Metro | *Agenda*

Meeting:	**Metro Council Work Session**
Date:	Tuesday, November 10, 2015
Time:	2:00 p.m.
Place:	Metro Regional Center, Council Chamber

CALL TO ORDER AND ROLL CALL

2:00 PM   **1.**   **CHIEF OPERATING OFFICER COMMUNICATION**

2:10 PM   **2.**   **GREATER PORTLAND INC. UPDATE**   **Janet LaBar, Greater Portland Inc.**

3:00 PM   **3.**   **LEAST COST PLANNING DEVELOPMENT**   **Jeff Frkonja, Metro**
                                                            Elissa Gertler, Metro

4:00 PM   **4.**   **COUNCILOR LIAISON UPDATES AND COUNCIL COMMUNICATION**

ADJOURN

Metro respects civil rights

Metro fully complies with Title VI of the Civil Rights Act of 1964 and related statutes that ban discrimination. If any person believes they have been discriminated against regarding the receipt of benefits or services because of race, color, national origin, sex, age or disability, they have the right to file a complaint with Metro. For information on Metro's civil rights program, or to obtain a discrimination complaint form, visit www.oregonmetro.gov/civilrights or call 503-797-1536. Metro provides services or accommodations upon request to persons with disabilities and people who need an interpreter at public meetings. If you need a sign language interpreter, communication aid or language assistance, call 503-797-1890 or TDD/TTY 503-797-1804 (8 a.m. to 5 p.m. weekdays) 5 business days before the meeting. All Metro meetings are wheelchair accessible. For up-to-date public transportation information, visit TriMet's website at www.trimet.org.

Thông báo về sự Metro không kỳ thị của

Metro tôn trọng dân quyền. Muốn biết thêm thông tin về chương trình dân quyền của Metro, hoặc muốn lấy đơn khiếu nại về sự kỳ thị, xin xem trong www.oregonmetro.gov/civilrights. Nếu quý vị cần thông dịch viên ra dấu bằng tay, trợ giúp về tiếp xúc hay ngôn ngữ, xin gọi số 503-797-1890 (từ 8 giờ sáng đến 5 giờ chiều vào những ngày thường) trước buổi họp 5 ngày làm việc.

Повідомлення Metro про заборону дискримінації

Metro з повагою ставиться до громадянських прав. Для отримання інформації про програму Metro із захисту громадянських прав або форми скарги про дискримінацію відвідайте сайт www.oregonmetro.gov/civilrights. або Якщо вам потрібен перекладач на зборах, для задоволення вашого запиту зателефонуйте за номером 503-797-1890 з 8.00 до 17.00 у робочі дні за п'ять робочих днів до зборів.

Metro 的不歧視公告

尊重民權。欲瞭解Metro民權計畫的詳情，或獲取歧視投訴表，請瀏覽網站 www.oregonmetro.gov/civilrights。如果您需要口譯方可參加公共會議，請在會議召開前5個營業日撥打503-797-1890（工作日上午8點至下午5點），以便我們滿足您的要求。

Ogeysiiska takooris la'aanta ee Metro

Metro waxay ixtiraamtaa xuquuqda madaniga. Si aad u heshid macluumaad ku saabsan barnaamijka xuquuqda madaniga ee Metro, ama aad u heshid warqadda ka cabashada takoorista, booqo www.oregonmetro.gov/civilrights. Haddii aad u baahan tahay turjubaan si aad uga qaybqaadatid kullan dadweyne, wac 503-797-1890 (8 gallinka hore illaa 5 gallinka dambe maalmaha shaqada) shan maalmo shaqo ka hor kullanka si loo tixgaliyo codsashadaada.

Metro의 차별 금지 관련 통지서

Metro의 시민권 프로그램에 대한 정보 또는 차별 항의서 양식을 얻으려면, 또는 차별에 대한 불만을 신고 할수www.oregonmetro.gov/civilrights. 당신의 언어 지원이 필요한 경우, 회의에 앞서 5 영업일 (오후 5시 주중에 오전 8시) 503-797-1890를 호출합니다.

Metroの差別禁止通知

Metroでは公民権を尊重しています。Metroの公民権プログラムに関する情報について、または差別苦情フォームを入手するには、www.oregonmetro.gov/civilrights。までお電話ください公開会議で言語通訳を必要とされる方は、Metroがご要請に対応できるよう、公開会議の5営業日前までに503-797-1890（平日午前8時～午後5時）までお電話ください。

សេចក្តីជូនដំណឹងអំពីការមិនរើសអើងរបស់ Metro

ការគោរពសិទ្ធិពលរដ្ឋរបស់ ។ សំរាប់ព័ត៌មានអំពីកម្មវិធីសិទ្ធិពលរដ្ឋរបស់ Metro ឬដើម្បីទទួលពាក្យបណ្តឹងរើសអើងសូមចូលទស្សនាគេហទំព័រ www.oregonmetro.gov/civilrights។ បើលោកអ្នកត្រូវការអ្នកបកប្រែភាសានៅពេលអង្គ ប្រជុំសាធារណ: សូមទូរស័ព្ទមកលេខ 503-797-1890 (ម៉ោង 8 ព្រឹកដល់ម៉ោង 5 ល្ងាច ថ្ងៃធ្វើការ) ក្រៅពីថ្ងៃ ថ្ងៃធ្វើការ មុនថ្ងៃប្រជុំដើម្បីអាចឲ្យគេសម្រួលតាមសំណើរបស់លោកអ្នក ។

إشعار بعدم التمييز من Metro

تحترم Metro الحقوق المدنية. للمزيد من المعلومات حول برنامج Metro للحقوق المدنية أو لإيداع شكوى ضد التمييز، يُرجى زيارة الموقع الإلكتروني www.oregonmetro.gov/civilrights. إن كنت بحاجة إلى مساعدة في اللغة، يجب عليك الاتصال مقدماً برقم الهاتف 1890-797-503 (من الساعة 8 صباحاً حتى الساعة 5 مساءاً، أيام الاثنين إلى الجمعة) قبل خمسة (5) أيام عمل من موعد الاجتماع.

Paunawa ng Metro sa kawalan ng diskriminasyon

Iginagalang ng Metro ang mga karapatang sibil. Para sa impormasyon tungkol sa programa ng Metro sa mga karapatang sibil, o upang makakuha ng porma ng reklamo sa diskriminasyon, bisitahin ang www.oregonmetro.gov/civilrights. Kung kailangan ninyo ng interpreter ng wika sa isang pampublikong pulong, tumawag sa 503-797-1890 (8 a.m. hanggang 5 p.m. Lunes hanggang Biyernes) lima araw ng trabaho bago ang pulong upang mapagbigyan ang inyong kahilingan.Notificación de no discriminación de Metro.

Notificación de no discriminación de Metro

Metro respeta los derechos civiles. Para obtener información sobre el programa de derechos civiles de Metro o para obtener un formulario de reclamo por discriminación, ingrese a www.oregonmetro.gov/civilrights . Si necesita asistencia con el idioma, llame al 503-797-1890 (de 8:00 a. m. a 5:00 p. m. los días de semana) 5 días laborales antes de la asamblea.

Уведомление о недопущении дискриминации от Metro

Metro уважает гражданские права. Узнать о программе Metro по соблюдению гражданских прав и получить форму жалобы о дискриминации можно на веб-сайте www.oregonmetro.gov/civilrights. Если вам нужен переводчик на общественном собрании, оставьте свой запрос, позвонив по номеру 503-797-1890 в рабочие дни с 8:00 до 17:00 и за пять рабочих дней до даты собрания.

Avizul Metro privind nediscriminarea

Metro respectă drepturile civile. Pentru informații cu privire la programul Metro pentru drepturi civile sau pentru a obține un formular de reclamație împotriva discriminării, vizitați www.oregonmetro.gov/civilrights. Dacă aveți nevoie de un interpret de limbă la o ședință publică, sunați la 503-797-1890 (între orele 8 și 5, în timpul zilelor lucrătoare) cu cinci zile lucrătoare înainte de ședință, pentru a putea să vă răspunde în mod favorabil la cerere.

Metro txoj kev ntxub ntxaug daim ntawv ceeb toom

Metro tributes cai. Rau cov lus qhia txog Metro txoj cai kev pab, los yog kom sau ib daim ntawv tsis txaus siab, mus saib www.oregonmetro.gov/civilrights. Yog hais tias koj xav tau lus kev pab, hu rau 503-797-1890 (8 teev sawv ntxov txog 5 teev tsaus ntuj weekdays) 5 hnub ua hauj lwm ua ntej ntawm lub rooj sib tham.

Metro | Making a great place

GREATER PORTLAND INC. UPDATE

Metro Council Work Session
Thursday, November 10, 2015
Metro Regional Center, Council Chamber

GREATER PORTLAND 2020
One Region. One Future.

CREATING THE FUTURE WE WANT

Greater Portland 2020 is an unprecedented, collaborative action plan for the Greater Portland of tomorrow. It's an ambitious agenda, envisioned and created by more than 40 public and private organizations throughout the region to pursue the future we want, not the future that's handed to us.

WHY WE NEED GREATER PORTLAND 2020

In the competitive global marketplace, pioneering regions take decisive action. They invest in education and capture the attention of talent, existing and future, to engage a nimble, new class of leaders and businesses. They create conditions necessary to spur innovation and entrepreneurship. They build systems and infrastructure to support the needs of the people and businesses to move their region forward.

For Greater Portland to compete in this arena and create prosperity and resiliency—now and for the future—we must act together to build an economic landscape where we can thrive. We must create the region we want.

ECONOMIC PROSPERITY FOR ALL

The Greater Portland 2020 goal is *economic prosperity for all across the region*, which requires alignment by Greater Portland's business, education and civic leaders.

The plan focuses on *three core strategies*, guided by an emphasis in *equity and advancement*:

> **"**
> # THE PRICE OF GREATNESS IS RESPONSIBILITY
> — *Winston Churchill*

PEOPLE
Talent development and recruitment

PRIORITIES

1. Advance career technical education by activating industry in training and education
2. Own, practice and perfect diversity
3. Close the income gap in underrepresented, disadvantaged populations

WHAT WE'RE AIMING FOR

- Fully prepared workforce
- Best metro in which diverse talent thrive
- Access for all to quality jobs

BUSINESS
Growing business and pioneering innovation

PRIORITIES

1. Execute a regional approach to industries
2. Make Greater Portland a top location for global investment and trade
3. Sharpen the region's competitiveness for jobs and investment
4. Connect entrepreneurial support initiatives and networks across the bi-state region
5. Develop a regional public-private higher education innovation network

WHAT WE'RE AIMING FOR

- Net new traded-sector jobs
- Best location for international investment
- Support for early/second-stage and seamless innovation platforms

PLACE
Infrastructure that meets the needs of business, people and innovation

PRIORITIES

1. Improve region's transportation capabilities to alleviate congestion, enhance transit and augment freight movement
2. Identify future needs for jobs-ready industrial and employment lands
3. Address regional housing supply and affordability
4. Plan for Greater Portland's economic resiliency

WHAT WE'RE AIMING FOR

- Seamless movement of goods, people, ideas
- Coordinated portfolio of competitive offerings across bi-state metro
- Efficiencies in resolving needs as more people live/work closer to each other

GREATER PORTLAND 20|20

YES@GREATERPORTLAND2020.COM

LEAST COST PLANNING DEVELOPMENT

Metro Council Work Session
Thursday, November 10, 2015
Metro Regional Center, Council Chamber

METRO COUNCIL

Work Session Worksheet

PRESENTATION DATE: November 10, 2015	**LENGTH:** 50 minutes

PRESENTATION TITLE: Least Cost Planning Development

DEPARTMENTS: Research Center, Planning and Development

PRESENTER(S):   Jeff Frkonja,   jeff.frkonja@oregonmetro.gov x1897
Elissa Gertler, elissa.gertler@oregonmetro.gov x1752

WORK SESSION PURPOSE & DESIRED OUTCOMES

Purpose:

Brief Council on potential benefits of developing a Least Cost Planning capability at Metro, how such a process could be used, and what resources would be needed beyond the $100,000 already appropriated for LCP development and piloting in FY15-16.

