

Project ReCharge School Sustainability Proposal

Save Power Hour by Hour

by Dayton Intermediate Robotics Team

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I. Mission Statement -

Our mission is to reduce the amount of money spent on electricity by reducing the amount of electricity used at Dayton Intermediate School (DIS). A reduction of 5% of kilowatts per hour (kWh) used would save the school approximately \$200.00 a month or \$2,400 per year. We would like to be the first school in our district to accomplish the goal of becoming more energy efficient through the use of Light Emitting Diode (LED) light bulbs.

II. Statement of Need

Dayton Intermediate School uses 583,026 kWh annually. This adds up to an annual cost of \$51,242.53. The school uses 2,470 - 28 watts of Compact Fluorescent Light bulbs (CFL) throughout the classrooms and common spaces. These fixtures are powered 19 out of 24 hours a day, year-round. The school needs a system in place to power down unused spaces. The school needs to replace high energy low light CFL's with 14 watt LED bulbs. This equals an annual savings of \$10,473.27 and 99,745 kWh, total savings in pounds of CO2 emissions of 153,009.55.

III. Goals and Objectives

We want to reduce the amount of Kilowatts per Hour, 5% by the end of August 2020. We will accomplish this by replacing the 2,470 bulbs in all classrooms and common spaces, with an LED compatible system. LED systems use less energy than incandescents and fluorescent systems, which are currently in use. We want to educate the staff and students to conserve electricity by reducing the amount of switches used in a classroom and by turning off the lights when leaving the room. We will know if the goal has been met by analyzing electricity bills over the next few months. Additionally, we will use staff/student surveys to analyze a change in behavior regarding lighting in the classrooms.

IV. Project Activities

Structurally Dayton Intermediate School will replace all current light bulbs with more energy-efficient LED components. Staff accessible switches or motion sensors in common areas will be installed by the start of the next school year in August 2020. Behaviorally, throughout the 2019-2020 school year, DIS will educate staff/students on the best ways to use the light switches in the classrooms. Announcements and visible stickers will remind students/staff of their role in reducing electricity. Finally, DIS will partner with Envirolutions to help fund the project as well as pursue grant and rebate opportunities from NV Energy and The Nevada Governor's Office of Energy.

V. Data Collection

DIS wastes a lot of money on energy because they use an inefficient light system as well as not having a way to power down the system easily. A year's worth of energy bills was obtained from the Lyon County School District Office and analyzed for the amount spent monthly and annually, as well as energy usage. We conducted an electrical usage analysis and found our current school consumes 5,882,665 kWh annually. This leads to a cost of \$51,242.53 on our annual electric bill. We calculated that if the light bulbs are replaced, students/staff remember to turn off the lights when not in the room and use only one light when in the room, we can meet our goal of reducing energy consumption by 29,151.3 kWh and a saving \$2,562.00

VI. Cost Share

We believe that Dayton Intermediate School will qualify for the Energy Smart Schools rebate through NVEnergy. According to NVEnergy's website: The Powershift Program offers a \$0.05 rebate program that can be used for LED replacement bulbs or lighting and occupancy sensors. This 0.05 rebate would generate \$4,987.27 of the potential cost of \$15,132 to replace light bulbs, not including labor. There is also the potential to qualify for additional support from the Nevada Governor's Office of Energy. We have reached out to them and are exploring this option.

VII Impact Analysis

Dayton Intermediate School would like to extend this project to Dayton High School that has an approximate \$10,000 per month electricity bill. We would also like to see the three elementary schools in Dayton Valley, work to increase their energy efficiency. In addition, we anticipate students who are being coached to reduce their electricity in classroom use, will take home with them the behaviors of turning off the lights or using less lighting. A hurdle that would need to be overcome will be if the funding is less than the amount needed to complete the project. Additionally, the use of the Lyon County School District Staff to complete the change over is potentially another problem area. If an outside contractor is required to complete the project, the District may not agree to complete the project. Finally, if our project is fulfilled to completion Dayton Intermediate School will produce a total savings of CO₂e of 153,009.55 per year.