

HB2017 Transit Advisory Committee

January 21, 2022

Attendees

Tom Mills – TriMet

Commissioner Jessica Vega Peterson – Multnomah County

Adam Argo – Clackamas County Rider Rep

Aron Carleson

Mary Lou Ritter

April Bertelsen – Portland Bureau of Transportation

Dan Bauer – Portland Streetcar

Deanna Palm, Co-chair – Executive Director, Hillsboro Chamber of Commerce

Dwight Brashear – Wilsonville SMART

Jamie Surface – TriMet

Jarvez Hall, Co-chair - East Metro Economic Alliance

Jodi Parker – OR-ID Council of Laborers

John Whitman – Ride Connection

Justin Trubiani – TriMet

Karen Buehrig – Clackamas County

Kate Lyman – TriMet

Kristina Babcock – Clackamas County

Mailee Xiong – TriMet

Mariana Valenzuela

Commissioner Paul Savas – Clackamas County

Reza Farhoodi – Rider Representative, Portland

Commissioner Roy Rogers – Washington County

Teresa Christopherson – Clackamas County

Sarah Ianarone – the Street Trust

Tom Markgraf – TriMet

Julie Wilcke – Ride Connection

Sara Wright – OEC

Christina Deffebach – Washington County

Emily Motter

Eve Nilenders – Multnomah County

Jan Campbell – TriMet Committee for Accessible Transportation

Cameron Bennett – Portland State University

Martin Gonzalez – TriMet

Jon Isaacs

Kristin Dennis – Metro

Michael Dohn – TriMet

Pharaoh Bolding

Victoria Paykar – OEC

Preliminaries

- The meeting begins at 8:32 AM.
- Tom reviews the Webex interface and meeting agenda.
- There is no public comment.
- Tom reviews the PTIP timeline.
- New committee members are introduced. They are:
 - ❖ Cameron Bennett – PSU, taking over from Gabby Abou-Zeid
 - ❖ Sarah Ianarone – Street Trust, taking over from Jillian Detweiler
 - ❖ Victoria Paykar – OEC, taking over from Sarah Wright
- We expect to hear from Metro soon in regards to a replacement for Bob Stacey.
- A rider representative for East Multnomah County is being recruited by county staff. This is the only vacant rider representative position.
- Jarvez Hall will continue to serve as a co-chair on the committee. Deanna Palm will remain on the committee, but will step down as co-chair. A vote will be taken at the next meeting. Jarvez invites any interested party to reach out to him with any questions regarding co-chair responsibilities.

Equity Maps

- The spirit of the HB2017 legislation is to improve transit in low-income communities. The local advisory committees are charged with defining what low-income is. This committee defines low-income as 200% of the federal poverty level. In the past, the committee has expanded the definition of low-income to include a number of factors; age, disability, race, etc.
- The TriMet Equity Index has been applied to this determination in the past, which includes 10 factors. Factors include:
 - ❖ People of color
 - ❖ Limited English proficiency
 - ❖ People with disabilities
 - ❖ Senior populations
 - ❖ Youth populations
 - ❖ Low/medium wage jobs
 - ❖ Limited vehicle access
 - ❖ Affordable housing

❖ Key retail, human and social services

- Staff measures these factors in every census block group in the region, scoring each block group based on these factors. The higher the score, the greater the equity need. The top-scoring quartile have been mapped and designated as equity block groups. This year, the counties and transit service providers requested maps for each county, with focus on areas outside of the TriMet district.

- Tom displays a map for the FY22-23 plan. In this map, equity areas include:

- ❖ Columbia Corridor
- ❖ East Portland
- ❖ East Multnomah County
- ❖ Clackamas Town Center
- ❖ Clackamas Industrial Area
- ❖ McLoughlin BLVD (Highway 99E) in Oregon City
- ❖ Highway 217
- ❖ Hillsboro
- ❖ Cornelius
- ❖ Forest Grove
- ❖ Tualatin
- ❖ Downtown Portland

- Using the new methodology for FY24-25, we get almost the same map, with almost the same general areas. This map does not include areas outside of the District.

- Tom displays maps of the individual counties; Clackamas, Multnomah, and Washington. The equity area for Multnomah County is in the northwest corner of the map. The equity areas in East County do not show up due to the large block groups of forested area.

- In both iterations of the map, Farmington and Midway show up as equity areas in Washington County.

Discussion

- April: Has the methodology itself changed, or is TriMet using new data?

- Tom: We are separating areas outside the TriMet district, and applying the equity index to them. The new county maps show the top quartile for the out-of-district areas for each county.

- Commissioner Savas suggests that the equity areas within the district be colored differently from the out-of-district areas for better visual distinction. Tom agrees; TriMet's GIS staff may be able to incorporate all of the data into one map using this method.

- Reza understands that some of the census block groups overlap into the TriMet Service district. What kind of apportioning was used to assume how much of the block group population is outside of the district? Tom will reach out to GIS staff to find out.

