



Dayton Elementary School Fifth Grade Project Recharge Proposal

L.E.D Lighting



Mission Statement

The mission of the fifth grade class is to change all of Dayton Elementary School's fluorescent lighting to LED lighting. LED lights will reduce peak loads and annual energy costs. LED lights do not flicker the way fluorescent lights do, and that can boost the student's moods and help concentration levels. Changing to LED lighting removes the risk of being exposed to mercury contained in fluorescent lights. If we change the fluorescent lighting to LED lighting Dayton Elementary School will be more energy efficient, save cost on electricity, as well as reduce cooling costs because fluorescent lights get way hotter than LEDs do.



Statement of Need and Goal/Objectives

Overall our school is in need of improvement when it comes to being energy efficient.

We believe that if we address these issues it will save a lot more than just money. It will save energy, the disposal of fluorescent lights and save the environment. The primary issues that our proposal addresses is energy efficiency. The reason this is a major concern is because of cost and the safety of our students and staff. Our objective for this proposal is to get support for funding and implementation for a project that will make Dayton Elementary School safer and more energy efficient.



Data, Cost, and Project Activities

We conducted an analysis of the lighting at Dayton Elementary School and calculated that our current energy consumption is estimated at 119,570kWh each year. The same number of LED lights will only use 71,812kWh each year. If we replace standard fluorescent lighting with LED lighting, the school will save approximately 47,759kWh per year!

With this project, Lyon County School District can save approximately \$4,537 per year on lighting and cooling costs at DES.



We got these numbers by, analyzing the number of fluorescent lights we currently have compared to the savings of the LED lights.

To implement all the LED lights it will cost around \$20,441. We believe this is a wise investment because fluorescent lights tend to hum and flicker, LED lighting last 3x longer than fluorescent lighting. LED lights use less energy, so in the end they are more cost efficient and better for our environment.

Based on our savings calculations, we will see a return on our investment in approximately 4.5 years.

<u>Existing Fixture Type</u>	<u>Fixture Quantity</u>	<u>Wattage</u>	<u>New Fixture Type</u>	<u>New Fixture Quantity</u>	<u>New Watts</u>	<u>kW Savings</u>	<u>Hours of Op.</u>	<u>KWH Savings</u>	<u>Est. Fix. Unit Cost</u>	<u>Est. Cost</u>
<u>Dayton Elementary School (AC)</u>										
2-lamp 4' T12 NLO	1	72	1-lamp 4' T8 HLO	1	33	0.04	2,376	93	\$ 30.00	\$ 30
4-lamp 4' T8 NLO	189	112	4-lamp 4' T8 28W RLO	189	85	5.10	2,376	12,125	\$ 45.00	\$ 8,505
4-lamp 4' T8 NLO	128	112	2-lamp 4' T8 28W RLO	128	43	8.83	2,376	20,985	\$ 37.00	\$ 4,736
4-lamp 4' T8 NLO	2	112	2-lamp 4' T8 28W NLO	2	48	0.13	2,376	304	\$ 37.00	\$ 74
3-lamp 4' T8 NLO	58	85	3-lamp 4' T8 28W RLO	58	63	1.28	2,376	3,032	\$ 37.00	\$ 2,146
3-lamp 4' T8 NLO	2	85	1-lamp 4' T8 28W NLO	2	33	0.10	2,376	247	\$ 30.00	\$ 60
3-lamp 4' T8 NLO (12')	1	85	2-lamp 8' T8 NLO & 1-lamp 4' T8 HO	1	81	0.00	2,376	10	\$ 35.00	\$ 35
2-lamp 4' T8 NLO	41	58	2-lamp 4' T8 28W RLO	41	43	0.62	2,376	1,461	\$ 35.00	\$ 1,435
2-lamp 4' T8 NLO	107	58	1-lamp 4' T8 28W NLO *	106	25	3.56	2,376	8,449	\$ 30.00	\$ 3,180
1-lamp 4' T8 NLO	4	31	1-lamp 4' T8 28W NLO	4	25	0.02	2,376	57	\$ 27.00	\$ 108
1-lamp 4' T8 NLO	2	31	1-lamp 4' T8 28W RLO	2	22	0.02	2,376	43	\$ 27.00	\$ 54
60 W inc.	6	60	15 W CFL	6	15	0.27	2,376	642	\$ 8.00	\$ 48
175 W merc. vap.	1	209	70 W MH	1	78	0.13	2,376	311	\$ 30.00	\$ 30
Totals	542			541		20.10		47,759		\$ 20,441
Total Fixture kWh Saved	47,758		Total Fixture kW	20.10						
kWh HCIF @ 0.042	2,006		kW HCIF @ 0.582	11.70						
Total kWh saved	49,763		Total kW Saved	31.80						

