

# King County Metro & Sound Transit Responses to Mercer Island City Council Questions/Data Requests (following April 30, 2019, Study Session)

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## 1. Questions requesting clarification on data showing actual regional transit service and bus ridership that is expected on Mercer Island at the time light rail becomes operational.

### a. How frequent is bus service during peak and non-peak hours? Please describe expected schedule.

Potential service is based on METRO CONNECTS' 2025 service vision and the service constraints established by the Settlement Agreement that will limit peak bus service to less than existing levels. There is no specific schedule at this time, but we anticipate the arrival of up to 20 buses per hour - an average of about one bus every three minutes - during peak periods roughly 6-9 AM and 3-6 PM on weekdays. Buses would likely be less frequent during midday, evening and weekend times.

In 2021, roughly 24 months before East Link opens, Metro will lead an extensive public engagement and planning process to give Eastside and Mercer Island residents and employees the opportunity to provide input and feedback on transit services and routing when East Link opens. This process will guide Metro's decisions about the existing Route 204, Route 630, and other transit and mobility services on Mercer Island, and throughout the Eastside. It is during this time that final decisions about specific bus routes and service levels will be made and ultimately approved by King County Council.

### b. How many passengers are expected to arrive and transfer by bus each hour throughout the day?

Metro does not estimate future ridership at the individual bus trip or route level. The best estimate stems from the pre-Settlement Agreement East Link FEIS Addendum (April 2017) that states the following:

"With the 77th Avenue SE Configuration, approximately 1,300 pedestrians in the peak hour, (1,050 from bus transfers and 250 from the park & ride lot) would cross N. Mercer Way between the I-90 bus route stops located on the north side of N. Mercer Way and the light rail station. *Parenthesis added* [With the 80th Avenue SE Configuration, riders would transfer between buses and light rail without crossing any public roadways. The only pedestrians crossing N. Mercer Way to access the stations and buses would be those parked at the parking garage, which would be similar to the No Build condition at around 250 during the peak hour.]"

The FEIS Addendum (April 2017) bases these numbers on a volume of 40 buses in the peak hour. Only 20 bus trips in the peak hour can fit in the Optimal Configuration. The FEIS Addendum assumes 1,050 bus transfer pedestrians and 250 park-and-ride patrons using this crosswalk in the peak hour (page 3-55 of the FEIS Addendum) *See endnote*<sup>1</sup>. To supplement this estimate, Metro used METRO CONNECTS to develop a hypothetical, conservative, AM peak commute

period (approximately 6 AM to 9 AM) volume of people arriving by bus to access Link or other destinations on Mercer Island. Assuming 20 trips in the peak hour – twelve 60ft coaches and eight 40ft coaches – arriving with all seats occupied, there would be 1,040 bus passengers at the peak AM commute period under this scenario (see Appendix below for additional information). It should be noted that the number of transferring bus passengers from both the FEIS Addendum and the hypothetically conservative METRO CONNECTS scenario are nearly identical at 1,050 and 1,040, respectively.

**c. How many pedestrians and bicyclists are projected to cross NMW at 80th and 77th intersections?**

The signal at 80<sup>th</sup> Avenue and N. Mercer Way currently has a regular cycle length of 90 seconds, but there are multiple phases based on time-of-day. The regular phase has a 10 second “Walk” sign and 18 additional seconds of clearance for the west crosswalk. A 90-second cycle assumption provides 40 opportunities for people to cross N. Mercer Way each hour.

As discussed in the response to 1.b above, the number of pedestrians in the west crosswalk during the busiest one-hour period in the AM per the FEIS Addendum—comprised of both bus transfers and users of the park-and-ride—is estimated at approximately 1,300 people, comprised of 1,050 transferring passengers and 250 park-and-ride users; the hypothetical scenario based on METRO CONNECTS, also discussed above, provides an example with a slightly lower number of pedestrians (1,290) in the west crosswalk. This results in an average of 32 or 33 pedestrians per cycle during the AM peak.