Outcome:

Obtain Council guidance to staff on the desired outcomes of a Least Cost Planning capability, what particular technical development approach seems most useful, what subject of a LCP first application or pilot Council would prefer, and the scale of additional resources that might be made available.

TOPIC BACKGROUND & FRAMING THE WORK SESSION DISCUSSION

Background

Least Cost Planning (LCP) is an investment decision support system that originated in the power utility industry. Originally based largely on benefit-cost analysis (BCA), the technique evolved to include other non-monetized measures and enabled utility planning efforts that invested in conservation programs as an adjunct to or means of "right-sizing" new generation assets. Transportation planning professionals and decision-makers adopted BCA and LCP techniques to support transportation investment decisions some time ago and have now accrued a range of actual LCP applications in the transportation field. LCP evolved further in its most successful applications to transportation decisions to the extent that current best-practice examples are now more properly categorized as Multi-Criterion Evaluation (MCE) exercises. The more compelling LCP/MCE transportation decision support examples explicitly address a comprehensive array of social, environmental, economic, system performance, and financial metrics and in so doing offer a robust framework for conducting triple bottom line (TBL or 3BL) evaluations. Excerpts from some real-world examples appear in Appendix A of this document.

Metro has a long track record of developing and applying performance measures to inform decisions regarding transportation policy and transportation investments. That work—much of it encoded in the current Regional Transportation Plan—provides a solid foundation for development work leading to LCP/MCE capabilities. Metro's existing evaluation criteria are very much aligned with a TBL approach, so LCP/MCE development could be viewed as an "upgrade" to Metro capability rather than a "replacement."

Why might Metro develop a "Least Cost Planning"/"Multi Criterion Evaluation" capacity?

Metro continuously seeks to improve its decision support capabilities. Examples of key decision objectives that would benefit from further development are social and geographic equity, public health outcomes, economic outcomes, and potential benefits of safety and reliability improvements. Metro also desires to maintain a national leadership role in transportation planning so it is noteworthy that many of its peer Metropolitan Planning Organizations (MPOs) now apply LCP/MCE decision support tools.

What can LCP/MCE techniques do that Metro can't do now?

The peer agency examples described further below show that several enhanced capabilities can accrue from deploying well-designed LCP/MCE processes:

- Enhanced apples-to-apples comparison of evaluation criteria (as much as technically feasible).
- Integrated understanding of costs and benefits (via explicit benefit-cost analysis).
- Complex outcomes "rolled up" into one metric. For example, travel time savings in different corridors or facilities may be difficult to compare directly but can be captured in total in a region-wide mobility benefit measure.
- More robust treatment of many criteria (especially equity) than qualitative approaches.
- A coherent narrative explaining how the decision-makers evaluate possible investments against desired outcomes.
- Clearly-visualized decision support information.

How would LCP/MCE be applied in practice?

It is crucial to be aware that LCP/MCE is a planning process that is supported by specific types of technical tools. The tools by themselves provide little value if they are not used in a well-executed process that appropriately engages decision-makers and stakeholders and gives everyone ample opportunity to understand the process, the decision support information, and the stakes at hand. Although the specific order could vary somewhat, successful LCP/MCE decision processes generally execute the following steps (note that some iteration between steps is often necessary):

1. *Identify the subject of the decision*

    Metro Council, working in conjunction with the Metro Policy Advisory Committee (MPAC) and the Joint Policy Advisory Committee on Transportation (JPACT), would identify the subject of the decision process. In the first instance at Metro this could consist of a hypothetical scenario designed by staff to test the various features of the analytic toolkit as a pilot for Council and other policymakers to understand how the process and its tools work. There are other planning activities that could also serve as a pilot for this effort, such as a regional transportation funding investment package or a future corridor study.

2. *Design criteria that inform the decision and address Metro objectives*

    Planning & Development and Research Center staff would tailor an analytic toolkit that comprehensively incorporates regional values via criteria that can meaningfully be analyzed, starting with the criteria and target outcomes now encoded in the adopted 2014 RTP and other regional planning documents. Council, MPAC and JPACT could choose to refine or define target outcomes for some or all of the criteria that establish "yardsticks" for comparing possible alternatives. The decision support process can thus be made more outcomes-based.

3. *Devise methods that make evaluation criteria measurable and comparable*

    Planning & Development and Research Center staff would design methods that would ensure that forecasted outcomes are properly measured and converted, to the best extent possible, into comparable terms such as dollars or some normalized score (e.g. zero to one hundred).

4. *Engage decision-makers to weight or prioritize the criteria*

    Council, MPAC and JPACT would engage in discussions or a statistical exercise that would establish the relative importance of the different evaluation criteria, or to structure the decision process in a manner that ensures all criteria are properly treated. This policy discussion should be informed by a broader stakeholder engagement process to ensure it reflects public priorities.

5. *Apply the evaluation to the actions to be decided*

Staff would apply the criteria evaluations and weighting (or prioritization) established by Council, MPAC and JPACT to produce evaluation findings.

6. *Report the evaluation findings to the decision-makers to support decision*

Staff would report the evaluation findings to Council, MPAC and JPACT, who would then render a decision. The decision should be informed by a broader stakeholder engagement process that includes an opportunity to provide input on the findings to inform the final decision.

<u>What guidance does current LCP/MCE best practice give Metro for carrying out process development?</u>
Metro staff perused a variety of recent applications of LCP/MCE techniques to transportation planning and decision processes across the United States and the United Kingdom. Key lessons from those examples, which include research by the Oregon Department of Transportation (ODOT) that informed the development of the ODOT MCE tool, Mosaic, include:

- **Analytic tools are necessary but not sufficient**; **a meaningful engagement process is also required.**
- Metro should **tap existing and successful peer agency LCP/MCE knowledge** for lessons and methods.
- **Benefit-cost analysis (BCA) is an important technical tool** that enables many useful criteria.
- **Evaluation criteria should be comprehensive and mutually exclusive.**
- **Criteria weights (priorities) should be set democratically** (e.g. by engaging Council, MPAC and JPACT appropriately).
- The **development and application processes should be transparent** to decision-makers and stakeholders. It is critical to report all individual criteria findings because doing so makes the details clear to stakeholders and lets them see for themselves how alternatives perform on the dimensions they most care about. In fact, some agencies report that single "rolled up" scores are less intuitive and less valuable to the decision than being able to see all the details.

<u>What are our technical tool development options?</u>
A LCP/MCE decision process requires software tools that perform the actual criteria evaluation using appropriate methods. Such tools can span a wide range of sophistication. At one end of the spectrum are more sketch-oriented tools such as ODOT's Mosaic tool. At the other end lie tools built specifically to take advantage of an agency's other land use and transportation analysis capabilities, including the full level of geographic and market segmentation detail available in the regional travel demand forecast model. Metro could choose to develop LCP capabilities at any point along this spectrum. The two endpoints of Metro's technical tool development option spectrum are the ODOT Mosaic Tool (which would need to be upgraded to handle the sheer amount of data for the entire Metro region) or a built-for-Metro toolkit that takes borrows the "best of breed" methods from other agencies' LCP/MCE tools then enhances them to provide next-generation capabilities. The main features of these "bookend" options include:

Upgrade Data Capacity of ODOT's Mosaic Tool
- Upgrade Mosaic's data capacity to function with a region the size of Metro
- Retain Mosaic fundamental "sketch" methods

Borrow best methods from peer agencies and enhance to provide Metro-specific LCP/MCE toolkit
- Use full market segment and zonal detail of the Metro travel demand model
- Upgrade or replace selected non-monetized criteria methods from Mosaic to obtain more robust evaluation methods, and develop new methods for Metro where Mosaic lacks the desired feature entirely.

How do the tool development options compare?

Metro staff estimated potential development costs for the bookend toolkit options. These early staff estimates identify a range of potential costs at each end of the spectrum and can be refined after obtaining Council guidance that would facilitate more-precise cost estimates. The estimates include one-time development costs over a multi-year period followed by subsequent annual maintenance costs that would ensure, on an ongoing basis, that the new toolkit would continue to use the latest evaluation methods. Note that the staff estimates below do not include the costs of carrying out the planning, engagement and decision support processes that would need to occur alongside development of a tool or toolkit; these costs are only for technical development.

Estimated Technical Option Development Cost Ranges*

	Mosaic with Data Upgrade		Borrow & Enhance		Mosaic with Data Upgrade	Borrow & Enhance
	Low	High	Low	High	Midpoint	Midpoint
M&S	125,000	150,000	300,000	450,000	137,500	375,000
Staff	26,000	40,000	100,000	175,000	33,000	137,500
Total	**151,000**	**190,000**	**400,000**	**625,000**	**170,500**	**512,500**

* Does NOT include planning process costs and ongoing maintenance costs

Note: costs (in $) represent a range of options, not a binary choice.

Estimated Post-Development Annual Maintenance Cost Ranges

	Mosaic with Data Upgrade		Borrow & Enhance	
	Low	High	Low	High
M&S	8,000	12,500	18,000	30,000
Staff	5,000	12,500	22,000	35,000
Total	7,000	25,000	40,000	65,000

Staff evaluated the two development bookends against a number of criteria that illustrate the value each option could offer to Metro. As the comparison table below shows, the "Upgraded Mosaic" option is less costly because its core evaluation methods are already defined. The primary cost driver of the Mosaic Tool option is the transfer of the Mosaic Tool to a database platform capable of handling the large amount of information required to analyze the entire Portland metropolitan region. Potential development timelines of the two bookend options in calendar and fiscal year terms appear further below.

The "Borrow-and-Enhance" option is more costly and would take longer to develop and implement, but offers a number of features that the Mosaic option does not supply. The more-advanced features of a borrowed/enhanced toolkit include the inherent ability to take full advantage of both the zonal (geographic) detail and the market segment (demographic) detail in Metro's travel demand model. This would enable more-detailed reporting by geography (e.g. Council district) and by demographic group (e.g. people living in areas with high proportions of low-income households). This finer detail combined with the benefit-cost analysis capability in turn enable more robust equity metrics, for example mobility benefits accruing to people of color and people with low income versus region-wide mobility benefits. Another outcome of more tightly coupling the LCP/MCE toolkit to Metro's travel model is that the former can more easily take advantage of future travel model upgrades. The Borrow-and-Enhance option also offers the opportunity to customize or upgrade evaluation methods while the Mosaic option does not, for example, monetize its equity criteria and thus offers less robust findings in the equity domain. The Borrow-and-Enhance BCA-derived equity metrics would be monetized and could be computed individually (without going through a full LCP/MCE evaluation) if desired. A Built-for-Metro approach would enable project-level LCP/MCE analysis (which Mosaic does not) and offer a more robust platform for analyzing pricing scenarios. Finally, most peer MPOs including the Seattle area Puget Sound Regional Council, the Bay Area Metropolitan Transportation Commission, San Diego Association of Governments, San Francisco County Transportation Authority, and others have opted to build their own LCP/MCE tools tightly coupled to their travel demand models. Appendix B illustrates, at a high level, how the various tools in the LCP/MCE "kit" utilize information from other Metro tools like the travel demand model.

