A G E N D A

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METRO

MEETING: **METRO TECHNICAL ADVISORY COMMITTEE**
DATE: July 21, 2010
DAY: Wednesday
TIME: 10:00 a.m. to noon
PLACE: Council Chamber

TIME	AGENDA ITEM	ACTION REQUESTED	PRESENTER(S)
10:00 a.m.	**CALL TO ORDER AND INTRODUCTIONS**		Robin McArthur
1. 45 min.	**Linking centers and corridors with investment priorities as a growth management tool** • Revisions to Urban Growth Management Functional Plan Title 6 on centers and corridors *Objective: Input on the approach to align regional investments with local actions centers and corridors*	Informational/ Discussion	Dick Benner Chris Deffebach Title 6 Subcommittee
2. 15 min.	**Revising local and regional monitoring and reporting requirements** • Revisions to Title 8 (Compliance) and Title 9 (Performance Measures) in the Urban Growth Management Functional Plan *Objective: Input on approach to align reporting and monitoring requirements with current policy direction*	Informational/ Discussion	Dick Benner
3. 30 min.	**Climate Prosperity Greenprint: Providing a roadmap and strategic framework to cohere and accelerate green priorities and jobs in the Portland-Vancouver region** • Background and vision • Actions and strategies • Governance and implementation *Objective: Input on the proposed Climate Prosperity strategies and recommend other parties to engage in the development of the governance and implementation process*	Informational/ Discussion	Heidi Rahn, Metro Rob Bennett, Portland Sustainability Institute
4. 30 min.	**Update on state mandates and development of work program for Climate Smart Communities project (HB 2001 scenarios work)** • Implements Climate Action Plan in adopted Regional Transportation Plan • Coordinates with state and regional climate activities *Objective: Input on the approach and major work program tasks*	Informational/ Discussion	Mike Hoglund Kim Ellis
Noon	**ADJOURN**		

MTAC meets the 1st & 3rd Wednesday of the month. The next regular meeting is scheduled for August 4, 2010.
For further information or to get on this mailing list, contact Paulette Copperstone @ 503-797-1562 or "paulette.copperstone@oregonmetro.gov"
Metro's TDD Number – 503-797-1804
Need more information about Metro? Go to www.oregonmetro.gov

600 NE Grand Ave.
Portland, OR 97232-2736

Metro | *Memo*

Date: July 15, 2010
To: MTAC
From: Richard Benner, Chris Deffebach
Subject: Linking centers and corridors with investment priorities as a growth management tool

Centers and corridors, identified as the focus of growth and activity in the 2040 Growth Concept, vary significantly across the region in terms of their stage of development. Each has had varying levels of aspirations, public investment, zoned capacity, level of mixed use and leadership. Title 6, of Metro's Urban Growth Management Functional Plan, guides local jurisdictions in planning and implementing centers. Metro staff, working with the assistance of a Title 6 MTAC subcommittee, have drafted revisions to Title 6 that are intended to align local and regional investments to support local aspirations in centers and corridors, consistent with the 2040 Growth Concept and allow for these varying stages of development.

MTAC reviewed an early draft of these revisions on May 5 and staff has continued to revise the draft based on these comments. The purpose of the discussion at MTAC on July 21st is to review the revised draft and give input on the approach in preparation for release of the proposal as part of the Chief Operating Officer's recommendations for a Community Investment Strategy later this summer. MTAC will be asked to make a recommendation on these revisions to MPAC in the fall as part of the overall Community Investment Strategy recommendations.

Highlights of the revisions include:

- Title 6, which currently applies to centers and station communities, would apply also to corridors and main streets. The need to establish center, corridor and station community boundaries, currently elsewhere in the UGMFP, would be specified in Title 6 and a separate map would record these locations.
- Title 6 currently requires local governments to develop action plans for their centers. As revised, the title would be incentive-based: if a local government wants (1) a "regional investment" [to be defined], (2) a guaranteed 30 percent trip reduction credit under the Transportation Planning Rule, or (3) a looser volume-to-capacity ratio under the Oregon Highway Plan, it must zone the center, corridor or main street to allow a specified mix of uses and a specified number of residents and employees per acre and implement other strategies.

The attached report, prepared as an appendix to the Regional Transportation Plan, documents the Motor Vehicle Trip Generation Rates Adjustment Research and Findings that have been used to support the 30% trip reduction factor. Additional research will be conducted as part of a recently funded OTREC grant by PSU.

Exhibit G of Ordinance No. 10-1244

TITLE 6: CENTERS, CORRIDORS, STATION COMMUNITIES AND MAIN STREETS

3.07.610 Purpose

The Regional Framework Plan (RFP) identifies Centers, Corridors, Main Streets and Station Communities throughout the region and recognizes them as the principal centers of urban life in the region. Title 6 calls for actions and investments by cities and counties, complemented by regional investments, to enhance this role. A regional investment is an investment in a new high-capacity transit line or designated a regional investment in a grant or funding program administered by Metro or subject to Metro's approval.

3.07.620 Actions and Investments in Centers, Corridors, Station Communities and Main Streets

A. In order to be eligible for a regional investment in a Center, Corridor, Station Community or Main Street, or a portion thereof, a city or county shall take the following actions:

1. Establish a boundary for the Center, Corridor, Station Community or Main Street, or portion thereof, pursuant to subsection B;

2. Perform a diagnosis of the Center, Corridor, Station Community or Main Street, or portion thereof, pursuant to subsection C; and

3. Adopt a plan of actions and investments to enhance the Center, Corridor, Station Community or Main Street, or portion thereof, pursuant to subsection D.

B. The boundary of a Center, Corridor, Station Community or Main Street, or portion thereof, shall:

1. Be consistent with the general location shown in the RFP except, for a proposed new Station Community, be consistent with Metro's land use final order for a light rail transit project;

2. For a Corridor with existing high-capacity transit service, include at least those segments of the Corridor that pass through a Regional Center or Town Center;

3. For a Corridor designated for future high-capacity transit in the Regional Transportation Plan (RTP), include the area identified during the system expansion planning process in the RTP; and

4. Be adopted and may be revised by the city council or county board following notice of the proposed boundary action to the Oregon Department of Transportation and Metro in the manner set forth in subsection A of section 3.07.820 of this chapter.

C. A diagnosis of a Center, Corridor, Station Community or Main Street, or portion thereof, shall analyze the following:

1. Physical and market conditions in the area;

2. Physical and regulatory barriers to mixed-use, pedestrian-friendly and transit-supportive development in the area;

3. The city or county development code that applies to the area to determine how the code might be revised to encourage mixed-use, pedestrian-friendly and transit-supportive development;

4. Existing and potential incentives to encourage mixed-use pedestrian-friendly and transit-supportive development in the area; and

5. For Corridors and Station Communities in areas shown as Industrial Area or Regionally Significant Industrial Area under Title 4 of this chapter, barriers to a mix and intensity of uses sufficient to support public transportation at the level prescribed in the RTP.

D. A plan of actions and investments to enhance the Center, Corridor, Station Community or Main Street shall consider the diagnosis completed under subsection C and include at least the following elements:

1. Actions to eliminate, overcome or reduce regulatory and other barriers to mixed-use, pedestrian-friendly and transit-supportive development;

2. Revisions to its comprehensive plan and land use regulations, if necessary, to allow:

   i. In Regional Centers, Town Centers, Station Communities and Main Streets, the mix and intensity of uses specified in section 3.07.650; and

   ii. In Corridors and those Station Communities in areas shown as Industrial Area or Regionally Significant Industrial Area in Title 4 of this chapter, a mix and intensity of uses sufficient to support public transportation at the level prescribed in the RTP;

3. Public investments and incentives to support mixed-use pedestrian-friendly and transit-supportive development; and

4. A plan to achieve the non-SOV mode share targets adopted by the city or county pursuant to section 3.08.230 of the Regional Transportation Functional Plan (RTFP) that includes:

   i. The transportation system designs for streets, transit, bicycles and pedestrians consistent with Title 1 of the RTFP;

   ii. A transportation system or demand management plan consistent with section 3.08.160 of the RTFP; and

   iii. A parking management program consistent with section 3.08.410 of the RTFP.

E. A city or county that has completed all or some of the requirements of subsections B, C and D may seek recognition of that compliance from Metro by written request to the Chief Operating Officer (COO).

F. Compliance with the requirements of this section is not a prerequisite to:

1. Investments in Centers, Corridors, Station Communities or Main Streets that are not regional investments; or

2. Investments in areas other than Centers, Corridors, Station Communities and Main Streets.

3.07.630 Eligibility Actions for Lower Mobility Standards and Trip Generation Rates

A. A city or county is eligible to use the higher volume-to-capacity standards in Table 7 of the 1999 Oregon Highway Plan when considering an amendment to its comprehensive plan or land use regulations in a Center, Corridor, Station Community or Main Street, or portion thereof, if it has taken the following actions:

1. Established a boundary pursuant to subsection B of section 3.07.620; and

2. Adopted land use regulations to allow the mix and intensity of uses specified in section 3.07.650.

B. A city or county is eligible for an automatic reduction of 30 percent below the vehicular trip generation rates recommended by the Institute of Traffic Engineers when analyzing the traffic impacts, pursuant to OAR 660-012-0060, of a plan amendment in a Center, Corridor, Main Street or Station Community, or portion thereof, if it has taken the following actions:

1. Established a boundary pursuant to subsection B of section 3.07.620;

2. Revised its comprehensive plan and land use regulations, if necessary, to allow the mix and intensity of uses specified in section 3.07.650; and

3. A plan to achieve the non-SOV mode share targets adopted by the city or county pursuant to section 3.08.230 of the Regional Transportation Functional Plan (RTFP)that includes:

i. Transportation system designs for streets, transit, bicycles and pedestrians consistent with Title 1 of the RTFP;

ii. A transportation system or demand management plan consistent with section 3.08.160 of the RTFP; and

iii. A parking management program consistent with section 3.08.410 of the RTFP.

3.07.640 Activity Levels for Centers, Corridors, Station Communities and Main Streets

A. Centers, Corridors, Station Communities and Main Streets need a critical number of residents and workers to be vibrant and successful. The following average number of residents and workers per acre is recommended for each:

1. Central City - 250 persons
2. Regional Centers - 60 persons
3. Station Communities - 45 persons
4. Corridors - 45 persons
5. Town Centers - 40 persons
6. Main Streets - 39 persons

B. Centers, Corridors, Station Communities and Main Streets need a mix of uses to be vibrant and walkable. The following mix of uses is recommended for each:

1. The land uses listed in *State of the Centers: Investing in Our Communities*, January, 2009, such as grocery stores and restaurants;
2. Institutional uses, including schools, colleges, universities, hospitals, medical offices and facilities;
3. Civic uses, including government offices open to and serving the general public, libraries, city halls and public spaces.

C. Centers, Corridors, Station Communities and Main Streets need a mix of housings types to be vibrant and successful. The following mix of housing types is recommended for each:

1. The types of housing listed in the “needed housing” statute, ORS 197.303(1);
2. The types of housing identified in the city’s or county’s housing need analysis done pursuant to ORS 197.296 or statewide planning Goal 10 (Housing); and
3. Accessory dwellings pursuant to section 3.07.120 of this chapter.

3.07.650 Centers, Corridors, Station Communities and Main Streets Map

A. The Centers, Corridors, Station Communities and Main Streets Map is incorporated in this title and is Metro's official depiction of their boundaries. The map shows the boundaries established pursuant to this title and boundaries established prior to January 1, 2011. Until a local government has established a boundary by action of its elected officials, the map will depict the approximate locations of Centers, Corridors, Station Communities and Main Streets shown on the 2040 Growth Concept Map in the Regional Framework Plan (RFP).

B. A city or county may revise the boundary of a Center, Corridor, Station Community or Main Street so long as the boundary is consistent with the general location on the 2040 Growth Concept Map in the RFP. The city or county shall provide notice of its proposed revision as prescribed in subsection B of section 3.07.620.

C. The COO shall revise the Centers, Corridors, Station Communities and Main Streets Map by order to conform the map to establishment or revision of a boundary under this title.

Proposed Amendments to Title 8 (Compliance Procedures)
of the Urban Growth Management Functional Plan

Title 8 establishes procedures to ensure that city and county comprehensive plans and land use regulations comply with requirements of the Urban Growth Management Functional Plan (UGMFP). Generally, the title requires cities and counties to notify Metro when they propose to adopt changes to their plans and land use regulations. It prescribes the manner in which Metro participates in the local process. It offers local governments an option with to request extensions of time for compliance and for exceptions from compliance. Title 8 requires the COO to report to the Metro Council on progress of cities and counties toward full compliance with the UGMFP). And, finally, it establishes a procedure for enforcement of a functional plan requirement if a city or county refuses to comply.

The proposed amendments seek to streamline the procedures in Title 8 to lighten compliance burdens on local governments and Metro. The principal amendments would do the following:

1. Eliminate the process for MPAC review of non-compliance. This process was intended to seek MPAC's advice on issues of non-compliance that are widespread, rather than single instances of non-compliance. The process has not been used. Should issues of general non-compliance arise the Council can seek MPAC's advice at any time, without a Title 8 process.

2. Authorize the COO to grant extensions of time for compliance and exceptions from compliance, with appeal to the Metro Council. Currently, local requests go directly to the Council for hearing. The criteria for an extension or an exception would be unchanged. The COO would issue an order that could be appealed to the Council.

3. Eliminate the annual hearing before the Council to consider the annual compliance report from the COO. The COO would simply file the report. Anyone who disagreed with a determination in the report could seek Council review of it.

4. Conform the enforcement remedies to 2009 legislation that clarifies enforcement actions the Council can take in the face of non-compliance by a city or county.

Exhibit I to Ordinance No. 10-1244

TITLE 8: COMPLIANCE PROCEDURES

3.07.810 Compliance With the Functional Plan

A. The purpose of this section is to establish a process for determining whether city or county comprehensive plans and land use regulations comply with requirements of the Urban Growth Management Functional Plan. Where the terms "compliance" and "comply" appear in this title, the terms shall have the meaning given to "substantial compliance" in section 3.07.1010.

B. Cities and counties shall amend their comprehensive plans and land use regulations to comply with the functional plan, or an amendment to the functional plan, within two years after its acknowledgement of the plan or amendment, or after any later date specified by the Metro Council in the ordinance adopting or amending the functional plan. The Chief Operating Officer (COO) shall notify cities and counties of the acknowledgment date and compliance dates described in subsections C and D.

C. After one year following acknowledgment of a functional plan requirement, cities and counties that amend their comprehensive plans and land use regulations shall make such amendments in compliance with the new functional plan requirement.

D. Cities and counties whose comprehensive plans and land use regulations do not yet comply with the new functional plan requirement shall, after one year following acknowledgment of the requirement, make land use decisions consistent with the requirement. The COO shall notify cities and counties of the date upon which functional plan requirements become applicable to land use decisions at least 120 days before that date. For the purposes of this subsection, "land use decision" shall have the meaning of that term as defined in ORS 197.015(10).

E. An amendment to a city or county comprehensive plan or land use regulation shall be deemed to comply with the functional plan upon the expiration of the appropriate appeal period specified in ORS 197.830 or 197.650 or, if an appeal is made, upon the final decision on appeal. Once the amendment is deemed to comply, the functional plan

requirement shall no longer apply to land use decisions made in conformance with the amendment.

F. An amendment to a city or county comprehensive plan or land use regulation shall be deemed to comply with the functional plan as provided in subsection E only if the city or county provided notice to the COO as required by subsection A of section 3.07.820.

3.07.820 Review by the Chief Operating Officer

A. A city or county proposing an amendment to a comprehensive plan or land use regulation shall submit the proposed amendment to the COO at least 45 days prior to the first evidentiary hearing on the amendment. The COO may request, and if so the city or county shall submit, an analysis of compliance of the amendment with the functional plan. If the COO submits comments on the proposed amendment to the city or county, the comment shall include analysis and conclusions on compliance and a recommendation with specific revisions to the proposed amendment, if any, that would bring it into compliance with the functional plan . The COO shall send a copy of comment to those persons who have requested a copy.

