Land Use and Planning Resources Report

Progress Report to the Minnesota Legislature

April 15, 2010

Metropolitan Council

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Preface

In 2009, the Minnesota Legislature passed a bill requiring a Land Use and Planning Resources Report.[1] The bill specifies:

(a) By January 15, 2011, the Metropolitan Council shall submit a report to the chairs and ranking minority members of the house of representatives and senate committees with jurisdiction over transportation policy and finance. The report must identify and assess the effectiveness of local level and regional level land use and transportation planning strategies and processes for:

(1) reducing air pollution;
(2) mitigating congestion; and
(3) reducing costs for operation, maintenance, or improvement of infrastructure.

(b) The report must emphasize approaches that reduce or manage travel demand through land use and access to transportation options.

(c) The Metropolitan Council shall (1) identify and adapt existing information and resources that are found to be applicable to Minnesota, taking into account travel and demographic trends specific to the Twin Cities metropolitan area; and (2) collaborate with local units of government and other stakeholders interested in development and refinement of the resources.

(d) The Metropolitan Council shall submit progress reports on development and application of the land use and planning resources report to the chairs and ranking minority members of the house of representatives and senate committees with jurisdiction over transportation policy and finance by October 15, 2009; April 15, 2010; and October 15, 2010.

(d) The Metropolitan Council may enter into a contract for up to $375,000 with the Board of Regents of the University of Minnesota for the Center for Transportation Studies to assist in creation of the report required under this section.

[1] Minn. Laws 2009, Ch. 36, Art. 3, Sec. 22.

Executive Summary

This second progress report continues the Metropolitan Council's work on a *Land Use and Planning Resources Report* to the Minnesota Legislature. It focuses on identifying policies and strategies, providing preliminary results for baseline estimates of air pollution, and describing collaboration and outreach efforts.

Transportation and Land Use Policies and Strategies

In over 40 years of planning for the region, the Council has adopted many policies and strategies on land use and transportation. It has also strengthened interrelationships among policies and strategies. This report identifies local and regional land-use and transportation policies and strategies for reducing air pollution, mitigating congestion and reducing costs of infrastructure. Policies and strategies are from the Metropolitan Council's *Regional Development Framework* and *2030 Transportation Policy Plan*.

Both sources include approaches that reduce or manage travel demand through land use and access to transportation options. Throughout the *2030 Transportation Policy Plan*, strategies emphasize ways to manage travel demand.

Land-use and transportation policies drawn from the *Regional Development Framework* and *2030 Transportation Policy Plan* address strategies and processes to:

- Minimize environmental impacts
- Manage congestion and improve performance
- Expand and enhance transportation choices
- Improve connections and access

Baseline Air Pollution Estimates and Air Pollution Impacts Tool

- The Council is developing a voluntary tool for estimating air pollutants generated by travel in the region. The purpose of producing a baseline air pollution estimate is to provide information, not to advocate strategies or mandate policies.

- Baseline air pollution estimates will estimate air pollutants from mobile transportation sources, including vehicles used for personal transportation, transit and commercial trucking.

- Preliminary results for baseline air pollution estimates focus on vehicle miles traveled (VMT) in 2005 for home-based trips and nonhome-based trips. Illustrative rates of VMT are produced for the region, typical types of communities and counties. For example, the region generated an average daily VMT per household of 51 for home-based trips in 2005.

- Planned use of an air pollution impacts tool, under development for the final report, is intended to serve as a voluntary tool for communities to assess impacts of proposed development. Impacts will be limited to travel-related air pollution generated by the interaction of transportation and land use, not pollutants coming from all types of sources.

- An air pollution impacts tool will work by comparing travel-related air pollutants from different patterns of development that, in turn, are associated with differences in travel behavior.
- Measuring impacts of development on air pollutants will support informed decision making by local governments. A menu of choices, characterizing development scenarios, will provide flexibility to fit local circumstances.

Collaboration and Outreach

- A variety of stakeholders offered guidance and advice on the content of the report, development of the air pollution impacts tool and useful planning resources. As part of collaboration and outreach efforts, Council staff met with land-use and transportation advisory committees for the Council as well as other stakeholders. Input helped refine study elements and respond to local concerns.

Introduction

In this report, the Metropolitan Council continues its work on a land use and transportation planning study. After the Minnesota Legislature directed the Council to develop a *Land Use and Planning Resources Report*, the Council completed an introductory report by October 15, 2009. This second report further explains the Council's approach and shares early results as the study progresses.

The overall plan for the final report is to include information on:

- Regional and local transportation and land use policies and strategies
- Resources and tools for land use and transportation planning
- Baseline air pollution estimates
- Air pollution impacts tool
- Collaboration and outreach
- Appendices

When following through on the work plan described above, the final report will address the legislative goals of reducing air pollution, mitigating congestion, and reducing infrastructure costs. In addition, the final report will emphasize approaches that reduce or manage travel demand through land use and access to transportation options. Future reports will provide information on: a) assessment of the effectiveness of strategies and processes for the three legislative goals, and b) resources and tools for land use and transportation planning, as part of identifying and adapting information and resources applicable to the area. Later reports will also further develop baseline estimates of air pollution and impacts on air pollution through use of a new, voluntary tool.

For this April report, preliminary development and application of the study includes:

- Regional and local transportation and land use policies and strategies – identification of strategies
- Resources and tools for land use and transportation planning – outline of plans
- Baseline air pollution estimates – definition and illustrative estimates
- Air pollution impacts tool – planned use of voluntary tool
- Collaboration and outreach – ongoing efforts
- Appendices – supplemental or reference information

The April report focuses on identifying policies and strategies, providing preliminary results for baseline estimates of air pollution from mobile transportation sources, and describing collaboration and outreach efforts. Other topics will be expanded later. For all topics, the content of upcoming reports will change with the addition of resources and emerging information on dynamic topics relevant to land use and transportation.

Timeframe of Reports

The Council will complete a final Land Use and Planning Resources Report by January 15, 2011. The first progress report was finished by October 15, 2009. The deadline for the second report is April 15, 2010, and another progress report is due on October 15, 2010. Each report will be submitted to the chairs and ranking minority members of the Minnesota House of Representatives and Minnesota Senate committees with jurisdiction over transportation policy and finance.

Context

How we change and develop in the region greatly depends on regional and local land-use and transportation decisions. Because those decisions take place in a larger context, this section briefly addresses big-picture topics both inside and outside the region's seven-county border. Information on land-use and transportation measures and interactions, key facts and trends, goals and initiatives, as well as uncertainties and opportunities, provide additional background.

Land Use and Transportation

Interactions of land use and transportation will be explored in upcoming reports by reviewing resources and tools for land-use and transportation planning. For this progress report, several characteristics are introduced, based on conclusions of a panel of national experts charged with establishing the scientific basis for examining relationships among development patterns, vehicle miles traveled, energy consumption and impacts of development patterns on greenhouse gas emissions.[2]

Important measures of land-use patterns include what are known as the 5Ds – density, diversity, design, destination accessibility and distance to transit.[3] In more detail, they include density of population and employment; diversity in the mix of land uses and jobs-housing balance; design elements, especially connectivity that encourages bicycling and walking; accessibility to destinations, often measured by distance from employment centers or other centers; and distance to transit, such as proximity to a bus or rail stop.[4] Significant measures of transportation networks and their interaction with land uses are the spatial pattern of transportation networks, such as fixed rail or connected grids versus cul-de-sacs; accessibility of destinations, such as distance to a major center; and distance between development and transit, which affects the likelihood of people using transit.[5]

A new federal partnership underscores interconnections between housing, transportation and the environment. In 2009, the U.S. Department of Housing and Urban Development (HUD), U.S. Department of Transportation (DOT) and U.S. Environmental Protection Agency (EPA)

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[2] The study was requested in the U.S. Energy Policy Act of 2005 (Section 1827) and funded by the U.S. Department of Energy. National Research Council (U.S.), *Driving and the Built Environment: The Effects of Compact Development on Motorized Travel, Energy Use, and CO_2 Emissions* (Washington, D.C.: Transportation Research Board, 2009), p. ix.

[3] National Research Council, p. 32.

[4] National Research Council.

[5] National Research Council, p. 14.

announced a partnership to coordinate investments for improved access to affordable housing, more transportation choices and reduced transportation costs.[6] The agencies plan to enhance integrated planning and investment; provide a vision for sustainable growth; redefine affordable housing measures that include transportation costs; redevelop underused sites; develop livability measures and tools; align programs at the three agencies; and undertake data collection, joint research and outreach.[7]

Facts and Trends

According to the last survey of travel characteristics in the region from the Travel Behavior Inventory (TBI), the number of trips increased faster than population between 1990 and 2000. Driving alone was the most common way of traveling, accounting for over 47 percent of person trips. (A person trip is a one-way journey by one person between two points.) Driving with a passenger made up almost 19 percent of person trips and riding as a passenger represented just over 23 percent. Public transit contributed 2.3 percent, walking made up 5.6 percent, and bicycling, 1.5 percent. Final results from the 2010 TBI will most likely become available after the final report is due in 2011.

Population and employment growth are expected to increase traffic congestion by 2030 despite the moderating influences of higher fuel prices, concerns over global warming and increased attention on alternative modes of travel. Between 2000 and 2030, the region is forecast to grow by 966,000 people, 471,000 households and 520,000 jobs.[8] Rapid growth is foreseen for the population 55 and over, and the mix of residents is expected to become increasingly diverse, both racially and ethnically.

