

Installation of New Streetlights on Northwest and Southwest Marine Drive

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Introduction

Southwest and Northwest Marine Drive, also commonly known as the UBC Highway, connects the University of British Columbia to Metro Vancouver. Between these two regions lies the University Endowment Lands consisting of approximately 3000 acres of land. The University Endowment Lands was founded in 1907 at the time of the University Endowment Land Act which was to fund the opening of the University of British Columbia. The University Endowment Lands is separate from the Province of British Columbia mayor governing system and is instead run by a manager. In 1925, the first pieces of property were sold via public auction which established the first residential community. In 1989, the undeveloped land was handed to the Vancouver Regional District to be designated as Pacific Spirit Regional Park (*University Endowment Lands - About*, n.d.).

Many commuters rely on Southwest and Northwest Marine Drive as a major route to the University of British Columbia. Alternate roads such as West 16th Avenue, University Boulevard, and West 4th Avenue are also utilized and are situated on the University Endowment Lands.

Purpose

Calls to install more lighting have been highlighted by students, residents, and faculty at the University of British Columbia. Reddit has become a conversational platform for individuals to express their thoughts and grieve after these accidents. One post highlights the absence of streetlighting as a primary cause for the accident involving two UBC students in September of 2021. “Georgia Yee, a biology student and Board of Governors representative, tweeted her concerns, saying that she was once almost struck by a vehicle on the same road” (Sangar). Although only few incidents have been recorded, there have been additional instances where

fortunately there have been no deaths. Ms. Yee's experience brings light to the problem. The discussion of installing new streetlights is the start to increased safety.

Method

Ten individuals have responded to a short five question survey conducted via SurveyMonkey.com and distributed through Instagram and personal messages. This survey is designed to analyze the rate of visibility on Southwest and Northwest Marine Drive and to investigate the use of these roads. An additional investigation of approximate costs was completed to assist in the practicality of installing new streetlights.

News reports of incidents along Southwest and Northwest Marine Drive have also been used in correlation to the absence of streetlights and to support the proposal. With this foundation of information, the necessity to install new streetlights is important for the safety and well-being of the UBC community

Scope

To assess the feasibility of installing new traffic lights along Southwest and Northwest Marine Drive, I ask the following questions:

1. What will the cost be to install new lights?
2. Will the University Endowment Lands approve of this proposal?
3. Will lights interfere with the Pacific Spirit Regional Park and its wildlife?
4. Will lights draw more pedestrian traffic into the park?
5. What are the implications of unlit streets?
6. Is there an alternative method to providing lighting (reflectors, painting curbs etc.)?

Data Section

Those who have completed the survey have responded to five multiple choice questions.

1. Are you a student at UBC?
2. Have you relied on either/both of these two routes to commute?
3. How often do you use either/both of these routes for your commute?
4. What method of transportation do you utilize when travelling along either/both of these routes?
5. How would you rate the visibility on these streets at night?

To assist in accurate responses, an attached map was used to assist in highlighting the discussed areas of Southwest and Northwest Marine Drive (Fig. 1).

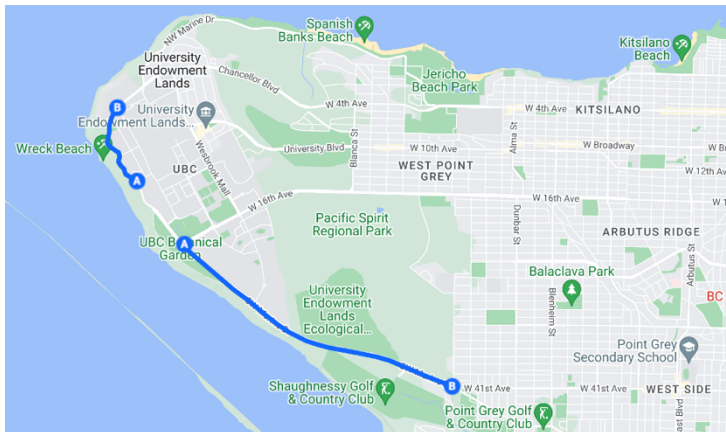


Figure 1: Map of Location

Analysis of Survey Results:

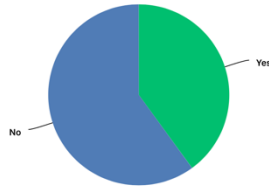
Of all respondents, 40% had stated they were UBC students (Fig. 2). While majority of respondents are not UBC students, there are 50% of participants who answered “yes” to using Southwest and/or Northwest Marine Drive for their commute (Fig. 3). This demonstrates the demand to install new streetlights as many users rely on this route for reasons aside from travelling to and from the university. With unlit streets, accidents are more prone as visibility is

decreased. The results from question three additionally support the requirement for streetlights to be added. Out of ten, 30% of respondents depend on Southwest and/or Northwest Marine Drive for two to four days of the week and an additional 20% answer that they rely on these routes for their commute one to three days a week. The remaining 50% respond to never use these routes for their commute (Fig. 4). While the division of responses concludes that there are only five respondents out of ten who actively rely on Southwest and/or Northwest Marine Drive, the remaining two survey questions support the dangers of the current absence of streetlights.

50% of ten respondents record that they use a vehicle while travelling on either or both routes (Fig. 5). This, paired with the incidents recorded on Southwest and Northwest Marine Drive, correlate to the amount of traffic and the potential for car accidents. Additionally, the concluding question asks respondents to rate the visibility of Southwest and Northwest Marine Drive at night. Of the total number of respondents, 90% rate the visibility to be unclear and the remaining 10% found the visibility to be satisfactory (Fig. 6). No respondents rank the visibility of the road to be clear at night. This highlights the consensus for the need to install new streetlights along Southwest and Northwest Marine Drive.

Are you a student at UBC?

Answered: 10 Skipped: 0

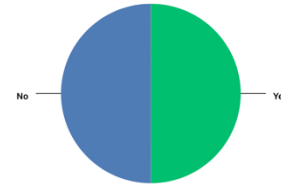


ANSWER CHOICES	RESPONSES
Yes	40.00% 4
No	60.00% 6
TOTAL	10

Figure 2: Survey Question 1 Responses

Have you relied on either/both of these two routes to commute?

Answered: 10 Skipped: 0

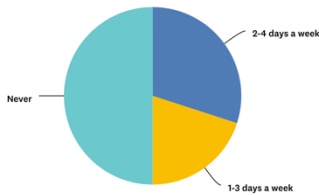


ANSWER CHOICES	RESPONSES
Yes	50.00% 5
No	50.00% 5
TOTAL	10

Figure 3: Survey Question 2 Responses

How often do you use either/both of these routes for your commute?

Answered: 10 Skipped: 0

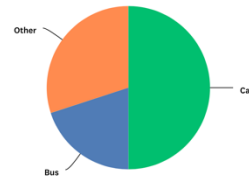


ANSWER CHOICES	RESPONSES
5-7 days a week	0.00% 0
2-4 days a week	30.00% 3
1-3 days a week	20.00% 2
Never	50.00% 5
TOTAL	10

Figure 4: Survey Question 3 Responses

What method of transportation do you utilize when travelling along either/both of these routes?

Answered: 10 Skipped: 0

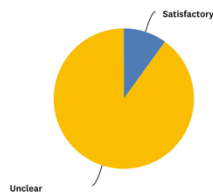


ANSWER CHOICES	RESPONSES
Car	50.00% 5
Bus	20.00% 2
Bike	0.00% 0
Walking	0.00% 0
Other	30.00% 3
TOTAL	10

Figure 5: Survey Question 4 Responses

How would you rate the visibility on these streets at night?

Answered: 10 Skipped: 0



ANSWER CHOICES	RESPONSES
Clear	0.00% 0
Satisfactory	10.00% 1
Unclear	90.00% 9
TOTAL	10

Figure 6: Survey Question 5 Responses

Analysis of Costs

The stretch of unlit road on Southwest and Northwest Marine Drive is approximately 5.40 kilometers. For the purpose of this proposal, generally, a streetlight should be installed every 0.05 kilometers on either side of the road. Each streetlight is estimated to be at a cost of \$3,000 and an additional \$1,000 for installation (“How Much Do Street Light Poles Cost?”). With 5.40 kilometers and a streetlight at every 0.05 kilometers on either side of the road, there is an estimate of 216 streetlights total to be installed. For optimal lighting purposes, LED streetlights should be used which has a cost of approximately \$180 each (Wenli).