B. If the COO concludes that the proposed amendment does not comply with the functional plan, the COO shall advise the city or county that it may:

1 Revise the proposed amendment as recommended in the COO's analysis;

2 Seek an extension of time, pursuant to section 3.07.830, to bring the proposed amendment into compliance with the functional plan; or

3 Seek an exception pursuant to section 3.07.840.

3.07.830 Extension of Compliance Deadline

A. A city or county may seek an extension of time for compliance with a functional plan requirement. The city or county shall file an application for an extension on a form provided by the COO. Upon receipt of an application, the COO shall notify the city or county and those persons who request notification of applications for extensions. Any

person may file a written comment in support of or opposition to the extension.

B. The COO may grant an extension if the city or county is making progress toward compliance or there is good cause for failure to meet the deadline for compliance. Within 30 days after the filing of a complete application for an extension, the COO shall issue an order granting or denying the extension. The COO shall not grant more than two extensions of time to a city or count and shall grant no extension of more than one year. The COO shall send the order to the city or county and any person who filed a written comment.

C. The COO may establish terms and conditions for the extension in order to ensure that compliance is achieved in a timely and orderly fashion and that land use decisions made by the city or county during the extension do not undermine the ability of the city or county to achieve the purposes of the functional plan requirement. A term or condition must relate to the requirement of the functional plan to which the COO has granted the extension.

D. The city or county applicant or any person who filed written comment on the extension may appeal the COO's order to the Metro Council within 15 days after receipt of the order. If an appeal is filed, the Council shall hold a hearing to consider the appeal. After the hearing, the Council shall issue an order granting or denying the extension and shall send copies to the applicant and any person who participated in the hearing. The city or county or a person who participated in the proceeding may seek review of the Council's order as a land use decision described in ORS 197.015(10)(a)(A).

3.07.840 Exception from Compliance

A. A city or county may seek an exception from compliance with a functional plan requirement by filing an application on a form provided by the COO. Upon receipt of an application, the COO shall notify the city or county and those persons who request notification of requests for exceptions. Any person may file a written comment in support of or opposition to the exception.

B. Except as provided in subsection C, the COO may grant an exception if :

1. it is not possible to achieve the requirement due to topographic or other physical constraints or an existing development pattern;

2. this exception and likely similar exceptions will not render the objective of the requirement unachievable region-wide;

3. the exception will not reduce the ability of another city or county to comply with the requirement; and

4. the city or county has adopted other measures more appropriate for the city or county to achieve the intended result of the requirement.

C. The COO may grant an exception to the housing capacity requirements in sections 3.07.120, or 3.07.130 if:

a. the city or county has completed the analysis of capacity for dwelling units required by section 3.07.120;

b. it is not possible to comply with the requirements due to topographic or other physical constraints, an existing development pattern, or protection of natural resources pursuant to Titles 3 or 13 of this chapter; and

c. this exception and other similar exceptions will not render the targets unachievable region-wide.

D. The COO may establish terms and conditions for the exception in order to ensure that it does not undermine the ability of the region to achieve the purposes of the requirement. A term or condition must relate to the requirement of the functional plan to which the COO grants the exception. The COO shall incorporate the terms and conditions into the order on the exception.

E. The city or county applicant or a person who filed a written comment on the exception may appeal the COO's order to the Metro Council within 15 days after receipt of the order. If

an appeal is filed, the Council shall hold a hearing to consider the appeal. After the hearing, the Council shall issue an order granting or denying the exception and send copies to the applicant and any person who participated in the hearing. The city or county or a person who participated in the proceeding may seek review of the Council's order as a land use decision described in ORS 197.015(10)(a)(A).

3.07.850 Enforcement of Functional Plan

A. The Metro Council may initiate enforcement if a city or county has failed to meet a deadline for compliance with a functional plan requirement or if the Council has good cause to believe that a city or county is engaged in a pattern or a practice of decision-making that is inconsistent with the functional plan, ordinances adopted by the city or county to implement the plan, or the terms or conditions in an extension or an exception granted pursuant to section 3.07.830 or 3.07.840, respectively. The Council may consider whether to initiate enforcement proceedings upon the request of the COO or a Councilor. The Council shall consult with the city or county before it determines there is good cause to proceed to a hearing under subsection B.

B. If the Council decides there is good cause, the Council President shall set the matter for a public hearing before the Council within 90 days of its decision. The COO shall publish notice of the hearing in a newspaper of general circulation in the city or county and send notice to the city or county, MPAC and any person who requests a copy of such notices.

C. The COO shall prepare a report and recommendation on the pattern or practice, with a proposed order, for consideration by the Council. The COO shall publish the report at least 14 days prior to the public hearing and send a copy to the city or county and any person who requests a copy.

D. At the conclusion of the hearing, the Council shall adopt an order that dismisses the matter if it decides the city or county complies with the requirement. If the Council decides the city or county has failed to meet a deadline for compliance with a functional plan requirement or has engaged in a pattern or a practice of decision-making that is inconsistent with the functional plan, ordinances

adopted by the city or county to implement the plan, or terms or conditions of an extension or an exception granted pursuant to section 3.07.830 or 3.07.840, respectively, the Council may adopt an order that:

1. Directs changes in the city or county ordinances necessary to remedy the pattern or practice; or

2. Includes a remedy authorized in ORS 268.390(7).

E. The Council shall issue its order not later than 30 days following the hearing and send copies to the city or county, MPAC and any person who requests a copy.

3.07.860 Citizen Involvement in Compliance Review

A. Any citizen may contact Metro staff or the COO or appear before the Metro Council to raise issues regarding local functional plan compliance, to request Metro participation in the local process, or to request the COO to appeal a local enactment for which notice is required pursuant to subsection A of section 3.07.820. Such contact may be oral or in writing and may be made at any time.

B. In addition to considering requests as described in A above, the Council shall at every regularly scheduled meeting provide an opportunity for citizens to address the Council on any matter related to this functional plan. The COO shall maintain a list of persons who request notice in writing of COO reviews, reports and orders under this chapter and shall send requested documents as provided in this chapter.

C. Cities, counties and the Council shall comply with their own adopted and acknowledged Citizen Involvement Requirements (Citizen Involvement) in all decisions, determinations and actions taken to implement and comply with this functional plan. The COO shall publish a citizen involvement fact sheet, after consultation with the Metro Committee for Citizen Involvement, that describes opportunities for citizen involvement in Metro's growth management procedures as well as the implementation and enforcement of this functional plan.

3.07.870 Compliance Report

A. The COO shall submit a report to the Metro Council by March 1 of each calendar year on the status of compliance by cities and counties with the requirements of the Urban Growth Management Function Plan. The COO shall send a copy of the report to each city and county within Metro.

B. A city, county or person who disagrees with a determination in the compliance report may seek review of the determination by the Council by written request to the COO. The Council shall review the request at a regularly scheduled meeting and shall notify the requestor and the affected city or county of the date of the review. The notification shall state that the Council does not have authority to:

1. Determine whether previous amendments of comprehensive plans or land use regulations made by a city or county comply with functional plan requirements if those amendments already comply pursuant to subsections E and F of section 3.07.810; or

2. Reconsider a determination in a prior order issued under this section that a city or county complies with a requirement of the functional plan.

C. Following its review, the Council shall adopt an order that determines whether the city or county complies with the functional plan requirements raised in the request. The Council may rely upon the COO's report for its determination. The COO shall send a copy of the order to the requestor, the affected city or county and any person who participated in the Council review.

D. A city or county or a person who participated at hearing may seek review of the Council's order as a land use decision described in ORS 197.015(10)(a)(A).

The Portland Metro Climate Prosperity Project

A GREENPRINT FOR THE METRO REGION

DRAFT June 2010

What is Climate Prosperity?

Climate Prosperity aims to fully integrate climate change policy and economic development into a single strategy. By leveraging our green assets to grow our green markets, companies, workforce, and innovation, the strategy will help unify and connect existing green efforts in the region, rather than duplicating work that's been done. The Rockefeller Brothers Fund provided start-up funding to develop the Greenprint.

What is the Greenprint?

The Greenprint provides a roadmap and strategic framework to cohere and accelerate green priorities and jobs in the Portland-Vancouver region. Created with input from over 150 leaders throughout the region, the Greenprint is a call to action that identifies six green actions and recommends key strategies to achieve them.

The Big Audacious Goal?

To become the nation's beacon in climate prosperity by enhancing community vitality and livability, achieving more economic growth and resiliency and producing less environmental impact—given the region's assets and size—than any other region in the world.

Where can I find out more?

Read the full Greenprint and find out how to get involved at:

www.pdxinstitute.org/climateprosperity

THE WORKING GROUP

Climate Solutions

DSW Collective

Formos

Lane Powell

Greenlight Greater Portland

Metro

Nike

Oregon Business Council

Oregon Institute of Technology

Portland Bureau of Planning and Sustainability

Portland Development Commission

Portland Sustainability Institute

Regional Partners

Worksystems, Inc.

ACTION 1:
Establish Finance Mechanisms for Green Innovation

- Establish clean energy finance programs
- Develop regional investment strategy to support green infrastructure, smart growth and sustainable development projects
- Develop utility service and revenue recovery models to accelerate resource efficiency and smart grid
- Develop regional green bank strategy that explicitly directs a portion of its loans into energy efficiency and renewable energy investments
- Encourage the Oregon Investment Council to invest a portion of the state treasury portfolio into local clean technology projects

ACTION 2:
Accelerate Energy and Resource Efficiency

- Establish clear goals and targets for efficiency in the metro region
- Accelerate bulk procurement of on-site clean energy systems
- Adopt high-performance building and infrastructure standards for major redevelopment sites

ACTION 3:
Commercialize Green Technologies

- Create a commercialization gap fund through the State of Oregon's signature Research Centers
- Educate and drive businesses to existing resources for commercialization
- Develop a consortium of companies to work together on proof-of-concept new buildings and retrofit projects to develop and commercialize innovative technologies

ACTION 4:
Cultivate the Regional Clean Tech Cluster

- Direct a dedicated portion of the region's economic development resources to the Clean Tech cluster
- Support the regional wind energy industry
- Support the regional solar energy industry
- Support the regional green development industry
- Support the regional electric vehicle, battery storage, and smart grid industries

ACTION 5:
Develop a Pipeline of Green Talent

- Forecast workforce needs
- Strategically invest in post secondary programs that will result in family wage green jobs
- Integrate green curriculum into metro region school districts (K-12)
- Create pathways to employment for all through sustainable workforce retraining programs

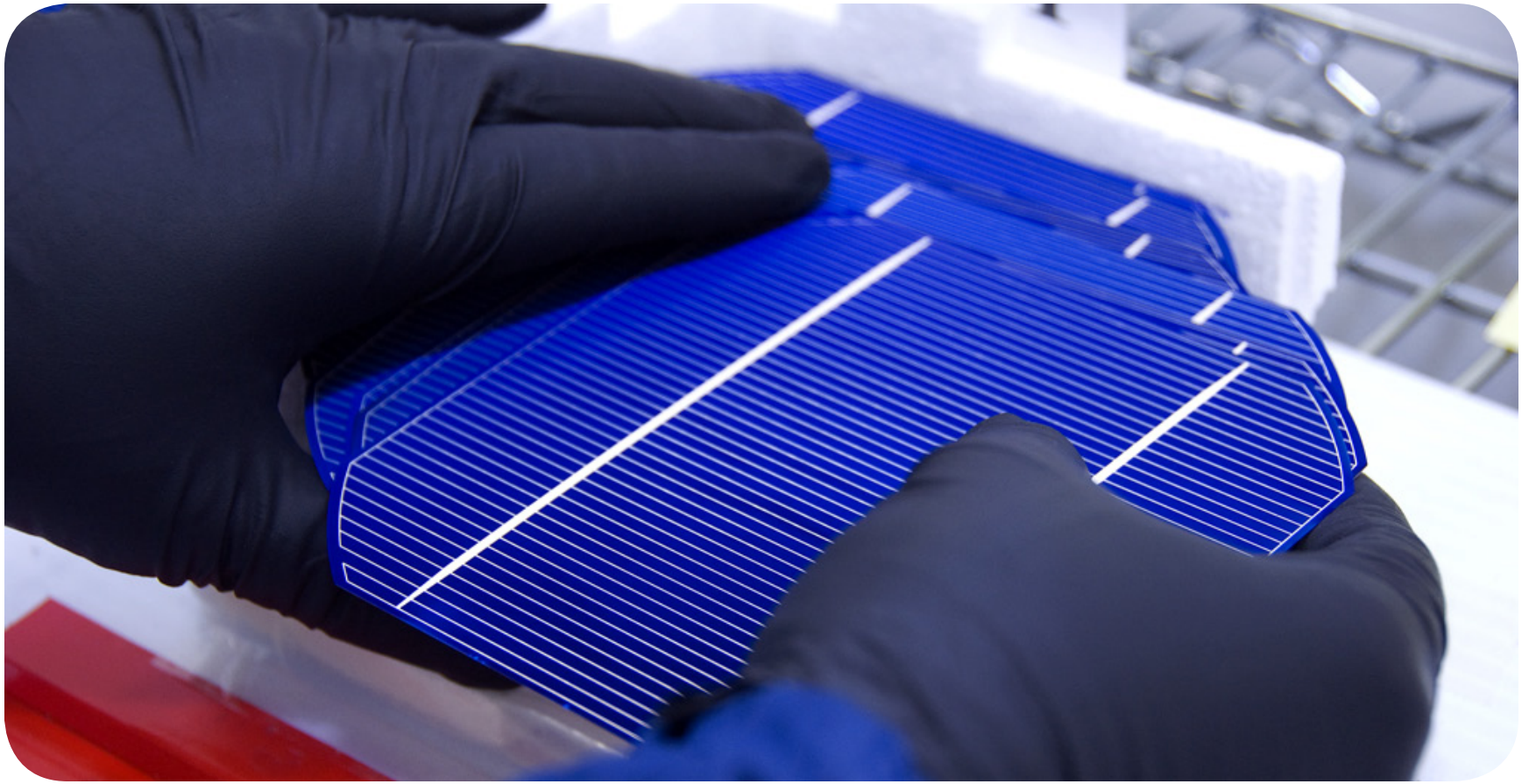
ACTION 6:
Build Support and Communicate Results

- Create Climate Prosperity leadership council to manage, promote, and track Greenprint actions
- Create a single, regional public-private economic development strategy
- Set up a measurement system to track quarterly and annual progress on key economic and environmental measures

The
Portland Metro
Climate Prosperity
Project

A GREENPRINT FOR THE METRO REGION

DRAFT June 2010



A Letter from the Working Group

In 2009, the Portland metropolitan region became a pilot of the national Climate Prosperity Project, an invitation-only initiative led by the Rockefeller Brothers Fund to reduce emissions while stimulating economic prosperity. We asked the question: how does the Portland region successfully curb emissions, expand business opportunity, and increase savings across jurisdictional boundaries?

Our region is an early adopter of green technologies, conservation, and innovative public policy. It's known as a place where the environment and livability takes priority, bucking national trends around sprawl and greenhouse gas emissions.

But our environmental leadership has not fully materialized into a strong economic development and public policy strategy. The promise of a clean economy is in our sights, yet other regions are vying for the leadership role — and they have the intent and capacity to pass us by.

This Greenprint is a call to action. It is a set of strategies to elevate and prioritize our activities, starting immediately. We can no longer afford to work without a strong regional platform on which to frame collaborative efforts. We can and must align our initiatives to grow our competitive advantages, scale up our efforts, and significantly reduce our environmental impacts.

Over the coming months, we will engage the region's business and civic communities to drive action. We will create a CEO-level leadership council to guide implementation and track progress. Success will require a united and aggressive effort over the next three years to strengthen and expand the Portland region's role on the leading edge of the global clean economy.

The time to act is now — please join us.

Sincerely,
The Portland Metro Climate Prosperity Working Group

THE WORKING GROUP

Climate Solutions

DSW Collective

Formos

Greenlight Greater Portland

Lane Powell

Metro

Nike

Oregon Business Council

Oregon Institute of Technology

Portland Bureau of Planning and Sustainability

Portland Development Commission

Portland Sustainability Institute

Regional Partners

Worksystems, Inc.

