SR 520 Floating Bridge and Landings
Regional Shared-Use Path (RSUP) Light Evaluation
Community meeting summary

Tues. Nov. 29, 2016 6:30– 8:30 p.m.
UW Center for Urban Horticulture NHS Hall

Attendees

46th District Legislators
• Senator David Frockt
• Rep. Jessyn Farrell
• Rep. Gerry Pollett

WSDOT Headquarters
• Secretary Roger Millar

SR 520 Program Management
• Julie Meredith
• Dave Becher
• Larry Kyle

City of Seattle Staff
• Emilio Garza

Communications
• Penny Mabie (facilitator)
• Stacey Howery
• Suanne Pelley

Public participants
• Elizabeth Kiker, Cascade Bike Club
• Blake Trask, Cascade Bike Club
• 23 participants

Executive Summary
On Nov. 29, WSDOT and the 46th Legislative District hosted a public meeting to discuss the lights along the SR 520 Regional Shared-Use Path (RSUP). The presentation and discussion included an overview of the lighting design process and the results of WSDOT’s evaluation of potential adjustment options to the path lighting.

Five options from the matrix were identified for further evaluation by WSDOT: four from the evaluation of potential adjustment options matrix and one presented by a project neighbor at the meeting. The five options are:
1. Additional shrouding on existing fixtures
2. Shrouding/obstruction on railing
3. Change/move lighting to a different location on the path
4. Change light fixture and bulb type
5. New proposed option: Add an off-the-shelf diffuser to the existing fixture

Introduction and opening comments (Rep. Farrell)
Rep. Farrell provided introductory remarks and background on her engagement in the SR 520 Regional Shared-Use Path (RSUP) light issues, addressing the following:
• In response to concerns about the RSUP lights from community members, WSDOT has been working with neighbors and elected officials to evaluate modifications to the lights.
• Transportation is highly politicized and WSDOT is working hard to be both responsive to stakeholders and manage political demands of a complex transportation project such as the SR 520 Bridge Replacement and HOV Program.
• The RSUP light discussion needs to take into consideration the variety of users and stakeholders interested in the path.
• Rep. Farrell has a long history working on this corridor as an advocate and now as a State representative.
• Rep. Farrell thanked Senator Frockt and Rep. Pollet for their participation, as well as Julie Meredith for her work and commitment to working with project stakeholders.
Overview of WSDOT RSUP Light Evaluation presentation (Julie Meredith)
The presentation and discussion focused on the lights along the Regional Shared-Use Path (RSUP) on the north side of the bridge.

Julie Meredith provided an overview of all the lights on bridge:
- **Temporary luminaires**: These lights are placed at the merge point from the new floating bridge to the temporary West Connection Bridge and will be in place until the Montlake Phase is complete.
- **Sentinels and minor elements**: Architectural lighting that runs along the north and south sides of the floating bridge; sentinels mark the ends of the floating bridge.
- **Regional Shared-Use Path lights**: These lights illuminate the path for bicyclists and pedestrians
- **Blue lights**: These lights designate emergency call boxes on the bridge.
- **Red lights**: These lights are used as navigation guidance for boaters.
- **Bright lights underneath the deck**: These lights are currently used for construction and may be used in the future, as needed, by maintenance crews.

Timeline and community feedback (Stacey Howery)
Stacey Howery noted that WSDOT’s response to community comments began in April 2016. Four days after turning on the RSUP lights, WSDOT turned off the lights in response to concerns from project neighbors north of the bridge. WSDOT then conducted an evaluation of the lights between May and August that included replacing the original 100-watt bulbs with 50-watt bulbs, and taking light measurements on the RSUP and from a boat on Lake Washington.

