0.00
Lithonia LBL4-LP840	Services	Lithonia LBL4-LP840	10	0.00	0.00
Total					**9,176.35**

Wall Mount 4' Fixture

Part Number	Type	Short Description	Qty	Cost ($)	Extended ($)
RABTSLED4-36/D10	Fixture	Wall Mount 4' LED Fixture, 4000k, 36w, 4000 Lumens	1	175.49	175.49
Wall Mount LED Fixture	Services	Wall Mount LED Fixture	1	0.00	0.00
Total					**175.49**

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Appendix

Financial Assumptions

Analysis Period (yrs)	10
Payback Calculation Method	Simple Payback
Cost of Capital (%)	6.0
Energy Cost ($/kWh)	0.0970
Energy Cost Annual Increase (%)	0.00
Product Tax Rate (%)	0
Service Tax Rate (%)	0
Cooling Savings Factor	0
Cooling Season Months	0
Heating Cost Factor	0
Heating Season Months	0

Schedules

Schedule Name	Description	Hours/Year
Default Lighting Schedule	5 Week days @ 12hrs2 Days @ 5 hrs50 Weeks per year	3,500
Continuous (24x7)		8,760