Total vehicle miles traveled continue to rise in the region, but in a reversal of historical trends, vehicle miles traveled per capita edged down in 2005 and remained nearly flat through 2008. Higher prices for gasoline and the economic slowdown probably explain recent trends reported in the Council's regional benchmarks. Daily vehicle trips are forecast to increase by 53 percent from 2005 to 2030, and daily vehicle miles traveled are forecast to rise by 36 percent. Hours and miles of congested travel are expected to climb even with planned transportation improvements.

Goals and Initiatives

At the state, national and international level, concern over environmental impacts, energy dependence and climate change have spurred policy initiatives, reduction goals or regulations. For example, Minnesota set goals to reduce statewide greenhouse gas (GHG) emissions to at least 15 percent below 2005 levels by 2015, at least 30 percent lower by 2025 and at least 80 percent lower by 2050.[9] To inform policy options for mitigation, the Center for Climate Strategies inventoried and forecast GHG emissions for the Minnesota Climate

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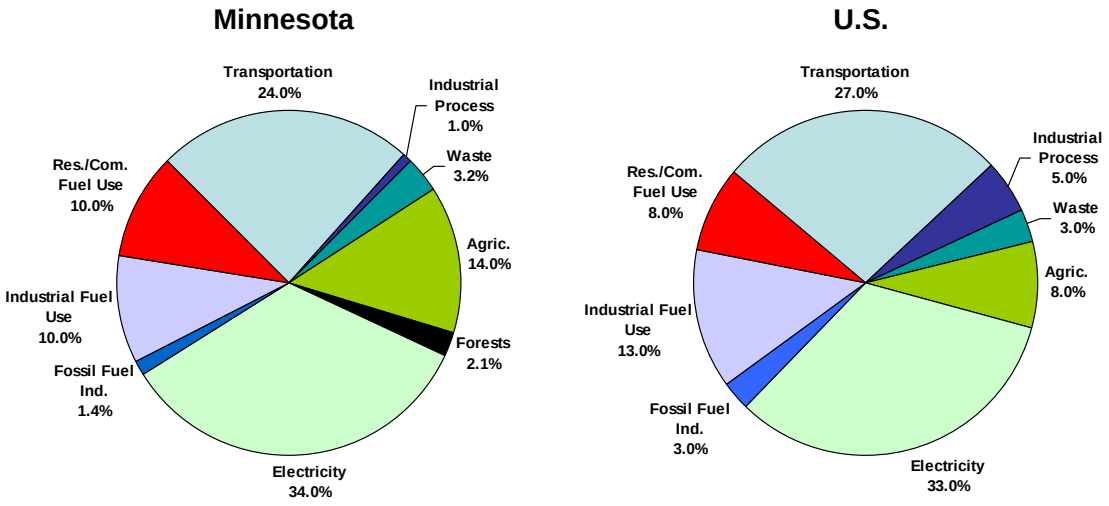
[6] U.S. Environmental Protection Agency, *HUD, DOT and EPA Partnership: Sustainable Communities*, http://www.epa.gov/dced/pdf/dot-hud-epa-partnership-agreement.pdf (June 16, 2009).
[7] U.S. Environmental Protection Agency.
[8] The employment forecast reflects minor revisions made during the process of reviewing comprehensive plan amendments or updates. Metropolitan Council, *2030 Regional Development Framework – Revised Forecasts as of December 31, 2009*, http://www.metrocouncil.org/metroarea/RDFforecasts.xls (accessed April 9, 2010).
[9] Minn. Stat. § 216H.02 (2009).

Change Advisory Group (MCCAG) of the Office of the Governor of Minnesota.[10] Its measures include six types of gases.[11]

As seen in Figure 1 below, Minnesota's transportation sector contributed 24 percent of gross greenhouse gas emissions in 2005, slightly lower than the national share of 27 percent.[12] Use of natural gas, oil, coal and wood fuels in commercial, industrial and residential sectors made up 20 percent of state emissions in 2005.[13] Electricity supply represented about one third of emissions both in the state and the nation.[14] Actions that focus on land use and transportation to reduce air pollutants, of which GHG emissions are a part, do not address all sources of pollutants.

Figure 1

GHG Emissions by Sector in 2005 for Minnesota and U.S.



Note: At a national level, forests act as a net sink of CO_2 (carbon storage or removal of emissions); therefore, they do not show up in the above graph of gross US emissions sources. For Minnesota, gross GHG emissions are the same as net emissions because no removal of emissions was identified.

Source: *Final Minnesota Greenhouse Gas Inventory and Reference Case Projections 1990-2025,* Center for Climate Strategies.

National and international initiatives encompass goals to address climate change, U.S. EPA findings, and regulations governing energy-efficiency standards for vehicles. International efforts on climate change include goals set by countries in the Kyoto Protocol and participation at the 2009 United Nations Climate Change Conference in Copenhagen. In

[10] Center for Climate Strategies, *Final Minnesota Greenhouse Gas Inventory and Reference Case Projections 1990-2025* (Washington, D.C.: Center for Climate Strategies, 2008), p. 1.
[11] The six gases include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perflurorcarbons and sulfur hexafluoride. Center for Climate Strategies.
[12] Center for Climate Strategies, pp. 5-6.
[13] Center for Climate Strategies, p. 5.
[14] Center for Climate Strategies, pp. 5-6.

2007, the U.S. Supreme Court ruled that greenhouse gases are air pollutants covered by the Clean Air Act.[15] The EPA subsequently announced an endangerment finding and a cause or contribute finding required before finalizing EPA greenhouse gas emission standards.[16] On April 1, 2010, EPA and DOT's National Highway Safety Administration announced a joint, final rule establishing a new program to reduce greenhouse gas emissions and improve fuel economy for new cars and trucks sold in the U.S.[17] The new federal regulations have broad, but uncertain implications.

Uncertainties and Opportunities

Uncertainties and opportunities abound when trying to influence land use and transportation. Fuel prices zigzag up and down, making it more difficult to predict impacts on changing long-term travel behavior and to budget for transit operating costs. An unusually long and deep economic downturn that began in December 2007 has shaken confidence in the pace of future employment and income growth. Questions about funding sources for public transportation investments and the outlook for reinvigorated development are difficult to answer. Global economic conditions and energy markets demonstrate interdependences outside the control of local policies. Demographic changes herald upcoming changes in how and where people may want to live and travel.

Yet, along with ample examples of uncertainty, opportunities exist as well. Changing demographics from an aging population and more immigration, combined with the possibility of higher energy prices, should offer more opportunities for development patterns that could lead to less travel by vehicles.[18] Bicycling to work shows potential for increasing alternative modes of travel. Among the 50 cities with the most workers, Minneapolis ranked second behind Portland, Oregon, in the percentage of commuters who bicycle to work.[19] For residents of the City of Minneapolis, 3.8 percent commuted by bicycle in 2007.[20] Technology offers ways to give employees more alternatives to work at home rather than commute to work in rush-hour traffic, manage congestion more effectively, and deliver more efficient public services.

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[15] *Massachusetts v. EPA*, 549 U.S. 497 (2007).
[16] U.S. Environmental Protection Agency, *Endangerment and Cause or Contribute Findings for Greenhouse Gases under the Clean Air Act*, http://www.epa.gov/climatechange/endangerment.html (accessed April 9, 2010).
[17] U.S. Environmental Protection Agency, *Final Rulemaking: Light-Duty Vehicle Greenhouse Gas Emissions Standards and Corporate Average Fuel Economy Standards*, http://www.epa.gov/otaq/climate/regulations.htm (accessed April 9, 2010).
[18] National Research Council, p. 9.
[19] Information on the mode of transportation to work is from the U.S. Census Bureau, 2007 American Community Survey. City of Minneapolis, *Minneapolis Closes the Gap with #1 Portland*, http://www.ci.minneapolis.mn.us/bicycles/MinneapolisClosesGap.asp (accessed April 9, 2010).
[20] City of Minneapolis.

Transportation and Land Use Policies and Strategies

This section of the *Land Use and Planning Resources Report* identifies existing regional and local land use and transportation planning strategies and processes in the Twin Cities seven-county metropolitan area for three legislative goals. They are: 1) reducing air pollution, 2) mitigating traffic congestion, and 3) reducing costs for operating, maintaining or improving infrastructure. Strategies emphasize approaches that reduce or manage travel demand through land use and access to transportation options.

Future reports will expand on strategies to reduce transportation costs and address the effectiveness of land use and transportation planning strategies and processes to achieve the three legislative goals. Strategies to reduce infrastructure costs will focus on transportation, especially the costs of the highway system and the transit network.

Coverage and Organization of Strategies

Two main sources identify existing regional and local land use and transportation planning strategies. The first is the Council's *Regional Development Framework*, adopted by the Council in 2004. The *Framework* is the Council's comprehensive guide for development in the seven-county metropolitan area. Its policies, strategies and goals integrate plans for four regional systems, including transportation, airports, wastewater service, and regional parks and open space. The *2030 Transportation Policy Plan*, adopted by the Council in 2009, guides development of the region's transportation system to 2030. Its plans for an integrated, multimodal transportation system advance regional land use and growth management goals identified and adopted in the *Framework*. Strategies in the *Transportation Policy Plan* emphasize approaches that reduce or manage travel demand through land use and access to transportation options. Other sources will be added to later reports.

Identified strategies address the three legislative goals, emphasize travel demand, stress the interaction of land use and transportation, and relate to development of an air pollution impacts tool. Not every policy touching on land use and transportation is included. Strategies on land transportation modes, such as roadway travel by personal vehicle, transit, or commercial truck, or travel by walking or bicycling are included. Transportation strategies exclude aviation because there is much less of a direct relationship between land use and aircraft flights. Land use strategies cover a diverse collection of topics, but do not include wastewater services and water supply. A number of strategies are included because they pertain to transportation infrastructure costs, such as transportation investments, or the cost-effective provision of infrastructure.