These are all very manageable numbers, and assumes all transferring passengers and park-and-ride users will chose to use the 80<sup>th</sup> Avenue station entrance, and no transfer passengers will opt to use the 77<sup>th</sup> Avenue SE station entrance. While this represents an increase in pedestrian volumes at this location over existing conditions, this increase would not jeopardize safety or require significant changes to traffic signal timing, noting that the East Link FEIS assumed 1,300 pedestrians would cross the street during the peak hour with no impact to people or cars. As we proceed with final design, we will conduct intersection analyses to confirm pedestrian and traffic operations.

The 2011 FEIS estimated under 15 pedestrians during the PM peak hour in the east crosswalk at N. Mercer Way and 77<sup>th</sup> Avenue SE once East Link is operational. The number of bicycles in the crosswalk was not estimated in the FEIS. There will be 40 bicycle parking spaces near the 77<sup>th</sup> Avenue SE entrance to the light rail station.

If deemed to be necessary, signal phasing and timing can be adjusted with Mercer Island and WSDOT approval to optimize pedestrian crossing efficiencies and safety. Volumes of people crossing N. Mercer Way will be highest in the AM peak, and much lower in the PM peak, midday, evening, and weekend periods. This is because bus passengers in the PM peak will board the bus on the south side of N. Mercer Way to go outbound to the Eastside or other destinations on Mercer Island.

**d. Will buses lay over on Mercer Island every hour of the day? Or just certain peak hours? Please describe.**

Buses will lay over at any time of day that Metro is operating service. However, it is unlikely buses will layover on Mercer Island every hour of the day, because it is unlikely service will be provided to Mercer Island 24 hours a day.

Every bus trip that stops on Mercer Island will layover at least five minutes, except the last trip of an operator's work shift. Hypothetically, if the first trip of the day was 5 AM and the last trip was at 12 AM, there would be buses laying over during these hours. The number of buses laying over at a given time corresponds to service frequency. Hence, the most use of layover spaces would only occur during AM and PM peak service periods, with likely less frequent use during midday, evening, and weekend periods.

No final decisions about the specific service and layover schedule will be made prior to an extensive public outreach process and approval by King County Council.

**e. To assess the safety mitigations, are there examples of similar conditions and what works/doesn't work?**

Analysis of the 77th Avenue SE Configuration was included in the 2017 Addendum (this configuration was not contemplated in the 2011 FEIS). Section 3.5.3 (pages 3-55 and 3-56) of the 2017 Addendum, which discusses mitigation for potential non-motorized (bikes and pedestrians) impacts, states the following:

"To address potential construction impacts for either the 77<sup>th</sup> Avenue SE or 80<sup>th</sup> Avenue SE Transit Integration configuration, mitigation would be similar to that described in the Final EIS...No operational impacts to non-motorized users were identified with the 80<sup>th</sup> Avenue SE Configuration and no mitigation is needed for this configuration. For the 77<sup>th</sup> Avenue SE Configuration, potential improvements that could be considered to increase the pedestrian capacity at the N. Mercer Way/80<sup>th</sup> Avenue SE include creating a pedestrian all-way crossing phase intersection or providing wider crosswalks and larger waiting areas at the intersection corners to accommodate pedestrians bunching and waiting for a walk signal. Non-motorized crashes are expected to be similar among all of the options during construction and operations on Mercer Island local streets. Therefore, no mitigation is proposed to address "non-motorized safety."

In addition to those discussed in the 2017 Addendum, potential intersection safety and operational improvements were included in the 03/19/2019 responses to Council comments:

*"It is anticipated that the transit interchange will result in a greater number of pedestrians using the west crosswalk at the 80<sup>th</sup> Avenue SE/N. Mercer Way intersection, due to transfers between the bus drop-off and the 80<sup>th</sup> Avenue SE light rail station entrance. While the transit interchange is still in the early design stages, pedestrian and bicycle safety at this location is a concern for all stakeholders and appropriate safety measures will be discussed and incorporated into the design moving forward, including the potential for the following:*

