Marquam Hill Connector
Green Ribbon Committee Meeting #3
April 10, 2019
Agenda

4:00 – 4:15  Public Comment
4:25 - 5:10  Review & Evaluation of Connector Type Options
5:10 - 6:00  Connector Type Discussion
Marquam Hill Connector Goals Survey

March 18 – April 1
Total Responses: 1,017
Total Comments: 303
Respondent Types

<table>
<thead>
<tr>
<th>Type</th>
<th>Number of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worker</td>
<td>526</td>
</tr>
<tr>
<td>Patient</td>
<td>459</td>
</tr>
<tr>
<td>Rec Users</td>
<td>392</td>
</tr>
<tr>
<td>Non-Visitor</td>
<td>103</td>
</tr>
<tr>
<td>Resident</td>
<td>101</td>
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<tr>
<td>Other</td>
<td>73</td>
</tr>
<tr>
<td>Student</td>
<td>30</td>
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Number of Responses
Note: Respondents could choose multiple
Most Important Goals

<table>
<thead>
<tr>
<th>Goal</th>
<th>Number of Responses</th>
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<tr>
<td>Access</td>
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<td>Operational</td>
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<tr>
<td>Safety</td>
<td>538</td>
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<tr>
<td>Environment</td>
<td>455</td>
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<tr>
<td>Budget/Schedule</td>
<td>284</td>
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<tr>
<td>Context</td>
<td>263</td>
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<tr>
<td>Experience</td>
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*Note: Respondents were asked to choose three*
Most Important Goals
Most Important Goals

- Access
- Operational
- Safety
- Environment
- Budget/Schedule
- Context
- Experience

Workers: N = 526
Patients: N = 459
Rec Users: N = 392
Non-Visitors: N = 103
Residents: N = 101
Students: N = 30
Most Important Goals

<table>
<thead>
<tr>
<th>Category</th>
<th>Access</th>
<th>Operational</th>
<th>Safety</th>
<th>Environment</th>
<th>Context</th>
<th>Budget/Schedule</th>
<th>Experience</th>
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<td>70</td>
<td>60</td>
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<tr>
<td>Patients</td>
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<td>30</td>
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<td>Non-Visitors</td>
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<td>Residents</td>
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<td>20</td>
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<tr>
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<td>45</td>
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</tbody>
</table>

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Likely Users of the Connector

<table>
<thead>
<tr>
<th>Group</th>
<th>Plan to Use Connector</th>
<th>Do Not Plan to Use Connector</th>
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</thead>
<tbody>
<tr>
<td>Students</td>
<td>82.8%</td>
<td>17.2%</td>
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<tr>
<td>N = 30</td>
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<tr>
<td>Patients</td>
<td>81.5%</td>
<td>18.5%</td>
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<tr>
<td>N = 459</td>
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<td></td>
</tr>
<tr>
<td>Rec Users</td>
<td>81.4%</td>
<td>18.6%</td>
</tr>
<tr>
<td>N = 392</td>
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<tr>
<td>Workers</td>
<td>79.9%</td>
<td>20.1%</td>
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<tr>
<td>N = 526</td>
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<tr>
<td>Residents</td>
<td>69.7%</td>
<td>30.3%</td>
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<tr>
<td>N = 101</td>
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</table>

Plan to Use Connector
Do Not Plan to Use Connector
Big Comment Themes

➤ Fast, efficient, and convenient.

➤ Protect the natural and historic environment.

➤ Minimize neighborhood impacts (i.e. traffic/parking/noise/light).

➤ Consider limited mobility needs.

➤ Make sure it is safe.
Other Comments

- Use of bikes.
- Extended hour access to OHSU.
- Weather protection.
- Connections to the South Waterfront.
Public Engagement Look Ahead

