# A Student's Stroll From State Street Housing
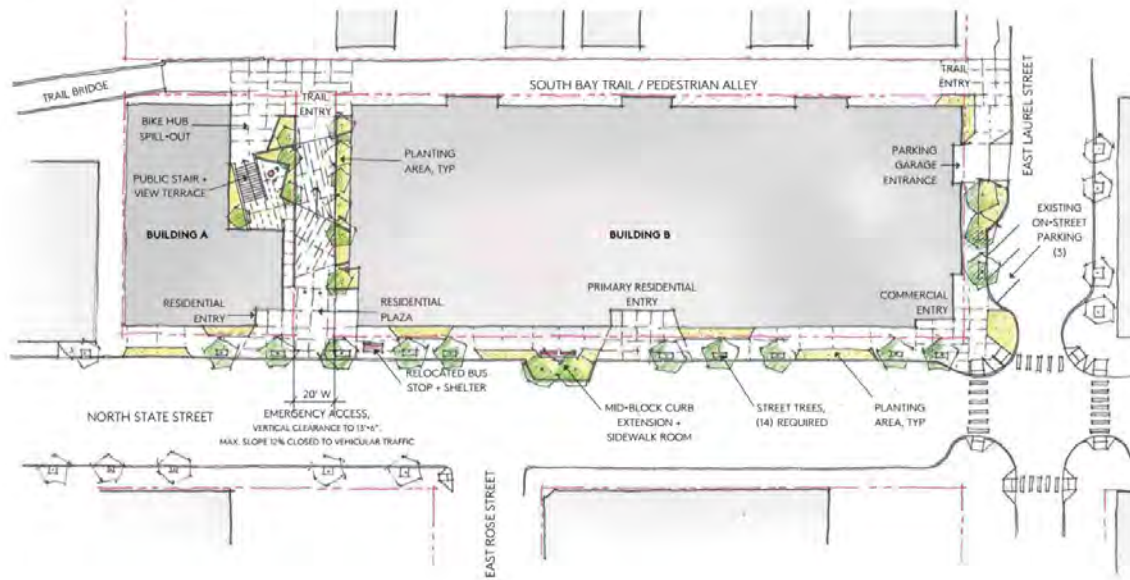


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**Executive Summary:**

        The proposed student housing development on State Street will bring an influx of 480 new residents to the development's location in downtown Bellingham. This influx of mainly a student population will increase the auto traffic and demand for transit services in this area up to Western Washington University's campus. The development wants to find ideas to incentivise residents to find alternative modes of transit to and from campus.

        We have assessed the walkability of routes from the proposed student development on State Street to Western Washington University, and will now provide our client with route recommendations, infrastructural improvements, and possible incentives and ideas the development can implement to encourage residents to choose sustainable modes of transportation.

        We are looking for a total budget of $57,572.50. This largely includes changes in infrastructure and has small costs regarding ideas that will incentivise more tenants to walk safely to and from campus. The incentives section can come either in full implementation or partial implementation depending on how the developer is budgeting this section. Incentive costs can be a fee taken out of tenants monthly rent or a section within their deposit for initial costs. Expenses due to infrastructure have to do with safety regarding lack of crosswalks, sidewalks, and ADA ramps and truncated domes. These are recommended specifically in 3 routes.

        We are working under Paulo Nunes-Ueno, the transportation demand management advisor hired by Spectrum Development Solutions.

**Statement of Need**:

        Our recommendations for routes and infrastructural improvements along with ideas for walking incentives and how encouragement is necessary to influence resident modal choices in a sustainable direction.

        The development is set to house 480 residents, mainly Western Washington University students and possibly Whatcom community college transfers and recent graduates. This development will have a unique impact on the area's traffic because, unlike normal apartment complexes, a majority of the development's population will be travelling to and from the WWU campus on a daily basis. This creates increased traffic along the surrounding streets and a larger demand on the transit system. The

development is located .5 miles from WWU's campus and conveniently located 4 blocks from the Bellingham station, providing quick access to transit services.

The scope of this project is across three separate routes up to WWU's campus from the proposed area of development. We have assessed each route and our recommended infrastructural improvements will benefit the future students who will live in the development, as well as students, staff, and bellingham residents who already live in the areas along our recommended routes. These improvements will provide anyone walking in this direction with a better experience and a more walkable environment. We are also recommending incentives that the development can implement to encourage sustainable transportation choices.

It's important to consider our recommendations now, because the development will be built within the next two years. The development is requesting a variance for a 43% reduction of parking spaces, so our recommendations will be utilized by the development as proof that a reduction in parking is warranted.

We conducted a student survey to assess student travel patterns and preferences. The student survey provided us with insight to student concerns, what influences their modal choices, and how we can use this information to choose the best routes and improvements. We found that a large influencing factor on student's choice to walk is the limited lighting and safety concerns in areas surrounding campus. We responded to this by evaluating the street lighting along the routes and we chose the most well lit route as our recommended safest route. Weather is another factor that strongly influences student modal choice. From our survey, 73% of 93 respondents said they were less likely to walk if the weather was unpleasant ( Figure 4). So one recommendation to counteract this would be the implementation of an umbrella share/poncho within the development's community. We are recommending to have an UmbraCity kiosk at the facility and in Miller Hall on Western's campus. We are also suggesting Lucid Energy Kiosks to display information about the development's green features such as bus times, the shuttle schedule, Smart Trips, E-Bikes, Peco-Ponchos, and UmbraCity WWU campus drop off locations.

**Project Description:**

The purpose of our project is to evaluate potential walking routes and make suggestions that can then be presented to residents who can use them to walk to and from campus safely. The other part of our project is to make suggestions about improvements to our presented routes, as well as suggest incentives or ideas that will encourage tenants to choose walking over driving or other less economically friendly forms of transportation.We are proposing three routes, Laurel - the most direct route, Gather -the safe route and the Roundabout - the fast route. With these routes we want

tenants to be able to have a choice when traversing from the State St. building to campus in the best way possible for them. Implementing the project will focus mostly on repairs and upgrades to the walking routes that will improve the walkability of each route. Making the suggested improvements will increase the chance that tenants will feel safe walking these routes.