Executive Summary

In the past decade, the Portland metropolitan region has emerged as a national leader in urban sustainability and clean technology. The region has witnessed a veritable explosion of activity across companies, government, nonprofit organizations and educational institutions, resulting in a dazzling array of new green products, policies, programs, and infrastructure.

It's clear that the region's track record has generated national recognition as well as tangible environmental and economic benefit. But the region's early adopter advantage diminishes as other cities and metropolitan regions—armed with greater resources and more sophisticated strategic partnerships and coordination—adopt the green mantle.

> The region is not guaranteed a leadership position in the fast-moving global green economy unless it invests in and organizes itself for success.

The national landscape is shifting quickly. The federal government is pouring billions of dollars into green research and business development. Innovation and entrepreneurship are soaring across all sectors of the clean economy.

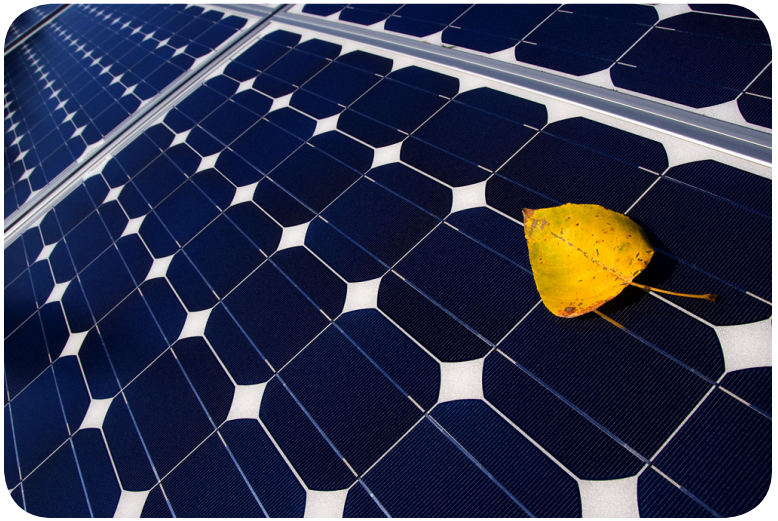
The Portland metropolitan region's challenge is not to discover the benefits of living, working, or thinking green. Rather, the challenge is to fully and strategically engage our business community, different levels of local and regional government, and our citizens in ways that keep the region at the forefront of the green economy. Few in our region are satisfied with the level of progress we have made creating green jobs or deploying innovative policy and financing structures that can scale broadly to reach the vision we all share for a sustainable economy. Put simply, the region is not guaranteed a leadership position in the fast-moving, global green economy unless it invests in and organizes itself for success.

Business and civic leaders need to take concerted action today to create more linkages among key players around shared market interests, regional business planning, and signature projects. The region must also increase its capacity to respond quickly and effectively to federal funding opportunities that will drive clean technology innovation and economic growth for years to come.

The Portland Metro Climate Prosperity Greenprint provides a roadmap to accelerate the region's leadership in green development and clean technology. It starts from the premise that the Portland metropolitan region can simultaneously strengthen its economy, reduce carbon emissions, and maintain a focused leadership position in the global green economy.

The Greenprint is a regional call to action that identifies six green actions and recommends key strategies to achieve them. The six strategic priorities were developed in consultation with more than 150 business, higher education, and workforce leaders and the Climate Prosperity Working Group over the last year. The Greenprint synthesizes the many catalytic but often disparate initiatives that are currently underway throughout the region and offers up a series of new strategies based on a scan of best practices throughout North America. In each case the strategies proposed require true regional collaboration — no individual jurisdiction, sector, or institution has the full range of assets and expertise to succeed on its own.

It's time for the region's business, civic, and environmental leaders to pull together to accelerate green job creation and invest at scale in our region's most promising green practices.



ACTION 1:
Establish Finance Mechanisms for Green Innovation

- Establish clean energy finance programs
- Develop regional investment strategy to support green infrastructure, smart growth and sustainable development projects
- Develop utility service and revenue recovery models to accelerate resource efficiency and smart grid
- Develop regional green bank strategy that explicitly directs a portion of its loans into energy efficiency and renewable energy investments
- Encourage the Oregon Investment Council to invest a portion of the state treasury portfolio into local clean technology projects

ACTION 2:
Accelerate Energy and Resource Efficiency

- Establish clear goals and targets for efficiency in the metro region
- Accelerate bulk procurement of on-site clean energy systems
- Adopt high-performance building and infrastructure standards for major redevelopment sites

ACTION 3:
Commercialize Green Technologies

- Create a commercialization gap fund through the State of Oregon's signature Research Centers
- Educate and drive businesses to existing resources for commercialization
- Develop a consortium of companies to work together on proof-of-concept new buildings and retrofit projects to develop and commercialize innovative technologies

ACTION 4:
Cultivate the Regional Clean Tech Cluster

- Direct a dedicated portion of the region's economic development resources to the Clean Tech cluster
- Support the regional wind energy industry
- Support the regional solar energy industry
- Support the regional green development industry
- Support the regional electric vehicle, battery storage, and smart grid industries

ACTION 5:
Develop a Pipeline of Green Talent

- Forecast workforce needs
- Strategically invest in post secondary programs that will result in family wage green jobs
- Integrate green curriculum into metro region school districts (K-12)
- Create pathways to employment for all through sustainable workforce retraining programs

ACTION 6:
Build Support and Communicate Results

- Create Climate Prosperity leadership council to manage, promote, and track Greenprint actions
- Create a single, regional public-private economic development strategy
- Set up a measurement system to track quarterly and annual progress on key economic and environmental measures

Introduction

In the past decade, the Portland metropolitan region has emerged as a national leader in urban sustainability and clean technology. The region has witnessed a veritable explosion of activity across companies, government, nonprofit organizations, and educational institutions resulting in a dazzling array of new green products, policies, programs, and infrastructure.

Myriad studies have documented the region's growing concentration and competitiveness in clean technology industries including solar manufacturing, wind energy, green building, environmental technology, energy efficiency, and electric vehicles across the state and region.[1]

Likewise, case studies of the region's unique public policy framework that incents green behavior through renewable energy standards, land use, transportation, building code, and recycling policies has become required reading in urban and regional planning departments across the country.

The Portland-Vancouver Metro Region

The footprint of the greater Portland-Vancouver metro area encompasses seven counties and 61 cities and towns.

Being a bi-state region is an asset for economic developers, as the distinctiveness of the north and south sides of the river means a greater array of options for businesses looking to locate or relocate.

But it poses challenges as well, among them state tax policies that stop at the river and poor communication in general across the Columbia.

Climate Prosperity envisions alignment throughout the entire metro area around a clean economy approach to economic development.

1 A national benchmarking report released by the Pew Charitable trusts in 2009 demonstrates that Oregon has one of the fastest growing clean energy economies in the country and a larger proportion of its workforce employed in the clean energy sector than any other state. Oregon led the nation with just over 1 percent of all of its jobs focused on the clean energy economy in 2007. See table on page 10.

The Region's Success:

The Portland metropolitan region distinguishes itself among peers as a community of eager inventors and early adopters of green innovation. It is characterized by a deep and long history of environmental activism and has gained a reputation as a "living laboratory" for sustainable urbanism. The region's green ethos characterizes and informs sustainable business practice as well with global sustainability leaders such as Intel and Nike setting the pace.

Portland-Vancouver has created literally hundreds of "green" success stories for which its business and civic leaders and citizenry should rightfully be proud.

- The region has tamed sprawl and vehicle miles traveled through implementation of an urban growth boundary resulting in a "green dividend" of more than $1 billion[2]
- The region is characterized by abundant mass transit (including busses, light rail and streetcars) linking Portland and surrounding communities
- The region boasts among the highest recycling rates, transit ridership rates, bicycle commuting rates and hybrid vehicle ownership rates in the nation
- The region has created thousands of high paying "green jobs" by attracting the largest concentration of solar manufacturing firms in the country[3]
- The state is a leader in the production of wind energy with Portland serving as home to North American headquarters of two of the largest global wind energy companies — Vestas and Iberdrola[4]
- Portland's major electric utility companies are ranked number 2 and 3 respectively in the nation for renewable energy sales[5]
- Bucking national trends, Portland has reduced carbon emissions below 1990 levels[6]

These success stories and others have led the Portland metro to become a darling of the national media and a magnet for young, creative talent.[7] The city and region routinely top national comparative rankings with respect to sustainability and livability.[8]

2 CEOs for Cities, Portland's Green Dividend, 2007

3 The region's solar cluster is anchored by SolarWorld in Hillsboro. SolarWorld is projected to employ 1,000 employees at full capacity. Other notable firms in the region's solar cluster include Solaicx and Sanyo.

4 Over 2,600 MW of capacity is already installed or under construction in Oregon and Washington, who rank 7th and 5th in national wind installation, respectively

5 The U.S. Department of Energy's National Renewable Energy Laboratory released its annual assessment of leading green power programs in May. Ranked by renewable energy sales (kWh/year), Austin Energy (Austin, TX), Portland General Electric (Oregon), and PacifiCorp (Oregon and five other states) ranked first, second and third in the nation.

6 City of Portland and Multnomah County, Climate Action Plan 2009. Portland instituted the first city local action plan on global warming in 1993. In 2008, Multnomah County emissions were 1% below 1990 levels, with a target to be 10% below in 2010, 40% below in 2030 and 80% below 1990 levels in 2050.

7 Greater Portland and Austin, TX lead the nation for attracting and retaining 18- to 34-year-old talent, 30% more than the national average.

8 Portland was rated the most sustainable city in the US in 2008, and one of the top 50 most livable cities in the world in 2009.

The Region's Opportunity:

The Portland metropolitan region has the opportunity to convert its green advantage into *widespread economic and competitive* advantage. In the decade to come only a handful of metropolitan regions will cement their position as leaders in the clean energy economy. Portland-Vancouver has the opportunity to leverage its current leadership position and expertise in sustainability to grow and thrive in the global clean technology marketplace. The clean energy economy can create badly needed jobs, investment, and wealth for the region.[9]

As several reports recently note, the Northwest is already leading in a number of critical and emerging clean energy segments. In 2009, the Pew Charitable Trusts released a national comparative report entitled, "The Clean Energy Economy: Repowering Jobs, Businesses and Investments Across America." The report shows that jobs in Oregon's core green economy sectors grew seven times faster than all jobs in the state between 1998 and 2007. At 1% of total employment, Oregon enjoys a larger share of employment in core green sectors than any other state. Oregon is one of only three states that the PEW report classified as a "large and fast growing" clean energy economy. Core green sectors in the state include energy efficiency, energy generation, and recycling technology.

What is the Clean Economy?

A clean energy economy generates jobs, businesses and investments while expanding clean energy productions, increasing energy efficiency, reducing greenhouse gas emissions, waste and pollution, and conserving water and other natural resources.

— Pew Charitable Trusts, The Clean Energy Economy

Defining Clean Economy Success:

- National leadership in green industries
- Quality job and income growth
- Growth and retention of existing companies
- Attraction and creation of new companies
- Transformation of the region's broader economic base

9 Portland's median income lags that of other west coast cities such as San Francisco and Seattle and its poverty rate is higher

Climate Solutions and Clean Edge reached similar conclusions in their 2008 report, "Carbon-Free Prosperity 2025." Their analysis determined that the Northwest already has unique competitive advantage in five key areas: solar PV manufacturing, green building design and services, wind power development, sustainable bio-energy and smart grid technologies. Clean Edge estimates that these five sectors alone could provide from 41,000 to 63,000 new jobs for Oregon and Washington by 2025.[10]

> Those companies, communities, governments, and regions that embrace clean-energy technologies... stand to benefit immensely by creating new jobs; becoming center of technological, business, and sustainability excellence; and leading the next wave of global innovation. Those that do not embrace this new wave, and continue to depend as much as they always have on carbon-intensive, increasingly costly and volatile fossil fuels, risk falling behind economically, socially and environmentally.
>
> ***— Carbon Free Prosperity 2025***

With focus and determination the region can seize a market leadership position in the clean energy economy. As Carbon Free Prosperity notes, however, "it is critical that the (Northwest) region prioritize investments in carefully selected areas in which it is most likely to be a leader in global markets, leverage existing and emerging assets, and build out vibrant clusters of expertise. The 'play to your strengths' strategy that often creates success for leading businesses and sports teams applies to clean-tech economic development as well."[11]

10 Carbon Free Prosperity 2025, pg. 5

11 Carbon Free Prosperity 2025, pg. 9, op. cit.

Key Growth Opportunities Identified by Research 2008-2009

Study	Clean Edge/Climate Solutions 2008, "Carbon Free Prosperity 2025"	Greenlight Greater Portland's Industry Cluster Research 2008	Portland Development Commission's Industry Cluster Research 2009	Pew Study 2009, "The Clean Energy Economy"
Purpose of Study	Identify Oregon and Washington's biggest Clean Tech Growth Opportunities	Identify Portland MSA's biggest strengths by concentration of companies and talent	Identify Portland region's biggest opportunities for job creation	Document current state of clean tech activity across 50 states
Major Areas of Strength or Opportunity Identified	Solar PV Manufacturing	Solar PV Manufacturing	Solar PV Manufacturing	Clean Energy
	Wind Power Development	Wind Power Development	Wind Power Development	Training and Support
	Green Building Design and Services	Green Building Design and Services	Green Building Design and Services	Environmentally Friendly Production[1]
	Smart Grid Technologies	Environmental Services and Recycling Technologies	Energy Efficiency	Energy Efficiency
	Sustainable Bio-Energy		Transportation and Energy Storage	Conservation and Pollution Mitigation[2]

1 PEW definition of Environmentally Friendly Production includes green building design and construction, alternative transportation fuel development, electric vehicle and equipment production, and sustainable agriculture

2 PEW definition of Conservation and Pollution mitigation includes environmental consulting, recycling, waste treatment, emissions control and monitoring, and water/wastewater treatment

The Region's Challenge:

The Portland region's early adopter advantage diminishes as other cities and metropolitan regions—armed with greater resources and aggressive strategic partnerships and coordination—adopt the green mantle.

Unlike many regions, the Portland metro's challenge is not to discover the benefits of living, working, or thinking green. Rather, the challenge is to fully and strategically engage the business community, government, and citizens in ways that keep the region at the forefront of the green economy. Few of us are satisfied with the level of progress the region has made creating green jobs or deploying innovative policy and financing structures that can scale broadly to reach the vision we all share for a sustainable economy.

Put simply, the Portland metropolitan region is not guaranteed a leadership position in the fast-moving, global green economy unless it invests in and organizes itself for success.

Business and civic leaders across the region need to take concerted action today to create more linkages among key players around shared market interests, regional business planning and signature projects. In addition there is great need to increase the region's capacity to respond quickly and effectively to federal funding opportunities that will drive clean technology innovation and economic growth for years to come.

The region's past accomplishments have put our community at the forefront of green innovation, but fragmented governance, a propensity toward process, long-standing ambivalence about "big business" and wealth, and a commitment to do-it-yourself culture (DIY) hold the region back. Regional business and civic leaders must not become complacent thinking that current approaches are good enough for the Portland metro to keep pace with the competition. Here's the reality: they aren't.

The Portland Metro Greenprint:

The Portland Metro Greenprint provides a roadmap to accelerate leadership in green development and clean technology. It starts with the premise that Portland-Vancouver can simultaneously strengthen its economy, reduce carbon emissions, and maintain a focused leadership position in the global green economy — but only if business and civic leaders take a hard look at current deficiencies and address them head on.

As a region, we can and must do better.

Imagine if our business and civic leaders committed to scaling up the best ideas and strategies developed within our region, made growing our regional green economy a priority, and organized accordingly without worrying about jurisdictional boundaries, organizational credit, or individual recognition? What if jurisdictions and organizations agreed on a set of shared priorities, then invested heavily in dollars and talent to make the kind of major impact that none of the parties could have produced on their own?