Groups of Strategies

Strategies are organized into four main groups to integrate information from the *Framework* and the *Transportation Policy Plan*. A fifth group of strategies that support broad policies beyond land use and transportation is also briefly described. The four groups are:

- Minimize environmental impacts
- Manage congestion and improve performance
- Expand and enhance transportation choices

- Improve connections and access

Strategies are organized in each group to identify regional policies and strategies, local strategies and *Transportation Policy Plan* strategies. Applicable core policies are identified first from policy directions and strategies in the *Framework* (Chapter 2). Regional policies appear next. These show the Council's role in accommodating growth in all communities (Table 1 in the *Framework*) and the Council's role for geographic planning areas (Tables 2 – 6 in the *Framework*). Local strategies from the *Framework* include community roles for accommodating growth in all communities (Table 1) and community roles by geographic planning areas (Tables 2 – 6). *Transportation Policy Plan* strategies, as mentioned earlier, guide development of the region's transportation system to 2030 and emphasize strategies to reduce or manage travel demand. Interrelationships among strategies are additionally acknowledged, as are other benefits that extend beyond the goals for this report.

Strategies are abbreviated in this section, but Appendices A and B provide more information. Appendix A supplies an overview of policy directions and strategies from the *Framework*, including policies for wastewater services, water supply and aviation that do not appear in the body of this report. Appendix B serves as a reference to describe regional strategies, local strategies and *Transportation Policy Plan* strategies in greater detail. For example, Appendix B provides additional information on ongoing transportation studies.

Geographic Planning Areas

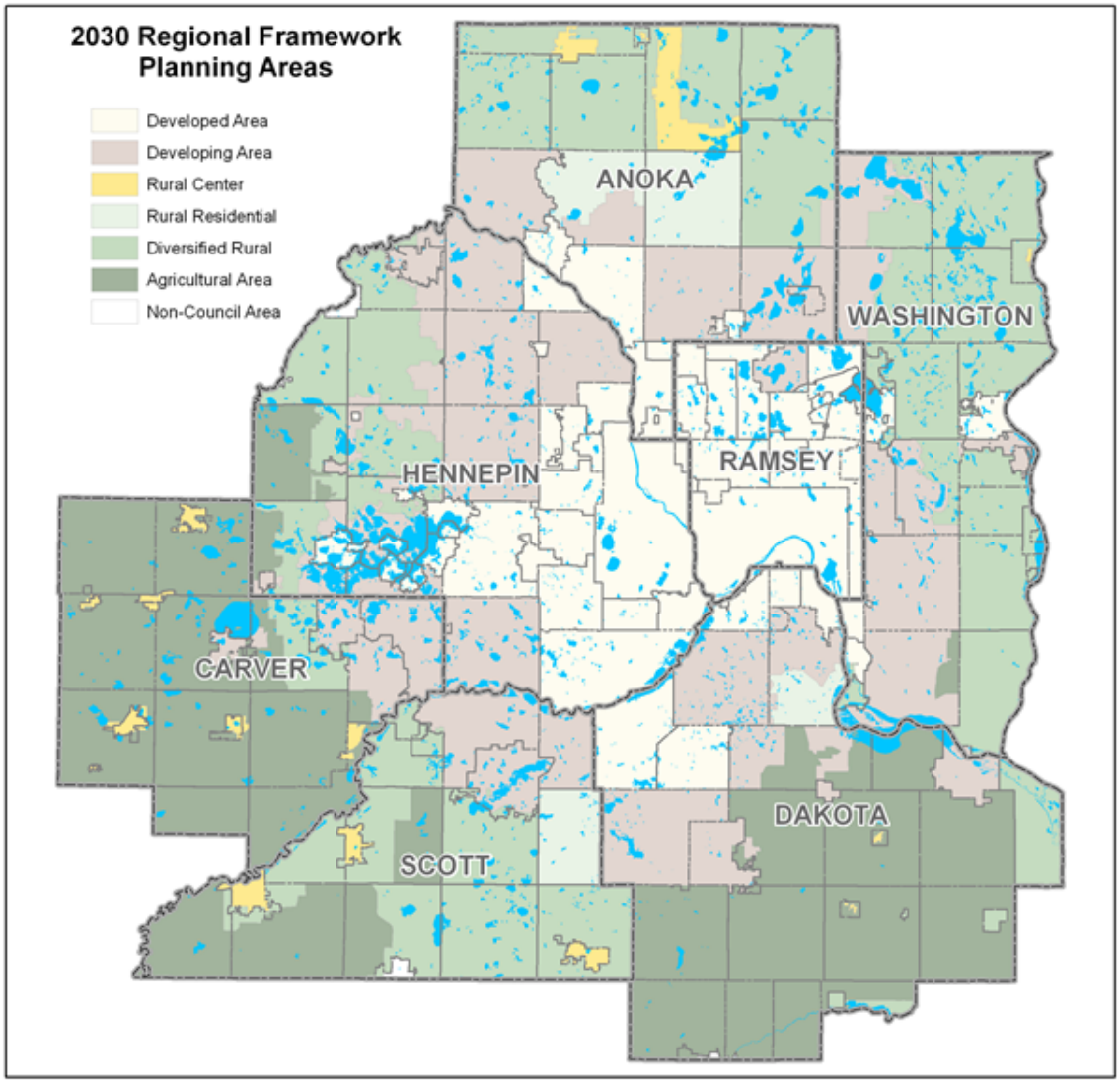
Strategies by geographic areas reflect that policies are tailored for different types of communities, and each community determines how to implement local strategies. The Council categorizes communities into geographic planning areas. These are developed communities, developing communities and four types of rural areas. Rural planning areas include rural centers (including rural growth centers), rural residential areas, diversified rural areas and agricultural areas. Figure 2 shows the location of the region's geographic planning areas.

Developed communities are cities where more than 85 percent of the land is developed and infrastructure is well established. Approximately 30 percent of the region's new households and about half of new jobs through 2030 are forecast to occur in these communities. Developing communities are cities where the most substantial amount of new growth will locate, about 60 percent of new households and 40 percent of new jobs. How and when development happens will influence how much additional land developing communities will need with urban services requiring substantial investments.

Rural areas make up about half of the 3,000 square miles in the region. Rural land uses range from farms to scattered or clustered homes to small towns, and rural areas include many of the region's remaining natural resources. Rural centers are small towns and may include rural growth centers with potential for and interest in growth. Most of new growth in rural areas is forecast to occur in rural growth centers, where existing infrastructure provides an alternative to individual wells and septic systems. Rural residential areas are developed at one housing unit per 2 to 2½ acres or less and have many individual sewage treatment systems. Diversified rural communities are sparsely developed areas with a variety of agricultural, large-lot residential and clustered housing, and other uses requiring a rural location.

Agricultural areas are large contiguous land areas planned and zoned to maintain agriculture as the primary land use.

Figure 2



Minimize Environmental Impacts

In the Council's regional policy directions and strategies, a primary goal is to work with local and regional partners to reclaim, conserve, protect and enhance the region's vital natural resources. Strategies support objectives to protect natural resources, including air quality, and plan for expanding the regional parks and trails system. Parks and trails in the Twin Cities are among the area's most attractive features, according to a 2009 survey of residents.

Minimizing impacts on air quality to meet federal regulations contributes to the quality of life. Parks and open space protect natural resources, and trees serve to sequester carbon emissions by removing carbon dioxide from the air and storing it.[21]

To protect the environment and reduce air pollution, regional policy directions and strategies for all communities include:

- Comply with federal air quality standards for carbon monoxide, ground level ozone and fine particulate pollution.
- Protect regionally important natural resources identified as unprotected in the Natural Resources Inventory and Assessment.
- Encourage integrating natural-resource conservation strategies in planning decisions.
- Plan to expand the regional park system to enhance outdoor recreation opportunities and serve important natural-resource functions.

Regional Strategies

Regional strategies to protect the environment and minimize environmental impacts include:

- Expand the regional parks system. Invest in acquisition and development of land for the regional parks system.
- Conserve, maintain and restore natural resources identified in natural resource inventories. Integrate conservation strategies into regional system plans.
- Provide technical assistance to communities on adoption and enforcement of environmental preservation and conservation techniques and ordinances.
- Conserve natural resources and protect vital natural areas when planning and constructing regional infrastructure.

Regional Strategies by Geographic Area

Regional strategies are to expand the regional park system, conserve natural resources, integrate natural resource conservation into regional plans, and provide technical assistance in developing communities, rural centers (including rural growth centers) and rural residential areas. In developing communities, strategies promote development practices that protect natural resource areas and provide technical assistance on environmental preservation and conservation techniques and ordinances. In developed communities, natural resources restoration is paired with reclamation of contaminated lands and appears in the group of strategies on improving connections and access.

In diversified rural and agricultural areas, regional strategies are to conserve natural resources and integrate natural resource conservation into regional plans. Model conservation easements are an additional option for diversified rural areas.

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[21] Philip Groth et al., *Quantifying the Greenhouse Gas Benefits of Urban Parks* (San Francisco, CA: The Trust for Public Land, 2008), p. 24.

Local Strategies

Local strategies to protect the environment and minimize environmental impacts include:

- Conserve natural resources and protect vital natural areas when constructing local infrastructure and planning land uses.
- Incorporate natural resources conservation practices and habitat restoration projects into development plans and projects.
- Complete local natural resource inventories. Integrate natural resources into local land use decision-making.
- Adopt environmental preservation and conservation techniques.
- Include high-quality natural resources as a part of local park systems.