1. *Providing painted crosswalks or other pavement markings (or materials) to improve visibility of pedestrian/bicycle crossings.*
2. *Improving horizontal and vertical sight distances through the removal of extraneous curbside clutter such as newspaper boxes, redundant utility poles, or overgrown vegetation.*
3. *Explore the use of bulb-outs and other traffic calming measures that reduce pedestrian/bicycle crossing lengths/times and reduce traffic speeds.*
4. *The use of signage and lighting to alert drivers to crossings.*
5. *Working with WSDOT, Metro, and the City of Mercer Island on signal timing changes that improve pedestrian safety, such as pedestrian lead phases, pedestrian-only phases, and pedestrian-activated (push button) phases.*
6. *Include design measures that promote the ease of bus traffic through the intersection.*
7. *Limit or prohibit right turn on red movements.”*

The KPG recommendations, which were also presented to Council at the 04/30/2019 study session, included the following for N. Mercer Way and 80<sup>th</sup> Avenue SE:

*“N. Mercer Way and 80th Avenue SE Street Intersection – revise the signal phasing so that when there is a pedestrian call on the west leg, the northbound left turn will change from protected-permissive to protected only. This will reduce the potential for collisions between left turning vehicles and pedestrians. Also, change the northbound left turn signal indicator from a green ball to flashing yellow arrow.”*

According to KPG’s analysis, by adjusting the traffic signal at NMW & 80<sup>th</sup> to give pedestrians a protected walk cycle, it reduces the potential for collisions at an intersection that already has one of the lowest collision rates on the Island, while only increasing the wait time for cars and buses traveling through the intersection by an average 3-5 seconds during AM and PM peak hours. The final crosswalk and signal design will be developed in final design. Mercer Island will be one of the agencies reviewing 60% and 90% design of the bus/rail integration project.

## **2. Questions regarding Metro Drop-off and Layover Operations**

**a. Respond to why Metro cannot drop off all of its westbound passengers on the south side of NMW after going around the roundabout and still satisfy its minimal and real operational layover needs (as opposed to one that might be more ideal from Metro's perspective).**

The Settlement Agreement prohibits regional buses from circulating through the Town Center. Dropping off passengers only on the south side of N. Mercer Way would require buses to loop through the Town Center or other local Mercer Island streets to access the designated layover spaces on N. Mercer Way. Based on extensive study and review, we do not see a way to drop-off passengers on the south side of N. Mercer Way *and* utilize the planned layover spaces on the north and south sides of N. Mercer Way without circulating through the Town Center. The planned layover spaces on the north and south sides of N. Mercer Way, as outlined in the Improved and Optimal Configurations, are essential to meet KCM’s operational needs.

**b. Can Metro’s active and layover bay operations be adjusted to allow for the dropping off of passengers only on the south side of N Mercer Way without buses going through Town Center?**

No. Once buses navigate around the roundabout to the south side of N. Mercer Way, there is no way for them to return to the north side of N. Mercer Way without looping through the Town Center or other local Mercer Island streets. As outlined below, there are also reasons why drop off of passengers, layover, and pick up of passengers *cannot* occur exclusively on the south side of N. Mercer Way.

One idea that was considered was to have the entire south side of N. Mercer Way used flexibly for pick up, layover, and drop off. However, this does not work for a few reasons including customer legibility and accessibility. A single flexible curb space would mean that riders would access pick up or drop off at different locations each time they take transit, and potentially even through different light rail station entrances, introducing a significant element of unpredictability for transit customers. Predictability of pick up and drop off locations is a critical to providing equitable access for all people, including those with visual, cognitive, or mobility impairments. It also presents issues for people who have challenges in traveling longer distances, such as people with luggage, strollers, young children, or the elderly. More simply, there is not enough physical space along the south side of N. Mercer Way to simultaneously accommodate 130ft bays for pick-up and drop-off *and* four layover spaces that will allow buses to pull-in and pull-out without requiring the movement of an adjacent bus.

**c. Are there alternative sites of bus layover bays that do not require buses going through Town Center?**

None that are consistent with the Settlement Agreement. Prior to the Settlement Agreement, many other options were evaluated in the FEIS and SEPA Addendum, including the 80<sup>th</sup> Avenue SE Configuration that Mercer Island City Council opposed. In the Settlement Agreement, Mercer Island City Council negotiated for their preference of the 77<sup>th</sup> Avenue SE Configuration. The planned 77<sup>th</sup> Avenue NE Configuration allows buses to serve Mercer Island and avoids buses circulating through the Town Center.