Our main suggestions for improvements are updating curb extensions to meet ADA standards, adding several crosswalks and a crossing signal to increase pedestrian visibility and awareness. Another improvement would be adding better lighting on all the perspective routes, increasing night visibility and potential night time safety. Also putting in a roadside speedometer on Garden street to reduce traffic speed on garden during rush hours. These would implemented by the city, but the developer would provide funding.

**Route 1. E Laurel Route:**

The E Laurel St route is the most direct route and ADA accessible. Although it is the longest in terms of both distance and time. The route starts at E Laurel St and State St. There is a painted crosswalk at this corner, and the route leads up Laurel St. There is another painted crosswalk on the next block at Forest St. and Laurel St. You continue to walk up Laurel St. and then turn right on Garden towards WWU. You can cross Garden at this point, but you first have to cross Laurel on a faded marked crosswalk, and then there there is no marked crosswalk across Garden. But if you choose not to, all of the curb extensions leading up this point are up to ADA standards, and the crosswalks are all marked. The sidewalk is also fairly wide and the grade is not steep, which offers a more accessible route in comparison to the Gather and Roundabout for handicapped pedestrians. Although there is also two areas where the sidewalk is broken or uneven, and there is one intersection at Garden and Oak where the curb extension should be updated to meet ADA standards, as well as another area where the Pine St. trailhead comes out on Garden. After the corner of Laurel and Garden, there are only two other striped crosswalks crossing Garden for the next half mile. One at the corner of E Myrtle St. and Garden, which was added recently when the Gather Apartment complex was developed. Then the final crosswalk is directly across from the Viking Union Center, where the route ends. When walking along Garden St. we noticed that many cars are speeding, and we believe this correlates to the limited number of marked crosswalks. I have especially found this to be a problem at night when I'm crossing Garden from the corner of Oak St. Crosswalks are known to increase driver awareness of pedestrian presence, and result in traffic-calming effects. We are suggesting several infrastructural improvements to reduce vehicle speeds and increase driver awareness along garden at pedestrian crossings.

- A marked crosswalk should be painted on the corner of Oak and Garden St.

- Installation of LED street lights near crosswalks to increase pedestrian visibility.
- Updated ADA curb extensions at Pine st. trailhead on garden, and at the Garden & Oak St. intersection.
- Sidewalk repair along Laurel and Garden.



**Figure. 1 E Laurel Route Map**

| East Laurel Route | | |
|---|---|---|
| Intersections/ Roads | Problem | Solution |
| East Laurel | Cracked sidewalk | Refill sidewalk or be aware that it could worsen over time and impair accessibility. |
| Laurel & Garden | Faded marked crosswalk | Repaint to improve pedestrian visibility and calm traffic. |

| Garden & Ivy | Overgrown vegetation causing poor pedestrian visibility | Speak to owner of rental at 823 N Garden St. to see if overgrown vegetation can be trimmed in order to improve pedestrian visibility. |
|---|---|---|
| N Garden | Broken/Uneven Sidewalk | Repair to improve accessibility. |
| Garden & Oak | Dark, Low pedestrian visibility at night, No crosswalk, Speeding cars, Curb extensions outdated | Add marked crosswalk to calm traffic, update curb extensions to meet ADA standards and improve accessibility, improve lighting to increase pedestrian visibility |

**Route 2. Gather Route:**

The Gather route is the second easiest and the second quickest route. The route utilizes the Gather complexes street lights along Ivy ST for night time lighting as well as the complexes outdoor security cameras for safety. The route is more roundabout and is less direct than the other two routes, but is easier to traverse. The route needs a crosswalk signal on the corner of Berry by forest where visibility is low for drivers at the crosswalk there. That crosswalk also needs ADA approved yellow curbs. Lighting needs to be upgraded and light posts added on Garden ST as well as on Ivy. This route needs three crosswalks put in, one on State ST, and two on Garden ST one by Nash and one closer to the Viking Commons. One Sidewalk improvement on Garden ST and one accessibility improvement near the Viking Commons.