SR 520 lighting design and measurements (Larry Kyle)
Larry Kyle provided an overview of the SR 520 Floating Bridge lighting design process:
- The Washington State Legislature required WSDOT to use a design-build contract for the floating bridge which requires the contractor to meet the design-build requirements, as detailed in the Request for Proposals (RFP).
- The floating bridge design review process was a multi-year undertaking - 2011-2012 - and had significant community engagement. The Seattle Design Commission (SDC) guided the floating bridge design. The design focused on the sentinels and railing, with the goal to create a sense of being on the water, through the color of the sentinels and design of the RSUP railing. The SDC endorsed the floating bridge design in 2012.
  - Renderings produced for the design review of the RSUP and sentinel lights as seen from the path were accurate with regard to both the fixtures and light emitted.
  - Kyle noted the design review process unfortunately did not focus on the RSUP lights as seen from the north. The one rendering of the bridge as seen at night from the north did not accurately represent all lights on the bridge but instead focused on the sentinels.
- The RFP specified the type of lights allowable on the RSUP – metal-halide or LED with a color temperature range between 3000 and 5000 Kelvin - which were based on current safety guidelines. The design-builder chose to use metal-halide lights.
- The RSUP lights were modeled after those on I-90 but differ from the I-90 lights in several ways:
  - As metal-halide bulbs, they have a whiter color temperature.
  - They are spaced farther apart – approximately 45 feet apart.
- Significant environmental regulations guided the lighting design process. The RSUP light fixtures and wattage levels were designed based on best available science around light impacts on the environment, including dark-sky guidelines and minimizing the spill of light on the water.
  - The WSDOT Design Manual instructed the design-builder to meet national and state environmental guidelines as detailed in the Biological Assessment. Per the Biological Assessment, 2.0 foot-candles (fc) is the light level at which juvenile salmonids may adjust behavior.
  - WSDOT conducted models and found the spillover light could be limited to 0.2 fc levels. WSDOT required the design-builder to meet the 0.2 fc spillover light levels.
  - The Engineer of Record determined 0.8 fc was the minimum average light level that would ensure path user safety and meet WSDOT Design Requirements.
- The RSUP was built with users in mind. As a commuter corridor, it is anticipated to handle 200 to 400 users per hour.
• Kyle explained details of the RSUP light and light measurements WSDOT conducted in summer 2016. In May, WSDOT compared 100-watt to 50-watt lights and decided to replace all RSUP light with 50-watt bulbs.
  o Measurements of the 50-watt bulbs in July showed that on-path measurements met the design-build requirements of 0.8fc.
  o Measurements of the RSUP lights from the water were approximately 0.2 fc, well below the 2.0 fc guidelines in the Biological Assessment.

Light evaluation (Dave Becher)
Dave Becher provided an overview of potential modifications to the RSUP lights that were evaluated, as outlined in WSDOT’s options matrix. It was noted that many of the options came from suggestions from community members. The 10 different options WSDOT reviewed were evaluated for five criteria.
  • Additional shrouding option: It is unclear if this option would both meet light-level requirements on the RSUP and address community concerns.
  • Wattage reductions: The change to 50W bulbs produce the lowest light level that the contractor will tolerate. Any additional reductions would require WSDOT to assume liability and could present safety concerns.
  • Shielding on railing: This option is technically possible but WSDOT would need to model it to ensure it would not present additional structural concerns, including additional wind-loading on the floating bridge. This option is also relatively expensive.
  • Remove some bulbs: This option would create dark spots on the trail, present safety concerns to users and liability issues.
  • Dimmer: WSDOT focused on certain uniformity with regards to the lights. The dimmer option would present safety concerns because there may not be adequate light on the trail.
  • Move location of the lights to north/railing side of the path: This is the design for the SR 520 West Approach Bridge North. To implement it on the floating bridge at this point is expensive and time consuming because it would require extensive engineering and construction.
  • Change light bulb type and fixture: It is possible to change to LED but the light would be a brighter, white light and may not address community concerns.
  • Turning off lights options:
    o Temporarily turn off lights: This would present a safety concern for the users on the path at night.
    o Turn off permanently: Considered a safety issue based on WSDOT requirements from design manual and for reasons noted above.

