Climate Smart Communities Scenarios HIA

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Oregon Health Authority
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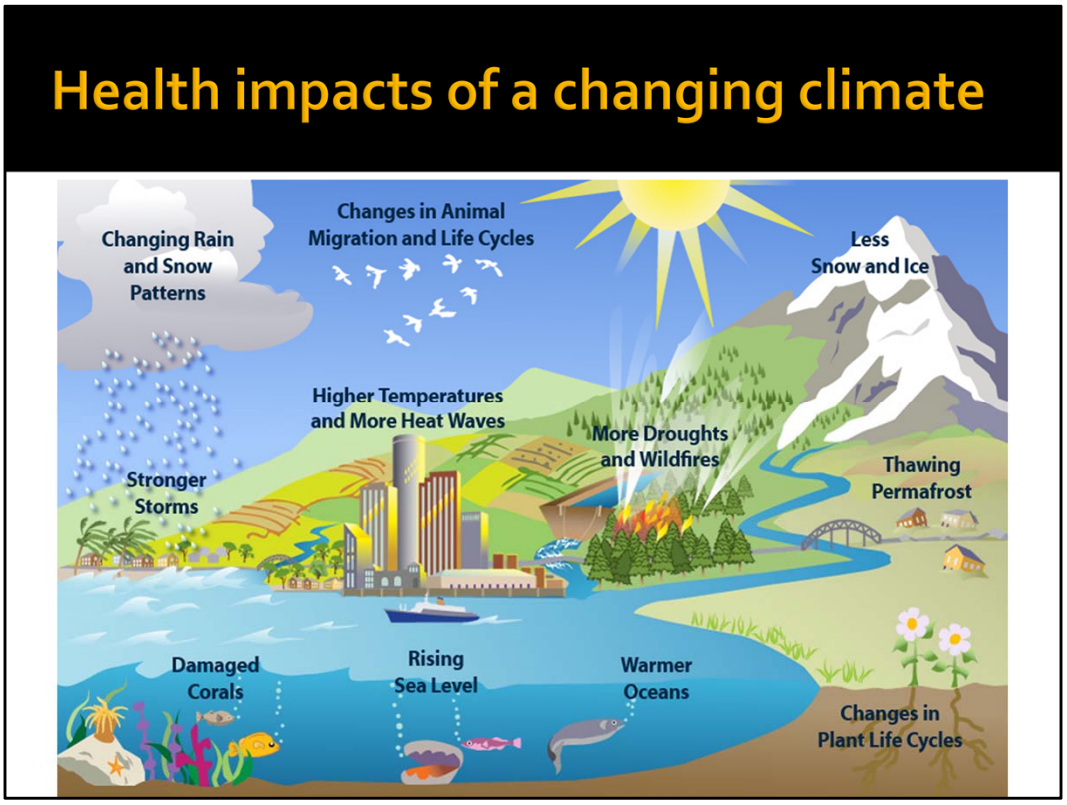


Not going to argue about climate change. The U.S. Global Change Research Program (USGCRP) is a Federal program that coordinates and integrates global change research across 13 government agencies to ensure that it most effectively and efficiently serves the Nation and the world. USGCRP was mandated by Congress in the Global Change Research Act of 1990, and has since made the world's largest scientific investment in the areas of climate science and global change research.

Globalchange.gov

National Climate Assessment

Key Finding #1
Global climate is changing, and this is apparent across the US in a wide range of observations. The climate change of the past 50 years is due primarily to human activities, predominantly the burning of fossil fuels.

- U.S. average temperatures has increased 1.5°F since 1895, 2/3 of the increase since 1980.
- The recent decade was the warmest on record for the nation.