**Figure 2. Gather Route Map**
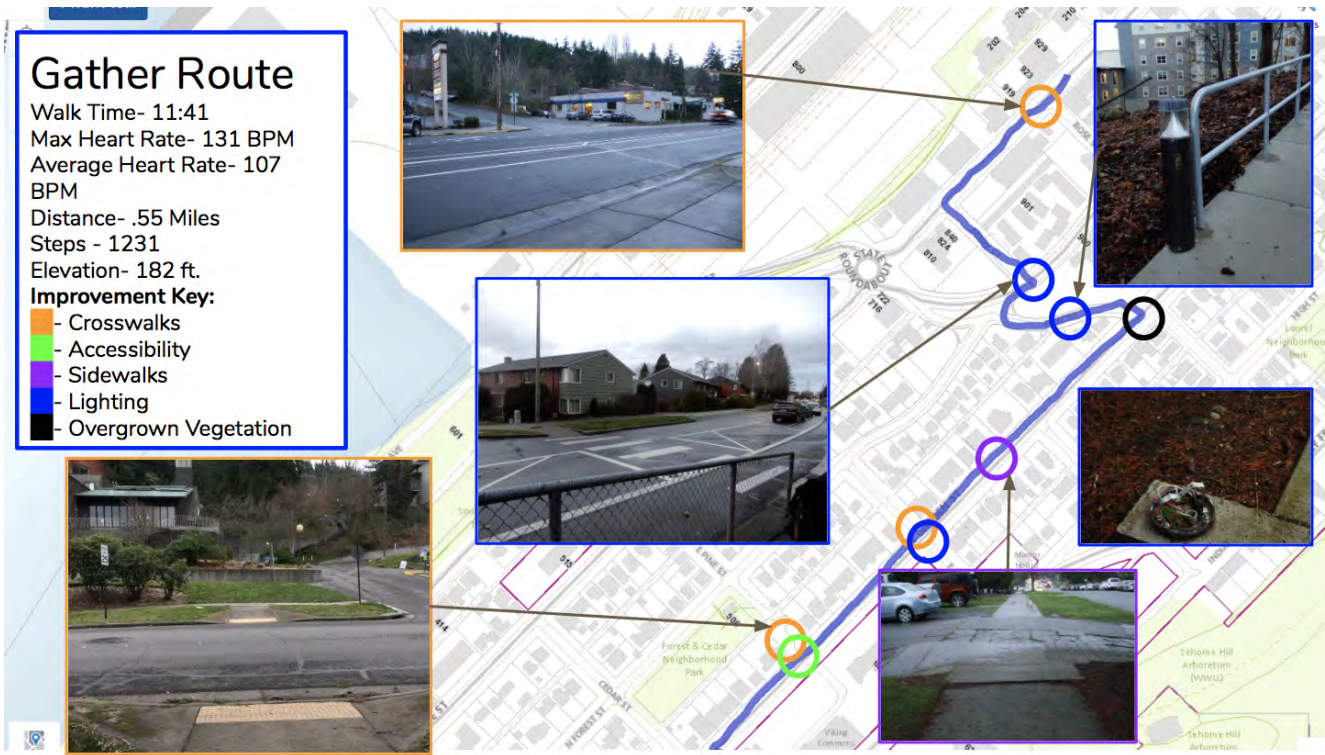


| Gather Route | | |
|---|---|---|
| Intersections/ Roads | Problem | Solution |
| N State street & Berry | Blind corner | Put in crosswalk signal. |
| E Ivy & N Forest | Lighting | Put in lighting to utilize Gather's lighting farther up the street. |
| E Ivy | Lighting | N/A |
| E Ivy & N Garden | Overgrown vegetation | Speak to owner of rental at 823 N Garden St. to see if overgrown bush can be trimmed in order to improve pedestrian visibility. |

| Oak and N Garden | Dark, Low pedestrian visibility at night, No crosswalk, Speeding cars, Curb extensions outdated | Add marked crosswalk to calm traffic, update curb extensions to meet ADA standards and improve accessibility, improve lighting to improve pedestrian visibility |
|:---:|:---|:---|
| N Garden | Broken/Uneven Sidewalk | Repair to improve accessibility. |

**Route 3. Roundabout Route:**

The roundabout route needs improvements in infrastructure starting on State street where there are no marked crosswalks other than the one at the roundabout and on Laurel. Continuing on the route, when you turn onto Pine street there is no sidewalk. This is a wide two way road that doesn't promote walkability. Half way up Pine there is a wooded path that snakes up with stairs. This is inaccessible for the handicapped and needs improved lighting because of the tree cover. Lastly, getting up to Garden, there are a limited number of marked crosswalks. Sometimes the wait to cross can be a while because cars won't stop. Out of convenience we are recommending to have a marked crosswalk from Pine to Westerns campus, as well as a sidewalk along Pine. There are also a few curb extensions along garden that need to be updated to meet ADA standards, these are pointed out on the map below.

**Figure 3. Roundabout Route Map**



| Roundabout Route | | |
|---|---|---|
| Intersections/ Roads | Problem | Solution |
| N State St | No crosswalk | Add Crosswalk before roundabout and after the Laurel Crosswalk to calm traffic and provide a more convenient crossing. |
| N State St & Pine | No Sidewalk | Add sidewalk along Pine st. to increase pedestrian safety and walkability. |
| Pine & N Forest | Poor lighting, Low accessibility | Increase lighting along trail to increase pedestrian safety. |
| Pine & N Garden | No crosswalk, Outdated curb extension | Improve curb extension to meet ADA standards and improve accessibility, add |

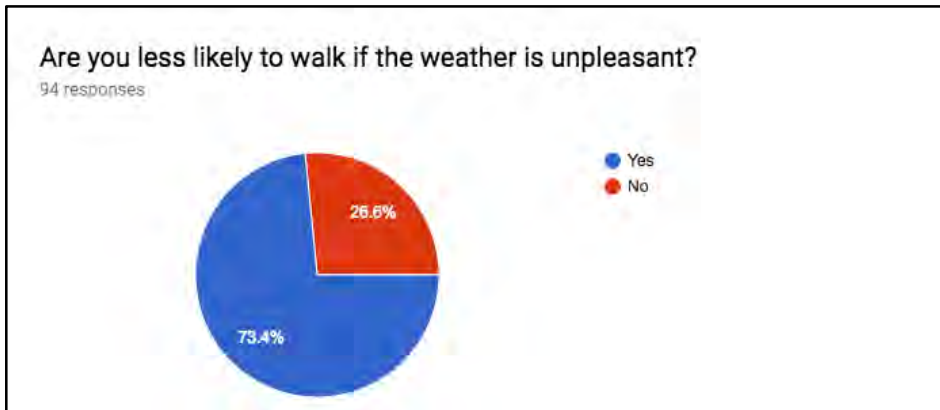| | | marked crosswalk to calm traffic. |
|---|---|---|

**Incentive 1: UmbraCity Partnership**



**Figure 4. Student Survey Weather Response**

One way to improve walkability would be to to partner with UmbraCity and provide an umbrella share kiosk in the lobby of the development and on Western Washington University's campus. As you can see from our survey, unpleasant weather patterns have a strong correlation with student modal choice.