Development Options Assessment Criterion	Mosaic with Data Upgrade	Borrow & Enhance
Bulk of Tool Already Developed	X	
Operates at Metro's geographic detail		X
Operates at Metro's market segment detail		X
Independent Utility (e.g. for equity analysis)		X
Metro controls criteria evaluation methods		X
Leverages Metro model upgrades (equity, peds, activity-based) *		X
Other MPO current/best practice		X
Enhances regional partners' toolkit **		X
More robust treatment of pricing scenarios		X
Capable of project-level analysis		X
Lowest cost to develop and deploy	X	
* Future-generation Metro models will have enhanced equity measurement capability and more mode detail		
** Metro does travel modeling for local jurisdictions so an enhancedtoolkit benefits regional partners		

It is worth noting that the range of cost options for technical LCP/MCE development is independent of the costs of a planning and engagement process that would use the resulting toolkit. Any deployment of an enhanced decision support information system will require extensive engagement with Council, MPAC and JPACT, and extensive outreach to stakeholders in general. Planning and engagement process costs are unlikely to vary significantly based purely upon the technical LCP/MCE toolkit details.

How would the Research Center recommend that Metro proceed?

At this point in time the Research Center recommends pursuing a "Borrow-and-Enhance" technical development approach in these phases:

- Phase 1: Assess and choose the best tools and methods to borrow, and scope detailed work plans and cost estimates both for full technical development and the planning processes that would use the toolkit.
- Phase 2: Develop the Benefit-Cost Analysis (BCA) component of the toolkit.
- Phase 3: Add the non-monetized criteria evaluation component, test, and deploy.

The rationale for this suggestion is that taken altogether the "Borrow and Enhance" approach would: more accurately encode Metro's objectives into its LCP/MCE process, offer superior analytic methods, provide the most versatility, and put Metro on par with and preferably in advance of peer public agencies. The phased approach could let the BCA component be used in planning decision processes by itself, if desired, to phase in deployment earlier than the completion date of the entire toolkit. The BCA component is relatively straightforward and by itself would significantly upgrade Metro's decision support toolkit, especially in the realm of equity and economic criteria. The technical development phases would be executed by a combination of staff and consultant resources, heavily weighted to consultants in the early steps.

As mentioned above, upgrading Metro's decision support toolkit in any way will require significant Council and Planning & Development Department resources as well. For these reasons the Research Center further recommends that it coordinate in more detail with Planning & Development staff to more-fully scope the latter's involvement. Planning staff would need to take a leadership role in building both the policy support and the stakeholder support critical to the success of an effort to upgrade Metro's decision process. To do so Planning staff will have to be engaged in shaping the technical development process as well. The time demands on Planning staff could compete with other initiatives underway such as the RTP update and will thus require careful forethought during budgeting. Since the conceptual approach is the same across the full range of technical options the resource requirements for Planning's involvement are not likely to vary greatly.

A potential timeline for building a Metro LCP/MCE toolkit along three tracks—the recommended technical approach, a policy track engaging elected officials, and a stakeholder involvement process—appears below. It would deliver a complete LCP/MCE technical toolkit by June 2018, with the benefit-cost analysis component ready to apply in mid-2017 if desired. The Policy and Stakeholder tracks assume—purely for discussion's sake—that the subject of the process is a regional funding package destined for the ballot in calendar 2018.

The potential budget demands for both Materials & Services (M&S) and staff time for both technical options also appear below, as does the phased budget for the high-end Borrow & Enhance technical approach.

Potential Timelines for Metro LCP/MCE Technical, Policy, and Stakeholder Efforts

Legend: Milestone | In-Progress | Phase Complete

Task	Lead	Milestones (month/year)
Technical Track (High End)	RC	Nov 2015: Release RFP; Feb 2016: Hire Consultant; March 2016: Sources Chosen; April 2016: Phase 1 Complete: Workplan; March 2017: Phase 2 Complete: BCA Component; Nov 2017: Full MCE Toolkit Functional; April 2018: Criteria Weighted; June 2018: Council Acceptance; July 2018: Phase 3 Complete: Full MCE Toolkit
Policy Track	P & D	April 2016: Multi-Year Workplan to Council; July 2016: BCA Design Signoff; Oct 2016: MCE Design to Council; Dec 2016: Full MCE Signoff; Jan 2017: Launch Planning Process; May 2017: Preliminary Alternatives Selected; Sept 2017: Preliminary Alternatives Compared; Nov 2017: Final Alternatives Selected; March 2018: Final Alternatives Compared; June 2018: Outreach Plan Finalized; Nov 2018: Action
Stakeholder Track	P & D	Feb 2016: Review Sources; July 2016: BCA Design Signoff; Dec 2016: Full MCE Signoff; Jan 2017: Launch Planning Process; May 2017: Preliminary Alternatives Selected; June 2017: Begin Analysis*; Sept 2017: Preliminary Alternatives Compared; Nov 2017: Final Alternatives Selected; March 2018: Final Alternatives Compared; June 2018: Outreach Plan Finalized; July 2018: Final Advice to Council, JPACT, MPAC

* Analysis beginning in June 2017 would use the BCA component only if the "Borrow & Enhance" technical track is chosen.

Potential Technical Track Budget Requirements by Option and Fiscal Year

M&S	Total, High Range	FY 15-16	FY 16-17	FY 17-18	FY 18-19
Upgrade Mosaic	$ 150,000	100,000	$50,000	$0	
Borrow & Enhance	$ 375,000	100,000	$137,500	$137,500	

RC Staff	Total, Low Range	FY 15-16	FY 16-17	FY 17-18	FY 18-19
Upgrade Mosaic	$ 40,000	20,000	$20,000	$0	
Borrow & Enhance	$ 175,000	30,000	$72,500	$72,500	

QUESTIONS FOR COUNCIL CONSIDERATION
- Does the Council have any questions for staff?

- Do the "why" and "how" LCP/MCE objectives match your vision for a Metro decision support capability?

- Which technical approach best meets Metro's needs, and is that approach financially feasible?

- What decision (or hypothetical decision) do you prefer as the "target" of a first Metro LCP/MCE exercise?

PACKET MATERIALS
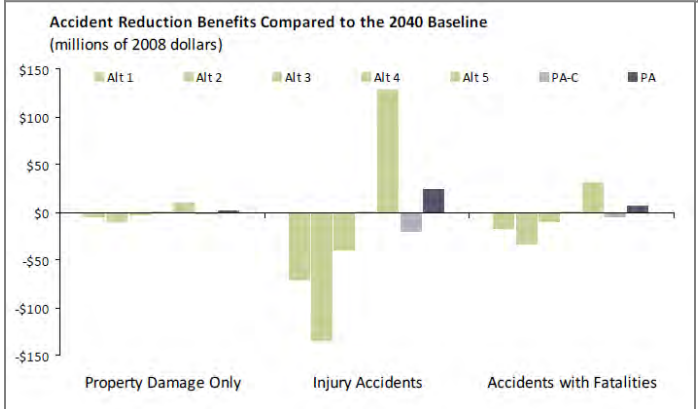- Would legislation be required for Council action   ☐ Yes   **X No**
- If yes, is draft legislation attached?   ☐ Yes   **X No**
- What other materials are you presenting today?
  - An Appendix showcasing LCP/MCE examples from other agencies compared to previous evaluation criteria used in regional planning.
  - An Appendix illustrating the various technical tools that inform LCP/MCE processes.

APPENDIX A: Selected Least Cost Planning/Multi Criterion Evaluation Examples Compared to Selected Metro Evaluation Examples
This appendix shows examples of LCP/MCE evaluation criteria findings compared to criteria previously used in Metro transportation planning

Example 1: SANDAG RTP alternatives MCE comparison and Metro 2014 RTP evaluation criteria comparison

The San Diego Association of Governments (SANDAG) MCE toolkit incorporates triple-bottom-line criteria including economic value (mobility, operating cost, vehicle ownership cost savings), environmental (emissions reductions), and social/human (increased physical activity due to more walking and biking trips, accident reduction) all placed into comparable monetary terms. Metro's approach incorporated vehicle hours of delay (in hours), vehicle-miles traveled per capita (VMT/capita), number of walk & bike trips, and bicycle miles traveled (BMT). Potential advantages of the MCE approach are that all mobility benefits (vehicle, transit, bike, and walk) are explicitly incorporated; changes in physical activity due to walking and biking choices are put on comparable terms to other criteria; and additional criteria are explicitly included (accident reduction, reliability benefits). Note that the use of the MCE framework does not preclude reporting other measures in addition, such as VMT per capita.

Plan Alternative Comparison by SANDAG

Build Scenarios Relative to Baseline (No-Build) Scenario

Description		
Build Scenario	RC	Hypothetical
Number of years	58	58

Summary		
Lifecycle Benefits	$53,752,288,102	$63,884,869,250
Lifecycle Costs	$29,153,987,133	$42,546,985,120
Net Present Value	$24,598,300,969	$24,598,300,969
Benefit / Cost Ratio	**1.84**	**1.50**
Internal Rate of Return (%)	10.8%	7.2%

Total Lifecycle Benefits by Category for Build Scenarios Relative to Baseline		
Scenario:	**RC**	**Hypothetical**
Mobility - Residents	$33,936,027,894	$25,611,958,902
Mobility - Trucks / Commercial	$9,143,327,429	$6,337,078,938
Emissions	-$394,015,321	$2,729,979,286
Accidents	$1,523,838,864	$1,987,327,688
Reliability	$478,016,975	$678,056,799
Vehicle Operating	$6,337,078,938	$23,408,823,856
Auto Ownership	$2,729,979,286	$3,123,173,814
Physical Activity	-$1,965,964	$8,469,967
Total	**$53,752,288,102**	**$63,884,869,250**

Excerpts from Plan Alternative Comparison for Metro's 2014 RTP

Vehicle Hours of Delay

Vehicle Hours of Delay (VHD)

	2010	2040NB	2040FC	2040ST
PM2	4,160	20,810	13,490	12,510
MD1	280	1,480	1,120	1,010

Average weekday, Intra-UGB

VMT per Capita

Average Week Day (AWD) Vehicle Miles Traveled (VMT) Intra-UGB

	2010	2040NB	2040FC	2040ST
VMT/capita	13.06	12.39	12.27	12.22
% Reduction		-5.1%	-6.0%	-6.4%

Number of Walk & Bike Trips

	2010	2040NB	2040FC	2040ST
Walk	505,500	814,100	835,900	823,900
Bike	178,400	293,300	306,600	302,700

(Average Weekday, Intra-UGB)

