

ST2 Update

Benefit-Cost Analysis

Sound Transit Board of Directors

June 12, 2008

Why Conduct B-C Analysis?

- RCW 81.104 requires ST's system plan conform with the regional transportation plan (Destination 2030)
- Benefit-cost (B-C) analysis required by Destination 2030 for projects over \$100M
- B-C analysis performed for ST2 light rail and commuter rail investments

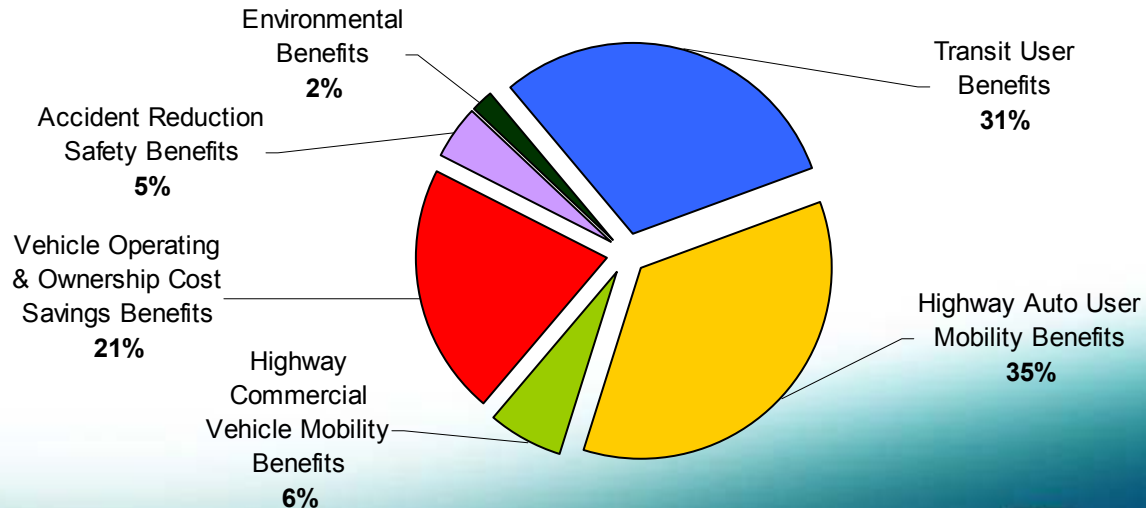
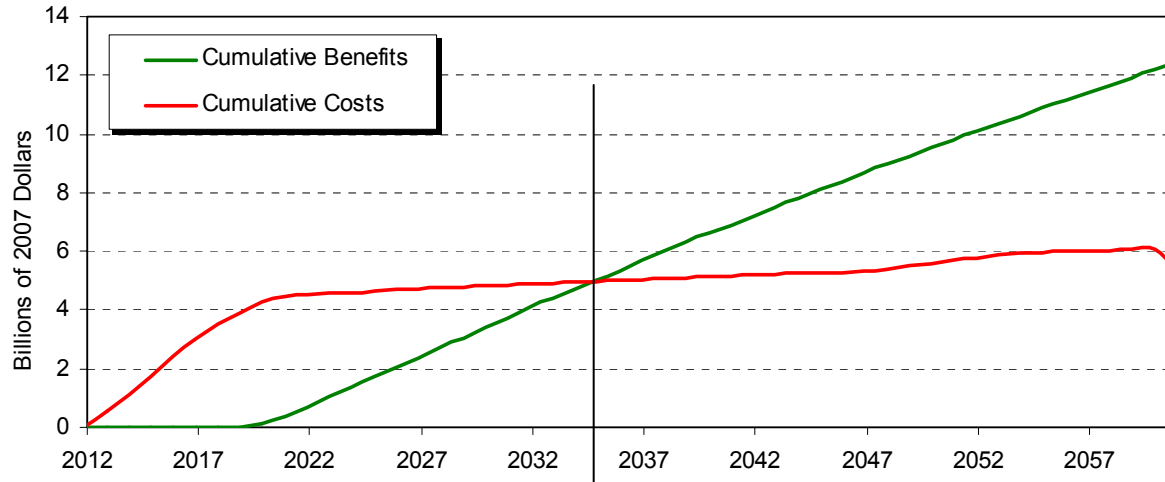
What is B-C Analysis?

- Economic tool used to measure the relative difference between benefits and costs of a given project or investment
 - Converts quantifiable benefits into constant dollar amounts (2007 dollars)
 - Benefit estimation based on consumer surplus theory
- Benefit-Cost ratio greater than 1.0 can be justified from public investment standpoint

