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## Optimizing Efficiency of Street Lights

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**Presenter Information**

Elias Taylor, Graciela Quinto, Peter Ataras, Shareace Miller, Jesus Montes, Dylan Penston, and Olivia Carter

# Optimizing Efficiency of Street Lights

Elias Taylor, Graciela Quinto, Peter Ataras, Shareace Miller, Jesus Montes, Dylan Penston, Olivia Carter

## PROBLEM/OPPORTUNITY

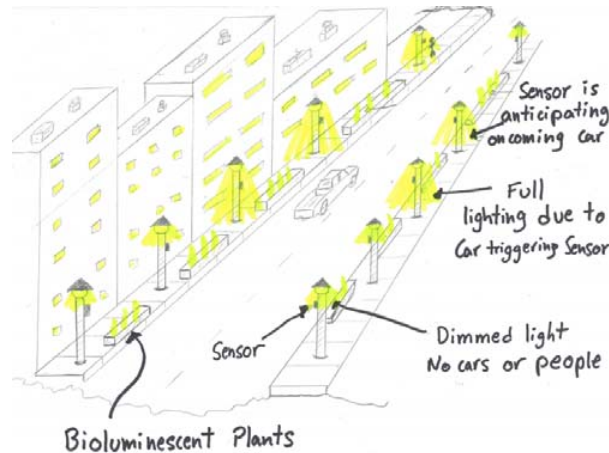
A significant amount of energy is lost in the transportation and transformation of electricity from its source location to the street lights due to the imperfect systems. Whole constellations have disappeared because of light pollution.



Figure 1: The use of an ordinary street light produces more waste than effective lighting



Figure 2: Bioluminescent Trees Lighting a City



Bioluminescent Plants  
Figure 3: Depiction of our solution

## KEY OBSERVATIONS



Figure 4: Streetlight sensors will only display full brightness when a pedestrian or car is near.

The Portland Bureau of Transportation owns 55,000 streetlights. Of these 55,000 about 4,800 of them are purely decorative. It costs Portland approximately 1.7 million dollars per year for street lights not including the 6 million dollar maintenance costs. This is calculated using only the cost of LED rather than incandescent bulbs.

The addition of bioluminescent plants can supply the necessary foot candle of light for the city that is aesthetically pleasing and requires no energy. Though these plants require planter boxes and regular maintenance.

## RESULTS

The addition of Bioluminescent plants and sensor-fitted LED lighting would result in a decrease in energy consumption for the required lighting thus giving a good return of investment due to cost reduction. This option is sustainable in the reduction of energy consumption which will also save Portland money. Through our research we found that the money invested on the lights alone will be earned back in about a year and a half. This solution is unique and sustainable. Perfect for Portland.

## CONCLUSIONS

Overall the City of Portland would be happy, healthier, and safer with our solution. Reducing costs of energy usage will decrease pollution while still providing the necessary lighting for pedestrian and cars. The motion sensor system combined with bioluminescent plants will save approximately .75 million dollars per year for the City while keeping Portland weird.

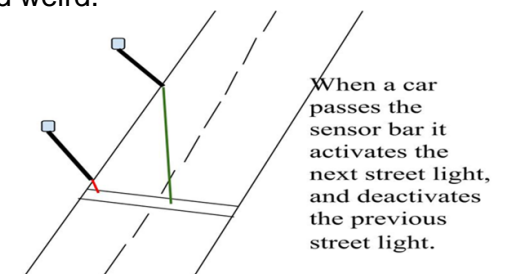


Figure 5: This picture demonstrates how motion sensors will activate and deactivate street lights after a car has passed.