



600 NE Grand Ave.  
Portland, OR 97232-2736

## Council work session agenda

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Tuesday, February 21, 2017

2:00 PM

Metro Regional Center, Council Chamber

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**2:00 Call to Order and Roll Call**

**2:05 Chief Operating Officer Communication**

**Work Session Topics:**

2:10 Multi-Criteria Evaluation/Least Cost Planning Tool Status

[17-1400](#)

Presenter(s): Jeff Frkonja, Metro

Kyle Hauger, Metro

Attachments: [Work Session Worksheet](#)

**3:00 Metro Attorney Communication**

**3:10 Councilor Communication**

**3:30 Adjourn**

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### សេចក្តីជូនដំណឹងអំពីការមិនរើសអើងរបស់ Metro

ការគោរពសិទ្ធិពលរដ្ឋរបស់ ។ សំរាប់ព័ត៌មានអំពីកម្មវិធីសិទ្ធិពលរដ្ឋរបស់ Metro ឬដើម្បីទទួលបានការបណ្តឹងរើសអើងសូមចូលទស្សនាគេហទំព័រ [www.oregonmetro.gov/civilrights](http://www.oregonmetro.gov/civilrights)។

បើលោកអ្នកត្រូវការអ្នកបកប្រែភាសានៅពេលអង្គប្រជុំសាធារណៈ សូមទូរស័ព្ទមកលេខ 503-797-1890 (ម៉ោង 8 ព្រឹកដល់ម៉ោង 5 ល្ងាច ថ្ងៃធ្វើការ) ប្រាំពីរថ្ងៃ ថ្ងៃធ្វើការ មុនថ្ងៃប្រជុំដើម្បីអាចឲ្យគេសម្រួលតាមសំណើរបស់លោកអ្នក ។

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**MULTI-CRITERION EVALUATION/LEAST COST PLANNING  
TOOL STATUS**

Metro Council Work Session  
Tuesday, February 21, 2017  
Metro Regional Center, Council Chamber



# METRO COUNCIL

## Work Session Worksheet

**PRESENTATION DATE:** February 21, 2017

**LENGTH:** 45 minutes

**PRESENTATION TITLE:** Multi-Criterion Evaluation/Least Cost Planning Tool Status

**DEPARTMENTS:** Research Center, Planning and Development

**PRESENTER(S):** Jeff Frkonja, [jeff.frkonja@oregonmetro.gov](mailto:jeff.frkonja@oregonmetro.gov) x1897  
Kyle Hauger, [kyle.hauger@oregonmetro.gov](mailto:kyle.hauger@oregonmetro.gov) x1813  
Elissa Gertler, [elissa.gertler@oregonmetro.gov](mailto:elissa.gertler@oregonmetro.gov) x1752

### WORK SESSION PURPOSE & DESIRED OUTCOMES

#### Purpose:

Provide to Council a status report on the Multi-Criterion Evaluation (MCE) Phase 1 tool development, outline intended Phase 2 efforts, and obtain Council members' thoughts on both the Phase 1 results and the potential Phase 2 steps.

#### Outcome:

Obtain Council input in general and particularly on expectations they may have that would inform staff's detailed scoping of Phase 2.

### TOPIC BACKGROUND & FRAMING THE WORK SESSION DISCUSSION

#### Previous Conversations and Conclusions

As Councilors may recall, Council directed Research Center (RC) staff via budgeting funds in FY15-16 to assess and recommend to Council a course of action that could produce for Metro a "Least Cost Planning" analysis capability. RC staff conducted their own research, coordinated with Planning & Development staff, and used part of the FY15-16 funding to engage consultant support. The FY15-16 effort produced recommendations to (a) scope the effort more broadly than the traditional LCP approach in the form of Multi-Criterion Evaluation (MCE) capability and (b) to carry out a work plan carefully designed to ensure that a Metro MCE tool would incorporate evaluation criteria relevant to Metro's "triple bottom line" philosophy and be consistent with the Regional Transportation Plan (and other Metro planning efforts such as the Climate Smart Strategy).

#### Status Summary

In response to the FY15-16 work and discussions Council endorsed staff recommendations and added RC budget in FY16-17 to the carryover from FY15-16 to fund a multi-year phased MCE tool development effort totaling \$275,000 of M&S expenditures. RC staff engaged a consultant team consisting of RSG Incorporated and EcoNorthwest to carry out development, coordinated with Planning staff on design details, and are scheduled to complete Phase 1 on the contracted scope, schedule, and Phase 1 \$125,000 budget by end February 2017. As intended, the Phase 1 work leaves \$150,000 for Phase 2. Phase 2 will extend into FY17-18.

#### Phase 1 MCE Tool Features

Phase 1 work produced for Metro a functional MCE tool capable of monetizing benefits versus costs for the staff-recommended Phase 1 evaluation criteria. RC staff are currently working to fully validate the tool in the context of Metro's existing travel model. Staff will give Council an overview of the Phase 1 MCE tool features at the work session.

### Potential Phase 2 Tool Enhancements

Given that the consultant team and Metro staff have momentum going on the project RC proposes to segue directly into Phase 2 work. Some of that work consists of relatively straightforward software and methodological enhancements. Other aspects of that work present Metro with certain options. The two main choices are how Metro's MCE capability might treat secondary or tertiary evaluation factors (such as indirect economic benefits) and how Metro could choose to establish relative weights for the different MCE evaluation criteria. Staff will frame possible choices during the work session to enable Council to offer their thoughts on the options.

### **QUESTIONS FOR COUNCIL CONSIDERATION**

- Does the Council have any questions for staff?
- Does Council have any observations to offer on the Phase 1 deliverables of the MCE tool?
- Does Council have any observations or suggestions on the potential focus of effort for Phase 2?