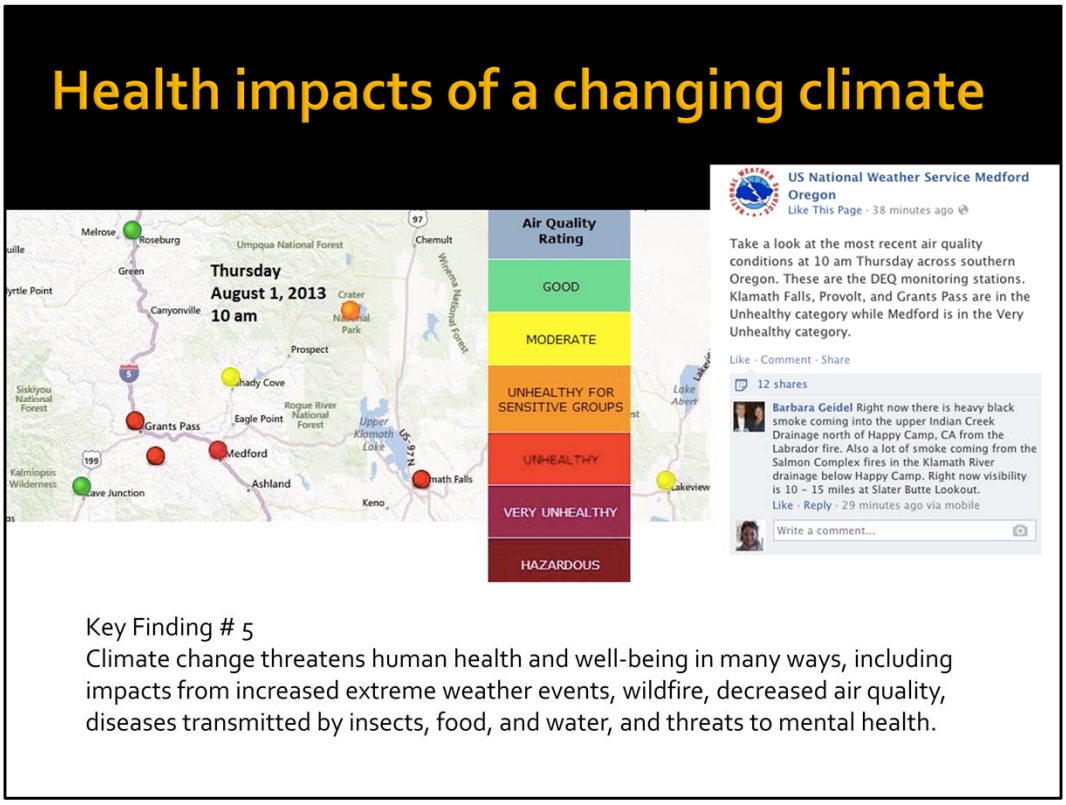
Highlight Oregon's work with local health departments to prepare for the health impacts of climate change; adaptation plans completed in the summer and will be available on our website www.healthoregon.org/hia

Major themes: OHA is concerned about the health impacts of climate change, and strongly supports attempts to mitigate climate change by reducing GHG emissions.

A tiny bit about what the health impacts might be

Policy context:
Metro will work with local governments to adopt the preferred scenario through scheduled updates to transportation and land use plans. In the future, Oregon's five other metropolitan planning organizations may also implement scenario planning.

2007 bill (HB 3543) mandated GHG reductions statewide
2009 bill (HB 2001) required scenario planning in Portland Metro region
Accommodate population and job growth
Reduce GHG emissions from light vehicles
Preferred scenario will be adopted through updates: transportation and land use plans, growth management strategy



National Climate Assessment Report

A tiny bit about what the health impacts might be

- 1,000 premature deaths per 1.8°F rise in temperature could occur each year
- 4,300 additional premature deaths per year by 2050
- Current climate change health-related costs: $6.5 billion and growing

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CSCS HIA Advisory Committee

Portland Metro/three counties/26 cities

Advisors
Metro
Planning, health, and equity nonprofits
8 of the 26 cities in the Metro region
All three counties
Local university
Local hospital
Trimet, regional transportation
ODOT
DEQ