To calculate the total cost of installing 216 streetlights, the cost of LED bulbs, installation, and the cost for the streetlight poles have all been considered.

$$(\$3,000 + \$1,000) \times 216 = \$864,000$$

$$(\$180 \times 216) + \$864,000 = \$902,880$$

Therefore, an approximate cost for installing new streetlights on Southwest and Northwest Marine Drive is concluded to be \$902,880. Although costs are quite high, the installation of new streetlights is necessary for community safety.

Alternative Option for Streetlights

Although installing new streetlights along Southwest and Northwest Marine Drive would be the most effective option in providing lighting along this road, reflectors can also be beneficial. Reflectors can be installed along the curb of the centre island and along the sidewalk curbs and bike lane for automobile designation. With Vancouver being susceptible to ample rain, the benefits of road reflectors are that they increase visibility in the rain (Lai). While this could be a primary cause of accidents due to the lack of visibility in the rain, studies have shown that there has been a decrease in accidents with the use of these reflectors. Driver awareness was

lower due to an unclear driving environment such as decreased visibility especially while driving at high speeds. Similar to the situation on Southwest and Northwest Marine Drive, road reflectors can be installed as an alternate option to streetlights.

For the sake of this proposal, the roads which would require lighting total 5.40 kilometers in length. According to a multitude of sources, reflectors should be installed every 40 inches. To have reflectors along the island curb, bike lane and sidewalk curb, there would be a total of 16.2 kilometers which would require lighting and an additional 16.2 kilometers on the opposite side of the centre island. This would total 32.4 kilometers of reflectors. With reflectors every 40 inches, there would be a total of 15,945 reflectors required for optimal lighting (Fig. 7).



Figure 7: Proposal of Reflector Location

A pack of 200 reflectors costs \$942.95 (“Barrier Marker (Box of 200 Markers)- Trafficsafetywarehouse.com”). With 15,945 reflectors required, a total of 80 packages would be required. The final cost to install reflectors would be \$75,436.

This option is more cost effective compared to the installation of new streetlights however, the lighting is not optimal.

Analysis of Locations of Previous Incidents

Northwest and Southwest Marine Drive have endured many incidents with pedestrians and drivers over the past years. Most recently, an incident involving children around nine or ten years old, were struck by a vehicle while walking near the UBC Botanical Gardens in June of 2022 (*Grade 4 Youngsters Hurt, Recovering, as Car Veers onto Sidewalk at UBC*). Leaving the community struck for another time as not long ago, another incident along this stretch of road occurred. In September of 2021, two UBC students were walking along Northwest Marine Drive around 2 a.m. and were struck by a vehicle that veered off the road (Gul et al.). In 2011, there was a motorcycle collision on the same section of Northwest Marine Drive (Prasad). Student and community safety is at risk and with the publication of these incidents, residents are expressing their concerns.

The reports of these accidents correlate to the absence of lighting. Although the absence of lighting is not the obvious cause for these accidents, it can be assumed that lighting would increase visibility and driver awareness to eliminate accidents along Southwest and Northwest Marine Drive.

Conclusion

Summary of Findings

The Metro Vancouver community has expressed their concern for community safety, and this can be near resolved if the installation of streetlights were to be implemented. The results from surveys were almost 100% agreeable that these two sections of road had unclear visibility. With the addition of accident data to support these findings, it can be concluded that Southwest and Northwest Marine Drive need new streetlights.

Recommendations

To optimize lighting on Southwest and Northwest Marine Drive, the installation of new streetlights is the best option. Although less cost effective, the lighting will illuminate the entire area to improve visibility for cars, bikers and pedestrians. This will eliminate potential accidents and ultimately increase safety for the UBC community.

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