Local Strategies by Geographic Area

In developing communities and rural centers (including rural growth centers), local strategies are to complete local natural resource inventories, integrate natural resources into local plans, adopt environmental preservation techniques, and include high-quality natural resources in local park systems. A strategy for rural residential areas is to adopt conservation or environmental protection provisions in ordinances. In diversified rural and agricultural areas, strategies include conserving natural resources and integrating natural resource conservation into regional plans. For developed communities, local strategies appear in the group of strategies on improving connections and access.

Transportation Policy Plan Strategies

Transportation Policy Plan strategies to minimize impacts on the environment include:

- Promote strategies to reduce transportation emissions of pollutants identified in the federal Clean Air Act.
- Give funding priority to projects that help the region comply with federal air quality standards.
- Implement initiatives to reduce greenhouse gas emissions. An example is Metro Transit's "Go Greener" initiative.
- Have regional transportation projects give special consideration to preservation and enhancement of the region's cultural and natural resources.

Interrelationships and Other Benefits

Minimizing environmental impacts is interrelated with other strategies for transportation and land use. Expanding trails enhances transportation choices (such as commuting to work by bicycling), potentially mitigates congestion by providing more alternatives to highway driving, and strengthens connections and access. Trails offer walking and biking alternatives that can reduce the number of vehicle trips and their impact on air quality.

Benefits of strategies go well beyond transportation and land use. Expanding parks, trails and open space will help meet the recreation needs of the region's growing population. Natural

resources support improved water quality by filtering water and reducing runoff.[22] Complying with federal air quality standards will avoid costly federal pollution control requirements and enhance the region's ability to grow economically. Moreover, reducing air pollution and encouraging increased physical activity through walking and biking in parks and on trails have significant health benefits.

Manage Congestion and Improve Performance

A primary goal in the Council's regional policy directions and strategies is to plan and invest in multi-modal transportation choices, based on the full range of costs and benefits, to slow the growth of congestion and serve the region's economic needs. In surveys, residents in the Twin Cities ranked transportation issues, including congestion, as the region's most important public concern in six out of seven years through 2009.

Strategies strive to modify travel behavior and slow the growth of congestion by making the highway transportation network more efficient so drivers use less fuel. Studies and initiatives under way to manage congestion and reassess highway expansion plans will be included in future reports.

Regional policy directions and strategies for all communities include:

- Focus highway investments on maintaining and managing the existing system, removing bottlenecks and adding capacity.
- Make more efficient use of the regional transportation system by encouraging flexible work hours, telecommuting, ridesharing and other traffic management efforts. Also use pricing techniques such as FAST lanes and HOT lanes.[23]

Regional Strategies

Regional strategies to manage congestion and improve performance include:

- Expand capacity of the regional transportation system to slow the growth of congestion.
- Support appropriate and cost-effective technologies to manage and optimize use of both highway and transit systems (examples: HOT lanes, ramp metering).

Regional Strategies by Geographic Area

In developed communities, the plan in the *Regional Development Framework* was to complete a six-lane ring route, eliminate bottlenecks, make select capacity improvements and

[22] Philip Groth, p. 14.
[23] FAST (Freeing Alternatives for Speedy Transportation) lanes are new, publicly owned highway lanes built by private entities, which are repaid by motorists who opt to drive on them. HOT (High Occupancy Toll) lanes are underutilized bus and carpool lanes that single-occupant vehicles can use by paying a fee. *Regional Development Framework*.

improve system management. As seen in the *Transportation Policy Plan* strategies, new initiatives are under way to update those strategies.

Local Strategies

Local strategies to manage congestion and improve performance include:

- Coordinate congestion-reduction measures to minimize or decrease peak-period impacts by collaborating with employers and providing information or incentives.
- Support better access and traffic management through improved design principles.

Local Strategies by Geographic Area

In developed communities, local strategies are to coordinate congestion-reduction measures, such as collaborating with employers and providing information or incentives to minimize or decrease peak-period impacts.

Transportation Policy Plan Strategies

Congestion will not be eliminated or significantly reduced in the metropolitan area, so the Council and its partners will implement ways to manage congestion and travel demand, as well as provide alternatives to congestion where feasible. Major policy objectives to mitigate congestion include increasing capacity to move people on the metropolitan highway system while reducing future demand. Managing and optimizing the existing highway system and strategically expanding capacity are other key pieces.

Studies and plans under way will be used to revise the *Transportation Policy Plan*:

- Produce an investment strategy for trunk highways in the Metropolitan Highway System Investment Study. Define cost-effective projects to optimize highway performance. Use study results to amend or update the *Transportation Policy Plan*.
- Reexamine major highway expansion plans in the previous *Transportation Policy Plan* (2004). Devise an investment strategy reflecting funding constraints.
- Develop a congestion management process to increase efficiency of the multimodal transportation system and reduce vehicle use.

Other strategies to manage congestion include:

- Give priority to transit advantages in highway planning and corridor studies to help mitigate congestion. Examples include high-occupancy vehicle (HOV) lanes, high-occupancy toll (HOT) lanes, bus-only shoulders and priced dynamic shoulders.
- Implement alternatives to traveling on congested highways. See examples above.
- Implement cost-effective technology to optimize highway performance.
- Reduce impacts of highway congestion on freight movement.
- Relate parking pricing and availability to mode use (single-occupant vehicle versus transit and other modes).

- Support roadway pricing, including HOT lanes and priced dynamic shoulder lanes. Consider implementing pricing on any expansion project.

Interrelationships and Other Benefits

Mitigating congestion dovetails with the goals of enhancing transportation choices by expanding the transit system. Improving performance of the transportation system also reduces air pollution caused by vehicles stuck in traffic and reinforces improved connections and access.

Benefits of strategies extend beyond transportation and land use. Managing congestion can shorten daily commutes and leave more time for personal or family activities. Fewer traffic jams that slow travel speeds also means drivers save money on fuel. Reducing congestion affects freight movement and ultimately impacts economic competitiveness.

Expand and Enhance Transportation Choices

In the Council's regional policy directions and strategies, a primary goal is to plan and invest in multi-modal transportation choices, based on the full range of costs and benefits, to slow the growth of congestion and serve the region's economic needs. The Council is responsible for the regional transportation planning of highway and transit systems. It operates the region's largest bus system, light rail transit and commuter rail. Strategies to expand and enhance transportation choices are fundamental to achieving a Council goal of doubling transit ridership by 2030.

By improving transportation choices, the goal is to mitigate congestion, reduce air pollution, improve mobility and lessen energy costs. Strategies to achieve these ends include expanding transit as an alternative to driving alone and shifting to other transportation modes that use less fuel, such as walking and biking. Policies that emphasize transportation investments rather than land use planning are found here instead of in the group of strategies on connections and access.

Regional policy directions and strategies for all communities include:

- Expand the transit system, add bus-only lanes on highway shoulders, provide more park-and-ride lots and develop a network of transitways.[24]
- Encourage local governments to implement a system of fully interconnected arterial and local streets, pathways and bikeways.
- Promote the development and preservation of various freight modes and modal connections to adequately serve the movement of freight within the region and provide effective linkages that serve statewide, national and international markets.

[24] Transitways are corridors or lanes dedicated exclusively for transit use, such as bus-only shoulders on highways, high-occupancy vehicle lanes, exclusive busways, light rail transit, or commuter rail. *Regional Development Framework*.

Regional Strategies

Regional strategies to expand and enhance transportation choices include:

- Plan a multi-modal, interconnected transportation system.
- Support a variety of freight transport modes to link the region with larger markets.
- Expand the regional trails system.

Regional Strategies by Geographic Area

A fuller range of regional strategies apply to developed and developing communities where transit services currently exist. In developed communities, regional strategies include operating transitways, transit stations and transit service. In both developed and developing communities, regional strategies are to plan highway, transit, pedestrian and bicycle investments to improve connections between home, work and other destinations.

Investments in other areas plan for transportation infrastructure consistent with local needs. In rural growth centers, strategies may provide park-and-pool or park-and-ride and express-bus links to urban areas depending on demand and available resources.

Local Strategies

Local strategies to expand and enhance transportation choices include:

- Plan and develop an interconnected local transportation system integrated with the regional system.

Local Strategies by Geographic Area

A local strategy in developed communities is to make transportation, transit, pedestrian and bicycle investments to improve connections between destinations. In developing communities, the emphasis is on building connections and supporting the transportation needs of planned growth. Strategies in other areas concentrate on planning and constructing transportation infrastructure to serve local needs in rural residential, diversified rural and agricultural areas. Infrastructure includes trails in diversified rural areas and additionally serves agricultural needs in agricultural areas. Other strategies are planning for an interconnected system of streets, pedestrian and bicycle facilities in rural centers (including rural growth centers) and constructing interconnected streets in rural residential areas.

Transportation Policy Plan Strategies

In the *Transportation Policy Plan*, expanding the transit system is an investment priority, although preserving the existing transportation system and effectively managing it are higher priorities. The Council, state and local units of government support efforts to increase the share of trips made by bicycling and walking.

Transportation Policy Plan strategies to expand transportation choices include:

- Implement a multimodal roadway system.

- Expand the local and express bus system and develop a network of rail and bus transitways to help meet the Council's goal of doubling ridership by 2030.
- Prioritize transportation investments. Preserving, operating and maintaining the existing transportation systems is first priority. Effectively managing systems is second. The third priority is investing to expand the local and express bus system and develop a network of transitways.
- Identify and pursue an adequate level of resources available and needed for regional transportation investments. Transitway infrastructure investments will not occur unless operating funds are identified.
- Base transitway investment decisions on selection criteria. Factors include ridership, mobility improvements, operating efficiency, environmental impacts, regional balance, economic development impacts and cost-effectiveness.
- Reduce or manage travel demand. Expand regional park-and-ride facilities to support service expansion within express corridor areas and along dedicated transitways.