Facilitated Q &A Discussion
All questions are from members of the public unless otherwise noted below.

Additional shrouding option
  • Question: Are the lights along the path shrouded from above or is it also shrouded from the north?
    o Response (Larry Kyle): The current fixture includes a shroud to block the light from shining above the fixture. The fixture geometry was designed to distribute light down and outward in a uniform way onto the path. Any changes to the fixture would require multiple models to be created and tested in order to determine if they address both safety and liability requirements, as well as neighbors’ concerns. This process would be time consuming and expensive as the RSUP path has approximately 200 lights.
  • Question: Has WSDOT talked to the RSUP lights manufacturer?
    o Response (Larry Kyle): Yes, WSDOT has been in contact with the manufacturer. The shroud currently installed is the largest shroud commercially available for this fixture.
  • Question (Rep. Farrell): What would it take to customize the shrouds, in terms of cost and process?
    o Response (Julie Meredith): WSDOT does not fabricate fixtures, so customized shrouds would have to go through a mock-up process and testing. As Larry Kyle noted, it would be a time-consuming process because WSDOT would need to ensure the fixture met both the needs of the path with regard to safety and liability as well as
the neighbors’ concerns. In addition, WSDOT would also have to assess the lighting levels at the belvederes.

New, proposed option

**Question:** I spoke with the manufacturer and was told they can design a $150 diffuser that will not have light spillage onto the railing. The manufacturer I spoke to is willing to help and we will “chip” in to help with the cost of any modifications. I am concerned that the renderings of the RSUP lights and railings from the floating bridge design review process were different than what currently exists today. The renderings showed the sentinel lights as the brightest element on the bridge.

- **Response (Julie Meredith):** As stated in the presentation, WSDOT recognizes the rendering of the floating bridge as seen from the north did not accurately represent all the bridge lights. WSDOT reiterated that the focus of the design review with the Seattle Design Commission was on the sentinels, railing and the height of the floating bridge.
- **Follow-up question:** If the goal is to have a light-reduction solution, then the bridge railing should be the focus. Can WSDOT turn off lights for the time being and prototype options? The RSUP is not currently a transit corridor; it is currently a non-essential path.
- **Response (Secretary Millar):** The RSUP is open to the public and is being used by the public. The RSUP also has a sizeable constituency and WSDOT does not want any work to the RSUP lights to cause a conflict with these stakeholders. If the path is open, it has to be lit.

West Approach Bridge North (WABN) lighting

- **Question:** I sent a comment to WSDOT immediately after the RSUP lights were turned on in April 2016 and received a response from WSDOT noting the lights on the next phase would be in a different location. What was the decision-making process regarding the location of the lights for the next phase?

- **Response (Secretary Millar):** The lights on the next phase, the WABN project, will be mounted on the railing, pointing south. While WSDOT recognizes the floating bridge lights have had unintended consequences, WSDOT has to balance the needs of all stakeholders and works very hard to avoid creating negative impacts on the community. WSDOT welcomes community input on [WSDOT’s options matrix](#) but please know that WSDOT will have to assess any associated consequences in terms of costs and outcomes. WSDOT will also have to balance these preferences with those of other stakeholders who are demanding no additional expenditures by WSDOT on this project. WSDOT may also wait until completion of WABN before spending any additional time and money on changes to lights on the RSUP in order to assess the different RSUP light design and placement.

- **Response (Julie Meredith):** It is important to note that a significant amount of time was spent in coordination with the Seattle Design Commission (SDC) to develop major architectural elements on the floating bridge that created a thematically “light and airy” experience. The sentinels and the railing were the features focused on by the SDC. For the WABN phase, a different rail design was chosen to reflect the transition from water to land. The railing and lighting design decisions were primarily architectural choices.