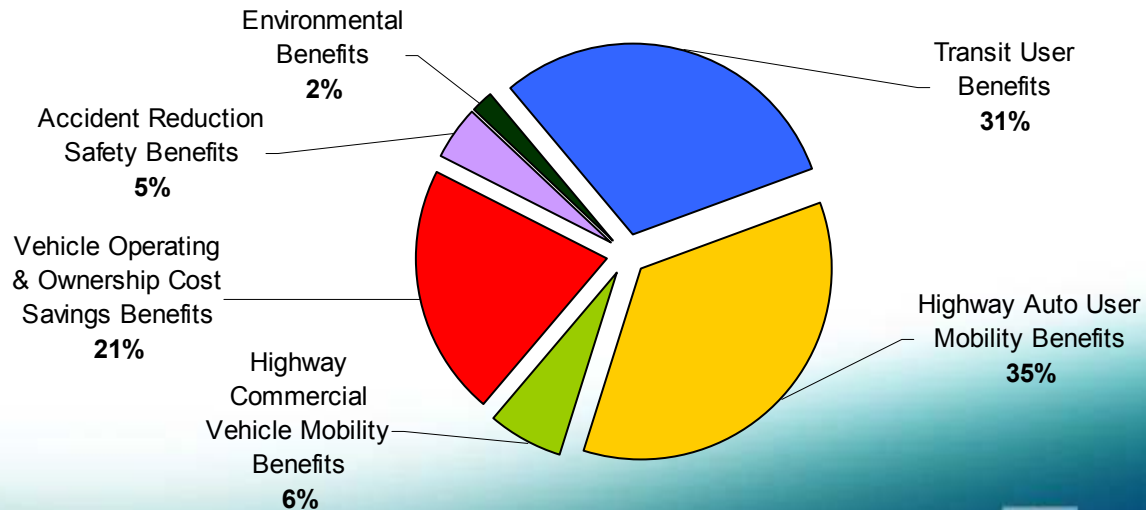
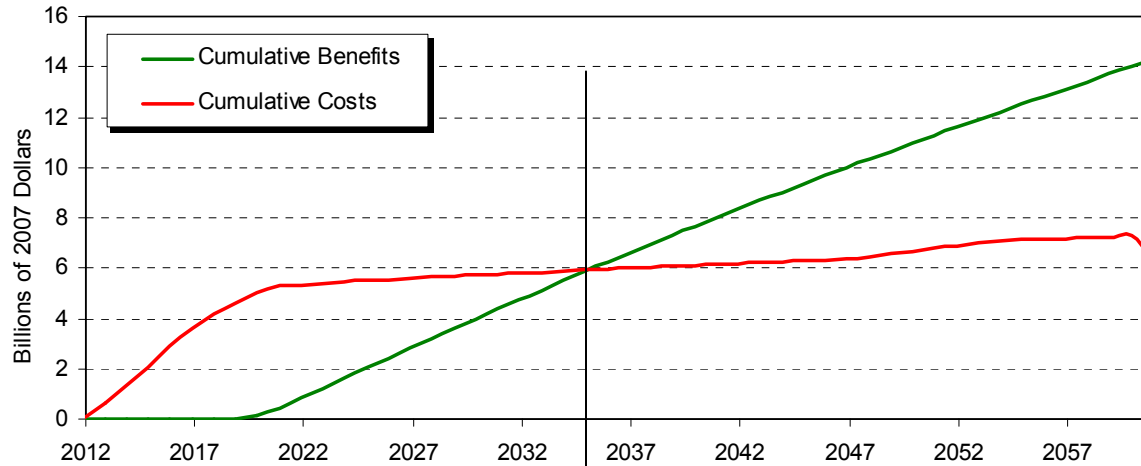
Results by Option

	0.4% 12 Year	0.5% 12 Year	0.5% 20 year
<i>Net Present Value</i>	\$7.0 B	\$7.8 B	\$16.3 B
<i>Economic Rate of Return</i>	7.7 %	7.5 %	9.1 %
<i>B-C Ratio</i>	2.3	2.2	2.7