With umbrellas in the entrance people can take an umbrella as needed and return it to the entrance for another tenant to use later, or at another kiosk location on Western Washington University's campus. We have been researching UmbraCity which is an umbrella share service that has been initiated at the University of British Columbia (UBC) and is expanding to both downtown Vancouver and Penn State University. There are eight kiosks on UBC's campus located in high traffic locations on campus. You can sign up for membership at any kiosk location, or on their smartphone app. Once registered you can log in and borrow an umbrella free of cost for a 2 day rental period. When you wish to return the umbrella you can drop it off at any kiosk location. If you are late with the return, a $2 fee will be charged to your account each day, for 10 days when the umbrella is considered purchased at $20. Umbracity has a sustainability goal to decrease the number of umbrellas in landfills through their sharing service. They provide umbrella only recycling bins next to one kiosk location on UBC's campus, where anyone can dispose their personal broken umbrella as well as the UmbraCity umbrellas. The bins are mainly full with users' personal umbrellas.UmbraCity umbrellas are designed to be very durable and wind resistant. When interviewing Amir Entezari, he said that out of the 2000 umbrellas they have had at UBC, only ~10 of their own have

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broken and needed to be recycled. During initial implementation at UBC, within 1 month the service had over 2000 active users and they had to increase the number of kiosk locations from 4-8, and add 1500 umbrellas. Currently they have over 8000 users right now, and the umbrellas have been rented over 20,000 times. The service has been so popular among the UBC campus that it is now being expanded to downtown Vancouver as well. The kiosks are leased monthly for $450-$550/Month/Kiosk, varying on customer and the predicted number of users. This price includes maintenance costs. For initial implementation at the State St. development and WWU I think it would be best to have one kiosk location in the lobby of the development, and then one kiosk location on campus, preferably in Miller Hall. This is a central building in red square, the middle of Western's campus. If demand increases, similarly to UBC we could add kiosk locations on campus. The best locations would be somewhere on the edge of both north and south ends of campus so students can grab umbrellas as they arrive or leave campus. Location suggestions include, the Viking Union building or the Library on north campus, then another on the edge of south campus like Academic West or the Wade King Recreation Center.



**Figure 5. Suggested UmbraCity Kiosk Location on WWU Campus**

The partnership with this service would encourage students to walk to campus rather than using a less sustainable mode of transportation, even when weather conditions aren't pleasant.

**Incentive 2: Smart Trips**

The development would also benefit by relaying information about Whatcom County Smart Trips to their new residents. This is an incentive program sponsored by:

- The city of Bellingham
- Whatcom County
- WTA
- Whatcom Council of Governments
- Northwest Clean Air Agency
- Puget Sound Energy
- Conoco Phillips Ferndale Refinery

The program encourages users to use sustainable modes of transportation by walking, bicycling, sharing rides, and taking the bus. As users log their smart trips they are entered to win prizes, and as more trips are logged the prizes increase in value. After making 10 trips you receive a Smart Trips discount card and have access to discounts offered by over 100 local businesses.



**Figure 6. Bellingham Smart Trip Discount Merchant Locations**

Smart Trips:

- Reduce traffic congestion
- Build a more efficient transportation system that provides more mobility and access for less cost
- Provide health benefits to individuals
- Strengthen social connections
- Create a more vibrant local business community
- Reduce greenhouse gas emissions and other types of air and water pollution

**Incentive 3: Lucid Energy Kiosk**

A Lucid Energy Kiosk or a similar product should be installed in the lobby of the development. Two student housing developments at UW have Lucid Energy kiosks in their lobbies and they provide information about the building's energy use as well as the green features on campus and within the University District. I interviewed JR Fulton, the Capital Planning and Sustainability Manager for Housing and Food Services at the University of Washington and he informed me that it's easy to manipulate and add information to display on the kiosks. Lucid Energy Kiosks have a green features section which could be edited to display the maps of our suggested walking routes, the city bus schedule, the development's shuttle schedule, UmbraCity Kiosk locations on Western's campus, E-bike information, Smart Trips information etc.

**Figure 7. Lucid Energy Kiosk Green Features**
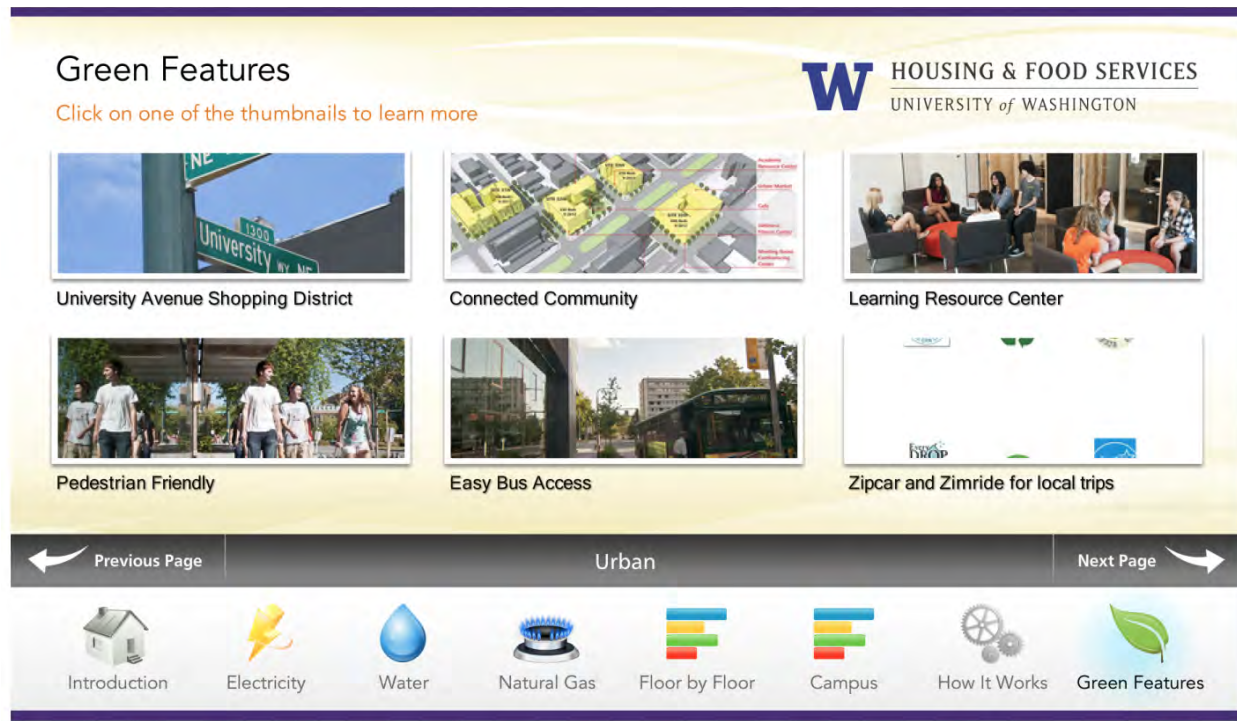
**Incentive 4: Peco Ponchos**

There are two types of biodegradable, compostable ponchos offered by Peco Ponchos. The first is a standard biodegradable, compostable poncho that can be offered to residents at the entrance of the development in case of bad weather. The second kind of poncho is also biodegradable and compostable, but it comes with a wildflower seed that can be planted, which could help the bees. Providing ponchos could increase walkability during rain and high winds, when an umbrella might not be the best option for traveling the short distance to campus. Both options can help decrease driving from the development during bad weather, which from our survey shows influence on people's modal choices.