The Climate Prosperity Greenprint provides a roadmap for just this type of collaboration. It is a regional call to action that identifies six green actions and recommends key strategies to achieve them. The six strategic actions were developed in consultation with more than 150 individuals and the Greenprint Working Group. In each case the strategies proposed require regional collaboration — no individual jurisdiction, sector, or institution has the full range of assets and expertise to succeed on its own.

The Big Audacious Goal?

To become the nation's beacon in climate prosperity by enhancing community vitality and livability, achieving more economic growth and resiliency and producing less environmental impact—given the region's assets and size—than any other region in the world.

What is Climate Prosperity?

The Portland metropolitan region has been designated as a pilot Climate Prosperity Project.[12] This initiative is led by the newly formed Climate Prosperity Project, Inc., a national nonprofit working with select regions across the country to align and advance economic development and environmental actions to reduce emissions while stimulating economic prosperity. Based on a scan of communities, regions, and states across the country, the national effort has developed a powerful framework (see next page) to serve as a useful guide for regional collaboration.

> "McKinstry is growing through a tough economic climate... By increasing the efficiency of hospitals, schools, campuses, and commercial buildings operating expenses, energy, water and waste consumption is curbed dramatically while sustaining a regional construction industry. McKinstry is an example that what is good for the environment is good for business."

Climate Prosperity asserts that metropolitan regions can simultaneously grow their economies and reduce greenhouse gas emissions. It rejects the notion that the economy and environmental protection are incompatible and embraces the belief that we can strengthen both through innovation. Climate Prosperity moves beyond climate protection by seeking specific ways to grow and capture economic growth through environmental progress. It offers an alternative to economic development practices that regard climate action as primarily a burden or drain on the economy.

Climate Prosperity is a hybrid, borrowing from the established fields of environmental sustainability and economic innovation. It recognizes that steps can be taken towards sustainability by reducing emissions through better energy efficiency and greater use of lower-emission alternatives. It also recognizes that innovation—which has opened up new frontiers in other fields such as information technology and biotechnology—can transform the energy field. A new wave of innovation can be a catalyst for prosperity that both addresses climate change and creates economic opportunity for people and communities.

12 The four pilots in the national Climate Prosperity Project are Silicon Valley, Portland, St. Louis, and Denver. Portland joined as a pilot in February 2009, when a number of representatives from the region attended a national Climate Prosperity meeting in Silicon Valley. The Portland representatives returned to form a working group and begin the pilot process. In summer 2009, the group received $25,000 from the Rockefeller Brothers Fund to develop a Greenprint for the region. Since then, the group has conducted a regional inventory of activity in the clean economy, engaged over 150 regional leaders, and drafted this Greenprint.

The regional climate prosperity framework includes demand and supply components that together produce multiple economic and environmental benefits.

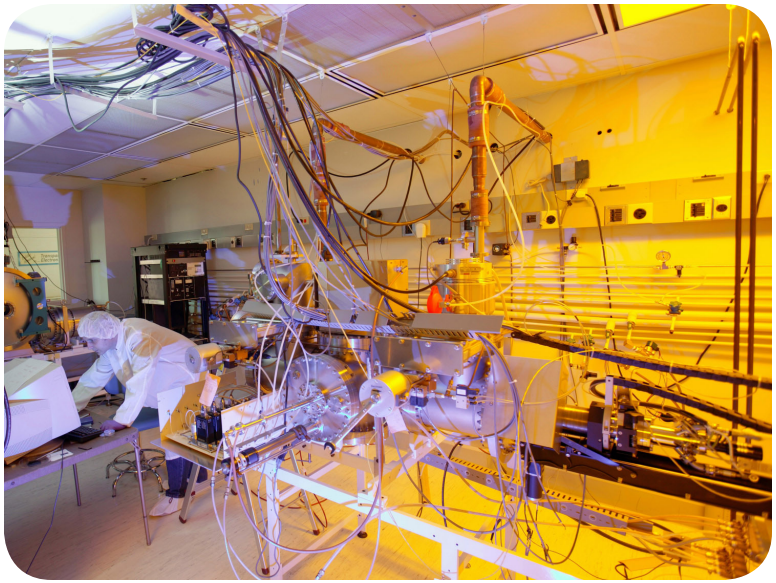
The "demand" side of Climate Prosperity involves growing the regional base of clean and green industries. While a region can increase its market for clean and green products and services, this demand can be met by local firms or firms based outside the region. The more that regional demand is met by local firms, the more economic benefits accrue to the region.

When a region actively encourages both clean and green demand and supply, it can maximize its environmental and economic benefits: reducing greenhouse gas emissions, improving energy savings, expanding business opportunities, and growing green talent and jobs.

The framework also suggests an organizational component to provide the "glue" to connect and align both demand and supply strategies, and track economic and environmental benefits. A regional Leadership Council can take many forms—but should reflect the unique characteristics of each region. Each pilot region engaged in the national Climate Prosperity initiative has created or is in the process of developing such a council.

Why does the region need a Greenprint?

There is no lack of sustainability plans and initiatives in the Portland metropolitan region. But existing plans and initiatives are often disjointed leading to suboptimal outcomes for the region as a whole. The region can work smarter. What's missing is a mechanism for linking organizations and goals, coordinating policy, and directing investment to maximize impact at the regional scale.



The goal is speed, scale and impact. As a region we can be satisfied with individual (but not collective) successes, remain good at starting (but not scaling) businesses and innovative initiatives, and continue to involve some (but not most) of the residents, businesses, and jurisdictions in the region's growing green economy.

Or, the region can set its sights higher. Business and civic leaders can choose to work together in creative and effective ways, harnessing the collective energy and talent of the region's people, institutions, and jurisdictions to build one of the world's most prosperous green economies.

The Greenprint provides a roadmap and strategic framework to cohere the component parts of the region's green agenda.

The Greenprint will help regional business and civic leaders:

- **Speak with one voice.** Portland-Vancouver is a small metro region (ranked 23rd in US market size). The region's efforts will garner more national attention and a greater share of federal funding if we speak with a single powerful voice about our innovative capacity an competitive advantages in clean technology.
- **Leverage scare resources.** Portland-Vancouver is a resource-constrained region. The region cannot afford to work in an uncoordinated fashion that breeds inefficiency and duplicates effort. By setting clear priorities, the Greenprint can get key public and private actors working off the same page to maximize existing human and financial resources.
- **Keep pace with the competition.** The competition for investment, companies, and top talent is intensifying as regions worldwide view green industry as one of the most promising sources of economic prosperity. Only by combining—rather than dividing up—the region's collective assets can we hope to keep pace, especially with larger metropolitan areas.[13]
- **Produce more innovation.** Real breakthroughs come at the intersection of different disciplines and diverse viewpoints. The Greenprint will help connect individuals, organizations, and sectors working on related aspects of the green agenda.
- **Achieve widespread buy-in and social equity.** The more that jurisdictions, industries, and residents of the region participate in and benefit from the growing green economy, the more likely we will sustain innovative policies and partnerships that will keep the region at the forefront of the green frontier. If the green economy is perceived to be (or actually is) limited to certain cities, environmental elites, or a narrow band of occupations, it is likely to devolve into intraregional disputes that stall progress and roll back earlier gains.
- **Drive results.** By highlighting and coordinating promising efforts, the Greenprint will focus scarce resources on scaling-up the most effective strategies, spreading the economic and environmental benefits widely and creating a growing regional market for locally produced green products and services.
- **Focus on prosperity.** The Portland metropolitan region trails other west coast regions in terms of wages, earnings and post-secondary enrollment. The Greenprint provides a concerted focus on clean tech job creation and related education and training to drive the growth of family wage jobs.[14]

13 In the past decade, Oregon generated only 1/10 the number of patents that California generated.

14 In 2008, median wage in Oregon was $15.22/hr and 2/3 of green jobs paid $15/hr or more, making it statistically more likely for green jobs to fall in the "high wage" category.

Delivering the Action Items contained in the Greenprint requires the region's business, civic, and environmental leaders to let go of some long-held practices and step up in new arenas.

- **DIY culture.** The tendency to "do-it-yourself" discourages regional collaboration that could leverage individual efforts to achieve greater impact. To scale the green economy and reduce carbon emissions, the region needs to adopt a "do-it-together" mantra.
- **Institutional fragmentation.** The region's efforts are largely aligned from a substantive standpoint, but there is no unifying mechanism for coordinating policy and scaling investment to maximize impact. The lack of a strong regional framework or platform on which to base collaborative green economy efforts has held back progress.
- **Economy and environment at odds.** The region's strong environmental ethic has spawned green innovation, but it has also created ambivalence about economic development. Some groups in our region see economic and environmental progress as mutually exclusive, rather than mutually supportive under the right circumstances.
- **Bringing innovation to market.** The region must get better at commercializing and capitalizing on homegrown green innovations, good ideas are too often lacking the capital and other business infrastructure to transform promising prototypes to profitable green products.

It's time for Portland-Vancouver to raise its game and take the green economy to the next level. The region must not pass up the opportunity to create the critical mass necessary to sustain innovation in key green industries.

Action 1:
Establish Finance Mechanisms for Green Innovation

The clean economy requires the development of new public and private finance instruments to kick start innovation, build new markets, and grow business. Such instruments can effectively leverage the metro region's commitment to green building, smart infrastructure and reducing greenhouse gas emissions (e.g. building demand for new business services and products). At the same time, the region needs to develop more diverse and stable funding to replace aging services and expand new infrastructure and support smart growth and green development.

Strategy 1.1

Establish clean energy financing programs

In Oregon, a broad partnership of local and state governments, utilities, labor and nonprofit organizations, and financial institutions launched Clean Energy Works Oregon, a $120 million comprehensive building retrofit program designed to increase the energy efficiency in thousands of residential and commercial buildings over three years. Currently in pilot in Portland, the City of Portland and State of Oregon received a $20 million federal grant from the US Department of Energy to accelerate and expand the program statewide. A new nonprofit, Clean Energy Works Oregon, is in development to support expansion throughout the region and state.

Strategy 1.2

Develop regional investment strategy to support green infrastructure, smart growth and sustainable development projects

Sound infrastructure and sustainable development are critical to maintaining and enhancing regional economic growth, competitiveness, productivity, and quality of life. Due to inadequate and unpredictable public funding, the region has a growing backlog of infrastructure repairs and limited funding to support smart growth. Metro is convening public, private, and nonprofit partners to develop an integrated investment strategy to help the region accomplish its goals of more effective targeting of existing resources, strategic positioning for future state and federal funding, and exploration of new funding mechanisms to support focused public investment.

Strategy 1.3

Develop utility service and revenue recovery models to accelerate resource efficiency and smart grid

Utilities have a unique combination of long-range business models, access to capital, and direct relationships to their customers. Innovative finance models such as dynamic pricing, on-bill repayment of energy retrofits or fee-for-service (e.g. hot water) rather than fee-for-energy use present major opportunities to transition to clean energy, as do smart grid infrastructure projects and district heating and cooling systems.

Strategy 1.4

Develop a regional green bank strategy that explicitly directs its loans into energy efficiency and renewable energy investments

Individual homeowners as well as businesses need access to capital to make investments in energy efficiency, renewable energy and other green projects, yet very few lenders are focused on making loans for these kinds of investments. The creation of a regional green bank strategy is critical to financing the work slated to happen in our region.

Strategy 1.5

Encourage the Oregon Investment Council to invest a portion of the state treasury portfolio into local clean technology projects

The Oregon Investment Council (OIC) oversees the investment of most funds managed by the State Treasury, including the Public Employees Retirement Fund. The OIC ensures that money in the funds is invested and reinvested to earn the greatest possible returns for the beneficiaries. Whereas the OIC cannot, as a matter of policy, invest in specific Oregon companies, it could potentially recommend that the state invest in a fund with a specific investment strategy that appears to offer an attractive risk/return profile relative to other investments in the same asset class. For example, the OIC might recommend investing Public Employee Retirement System funds in a regionally-focused renewable energy fund that leverages private capital, federal loan guarantees, federal tax credits and Business Energy Tax Credits to yield above-market returns.

Action 2:
Accelerate Energy and Resource Efficiency

More efficient use of energy and resources directly impacts both economic savings and greenhouse gas emissions reductions. Whether through elimination of waste or optimization of use, efficiency lays an essential foundation for economic growth. In fact, it is a key driver to economic recovery. Efficiency—at all scales—can help reduce businesses' operational expense, increase consumer spending power, and aid the region in meeting emissions reduction goals.

Strategy 2.1

Establish clear goals and targets for efficiency in the metro region

Spur future gains in efficiency through clear, transparent goal-setting. Specific actions include:

- **Establish energy efficiency and greenhouse gas reduction targets for the metro region**
  The metro region is the economic engine for Oregon and SW Washington. If it does not meet regional targets, the region jeopardizes the established states' goals. Further, it contextualizes regional strategies while eliminating the fragmentation caused by thirty separate local targets. An aligned set of targets and goals helps position our region for federal funding opportunities.

- **Establish energy performance scores for all commercial and residential buildings**
  Support the expansion of Energy Trust of Oregon's pilot Energy Performance Score program into a metro region and ultimately state program. Support its growth through inclusion in the Clean Energy Works Oregon energy retrofit program.

- **Promote industry adoption of energy efficiency goals for energy intensive industries**
  Food processing and manufacturing are two regionally significant industries that can accrue massive benefits from the elimination of inefficiencies and waste in their production and processes. This strategy supports the creation of industry-wide goals around energy efficiency, spurring the implementation of energy-saving processes in existing and new manufacturing systems.

Strategy 2.2

Accelerate bulk procurement of on-site clean energy systems

Accelerate bulk procurement of on-site clean energy systems. Spur the creation of demand for clean energy systems through bulk purchasing from a number of sectors:

- **Greatly expand metropolitan jurisdictions bulk purchase of photovoltaic and solar thermal technology for their facilities**
  Leverage the buying power of metropolitan jurisdictions to move the market toward greater demand for clean energy systems.

- **Expand Solarize Portland model to allow for region-wide residential bulk purchasing agreements.**
  Support the aggregate purchase of residential clean energy systems, organizing individual households to purchase at scale.

Strategy 2.3

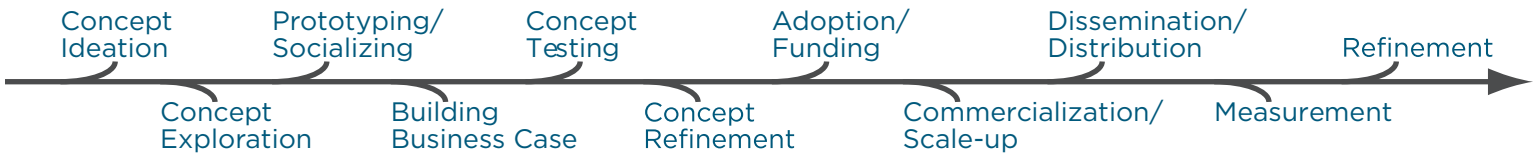
Adopt high-performance building and infrastructure standards for major redevelopment sites

High-performance EcoDistrict standards[1] will accelerate the implementation of district energy, smart grid, green streets and other district scale innovations and green building best practices in large-scale developments. The EcoDistricts Initiative includes a set of methods—assessment, governance, and policies—to guide catalytic projects that knit buildings, infrastructure, and behavior together and capture efficiencies at the district or neighborhood scale. Currently in pilot in five Portland neighborhoods, EcoDistricts provide an innovative frame for metro-wide adoption in regional and town centers.

1 www.pdxinstitute.org/ecodistricts

Action 3:
Commercialize Green Technologies

Businesses's ability to move green technologies to market quickly and efficiently will play a pivotal role in growing the clean economy. A robust infrastructure is necessary to help businesses move promising ideas through the lifecycle of product and service development. Academic institutions, government and nonprofits each play roles in supporting the pipeline for promising ideas.



Strategy 3.1

Create a commercialization gap fund through the State of Oregon's signature Research Centers

This fund will enable promising companies to move beyond the early stages of technology commercialization, past the common—and often deadly—financing gap stretching between research and product development. The fund will be modeled on the success of the ONAMI (Oregon Nanoscience and Microtechnologies Institute) commercialization gap fund, and supported by all of Oregon's signature Research Centers.