### **PACKET MATERIALS**

- Would legislation be required for Council action     Yes    **X No**
- If yes, is draft legislation attached?                     Yes    **X No**
- What other materials are you presenting today?
  - Staff will provide a presentation during the work session.

Materials following this page were distributed at the meeting.

# Metro's Least Cost Planning/Multi-Criteria Evaluation toolkit

Phase 1 Status Report

Phase 2 Look-Ahead

Metro Council Work Session

February 21, 2017

Jeff Frkonja, Director, Research Center

Kyle Hauger, Senior Modeler, Research Center



Metro | *Making a great place*



# Agenda

- History: how we got to now
- Phase 1 status report/tool overview
- Phase 2 and 3 thoughts
- Discussion



# History



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# Timeline

## FY15-16

- Council: \$50K to RC to scope “Least Cost Planning” (LCP) analytic tool

## November 2015

- RC recommended
  - “borrow and enhance”
  - Broader “Multi Criterion Evaluation” (MCE)
- Council asked for detailed scope & budget
- RC engaged consultant

## Spring 2016

- RC recommended MCE approach (phased)
- \$275K total (incl. carryover) for phased work

# MCE Objectives

Enhance Metro's transportation decision-support tools:

- Use a *benefit-cost-analysis* kernel in a “*triple bottom line*” framework
- Treat travel forecasts & costs holistically (“*roll-up*”)
- Make different measures comparable (“*apples to apples*”)
- Understand who benefits (“*equity*”)
- Do all the above reasonably quickly & efficiently (“*cost-effective analytics*”)

Support Multiple Levels of Analysis:

- *Plan*
- *Corridor or “Package”*
- *Project (major)*

# Original Phasing Plan

Phase	Schedule	Budget
1: Build BCA calculator, cost-tracker, and visualizer-- <i>built on FHWA work</i> --with advanced features	Complete February 2017	\$125,000
2: Add non-monetized measures, conduct technical outreach, weight the measures	Complete June 2018	\$150,000
3: Add “indirect” economic measures	December 2018 (tentative)	\$80,500 *

\* *Not yet adopted*



# RC—Planning Dept. Coordination

Principles for an LCP/MCE toolkit:

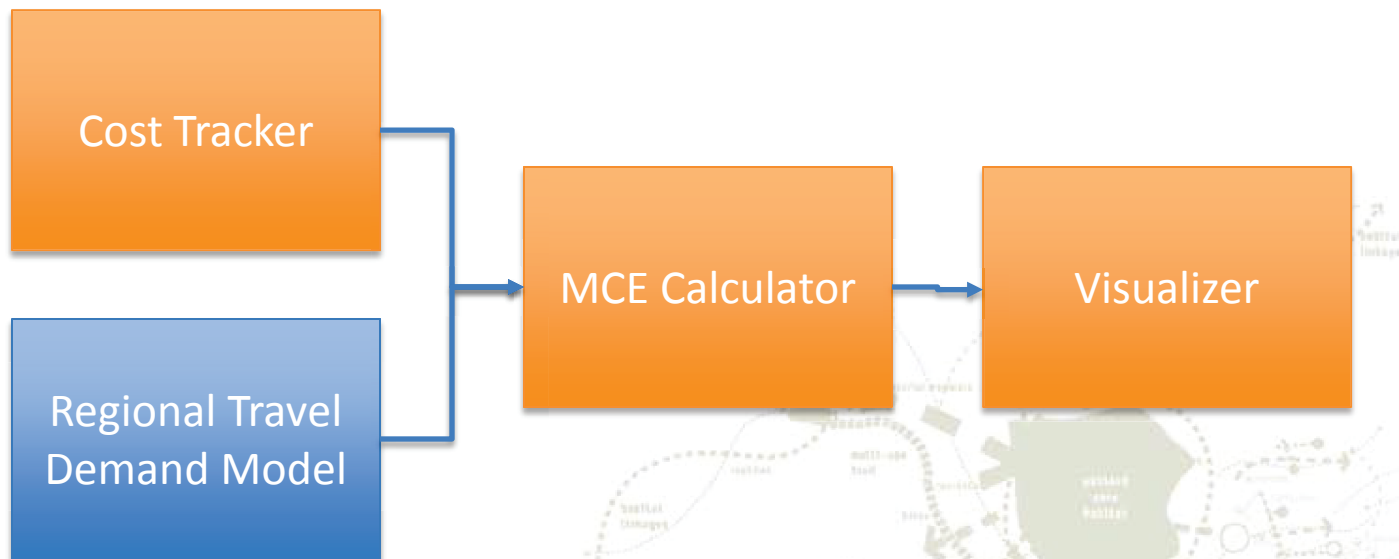
- *Ensure consistency with RTP and other policy objectives*
- *Ensure wise application...*
  - *Actually help to inform the decision*
  - *Structure planning processes to provide stakeholder understanding of the tool*

# RC-Planning Coordination

## *From Spring 2016...*

Potential MCE Applications	Timing	Utility	Resource Intensity	Decision Support	Available Resources	Programmatic Alignment	Overall Readiness Score
1. Regional Transportation Investment Package	***	***	***	***	*	*	2.3
2. 2022-24 Regional Flexible Funds Allocation	***	***	***	***	**	***	2.8
3. 2022 RTP Update	***	***	**	**	**	***	2.5
4. Future Corridor and Investment Area Plans	***	***	***	***	***	***	3.0
5. 2018-21 Regional Flexible Funds Allocation	*	***	***	***	*	**	2.2
6. 2018 RTP Update	*	***	**	**	*	**	1.8
7. 2018 Regional Transit Strategy	*	**	**	**	*	*	1.5
8. 2018 Regional Freight Strategy	*	**	**	**	*	*	1.5
9. Powell-Division Transit Development Project	*	***	***	***	*	*	2.0
10. Southwest Corridor Project	*	***	***	***	*	*	2.0