**d. When no buses are present on the north side of NMW, where does the bus stop and unload? What happens when a follow along bus arrives before a bus has unloaded?**

At the existing bus stop on the north side of N. Mercer Way. The existing bay is long enough to accommodate two buses at the same time, and the first bus will always pull forward to the front end of the bay to allow space for a second bus.

**3. Questions regarding Bus operations and future bus-rail integration from Eastside Cities to Bellevue and Mercer Island.**

**a. What routes are proposed to get passengers from Issaquah and points east to South Bellevue? And which routes from which cities are proposed to Mercer Island? How many trips per day? How many passengers per trip?**

As previously mentioned, specific routing and schedules have not been determined. Based on constraints established by the Settlement Agreement, no more than 20 trips per hour are expected during peak periods. METRO CONNECTS generally defines these routes as coming from Issaquah and Sammamish – areas that will not be served by East Link.

Metro and Sound Transit will work cooperatively to design a network that connects people from the Eastside to both Bellevue and Seattle. The routes that connect to Mercer Island will be primarily designed to get people to Mercer Island and allow for an efficient connection to Seattle. Other routes would be designed to get people directly from the Eastside to destinations in Bellevue.

While specific routes have not been proposed to get passengers from the Eastside to South Bellevue, the current service illustrates how Metro and Sound Transit connect people to both Bellevue and Seattle with different services. Currently Metro Route 214 and Sound Transit Route 554 connect Issaquah to Seattle via Mercer Island. Metro Route 271 connects Issaquah to downtown Bellevue via Eastgate in addition to Sound Transit Express Routes 555 and 556. In the future, we would expect similar service options with some connecting to Mercer Island, and some connecting to Bellevue.

Currently, 10 routes serve the I-90 Bridge. When Link opens, bus service west of Mercer Island will no longer be needed. Most of these routes will serve other parts of the eastside that are not served by Link light rail. A few routes (using not more than 20 buses per peak hour) will likely connect to the Mercer Island Link station serving passengers headed to Seattle who come from areas not served by Link. METRO CONNECTS generally defines these areas as Issaquah and Sammamish.

Specific routes, how many trips per day, and how many passengers per trip cannot be determined without public engagement as noted in 1a. However, as stated in 1b, using the constraint of 20 buses per hour, and assuming every seat was filled, this would result in 1,040 people arriving by bus in the peak hour.

**b. What routes will passengers use traveling from Issaquah/Sammamish/etc. to Bellevue/Redmond? Will they ride a bus to Mercer Island, and then have to ride a bus to South Bellevue? If those passengers are being taken to South Bellevue on other routes, why cannot South Bellevue be the transfer point to light rail?**

As outlined in 1a, final routing and scheduling will not be finalized until public outreach is complete. We expect to design some services connecting to from the Eastside, generally along I-90, to Mercer Island that will allow for the most efficient connection to East Link into Seattle. Other service from the Eastside will travel directly to Bellevue.

As a major park-and-ride location, the South Bellevue Link station will be a transfer point to light rail for some people, but it is not the most efficient connection to Link for transit riders from the Eastside, generally in communities along I-90, traveling to downtown Seattle. As previously discussed, Mercer Island is a more efficient and direct transfer point to Link for these communities.

Customers will be able to choose the service going most directly to their destination, whether it is Mercer Island, Seattle, Bellevue, or other locations. Many routes will be adjusted to efficiently connect to Link, and avoid duplicative service by bus and rail.

**c. With regard to the claimed 150-175 people per day served by routes 554 and 216, who will not be otherwise served, please provide more information on why they are boarding or alighting on Mercer Island? Are they residents here? Do they work here? Are they simply using the MI Park and Ride as a way station because it's convenient?**

The data showing 150-175 people either board, or alight on Mercer Island is obtained by Automatic Passenger Counts (APC), which anonymously records a person entering or leaving the coach. APC data is a federal requirement. The equipment, and methodology is best practice in the transit industry, and is used by cities across the country. The collection method and data are regularly audited by the Federal Transit Administration.