Bicycle Miles Traveled (BMT)

	2010	2040 NB	2040 FC	2040 ST
BMT	443,400	729,800	801,500	793,200
Population	1,483,506	2,080,456	2,080,456	2,080,456
BMT/Capita	0.30	0.35	0.39	0.38

Example 2: PSRC LCP/MCE Criteria applied to RTP and Metro Climate Smart Strategy Criteria
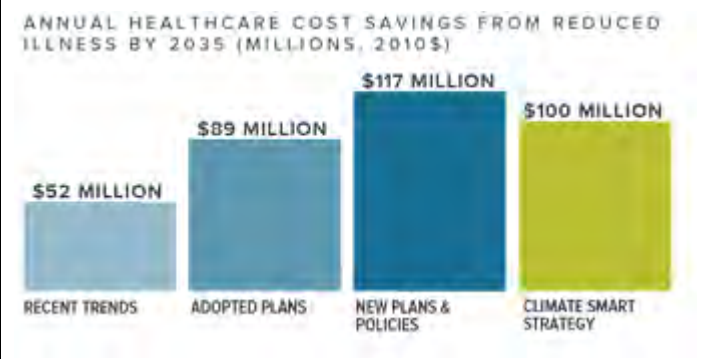
Metro's Climate Smart Strategy (CSS) alternatives evaluation demonstrates that Metro's evaluation approaches are already evolving toward an LCP/MCE approach. The Puget Sound Regional Council (PSRC) LCP/MCE approach monetizes mobility benefits in total and by mode, reliability benefits, emissions benefits, safety benefits, and operating cost savings benefits, as does SANDAG's LCP/MCE approach. Likewise, Metro's CSS also monetizes emissions benefits (using a health-based metric), travel (mobility) costs, and savings in vehicle operating costs and ownership. The PSRC and CSS approaches produce graphical visualizations of their findings. The SANDAG approach adds the formal benefit/cost treatment which explicitly calls out the relationship of total costs to the total benefits, as shown in the prior example. A potential evolutionary step from Metro's CSS approach would be to add all the criteria used by SANDAG and PSRC (e.g. safety benefits, physical activity benefits, etc.) and incorporate the fully-featured benefit-cost analysis. It would also be valuable for Metro's approach to evolve to using the Metro travel demand model rather than the Greenstep sketch tool.

Plan Alternative Comparison by PSRC (excerpts)	Alternative Comparison for Metro's Climate Smart Strategy (excerpts)
Source: Transportation 2040 Final Environmental Impact Statement, Appendix D. Puget Sound Regional Council. 2010.	Source: Climate Smart Strategy Scenarios. Metro

Plan Alternative Comparison by PSRC (summary table)	Metrics Used for Metro's Climate Smart Strategy (metric list)

Plan Alternative Comparison by PSRC (summary table)

Evaluation Criteria	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Preferred (Constrained)	Full Preferred
Mobility							
M1. Travel Time Savings	$1,850	$2,510	$3,440	$2,890	$3,560	$5,020	$6,390
M2. Improved Reliability Benefits	$290	$410	$1,000	$1,140	$1,290	$1,070	$1,180
M3. Vehicle Operating and Ownership Benefits	-$93	-$189	-$125	$200	$13	$73	$213
M4. Other User Benefits	$17	$38.	$77	-$15	-$457	$89	$34
Finance							
F1. Facility Operating Cost	-$360	-$160	-$300	-$510	-$1,030	-$1,570	-$2,600
F2. Capital Cost	-$640	-$2,310	-$1,670	-$1,650	-$1,700	-$1,560	-$2,770
F3. Operating Revenues	$180	$257	$2,940	$3,660	$7,100	$3,500	$5,360
F4. Influence of Finance on the Economy	-$134	-$363	-$46	$44	$138	$224	$103
Growth Management							
GM1. Population	⊗	⊗	⊗	⊗	⊗	⊗	⊗
GM2. Employment	⊗	⊗	⊗	⊗	⊗	⊗	⊗
GM3. Jobs to Housing Balance	⊗	⊗	⊗	⊗	⊗	⊗	⊗
GM4. Population and Jobs in Centers	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Economic Prosperity							
EP1. Benefits to Low- and High-wage Employment	$382	$441	$555	$431	$370	$1,060	$1,380
EP2. Benefits to Cluster Employment	$56	$116	$179	$142	$49	$297	$373
EP3. Benefits to Freight-Related Employment	$55	$86	$97	$81	$52	$171	$226
Environmental Stewardship							
ES1. Vehicle and Stationary Emission Benefits	-$14	-$35	$19	$31	$94	$38	$72
ES2. Impervious Surfaces	⊗	-	-	⊗	⊗	-	-
ES3. Agriculture and Natural Resource Lands	⊗	-	⊗	⊗	⊗	⊗	⊗
ES4. Energy Usage from Vehicle and Building Use	⊗	⊗	+	+	+	+	+
Quality of Life							
QL1. Accident Cost Savings	-$94	-$177	-$52	$1	$168	-$26	$32
QL2. Nonmotorized Travel	⊗	-	⊗	+	+	+	+
QL3. Redundancy (Roads and Transit)	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Equity							
E1. Geographic Distribution of Benefits	+	⊗	+	-	⊗	⊗	⊗
E2. Income Distribution of Benefits	⊗	⊗	⊗	-	-	⊗	⊗
E3. Benefits to Personal and Commercial Users	⊗	⊗	⊗	-	-	⊗	⊗
E4. Benefits to Environmental Justice Populations	+	+	+	+	+	+	+

Source: Transportation 2040 Final Environmental Impact Statement, Appendix D. Puget Sound Regional Council. 2010.
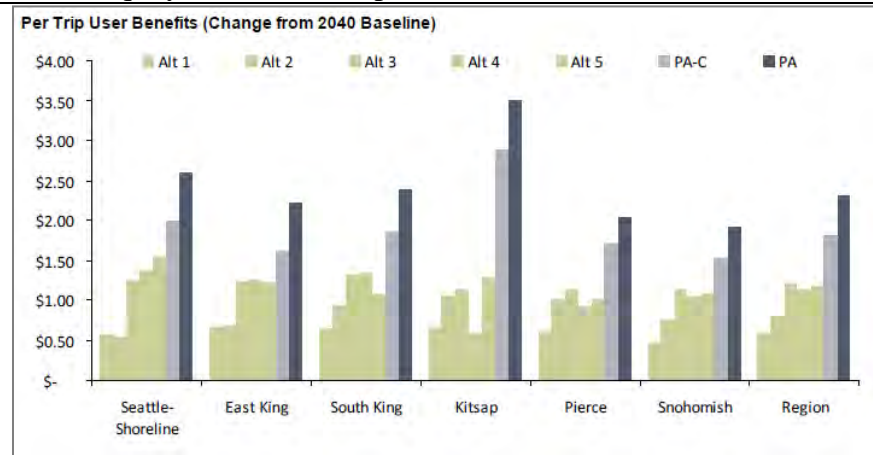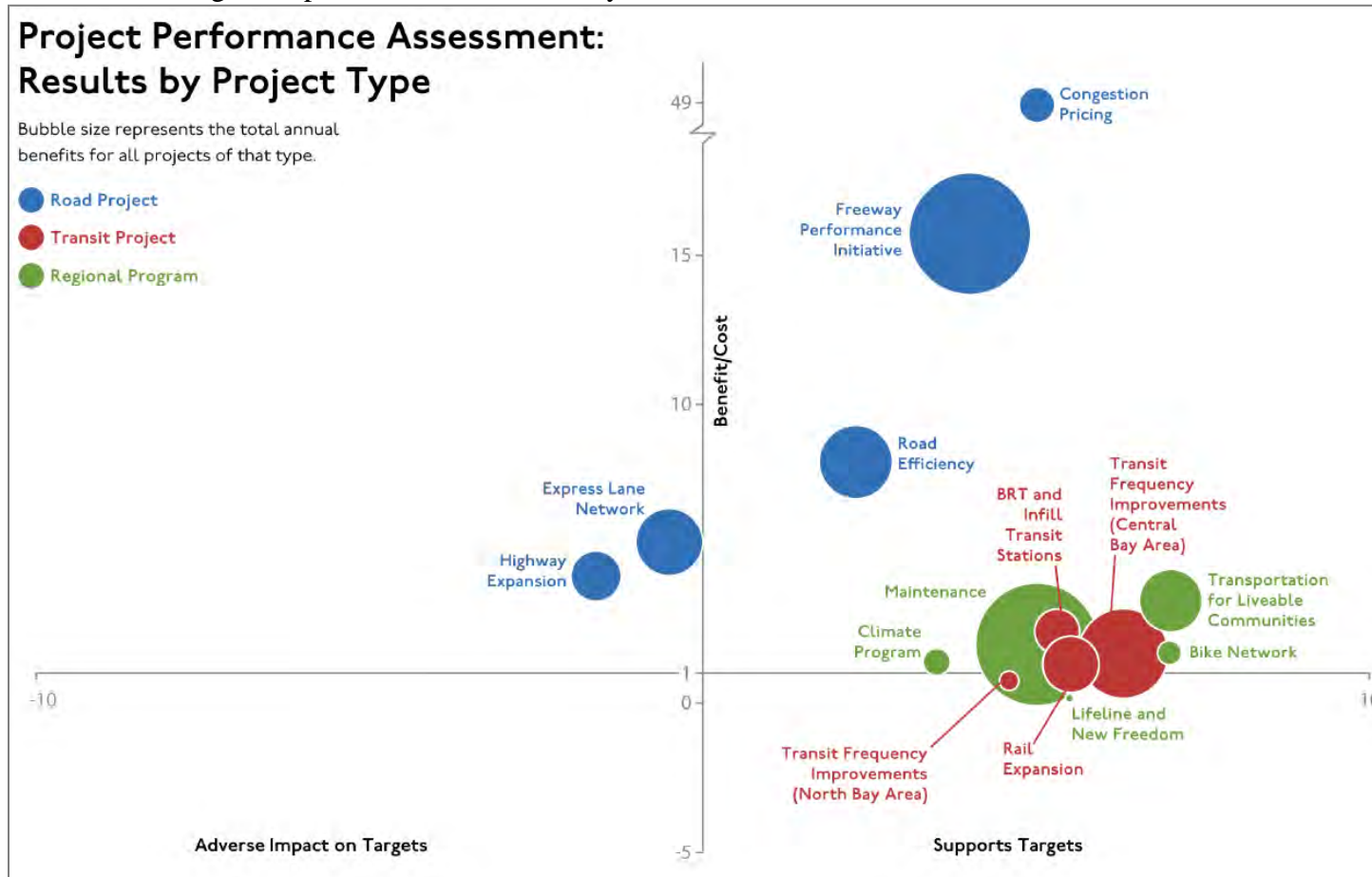
Metrics Used for Metro's Climate Smart Strategy (metric list)

- Green House Gas Reductions
- Economic Benefits from Improved Health
- Lives Saved through Physical Activity and Pollution Reduction
- Environmental Cost Reduction due to Pollution Reduction
- Truck Travel Cost Reduction
- Vehicle Operating and Ownership Cost Reduction

Compiled from: Climate Smart Strategy for the Portland metropolitan region. Metro. 2014

Metrics Used by Metropolitan Transportation Commission (excerpt)

The "Goal" column contains the target outcome expressed as a percentage of some reference value, for example current-year production of CO_2 emissions. In this example the "Equity, Environment, and Jobs" alternative achieves more CO_2 reductions than the target outcome (17% reduction vs. 15% reduction goal).