# Phase 1 MCE Status Report





# Phase 1 Status

## Tasks

- *Cost Tracker*: completed
- *Visualizer*: complete end February
- *Calculator*: complete end February
- Outstanding tasks next two weeks:
  - Complete function-testing of all Calculator measures
  - Refine the Visualizer in light of test experience
  - Finalize documentation

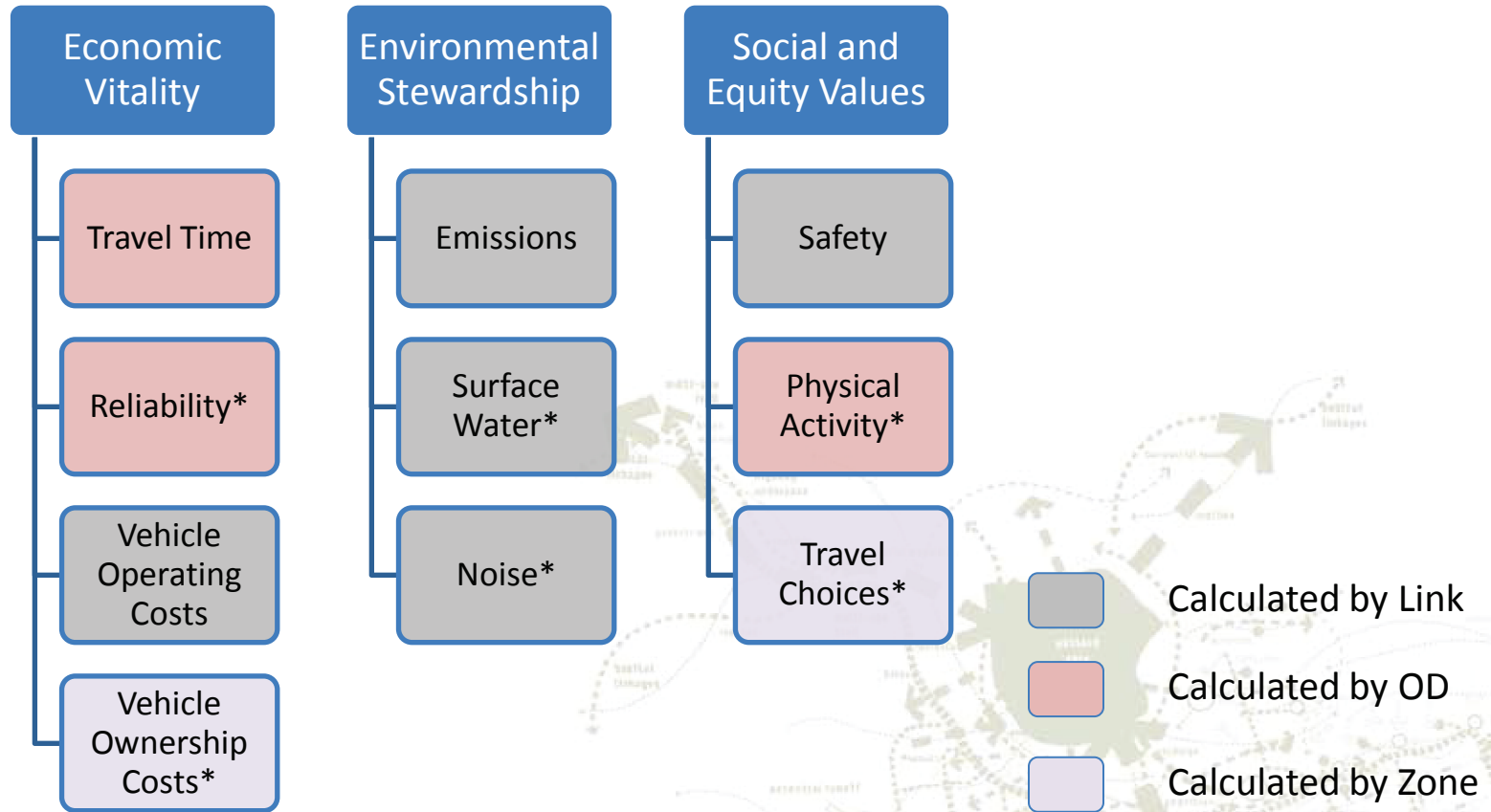
## Schedule

- On time

## Budget

- On Budget (\$125K M&S)

# MCE Benefits → Triple-Bottom Line



\* These benefits are based on emerging methods where other benefits are based on mature benefit calculations.