Evaluation of options

- **Comment:** I am in support of the bridge and the shared-use path but do not feel confident that WSDOT is doing a good job assessing the options and feel that the lights are contributing to light pollution on the water. I would like WSDOT to take a boat tour on the water to see the brightness of the lights and have community representatives be a part of WSDOT’s decision-making process.

- **Comment:** I recognize the passion and concerns of the neighbors at this forum and would like to also call attention to the fact that this is a City and a community that invests in providing alternate modes of transportation. I believe a 50% reduction in the brightness of the
lights on the path is powerful. I value having a bridge that lights the way for users to walk and bike, and particularly value lighting that supports safety on paths at night, especially for women.

- **Question:** I am concerned that criteria E on WSDOT’s options matrix makes it appear that the neighbors will not be satisfied with any changes.
  - **Response (Julie Meredith):** WSDOT did not want to presume what neighbors wanted. Criteria E on the matrix is meant to indicate how effectively any of the changes would meet neighbor concerns, based on WSDOT’s lighting evaluation and feedback received from project neighbors.
  - **Response (Secretary Millar):** WSDOT emphasized that the potential light adjustments listed on WSDOT’s options matrix were presented by the neighbors through feedback to WSDOT since the RSUP lights have been illuminated. WSDOT has evaluated these options as a result of neighbor comments.

- **Question:** I am a bicyclist and am wondering if lighting that shines downward from handrails is a practical design for WSDOT to evaluate. The UW light rail station has LED lights embedded in the handrails and works well. The lights on the I-90 and the SR 520 paths are experienced differently from the water and the SR 520 RSUP lights are a hazard to boaters, especially if boaters have been drinking.
  - **Response (Julie Meredith):** WSDOT has looked at lighting in railings and it will be a part of the WABN project path.
  - **Response (Secretary Millar):** The floating bridge design-review process focused on having sufficient light on the RSUP for safety and liability reasons, and designing the railing to create a thematically light and airy experience. WSDOT can evaluate additional shrouding and changing locations of lights. WSDOT wants to work with the community to find a solution because the RSUP lights are an important issue for this neighborhood, but WSDOT must balance all the needs within the agency.

- **Question (Rep. Pollett):** I would like to follow up on the comments about the design of lights on a railing and note that Cascade Bicycle Club was a partner in implementing that design. I am confused as to why WSDOT’s design guidance on the floating bridge would be different than that for the path over I-5 at Northgate. Shedding light onto water impacts fish so WSDOT should commit at the meeting to shroud testing and to include several community members in the evaluation process. If WSDOT’s testing showed shrouding was feasible, it would be the lowest-cost option. WSDOT should not wait until the WABN phase is completed to evaluate that lighting design.
  - **Response (Rep. Farrell):** There are budgetary implications of any changes to the RSUP lighting. It is critical to determine what decisions would require additional legislative approval and WSDOT cannot make a decision at this meeting. It is important to be very sensitive to the issues around costs and important not to raise expectations above what is financially feasible. It is not possible to make any promises without assessing the budgetary implications.
  - **Response (Secretary Millar):** WSDOT will follow-up with the manufacturer to determine if an off-the-shelf shrouding option exists. If shrouds have to be customized, that will be more expensive and time consuming.

- **Question:** Would a warmer color temperature light reduce the glare on the water?
  - **Response (Larry Kyle):** The current fixture could be retrofitted and the bulb could be changed to a warmer light. Neighbors to the north would still see the light, so WSDOT believes that a color temperature change to the RSUP lights would likely not address the neighbors’ concerns.

- **Question:** I am a bike commuter and appreciate WSDOT’s work on this issue. Has WSDOT looked at the budgeting and costs for the options in the WSDOT’s options matrix? Does WSDOT have a preferred solution? I would suggest the following be pursued, in order of preference: change/move lighting to a different location on the path (#7); shrouding/obstruction on railing (#4); additional shrouding on existing fixture (#2).
  - **Response (Julie Meredith):** WSDOT has not yet evaluated the cost of the potential options but I have made note of your suggestions.