- Open House
  TODAY (3 – 7:30pm)
- Online Open House
  April 15 – April 29
- Committee on Accessible Transportation (CAT)
  April 11
- Portland Design Commission Briefing
  April 18
- Portland City Council Work Session
  May 7
Where we are in the process...

```
<table>
<thead>
<tr>
<th>MHC Concept Phase</th>
<th>MHC Design Phase 2019-2022</th>
<th>SWC Construction Phase 2023-2027</th>
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</thead>
<tbody>
<tr>
<td>Project Development</td>
<td>Final Engineering</td>
<td>SWC opens 2027</td>
</tr>
</tbody>
</table>

- **Steering Committee selects MHC type**
- **Local Permit**

**January**
- WG + GRC meetings
- Existing conditions & draft criteria

**February**
- Finalize criteria & review types
- Refine options

**March**
- Select preferred option

**April**
- Online Engagement
- Open House
- City Council Work session

**May**
- Design Commission Briefing

**2019**
- On-going SWC open houses & CAC meetings

**2020**
- Land Use Review
- DAR & DR Hearings

**2021**
- Pre-app & Environmental Review

**2022**
- Selected Option
- Public Input
- FEIS - Selected option studied

- **Agency Planning to Minimize Harm**
- **Develop draft baseline report & coordinate with BDS**

**Design Overlay**
- **Design Commission**

**Environmental / Natural Resource Overlays**
- **FEIS - 4(f)**

**MHC Concept Phase 2019-2022**
- **Public Involvement**
- **Open House**
- **City Council Work session**

**MHC Design Phase 2019-2022**
- **On-going SWC open houses & CAC meetings**

**SWC Construction Phase 2023-2027**
- **Pre-app & Environmental Review**
- **Selected Option**
- **Public Input**
- **FEIS - Selected option studied**

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Focus Topics from March GRC

Types to study further:

• Bridge + Elevators
• Funicular/Inclined Elevator
• Tunnel + Elevators
• Aerial Tram (cost analysis)
• At-grade Crossing
• Undercrossing
Where are we going?

[Map of Marquam Hill area with various landmarks and trails marked.]

Ex. Trails

LEGEND

Ex. Bus Stops

1" = 200'

- Multnomah Pavilion
- Shriner's Hosp.
- Kohler Pavilion
- Elks Children's Eye Clinic (under construction)
- Casey Eye Institute
- VA Main Hosp.
- VA Primary Care Clinic
- Dornbecher Children's Hospital
- Hatfield Research Center
- OHSU Hosp.
- Physician's Pavilion
- Biomedical Research Building
- Sam Jackson Hall
- Aerial Tram
- Garage D
- Whetaker Trail
- Woods Trail
- Terwilliger Parkway boundary

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Gibbs Station to Terwilliger Blvd

Map showing the route from Gibbs Station to Terwilliger Blvd, highlighting key locations such as the VA Main Hosp., VA Primary Care Clinic, Kohler Pavilion, Physician’s Pavilion, and other medical facilities and landmarks.
Gibbs Station to Parkway Boundary
Gibbs Station to OHSU Interior

Ex. Trails
Ex. Bus Stops

1" = 200'

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Inclined Elevators

Precedents

Ljubljana, Slovenia

Edmonton, Canada

Deer Crest, Utah

Montmartre, Paris
Inclined Elevators - View from base
Inclined Elevators - Stairway

Montmartre, Paris

Edmonton, Canada
Inclined Elevators - Aerial View
Inclined Elevators - Plan

Station Area Design In Progress

Protected View

Inclined Elevator Stop

Inclined Elevators

At-Grade Crossing

Bus Stop

Stair

Inclined Elevator Stop

Terwilliger Blvd

Campus Drive

Casey Eye Institute

Parking Garage

ADA Path

Protected View
Inclined Elevators - Potential Alignments
Bridge + Elevators

Precedents

Edmonton, Canada

Neckartenzlingen, Germany

Ennetbaden, Switzerland
Bridge + Elevators to Terwilliger (Lower Level)
Bridge + Elevators - Overlooks

Precedents

Darlene Hooley Pedestrian Bridge

Pescatore Park, Luxembourg
Bridge + Elevators - View east from roadway
Bridge + Elevators to Terwilliger (Upper Level)
Bridge + Elevators - Potential Alignments
Tunnel + Elevators

Precedents

Miho Museum, Japan

Kings Cross, London
Tunnel + Elevators - Plan

- Tunnel Entry
- 210'
- 475'
- Garage Below
- Elevator Entry

- Kohler Pavilion
- Parking Garage
- Campus Drive
- Casey Eye Institute
- Tunnel
- Terwilliger Blvd
- Bus Stop
- Station Area Design In Progress

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Tunnel + Elevators - View west from base