**Incentive 5: Group Walks**

Group walks are scheduled times during early morning or late evenings where students can meet up, either on campus or at the development and walk together in small or large groups based on class schedules. This way people won't have to walk alone and feel unsafe in areas on the three suggested routes that may still be dim or cause safety concerns. The development could post group walk times that account for travel times from the development and the longest route to campus by either posting them on the suggested kiosk, the Development website or on a poster in the entrance to the development and in Viking Union on Western's campus. This could increase walking to and from campus during those hours where students might choose to drive or take the bus because of poor lighting.

**Incentives Impacts, Costs, and Recommended Units**

| Incentives Recommended | Impact | Cost per Unit | Units Recommended |
|---|---|---|---|
| Umbrella Share | Increase walking in bad weather. | $500 | 2 |
| Kiosk | Information Display. | $14,000 | 1 |
| Compostable Ponchos | Increase walking in bad weather. | $0.42 | 500 |
| E-Bike | Ease of uphill travel. | $2,000 | 10 |
| Spin | Uphill travel. | Free | |
| Bus Shuttle | Provides ride share | $35,000 | 1 |

| | | | |
|---|---|---|---|
| | for students to campus since bus route is inconvenient | | |

## Project Timeline

This is the first phase in this strategic plan for this facility. It consisted mostly of data analysis, and research related to walkability. The project took over two months to gather data, do case studies, write proposals and identify incentives.

Some of our recommended infrastructural improvements have already been proposed in the Bellingham Pedestrian Master Plan. The roundabout route follows State Street and then turns right onto Pine street. We are recommending that sidewalks be put in along the three blocks of Pine Street, which is already included as a tier 2 improvement for projected projects in the Bellingham Pedestrian Master Plan.

Risks could come within the incentives section regarding the umbrella share. Some have been really successful at a small scale and some have been very unsuccessful on a large city scale. The decision to implement these incentives will be left up to the developer, hopefully using the data we have provided they can determine what might work best for this location.

Assumptions regarding how this area will become more populated with the large influx of population to this area which is mostly commercial.

## Total Budget:

| | Estimated Cost |
|---|---|
| **Infrastructure Improvements** | |
| Sidewalks | $625/ ft |

| | |
|---|---|
| Marked Crosswalk | $1,200/ intersection |
| ADA Ramps and Truncated Domes | $2,000/ intersection |
| Total Budget for Infrastructure | $40,000 |
| **Incentives** | |
| Umbrella Share | $1000/ month |
| Kiosk | $14,000 |
| Compostable Ponchos | $200 |
| E-Bike | $10,000 -$40,000 |
| Spin | Free |
| Bus Shuttle | $35,000 |
| Total Budget for Incentives | $96,000 |

This budget includes costs of incentives from Group A, resulting in a total budget for both incentives and all improvements at $136,000.

**Monitoring and Evaluation:**

The paths for walkability that we have recommended can be reassessed after the facility is up and running and the first students have lived there an entire quarter. This can be conducted with a survey based on how the tenets are getting to and from Western Washington's campus along with if they feel safe regarding lighting and walkability. If changes in infrastructure are implemented this will also change the data. These surveys can be revisited every season because walkability differs based on weather and temperature. This can be done through Westerns facilities or through the actual developer which will give a better idea for budgeting  incentives throughout different seasons (EX. More ponchos in winter less in summer). The impact will not be seen until the development is fully functioning with paying tenets.

We could measure the success of the walking routes and incentives by how many residents don't drive or have cars on the premises. If the walking routes are successful than tenants will not feel the need to bring their cars or drive them to school. Along with that the amount of street or nearby parking could also be an indicator of how many residents are walking versus driving. The surveys can also be used to check the suggested route success.

**Conclusion:**

With this project we hope to influence tenants to choose to walk to campus rather than driving by providing suggested walking routes and infrastructural improvements that can be made to increase pedestrian safety, and accessibility along these routes. Also our suggested incentives and improvements should encourage residents to walk to campus regardless of bad weather, or areas where they might have previously felt unsafe. With the route improvements, the paths tenants' route will be safe, well lit and easy to travel. By improving crossings, visibility, and accessibility this will increase the likelihood that residents actually choose walking over driving.

With incentives like Peco Ponchos, UmbraCity, Lucid Energy Kiosks, as well as Smart Trips and Group Walks residents will experience a more pleasant and safe walk to campus. The development is less than a fifteen minute walk from campus so there is very little reason for college students not to be able to walk to campus as long as they feel like walking is a safe and easy option.

**Appendices:**

**Glossary:**

Roundabout Route:

- 10:40
- .51 Miles
- 116 Average Heart Rate, 142 Max
- 1112 Steps
- 188 elevation

Gather Route:

- 11:41
- .55 Miles
- 111 Average Heart Rate, 138 Max
- 1231 Steps
- 182 Elevation

E Laurel Route:

- 13:39
- .61 Miles
- 107  Average Heart Rate, 131 Max
- 119 Calories Burned
- 1326 Steps
- 197 Elevation

UmbraCity: Umbrella share start-up company from Vancouver BC.

Lucid Energy Kiosk: Tablet that displays energy use of building and sustainable features.

Smart Trip: Any trip made by walking, bicycling, sharing a ride or riding the bus that replaces a drive-alone vehicle trip.

Peco Ponchos: Biodegradable, compostable ponchos.

Group Walk: An organized walk for safety and transportation in which multiple students walk to and from campus at a predetermined time.