Strategy 3.2

Educate and drive businesses to existing resources for commercialization

The region is home to a myriad of resources available to businesses pursuing the various stages of commercialization. Local governments, universities, state signature Research Centers, and small business development centers offer services to businesses, such as connections to university research and development or aid in writing a business plan. This strategy promotes compiling these resources to streamline connections between available resources and businesses and entrepreneurs.

Strategy 3.3

Develop a consortium of companies to work together on proof-of-concept new buildings and retrofit projects to develop and commercialize innovative technologies

If further leveraged, construction and development activity will help regional firms establish and maintain a competitive advantage as innovators in the built environment. Complementary companies and competitors, through working together, will develop the knowledge and technology necessary for the design, construction, and operation of next generation buildings.

Companies and university researchers are finding common ground—and common questions—in the design and construction of the Oregon Sustainability Center.

Slated to achieve net-zero energy and water performance, OSC is fertile ground to test new technologies around energy efficiency, demand management, and wastewater treatment. With companies and researchers at the table from the beginning of design, OSC acts as a living laboratory — a hub for innovation from blueprint to operation.

Action 4:
Cultivate the Clean Tech Cluster

While building the metro region's clean economy, special attention must be paid to the growth of the Clean Technology cluster. The cluster is poised to become one of the region's strongest competitive advantages, housing a diverse set of companies that together create a center of gravity for innovation and economic growth. The cluster has a solid foothold in the region, but targeted support will cement its role as a national and global leader. With this leadership position, companies have greater reason to locate in the region, driving revenue from supplying next-generation clean products and services.

Strategy 4.1

Direct a dedicated portion of the region's economic development resources to the Clean Tech cluster

- **Continue the work** of the Jobs Grow Here program and other efforts to convene and organize firms to identify and address industry-specific opportunities and barriers to regional growth
- **Provide business resources and assistance** such as Economic Gardening programs and targeted financial assistance to increase revenues, improve operating efficiencies, and facilitate business expansions work
- **Recruit firms** from outside the region to locate facilities and operations within the region
- **Facilitate access to workforce training**
- **Support and develop state and local policies** to help drive demand for products and services from regional firms

What is a cluster strategy?

A cluster strategy organizes traded sector industries in a coordinated manner to make more efficient use of resources and to capture synergies in otherwise unrelated activities. It creates in-depth knowledge to fuel catalytic initiatives and to strategically invest resources for maximum effect.

Strategy 4.2

Support the regional wind energy industry

- **Organize and market individual manufacturers as larger groups**
  Organize and market as a group capable of meeting a wide range of wind farm maintenance, repair, and replacement needs.

- **Support training and re-tooling of local manufacturers' processes**
  Update and train to meet wind farm supplier requirements around maintenance and supply of replacement parts.

- **Broker connections**
  Connect regional manufacturers with wind farm operators in the Northwest and on the West Coast in search of regional suppliers.

Strategy 4.3

Support the regional solar energy industry

- **Identify supply chain needs**
  Work with original equipment manufacturers (OEMs) to identify their supply chain needs.

- **Develop and expand the local supply chain**
  Build out the local supply chain for OEMs by helping regional manufacturers train and re-tool to meet OEM supply needs and, when regional manufacturers are unable, recruiting strategically valuable suppliers from outside the region.

Strategy 4.4

Support the regional green development industry

- **Drive demand for commercial retrofits**
  Utilize public finance mechanisms to drive local demand for retrofitting large commercial buildings for optimized energy, water, and materials performance.

- **Develop local supply chain**
  Develop a local supply chain to provide products and materials to be used in building retrofits.

The emerging electric vehicle cluster is poised to take full advantage of the Portland region's eagerness to test new green technologies. Designated as one of 5 areas nationwide to test the roll-out of the Nissan Leaf, the region is also receiving a portion of the $100 million federal grant to eTec for the installation of charging infrastructure.

The widespread adoption of electric vehicles not only supports the growing sector of electric vehicle companies in the region, it further strengthens the case for a smart electric grid.

Strategy 4.5

Support the regional electric vehicle, battery storage, and smart grid industries

- **Educate the public on the benefits of electric vehicles**
  Provide education throughout the region on the benefits of electric vehicles.

- **Deploy charging infrastructure**
  Accelerate the deployment of charging infrastructure by providing financing assistance and minimizing permitting barriers.

- **Accelerate deployment of a smart grid strategy**
  Establish standards for two-way energy storage and accelerate deployment of a smart grid strategy to provide infrastructure that benefits from and supports widespread adoption of electric vehicles.

Action 5:
Develop a Pipeline of Green Talent

As the region's green industry grows, a diverse talent pool is needed to supply the skills necessary to build the clean economy. At the same time, economic transformation provides the opportunity for individuals in the region's workforce to find new pathways to personal prosperity. Preparing workers for careers in the energy efficiency and renewable energy sectors is a critical component to fuel climate—and individual—prosperity.

Strategy 5.1

Forecast workforce needs

This strategy supports modeling the number and type of jobs that will be created by state and local policy. As policies are enacted, they will be immediately analyzed for the demand created for workforce. These analyses will allow schools and training entities to teach skills in demand while simultaneously allowing workers to make informed decisions in their career choices.

Strategy 5.2

Strategically invest in post secondary programs that will result in family wage green jobs

Target college, university and apprenticeship program investments for high-leverage outcomes:

- **Invest significant dollars to produce a few key programs to lead the nation**
  such as Oregon Institute of Technology's Renewable Energy Engineering program and Portland State University's green buildings programs.

- **Invest in "educational innovation fund"**
  to target money to implementation of key green curriculum outcomes.

- **Refine apprenticeship models**
  to integrate green technologies and processes.

Strategy 5.3

Integrate green curriculum into metro region school districts (K-12)

- **Adopt successful local and national best practice models and integrate into regional schools**
- **Create opportunities for companies to partner with and influence schools**
  through mentorships, career related learning experiences, and support for curriculum and labs

Strategy 5.4

Create pathways to employment for all through sustainable workforce retraining programs

- **Develop career pathway maps**
  Articulate pathways for everyone within the targeted industry categories.
- **Focus attention and access on historically underserved and disadvantaged populations**

A recent recipient of a federal $5 million Green Jobs Training grant, the Portland-Salem-Vancouver region is immediately training to build skills that are 'in demand' for the renewable energy and energy efficiency sectors.

But the focus isn't solely on the short term. As part of the grant activities, the Oregon Manufacturing Extension Partnership is analyzing the skills and production requirements of these sectors, while simultaneously identifying good candidates to develop and manufacture new product lines to support the industry.

Action 6:
Build Support and Communicate Results

The region must align around common goals, forge new avenues of communication and collaboration, and reorganize itself to fully realize the promise of Climate Prosperity. Immediate collaboration will position the region for timely opportunities emerging from the federal government. Longer-term, cross-jurisdictional collaboration will build capacity for economic development on a scale to compete with other leading metros. Further, regional collaboration will serve to highlight the roles available to—as well as the roles occupied by—businesses and organizations, avoiding duplication and fragmentation. Communication is as important as collaboration; the region must tirelessly communicate the results of its actions and its growing set of competitive advantages both within its borders and to the outside world.

Strategy 6.1

Create Climate Prosperity leadership council to manage, promote, and track Greenprint actions

A leadership council will act as a mechanism to align actions, coordinate policy and scale investment across the region around the Climate Prosperity actions.

Strategy 6.2

Create a single, regional public-private economic development strategy

Create a strategy with widespread support and buy-in from business and the public sector to lead Climate Prosperity implementation. Other leading metro regions have singular entities that provide cohesion among economic development efforts, enabling them to compete more effectively for companies, resources and other opportunities.

Strategy 6.3

Set up a measurement system to track quarterly and annual progress on key economic and environmental measures

Use information to educate about the concept and benefits of Climate Prosperity among the public, as well as governments, businesses, and others throughout the region and beyond.

The Oregon Way was launched by Governor Kulongoski in 2009, drawing public and private sectors together to steer catalytic projects toward emerging federal funding. The goal was to gain an edge for Oregon in the stiff competition for billions of dollars in stimulus.

From this effort, a group of policy and business leaders informally convened to build a medium-term strategy for Oregon and metro Portland. Dubbed the "Sustainable Jobs War Room," it is envisioned as a transformational policy and financing architecture to immediately accelerate the number of new green jobs created.

Building from this solid base of collaboration, the Climate Prosperity Leadership Council will provide a regional landing place for ongoing goal-setting and collaboration.

Next Steps

To meet the ambitious objectives in the Greenprint, the region must immediately invest in building a regional governance framework and focus on targeted priorities and actions where there is the most capacity and strength. The next steps are to engage, lead, and implement.

1. Engage.

It is time to bring together the region's stakeholders in the clean economy. A 45-day feedback and comment process will refine the Greenprint and start to cohere the companies and organizations ready to seize the opportunities of Climate Prosperity.

2. Lead.

Key decision-makers and organizations in the region must sign on to support the action. Over the coming months, CEO-level and political leaders will be asked to join the Climate Prosperity Leadership Council, charged with guiding the region's efforts and aligning resources around common ends.

3. Implement.

With a Leadership Council in place and wide-spread support throughout the region, all that remains is to act. A final version of this Greenprint will provide the roadmap to guide Portland-Vancouver's clean economy strategy, providing a framework for future decisions, collaborations, and actions.

First Year Priorities

Out of the 6 actions and 23 strategies listed in the Greenprint, the following seven strategies merit strong support and leadership in this critical first year of action:

1.1: Support the launch of Clean Energy Works Oregon

1.2: Help Metro develop a regional investment strategy for infrastructure

2.3: Expand the EcoDistricts Initiative metro wide

3.1: Create a commercialization gap fund housed within Oregon's signature Research Centers

4.5: Support the regional electric vehicle and charging infrastructure roll-out

5.4: Support sustainable workforce retraining programs

6.1: Create the Climate Prosperity Leadership Council

The challenge of Climate Prosperity is great — but so is the opportunity.

We urge you to join us.

To stay up to date and find out how to get involved
visit www.pdxinstitute.org/climateprosperity
or contact Liz Hopkins, lhopkins@pdxinstitute.org

CLIMATE PROSPERITY

Rethink financing.

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Commercialize.

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Develop green talent.

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Metro | *Memo*

Date: July 14, 2010

To: MTAC and interested parties

From: Mike Hoglund, Research Director
Kim Ellis, Principal Transportation Planner

Re: Climate Smart Communities - Oregon Greenhouse Gas Scenario Mandates

BACKGROUND

This memo provides an overview of the state, federal and regional context guiding future scenario planning work in the Portland region. A summary of major tasks and decision points for the Climate Smart Communities effort is provided for reference. A detailed work program is being developed for input in the coming months.

State and Federal context

In 2007, the Legislature established statewide targets for greenhouse gas emissions (GHGs) – calling for stopping increases in emissions by 2010; 10 percent reduction below 1990 levels by 2020 and a 75 percent reduction below 1990 levels by 2050. The targets apply to all emission sectors, including energy production, buildings, solid waste and transportation.

In 2009, the Legislature passed House Bill 2001, directing Metro to "develop two or more alternative land use and transportation scenarios" by January 2012 that are designed to reduce greenhouse gas emissions from light-duty vehicles. Sections 37 and 38 of House Bill 2001 are intended to ensure statewide targets for GHG emissions are being addressed in metropolitan transportation plans and regional and local land use plans. House Bill 2001 also calls for LCDC rulemaking in 2011 to establish a specific Metro-area target for the transportation-related emissions sector. The region's LCDC established target will take into account all sectors of carbon emissions for all parts of the state. A report on the Metro-region scenarios analysis is due to the Oregon Legislature by February, 2012. House Bill 2001 also requires Metro to adopt one scenario that meets the state targets after public review and comment. Finally, it requires local governments to adopt comprehensive plan and land use regulations consistent with the adopted scenario.[1]

The 2009 Legislature also established the Metropolitan Planning Organization Greenhouse Gas Emissions Task Force through House Bill 2186. The task force's recommendations were approved by 2010 Legislature as part of Senate Bill 1059. Senate Bill 1059 provides further direction to greenhouse gas scenario planning in the other Oregon MPOs and the Metro region. [2] It also calls for a statewide GHG emission reduction strategy for the light-duty vehicle emissions sector; and calls for the state to develop a toolkit of emission reductions actions.

Federal climate legislation, with targets and commensurate planning requirements to mitigate GHG emissions remain pending in Congress.

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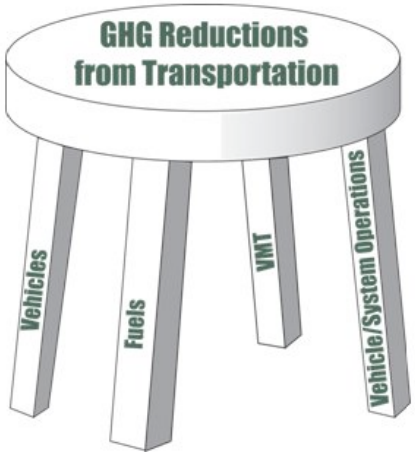
[1] For more information on House Bill 2001, go to http://www.oregon.gov/ODOT/JTA_overview.shtml.

[2] For more information on House Bill 2186 and the Task Force recommendations, go to http://www.oregon.gov/ODOT/TD/TP/HB2186.shtml.

Regional context

In 2008, the region examined a number of scenarios during the Making the Greatest Place process intended to best meet six regional outcomes, including minimizing contributions to global warming. Those scenarios provide a baseline for further work but did not demonstrate the necessary emission reductions to meet the long-term state and regional targets.

In 2009, the region approved an updated RTP that establishes appropriate and timely policy direction by putting GHG reduction directly into the plan rather than waiting for a federal mandate, and it allows the region to begin work to address requirements set out in House Bill 2001 by the 2009 Legislature.



There is no silver bullet, but the region can build on past successes. In general, the Portland region is leading the United States in reducing transportation-related GHGs. Vehicle miles traveled (VMT) per capita have been declining, transit and bike mode shares are increasing, and shorter trips have resulted due to compact, mixed-use urban form. National studies, research in California and the Puget Sound region and other scenario planning efforts have shown that compact urban form coupled with expanded travel choices, system operations and trip reduction programs, user fees, and technology (e.g., more efficient vehicles and lower-carbon fuels) will reduce transportation-related carbon emissions. These strategies are recommended by the 2035 Regional Transportation Plan (RTP), and will be further tested through the scenarios.

In order to meet state goals and the region's broader set of desired outcomes, Metro's greenhouse gas scenario planning work will be guided by the following principles:

- **Regional collaboration and partnerships.** Addressing the climate change challenge will take a regional approach and partnerships in the public and private sectors, requiring meaningful policy and investment discussions with elected leaders, stakeholders and the public. It is only by working together and combining resources that the region can hope to make real progress and be successful.
- **Healthy environment and healthy economy.** Environmental health and economic vitality are not mutually exclusive -- with strategic planning, innovation and investment, the region can achieve both desired outcomes.
- **Continued leadership on the integration of land use and transportation.** National studies continue to show that a compact urban form coupled with expanded travel choices as key to reducing greenhouse gas emissions. Land-use and transportation policy-makers must work together to provide leadership and commit to strategies that will enhance this integration at the local, regional and state levels.
- **Build on past successes and innovation.** The scenarios analysis will build on the innovative policy and technical work from the *Making the Greatest Place* initiative, the Regional Transportation Plan update and local efforts to implement the 2040 Growth Concept. Scenarios will be based on agreed-upon assumptions for land use and development patterns, transportation, user fees and technological advancements related to vehicle fleets and fuels.
- **Better tools for complex decisions.** Appropriate baseline data and enhanced analysis tools will be developed to better understand which strategies are most effective and the benefits and impacts of different strategies on reducing carbon emissions and achieving other desired outcomes.