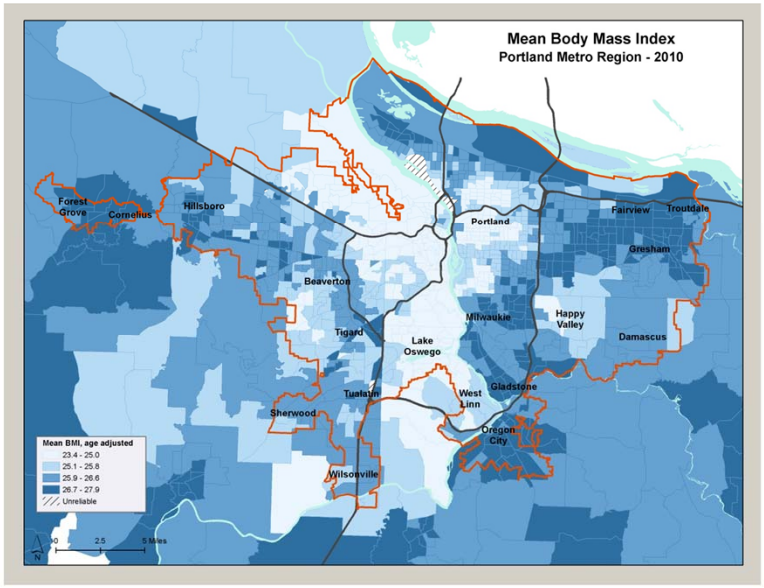
•A tiny bit about methodologies

how we used advisory committee input
- Meeting with advisory committee
- Established scope
- Materials, resources, data
- Technical and peer review of the paper

Transition into scope

1000 Friends of Oregon
DEQ
DLCD
City of Beaverton
City of Gresham, Urban Design and Planning Department
City of Forest Grove
City of Hillsboro
City of Milwaukee
City of Oregon City
City of Portland
City of Tualatin
Coalition for a Livable Future
Metro
Multnomah County Health Department
Multnomah County Planning
ODOT
OHSU
OPAL
Oregon Environmental Council
Oregon Health Authority
Oregon Public Health Institute
Oregon Transportation Research and Education Consortium
PSU
Regional Transportation Council
The Resource Innovation Group
TriMet
Upstream Public Health
Washington County

Physical activity



Source: Oregon Health Authority, Environmental Public Health Tracking report: DMV records are valuable for obesity surveillance in Oregon, September 2012

Major themes: lit review; Some basic information about health outcomes, and the connection between physical activity and health outcomes, and the importance of that connection for improving health outcomes throughout the region for all residents.

What Accounts for Differences in Health?

Genetics (5%)
Personal Behaviors (30%)
Health Care (10%)
Social and Environmental Conditions (55%)

World Health Organization,
Commission on the Social Determinants of Health (2008)

Health
A state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.
Health Determinant
The range of personal, social, economic and environmental factors which determine the health status of individuals or populations. Examples: Behavioral determinant, consumption of fruits and vegetables; environmental determinant, convenient access to healthy food retail.
Health Outcome
Health status of an individual, group or population which is attributable to a number of determining factors such as behaviors, social and community environments, health care services, and genetics. Example: diabetes, cholesterol level.

Obesity contributes to the deaths of about 1,400 Oregonians each year, making it second only to tobacco as the state's leading cause of preventable death. The majority of Metro region residents are overweight or obese, and more than half do not meet physical activity recommendations.

While obesity is traditionally understood to result from an imbalance in calorie consumption and energy expenditure, it is clear from recent studies that the built environment, transportation infrastructure, access to healthy and nutritious food, and other environmental factors strongly influence physical activity and healthy eating(55-64). These factors influence children and adolescents as well as adults, through commutes to school and other destinations important to youth, like community centers and work locations. While active commuting to school has been shown to be related to healthy weight, just 48% of Oregon children who live within one mile of school walk to school at least 3 days per week, while 8% bike to school at least 3 days per week.

People who commute by walking, bicycling or public transit are more likely to meet physical activity recommendations, and they do twice as much total physical activity (transportation and recreation combined) as those who commute by automobile(68-75).