Target	Goal	No Project	Preferred	Transit Priority Focus	Network of Communities	Equity, Environment & Jobs
1 Reduce per-capita CO_2 emissions from cars and light-duty trucks	-15%	-8%	-18%	-16%	-16%	-17%
2 House the region's projected growth	100%	100%	100%	100%	118%	100%
3a Reduce premature deaths from exposure to fine particulates ($PM_{2.5}$)	-10%	-71%	-71%	-72%	-69%	-72%
3b Reduce coarse particulate emissions (PM_{10})	-30%	-16%	-17%	-17%	-14%	-18%

achieves or exceeds performance target
falls short of performance target
moving in the wrong direction

Source: THE CRITICALINTERSECTION OF PUBLICHEALTH, SOCIAL EQUITY, AND PERFORMANCE-BASED PLANNING. Presentation by Dave Vautin or METROPOLITAN TRANSPORTATION COMMISSION. DECEMBER3, 2014

The Puget Sound Regional Council's LCP/MCE approach includes a custom-build benefit-cost analysis (BCA) tool integrated with PSRC's travel demand model. This enables reporting benefits both by geographic area (below left) and by sub-population (below right). Since the benefits include all those accrued to the summary reporting unit (geography or group) regardless of where the benefit was physically realized within the entire region, this technique provides a more accurate accounting of the distribution of benefits than, for example, simple summaries of expenditures of capital dollars in geographic areas. The PSRC geographic equity example illustrates that in year 2040, relative to the baseline case, the Preferred Alternative would give residents of the Kitsap subarea of the PSRC planning area more per-trip user benefits than the regional average. The PSRC social equity example shows that the Preferred Alternative achieves the highest per work trip benefits of all alternatives for low income travelers but that per work trip benefits of higher income groups are greater than those of lower income groups. Some of Metro's criteria are still in development and could benefit from developing LCP/MCE capabilities.

PSRC Equity Criteria (excerpts)	Equity Metrics Used in Metro's 2014 RTP
Per Trip User Benefits (Change from 2040 Baseline) Per Worktrip Benefits by Income (Change from 2040 Baseline): Reduced Travel Time, Unreliability, Vehicle Operating Costs and Other User Costs Source: Transportation 2040 Final Environmental Impact Statement, Appendix D. Puget Sound Regional Council. 2010.	**EQUITY** **Affordability** – By 2040, reduce the average household combined cost of housing and transportation by 25 percent compared to 2010. · In 2010, the average household in the Portland region spent about 43.9 percent of its income on housing and transportation. In 2040 it is estimated that the average household in the region will spend about 51% on housing and transportation. · The region does not meet the target. However, the cost of transportation as a percentage of total household income holds steady from 2010 (13.7%) to 2040 (13.6%). **Access to daily needs** – By 2040, increase by 50 percent the number of essential destinations accessible within 30 minutes by bicycling and public transit for low-income, minority, senior and disabled populations compared to 2005. · Data under development · The methodology for establishing a base line for this target is being developed.
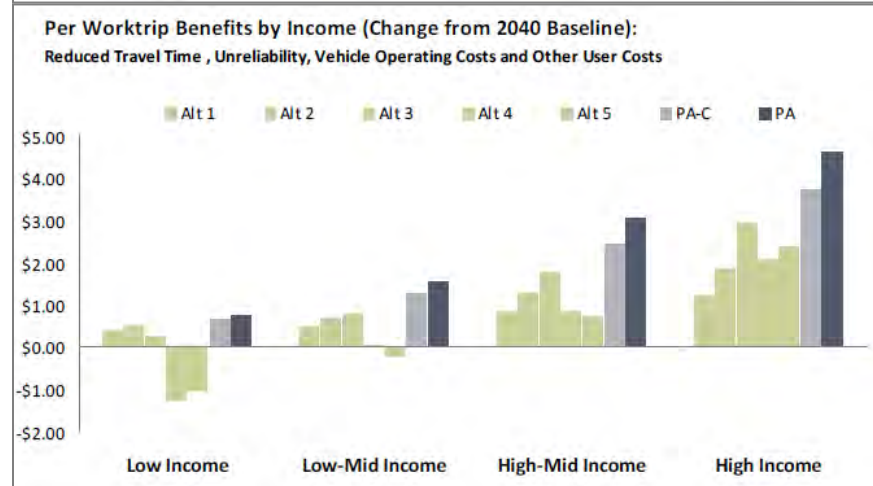
**Example of analytics supporting a particular planning process**

The Bay Area Metropolitan Transportation Commission (MTC) crafted an outcomes-based planning process that applied its LCP/MCE toolkit in a two-part process: an evaluation of how alternatives compared in meeting target outcomes and a benefit-cost analysis (BCA). MTC visualized the relative success of various alternatives on a graph with better BCA results to the right (X-axis) and better outcomes performance up (Y-axis). Verbal communications from MTC staff indicates that in practice their outcomes evaluation was intended to exercise greater influence on the decision, in some cases intended to serve as a "gatekeeper" to further BCA analysis.

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

Benefit/Cost

49

15

10

1

0

-5

-10

10

Congestion Pricing

Freeway Performance Initiative

Road Efficiency

Express Lane Network

Highway Expansion

BRT and Infill Transit Stations

Transit Frequency Improvements (Central Bay Area)

Transportation for Liveable Communities

Maintenance

Climate Program

Bike Network

Lifeline and New Freedom

Transit Frequency Improvements (North Bay Area)

Rail Expansion

Adverse Impact on Targets

Supports Targets

Source: THE CRITICALINTERSECTION OF PUBLICHEALTH, SOCIAL EQUITY, AND PERFORMANCE-BASED PLANNING. Presentation by Dave Vautin of METROPOLITAN TRANSPORTATION COMMISSION. DECEMBER3, 2014

Appendix B: Schematic Showing the LCP/MCE "Toolkit" and its Integration with Existing Metro Tools

A multi-criteria evaluation (MCE) toolkit consists of three main components: a benefit-cost analysis (BCA) tool, a tool that evaluates non-monetized criteria, and (if needed) a tool that support qualitative evaluations. The toolkit, especially the BCA component, takes inputs from the "chain" of models that produce forecasts of transportation system performance from the travel demand model. The tighter the "coupling" between the quantitative MCE tools and the travel demand model the more the findings can leverage travel model reporting capabilities such as fine grains of geographic and demographic detail. Supplementary data, especially cost estimates for the investments in the alternatives analyzed, is also required as inputs to the various components of the overall MCE toolkit. The distribution of expected land uses itself (from the land use allocation forecast tool, Metroscope) can also inform the evaluation findings.
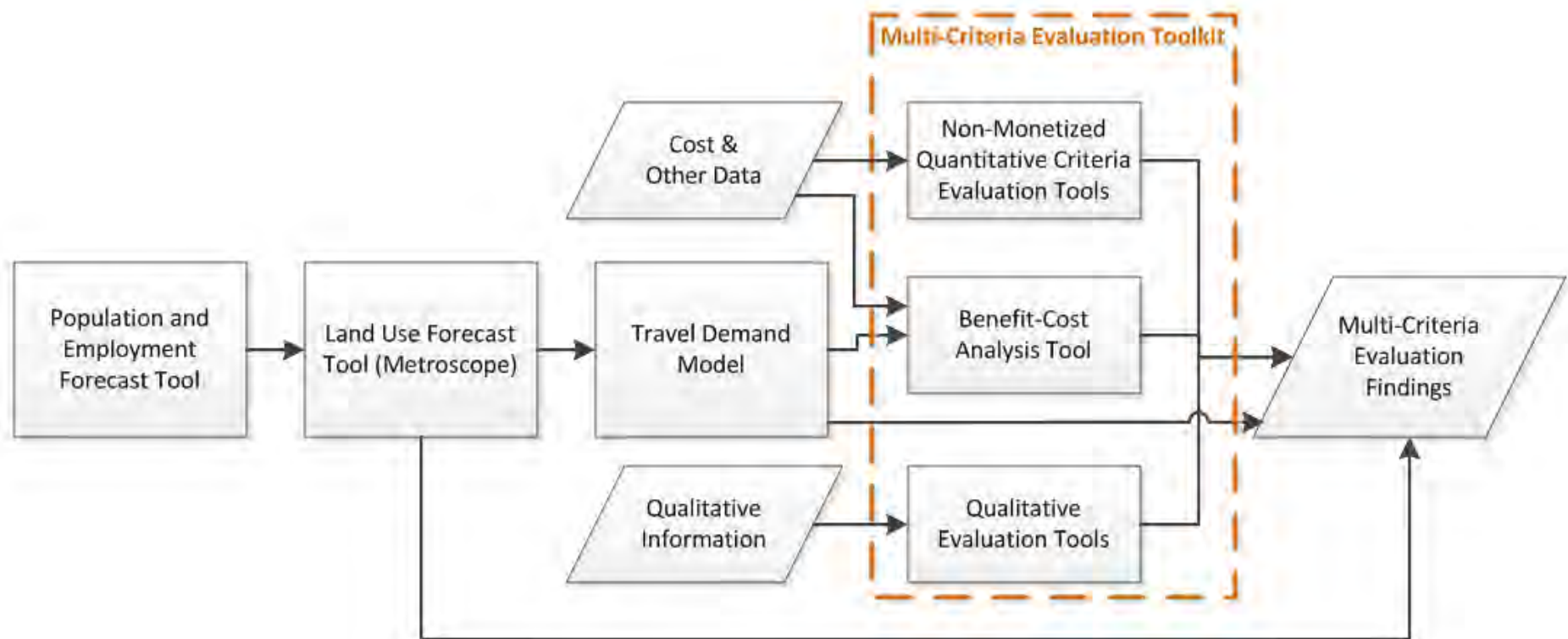
Materials following this page were distributed at the meeting.

Building a Metro Least Cost Planning Capability

(aka Multi-Criteria Evaluation)

Potential Work Plan

Metro Council Work Session

November 10, 2015

Jeff Frkonja, Research Center Director

Elissa Gertler, Planning & Development Director

Version 4a

Metro | *Making a great place*

Agenda

What is "Least Cost Planning" and what it could do for the region

What options we have for developing Least Cost Planning at Metro

To what we might apply Least Cost Planning techniques

Council discussion

Agenda

Council Discussion Preview:

- *Questions?*
- *Does the "what it does" description match your vision?*
- *Which technical approach best fits the vision and can we make the necessary resources available?*
- *What "decision" would you prefer to address in a pilot LCP effort?*

What is Least Cost Planning (LCP)? What could it do for the region?