- Sarah I: We all know that East County inside the service area has some of our lowest SCS concentrations in the entire state. How are we balancing population densities and other concerns with something based on a straight SCS number? She is confused how East Portland fits in relative to HOLBROOK-Burlington area.

- Tom: That area is only being compared to the area of Multnomah County east of the dotted line near Troutdale. The map prior shows where in the TriMet district the equity areas are. This is useful to the county as they apply funds generated in areas outside of the TriMet district. These areas generate less than \$100K in STIF funds annually.

- Tom notes that there are pockets of poverty in areas not shown on these maps, due to the rural nature of certain block groups.

- April: It would help to look at the individual indices elements for specific areas to help inform conversations around investment.

- Tom: Going forward, a unified, color-coded map will be brought back to the committee once all seats are filled. He met with staff from the counties; Washington County staff feel that the data TriMet presented does not fully line up with theirs. Metrics may differ between TriMet and Washington County. He will have further discussions with the county staff, which may result in alterations to the map.

Update on Zero-emission Bus Fleet – Kate Lyman, TriMet

- Tom: We will need to have a conversation about funding. In 2019, we discussed funding plans over 5 years.
- The zero-emission bus transition is a 20-year project. Originally, \$5 million per year was allocated to purchase electric buses. Over the course of five years, \$28 million was allocated for electric bus infrastructure. By the end of 2023, we will have received the \$28 million. We have not spent the full amount, because it takes time to design, engineer, rehab and construct our bus facilities, particularly the garages.
- In the first slide of the presentation, Kate provides an overview of TriMet’s current electric bus fleet.
- In September 2018, the TriMet Board adopted the Non-diesel Bus Plan, with a commitment to make a full transition away from diesel by 2040. For the past 3.5 years, several bus models have been tested;
- 5 New Flyer short-range battery electric buses operating on Line 62, with charging stations at Merlo Garage and Sunset Transit Center
- There have been reliability challenges with these models.
- 5 Gillig Long range battery electric buses, which can only be charged at a garage overnight; buses have larger batteries
- They are currently operating on Lines 6-MLK and 20-Burnside, and appear to be more reliable than New Flyer buses. The buses have an advertised range of 150 miles, but colder temperatures reduce the range of the buses to approximately 110 miles.
- 2 40" and 1 60" rehabilitated buses from Complete Coachworks; older diesel buses retrofitted with electric propulsion systems
- These seem to be working well, but there were some delays in delivery. The agency hopes that these conversions will be more cost-effective than purchasing new buses. However, it remains to be seen as to how scalable this type of conversion is.
- TriMet was able to loan several New Flyer long-range battery electric buses for 1 year. These buses were previously operated by King County Metro.
- Kate displays a slide illustrating the location of TriMet’s bus garages; Merlo, Center, Powell, and soon to be Columbia. Each facility houses between 200-300 buses.
- Staff has conducted analyses to determine the anticipated fleet size by 2040, as many as 1000 buses may be needed.
- TriMet needs to re-evaluate the way in which the chargers are built. The current chargers are adequate for the current fleet size, but are too bulky for a larger fleet. Overhead charging facilities are being considered to free up ground space for parked buses. Kate displays 2 images to provide the audience with a comparison between ground-level chargers and overhead chargers.
- In order to accommodate overhead structures, additional structures will need to be built, since buses are currently parked outside.
- Kate displays a site plan to give the audience an idea of the planning work being undertaken. Orange areas indicate the 40" bus fleet, green areas indicate articulated buses, and the purple area indicates overhead charging facilities.
- The facility would be mostly open-air with overhead decks containing the charging equipment. This plan should allow for maintenance to occur above the parking area. Plans have been drawn up for all garages.
- TriMet Staff-in partnership with PGE and Pacific Power-have been analyzing the amount of power needed to charge 200-300 buses at a single garage. Kate displays a chart showing the estimates of peak power demand when all buses are electrified. The power requirements are 4-5 times what they are today. The utility companies will need to upgrade the substations and feeder lines for all of the bus facilities. These costs have been folded into the overall cost estimates for fleet conversion.