* Quantity changed



We believe that Dayton Elementary School would be eligible for a rebate from Nv Energy if we make these changes. We replaced some of our fluorescent bulbs with LED bulbs, but we need help to finish the job. When we finish upgrading the lights, it will save us more money to improve the school, which will make the kids happier.

We looked into the Nevada Governor's office of energy, we found that if we upgrade all of our fluorescent bulbs to LED bulbs, they will use less energy which will save our school more money. Our school will pay less in expenses, and won't have to pay more to dispose of the mercury inside the fluorescent bulbs. Also, the money saved could be used to purchase more computers for the school.



In order to change all the lighting in Dayton Elementary School from fluorescent to led bulbs there are several steps that need to be completed. First, we must ask for help with funding from Envirolution, and its partners. If we, in fact, get approved, we will then have to ask Mr. Vismar and Mr. Gleason to implement our project, by changing and disposing of the old bulbs.

We believe that it will take approximately one school year to implement our proposal. We feel that the best approach is to change the fluorescent bulbs to LED when they burn out. We can not do this all at once.

We will need the help of Mr. Vismar, Mr. Gleason, Envirolution, NV energy, Governor's Office of Energy.

Mrs. Peters, DES principal, has written a letter of support to Envirolution and district administration.



Dayton Elementary School

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Phone 775-246-6262 Fax 775-246-6264

Mrs. Leslie Peters, Principal

Ms. Shawn Romero, Assistant Principal

May 12, 2020

To Whom it May Concern,

My name is Leslie Peters and I am the proud Principal at Dayton Elementary School in Dayton, Nevada. Over the course of the school year I was excited to see and hear about our 5th grade students' involvement with Project ReCharge. The learning that took place was rigorous, hands-on and relevant to our school and our society today.

Through this program our students were able to use important 21st century skills of collaboration, critical thinking, and effective communication to create their project. This real-world program is just what our students today need; opportunities within their classrooms to see how their learning is connected to something greater! Thank you for your support for our students and teachers through this endeavor.

We are hopeful that our project will be one selected and we look forward to the possibility of becoming more "green" and environmentally friendly by being able to replace our fluorescent lights with LED bulbs.

Thank you so much again for your support and consideration of our students' project.

Sincerely,

Leslie Peters
Principal, Dayton Elementary School



Impact Analysis

1. Our proposal is cost effective as explained above, however, it will also have these benefits:
 - Lasting far longer than incandescent and fluorescent light.
 - They are enormously energy efficient
 - They don't have any ultraviolet in them
 - They can work in extreme temperatures
 - They work instantly
 - They have less radiant heat and are more affordable now

1. Some possible cons or limitations on our proposal are...

_____ One con about LED lights is directional lighting. As a result, LED lights do not scatter light in all directions the way incandescent and fluorescent lights do. While LED lights are ideal as spotlights, they are less effective as area lights.

However, we think that if a different shape is made for LED light bulbs, this might help in distributing the light that comes from it and will be more effective in lighting a wider area.

1. We think the project will continue after we graduate if we help others realize that it is the small changes that can make a big difference in the future. We can also leave our work and findings so that they can have a starting point and continue the work that has been done so far.