Tunnel + Elevators - Section
Tunnel + Elevators

National Gallery, Washington DC

Amsterdam
Tunnel + Elevators - Potential Alignments

DEIS study

1. Potential Hospital Expansion
2. Casey Eye Institute
3. ECEC (Early Childhood Education Center)

Potential Hospital Expansion

Diagram showing various buildings and potential hospital expansion areas.
3.4 Alternative 3 – Gibbs Street Aerial Tram with Monocable Tram to Barbur

This alternative suggests the same tram system and alignment for Gibbs Street as Alternative 2, Gibbs Street Tram. However, this alternative builds upon the other by suggesting that a second system be developed to interconnect with the Barbur Boulevard transit corridor. This second system would be located just to the north of the Gibbs Street Tram, and is a slightly different technology than the aerial tram. The second system would provide direct access between Marquam Hill and Barbur Boulevard and facilitate a far more effective integration into the regional transit network than the Gibbs Street Tram alone.

The alignment of the monocable tram is illustrated in Figure 3.12. At the Barbur terminal, property currently occupied by a synagogue would need to be acquired to accommodate the station. The tram would rise quickly from that point to a 141 foot tower just east of Terwilliger Parkway (Figure 3.13), and continue on to a combination tower/landing platform adjacent to the Gibbs Street Tram platform on the OHSU campus.

A monocable tram features cabins that are fixed to a reversible circulating cable, meaning that the cabins do not rotate around the bullwheel at the endpoints of the system. In this way, the system operates like the aerial tram, with the cabins reversing direction at either end of the system. Because this is such a simple system it is easier to maintain and less expensive to construct than an aerial tram or a gondola. Transit transfers can be made very effectively between the two trams as well as at Barbur Boulevard. Improvements to Barbur (Figures 3.14 and 3.15) would assist in pedestrian crossings, and would be more cost effective than structural crossings of Barbur.

The vehicle travel time for the Monocable Tram is estimated to be 1 minute 35 seconds. Accounting for loading and unloading, this means that the monocable tram could run as often as every 2 minutes 5 seconds, although for the purposes of this study a time of 2 minutes 30 seconds between the start of one run and the start of the next (e.g., 1:35 of travel time and 0:55 of dwell time) was used.
Aerial Tram Concept

Reversing direction at either end of the system. Because this is such a simple system it is easier to maintain and less expensive to construct than an aerial tram or a gondola. Transit transfers can be made very effectively between the two trams as well as at Barbur Boulevard. Improvements to Barbur (Figures 3.14 and 3.15) would assist in pedestrian crossings, and would be more cost effective than structural crossings of Barbur.

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Aerial Tram Concept

Plan

Section
Aerial Tram Cost Analysis

Portland Aerial Tram

(2002) $10.2mil
$28.5mil
$40mil
(2006) $57mil

Barbur Aerial Tram

Add:
• escalation
• soft costs
• equipment assumptions
• design & construction complexity premium
(2022) $50-85mil (2022)
Discussion
Inclined Elevators - Plan

- Casey Eye Institute
- Parking Garage
- Campus Drive
- Terwilliger Blvd
- Barbur Blvd
- Station Area Design In Progress
- Inclined Elevator Stop
- ADA Path
- Bus Stop
- At-Grade Crossing
- Stair
- Protected View
Bridge + Elevators - Plan
Bridge + Elevators - Potential Alignments
Tunnel + Elevators - Plan

- Tunnel Entry + 210'
- Elevator Entry + 475'
- Garage Below
- Kohler Pavilion
- Parking Garage
- Casey Eye Institute
- Campus Drive
- Terwilliger Blvd
- Barbur Blvd
- Station Area Design In Progress

Bus Stop

Protected View

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Tunnel + Elevators - Potential Alignments

Gibbs St. Station

Potential Hospital Expansion

#2 & #3 Have constructibility concerns

Parkway boundary

Potential Hospital Expansion

ECEC

Casey Eye Institute

At Kohler Pavilion

Gibbs Street Station

Barbur Blvd.