Background

Comparison with Current Capabilities

Advantages Realized at Peer Agencies

Background

Least Cost Planning:

- A structured planning **process** that provides **decision support information** to the decision-makers
- **Applies benefit-cost analysis (BCA)**
- **Originally** developed by power utilities **examine capital investments versus conservation programs**
- A large body of **theoretical, ethical, and practical developments already exist**

Background: Least Cost Planning Evolution in Transportation Field

- Transportation "borrowed" LCP
- Evolved toward multi-criteria evaluation (MCE) in a triple-bottom-line* context
- Each evolutionary step added more information
- MCE: *a framework for making sense of diverse information*

Benefit-Cost Analysis → Least Cost Planning → Triple Bottom Line Thinking → Multi-Criterion Evaluation

Background: Transportation Decision Evaluation at Metro

2014 RTP

- Variety of individual metrics and costs

Climate Smart Strategies

- Triple-bottom-line context
- Monetized benefits*

Equity Strategy

- Seeks to enhance the equity lens

```
[ 2014 RTP ] → [ Climate Smart Strategy ] → [ Equity Strategy ]
```

Greenstep tool application to CSS omitted integrated costs and lacked detail

Metro | *Making a great place*

Background: Working Metro LCP/MCE Definition

Complete the evolutionary arc started by CSS:

- Retain triple-bottom-line context
- Add full benefit-cost analysis to treat costs and benefits together
- Upgrade to Multi-Criterion Evaluation to ensure rigorous attention to all things the region values (economic, environmental, social, *equity*, human health dimensions)
- Borrow best practice tools and knowledge
- Enhance and innovate to fully address the things our region values

```
┌───────────┐      ┌───────────┐      ┌───────────┐      ┌───────────┐
│ 2014 RTP  │ ───▶ │  Climate  │ ───▶ │  Equity   │ ───▶ │  Metro    │
│           │      │   Smart   │      │ Strategy  │      │ LCP/MCE   │
│           │      │ Strategy  │      │           │      │           │
└───────────┘      └───────────┘      └───────────┘      └───────────┘
```
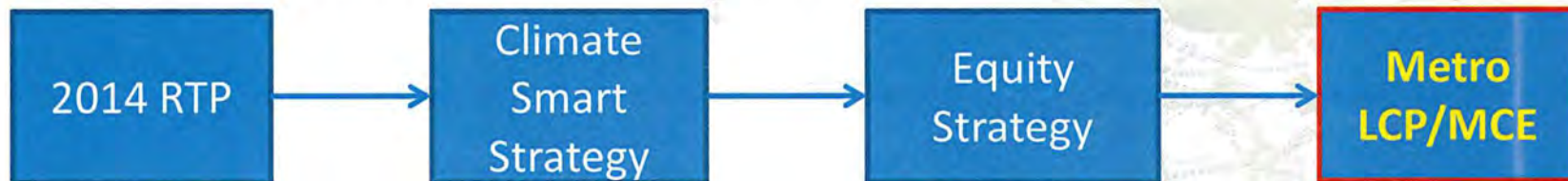
Comparison with Current Capabilities

Metro's peer agencies have applied or developed various forms of BCA, LCP, MCE:

- Puget Sound Regional Council (PSRC, Seattle area)
- Metropolitan Transportation Council (MTC, Bay Area)
- San Diego Association of Governments (San Diego, Southern California)
- San Francisco County Transportation Authority (SFCTA, Bay Area)
- Washington State Department of Transportation (WSDOT)
- Oregon Department of Transportation (ODOT—developed the Mosaic tool)
- Chicago Metropolitan Agency for Planning (CMAP, Chicagoland)
- *...and more*

Comparison: "Rollup"
SANDAG's scorecard and Metro 2014 RTP (excerpts)

Plan Alternative Comparison by SANDAG

Build Scenarios Relative to Baseline (No-Build) Scenario

Description

Build Scenario	RC	Hypothetical
Number of years	58	58

Summary

	RC	Hypothetical
Lifecycle Benefits	$53,752,288,102	$63,884,869,250
Lifecycle Costs	$29,153,987,133	$42,546,985,120
Net Present Value	$24,598,300,969	$24,598,300,969
Benefit / Cost Ratio	**1.84**	**1.50**
Internal Rate of Return (%)	10.8%	7.2%

Total Lifecycle Benefits by Category for Build Scenarios Relative to Baseline

Scenario:	RC	Hypothetical
Mobility - Residents	$33,936,027,894	$25,611,958,902
Mobility - Trucks / Commercial	$9,143,327,429	$6,337,078,938
Emissions	-$394,015,321	$2,729,979,286
Accidents	$1,523,838,864	$1,987,327,688
Reliability	$478,016,975	$678,056,799
Vehicle Operating	$6,337,078,938	$23,408,823,856
Auto Ownership	$2,729,979,286	$3,123,173,814
Physical Activity	-$1,965,964	$8,469,967
Total	**$53,752,288,102**	**$63,884,869,250**

Excerpts from Plan Alternative Comparison for Metro's 2014 RTP

Vehicle Hours of Delay

Vehicle Hours of Delay (VHD)

	2010	2040NB	2040FC	2040ST
PM2	4,160	20,810	13,490	12,510
MD1	280	1,480	1,120	1,010

Average weekday, Intra-UGB

VMT per Capita

Average Week Day (AWD) Vehicle Miles Traveled (VMT) Intra-UGB

	2010	2040NB	2040FC	2040ST
VMT/capita	13.06	12.39	12.27	12.22
% Reduction		-5.1%	-6.0%	-6.4%

Number of Walk & Bike Trips

	2010	2040NB	2040FC	2040ST
Walk	505,500	814,100	835,900	823,900
Bike	178,400	293,300	306,600	302,700

(Average Weekday, Intra-UGB)

Bicycle Miles Traveled (BMT)

	2010	2040 NB	2040 FC	2040 ST
BMT	443,400	729,800	801,500	793,200
Population	1,483,506	2,080,456	2,080,456	2,080,456
BMT/Capita	0.30	0.35	0.39	0.38

Sources:
- Transportation 2040 Final Environmental Impact Statement, Appendix D. Puget Sound Regional Council. 2010.
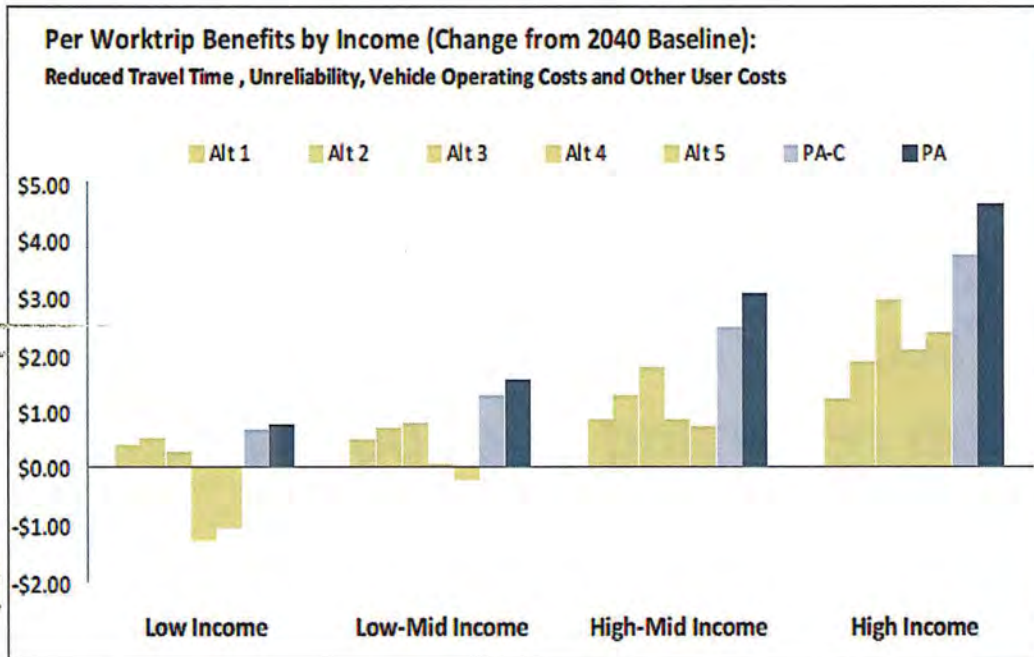- Regional Transportation Plan. Oregon Metro. 2014.

Metro | *Making a great place*

Comparison: Equity Evaluations (Social leg)

PSRC--Per-trip benefits to population group

Metro 2014 RTP—average combined cost of housing and transportation

Per Worktrip Benefits by Income (Change from 2040 Baseline):

Reduced Travel Time , Unreliability, Vehicle Operating Costs and Other User Costs

Legend: Alt 1, Alt 2, Alt 3, Alt 4, Alt 5, PA-C, PA

Y-axis: $5.00, $4.00, $3.00, $2.00, $1.00, $0.00, -$1.00, -$2.00

X-axis categories: Low Income, Low-Mid Income, High-Mid Income, High Income

	EQUITY		
Affordability – By 2040, reduce the average household combined cost of housing and transportation by 25 percent compared to 2010.	In 2010, the average household in the Portland region spent about 43.9 percent of its income on housing and transportation. In 2040 it is estimated that the average household in the region will spend about 51% on housing and transportation.	The region does not meet the target. However, the cost of transportation as a percentage of total household income holds steady from 2010 (13.7%) to 2040 (13.6%).
Access to daily needs – By 2040, increase by 50 percent the number of essential destinations accessible within 30 minutes by bicycling and public transit for low-income, minority, senior and disabled populations compared to 2005.	Data under development	The methodology for establishing a base line for this target is being developed.

Sources:
- Transportation 2040 Final Environmental Impact Statement, Appendix D. Puget Sound Regional Council. 2010.
- Regional Transportation Plan. Oregon Metro. 2014.

Metro | *Making a great place*

What advantages did LCP/MCE supply to our peer agencies relative to current Metro capability?

- *"Apples-to-apples" comparison**
- *Costs explicitly treated in value comparisons*
- *"Rolls things up" (aggregates disparate findings into one "score" region-wide)*
- *Enables information reporting at geographic subareas and by population segments*
- *More robust evaluations of:*
  - *Equity*
  - *Health & Safety*
  - *Reliability*

* Acknowledging that current techniques may still require separate treatment of some criteria

What Options Have We for Developing LCP?

What overall work plan would we follow?

What investments in tools might we make?

What investments in process activities would be required?

What would the overall workplan look like?

- Scope and *implement the planning process*
  - *Identify what will be decided**
  - Launch the technical development and identify *criteria*
  - Engage decision-makers to *weight the criteria*
  - *Apply the evaluation toolkit* to the actions
  - *Report the evaluation findings* to the decision-makers
  - *Make the decision*
- Scope and *implement technical development*
  - Choose the *starting-point tools*
  - Engage consultants to help *enhance tools and evaluation methods*

What might the overall workplan look like?

Fiscal Year:	FY15-16				FY16-17				FY17-18			FY19-20
Calendar Year:	2016						2017				2018	
Track	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Technical	Scope & Launch		Complete BCA			Complete full MCE Toolkit						
Policy		Launch		BCA OK		Needs		MCE OK	Alts	Weight	Evaluate	Decide
Stakeholder		Launch	Outreach	BCA OK		Needs & MCE			Alternatives		Evaluate	Advise

Three-phase technical development

Technical, Policy, and Stakeholder tracks coordinated

Metro | *Making a great place*

What are the tool investment options?

Main Starting-Point Options:

- Apply ODOT's Mosaic "sketch" tool*

- Borrow methods from peer agencies and enhance for Portland region

* After making upgrades necessary to handle regional-scale data required
Note that ODOT's Greenstep also has visualizations that can be borrowed

What are the tool investment options?