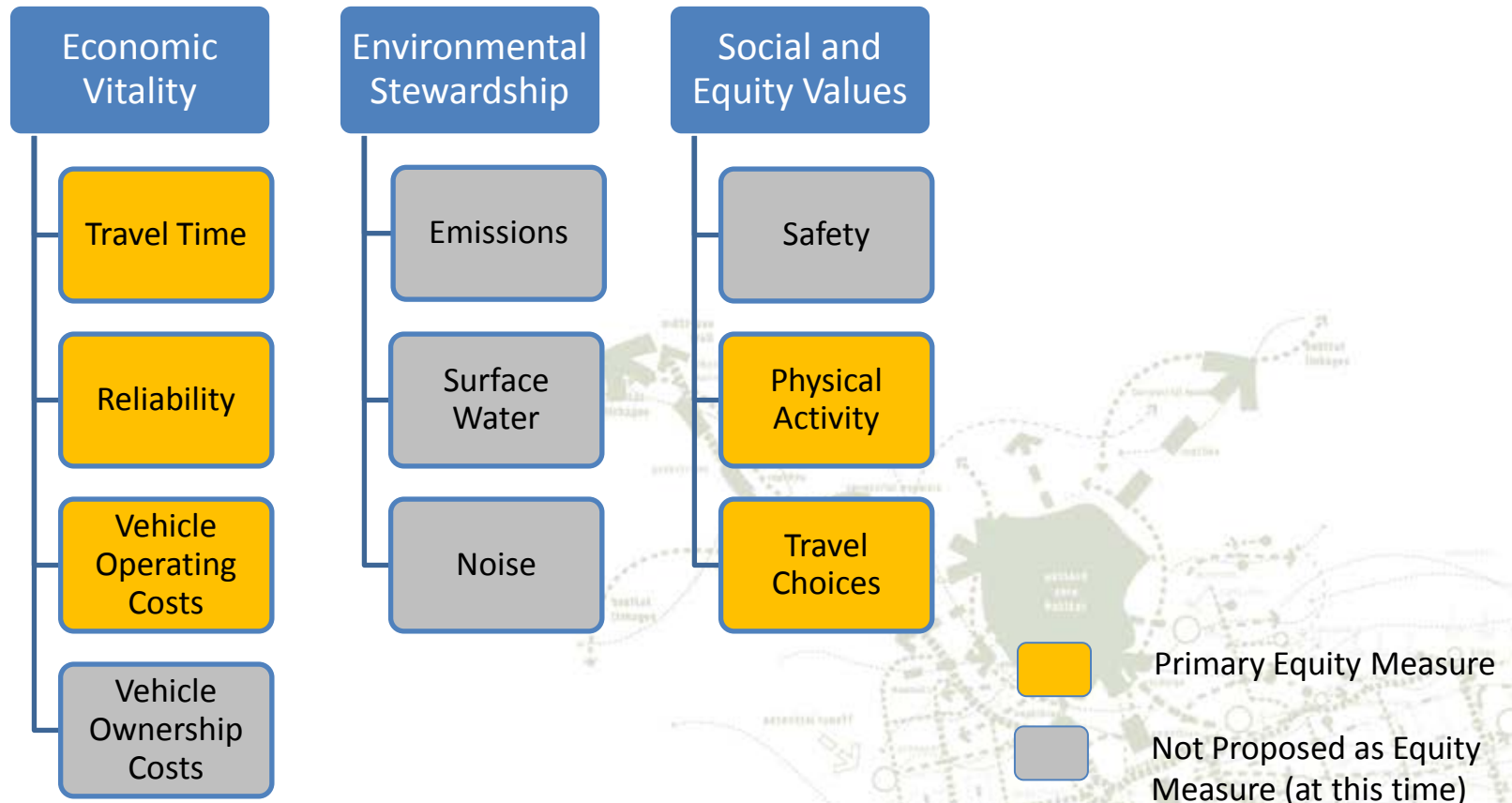
# RC-Planning Coordination

• RC consulted Planning subject-matter experts, RTP manager, and Policy Development Manager during MCE tool design phase on...

- Overall features
- Equity
- Safety
- Reliability
- Travel options
- Physical activity
- Potential application process & outreach

...and made design changes to many MCE toolkit features as a result.

# Equity: “who benefits?”



# Equity Populations: RTP Definitions

Age Groups: Younger than 18 and older than 65

Low English proficiency (LEP)

Household Income less than \$25,000 per year

Racial/Ethnic minorities

# Metro MCE Tool Tests

Two *synthesized*, project-scale “build” scenarios

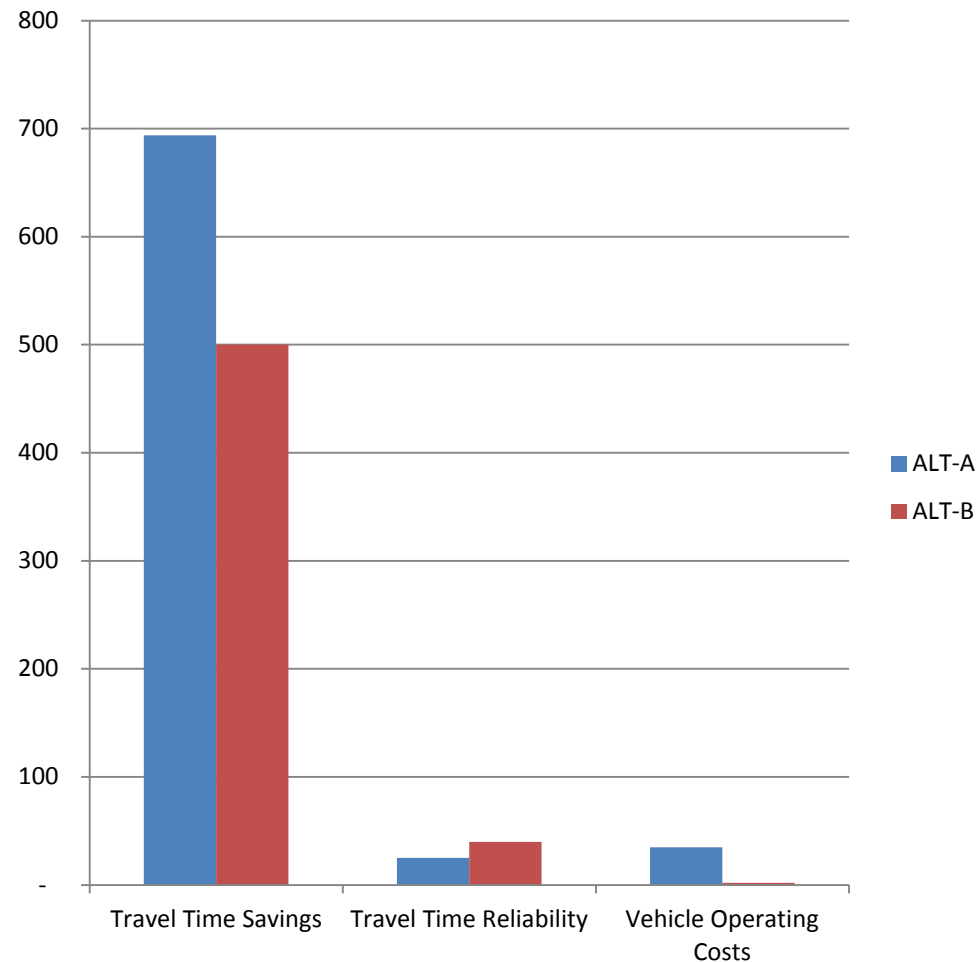
2040 RTP No-Build as reference scenario

Staff applied MCE tool to travel model outputs from the test scenarios to:

- Function-test MCE Calculator
- test MCE methods
- Test the Visualizer

# Economic Vitality

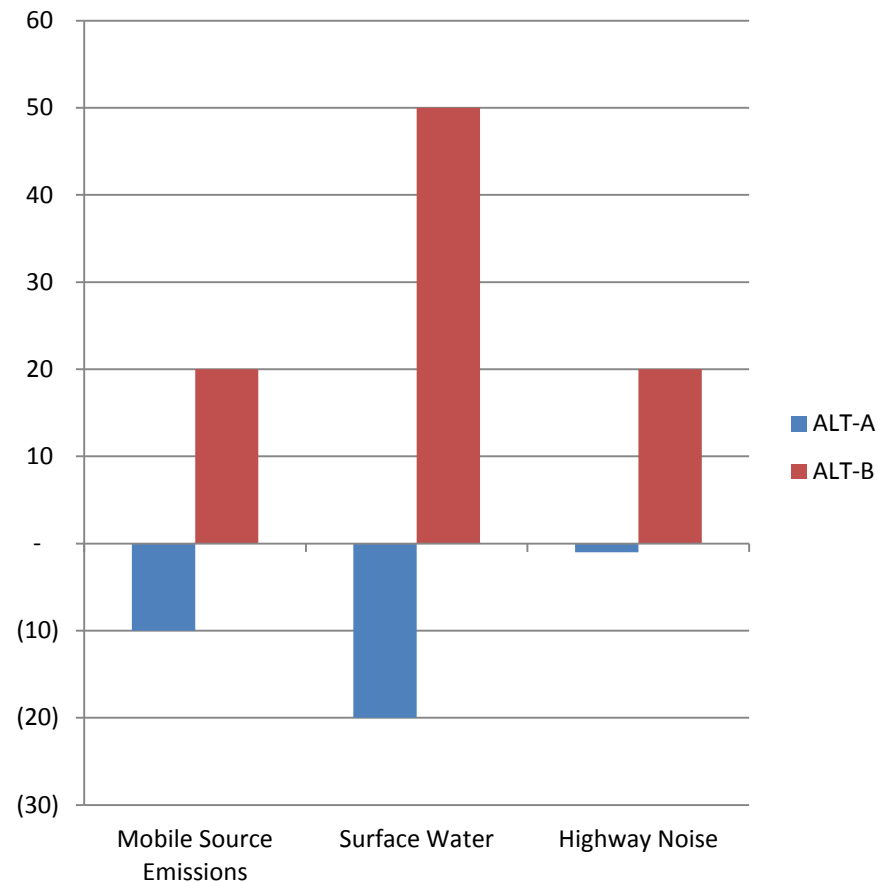
Forecast 2040 Annual Benefits Relative to No-Build  
(millions of 2040 \$)



Source: UNWEIGHTED results from Metro Research Center MCE Phase 1 Test Suite

# Environmental Stewardship

Forecast 2040 Annual Benefits Relative to No-Build (thousands of 2040 \$)