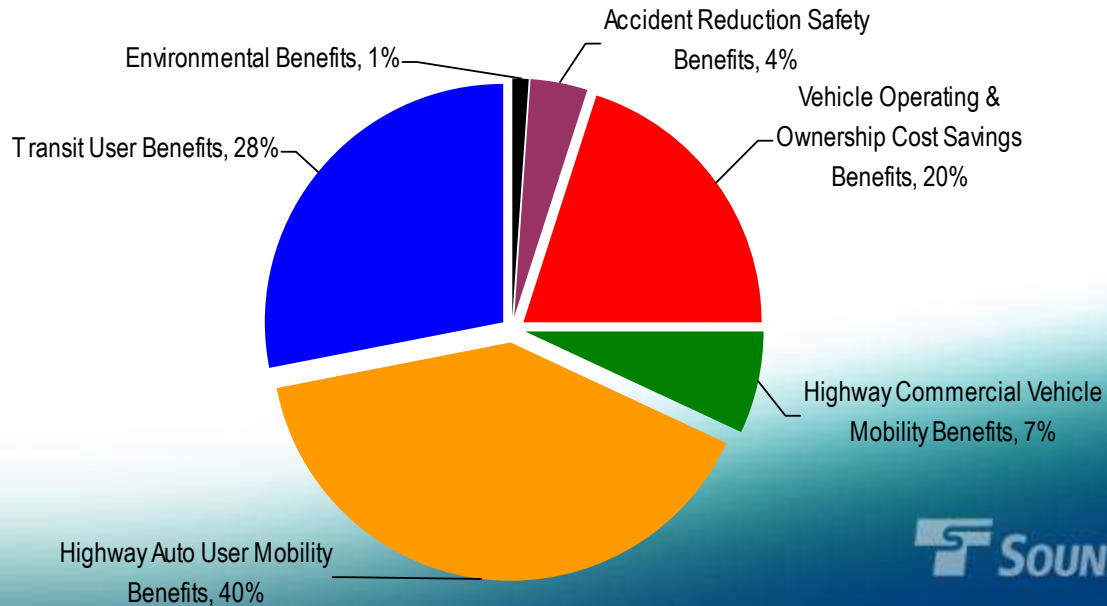
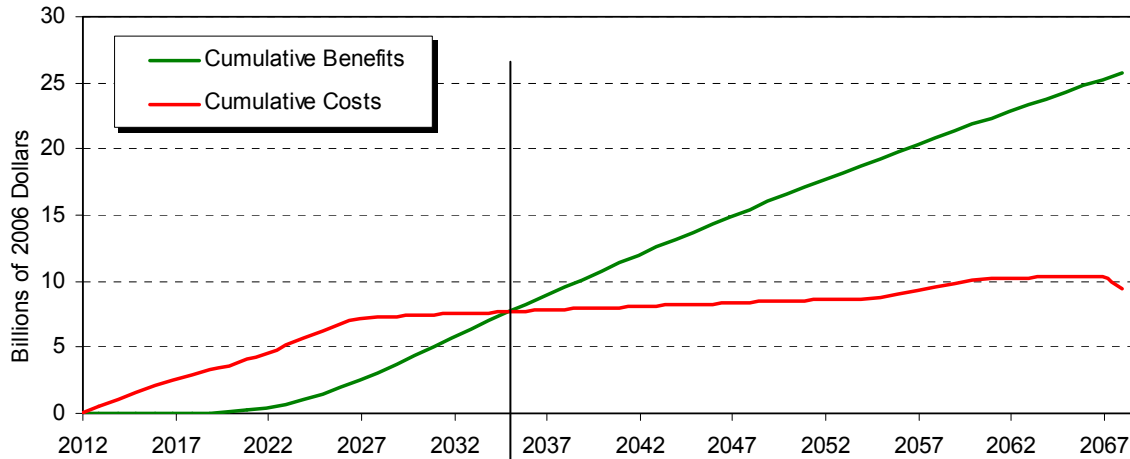
Cumulative Present Values (0.4% 12-Year Draft Plan)



Cumulative Present Values (0.5% 12-Year Draft Plan)



Cumulative Present Values (0.5% 20-Year Draft Plan)



PSRC Conformity Schedule

- June 12th Transportation Policy Board
 - Board briefed on draft results
- June 26th Executive Board
 - PSRC staff presents status report to Executive Board
- July 10th Transportation Policy Board
 - Board recommends conformity finding to Exec Board
- July 24th Executive Board
 - Board certifies ST2 Plan conformity

Appendix

ST2 Update Benefit-Costs Analysis

Economic Evaluation Measures

- Net Present Value (NPV)
 - Indication of the overall dollar magnitude of the ST2 net benefits in today's dollars
 - Net Present Benefit – Net Present Cost = Net Present Value
- Economic Rate of Return
 - Real discount rate that makes the present value of all costs equal the present value of all benefits
 - Percentage “return on the investment”
 - If return > low-risk bonds it is “economically worthwhile”
- Benefit/Cost Ratio
 - Present value of benefits divided by present value of costs
 - Ratio of > 1.0 is necessary for project to be economically feasible

Model Assumptions

- Evaluation Period
 - Construction only/No benefits 2012-2018
 - Partial operations/Partial benefits 2019-2020
 - Full operations/Full benefits 2021-2060
- Discount rate of 3%
 - Indication of the real time value of resources after controlling for inflation
 - Benefits and costs are valued less today the further out in time they occur

Benefits Included in the Analysis

- Transit user travel time savings
- Mobility benefits for non-transit users
- Auto operating & ownership cost savings
- Accident reduction / safety benefits
- Reduced parking requirements
- Environmental/air quality benefits

Benefits NOT Included in the Analysis

- Travel time reliability improvements
- Newly induced travel attributable to transit investments
- Multiplied employment, earnings and income effects of investment expenditures
- Property value increases near stations
- Reduced requirements for “un-priced” parking (e.g., free parking at employment sites)
- Greenhouse gas reduction impacts (global warming)
- Accident/safety benefits of rail over bus

Costs Included in the Analysis

- Capital expenditures for the rail system
- Annual operating and maintenance (O&M)
- Periodic rehabilitation and replacement (e.g., new vehicles)
- Residual values
 - Unused/remaining value of long-lived assets at the end of evaluation period (“resale” value)

Costs NOT in the Analysis

- ST Express projects
- Light rail studies and ROW preservation

Sensitivity Tests

1. 15% increase in all calculated benefits
2. 15% decrease in all calculated benefits
3. 15% increase in initial capital costs
4. 15% decrease in initial capital costs
5. 10-year increase in the evaluation period
6. No real wage growth in calculating the value of time
(reduces future value of benefits)