Climate Smart Communities Project
Work Plan Summary

PROJECT GOALS

- Convene a collaborative, regional process to achieve the state greenhouse gas (GHG) emissions reduction targets for cars and light trucks in the Portland metropolitan region.
- Actively engage and inform the region's decision-makers, public agencies and other community stakeholders on land use and transportation-related actions needed to prepare for and address climate change.
- Apply an outcomes-based evaluation approach and use visualization tools to assess the benefits and impacts of scenarios tested.
- Develop a recommended scenario that advances the 2040 Growth Concept, local aspirations, and the following six desired outcomes for *Making the Greatest Place*:
  - Vibrant communities
  - Economic prosperity
  - Safe and reliable transportation
  - Leadership on climate change
  - Clean air and water
  - Equity

KEY TASKS

	Task 1: **Scoping** *March – August 2010*	**Task 2:** **Scenario Framing and Research** *July - December 2010*	**Task 3:** **Scenario Development and Evaluation** *January 2011 – January 2012*	**Task 4:** **Scenario Selection** *February 2012 – June 2012*	**Task 5:** **Scenario Implementation** *July 2012 – June 2014*
TECHNICAL WORK AND POLICY DEVELOPMENT	▪ Identify project team and management structure ▪ Establish project website ▪ Finalize baseline regional GHG inventory ▪ Develop scope of work and budget ▪ Develop stakeholder engagement strategy and public participation plan ▪ Seek partnerships and grant funding ▪ Develop IGA with ODOT	▪ Develop tools and enhance regional models, including sketch-level tools ▪ Develop GHG analysis procedures ▪ Work with state agencies to develop transportation-related GHG emissions reduction target for the Metro region ▪ Research and publish white papers to establish basis for policy inputs to test ▪ Identify evaluation criteria ▪ Frame scenario choices and policy options with sketch-level tools	▪ Continue to enhance regional models ▪ Work with state agencies to develop transportation-related GHG emissions reduction target for the Metro region *(LCDC adoption in June 2011)* ▪ Refine evaluation criteria and tools, as needed ▪ Develop and evaluate reference case and three scenarios with sketch-level tool(s) ▪ Prepare preliminary findings and recommendations report for approval	▪ Present report findings and recommendations to 2012 Legislature ▪ Identify local and regional strategies (investments and actions), policies and tools needed to meet state target ▪ Prepare policy recommendation and direction for development and evaluation of preferred scenario ▪ Consider amending the RTP based on scenario findings	▪ Develop and analyze preferred scenario with regional models ▪ Prepare preferred scenario findings and recommendations report for adoption ▪ Update regional and local plans to implement preferred scenario o Regional Framework Plan and 2040 Growth Concept o Regional Transportation Plan o Regional Functional Plans o Local transportation system plans, comprehensive plans and land use regulations
ENGAGE-MENT	▪ Convene regional decision-makers and other stakeholders on climate science and policy options toolbox ▪ Advisory committee input on work program	▪ Conduct focus groups, public opinion research and stakeholder outreach on policies to be tested	▪ Convene stakeholder workshops to develop scenarios using sketch-level tools ▪ Conduct stakeholder outreach on preliminary findings	▪ Conduct stakeholder outreach and public review of findings and recommendations	▪ Conduct stakeholder outreach and public review of preferred scenario as part of RTP update
MILESTONE	▪ Approve work program	▪ Approve policy assumptions to test and sketch-level scenario tool(s) to use in scenario development and evaluation	▪ Approve findings and recommendations report for consideration by the 2012 Legislature ▪ Recommend next steps and tools to use for preferred scenario selection	▪ Approve policy recommendations to direct development and evaluation of preferred scenario	▪ Release recommended changes to regional policies and functional plans for public and stakeholder review ▪ Approve updated regional plans and policies, and new local government implementation requirements
RELATED METRO ACTIONS	▪ 2035 Regional Transportation Plan adopted, June 2010 ▪ Reserves adopted, June 2010 ▪ Regional Greenhouse Gas Emission Inventory released, March 2010 ▪ Climate Prosperity strategy development ▪ Climate change adaptation regional workshops	▪ Climate Prosperity Greenprint release, June 2010 ▪ Climate change adaptation strategy released, September 2010 ▪ Climate Prosperity leadership committee launched, October 2010 ▪ Community Investment Strategy, December 2010	▪ Regional Flexible Fund Allocation, Summer 2011 ▪ Portland-Vancouver Greater Indicators, July 2011	▪ Active Transportation Action Plan, June 2012	▪ Regional Transportation Plan, June 2014

July 14, 2010

METRO

Appendix 5.2 2035 Regional Transportation Plan
Phase 1 Motor Vehicle Trip Generation Rates Adjustment Research and Findings

1.0 INTRODUCTION

With infrastructure costs increasing beyond budgets and climate change forcing more sustainable, smart growth actions, it is integral to understand how the built environment (e.g., both land use and transportation) influences travel behavior (number of trips, trip length, mode choice), and whether different policies and programs reduce trip-related impacts and associated costs to the transportation infrastructure system. Current ITE rates represent travel behavior for single lots and uses, primarily measured in low-density suburban areas. Despite years of independent research that indicates a more compact urban form with access to transit and a greater mix of uses generates fewer and shorter vehicle trips, local governments primarily use current ITE trip generation rates to evaluate transportation impacts, determine parking ratios, calculate transportation system development charges (SDCs), and make key planning and infrastructure decisions. Under the Oregon Transportation Planning Rule, section -0060, and Oregon Highway Plan, Policy 1.F.6, local governments are required to demonstrate that plan amendments and zoning changes cause no further degradation to state-owned facilities or mitigate the degradation anticipated from the proposed amendment. Thus, it is integral to understand how the built environment influences travel behavior, and calculate trip rates that reflect the entire activity spectrum of different development typologies.

This alternative approach is extremely important in determining the impact of different development types on the transportation system to: 1) avoid over-planning the infrastructure system for the surrounding land uses; 2) suggest strategies and investment priorities to encourage more compact, mixed-use areas with more transportation choices and 3) avoid creating regulatory and/or financial barriers to compact form envisioned by local, regional and statewide plans (i.e. uniform TSDCs can result in lower impact development paying the same rates, and thus subsidizing development with higher impact costs to the transportation system).

The first phase of the research centers on research conducted over the last ten years into trip generation rates in mixed-use, pedestrian-friendly and transit supportive development. Collective research on trip generation rates shows areas with compact urban form, access to transit and a greater mix of uses generates shorter vehicle trips and a 20-50% reduction in vehicular trips, confirming ITE trip generation rates tend to overestimate automobile trips for compact, mixed-use development patterns.

Recent data collection in areas with these development characteristics within the Portland region showed an average reduction of 40 percent between the ITE vehicle trip rates and observed trips.

These consistent findings and local data provide the reasonable nexus for allowing local governments in the region to apply a 30 percent motor vehicle trip reduction credit when conducting a traffic impact analysis on plan amendments that will result in mixed-use, pedestrian-friendly and transit supportive development located in 2040 centers, main streets, station communities and corridors served by high-quality transit. The 30 percent trip reduction credit is allowed pursuant to Section 3.08.510B of the Regional Transportation Functional Plan (RTFP), contingent on approval of Title 6 of the Urban Growth Management Functional Plan in December 2010.

The second phase of this research will focus on evaluating more data points for the full set of 2040 land uses and development characteristics to establish additional statistical correlations for this region. Metro has applied for an Oregon Transportation Research and Education Consortium (OTREC) grant to complete the second phase of this work by October 2011. Other trip generation and reduction research by the Transportation Research Board (TRB), Institute of Transportation Engineers' (ITE) and other researchers will also support this effort.

This document is organized into the following sections:

1.1 Background and Problem Statement

1.2 Relevant Trip Generation and Reduction Research

1.3 Investment Toolkit: System Development Charges Report

1.4 Summary and Recommendations for Future Research

1.1 BACKGROUND AND PROBLEM STATEMENT

During land use review and development permitting processes, public agencies commonly require estimates of vehicle travel impacts associated with proposed land use projects, assessments of their potential contribution to traffic congestion, and identification of appropriate mitigation strategies. These strategies often include mitigation fees such as system development charges and traffic impact fees, private developer contributions, and specific facility improvements to address traffic impacts.

The Institute of Transportation Engineers' (ITE) *Trip Generation* Manual has been the definitive guide and continues to be the primary source for estimating vehicle traffic impacts associated with proposed land use projects. In preparing traffic and transportation impact analyses, planners and engineers often rely on the ITE published trip generation rates for different types of land uses (e.g., institutional, residential, commercial, industrial).

The *ITE Trip Generation* manual states that the trip generation data is an estimate and may not be truly representative of the trip generation characteristics of a particular land use. This is largely due to the fact that ITE data typically reflects single-use, isolated suburban development usually lacking a mix of transit-supportive uses, availability and proximity of transit service, and the existence of pedestrian and bicycle facilities.

As a result, the use of ITE trip generation rates for proposed mixed-use urban infill development projects served by transit and having good bicycle and pedestrian access could significantly over estimate vehicular traffic impacts. A growing body of research supports this over-estimation and the current *ITE Trip Generation* manual rates are not sufficient to guide the assessment of impacts of these types of proposed infill development projects. ITE advises traffic engineers to adjust average trip generation rates for areas with good public transportation however there is no standardized tool for making these adjustments, and most local jurisdictions do not have the capacity to conduct their own data collection. The research is also showing lower trip generation rates for other land use characteristics, such as compact and mixed-use development, independent of access to good public transportation. The ITE manual is currently undergoing review and is expected to include trip generation rates for mixed-use and transit-oriented development in its update.

It is the policy of the Portland metropolitan region to encourage compact, mixed-use development in 2040 centers and corridors served by high-quality transit and well-connected multi-modal streets designed to support walking and bicycling. The application of over-estimated/exaggerated/inaccurate/higher than actual trip generation rates when assessing the impact of land use changes and specific infill development proposals may have unintended consequences that will limit the region's ability to achieve the 2040 Growth Concept vision.

Infill development is defined as new development and redevelopment projects located on vacant or underutilized land within existing developed areas. Trip generation rates that more accurately reflect travel patterns of transit-oriented and mixed-use development would account for the benefits of reduced vehicle travel demand in these areas and could be applied in the following types of transportation analyses:

- Calculating transportation system development charges, private developer fees and other traffic impact fees.
- Determining whether a "significant effect" occurs from proposed plan amendments or land use changes, as required under Oregon's Transportation Planning Rule (TPR) (Section 0060).
- Demonstrating that a proposed high-capacity transit (HCT) corridor meets the 2035 RTP System Expansion Policy (SEP) framework targets.
- Setting appropriate parking ratios.
- Identifying investment needs and priorities to maximize existing infrastructure.

Quantifying motor vehicle trip reduction credits is necessary because the ITE *Trip Generation* manual developed vehicle travel rates using data from suburban areas with little or no transit service, poor pedestrian access, single-use development patterns and low densities – all conditions that facilitate greater automobile use. Recent research has indicated that behavioral response to contextual factors such as density, diversity in land use, pedestrian-friendly and street grid design, connectivity, and regional accessibility influence travelers' trip-making decisions and should be accounted for when

evaluating the potential impacts of new mixed-use development proposals. [1]

The purpose of this research is to demonstrate that the 30% trip reduction included in the RTFP represents the conservative side of trip adjustment findings for mixed-use, pedestrian-friendly and transit supportive development. Phase 2 will identify alternative methods for determining trip generation rates that more accurately reflect the motor vehicle traffic impacts associated with mixed-use, pedestrian-friendly and transit supportive development. The results of Phase 2 may result in increasing adjustments to trip reductions after additional local data is collected.

1.2 LITERATURE REVIEW OF TRIP GENERATION/REDUCTION RESEARCH

A substantial body of research is devoted to understanding the impact of various land use, design, and demand management strategies on travel behavior. Much of the research conducted analyzes variables that affect travel behavior in the form of vehicle miles traveled (VMT), auto ownership, trip length, and shifts in mode share. This research over the last few decades has shown that compact, mixed-use areas have lower levels of automobile use per capita, greater use of alternative modes, and tend to generate shorter trips.

This literature review focuses specifically on research into the effects of the built environment that demonstrate that transit-oriented pedestrian friendly mixed-use development has lower vehicle trip generation rates than calculated using the standard ITE rate. This section reviews the major studies and research quantifying the trip reduction effects of various land use and programmatic strategies that will be implemented through the Urban Growth Management Functional Plan (UGMFP) and Regional Transportation Functional Plan (RTFP). The research is organized into the following strategy and policy areas:

- ”D” Factors—Density, Diversity, Design, Destinations, Distance to Rail
- Transit and Transit-oriented Development
- Transportation Demand Management and Parking Management
- Socioeconomic Status

Effects of the “D” Factors—Density, Diversity, Design, Destinations, Distance to Rail

Many studies are organized by different travel purposes (e.g. commute, non-commute, home-based, etc.), analytical methodologies (simulations, aggregate and disaggregate studies), and types of independent variable used. However, the results of these different studies are aggregated to develop typical elasticities of various explanatory variables. Perhaps the most widely cited study of this type was conducted by Ewing and Cervero in *Travel and the Built Environment* (2001). After compiling data from roughly 50 studies on travel impacts and the built environment, the authors developed travel demand elasticities influenced by variables describing the built environment such as neighborhood form, land use patterns, transportation network, and urban design.

[1] Ewing, R. and R. Cervero, 2001,*Transportation Research Record: Journal of the Transportation Research Board*, *No. 1780*, pp. 87-113

These relationships were further aggregated creating typical elasticities for vehicle trips and VMT with respect to the "4D" indicators of the built environment: Density, Diversity, Design, and Destination Accessibility. Cervero and Kockelman (1997) originally developed a 3D approach minus the 4th "D" – Destination Accessibility. However, a Destination variable (also referred to as Regional Accessibility) was introduced as a way to generate a more accurate representation of trip generation in conventional suburban development patterns. Because travel behavior is influenced differently by density, mix of uses and design in more suburban locations as compared to more urbanized locations, the destination factor accounts for the benefits of regional clustering and locating development along strategic transportation corridors. The "typical" elasticities shown in Table 1 can be used in the absence of a localized study as a way to estimate default trip reductions as the built environment changes.

Table 1 – Typical Elasticities for the 4Ds

		Vehicle Miles Traveled (VMT)
Density	Household/population density	-.04
	Job density	-.00
Diversity (Mix)	Land use mix	-.09
	Jobs-housing balance	-.02
Design	Intersection/street density	-.12
	% 4-way intersections	-.12
Destination Accessibility	Job accessibility by auto	-.20
	Job accessibility by transit	-.05
	Distance to downtown	-.22
Distance to Transit	Distance to nearest transit stop	-.05

Source: Ewing and Cervero (2001). *Travel and the Built Environment—A Meta-Analysis*

These elasticities are useful in travel forecasting and in sketch planning and are intended to be additive. Thus, the impact of the built environment on travel using each "D" variable cumulatively could contribute to a significant decrease in vehicle miles traveled. Trip generation at the nonresidential end is also influenced by density, but to a much lesser degree (Cervero, 1989, cited in Kuzmyak et. al, 2003). There are also far fewer studies investigating this relationship, and there is no comparable dataset to that of residential density. Three of the most important variables identified in the literature[2] are used to calculate the quality of the bicycle and pedestrian environment. They are as follows:

- Intersection density, which measures street connectivity. A well-connected grid (high intersection density) provides better opportunities for pedestrian travel than cul-de-sacs and "loops and lollipops" (low intersection density).
- Sidewalk completeness
- Bike network completeness

In the same way, the 1000 Friends of Oregon study (1993) produced for the Portland region's LUTRAQ

[2] See, for example, Dill (2003); Parsons Brinkerhoff (1993); Kuzmyak et al. (2003); Ewing & Cervero (2001); and Ewing (1999).

effort found that factors which enhance the pedestrian environment, significantly influence mode choice. Pedestrian zones with high pedestrian environment factors (e.g. factors that are synonymous with good urban design), tended to observe more transit, pedestrian and walk trips and fewer vehicle trips.

The "D" factor approach is gaining increased confidence as a reliable estimator for trip reduction. For example, in the Urban Land Institute's *Growing Cooler* report (2008), the significant effects of compact development on travel behavior were shown to reduce vehicle miles traveled by 20 to 40 percent. The Report's findings summarize nearly 100 studies that looked at the issue from varying angles, but all show that residents of compact, mixed-use, transit-served communities drive less:

- Research that compares overall travel patterns among regions and neighborhoods of varying compactness and auto orientation;
- Studies that follow the travel behavior of individual households in various settings; and
- Models that simulate and compare the effects on travel of different future development scenarios at the regional and project levels[3].