There is no way to determine the person's origin or destination, only that they entered or left the bus using Automated Passenger Count (APC) technology. This technology is installed on all Metro buses and records boarding and alighting data. Metro cannot and does not inquire about passengers' place of residence, employment, or final trip destination. It is logical to conclude that these passengers live on the Eastside and come to Mercer Island to work or shop, or are Mercer Island residents that are traveling to/from Eastside destinations.

#### **4. What is the benefit to Mercer Island residents of the "optimal configuration"?**

Bus service connecting Eastside communities to Mercer Island will be a critical component of the regional transit network because that service will efficiently connect customers to East Link and destinations on Mercer Island. This service will provide a competitive mobility option to reduce demand for parking at Link stations, including the Mercer Island park-and-ride lot; and reduce car dependency for people accessing jobs, shopping, and other services on Mercer Island.

A short-hand list of the benefits of the Optimal Configuration include the following:

- Transportation funds in the amount of \$10M for transportation improvements on Mercer Island per the Settlement Agreement;
- Bus/Rail Integration in the form of the 77<sup>th</sup> Avenue SE Configuration—as preferred by the Mercer Island City Council;
- Mercer Island is one of limited cities in King County that will have a light rail station;
- Overall improved connections to the regional transportation network;
- No substantial bus operations and no bus layovers along 80th Avenue;
- Future bus volumes (16-20 buses per peak hour) will be less than existing bus volumes (36-39 buses per peak hour);
- No bus idling during layovers;
- Provides benefit to Mercer Island employers whose employees rely on bus service from eastside locations not served by light rail;
- Provides flexible curb space that may be used for future first/last mile mobility initiatives, including local Metro service, micro-transit, and rideshare opportunities;

- Bus/rail integration is limited to a two-block area of Mercer Island;
- Limited occurrences of long bus layovers (average 15 minutes when a bus is laying over);
- No routing of regional buses through the Town Center;
- The better the transit service and flexibility of transit service operations, the fewer single-occupant vehicle trips on Mercer Island from non-Island commuters;
- Other eastside cities will have a significantly greater number and percentage of buses for bus/rail integration; and
- The roundabout provides a safer intersection for both vehicular and pedestrian traffic.

**5. How will pedestrians be protected against external security threats especially when pedestrians are within the crosswalk?**

The City of Mercer Island is best equipped to answer this question. Section 4.6 of the *2017 Addendum* addresses safety concerns from a transit perspective, which states:

“This section addresses the potential changes in crime rates and response times for emergency vehicles resulting from the Mercer Island Bus Transit Integration configurations. As described in the Final EIS, the potential for crime reflects the level of crime in the surrounding community. Mercer Island has a low crime rate, which would be expected to continue with the implementation of the Transit Integration configurations. The Final EIS also describes how the design of the station incorporates elements of Crime Prevention Through Environmental Design (CPTED) to discourage crime in and around the station. Sound Transit operates its own security force at its facilities. This includes Sound Transit’s contracted security personnel and/or contracted law enforcement officers that function as transit police. Security personnel are stationed at some facilities throughout the day, and some roam and patrol transit facilities and respond to incidents in coordination with local law enforcement.”

**6. If additional north end intersections need or would benefit from additional mitigation due to rail station congestion and bus interchange, who pays?**

All potential impacts and proposed mitigation measures are included in the *2011 FEIS* and *2017 Addendum*. Sound Transit has already implemented many of the mitigation measures. A future signal improvement at 80<sup>th</sup> Avenue SE and SE 27<sup>th</sup> Street intersection is also part of the FEIS mitigation. If the City wishes to make additional improvements that are not part of the FEIS mitigation, there are funds in the Settlement Agreement that the City could choose to use for additional improvements.

