

Capital Trade-Offs

- Evaluated three major capital expenditure scenarios
 - Speed and Reliability Corridor Improvements
 - Direct Access Ramp Improvements
 - Park and Ride Expansion

Speed and Reliability Improvements

- About 240 miles of Speed and Reliability Improvements
- Focused on 2040 network frequent/very frequent transit corridors
- Assumed 15 percent improvement in travel speeds over baseline conditions
- No specific improvements identified (TSP, BAT lanes, etc.)
- Cost assumed at \$2.0M per mile (based on TCRP research)
- Assumes new Ship Canal Crossing at \$100M with bus lanes

Direct Access Ramps

- Assumed five new direct access ramp projects
 - SODO Busway to Seattle Blvd/Airport Way
 - West Seattle Freeway to 1st Avenue S/SR 99
 - I-5 to Industrial Way/SODO Busway
 - I-5 to SR 900
 - SR 167/James St
- These ramps are in addition to the I-405 Corridor Master Plan ramps
- Ramps assumed to cost \$96M each, mid-range price of I-405 ramp project cost estimates
- Each ramp reduces transit route travel time by 4-6 minutes

Park and Ride Expansion

- Double the number of publicly owned park-and-ride spaces (20,500 to 41,000 stalls)
- Assumed to be located at existing high-utilization lots
- Mix of surface lots and garages
- \$30,000 per stall

Impacts: Boardings and Rev. Hours

Scenario	Change in Daily Boardings		Change in Annual Revenue Hours with Improvement	
	Total	Percent	Total	Percent
Speed and Reliability Improvements	+47,300	4.9%	-228,942	-5.1%
Direct Access Ramps	+13,000	1.4%	-70,840	-1.5%
Park-and-Ride Expansion	+42,000	4.6%	N/A	

Capital Improvements: Total Costs

Scenario	Total Costs
Speed and Reliability Improvements	\$574 million
Direct Access Ramps	\$480 million
Park-and-Ride Expansion	\$615 million

Payback and Amortization Assumptions

- Cost per revenue hour: \$161 (based on 2014 data from Metro)
- Interest rate: 5%
- Lifespan of capital investments (amortization period): 50 years
 - Assumes the bulk of the improvements have long life spans
- Average fare per boarding: \$1.24 (based on 2014 data from Metro)

Payback Period and Annual Cost per Rider

Scenario	Payback Period	Annualized Capital Cost per Annual Boarding	Benefit/Cost Ratio
Speed and Reliability Improvements	6 years	\$2.10	1.77
Direct Access Ramps	29 years	\$6.30	0.63
Park-and-Ride Expansion	36 years	\$2.50	0.49

Findings

- Speed and reliability improvements are the most cost effective type of capital improvement
 - Combination of high ridership and service hours savings
 - Only type of improvement with a positive benefit/cost ratio
- Direct access ramps have a high annualized cost per annual boarding, but provide service hours savings, offsetting the cost somewhat
- Park-and-ride stalls generate riders and fares, but have the lowest benefit/cost ratio (this could change if parking is not free)