Development Cost* Range Estimates

	Mosaic with Data Upgrade		Borrow & Enhance	
	Low	High	Low	High
M&S	125,000	150,000	300,000	450,000
Staff	26,000	40,000	100,000	175,000
Total	**151,000**	**190,000**	**400,000**	**625,000**

* Does not include marginal "tool outreach" costs of the planning process

Metro | *Making a great place*

What are the tool investment options?
Borrow & Enhance High Range Cost* Estimates by FY

Fiscal Year:	FY15-16	FY16-17	FY17-18	FY19-20	Totals
M&S	150,000	$150,000	$150,000	0	450,000
Staff	30,000	$57,500	$57,500	$30,000	175,000

Does not include marginal "tool outreach" costs of the planning process

NOTE: supersedes work session agenda packet "high" range timeline

Metro | *Making a great place*

What are the tool investment options?

Options compared

Toolkit Options Assessment	Mosaic with Data Upgrade	Borrow & Enhance
Bulk of Tool Already Developed	X	
Operates at Metro's geographic detail		X
Operates at Metro's market segment detail		X
Independent Utility (e.g. for equity analysis)		X
Metro controls criteria evaluation methods		X
Leverages Metro model upgrades (equity, peds, activity-based) *		X
Other MPO current/best practice		X
Enhances regional partners' toolkit **		X
More robust treatment of pricing scenarios		X
Capable of project-level analysis		X
Lowest cost to develop and deploy	X	

*   Metro's travel demand model is constantly evolving

** Metro performs modeling for other agencies in the region

Metro | Making a great place

What are the tool investment options?

LCP/MCE toolkit would complement other tools:

- Economic Value Atlas

- Mobility Corridor Atlas

- Equity Strategy

What tool investment option does Research Center recommend?

- Borrow & Enhance
  - Leverages Metro's travel model tools
  - Builds on existing Metro work
  - Multi-phase approach allows mindful treatment of values important to region
  - Greatest opportunity to take national leadership in LCP/MCE process development

What tool investment option does Research Center recommend?

- Spend existing $100K to:
  - Create and bring Council detailed multi-year budget
  - Start* BCA development

$50K additional this year would help immensely

What are the planning process investment options?

- Depend upon choice of decision

- Toolkit "understanding-building" similar in all cases

To what might we apply LCP/MCE techniques?

What upcoming decisions do we face?

What factors affect the choice of decision?

Metro | *Making a great place*

What factors affect our choice of decision?

- *Timing*
  - *potential for decision timeline to match tool availability*
- *Utility*
  - *potential to meet a need (as defined by stakeholder request and acceptance of tool)*
- *Resource Intensity*
  - *ability to right-size toolkit development/outreach efforts compared to decision benefits*
- *Decision Support*
  - *ability for tool to have a meaningful, positive impact on decision-making*
- *Available Resources*
  - *ability for tool to be used with available decision resources*
- *Programmatic Alignment*
  - *ability to apply toolkit/process across multiple projects and programs*

What decisions do we face?

Potential Projects	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

*** = Strong Potential

** = Some Potential

* = Limited Potential

Discussion

- *Questions?*

- *Does the "what it does" description match your vision?*

- *Which technical approach best fits the vision and can we make the necessary resources available?*

- *What "decision" would you prefer to address in a pilot LCP effort?*

What are the tool maintenance costs?

Maintenance Cost* Range Estimates Per Year

	Mosaic with Data Upgrade		Borrow & Enhance	
	Low	High	Low	High
M&S	8,000	12,500	18,000	30,000
Staff	5,000	12,500	22,000	35,000
Total	**7,000**	**25,000**	**40,000**	**65,000**

Does not include marginal "tool outreach" costs of the planning process

Metro | *Making a great place*

Comparison: Mobility Evaluation (part of economic leg)

PSRC--detailed & total mobility benefits
Mobility Corridor Atlas--selected corridor travel times
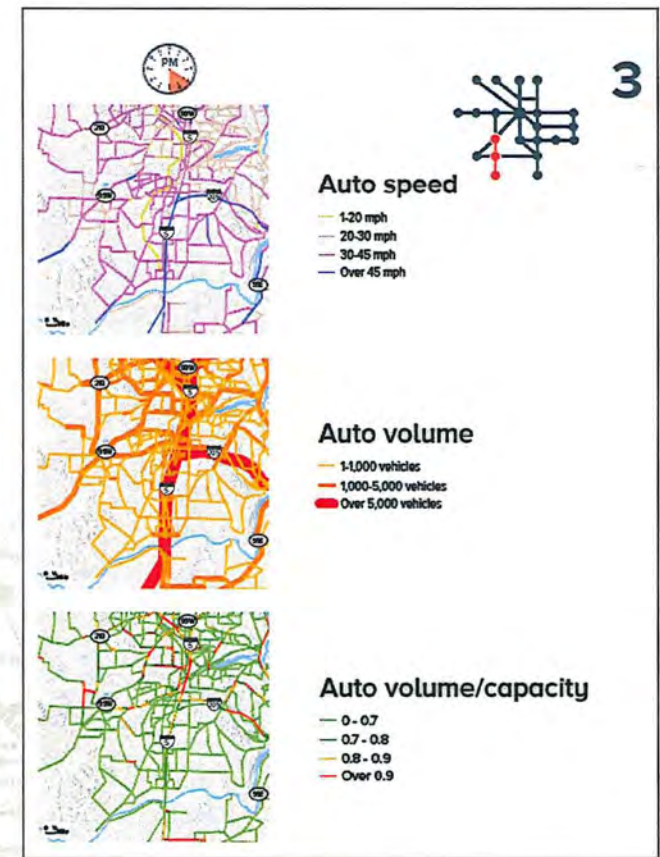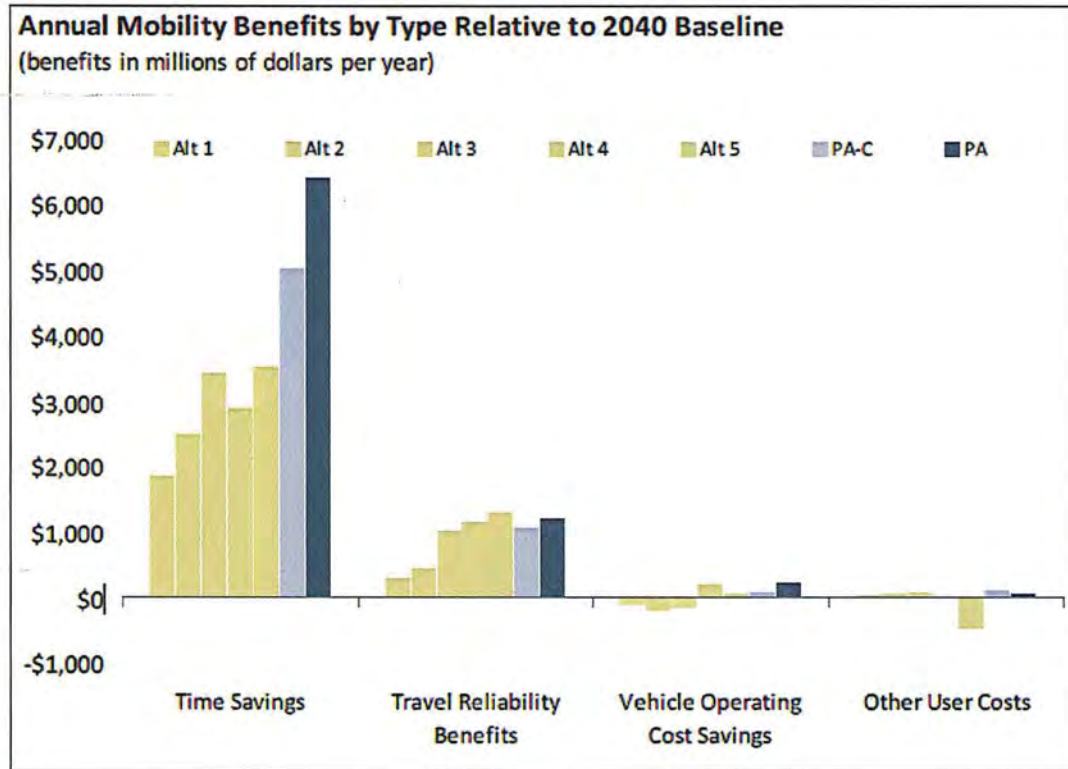
Annual Mobility Benefits by Type Relative to 2040 Baseline
(benefits in millions of dollars per year)

Metro | *Making a great place*

Comparison: Economic Evaluation

PSRC--specific & total user benefits to "cluster" industry, freight, and high-wage locations
Greenstep--total truck travel costs

Per Trip User Benefits (Change from the 2040 Baseline)

Legend: Alt 1, Alt 2, Alt 3, Alt 4, Alt 5, PA-C, PA

Y-axis: $3.00, $2.50, $2.00, $1.50, $1.00, $0.50, $-

Categories: Cluster, Freight, High Wage, Region
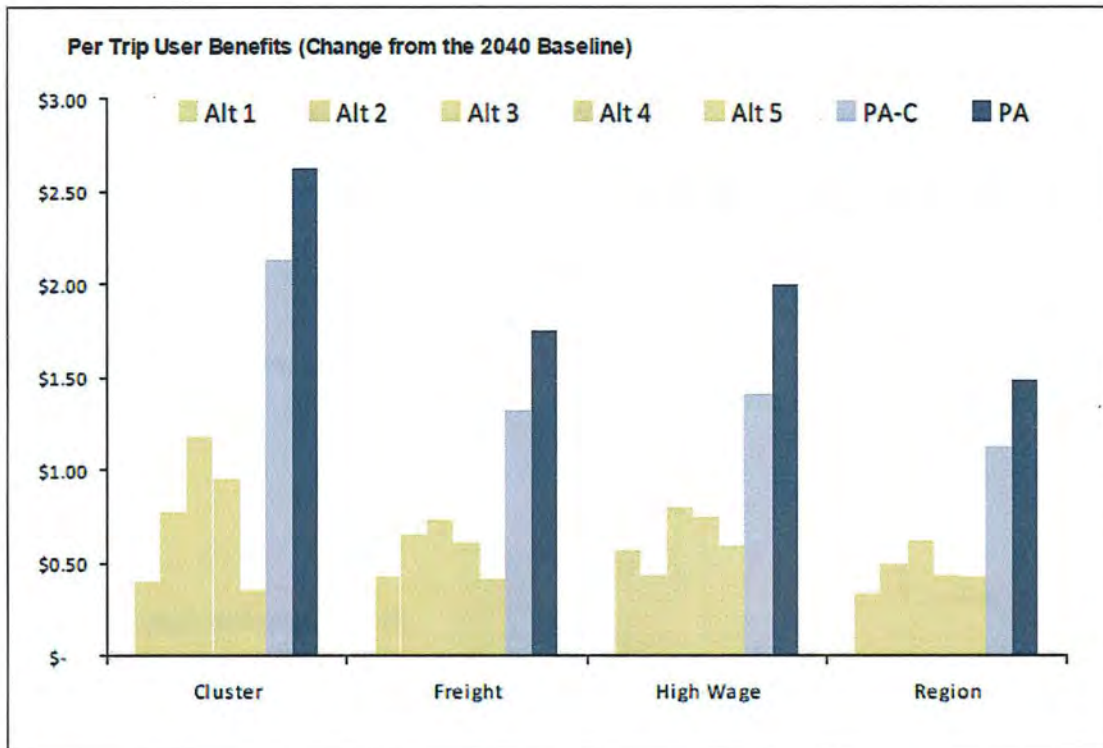
ANNUAL ENVIRONMENTAL AND FREIGHT TRUCK TRAVEL COSTS BY 2035 (MILLIONS, 2005$)