Transportation Policy Plan strategies to enhance or facilitate transportation choices include:

- Coordinate transitways with projects, facilities and investments of other modes.
- Support enhanced transit service along transitways.
- Encourage transit and roadway investments to include bicycle and pedestrian travel.
- Use criteria for federal funding to prioritize projects that encourage multimodal investments, such as bicycle and pedestrian connections to transit stations.
- Pursue improved freight connections between the Twin Cities and other regions.
- Analyze needs for freight terminal access.
- Coordinate with adjacent counties to support connections between regional highways and surrounding counties.
- Promote and market transportation choices.

Interrelationships and Other Benefits

Expanding transportation choices additionally aids efforts to reduce air pollution and mitigate congestion. Expanding the regional trails system not only provides another transportation mode, but also has the benefit of conserving natural resources. When integrated with land use planning, an intermodal transportation system improves connections and access to jobs and other destinations.

Benefits of strategies go beyond land use and transportation. Households with greater access to transportation alternatives may drive less and save money on fuel. Expanding transportation alternatives also increases the region's ability to attract and retain residents without vehicles and those who prefer a wider range of transportation choices. Supporting

freight transportation has economic benefits because moving resources and goods within the region and to national and global markets is key for increasing economic competitiveness.

Improve Connections and Access

Two primary goals in the Council's regional policy directions and strategies support improving connections and access through land use and transportation. One goal is to work with local communities to accommodate growth in a flexible, connected and efficient manner. Another goal is to encourage expanded choices in housing location and types, and improved access to jobs and opportunities.

Strategies aim to connect land uses, improve access to transportation corridors, and connect transportation modes. Fewer trips, shorter trips, and shifts to alternative transportation modes, such as biking and walking – these are the goals of increased density, integrated land uses and other more transportation-efficient land use patterns.

Regional policy directions and strategies for all communities include:

- Support efficiently connecting housing, jobs, retail centers and civic land uses.
- Encourage growth and reinvestment in adequately sewered urban and rural centers with convenient access to transportation corridors.
- Support the production and preservation of lifecycle and affordable housing with links to jobs, services and amenities accessible by auto, transit, biking and walking.
- Ensure an adequate supply of serviced, developable land to meet regional needs.

Regional Strategies

Regional strategies to improve connections and access include:

- Invest Council resources to increase the variety of housing types and costs, mix land uses and increase transportation choices. Also leverage private investment.
- Negotiate lifecycle and affordable housing goals in implementing the Livable Communities Act (LCA) and the Metropolitan Land Planning Act (MLPA).
- Invest Council resources – infrastructure improvements, grant programs and technical assistance – to accommodate regional growth while using regional systems and land efficiently.
- Help cities comply with Minnesota Department of Transportation's (Mn/DOT) access management guidelines.[25]

[25] Access management is the practice of carefully planning the location and spacing of driveways, street connections and median openings to maximize safety and traffic carrying capacity of highways. Federal Highway Administration.

Regional Strategies by Geographic Area

Regional strategies apply to the full range of geographic planning areas. Strategies emphasize reinvestment and housing, infrastructure and land for future development, and coordinated investments. These regional policies support the cost-effective use of regional infrastructure.

Reinvestment and Housing

Regional strategies facilitate reinvestment in developed communities. Investing Council resources and expanding existing regional infrastructure supports reinvestment, including infill, adaptive reuse and redevelopment. Other strategies strive to coordinate redevelopment to improve transit connections and reclaim contaminated land for redevelopment and natural resources.

Housing strategies pertain to all geographic areas. Regional system investments and incentives help preserve existing housing and add higher-density housing in developed communities. Technical assistance on ordinances and projects assists lifecycle and affordable housing in developing communities. Negotiated goals for lifecycle and affordable housing goals are part of implementing the Livable Communities Act (LCA) and Metropolitan Land Planning Act (MLPA) in rural growth centers, rural residential, diversified rural and agricultural areas.

Infrastructure and Land for Future Development

In developing communities, strategies are to provide regional infrastructure to support local development and protect an adequate supply of land to accommodate urban development after 2030. Technical assistance helps implement strategies to protect lands for future urban development. Investments in regional infrastructure and resources support staged development and centers with convenient access to transportation and transit corridors.

Strategies focus on planning for future growth and preserving land in other geographic areas. Planned improvements to regional infrastructure will support expected growth at higher residential densities in rural growth centers (3 to 5 units per acre), while preserving low densities in surrounding rural areas (not to exceed 1 unit per 40 acres in agricultural areas and 1 unit per 10 acres in diversified rural areas). Unsewered areas of 2 ½ acre lots are discouraged in rural residential areas. Plans for diversified rural areas will protect natural resources, preserve areas for post-2030 growth with cost-effective infrastructure, and accommodate forecasted growth through 2030 without providing regional urban services. In agricultural areas, plans call for maintaining agricultural land uses through at least 2030. If needed, based on post-2030 forecasts, some agricultural lands may be used for efficient expansion of regional urban infrastructure to develop at urban densities.

Coordinated Investments

The Council will invest its resources to assist communities and projects that achieve multiple goals in rural growth centers, rural residential, diversified residential and agricultural areas. Goals include increasing the variety of housing types and costs, mixing land uses, increasing transportation choices, and leveraging private investment.

By working with the Transportation Advisory Board, developing communities that coordinate their development and transportation planning will be recognized in the competition for federal transportation funds. Strategies for rural residential areas support limiting access points to state and county roads and emphasize constructing an interconnected local street system.

Local Strategies

Local strategies play a pivotal role because local governments make land use decisions. Strategies to improve connections and access include:

- Plan for development that accommodates growth forecasts at appropriate densities.
- Facilitate development of a range of housing densities, types and costs.
- Adopt and implement a Council-approved comprehensive plan.
- Implement plans that provide land for a variety of affordable and life-cycle housing options. Adopt local housing goals and implementation plans.
- Develop local land uses linked to the local and regional transportation systems.
- Plan for connections between housing, employment centers and other destinations.
- Use Mn/DOT's access management guidelines to prepare plans and ordinances.

Local Strategies by Geographic Area

Local strategies recognize differences among geographic planning areas, and the range of strategies promotes flexibility. Strategies focus on density, reinvestment and housing, infrastructure and land for future development, and integrated land uses.

Density

As seen in Table 1, density defines central differences in how planning areas will develop. Local strategies plan for orderly expansion and cost-effective infrastructure to accommodate forecasted growth at appropriate densities. Specific strategies are to reinvest in developed communities and preserve areas for post-2030 growth in rural areas.

Reinvestment and Housing

In developed communities, local strategies concentrate on reinvestment and reuse. One strategy is to approve reinvestment projects that make cost effective use of infrastructure and increase density. Another is to plan reinvestment to diversify housing, connect housing and jobs, and integrate new development. To accommodate forecasted growth and efficiently use existing infrastructure, communities may convert or reuse underutilized land.

Local housing strategies work toward achieving regional housing goals and facilitating a range of housing options. Developed communities can pursue reinvestment strategies to achieve lifecycle and affordable housing goals under the Livable Communities Act (LCA) and the Metropolitan Land Planning Act (MLPA). Adopting ordinances to

Table 1 Local Strategies: Density by Geographic Planning Area	
Planning Area	**Density (units per acre)**
Developed	5 units or more Higher where convenient access to transportation corridors
Developing	3-5 units or more Higher where convenient access to transportation corridors
Rural growth centers	Maximum 1 per 10 acres in diversified rural areas Maximum 1 per 40 acres in agricultural preservation areas
Diversified rural	Maximum 1 per 10 acres in clustered development
Agricultural	Maximum 1 per 40 acres in areas designated for agricultural use

increase lifecycle and affordable housing is a related strategy for developed and developing communities. For rural centers (including rural growth centers), rural residential, diversified rural and agricultural areas, strategies are to adopt local housing goals and implementation plans. Additional strategies for the same areas are to use local controls and resources to help develop housing at a range of densities, types and costs, and implement comprehensive plans that provide land for affordable and life-cycle housing options.

Infrastructure and Land for Future Development

Local strategies focus on accommodating forecasted growth and using infrastructure and land efficiently. Developed and developing communities can adopt ordinances to achieve these goals. For developing communities, a strategy is to stage local infrastructure and development to accommodate 20 years of growth and consider the need for additional land for growth beyond 2030. These communities may implement local controls and tools to time and stage development. Other strategies for developing communities are to identify areas reserved for future urban development and develop strategies to minimize development that could preclude future urban development. Orderly annexation agreements are an option in rural growth centers and for planning infrastructure improvements in developing communities. An additional strategy for rural growth centers is to adopt ordinances that time development with infrastructure availability. In diversified rural areas, strategies are to plan development that will protect natural resources, preserve areas where cost-effective and efficient urban infrastructure can be provided for post-2030 growth and accommodate growth without requiring regional urban services. To protect farmlands, agricultural areas can implement exclusive agricultural zoning, agricultural security districts and lower densities. Strategies for agricultural areas are to maintain agricultural land uses through at least 2030 to preserve prime agricultural lands and limit residential development to preserve land for efficient expansion of regional urban infrastructure after 2030.