**7. Would it be helpful to Sound Transit to receive Council concurrence on the roundabout prior to Council approving an integration concept?**

We appreciate the intent behind this question. The proposed configuration, including the roundabout at 77<sup>th</sup> Avenue SE and N. Mercer Way, implements the bus/rail integration project as outlined in the Settlement Agreement. Additional Council concurrence is not needed. Sound Transit’s Mercer Island station is nearing completion. In June 2019, Sound Transit will move forward with the final design contract for the 77<sup>th</sup> Avenue SE bus/rail configuration as well as the 80<sup>th</sup> Avenue SE Station frontage in order to complete the station frontage before the start of East Link revenue service. If Mercer Island City Council wishes to take an action that recognizes



the proposed bus/rail integration project as implementation of the Settlement Agreement (including the roundabout) please do so by June 2019. Sound Transit will also coordinate with the City on the construction of the mixed-use development at the Tully's site and its intersection with the station frontage on 80<sup>th</sup> Ave SE.

**8. Requests for third party reviews of Metro and Sound Transit data and assumptions: If the council majority wishes to contract for outside consultant review, City staff will solicit costs for such scope of work. Propose that King County and Sound Transit pay for an independent consultant to perform this review, where the consultant is selected and supervised by the city.**

No. Sound Transit and King County will not pay for outside consultant review. Reimbursement for consultant costs to review analysis (that Mercer Island has already been a participant in) are not eligible for Settlement funds per Section 5 and Section 12 of the Settlement Agreement.

**Appendix:** Calculations for estimating the number of people crossing N. Mercer Way during an AM peak commute hour

	<b>Estimates of the number of people crossing N Mercer Way at 80th Street</b>	
	FEIS estimate, published per 2017 Addendum	METRO CONNECTS service assumption based on limitations of Settlement Agreement - assuming <u>all</u> seats full
Estimated bus to rail passengers in peak hour	1,050	1,040
Assumed passengers from P&R in peak hour	250	250
<i>Total peak hour crossings across N Mercer Way at 80th Ave</i>	<i>1,300</i>	<i>1,290</i>
Existing and assumed signal cycle length = 90 Sec	90	90
<i>Number of signal cycles per hour (i.e. # of "WALK" signals): 3600/90 = 40</i>	<i>40</i>	<i>40</i>
<b><i>Average number of people crossing per cycle in peak hour</i></b>	<b>33</b>	<b>32</b>
<b>Assumptions and Calculations:</b>		
Number of peak bus trips per hour at Mercer Island Link Station; Number of buses per hour limited by constraints of Settlement Agreement configuration	40	20
		This scenario includes 4 routes, two with a bus arriving every 15 min with 40 seats, and two with a bus arriving every 10 min with 60 seats, which equals 20 buses an hour with a bus arriving every 2 to 5 minutes. [1040=(2*4*40)+(2*6*60)]
<b>Note:</b> In our recent discussions with City Councilmembers we also discussed reasonable assumptions where as low as 775 people, which is 25 people per signal cycle, could cross in the peak hour, given that there will be about half as many bus trips to Mercer Island under the Settlement Agreement compared with the FEIS Addendum estimates.		

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<sup>i</sup> **Endnote:** Sound Transit has also been asked to compare these results to our ridership estimates for Mercer Island Station. The 2011 FEIS included a projection of 1,500 daily boardings at the Mercer Island station in 2020 and 2,000 daily boardings in 2030 (page 3-25). A more recent projection from 2016 included an approximate 4,200 daily boardings for the current year (*this is an estimate of the ridership if East Link was operational in 2016 and all ST2 projects were complete*). Using the estimate of 1,300 passengers crossing NMW at 80<sup>th</sup> from the 2011 FEIS, an estimate of 4,200 daily boardings could be met before midday. For now, the 2016 projection is the most accurate and will likely change as we approach East Link's opening date. It's important to remember that these are projections that change and fluctuate as more data and information becomes available. Sound Transit projects ridership using various assumptions that reflect best available information, such as regional employment and population forecasts, which provide information about a specific period in time. While this information gives us a rough idea of what we can expect in terms of ridership, there are other assumptions that affect these numbers. As such, Sound Transit does not publish estimates for a project's opening year for a variety of factors including coordination with King County Metro bus routes and transfers, changing rider behavior and a project's specific opening date.

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