ADA: Americans with Disabilities Act

**Case studies-** UW Housing Lucid Energy Kiosk, UmbraCity, Peco Ponchos

**Links to relevant websites**-

http://umbracity.com/solutions/ -Umbra City

https://www.whatcomsmarttrips.org/faq#one - Bellingham Smart trips

http://smarttrips.s3.amazonaws.com/documents/EasyStepstoGoodHealth.pdf - Smart trips information brochure

http://www.buildingdashboard.com/clients/washington/ - UW housing energy kiosk dashboard

https://www.cob.org/Documents/pw/transportation/pedestrian-planning/bpmp-final-plan-7-16-12.pdf -Bellingham Master Pedestrian Plan

FHWA https://www.fhwa.dot.gov/publications/research/safety/04100/04.cfm Safety effects of marked vs unmarked crosswalks

**Interviews-** UW Jr Fulton

**UW JR Fulton Interview Transcription**

JR:Hello
Me:Hi this is Maya Lewis from Western Washington University
JR: Hi how are you?
Me: I've been good, how about yourself?
JR: Pretty good.
Me: So to give you an idea about the project that I'm working on, I have been working with this transportation demand manager for a proposed student housing development that's going to be just right downtown Bellingham and the development wants to request a variance for a reduction of the parking requirements
JR: I would recommend that also because what we find is that when we've done surveys in the past we have found that 4-6% of our student actually have cars at the university.
Maya: Yeah we have been considering that too. Because even in my case, I live off campus and I still have my car but I dont drive it that often. But the problem is that students are going to be bringing their cars with them which will still increase the number of trips made from this location.
JR: Well the other thing would be if there you have remote parking someplace on campus that they could park there cars and not use them. Because everytime you add a parking place you have to build either structured parking or surface parking. So sometimes the parking place is actually bigger than the students rooms or residence halls. That's why they cost incredibly and um none of our parking lots, we have a couple under buildings, are dedicated to students or used by students.
Maya: You mentioned that the parking is dedicated to campus parking services, what are those?

JR: We (University of Washington) 20 years ago made a deal with the city that they would never exceed about 15000 parking spots on campus. So they had this goal in mind that then they would do things to get people to ride together, to get people to walk, to get people to bike, to get people to do all those kinds of things and so we also have the Upass which I think you're familiar with. And I think the Upass is actually losing money now because what they used to do is.. Well the cost for it has gone up somewhat.. And what they used to do is.. It was based on.. They supplemented the cost of it… subsidized it if you will by parking. So people paid $70 a month to park, that money went towards the upass. So now that less people are driving, more people want the Upass. The other thing is you've got Uber, Lyft, and we also now have three different bike share programs that are just parked everywhere that students can use as well.

Maya: Yeah like Limebikes.

Jr: Yes and I know that Limebike is looking at Bellingham so I think it's a matter of time.

Maya: Yeah the only negatives that we have found with biking from this location up to campus are the steep hills.

JR: You think it's hillier than Seattle?

Maya: Haha no its not

JR: Of course not

Maya: So pretty much my role in this project is to find ways to encourage students to choose sustainable transportation options. So I was looking into Poplar Hall and I saw that students who live there have committed to a sustainability pledge before moving in. I was wondering what this pledge entail?

JR: So what the pledge came out was originally poplar was the first resident hall completed and there were so many students who wanted to go into it, so we thought oh we can add this pledge and use that to get student's input. It is a little more energy efficient than the other buildings. All the resident halls we have are LEED gold, they're all sustainable. But the did use that pledge because there were so many people that wanted to live there the first year.

Maya: Ok so was it a pledge for daily actions to reduce their carbon footprint or what?

JR; Well it was pretty loose, and I'm not even sure they still do it, but it was basically a commitment that I'm gonna do something, maybe I'm always going to walk to class or I'm gonna recycle… I don't know exactly how it went, I don't do the residence life….

Maya: Yeah I just read an article on it and I thought it was a cool idea for the residence to give housing priority to students who pledge to act sustainably. So once again my role is to be working with this development to see what they can do at their level to encourage their residents to use alternative modes of transportation rather than driving to school.

JR: Is there going to be a bike room in the building?

Maya: yes

JR: and what percentage of students will have space for their bikes?

Maya: I'm unsure of the exact number of provided spaces let me pull up the development site plan proposal

JR: How many students will the development be housing?

Maya: It's going to house around 500 resident. And there's going to be two separate buildings with a bike storage room underneath one of them.

JR: My recommendation would be that you have a minimum of 30%. So that at least 30% of students have a locked secure place for the bike. That's the minimum that we use. So you're looking at about 150 bike spaces. And sometimes we include bike repair stuff. Like chains and compressors stuff like that… you can create a bike culture. I'd also include lockable bike racks outside as well for visitors and people trying to leave quickly and that kind of stuff.

Maya: Good idea.. Yeah I'm looking at the development's proposal right now and they plan to provide 365 spaces bike spaces. They want to provide more biking storage since they are asking for a parking reduction.

JR: That makes sense, that's a good idea.

Maya: So I want to ask a few questions about the energy kiosks that you guys have in Poplar Hall and the Cedar Apartments.

JR: The Lucid desk ones?

Maya: Yeah, you mentioned that they were easily manipulative for displaying information. I was just wondering what the costs of those are? I've been trying to look at estimates, but I can't find much information on it. And I know they also vary according to each project.

JR: Well yeah and they have an ongoing cost to have them in place. I'm trying to remember.. And I'm supposed to the guy that normally manages this.. But i'm thinking they're 3-4 thousand dollars a year, plus some initial costs to get it in, maybe ten grand. But then that's got, we monitor by floor, so I can actually compete floors against each other, and we monitor water by building. But if you have solar on your building you can show that, we're going to show recycling to see how much gets recycled that kind of stuff. But how much students actually using it, I don't know.

Maya: I was just going to ask that, if there was any way to measure to see if students are interacting with them. My friend lived in Poplar and when I came to visit I noticed it instantly and wanted to spend time checking out the type of information it displays and what not.

