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GRAND VILLAGE OF ST. PETERSBURG
St. Petersburg, Florida

Energy Analysis
December 11, 2014

LumaSTREAM® Low-Voltage, Intelligent LED Lighting Systems™

GRAND VILLA SENIOR LIVING COMMUNITY
Looks like home. Feels like family.®

Prepared For:
LUMASTREAM

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Executive Summary

This memo summarizes the lighting savings that can be realized by installing the LumaStream when compared to the original lighting design for the Grand Villa Facility. Both designs feature LED lighting, with the LumaStream design featuring fixtures with significantly higher efficacy.

The building is roughly 26,948 square feet, and encompasses two floors of operational building.

The main fixture of each design is a recessed fixture that produces roughly 2000 lumens. The LumaStream fixture uses 21 watts, while the original design uses a 30.1 watt fixture from Elite Lighting. The watts used are based on the input watts from the specification sheets provided by the manufacturers. They will not include any loses upstream associated with controls or power conversion systems.

We have also added a rough estimate of HVAC energy savings, due to lower wattage output. This review only considered the lighting design, with not mechanical system design/performance review, so a more accurate review of the mechanical energy savings could not be quantified, so a rough calculation was made using a limited energy model to provide a range of savings expectations related to the HVAC.

Assumptions

The facility operates 24/7. It was assumed that the lights in the activity spaces would run for the equivalent of 60 hours per week. The connection spaces (corridors, stairs, lobbies) would run for an equivalent of 146 hours per week (assuming the fixtures reduce to 65% during the night). The restrooms are assumed to operate the equivalent of 20 hours per week.

The fixtures were assumed to have the following input watts:

Fixture	Watts
R3	21
P3	12
R4	9
E1	12

**$0.10/kWh was used of the cost of electricity*

There were a few spaces that did not include lighting designs in both plans. Spaces M247, M202 and M234 had LumaStream designs but no design in the original submission.

The LumaStream fixtures were assumed to replace fixtures consistent with the other spaces. There were a few spaces that had a design in the original drawing (i.e M250) but didn't have new fixtures specified in the LumaStream design. These spaces were excluded from the analysis. Where other fixtures were expected to be included in both designs (i.e chandelier fixtures) they were left out of both counts.

The Trinity DC power distribution system utilized by the LumaStream design provides a 7% decrease in conversion loss for the DC system during dimming periods, as compared to other recognized systems, per a LumaStream White Paper 'The Benefits of Low-Voltage DC Power Distribution for LED Lighting.'

Energy Results

Overall the LumaStream design reduced the lighting energy use by roughly 50% compared the original design, and saves about 32,000 kWh/year in energy use.

This equates to $3,200/year in annual electrical savings.

Additional savings could be found through HVAC energy savings during periods when the building is cooling and lights are running, as less heat is being expelled by the lower wattage fixtures. We estimate that this savings is in the ballpark of $400-800/year depending on age/efficiency of equipment. This figure is based on an energy model created in eQuest.

Opportunities

If the 179D tax deduction is extended in congress, the lighting design could be used to qualify the building owner for an accelerated depreciation of $0.60-$1.80/SF.

REAL Building Consultants can provide an estimate of fees to perform the requisite modeling to demonstrate compliance to qualify for the accelerated depreciation.

Lighting Savings Calculations

Space	Space Number	Hrs per Week	Old Watts	New Watts	Old kWh	New kWh	Percent Savings
Parlor	M101	146	331	189	2,521	1,439	43%
Promonadae	M108	146	241	147	1,833	1,119	39%
Lobby	M100	146	181	126	1,375	959	30%
Leading Office	M102	60	181	126	565	394	30%
Corridor	M104A/M139	146	430	147	3,274	1,119	66%
Activity Room	M104	60	377	261	1,180	817	31%
Grand Hall	M103	60	211	147	659	460	30%
Library	M106	60	483	204	1,511	638	58%
Corridor	M107	146	227	156	1,726	1,188	31%
Train Room	M110	60	303	144	948	451	52%
Seating	M105	60	213	144	665	451	32%
Computer Center	M111	60	106	72	333	225	32%
Private Dining	M113	60	120	84	377	263	30%
Dining	M112	60	1,054	693	3,296	2,168	34%
Serving Kitchen	M114	60	1,652	252	5,168	788	85%
Corridor	M115/M123	146	430	147	3,274	1,119	66%
Main Street	M126	146	482	336	3,666	2,558	30%

Restroom	M137/M138 + Corridor	30	295	189	461	296	36%
Restroom	M124	30	261	147	408	230	44%
Corridor	M128	146	151	105	1,146	799	30%
Theater	M135	60	306	108	957	338	65%
Corridor	M251	146	516	189	3,928	1,439	63%
Seating	M238	60	271	189	848	591	30%
Café	M237	60	271	189	848	591	30%
Activity Room	M235	60	271	189	848	591	30%
Library	M239	60	271	189	848	591	30%
Plaza	M240	146	271	225	2,062	1,713	17%
Corridor	M245	146	181	126	1,375	959	30%
Nurse Station	M243	60	181	126	565	394	30%
Den	M246	60	241	168	753	526	30%
Restroom	M219	30	288	231	451	361	20%
Restroom	M217	30	344	189	538	296	45%
Aviary/Television	M218/200/201/220	60	843	525	2,637	1,643	38%
MC Director	M203	60	176	84	552	263	52%
Corridor	M224	146	344	168	2,619	1,279	51%
Sunroom	M221	60	1,720	300	5,381	939	83%
Corridor	M205	146	258	210	1,964	1,599	19%
Elevator Lobby	M247	146	211	84	1,604	639	60%
Wellness	M202	146	120	84	917	639	30%
Dining Room	M234	60	753	525	2,354	1,643	30%
	Totals		**15,562**	**7,914**	**66,433**	**34,514**	**48%**

Please contact me directly should you have any additional questions or would like to further discuss opportunities to assist with tax deduction opportunities.

Sincerely,

Taylor Ralph, LEED® AP BD+C
President, REAL Building Consultants