- Unlike with diesel buses, maintenance staff will need greater access to the top of the electric buses, because there are more parts on the roof. The maintenance facilities will need to be retrofitted with catwalks, fall protection, heavy lifting equipment, and charging facilities.
- Kate displays cost estimates with appropriate amounts of contingency for the level of design. The column showing the charging infrastructure cost includes the cost of charging equipment, the overhead structures, and preliminary costs from the utilities regarding substation retrofits. On the right are maintenance facility upgrade costs. The dollars are in current year dollars, and account for inflation.
- Technology Options and Range Considerations;
 - 3 types of zero-emission buses on today's market; long-range battery, short-range battery, and fuel-cell electric buses. The fuel cells are powered by hydrogen. The hydrogen buses have ranges of up to 300 miles. Some diesel buses today operate at over 300 miles per day.
 - Hydrogen is not being produced locally.
 - Long-range battery-electric buses are the easiest to deploy. However, they are not likely to be the solution for a complete fleet conversion. The general consensus is that batteries will improve, but will not have a 300+ mile range by 2040. This means that TriMet will need to invest in short-range battery or fuel-cell hydrogen buses.
 - Kate compares capital costs between short-range electric and hydrogen buses.
 - With the assistance of their consulting teams, it was determined that fast chargers would need to be installed in seven locations. The top 3 locations are Beaverton Transit Center, Clackamas Transit Center, and Gresham Transit Center.
 - Kate displays concepts for fast chargers at these transit centers. Green symbols indicate articulated buses, and red symbols indicate 40' buses.
 - The ceiling of the Clackamas Transit Center garage cannot handle the weight of the charging infrastructure, necessitating the construction of a platform on which to mount the charging equipment.
 - The cost of implementation is approximately \$92 million in today's dollars.
 - Hydrogen fuel considerations;
 - Kate briefly explains the process of extracting hydrogen.
 - The nearest producer of hydrogen is in Sacramento, CA. An electrolyzer is under construction in Douglas County, WA.
 - TriMet would need 4-5 truck deliveries of hydrogen per day.
 - TriMet studied 3 alternatives for acquiring hydrogen;
 - Produce hydrogen On-site, with distribution from the Columbia bus garage
 - Build electrolyzers and methane reformers at each garage (\$400 million)
 - Purchase hydrogen from off-site (\$53 million).
 - The last option is most feasible if hydrogen generation comes to the Portland region.
 - In summary, the total infrastructure need for electric bus conversion is \$700 million in today's dollars.
 - TriMet is in the process of initiating its next procurement of long-range battery-electric buses. At this point, there are enough blocks on the system for these buses to be deployed.
 - TriMet-in partnership with PSU-has conducted air-quality modelling. PSU will help develop a plan to deploy buses in areas with the worst air quality.

Discussion

- Tom: We are ordering 24 long-range battery-electric buses. There is federal funding-much of which is competitive-to assist us; we are still determining what the amount will be.
- Commissioner Savas has been following the hydrogen market for quite some time, and refers to infrastructure developments in California. He notes that hydrogen is being used for electric storage on a macro scale. He believes TriMet could play a key role in bringing hydrogen production to Oregon, and that the state could assist in efforts to power buses with hydrogen fuel cells.
- Kate: The Oregon Department of Energy is working on a renewable hydrogen study. Department staff have reached out to TriMet staff regarding their future plans. At this point, TriMet has not committed to hydrogen.
- Commissioner Rogers believes that there are competing goals at work. He does not believe that HB2017 funds should be dedicated to fleet electrification. Instead, the funds should be dedicated to providing transit service. Is this pot of money really intended for electric buses?
- Tom: In the legislation, zero-emission vehicles is included as an item eligible for funding. This committee has been allocating money for the expansion of services for the general public, seniors, and people with disabilities. It is of course up to the committee on how to allocate the funds.
- Commissioner Rogers does not propose abandoning zero-emission goals, but still feels that investment in service to underserved areas is a priority. Has the committee had a serious discussion regarding prioritization of funds?
- Tom recalls that triangle funds were discussed. The amount of money invested in expanding services is in part contingent on the number of vehicles and operators available. Acquiring both takes time; in the interim, some monies can be spent on capital investments. Over time, as service increases, capital investments would shrink, and service expansion investments would grow. The pandemic changed things. Fare revenue plummeted, and we are now suffering a multi-industry labor shortage. While we are in a place where we are unable to expand service, we should make investments in other areas.
- April recalls that the committee felt that zero-emission fleet investments are important, but agrees that other funding streams should be leveraged. The City has engaged with the freight industry in regards to zero-emission propulsion systems. Perhaps there are opportunities to coordinate renewable fuel sources on a multi-agency level. Has TriMet investigated restructuring bus blocks? Kate confirms that they have, but doing so would be less efficient, because more buses than today would be required.
- Dwight: SMART currently operates electric buses, and has a goal to convert to battery-electric and RNG buses by 2028. When discussing fund allocation, we should look at true regionalization of transit. Sometimes, we miss opportunities to look at currently unmet rural needs. There are opportunities to spread those dollars around to reach more people.
- Commissioner Savas agrees with Commissioner Rogers and Dwight. He reiterates that hydrogen is emerging as a viable fuel source. He acknowledges that the triangle funds by themselves cannot meet any need fully.
- Jarvez: The committee decides how to allocate the funds. Tom adds that the committee advises the TriMet Board, which will have the ultimate decision-making authority. That said, he does not expect the Board to overrule the committee.

Next Steps

- TriMet staff are looking at funds received in the plan. They will estimate how much is projected to be spent by the end of this biennium, the amount of any carry-over, and any estimates from ODOT regarding more revenue which could come in, and FY24-25 revenue projections. Carry-over, surplus and projection funds will be added together to provide an estimate for the revenue of the plan. Staff will come back to the committee with reports from project managers, and what it would cost to continue with these projects. This would be an opportunity for the committee to discuss funding allocation.
- In the near future, TriMet will kick off an effort to survey the community on what post-pandemic service should look like.
- Our next meeting will take place on Friday, February 18, 2022.
- The meeting adjourns at 10:01 AM.