Integrated Land Uses

Strategies are to plan land use patterns that support transit service and development in developed communities and support transit development and service expansion in developing communities. Integrated land uses (such as transit-oriented development) may be supported by adopting ordinances in developed and developing communities. For developed communities, additional strategies are to improve transportation connections and address transportation issues such as travel demand management, access management, safety and mobility when planning infill and redevelopment projects. In developing communities, strategies to improve transportation connections and address transportation issues involve commuting (park and rides, express bus service), access management, safety and mobility when planning new development. Planning for development can be coordinated with the county to ensure the availability of highway capacity. In rural residential areas, a strategy is to adopt improved design techniques for access management.

Transportation Policy Plan Strategies

Transportation Policy Plan strategies to improve connections and access include:

- Maximize access to jobs, housing and services through land use planning and development practices.
- Use transitways and the bus system as catalysts for development and growth of major employment centers and residential nodes. Form an interconnected network of higher density nodes along transit corridors.
- Implement a system of interconnected streets, pathways and bikeways to meet local travel needs without using the regional highway system.
- Develop a safe and attractive pedestrian environment near major transit corridors and stations that connects pedestrians and bicyclists to buses and trains.
- Encourage local planning for bicyclists and pedestrians. For federal transportation funding, a local bicycle or pedestrian project must be consistent with an adopted plan.
- Manage access to highways to optimize performance of existing facilities.

Transportation Policy Plan strategies to improve connections and access by staging growth or by efficiently coordinating transportation and land use planning include:

- Plan for the next 20 years and stage transportation infrastructure to meet forecasted growth within the Metropolitan Urban Service Area (MUSA). Outside the MUSA, transportation plans and land use patterns must be compatible with the region's need for future sewered development and protection of agriculture.
- Make local comprehensive plans conform to the *Transportation Policy Plan*.
- Ensure that transitways promote efficient development and redevelopment.

- Coordinate transportation investments and land development along major transportation to intensify job centers, increase transportation links and improve jobs-housing connections.
- Coordinate transportation investments and land development to support travel by modes other than automobiles, including travel by transit, walking and bicycling.

Interrelationships and Other Benefits

Connecting land use decisions to transportation investments can reduce vehicle miles traveled and help slow the growth in congestion. Over the long run, results are expected to reduce air pollution, mitigate congestion, and reduce costs by making more cost-effective use of infrastructure. Strategies also bolster the effectiveness of investments to expand transportation choices.

Benefits of strategies extend beyond land use and transportation. A mix of housing provides choices for a range of ages and incomes, and connections to transit offer economic advantages for communities competing with other regions for jobs and residents. Shorter daily commutes resulting from connected land uses and integrated transportation modes save residents and businesses time and money.

Support Broad Policies Beyond Land Use and Transportation

Other regional and local strategies help or promote reducing air pollution, mitigating congestion or reducing infrastructure costs, but are indirect or extend well beyond land use and transportation. Many support efficient use of regional systems and land while accommodating expected future growth and preserving natural resources. For example, policies for wastewater treatment and water quality are vital to the region, but are not highlighted in transportation and land use strategies. Omitting strategies is not intended to minimize their importance, but to focus attention on land use and transportation. Because policies are so interconnected, and because reducing infrastructure costs is a core benefit of regional systems, this report acknowledges the importance of all adopted Council policies.

Resources and Tools for Land Use and Transportation Planning

Local, national and international resources and tools will inform regional and local strategies to achieve the objectives of this study. Overall goals are to: 1) reduce air pollution, 2) mitigate traffic congestion, 3) reduce transportation infrastructure costs, 4) identify approaches that reduce or manage travel demand through land use and access to transportation options, and 5) create an air pollution impacts tool for voluntary use by local communities to support decision-making. Many resources and tools provide benefits for multiple objectives, and some provide broad benefits not confined to land use and transportation.

For upcoming reports, diverse resources and tools will be reviewed to find land use and transportation strategies with significant potential for the region. In other words, information will be selected to be applicable or adaptable to demographic and travel trends in the Twin Cities metropolitan area. Sharing these resources and tools is intended to make the final report more useful to local communities.

Resources and tools will be organized into a bibliography. The bibliography will most likely be structured to introduce the resource or tool and provide a brief abstract before summarizing relevant, key conclusions and findings.

Baseline Air Pollution Estimates

The Council is developing a voluntary tool for estimating air pollutants generated by travel in the region. The purpose of the air pollution estimates is to provide information, not to advocate strategies or mandate policies. Baseline estimates of air pollutants for the region and smaller geographic areas, such as cities, will provide a consistent starting point to aid land use and transportation planning.

Definition

Before explaining the method used to produce baseline air pollution estimates, a few terms need clarification. Council staff began working on baseline measures for a tool to estimate travel-related air pollutants from the interaction of land use and transportation, calling the tool a "carbon footprint tool." In common usage, "carbon footprint" refers to the amount of greenhouse gases emitted into the atmosphere. Greenhouse gas (GHG) emissions mainly consist of carbon dioxide (CO_2), but also include carbon monoxide, methane, nitrous oxide and several other gases. The air pollutants estimated by the tool are not confined to greenhouse gases, so "carbon footprint" is a misnomer because the term does not reflect the full range of air pollutants estimated. (A list of the air pollutants appears in Table 2.) The tool is now more accurately referred to as an "air pollution impacts tool."

In the tool, not all emissions are estimated, only air pollutants from mobile transportation sources. Furthermore, specific sources that contribute to air pollutants are part of the air pollution impacts tool only if land use changes significantly affect vehicle miles traveled. (For more information, see the explanation in the next section on the air pollution impacts tool.)

The air pollution impacts tool will estimate emissions from roadway use − vehicles used for personal transportation, transit and commercial trucking. Buses are included, but not light-rail transit (Hiawatha LRT) or commuter rail (Northstar). Air pollutants from aviation and private rail traffic are not included. The Council's regional transportation model does not include commercial rail, and the Council has no data to forecast travel behavior for a transportation mode run by private rail operators. Air traffic is not part of the tool because there is little relationship between land use and aircraft flights. Ground-transportation trips for airport passenger access and freight distribution are reflected in the tool.

Baseline Methodology

Air pollution estimates use 2005 as a baseline. The Minnesota Department of Transportation (Mn/DOT) has traffic count data for 2005, and the Twin Cities regional travel demand model provides model data for 2005. The baseline is also consistent with Minnesota's Next Generation Energy Act, passed in 2007 to set statewide guidelines for greenhouse gas emissions and other goals. The baseline additionally matches regional land use data last updated by the Council in 2005.

Baseline air pollution estimates are produced by regional transportation models and a new federal model developed to estimate pollutants emitted by mobile sources. The regional models provide information on number of trips, trip mode, trip length, and time of day

traveled. Baseline data on vehicle miles traveled on roadways and transitways are generated from the Twin Cities regional travel demand model. (See Appendix C for more information on transportation modeling.)

The travel demand model produces vehicle miles traveled (VMT) by trip purpose for geographic areas in the region. Model data can aggregate VMT results for geographic areas ranging from Transportation Analysis Zones (TAZs) at the smallest scale, to individual communities, to types of communities (central cities, suburbs, rural townships, and rural growth centers), to a regional average. It is not yet determined what geographic areas will be used in the final report. Air pollution estimates for geographic areas will depend on testing changes in development patterns, as explained in the next section on measuring impacts.

Trip purposes cover home-based trips, nonhome-based trips and through trips passing through a geographic area. Preliminary baseline estimates focus on home-based trips and nonhome-based trips, although other measures are being reviewed. VMT by home-based trips is being tabulated by Transportation Analysis Zones (TAZs) and community of residence. VMT by nonhome-based trips and commercial trucking trips is being tabulated by TAZ and community of trip origin and trip destination. VMT of personal trips and truck trips passing through a community, without the trip starting or stopping, is being tabulated by community.

Once vehicle miles traveled (VMT) are calculated by trip purpose, results are then combined with the number of households or the number of employees in a TAZ or community to develop base VMT generation rates. These rates serve as the base for comparing vehicle miles traveled generated by an alternative development pattern.

Modeling of Air Pollutants

In a last step, air pollutant generation rates are derived from MOVES2010, a new air pollution model released by the U.S. Environmental Protection Agency (EPA) in January, 2010. MOVES2010 will be used to estimate pollutants emitted by mobile sources in a 2005 baseline and an alternative development option. The new federal air pollution model can provide emission rates for nearly a dozen air pollutants, including greenhouse gases. Emissions estimated by the model are listed in Table 2.