Children who walk or bike to school are more likely to meet physical activity recommendations, and to attain healthier body composition and cardiorespiratory fitness(72, 76-81). Regular, moderate (at least 30 minutes a day on 5 days of the week) physical activity provides substantial health benefits, including lower risk of all-cause mortality, cardiovascular disease, stroke, certain cancers, depression, high blood pressure, diabetes, and obesity (82, 83).

the most recent data shows that Multnomah County has a higher diabetes mortality rate than the national average (38). Diabetes predominately affects the following population groups: lower income, communities of color, and individuals over the age of 65 (33, 39). In 2010, diabetes mellitus contributed 6.5% of the total deaths for non-white Oregonians. This was compared to only 3% for white non-Hispanic Oregonians (40).

heart disease is the second leading cause of death within Clackamas, Multnomah, and Washington counties (33, 48, 49).

Cancer is the leading cause of death in Oregon and in the Portland metropolitan region (33, 48-50). With a death rate of 178.6 per 100,000 population in 2009, Oregon ranks among the top quarter of states with the highest cancer death rate in the nation (50, 51). Additionally, except for lung and colorectal cancer, Oregon has higher incidence rates for all cancer types compared to the national average (52). Regular physical activity lowers the risk of cancer.

Collisions and fatalities

Major themes: lit review; Leading cause of death for Oregonians age 5-24, equity concerns (bikers, walkers, the poor, those dependent on non-car transportation)

Motor vehicle crashes are the leading cause of injury death in the United States and the second leading cause in Oregon (114) (115). They are the leading cause of death for individuals between the ages of 5 and 24 (114).

Serious pedestrian and bicycle crashes account for 20% of all serious crashes in the region(19). Serious crashes are those that result in a fatality or an incapacitating injury. While 3.2% of all trips (not counting trips to access transit) take place by bicycle, 8% of all serious and crashes involve bicyclists. Over 10% of all trips in the region are made by pedestrians (not counting trips to access transit) and 12% of all serious and fatal crashes involve a pedestrian.

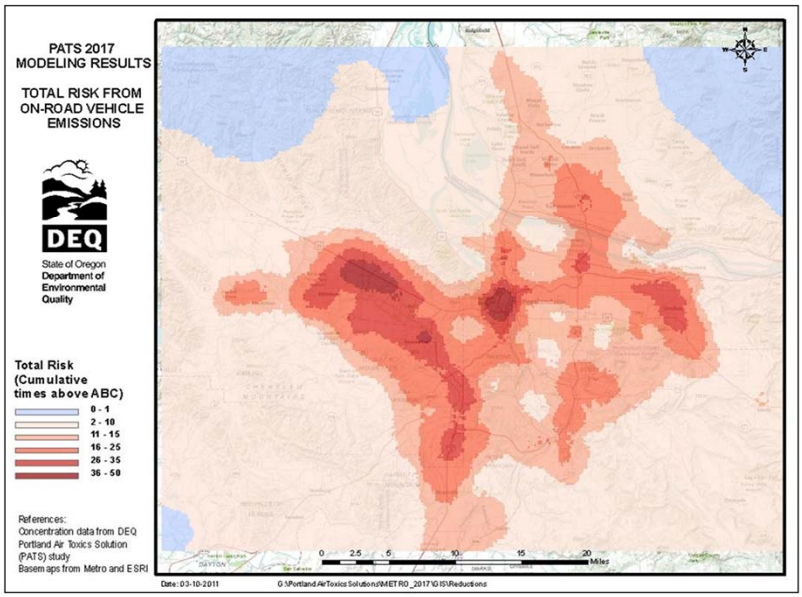
There were a total of 1,297 pedestrian crashes resulting in injury in the Portland region between 2007 and 2010. Of those crashes, 252 resulted in a death or an incapacitating injury. The majority of pedestrian crashes occur while pedestrians are crossing the roadway, either at an intersection or mid-block. Nearly 80% of all serious and fatal pedestrian crashes occur when people are crossing the roadway.