JR: Again that's often something that can be covered by residential life if they think the students will like to use it and it'll encourage them to turn their lights out and leave their heat down because of it, it actually saves them money.

Maya: Yeah I was thinking that would be a good incentive to the developers if they chose to include one. You mentioned that there were comparisons for each floor's energy usage. I was wondering, do the RA's.. you mentioned there was competition between floors, are there any incentives for the floors that save the most energy.

JR: We haven't done that. We've talked about it. We've talked about like getting I don't know Pagliacci (Pizza) that who ever was lowest would get that. We don't normally hold competitions per say, but there's an ongoing competition because the information is always displayed…

JR: So we have three resident halls with parking underneath them, and three other with no parking except 2 ADA spaces.. That's it. One of the reasons we put the parking under these was because we had to replace the parking... we took a parking lot to put the building in. So we had to pay the university to replace that parking. And they were going to charge us 35000 for the space we took on the surface. And we could build them for 20-25, and so we built them underneath the building.

Maya: And those parking spaces serve parking services rather than the residence themselves.

JR: Yeah we got out of the parking business, parking services/university parking group runs that. We kinda have done this all over campus, taken parking lots and then paid them back in parking. And that's how we've done it. And of course they have that cap of 15,000 parking spots that they can't exceed that on campus.

Maya: Ok that's good to know! Another question I have is so a lot of concerns I've heard about students walking to school are over safety concerns. At western we have a green coat program that pretty much if you feel unsafe you can call and have someone walk with you across campus. I was wondering if UW has a similar service or at least guidelines for students walking alone.

JR: I think they do, but I'm not positive. You could talk to someone from Reslife and they could tell you that better than I could.

Maya: Ok cool.

JR: Do you have lime bike up there now?

Maya: No we don't have any of the mass bike rental services up here yet, I heard that there was some talk about implementing it in the future, but I'm unsure on the status.

JR: I'll check with that, I have a friend who works for Limebike.

Maya: I feel like that would be cool, especially since Western is predicted to grow quite a bit and there's a pretty decent bike culture in Bellingham. So I mainly wanted to talk

about the Kiosks and after seeing the link you sent about all the information that can display that was really helpful!

JR: Good!

Maya: So I think that was all of my questions, thanks for taking the time out of your day to talk with me!

JR: Sure thing, goodluck!

Maya: Thanks, have a good one!

JR: Alright, bye!

**UmbraCity Interview with Amir Entezari:**

Maya: Hi this is Maya, from Western Washington university's office of sustainability. How are you? Like I said in my email I'm working on a project this quarter with a transportation demand manager from a proposed student development near campus. I'm focusing on ways to improve the walkability of routes up to campus, as well as incentives and services that the developer can provide to it's residents. Here in Bellingham, we experience our fair share of rain similar to Vancouver. As you know Weather largely influences student modal choice, so we're thinking a service like UmbraCity  would encourage students to walk to school when weather conditions might sway them otherwise. I'm curious to learn how this program was initiated at University of British Columbia and it's costs. Different challenges with implementation etc.

Amir: Same issues, big campus, wide, buildings scattered whether residential or classrooms Main objective- improve mobility through campus UBC was looking at bike share system, improving transportation etc. When they proposed idea it rang a bell because it aligned well with objective, so ran project, main goal to improve mobility. One of most successful initiatives at UBC.

Maya: A lot of umbrella share companies are unsuccessful, but umbra city has been successful. Have you found any challenges and different ways to handle them? Main have been locations of kiosks, read they choose locations based on high levels of campus traffic. Did you choose locations based on where bus stops were? Or high populated student locations like a student union building?

Amir: Yeah absolutely, in the beginning when we proposed idea to university, prior to pitching we did research to find what areas of campus that occupy the most student traffic on rainy days, and we also counted how many students do not have proper coverage with umbrella or a rain coat or anything. So we came up with 4 initial locations on campus, the main bus loop, main transportation, then other places at the student union building, main hub for student gathering, the other 2 were both ends of the campus. So once we ran for a few months we saw how

successful it was, and did more research to talk to 200= students on campus to find where we should place additional kiosks.

Maya: With your initial kiosks did you have the recycling bins next to the kiosk, or was that added later on?
Amir: We added that later on, because after we ran it for a few months, one of the main goals that we are creating is a sustainable company, we want to make sure that we reduce number of umbrellas that end up in a landfill. We realized that users have broken umbrellas, and they see our kiosks and throw theirs into the garbage bin. We saw a few of these happening where they would return their broken umbrella in our kiosks. So we came up with a new initiative with a specific recycling bin on campus. We ran a program to accept all umbrellas and we properly recycle each piece of all the broken umbrellas.

M: How often do you guys have to empty the bin? And what's the rate that your umbrella's break?
A: Our own don't break often, especially after we went through a few iterations. The umbrellas are designed to be shared, wind proof, very sturdy. We had maybe out of the 1-2 thousand that we currently have on the campus alone, maybe we had around 10 of our own umbrellas that have broken.

M: So have you found that a majority of the umbrellas in the recycling bins are user's personal umbrellas?
A: Exactly, and now we found a way to recycle them rather than having them end up in the landfill when they choose to use our product.

M: So how did you fund the start up?
A: Proposed to university, not part of university, independent company. Initial launch got 10k funding. After they saw there's actually a demand, and that people are using it and got positive feedback, they increased the number of kiosks, 4-8 kiosks, 500 umbrellas-2000 and additional funding was given. Model changed, we don't sell kiosks, we own them and lease them to the organizations. Right now we're expanding to downtown Vancouver.
Haven't publicly announced, want to make sure all kiosks are in right location, 8 now, 20 within next couple weeks. Near convention center where lots of people are. Also working with a corporate campus is South Carolina.

M: Did you guys come across any big challenges other than initial funding?