- **Comment (Senator Frockt):** The senator thanked Secretary Millar for his participation in this discussion and noted transportation is a highly political and volatile issue. It is important to
evaluate all constituent impacts. I would like to work with the SR 520 project team through the legislative session to evaluate potential changes and, like WSDOT, do not support turning off the lights. The senator has also discussed the RSUP concerns with the Chair of the Senate Transportation Committee.

Public involvement and engagement

- **Question:** WSDOT should give this issue to the neighbors or a team of UW engineering students to solve if the manufacturer does not have an off-the-shelf shroud. Who made the original design decisions and why were no community members involved? Who is responsible for the unintended consequences the lights have created?
  - **Response (Secretary Millar):** WSDOT is ultimately responsible. The design was developed, as described in the presentation, after extensive community feedback and work with SDC. The design-build contractor designed the bridge based on design guidelines from WSDOT and the need to ensure the lighting and railing met safety requirements. WDOT will double-check with the manufacturer regarding the availability of a larger, off-the-shelf shield and will evaluate the other light designs on the WABN project.

- **Comment:** I participated in the early-design-review-mediation process where one of criteria for the SR 520 corridor project was low-light. It seems odd that SDC did not ensure that outcome. Project neighbors are supportive of a shared-use path but there needs to be a solution before the next phase (WABN) is complete. The RSUP path is currently a path to nowhere so it is a good time to close the RSUP and try shrouding options. It is important to re-characterize this issue as not just a neighbors’ problem because there is also impact on fish.

- **Question:** I do not feel there was adequate community input in the floating bridge design process.
  - **Response (Julie Meredith):** As the SR 520 program progresses, WSDOT is making adjustments to how they engage the community based on community feedback. For the next phase of construction, the SR 520 Montlake Phase, WSDOT is considering an Ombudsman position to be a liaison between the SR 520 project team and the community. WSDOT is doing the best we can to resolve this lighting situation that no one anticipated would be problematic and we will continue to do our best to address community concerns.

- **Question:** I am a new resident and have noted a perceived distrust of WSDOT that may be hold-over from a previous era. I would encourage the group to take the productive conversation facilitated at the meeting to develop cooperative relationships between WSDOT and the community.
  - **Response (Secretary Millar):** WSDOT is always working to improve its community relations and further develop its cultural competency.

Environmental concerns

- **Question:** I am particularly concerned about the impact of the light on the fish. As a biochemist, I have reviewed all the reports and scientific papers regarding the environmental analysis for this project and believe the light level requirement of 2.0fc threshold is abstract because any light impacts fish negatively. A peer-reviewed study by Roger Tabor, et al noted that lights led to migratory salmon being eaten by predators whereas the absence of light resulted in more salmon being able to escape. The recommendation in this study was a .009fc threshold.
  - **Response (Larry Kyle):** I would agree that the 2.0fc threshold is somewhat arbitrary but emphasized the lower light exposure is better. That is why WSDOT put the lower requirement of 0.2fc or less (for light reaching the surface of the lake) into the RFP for the floating bridge.
  - **Response (Secretary Millar):** While the U.S. Fish and Wildlife Biological Opinion requirements designated the 2.0fc threshold, WSDOT chose to require a 0.2fc threshold for light reaching the surface of the lake in the floating bridge contract. WSDOT is supportive of exploring if shrouding will work for both neighbors and fish.

Miscellaneous
• **Question:** Are the RSUP lights the only issue with the floating bridge? Is this the vision of the future?
  
  o **Response (Secretary Millar):** WSDOT projects throughout the state have challenges but asked the attendees to put the RSUP light issue in perspective. Washingtonians expect superb projects and WSDOT has notable engineering accomplishments: WSDOT has designed and constructed the world’s longest floating bridge, including addressing seismic issues, critical for public safety. Issues can arise from WSDOT projects and we are committed to continuing to work with the community to address concerns.

Rep. Farrell closed the meeting thanking everyone for attending.