Baseline Results

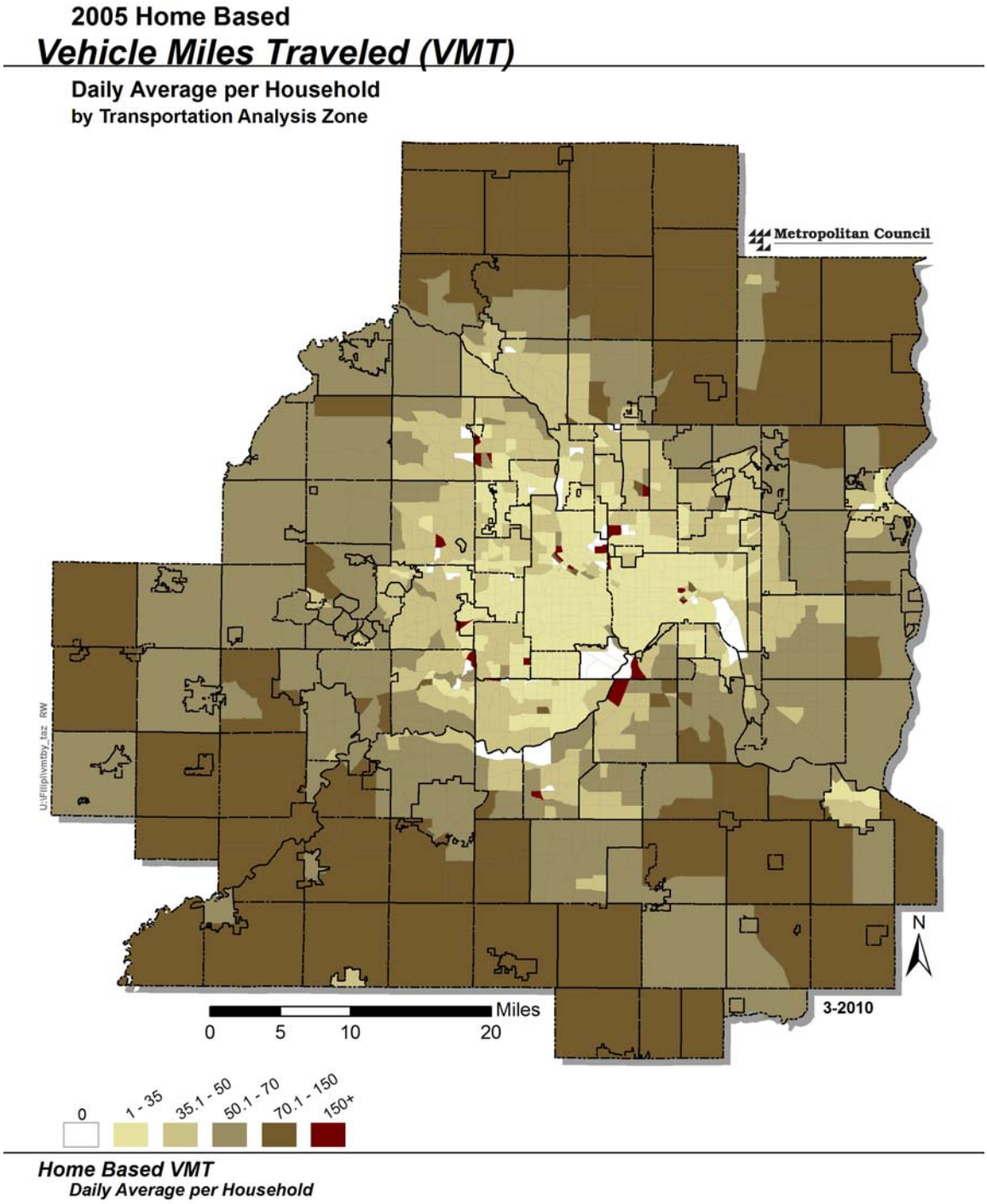
Preliminary results focus on 2005 vehicle miles traveled (VMT) for home-based trips and nonhome-based trips. Illustrative rates of VMT generation are shown in Table 3 for the region, for typical types of communities (central cities, suburbs, rural townships and rural growth centers) and for counties. Figure 3 shows 2005 home-based VMT by Transportation Analysis Zones (TAZs).

Table 2 Air Pollutants Estimated	
Ammonia Atmospheric CO_2 Carbon monoxide (CO) CO_2 equivalent Hydrocarbons Methane (CH_4)	Nitrogen dioxide (NO_2) Nitrogen oxide (NO) Organic gases Sulfur dioxide (SO_2) Volatile organic compounds (VOCs)
Notes: CO_2 equivalent is calculated by MOVES2010, taking into account the carbon content and greenhouse gas potential of carbon dioxide, methane and nitrous oxide. Energy consumption will also be estimated for total energy consumption, petroleum energy consumption and fossil fuel energy consumption.	

Table 3
Preliminary Baseline Estimates of Average Daily Vehicle Miles Traveled per Household

Geographic Area	Home-Based VMT per Household	Nonhome-Based VMT per Employee
Seven-County Region	51	25
Central Cities	32	19
Suburbs	55	27
Rural Growth Centers	57	31
Rural Townships	115	84
Anoka County	67	33
Carver County	73	32
Dakota County	62	31
Hennepin County	41	22
Ramsey County	41	23
Scott County	77	34
Washington County	67	36

Figure 3



The air pollution impacts tool is not designed to rank communities by air pollutants or to discourage development supporting the region's economic vitality. Communities may use the tool at their discretion and can integrate results with existing planning resources. Work on the

Natural Resources Inventory and Assessment serves as a model. For the natural resources tool, the Council and the Minnesota Department of Natural Resources completed an inventory and assessment of regionally important natural resources. The Council disseminated the information, and local governments could then opt to use the database as a starting point to identify important resources and make conservation decisions. To repeat an essential point, the air pollution impacts tool will not mandate solutions, but will provide information to assist land use and transportation planning.

Air Pollution Impacts Tool

Future progress reports will explain and demonstrate how local governments may choose to apply the air pollution impacts tool. It is intended to serve as a tool, a voluntary tool, for communities to assess impacts of proposed development. Impacts will be limited to travel-related air pollution generated by the interaction of transportation and land use, not pollutants coming from all types of sources.

Mechanics of Tool

An air pollution impacts tool will work by comparing travel-related air pollutants from different patterns of development that, in turn, are associated with differences in travel behavior. The tool will first compare a baseline estimate of average daily vehicle miles traveled (VMT) to VMT generated by an alternative development option. Then, the tool will translate the difference in VMT into a change in air pollutants, including greenhouse gas (GHG) emissions. For a development alternative that produces fewer vehicle miles traveled, the tool will estimate reduced air pollutants. The tool will not measure total air pollutants or total greenhouse gases for a community. Nor will it forecast emissions in 2030. Its value comes from comparing a baseline measure to emissions from a different type of development that potentially produces fewer vehicle miles traveled from the interaction of transportation and land use.

Voluntary Use of Tool

Measuring impacts on air pollutants will support informed decision making by local governments. The voluntary tool will be available to help planners and other users communicate about the impact of alternative development on reducing travel-related air pollutants. For example, a city planner could use the measure to see how a proposal that clusters commercial development or housing near transit may reduce air pollutants. The tool is mainly geared toward smaller-scale development options for a neighborhood or subdivision.

The form of the tool is not yet determined, but the goal is to design a user-friendly computer application. That means supporting complex data interactions and applying technology to make a robust, yet easy-to-use tool. Different forms of the tool will be evaluated, such as online, database, spreadsheet, or Geographic Information Systems (GIS) options.

Also undecided are the approaches or features, called scenarios, that will be selected to characterize a development alternative to potentially reduce VMT. Scenarios to reduce VMT will be explored, using examples from the literature on resources and tools for land use and transportation planning. These efforts will apply established sources and evaluate emerging approaches, both nationally and locally. Information and resources will be adapted to apply to the region's travel and demographic trends. To illustrate possibilities, one scenario could feature higher residential density per acre. Another scenario could concentrate employment to test whether it would support high-quality transit, characterized by speed and frequency of transit services. Additional possibilities may show the impact of building a park-and-ride facility, increasing carpooling, or improving accessibility to transportation options. The tool will list scenarios to choose from, individually or in combination. Only scenarios backed up

by evidence of reducing VMT will be selected. A menu of choices will provide flexibility to fit local circumstances.

Collaboration and Outreach

In the early stages of developing this study, the Council sought input from a variety of stakeholders. Discussions with advisory committees and other stakeholders facilitated key objectives – listening, sharing ideas and gaining feedback.

Meetings with Advisory Committees and Stakeholders

Council staff met with land use and transportation advisory committees for the Council − the Land Use Advisory Committee (LUAC) and committees of the Transportation Advisory Board (TAB). They also involved stakeholders who expressed interest in participating. (Committee members and stakeholders are identified in Appendix D.) The series of meetings held, including dates and topics, appears in Table 4. Council staff will continue to brief the Council on progress reports, as done so on January 13, 2010.

Committees and stakeholders offered guidance and advice about the content of the report, development of the carbon footprint tool and useful planning resources. (The tool was later renamed "air pollution impacts tool." The former term is retained here because its name may have influenced discussion of the tool.) Questions asked by committee members and stakeholders helped Council staff refine study elements and respond to local concerns. Locally elected officials on the LUAC, as well as stakeholders, shared their knowledge, made suggestions, and articulated a range of local perspectives. Discussions with committees supporting the TAB focused more on transportation impacts.

Land Use Advisory Committee

The Land Use Advisory Committee is authorized by state statute to give advice and assistance to the Council on land use, comprehensive planning, and matters of metropolitan significance. LUAC has 16 members, with one representative from each district and each county within the Council's jurisdiction. By law, at least half of the committee members on LUAC must be elected officials.

Advisory Committees of Transportation Advisory Board

Council staff also met with two advisory committees of the TAB, which plays a central role in the region's transportation planning process. TAB is authorized by state statute and has 34 members representing elected officials, citizens, state agencies and various modes (such as freight, bicycles, pedestrians and transit). The TAB's Technical Advisory Committee (TAC) is made up of planners and engineers from cities and counties, as well as staff from the Council and other regional, state and federal agencies. Members of the TAC Planning Committee represent communities, counties, and transportation, transit, rail, and pollution control agencies. This group advises the TAC and TAB on planning issues.

Table 4 Key Meetings with Committees and Stakeholders		
Group	**Topic**	**Meeting Date**
Land Use Advisory Committee	Review of land use policies in *Transportation Policy Plan*	July 24, 2008
Land Use Advisory Committee	Parameters of draft report on land use and planning resources; legislative background	October 1, 2009
Technical Advisory Committee of Transportation Advisory Board	Plan for land use and planning resources report; questions and comments	November 4, 2009
Study Stakeholder Group	Overview of plans for report; advice, comments and suggested resources	December 16, 2009
Planning Committee of Technical Advisory Committee for Transportation Advisory Board	Overview of report; transportation carbon footprint	January 14, 2010
Land Use Advisory Committee	Carbon footprint; overview of policies and strategies; community strategies	January 28, 2010
Land Use Advisory Committee	Carbon footprint methodology; invitation for stakeholder input	February 18, 2010
Land Use Advisory Committee	Review of draft progress report	March 18, 2010
Notes: The 2008 committee meeting is listed because the topic discussed is relevant. The carbon footprint tool was later renamed "air pollution impacts tool."		