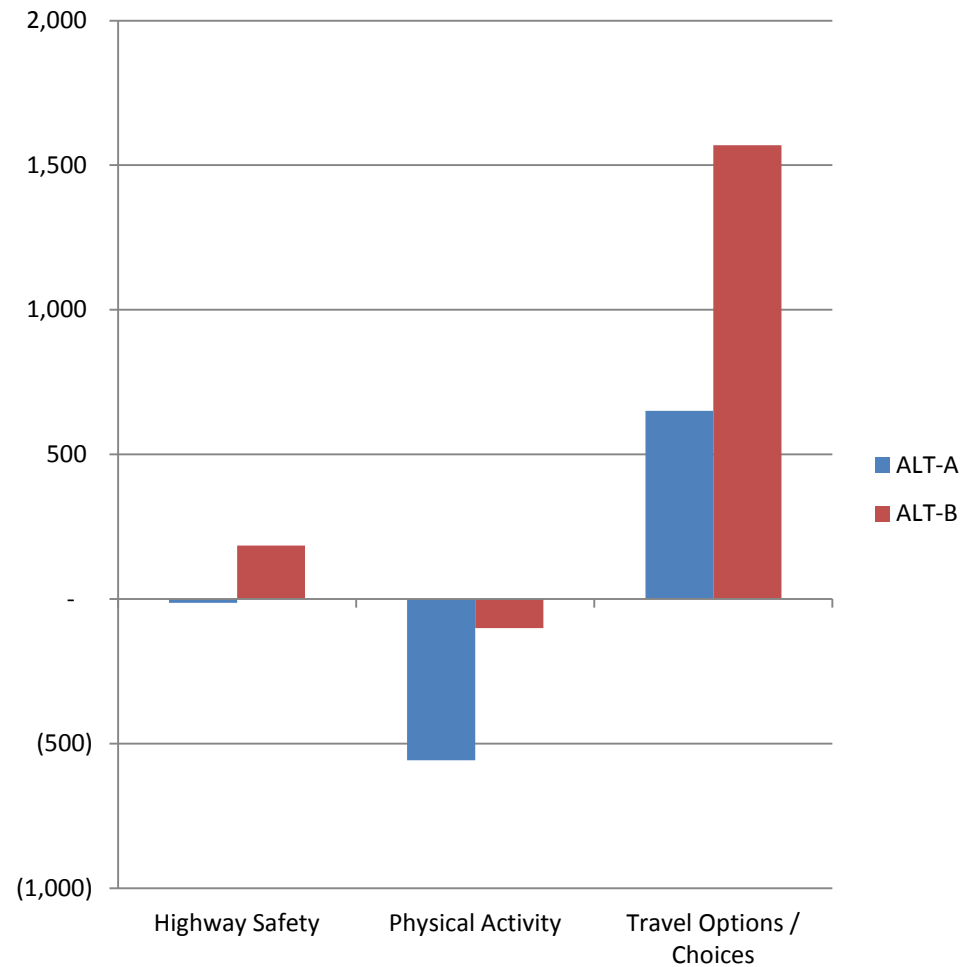


Source: UNWEIGHTED results from Metro Research Center MCE Phase 1 Test Suite



# Social Goods

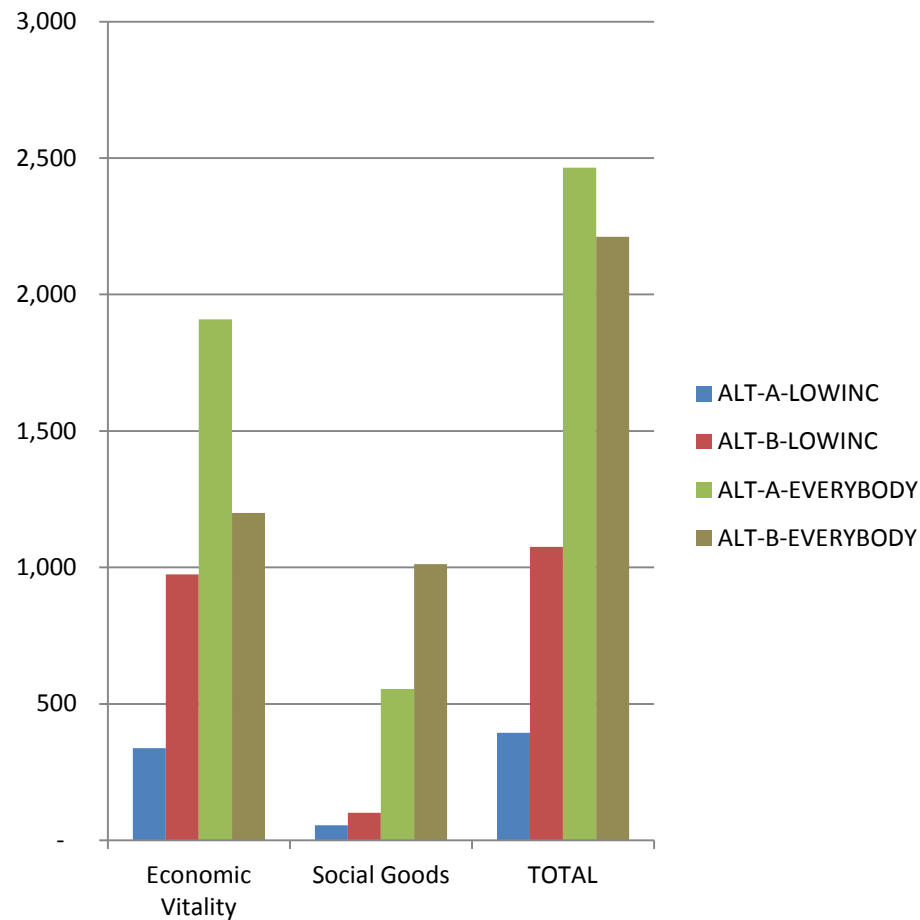
Forecast 2040 Annual Benefits Relative to No-Build  
(thousands of 2040 \$)



Source: UNWEIGHTED results from Metro Research Center MCE Phase 1 Test Suite

# Equity Summaries

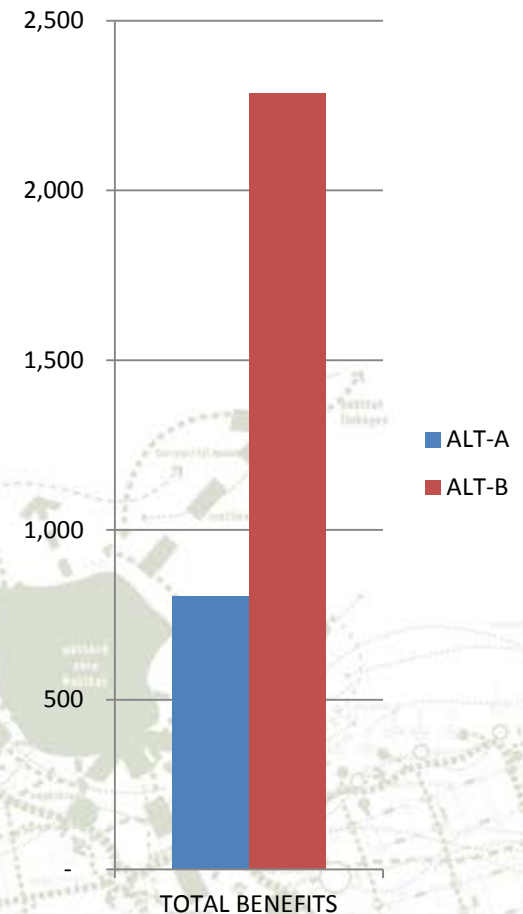
Forecast 2040 Annual Equity Benefit Measures  
Low Income vs. All Travelers (thousands of 2040 \$)