There were a total of 1,503 bicycle crashes resulting in injury in the Portland region between 2007 and 2010. Of those crashes, 140 resulted in a death or an incapacitating injury. Most bicycle crashes occur at intersections – 73% of all serious and fatal bicycle crashes occur at an intersection.

Pedestrian and bicycle injuries are underestimated. Non-fatal crashes with motor vehicles and bicycle-only injuries are less likely to result in a police report, and therefore to end up in official crash statistics. A Portland study found that 20% of bicycle commuters surveyed had experienced a traumatic event and 5% required medical attention during one year of commuting(131). A San Francisco study found that over 50% of bicycle injuries treated at one hospital were not associated with a police report(132).

Making streets much safer for people walking and riding bicycles and dramatically reducing bicycle and pedestrian crashes is an important element of health. Feeling and being safe while walking and bicycling is an important factor in the choices people make whether to walk or cycle at all, and therefore is a critical part of a complete transportation system. Transportation safety is also an equity issue. Research and data show that often people with low incomes and people of color are much more likely to live near wide, high-traffic streets and are thus much more likely to be injured by an auto.

Air quality



Major themes: lit review; reducing air pollution is good, major improvements in last 30 years, gains still possible. Air pollution has major equity implications.

Overall, air pollution in the Portland metropolitan region has decreased dramatically over the last 30 years . However, air quality remains an environmental justice and equity issue. The Portland Air Toxics Solutions Committee Report and Recommendations mapped census block groups with minority populations above 25% overlaid with total times above benchmarks for all pollutants observed in the study, including emissions from cars and trucks(20). Visual inspection of the overlay suggests that there is an overlap between high minority and high impact areas in some areas of the study boundary. Those areas include Forest Grove, Hillsboro, Aloha, Beaverton, North Portland, East Portland and Gresham.

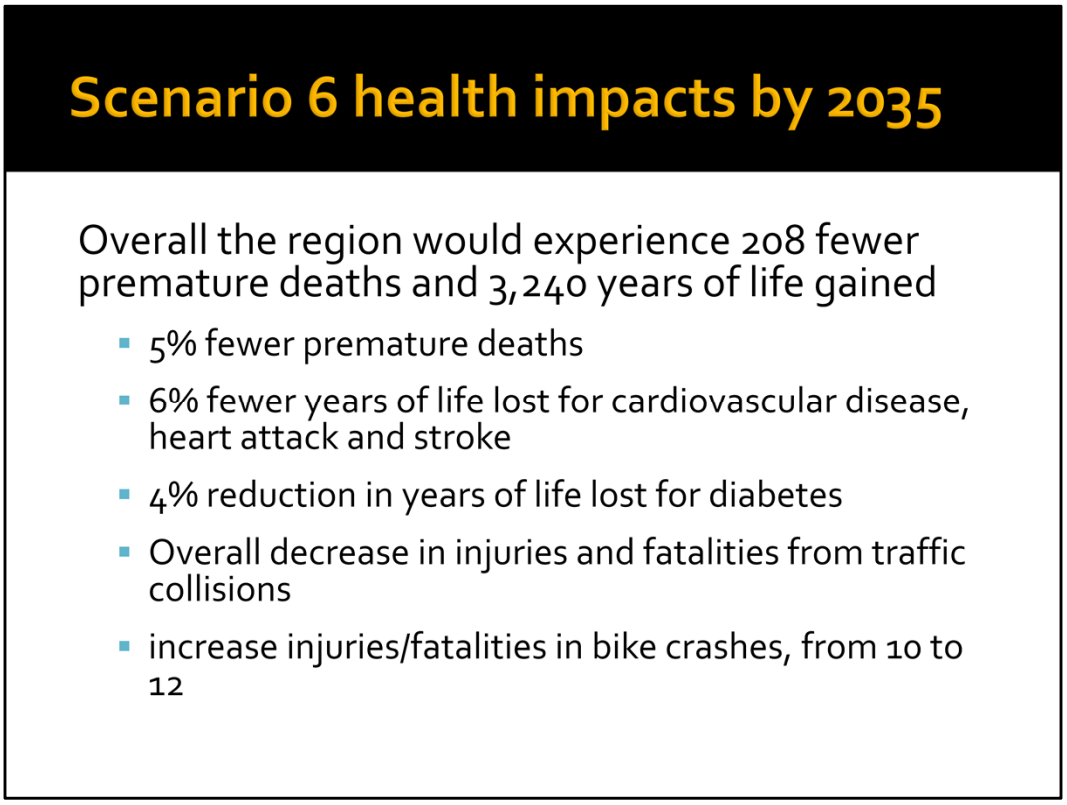
In 2009, approximately 10.2 % (≈300,000) of Oregon adults and 9.5% (≈ 83,000) of children had asthma (27) . As a result, Oregon ranked among the top five states in the nation with the highest percent of adults with asthma (27, 30).