Similar research from Reid Ewing used data from six large, diverse US metropolitan regions to develop a new methodology for more accurately predicting the traffic impacts of mixed-use developments. The regions selected were Atlanta, Boston, Houston, Portland, Sacramento and Seattle. On average, the research found that a total of 29 percent of the total trip ends generated by mixed-use developments put no strain on the external street network, generate very few vehicle miles traveled, and should be deducted from ITE trip rates for stand-alone developments[4]. In the Portland region, the Reid Ewing research showed a decrease in VMT of X and trip length of Y.

Irrespective of the type of research approach used, the findings remain the same: mixed-use, pedestrian-friendly and transit supportive development reduces the number of trips and the miles that residents drive.

Effects of Transit & Transit Oriented Development

Transit-supportive environments play a significant role in mode choice and trip generation as well. Nelson\Nygaard developed a Transit-Orientation Index (1997) that determined relative orientation towards transit and potential ridership per acre for the Portland Metro region. The independent variables used in a regression analysis to determine potential ridership included employment per acre, retail employment per acre and housing per acre. In the end, these variables explained 81 percent of the variance in ridership per acre.

More recently, TCRP Report 128 looked at the effects of transit-oriented development on trip generation among other independent variables (Cervero and Arrington, 2008). This study builds upon previous comprehensive studies that linked rates of transit use, and reduced vehicular trips, with

[3] Urban Land Institute, *Growing Cooler: The Evidence on Urban Development and Climate Change. p. 11.*
[4] Ewing, Reid et al., *Traffic Generated by Mixed-Use Developments – A Six-Region Study Using Consistent Built Environmental Measures.*

working and living near transit stops (Lund, Cervero and Wilson, 2004). The study found that observed vehicle trips in four metropolitan areas (Washington, D.C., Philadelphia/New Jersey, San Francisco, and Portland) were far below the average ITE trip generation rates for each land use. Furthermore, the 17 TODs studied averaged 47 percent fewer vehicle trips than ITE Trip Generation estimates, demonstrating that the conventional method of estimating trip impacts greatly overestimates trip generation rates for transit-supportive environments.

The Institute of Traffic Engineers (ITE) Manual currently states that TOD-style housing generates an average of 6.67 trips per unit per day. The TCRP research took detailed counts of 17 independent TOD-style housing developments in four U.S. cities, which showed a trip count of 3.55 trips per unit per day, a decrease of 47 percent. The Portland Metro Region was represented in the study with five local TOD developments projects with 90 to 711 units each. **The results of those five locations showed an average difference of 40 percent between the ITE vehicle trip rates and observed trips.** The results from the Portland locations can be seen in the Table 2.

Table 2 – Portland Metro Region Transit-Supportive Infill Developments

TOD SITE	OBSERVED TRIP RATE	ITE TRIP RATE	TOD RATE AS A PERCENT OF ITE RATE	PERCENT DIFFERENCE
Center Commons (City of Portland)	4.79	6.72	71.30%	-28.70%
Collins Circle (City of Portland)	0.88	6.72	13.08%	-86.92%
Gresham Central (City of Gresham)	5.91	6.72	87.95%	-12.05%
Merrick Apts. (City of Portland)	2.01	6.72	29.84%	-70.16%
Quatama Crossing (Beaverton)	6.34	6.72	94.38%	-5.62%
Average	**3.99**	**6.72**	**59.31%**	**-40.69%**

Source: TCRP Study (2010)

Table 3 shows basic characteristics about each of the TOD sites in the Portland Metropolitan region.

Table 3 – Background on Case Study TOD Housing Projects

TOD Site	Housing Type	# of Stories	# of Units	# of On-Site Parking Spaces	# of Driveways	Nearest Rail Station	Shortest Walking Distance from Project to Nearest Station (feet)
Center Commons	Apartments	4	288	150	2	60th Ave. MAX	450
Collins Circle	Apartments	6	124	93	1	Goose Hollow MAX	525
Gresham Central	Apartments	3	90	135	2	Gresham Central MAX	620
Merrick	Apartments	6	185	218	1	Convention Center MAX	700
Quatama Crossing	Apartments	3	711		3	Quatama MAX	2000

Source: TCRP Study (2010)

Metro's current TOD program focuses its efforts in areas with High Capacity Transit accessibility and/or Frequent Bus Service, two types of transit that occur almost exclusively in Metro-designated 2040 Centers and Corridors. TOD style development has been embraced by local jurisdictions in their own 2040 Centers and Corridors, indicating that local governments intend to implement this type of development as they implement the 2040 Growth Concept in their local plans.

The policy value of transit-oriented development projects in centers and corridors is well understood. **With an expanding inventory of TOD projects around the country, there is growing evidence about the value of compact, transit-oriented housing and its impact on trip generation in centers and corridors. The TCRP research clearly shows that TOD projects produce fewer automobile trips than more "traditional" lower-density, single use development patterns – on average 40 percent less.**

Effects of TDM and Parking Management

Transportation demand management (TDM) refers to the trip reduction potential of strategies that manage or influence how residents and employees use the transportation system. The following subsections summarize the research behind the trip reduction savings attributed to various TDM strategies.

Parking Management

TDM programs have been shown to reduce employee vehicle trips by up to 38 percent, with the largest

reductions achieved through parking pricing[5]. Donald Shoup expands upon cash out programs finding that single occupancy vehicle trips declined by 17 percent and other modes increased significantly (carpooling by 64 percent, transit by 50 percent, and walking/biking by 33 percent) after a parking cash-out program was introduced at various urban and suburban worksites with varying levels of transit service[6]. Another study of City of Pleasanton (CA) employees saw a doubling of participation between 1993 and 2004 and an annualized reduction of 20,625 commuter vehicle trips[7].

Parking supply is another key indicator of trip generation. Research shows that there is an indirect link between reduced minimum parking requirements and a decline in vehicle trips. Setting minimum parking requirements and not imposing parking maximums often results in lower parking prices, as the supply of parking exceeds demand, which in turn increases vehicle ownership and the propensity to use a vehicle for work trips.

Studies reveal that the elasticity of vehicle ownership with respect to price is typically -0.4 to -1.0, hence a 10 percent increase in total vehicle costs reduces vehicle ownership 4 –10 percent[8].Average income households spend an average of $3,800 annually per vehicle[9]. Assuming that residential parking spaces have an annualized cost of $800 per year, parking costs add 21 percent to vehicle costs for an average income household. Assuming a vehicle price elasticity of –0.7 (Table 4), minimum parking requirements that exceed the actual demand for parking increase vehicle ownership about 15 percent. The resulting increase in vehicle ownership produces more vehicle trips. Conversely, decreasing both minimum and maximum parking requirements and eliminating minimum parking requirements would result in a proportionate reduction in residential vehicle trips[10].

Table 4 - Vehicle Ownership Reductions from Residential Parking Pricing

Annual (Monthly) Fee	-0.4 Elasticity	-0.7 Elasticity	-1.0 Elasticity
$300 ($25)	4%	6%	8%
$600 ($50)	8%	11%	15%
$900 ($75)	11%	17%	23%
$1,200 ($100)	15%	23%	30%
$1,500 ($125)	19%	28%	38%

Source: Nelson\Nygaard (2010), Santa Monica LUCE Trip Reduction Impacts Analysis

Subsidized Transit Passes

Free transit pass programs have been shown to increase transit ridership by 50-79 percent (City of Boulder, undated; Caltrans, 2002), and reduce vehicle trips by 19 percent (Shoup, 1999). Likewise, Todd Litman of the Victoria Transport Policy Institute confirms the trip reduction benefits of transit subsidies by workplace setting. Figure X below depicts the potential trip impacts of a transit pass program.

[5] Shoup & Willson (1980); Comsis (1993); Valk & Wasch (1998); Pratt (2000).
[6] Donald C. Shoup, *Evaluating the Effects of Cashing Out Employer-Paid Parking: Eight Case Studies*, http://www.arb.ca.gov/research/apr/past/93-308a.pdf.
[7] U.S. Environmental Protection Agency (2005), *Parking Cash Out: Implementing Commuter Benefits as One of the Nation's Best Workplaces for Commuters*, http://www.bestworkplaces.org/pdf/ParkingCashout_07.pdf
[8] Victoria Transport Policy Institute (2009), Transportation Elasticities, http://www.vtpi.org/tdm/tdm11.htm
[9] Bureau of Labor Statistics (2003), Consumer Expenditure Survey, 2002, www.bls.gov.
[10] From Nelson\Nygaard (2010) Santa Monica LUCE Trip Reduction Impacts Analysis.

Table 5 - Vehicle Trip Reduction by Workplace Setting and Daily Transit Subsidy

	Daily Transit Subsidy			
Worksite Setting	**$0.75**	**$1.49**	**$2.98**	**$5.96**
Low density suburb, rideshare oriented	0.1%	0.2%	0.6%	1.9%
Low density suburb, mode neutral	1.5%	3.3%	7.9%	21.7%
Low density suburb, transit oriented	2.0%	4.2%	9.9%	23.2%
Activity center, rideshare oriented	1.1%	2.4%	5.8%	16.5%
Activity center, mode neutral	3.4%	7.3%	16.4%	38.7%
Activity center, transit oriented	5.2%	10.9%	23.5%	49.7%
Regional CBD/Corridor, rideshare oriented	2.2%	4.7%	10.9%	28.3%
Regional CBD/Corridor, mode neutral	6.2%	12.9%	26.9%	54.3%
Regional CBD/Corridor, transit oriented	9.1%	18.1%	35.5%	64.0%

Source: Victoria Transport Policy Institute (2008), *Transportation Elasticities*, http://www.vtpi.org/elasticities.pdf

Carpooling and Rideshare

Research indicates that ridesharing programs typically attract 5-15 percent of commute trips if they offer only information and encouragement, and 10-30 percent if they also offer financial incentives such as parking cash out or vanpool subsidies. Rideshare programs that include incentives such as HOV priority and parking cash-out often reduce affected commute trips by 10-30 percent[11]. If implemented without such incentives travel impacts are usually smaller. A study conducted by Reid Ewing concluded that ridesharing programs can reduce daily vehicle commute trips to specific worksites by 5-15 percent, and up to 20 percent or more if implemented with parking pricing[12].

Carsharing

Trip reduction benefits documentation for carsharing is gaining momentum. According to TCRP Report 108, each car-sharing vehicle takes nearly 15 private cars off the road – a net reduction of almost 14 vehicles[13]. A UC Berkeley study of San Francisco's City CarShare found that members drive nearly 50 percent less after joining. The research also indicates nearly three-quarters of the vehicle trips made by members were for running errands, visiting friends and other social activities, meaning that only roughly one-quarter of trips were for commuting to work.

Alternative Work Schedules

Compressed work weeks and telecommuting are TDM strategies that eliminate vehicle trips by decreasing the number of work days while maintaining the level of work hours (i.e. working four 10-hour days per week) and shifting the worksite to an employee's home, respectively. Research by Apogee (1994) demonstrated that compressed work weeks can reduce VMT by up to 0.6 percent and vehicle trips by up to 0.5 percent in a region. However, two other studies showed that compressed work weeks may provide more modest reductions in total vehicle travel, in part because participants

[11] Philip Winters and Daniel Rudge (1995), *Commute Alternatives Educational Outreach*, www.cutr.eng.usf.edu.
[12] Reid Ewing (1993), *TDM, Growth Management, and the Other Four Out of Five Trips.*
[13] Transportation Research Board (2005), *Car-Sharing: Where and How it Succeeds*, Transit Cooperative Research Program Report 108. http://onlinepubs.trb.org/Onlinepubs/tcrp/tcrp_rpt_108.pdf

make additional trips during their non-work days.[14]Compressed work weeks may also encourage some employees to move further from worksites or to drive rather than rideshare.

The most important TDM strategies include parking and financial incentives for alternative modes of transportation, using these can result in a trip reduction of up to 19%, independent of other land use characteristics.

Effects of Socioeconomic Status

The likely effects of demographic factors on trip generation are largely ignored in many studies. A trip generation analysis must resolve how much trip reduction can be attributed to policies and strategies compared to socioeconomic indicators like income. Research indicates that socioeconomic factors such as household income, household size and auto ownership have an even greater effect on trip generation than the 4Ds[15].

The affordable/senior housing mitigation strategy assumes that those living in subsidized units are more likely to commute to work or make non-commute trips using alternative modes of transportation. This is based on research verifying that low-income families and senior citizens tend to own fewer vehicles and drive less. In one San Francisco Bay Area study, households earning under $25,000 per year make 5.5 vehicle trips per day, compared to a regional average of 7.6. High income households (earning more than $75,000 per year) make an average of 10.5 trips[16]. **Further work will need to explore existing research efforts into documenting the socioeconomic effects on trip generation rates in Phase 2.**

1.3 COMMUNITY INVESTMENT TOOLKIT: SYSTEM DEVELOPMENT CHARGES REPORT

Galardi Consulting, LLC was authorized by Metro in January 2007 to perform a review of system development charge (SDC)[17] approaches used by jurisdictions throughout North America that promote real cost recovery of infrastructure and sustainable development patterns and to evaluate the applicability of these approaches to jurisdictions in the Metro area[18]. The findings and recommendations of the study are summarized in the report: *Promoting Vibrant Communities through SDCs,* published in July 2007 (the "Study").

The Study covered all SDCs collected in Oregon, including TSDCs. TSDC methodologies were found to be calculated almost exclusively through the use of ITE trip generation rates and from TSP project lists, which base their project needs on anticipated demand as quantified in the ITE trip generation rates. As established, ITE trip generation rates are generated from and thus, only reflect low density, single use auto-dominated development types. With a more diverse urban landscape, and a focus on compact, mixed-use urban form as envisioned by the 2040 Growth Concept, one of the true cost and cost

[14] See Ho and Stewart (1992) and Giuliano (1995).
[15] See Kockelman (1995) and Ewing and Cervero (2001)
[16] See Russo (2001); Holtzclaw et al. al. (2002)
[17] System development charges and "impact fees" are used interchangeably in this memorandum.
[18] For purposes of this study, 'real' cost recovery is intended to reflect both full cost recovery (costs related to both the array of facility and cost types needed to provide capacity for growth generally and specifically related to implementing the 2040 Growth Concept are included), as well as recognition of potential cost variations among developments, with respect to specific development characteristics like density, location, and configuration.

recovery questions of the Study was whether or not these development types had different trip generation rates than those established in ITE and thus, variable SDC fees. To answer this question, the Study analyzed whether SDC fee systems have been implemented as a result of finding different development types had different trip generation rates and thus, variable rates of demands and costs to the system. As summarized in the full Study, industry information suggests that development characteristics may generally impact system demands for transportation as follows:

> ***Transportation:*** *Service units are trips and vehicle miles traveled (VMT), so cost of service is influenced by household and building type and size, as well as location, density and configuration. Development type and size are potential indicators of motor vehicle trip generation rates. Density has a strong influence on mode choice to destinations and distance to destinations. Location, to the extent that it relates to proximity to public transit may also be significant factor related to system impact, as is development configuration; when living-working-shopping-services are all nearby, fewer car trips are needed and the distance traveled is reduced.*

The development characteristics found to impact transportation system demands in the Study mirror those outlined above (in Section 1.2): Density, Diversity, Design, Destinations, Distance to Rail, local transit service, and transit-oriented development patterns. Based on the findings, the Study recommended variable SDC fees in order to reflect the different trip generation rates and associated system costs of different development patterns. The Study also recommended local travel demand data and modeling beyond the use of ITE rates in order to support efficient system planning and establish a variable SDC methodology.

National and regional data sources from the Study related to transportation system impacts for 'smart growth' development (compact mixed-use, transit-oriented infill development)are provided below.