Source: UNWEIGHTED results from Metro Research Center MCE Phase 1 Test Suite

# Total Benefits--“Rollup”

Criterion	Measure	ALT-A	ALT-B
Economic Vitality	Travel Time Savings	694	500
	Travel Time Reliability	25	40
	Vehicle Operating Costs	35	2
	Vehicle Ownership Costs	-	-
Environmental Stewardship	Mobile Source Emissions	(10)	20
	Surface Water	(20)	50
	Highway Noise	(1)	20
Social Goods	Highway Safety	(13)	186
	Physical Activity	(557)	(100)
	Travel Options / Choices	651	1,569
	<b>TOTAL BENEFITS</b>	<b>804</b>	<b>2,287</b>



Source: UNWEIGHTED results from Metro Research Center MCE Phase 1 Test Suite



# Phase 1 Conclusion

**As of March 2017 Metro will have a functional LCP/MCE toolkit**



# Phase 2 Thoughts



# Phase 2 Work

RC staff propose...

- More-automated workflow + travel model integration for more efficient user experience
- Enhanced travel model features (our Planning colleagues would value these)
  - Safety
  - Auto ownership benefits
- Fully-featured, web-accessible Visualizer
- Tests of more-realistic scenarios
- Technical outreach
  - Planning & Development staff
  - Metro Technical Committees

# Phase 2 or 3 Potential Work

For discussion...

- Add ways to make benefits understandable in stakeholder terms?
  - Effects on land values
  - Effects on employment location
  - Effects on residential location
- Process outreach to a broader audience?
  - Metro policy committees
  - External Stakeholders & Partners
- Weight the criteria (Council & JPACT) ?

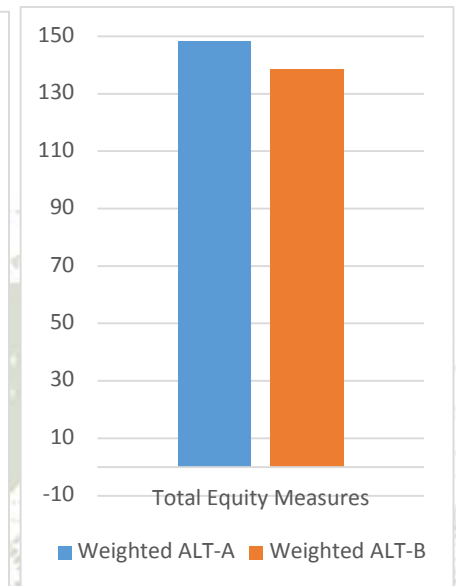
These choices should be tied to potential use of the tool

- **Planning staff suggest the 2022/2023 RTP**
- **This suggests that weighting move to Phase 3**

# Why we talk about “weighting”

Weighting assigns decision-makers’ values to measures and/or criteria.

	Unweighted		Weighted	
	ALT-A	ALT-B	ALT-A	ALT-B
Physical Activity	-2	8	-2	8
Travel Options / Choices	51	63	76	95
Travel Time	28	9	28	9
Travel Time Reliability	1	0	1	0
Vehicle Ownership Costs	46	46	46	46
<b>Total Equity Measures</b>	<b>123</b>	<b>127</b>	<b>148</b>	<b>139</b>





# How we might do “weighting”

Range of options...

No Weights  
(accepts  
market  
valuations)

Delphi  
Process  
(facilitated  
discussion)

Statistical  
Survey



# Discussion

Does the Council have any questions for staff?

Does Council have any observations to offer on the Phase 1 deliverables of the MCE tool?

Does Council have any observations or suggestions on the potential focus of effort for Phase 2?