Non-white children and children living in poverty have a significantly higher risk of asthma than do white children (32)

“Low-income communities and communities of color are more likely to live in close proximity to high-traffic roads and have higher exposures to harmful air pollution as a result. These groups may also live in lower quality housing with poor indoor air quality. Their cumulative exposure to indoor and outdoor air pollution may be significantly higher than other groups.

Fact Sheet: Air Quality in Portland, DEQ’s Fact Sheet: Air Quality in Portland (Portland Air Toxics Solutions)
The five priority categories are:

- Residential wood combustion
- Cars and trucks
- Heavy duty vehicles
- Construction equipment
- Industrials metals facilities



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The six scenario clusters (2035) we tested have different health impacts
Overall health impacts are positive compared to base year (2010)
Scenario 3 and 6 are most beneficial for health

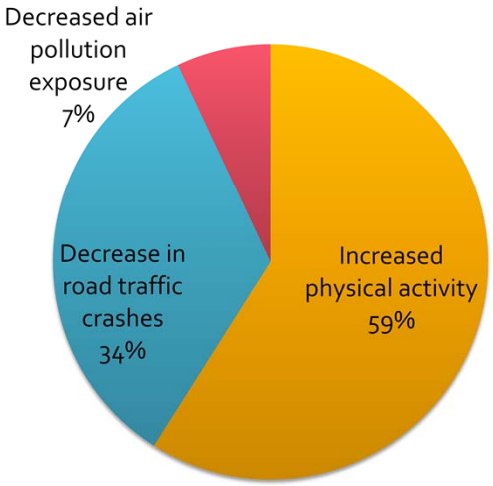
Most ambitious (level 3) **community design** changes, lowest levels of **driving**, highest levels of **active travel**, and ambitious (levels 2 & 3) **pricing** changes added in scenario 6

Taking into account the increase in bike injuries, still found overall health benefits. Car crash numbers (car-car) would go down from 26 to 14 (highway), 128 to 69 (arterial), and 62 to 33 (local streets).

One study found that crosswalk markings without signals or stop signs are associated with increased risk of pedestrian-motor vehicle crashes for older pedestrians(120). There is evidence of a significant positive relationship between traffic volume and the rate of vehicle collisions involving pedestrians (121-123). One review and analysis found that the highest risk of severe or fatal crash occurs in areas with low street network density, and that safety outcomes improve as intersection density increases (122).

One researcher has found that for bike and pedestrian crashes, there is safety in numbers - as the numbers of bicyclists and pedestrians increases, severe and fatal crashes decrease(124). However, other studies have shown that higher pedestrian and bike activity does not result in increased safety, and that other factors such as vehicle volume, speed, and roadway design are the most important contributors to bicycle and pedestrian motor vehicle crashes (121, 125).

Health impacts



Comparison of baseline to scenario 6, considering DALYs as main outcome measure.

