Comparing two proposed Max lines for SE Portland using a Cost Benefit Analysis

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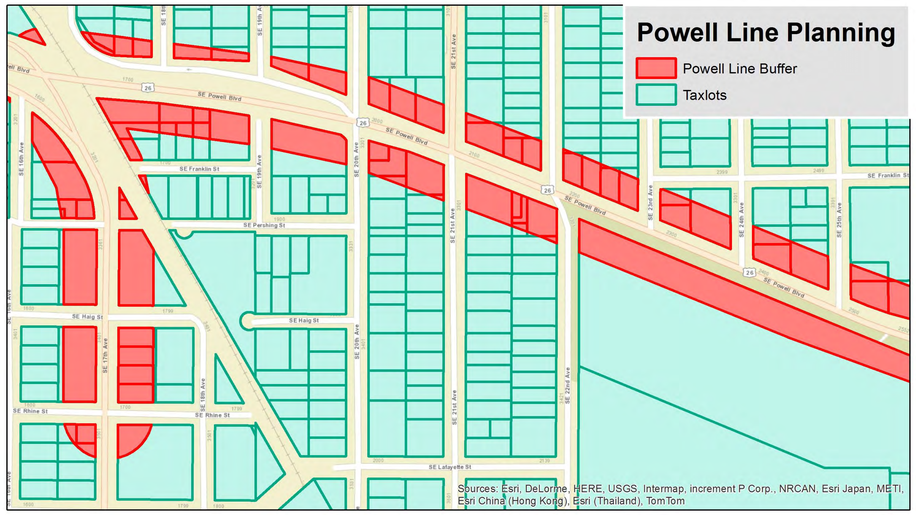
Methods

Benefit: A major factor is the number of potential people who will use these new lines. This number is based on the amount of people who already use public transportation but might switch to use the new line exclusively or make transfers from another line or bus. There is also the potential that people who do not use public transportation currently will start using a new line in their neighborhood. In order to calculate the potential use of the line we look at the number of transit stations along each route, the number of park and rides along each route, the bus lines that run along the potential routes, and population in the area. We will limit our interest to a 1/2 mile buffer around each station.

Cost: We determined the cost by calculating the value of land along the route that must be purchased by trimet for the project. The land acquisition costs was based on tax lot values. To find the property that had to be bought we created a 120 ft buffer along the track. Any property in the buffer would need to be bought (we assume that only 50 percent of the property needs to be purchased). The other factor was the actual cost of building the track, which will be calculated assuming the cost of track per mile is constant. We also will be adding the cost per station. We did not find a simple formula for how much the track would cost, so we worked with historical data to figure out how much it might cost to build the station and track.



After finding all of the factors for our benefit we had to develop a formula to come up with a single number for the benefit. So we took each factor and converted it to a score between 1 and 10. From there we had to decide on the weight for each factor. We came up with 4 different equations.

1. 0.75(Population) + 0.15(Buses) +0.05(park and ride) +0.05(TransitCenter)
2. 0.50(Population) + 0.30(Buses) +0.10(park and ride) +0.10(Transit Center)
3. 0.30(Population) + 0.50(Buses) +0.10(park and ride) +0.10(Transit Center)
4. 0.50(population) + 0.50(buses)

	Park and Rides	Transit Centers	Buses	Population
Powell	2	0	28	46541
HWY 224	3	1	34	35364

Conclusion

From the cost benefit analysis, we have concluded that the proposed Powell Line offers greater potential in future ridership than the proposed Milwaukie Line, and would therefore advise Trimet and METRO to authorize the new Powell line.

	Stations	Cost per Station	Station Cost	Track Length (Miles)	Cost per Mile	Total Track Cost	Property Cost	Total Cost
Powell	3	370711	1,112,133	4	25,000,000	**100,000,000**	131,264,274	**234,639,000**
HWY 224	5	370711	1,853,555	5	25,000,000	**125,000,000**	184,638,138	**256,265,000**

Data Sources:
U.S. Census Bureau
Trimet
METRO
ESRI