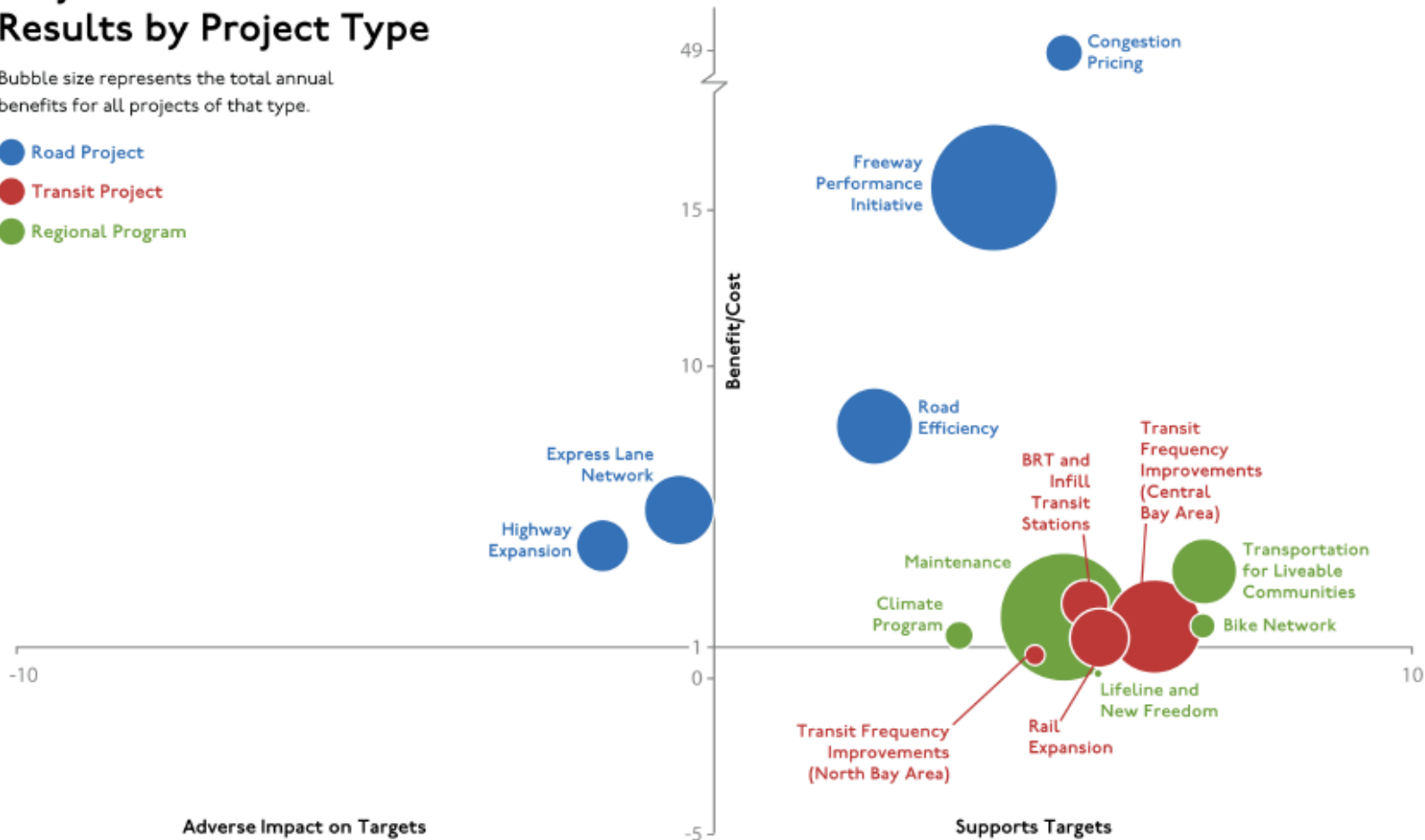


# Example Project Assessment Combining MCE Benefits and Other Criteria

## Project Performance Assessment: Results by Project Type

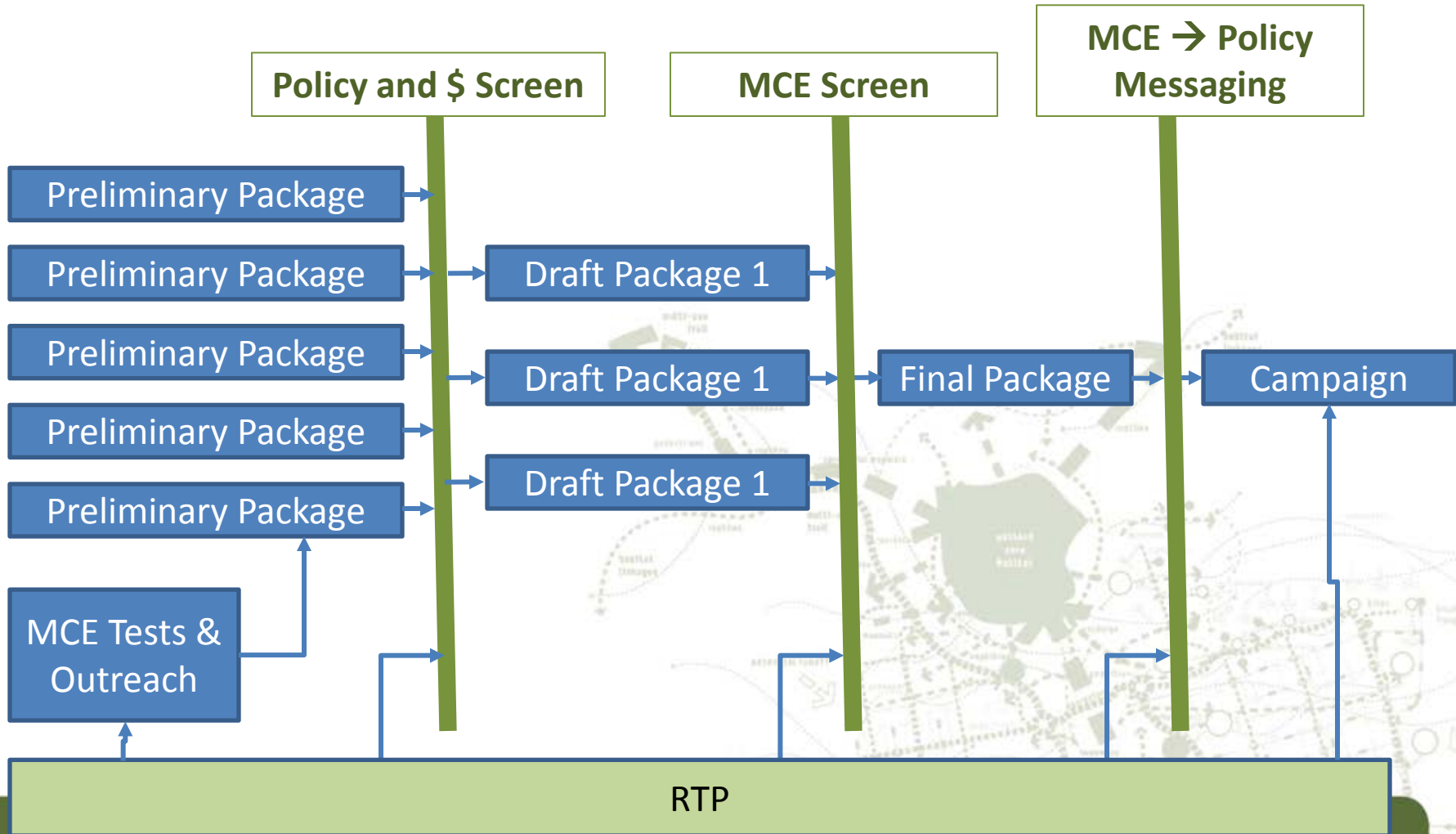
Bubble size represents the total annual benefits for all projects of that type.

- Road Project
- Transit Project
- Regional Program



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# Potential Process Flow



# The MCE tool “kit”