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Key recommendations

- Develop and implement a preferred scenario that meets or surpasses the greenhouse gas emissions reduction target set for the region.
- Emphasize strategies that best increase active transportation and physical activity: community design, pricing and incentives – to maximize public health benefits and meet the state target.
- Include strategies, such as community design, that can lead to decreases in road traffic injuries and fatalities for all populations in the region, in particular for children

Faming: these are huge investments, there are difficult political realities; investments in increasing physical activity could pay enormous public health dividends

To be able to truly understand the differences between the final three scenario alternatives (when determining what strategies/levels will be included in the final preferred alternative), it would be helpful to run ITHIM again to be able to make comparisons across

Outcome of HIA

Recommended Phase 2 Evaluation Criteria

Evaluation criteria	Questions to answer	Evaluation measure	Estimation Method/Tool
Social equity	*How will our choices affect the region's most vulnerable populations?*	Highlighted evaluation measures will be measured across population groups (e.g., income, age and ethnicity) to identify whether disproportionate impacts may occur to vulnerable populations in the region. Vulnerable populations are defined to include: low-income households, communities of color, older adults, children, households with limited english proficiency and people with disabilities.	
Jobs and housing	*How will our choices affect where we work and live?*	Number and distribution of housing (by type, cost and location)	MetroScope output
		Number and distribution of jobs (by type and location)	MetroScope output
		Housing and job growth captured inside urban growth boundary compared to growth captured in nearby areas	MetroScope output
		Employment access and proximity to labor markets	MetroScope output and ArcGIS
		Employment land in proximity to key transportation corridors (Land zoned for employment use in proximity to major transportation corridors)	MetroScope output and ArcGIS
		Access to destinations (households within .5-mile distance of large employment centers, colleges and high schools, libraries, regional shopping centers, airports, hospitals, major medical centers, parks, and major social service sites by income group, race and ethnicity, and age)	MetroScope output and ArcGIS
Cost and the Economy	*What will our choices cost and how will they affect public sector and household budgets, and the economic competitiveness of businesses and industry in the region?*	Transportation infrastructure costs (capital and operations)	GreenSTEP output
		Other public/private infrastructure costs	GreenSTEP/MetroScope output
		Social costs per capita and by income group (e.g., combined cost of travel delay, climate change damage and adaptation, energy security, air and noise pollution, crash costs to non-drivers and other environmental impacts)	GreenSTEP output
		Household cost burden - Housing and transportation costs combined per household by income group (total and as a percent of income by income group)	MetroScope and GreenSTEP outputs
		Freight truck travel delay costs	GreenSTEP output
		Transportation revenues per capita and by income group	GreenSTEP output
Travel	*How will our choices affect how we get around?*	Vehicle miles traveled per capita	GreenSTEP output
		Vehicle delay per capita	GreenSTEP output
		Transit service per capita (revenue miles)	GreenSTEP output
		Access to transit (households and jobs within .5-mile distance of high capacity transit stations/ stops and .25-mile distance of frequent bus stops by income group, race and ethnicity, and age)	MetroScope output and ArcGIS
		Average commute trip length	MetroScope output
Energy consumption and GHG emissions	*How will our choices affect climate change and energy security?*	GHG emissions per capita	GreenSTEP output
		Fuel consumption (region-wide) (petroleum-based, liquid and gaseous fuels consumed in light vehicle engines)	GreenSTEP output
Natural resources	*How will our choices affect air quality, water supplies and farms, forestland and natural areas?*	Criteria pollutant emissions	GreenSTEP output
		Land consumed for development	MetroScope output
		Residential water consumption	GreenSTEP output
Public health	*How will our choices affect our health?*	Physical activity per capita (walk trips and bike miles)	GreenSTEP and public health model output
		Chronic illness (obesity, diabetes, asthma)	Public health model output
		Traffic safety (change in fatalities and injuries)	Public health model
Feasibility	*What choices can we afford, what choices are feasible and how do we implement our choices in an equitable and cost-effective manner?*	Financial, legal, legislative or regulatory barriers for implementation	Qualitative assessment
		Political or public acceptability	Qualitative assessment
		Institutional capacity for implementation and long-term "ownership"	Qualitative assessment
		Policy tools to support neighborhood stability and reduce existing community disparities during implementation	Qualitative assessment and ArcGIS

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