A: Well every day we faced problems but that's familiar across any start up. But we didnt have any roadblocks. It's been challenging especially with startup nature. It's a new concept, there's nothing similar to it that has been working. People have to see it to understand. Thankfully we have managed to overcome all obstacles and challenges. One was a positive, when we launched at UBC, we started with 500, with a few month we had over 2k active users. So we

had a shortage. There were lineups at some of the kiosks, and there were more people in the line than there were umbrellas in the kiosk. So we worked with the university to supply more products for the demand. I know there are other companies that have tried it, like Brella Box. SO they tried it, they had the right idea, launched at same time. Unfortunately they didn't have the technology. Appeared on shark tank, made a great online presence, had good press coverage, but didn't have technology or funding to execute. We never raised funding, we are self-funded. and based on the clients we got like the university..

M: Was the university's funding from student fees? At western we have the SAF, each quarter students pay a $7 fee, and then that money goes to support sustainability projects on campus, did the funding come from something similar?

A: Exactly yeah. A lot of students are benefitting. We have over 8k active users right now, they have been rented over twenty thousand times and that's 20 percent of the university are our users on a day to day basis. One of the grant programs that was initiated on campus, and was actually successful.

M: Were there any examples or model projects that gave you this idea?
Amir: Absolutely. We actually launched in 2015, we started working on this in late 2014. We were inspired by bike and car sharing programs that were a similar concept. I don't call it sharing, I call it access economy. With sharing it's something like Air bnb where someone provides their own and other people use it. With access one org provides item whether c b u then other people access it. So yeah we were definitely inspired by them.

M: How many other universities have contacted you that are interested?
A: Penn state initially invested in Brella box, now reached out to them. Working with them now, personally went there and had meetings. Now they are in contact, and going through the contract phase. We do have a lot of inquiries from other universities, across different states, Europe and Australia. But we want to make sure everything is done right. We want to make sure we run this at one university first to see how everything goes. To see the operations activity before we work with organizations to roll out the same model and that's what we're doing right now

M: So what would you say the timeline for implementation at Penn state would be?
A: Now is the time, right now we have a streamline at manufacturing to roll out the system. So I could say the time we sign the agreement, it doesn't take more than a few weeks to actually install

M: How much is installation cost per kiosk?
A: Current leasing model on monthly basis, annual contract. Price dependent on the type of customer, how many users they think will use the system. Roughly its 450-550/kiosk/month.

Maya: Explained project with state st development, and our walkability goal. Want to know if implementation at WWU is possible.
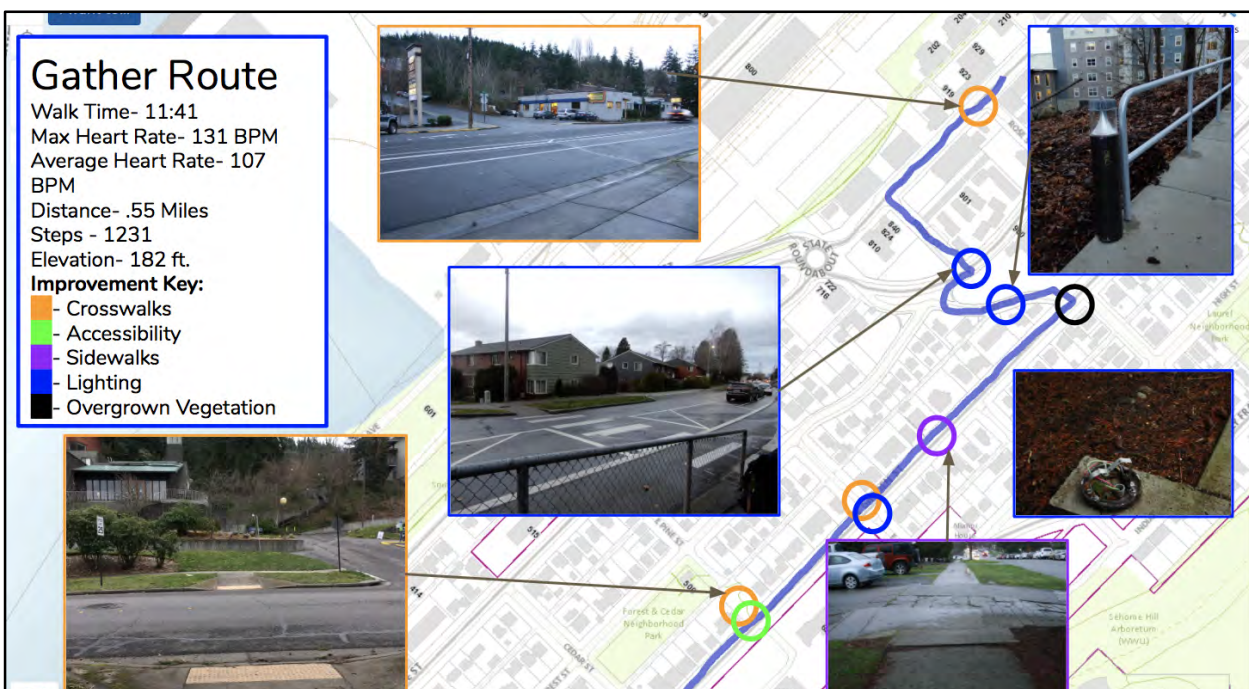
Amir: How many students does WWU have?

Maya: 15k

Amir: Is there a student union hub?

Maya: Viking union, North and South campus hubs. Miller, Kärnten,

Amir : We could do the exact thing that UBC did. Which is to roll it out with two or three kiosks on campus, see student response and learn from there. Rather than doing too much research etc. 400-500 umbrellas, run it for a few months and see student response/ how many users war get and the number of rainfalls we have. Then adjust number of kiosks and umbrella based on that. I think that because how close you are to use, it's like an hour drive. So we could easily bring a few kiosks and some umbrellas and run it for a few months to see how it goes. If there's any other information that you think you need to get this going, I'd be more than happy to provide.

A: Okay I'll be in contact with you and let you know how everything goes!

# Roundabout Route

Walk Time- 10:40
Max Heart Rate- 142 BPM
Average Heart Rate- 116 BPM
Distance- .51 Miles
Steps - 1112
Elevation- 188 ft.
**Improvement Key:**
- Crosswalks
- Accessibility
- Sidewalks
- Lighting