	RECENT TRENDS	ADOPTED PLANS	NEW PLANS & POLICIES	CLIMATE SMART STRATEGY
Total	$1.5 B	$1.5 B	$1.3 B	$1.3 B
Environmental costs due to pollution	$567 M	$503 M	$434 M	$467 M
Freight truck travel costs due to delay	$975 M	$970 M	$885 M	$882 M

Sources:
- Transportation 2040 Final Environmental Impact Statement, Appendix D. Puget Sound Regional Council. 2010.
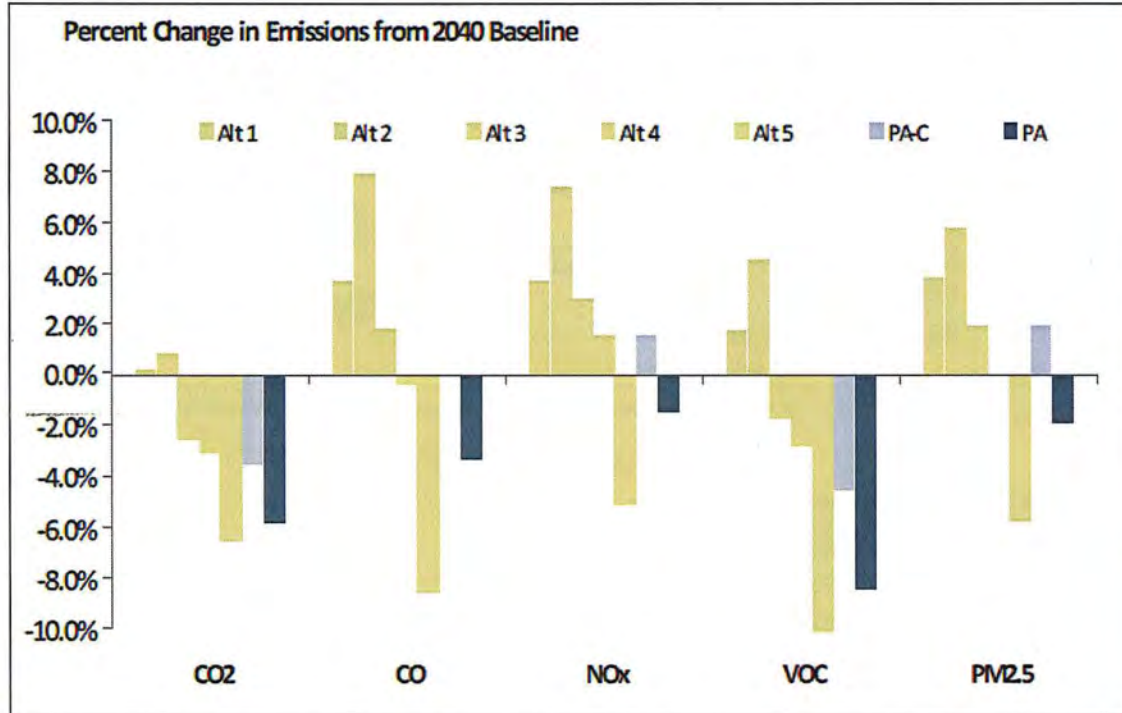- *Climate Smart Strategy for the Portland metropolitan region*. Oregon Metro. 2014.
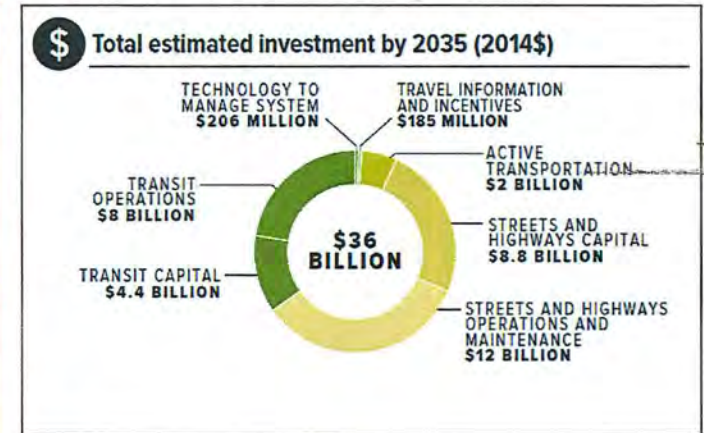
Metro | *Making a great place*

Comparison: Environmental Evaluation

PSRC--Change in value by pollutant
Greenstep—Total environmental cost of pollutants

Sources:
- Transportation 2040 Final Environmental Impact Statement, Appendix D. Puget Sound Regional Council. 2010.
- *Climate Smart Strategy for the Portland metropolitan region*. Oregon Metro. 2014.

Metro | *Making a great place*

Comparison: "Rollup"

SANDAG--BCA "scorecard" with costs and benefits

Metro—Climate Smart Strategies cost data (see previous slides for other metrics)

Build Scenarios Relative to Baseline (No-Build) Scenario

Description		
Build Scenario	RC	Hypothetical
Number of years	58	58

Summary		
Lifecycle Benefits	$53,752,288,102	$63,884,869,250
Lifecycle Costs	$29,153,987,133	$42,546,985,120
Net Present Value	$24,598,300,969	$24,598,300,969
Benefit / Cost Ratio	**1.84**	**1.50**
Internal Rate of Return (%)	10.8%	7.2%

$ Total estimated investment by 2035 (2014$)

TECHNOLOGY TO MANAGE SYSTEM $206 MILLION
TRAVEL INFORMATION AND INCENTIVES $185 MILLION
ACTIVE TRANSPORTATION $2 BILLION
TRANSIT OPERATIONS $8 BILLION
STREETS AND HIGHWAYS CAPITAL $8.8 BILLION
$36 BILLION
TRANSIT CAPITAL $4.4 BILLION
STREETS AND HIGHWAYS OPERATIONS AND MAINTENANCE $12 BILLION

Total Lifecycle Benefits by Category for Build Scenarios Relative to Baseline

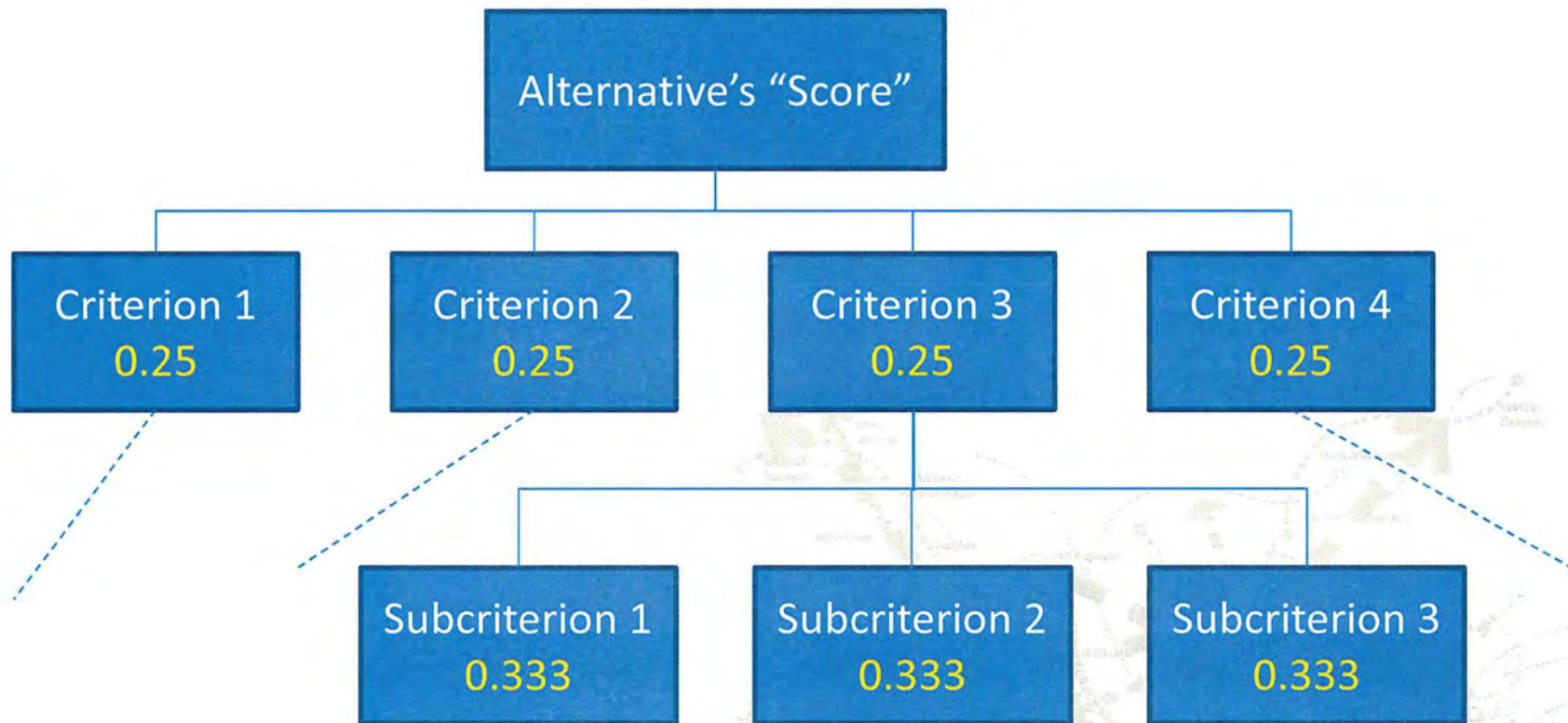| Scenario:	RC	Hypothetical	
Mobility - Residents	$33,936,027,894	$25,611,958,902	Economic
Mobility - Trucks / Commercial	$9,143,327,429	$6,337,078,938	Economic
Emissions	-$394,015,321	$2,729,979,286	Environmental
Accidents	$1,523,838,864	$1,987,327,688	Health/Safety
Reliability	$478,016,975	$678,056,799	Economic
Vehicle Operating	$6,337,078,938	$23,408,823,856	Economic
Auto Ownership	$2,729,979,286	$3,123,173,814	Economic
Physical Activity	-$1,965,964	$8,469,967	Health/Safety
Total	**$53,752,288,102**	**$63,884,869,250**	

Metro | *Making a great place*

Principles of Successful LCP/MCE

- All Criteria taken together should provide a **comprehensive** evaluation
- Criteria should be **mutually exclusive**
- Weights should be set using information from the actual decision-makers (**democratic**)
- Process should be **transparent**
  - Engage stakeholders meaningfully
  - Publish both overall and component evaluation results
  - Fully disclose all analytic methods, assumptions, and limitations
  - Fully disclose all criteria composition and weights

What do you "get"?
Criteria made comparable