1.4.1 Consideration of Smart Growth Principles

The Oregon Department of Transportation (ODOT) TSP guidelines discuss evaluation of land use alternatives as a means of addressing future system capacity needs. A detailed discussion of the TSP Step: *Develop & Evaluate System Alternatives that Eliminate Deficiencies and Meet Needs*, specifically addresses how land use characteristics may impact transportation system needs, through reduced automobile trip generation, shorter trips, and mode choice:

> *At the community level, land use planning should focus on both residential and employment centers and their impact on trip generation, length and mode choice. Density, location and size of residential and employment centers influence these measures of transportation performance. In addition, the balance between jobs and housing may impact travel. At the smaller neighborhood or project level, the diversity of land uses within walking or bicycling distance and the design of the built environment may influence mode choice and trip length. In this context, mode choice refers to the ability and willingness of travelers to make trips using non-motorized modes, thus reducing the number of trips on local streets and arterials. [ODOT, TSP Guidelines, pgs 36-37).*

In recent years, considerable research has been conducted to isolate the effects of 'smart growth factors' on transportation demand. Specifically, the research effort focused on factors directly attributable to the physical characteristics of development projects: density, diversity, design, and destinations ("the 4Ds"). The research has documented the potential effects of incorporating smart growth factors in vehicle trip forecasts, and has developed adjustment factors that can be applied directly to vehicle trips or vehicle miles traveled. The following sections discuss how transportation planning models and standard trip generation rates may be modified to incorporate smart growth factors.

1.4.1.1 Trip Generation Surveys

Trip generation rates for individual land use types are typically derived from on-site surveys. The Institute of Transportation Engineers (ITE) Trip Generation report is the most comprehensive compilation of such data, although agencies may substitute locally-generated data where available. The ITE data were collected by counting vehicles entering and leaving a particular development site. Most were collected in suburban areas that had separate parking facilities for the particular development. As such, the data do not fully represent trip generation at more urban forms of development or smart growth practices.

Some SDC programs (e.g. City of Olympia, Washington) have utilized trip generation adjustments to account for more urbanized development patterns. These adjustments include lower vehicle trip generation rates based upon activity center travel surveys (primary source: NCHRP Report 323, 'Travel Characteristics at Large-Scale Suburban Activity Centers, 1988), reduced trip lengths based on regional household travel surveys and travel model output, and higher 'pass-by' trip rates to account for the potential of mixed use sites. **These adjustments have produced reductions in SDC rates in the range of 20 to 50 percent (see case studies at the end of this section).**

More recent adjustments to ITE trip rates for smart growth practices have been documented through research related to air quality management.[19] A national air quality model URBEMIS has been used to estimate trip reduction credits for development projects based on their location and other physical characteristics.

Many SDC demand schedules rely on two variables to estimate vehicle trips (VT) for each development: ITE trip generation rate per unit (assigned by land use) and number of units attributable to the development (generally, 1,000 square feet of floor area or other measure). The limitation of this approach is that there is no recognition of other variables, like density and location that may impact VT generation, and therefore, transportation system impact. The purpose of the URBEMIS mitigation component is to provide a tool for adjusting ITE trip rates to recognize such variables, for use in charging impact fees, among other purposes

The URBEMIS model is available to the public for free and may be accessed at www.urbemis.com. A paper by Nelson\Nygaard Consulting Associates: *Crediting Low-Traffic Developments Adjusting Site-Level Vehicle Trip Generation Using URBEMIS* (August 2005), provides formulas that may be used to adjust ITE

[19] Nelson\Nygaard Consulting Associates, *Crediting Low-Traffic Developments Adjusting Site-Level Vehicle Trip Generation Using URBEMIS*, August 2005.

rates for individual developments based on a variety of physical and demand management measures. The adjustments consider how the characteristics of a specific development differ from the characteristics inherent in the ITE trip rates ("default" values). For example, in considering net residential density, **a residential development with 16 units per acre (compared to the default value of 3 units per acre) would have a trip rate reduction of 28 percent.**

Table 6 summarizes the potential trip reduction credits provided by URBEMIS.

Table 6 – Summary of URBEMIS Trip Reduction Credits

Measure	Residential (1)	Non-Residential
Net Residential Density	Up to 55%	N/A
Mix of Uses (Diversity)	Up to 9%	Up to 9%
Local-Serving Retail	2%	2%
Transit Service	Up to 15%	Up to 15%
Pedestrian/Bicycle Friendliness	Up to 9%	Up to 9%
Physical Measures subtotal	*Up to 90%*	*Up to 35%*
Demand Management Subtotal	*Up to 7.75%*	*Up to 31.65%*

Source: Nelson\Nygaard Consulting Associates

(1) For residential uses, the percentage reductions shown apply to the ITE average trip generation rate for single-family detached housing. For other residential land use types, some level of these measures is implicit in ITE average trip generation rates, and the percentage reduction will be lower.

While URBEMIS provides a tool for potentially adjusting standard trip rates for smart growth factors, the authors caution: "*It must be stressed that the trip reductions recommended here are subject to considerable uncertainty. They should be interpreted as the mid-point of a range, rather than as a single, precise value. Travel behavior is complex and difficult to predict, and the approach described here will need to be refined in future years, as more data become available.*"

Another source of data for adjusting ITE trip rates is: *Getting There from Here – Measuring the Benefits of Compact Development on Vehicle Miles and Climate Change* (Jerry Walters, Fehr & Peers). This paper presents empirical data on the effects of density, diversity, walkability, regional accessibility and distance from transit on vehicle miles. The paper indicates that:

> *Research is also currently underway by several transportation planning organizations on the degree to which individual smart growth characteristics reduce vehicle trip generation of individual development projects. Preliminary results from several of these studies indicate that trip generation may be lower than the suburban trip generation rates published by the Institute of Transportation Engineers (ITE), commonly used in traffic impact analysis.*

For example, trip rates for mixed-use developments analyzed were 35 percent below ITE trip rates. Similarly, trip rates for transit-oriented development were 30-60 percent below the ITE rates. This research was prepared by ITE in partnership with the Environmental Protection Agency and is undergoing review by the ITE membership.

1.4.2 Case Studies

The following section highlights case studies that were included as part of the SDC study from cities across the country. The case studies highlight cities that have developed variable SDC methodologies or implemented SDC credits based on findings that development characteristics reduced transportation system demands through lower trip generation rates. These studies involved the analyses of local data collection, trip generation studies and adjusted travel demand models. The new SDC methodologies in these cities reflect reduced associated system costs for compact mixed-use, transit-oriented infill development, particularly in downtown areas and town centers. The variable fee for these areas was reduced by 23 – 50 percent. This was a direct result of data findings showing a trip generation reduction for these areas as compared to ITE rates and low-density, auto-dominated suburban areas.

1.4.2.1 City of Olympia

The City of Olympia has reduced the transportation impact fees for downtown commercial uses to reflect the fact that the downtown is compact and alternative modes of transportation are accessible. Consequently, the theory is that each business has less of an impact on the transportation system.

Reduced fees for the downtown area reflect the following demand characteristics:

- Reduced trip lengths based on an analysis of data from the regional planning agency's household travel survey and travel model, and the ITE Trip Generation Manual.
- Lower percent of new trips (or more "pass-by" trips) for certain land uses (walk-in bank and supermarket) based on ITE data and other national studies.
- Reduced trip lengths for both home based work trips and total trips, based on data from the regional transportation model that showed reduced average trip lengths to/from the Olympia Central Business District (CBD).

Table 7 summarizes the recommended trip rate adjustments for these downtown land uses.

TABLE 7 – Recommended Vehicle Trip Generation Rate Adjustments for Downtown Olympia

Land Use (ITE Category)	ITE Average Trip Rate (PM peak Hour)	50% of Standard Deviation (SD)	Modified Trip Rate (Average-50% SD)
Walk-in Bank (911)	33.15	14.67 **	18.48
Supermarket (850)	11.51	2.38	9.13
Fast Food (without Drive-Through Window) (883)	26.15	5.26	20.90

Land Use (ITE Category)	ITE Average Trip Rate (PM peak Hour)	50% of Standard Deviation (SD)	Modified Trip Rate (Average-50% SD)
Convenience Market (Open 15-16 Hours) (852)	34.57	8.81	25.77

** Based upon Drive-in Bank Standard Deviation (ITE Land Use 912) that is equal to 88 percent of the average rate. Calculation: 0.88*33.15= 29.34 estimated SD; 50 percent of SD=14.67

Table 8 summarizes trip length data (daily vehicle trips) for total trips and for 'Home Based Work Trips'. The total trip data are useful for looking at a range of typical trips made within the city, while the work trip data can be associated closely with office land use types.

Table 8 – Average Trip Length Comparison

Scenario	Trips to/from Olympia CBD	Average City Trips	Olympia CBD Trip Lengths compared with Average City Trips
Total Trips	2.3 mi	3.7 mi	-39%
Home Based Work Trips	2.7 mi	3.0 mi	-12%

Source: TRPC Model

The fact that downtown trip lengths are shorter than average within the city implies that a typical trip generated in downtown would have fewer impacts on the city's street system. Stated another way, downtown development creates proportionally less need for new road improvements than a land use situated elsewhere in the city.

1.4.2.2 City of Atlanta, Georgia

The City of Atlanta recognizes the reduced impact on roads because of the close proximity to rail transit. The City reduces impact fees 50 percent for developments within 1,000 feet of a rail station.

1.4.2.3 City of Tucson, Arizona

The City of Tucson adopted an impact fee methodology for roads that uses both location and dwelling unit size in assessing impact fees. The City's work found that the central city core had a reduced tendency to use private motor vehicles, shorter trip lengths and generating 77 percent of the vehicular travel demand compared to other city residents. Table 9 shows the trip variations by location.

Table 9 – Road Reduction Factor for Core Residential Development

	Central Core	Rest of City	Ratio
Percent Driving Private Motor Vehicles to Work	78.8%	90.8%	0.87
Travel Time, Non-Public Transportation (minutes)	19.1%	21.6%	0.88
Reduction in Road Impact for Residential in Central Core			0.77

Source: *Promoting Vibrant Communities through SDCs – Appendix D*

The City's work also found that the average number of vehicle trips generated per day is almost directly proportional to the number of people living in the dwelling unit which is strongly related to the size of the dwelling unit. The results based on dwelling unit size are shown in Table 9.

Table 9 – Residential Road Impact Fees by Size Category

Housing Type/Size Category	Midpoint	Peak Hour Trips	Road Fee
Less than 500 sq. ft.	375	0.48	$2,186
500 – 749 sq. ft.	625	0.60	$2,743
750 – 999 sq. ft.	875	0.69	$3,198
1000 – 1249 sq. ft.	1125	0.76	$3,462
1250 – 1499 sq. ft.	1375	0.83	$3,829
1500 – 1999 sq. ft.	1750	0.91	$4,196
2000 – 2999 sq. ft.	2500	0.95	$4,386
3000 – 3999 sq. ft.	3500	0.99	$4,562
4,000 sq. ft. or more	4500	1.03	$4,738

1.6 SUMMARY AND RECOMMENDATIONS FOR FUTURE RESEARCH

The numerous studies covered by this literature review did vary in purpose, design, location, and terminology, but came to the same conclusions regarding the land use characteristics and policy strategies that reduce trip generation rates: density, good urban design, mix of uses, destinations, TDM and parking management strategies, access to transit, and transit-oriented development. The collective research shows areas with these attributes generate shorter vehicle trips and a 20-60% reduction in vehicular trips depending on the extent to which these characteristics exist. Thus, 2040 centers, main streets, station communities and corridors, which are defined by and planned for compact urban form, access to transit and a greater mix of uses will likely experience similar reduced trip generation rates.

Trip reduction rates of 28% were uncovered for increased residential density alone at densities recommended for town centers in the Regional Framework Plan and planned for and exceeded in the regions 2040 centers and corridors. Mixed-use, pedestrian-friendly, transit supportive development, required, planned for and existing in the region's 2040 centers and corridors, experienced on average a 35% reduction in trip generation rates. Coupled with transit-oriented development and access to high-capacity transit, this rate reduction increased as high as 60%. Recent data collection in TOD areas with a mix of these development characteristics within the Portland region showed an average reduction of 40 percent between the ITE vehicle trip rates and observed trips.

Identifying more accurate traffic generation numbers to assess the traffic impacts of proposed mixed-use development and tying those to the performance of TOD has important implications on the design and long-term performance of 2040 Centers, Main Streets, Station Communities and Corridors:

- Local officials and neighborhoods may be more supportive of increases in residential densities near transit.
- Private developers of mixed-use projects are legitimately concerned about the costs and other impacts that can result from over-estimation, which can serve as a disincentive to implementing these kinds of development proposals in a community. Paying lower fees can be passed on to consumers through lower housing costs, which can help the region's effort to provide more affordable housing options.
- Accurate trip generation data will promote efficient and cost-effective use of existing infrastructure and services (including parking) and may streamline approval of mixed-use development proposals that could be delayed due to lack of funding for required mitigation improvements. This in term may cause housing and job growth to occur in less transit-accessible areas or even outside the urban growth boundary.
- Less parking, good pedestrian access to transit and high quality transit service will help increase transit ridership.
- Lower provision of this infrastructure (i.e. parking), and growth where we want it, will create an efficiency of land use and decrease impacts to the environment (GHGs)

Using ITE trip generation rates that over-estimate system impacts in compact, mixed-use areas will have significant and widespread negative impacts on the region's landscape and ability to achieve the 2040 vision. Over-estimating trip generation rates in these types of centers and corridors will cause over-planning the system for these surrounding land uses and will support strategies, funding systems and investment priorities that undermine and prevent the development of compact, mixed-use areas with more transportation choices. This directly conflicts with regional policies in the 2040 Growth Concept, as well as state and local policies, that call for development of mixed-use centers and corridors to support jobs and freight reliability, a compact urban form, and leveraging transportation investments such as high capacity transit.

Given these implications, it is extremely important to use the best trip generation data available. Consistent findings over the last ten years and recent local data collection in the region provide the reasonable nexus for allowing local governments in the region to apply a 30 percent motor vehicle trip reduction credit when conducting a traffic impact analysis on plan amendments that will result in mixed-use development designed to support walking, bicycling and transit that are located in 2040 centers, main streets, station communities and corridors served by high-quality transit. The 30 percent trip reduction credit is allowed pursuant to Section 3.08.510B of the Regional Transportation Functional Plan (RTFP), contingent on approval of Title 6 of the Urban Growth Management Functional Plan in December 2010.

Next Steps – Phase 2 OTREC research

The research conducted under this phase of the project would account for how the built environment influences travel behavior (number of trips, trip length, mode choice), for a range of land development typologies and levels of activity in the Metro region. Thus, the goal of this work will be to develop multiple new vehicle trip generation rates or other measures (e.g. ITE adjustments) that more accurately reflect the full spectrum or scale of development types and corresponding travel behavior. It will also

provide data to modify the 30% adjustment factor as needed, which currently represents the conservative side of trip adjustment findings for transit-oriented centers and corridors. The research will:

- Document local trip generation rates and how they differ from current ITE rates through local case studies and other tools
- Support the findings of the SDC Study, which identified the challenge to implementing SDCs that reflect real cost recovery due to a lack of local travel demand data to support a variable SDC methodology.
- Make suggestions on how to better align local and regional infrastructure investments, funding systems, and growth management efforts
- Inform local and regional policies and investment priorities, including high capacity transit plan implementation
- Inform policy changes needed to achieve mode share targets, greenhouse gas emissions reduction targets and other outcomes the region is trying to achieve
- Be applicable to current and future communities
- Be transferable to other communities, locally and nationally

Outputs and outcomes anticipated include:

- Data guide for local jurisdictions: a statistical breakdown of the relationship between transportation behavior and specific land use patterns and characteristics
- Formula tying development typologies and land use characteristics to proportional rates based on the impact of each development typology, which will determine the different fee tiers of TSDCs in a local jurisdiction.
- Documentation of the effect on a local city's TSP and TSDCs through a case study of the project's research findings.
- Recommendations for additional research needed, including informing the next regional household travel behavior survey conducted by Metro and potential modifications to how we design and analyze future surveys.
- Recommendations for application of these rates within the Metro region and needed land use and transportation policy changes.
- Support from the transportation, land use, and engineering communities.