References

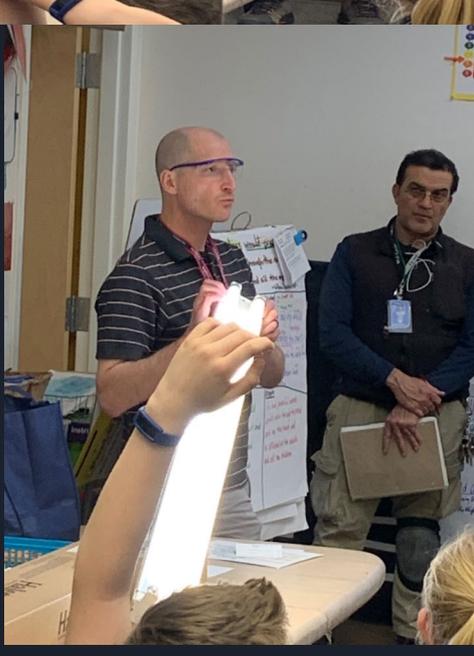
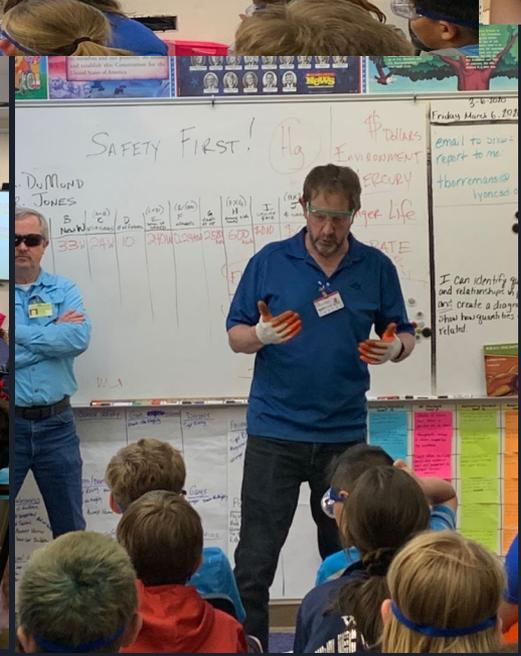
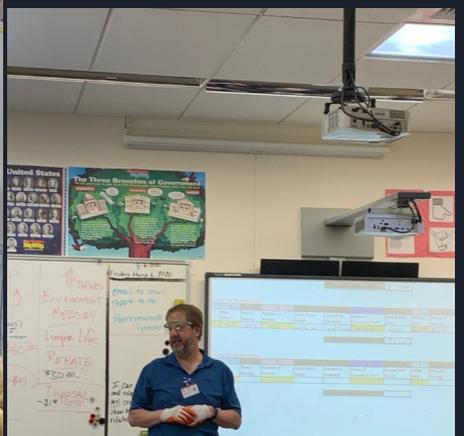
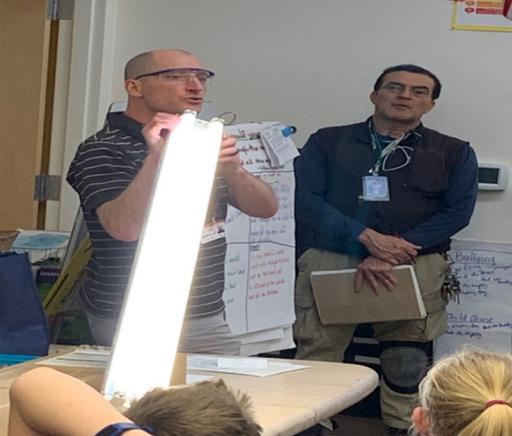
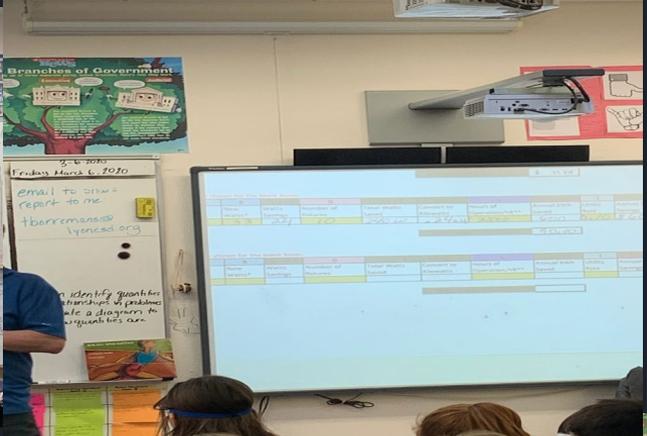
NV Energy - Energy Smart Schools Program

<https://www.nvenergy.com/save-with-powershift/schools>

Andrew DuMond - Energy Smart School Schools - Nevada
Presentation at DES about changing from florescent to LED lighting

Governor's Office of Energy

http://energy.nv.gov/programs/active_programs/





Thank you for taking our proposal into consideration

-Dayton Elementary School Fifth Grade Team -

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