Committee Feedback

Members of the Land Use Advisory Committee emphasized developing a carbon footprint tool as a voluntary tool, so it would not be misinterpreted as a new regulatory requirement. In addition, committee members underlined the importance of producing useful information for local communities. More specific points made by the committee include:

- Tools and resources should be flexible and offer multiple options.

- Freight movement, especially truck traffic, is too important to leave out of a carbon footprint methodology. Local governments are affected by commercial truck traffic through congestion and land uses. Members recommend including commercial trucking, aviation, and rail transportation in a carbon footprint measure.
- The relationship between density and affordability matters. Many people do not work where they live in the current economy. Residents cannot move because of the poor housing market. In response, communities may increase investment in infrastructure for telecommuting.
- Viewpoints of the economic development, real estate and business community have not been heard. Comments from stakeholders that mainly represent environmental organizations may skew input. Tools and resources may not be as helpful to local communities as they could be with more inclusive input.

Members of transportation advisory committees emphasized the need to involve local governments. They also expressed sensitivity over how a carbon footprint tool could be used. More specific points include:

- Apply good models to further involve local governments. Examples include the process used for the Transit System Plan Update and outreach methods by local planning groups, such as the American Planning Association (APA). Reducing greenhouse gas emissions is a major issue for the APA.
- This report should be a resource that communities can use to help make policy decisions, not a means of grading or judging communities.
- Reducing greenhouse gas emissions is a sensitive subject. Some fear being penalized over emissions, particularly areas that lack resources or opportunities for transit service.
- Do not neglect the legislative goal of reducing infrastructure costs. The direction of the study appears to emphasize reducing air pollution. Mitigating congestion is included but not emphasized to the same extent.

Stakeholder Feedback

Stakeholders and Council staff discussed plans and ideas for the study before Council staff returned to the LUAC for more briefings. One stakeholder suggested surveying local communities working on sustainable community initiatives. In response, Council staff members conducted an informal survey, or conversations with communities about strategies. Preliminary findings were presented to the LUAC and appear in Appendix E. Stakeholders also offered input and advice on resources, sources, tools and helpful bibliography materials. For instance, stakeholders mentioned a Green Steps Cities program by the Minnesota Pollution Control Agency and Complete Streets policies. Where appropriate, these materials will be included in the final report.

Stakeholders were invited to speak at a LUAC meeting in February, 2010. Their comments are shared below.

1000 Friends of Minnesota, John Bailey:

- Transportation and land-use impacts are important outcomes of this type of work, but there are many other reasons to take action. Multiple objectives will be met − not just reducing a carbon footprint. Other outcomes include: reducing personal transportation costs; addressing affordable housing; reducing public infrastructure costs through more compact development; reducing air pollution beyond CO_2; and promoting land uses with smaller homes that affect energy use.

Fresh Energy, Lynne Bly:

- A carbon footprint should only be a part of the study, not everything. The legislative goal is to produce a tool that the region and local communities can use to evaluate alternative development. The question is, how can we reduce vehicle miles traveled? An interconnected, multi-modal transportation system is important so communities can shape development to optimize transit investments.

Transit for Livable Communities, Dave Van Hattam:

- Local carbon footprints and voluntary tools are emphasized, but consider other approaches. First, encourage a regional and non-voluntary, incentive-based program. Include an analysis of other regions. Second, explore a goal in the *Transportation Policy Plan* to intensify employment centers. To achieve this, the region would need additional incentives and potentially, new regulatory powers.

Minnesota Center for Environmental Advocacy, Jim Erkel:

- Calculating a carbon footprint becomes complicated very quickly. We are not working off of a clean slate. Climate protection efforts have been under way for over a decade. For example, 17 cities in the region have signed on to the U.S. Conference of Mayors Climate Protection Agreement and are working on land use and transportation. Many U.S. cities have adopted climate action plans under ICLEI-Local Governments for Sustainability. California's more regulatory approach could be a model for Minnesota.

Embrace Open Space and Trust for Public Land, Jenna Fletcher:

- Parks, trails and open space are important to residents. Parks and trails are valuable as connections and as part of an urban tree canopy for carbon sequestration. Parks are trip destinations, so that should be reflected in modeling. We are seeing more commuting by bike. Planning park locations and building more trails and trail connections may be strategies to cut vehicle miles traveled.

Council staff will continue outreach and collaboration efforts to encourage communication and inform upcoming reports.

[Appendices include supplemental or reference information.]

Appendix A: Overview of Policy Directions and Strategies

The Council's policy directions and strategies are organized around four policies adopted in the *Regional Development Framework*, along with additional strategies for all communities to achieve regional goals. Policy directions and strategies from Chapter 2 in the *Framework* are listed below. They include policies for wastewater services, water supply and aviation that do not appear in the body of this report.

- **Work with local communities to accommodate growth in a flexible, connected and efficient manner.**

  - Support land-use patterns that efficiently connect housing, jobs, retail centers and civic uses within and among neighborhoods.

  - Encourage growth and reinvestment in adequately sewered urban and rural centers with convenient access to transportation corridors.

  - Promote development strategies that help protect and sustain the regional water supply.

- **Plan and invest in multi-modal transportation choices, based on the full range of costs and benefits, to slow the growth of congestion and serve the region's economic needs.**

  - Focus highway investments on maintaining and managing the existing system, removing bottlenecks and adding capacity.

  - Make more efficient use of the regional transportation system by encouraging flexible work hours, telecommuting, ridesharing and other traffic management efforts, and by employing a variety of pricing techniques such as FAST lanes and HOT lanes.

  - Expand the transit system, add bus-only lanes on highway shoulders, provide more park-and-ride lots and develop a network of transitways.

  - Encourage local governments to implement a system of fully interconnected arterial and local streets, pathways and bikeways.

  - Promote the development and preservation of various freight modes and modal connections to adequately serve the movement of freight within the region and provide effective linkages that serve statewide, national and international markets.

  - Support airport facilities investments to keep pace with market needs and maintain the region's economic vitality.

- **Encourage expanded choices in housing location and types, and improved access to jobs and opportunities.**

  - Work to ensure an adequate supply of serviced, developable land to meet regional needs and respond to demographic trends.

  - Work with regional partners to increase housing options that meet changing market preferences.

- Support the production and preservation of lifecycle and affordable housing with links to jobs, services and amenities accessible by auto, transit, biking and walking.

- **Work with local and regional partners to reclaim, conserve, protect and enhance the region's vital natural resources.**

  - Encourage the integration of natural-resource conservation strategies in regional and local land-use planning decisions.

  - Work with other regional partners to protect regionally important natural resources identified as unprotected in the Natural Resources Inventory and Assessment.

  - Work to preserve the quality of the region's water resources.

  - Work with our regional partners to remain in compliance with federal air quality standards for carbon monoxide, ground level ozone and fine particulate pollution.

  - Designate additional areas for the regional park system that enhance outdoor recreation opportunities and serve important natural-resource functions.

Appendix B: Reference Information on Transportation and Land Use Policies and Strategies

Appendix B provides more information on policies and strategies from the *Regional Development Framework* and the *2030 Transportation Policy Plan*. It serves as a reference since strategies are abbreviated in the body of this report. Regional and local strategies in Appendix B are closer to verbatim descriptions (with emphasis added in bold) and provide additional detail. They are organized to match the same groups found in the body of this report: minimize environmental impacts, manage congestion and improve performance, expand and enhance transportation choices, and improve connections and access. Broad policies beyond land use and transportation are not included.

Strategies identify regional policies, local strategies and *Transportation Policy Plan* strategies. The Council's policy directions and strategies from the *Framework* are not repeated since they are included in the body of the report and in Appendix A. Regional policies appear first. These show the Council's role in accommodating growth in all communities (Table 1 in the *Framework*) and the Council's role for geographic planning areas (Tables 2 – 6 in the *Framework*). Local strategies from the *Framework* include community roles for accommodating growth in all communities (Table 1) and community roles by geographic planning areas (Tables 2 – 6). Strategies from the *Transportation Policy Plan* appear last.

Minimize Environmental Impacts

Regional Strategies

- **Expand the regional parks system**, as appropriate, to conserve, maintain and connect natural resources identified as high quality or of regional importance. Invest in acquisition and development of land for the regional parks system.
- Partner with state agencies, counties, communities, builders and developers, and nonprofits to **conserve, maintain and restore natural resources identified in regional and local natural resource inventories**. **Integrate natural resource conservation strategies into regional system plans** for infrastructure improvements and development and to restore degraded natural resources of regional importance to support an interconnected network of natural resources.
- **Provide technical assistance** to communities regarding the adoption and enforcement of environmental preservation and conservation techniques and ordinances.
- Conserve natural resources - particularly water resources - and **protect vital natural areas** when planning and constructing regional infrastructure (wastewater systems, roads, transit, parks and open space, and airports).

Regional Strategies by Geographic Area

Developing Communities

- Expand the regional parks system, as appropriate, to conserve, maintain and connect natural resources identified as high quality or of regional importance. Invest in acquisition and development of land for the regional parks system.
- Partner with state agencies, counties, communities, builders and developers, and nonprofits to conserve, maintain and restore natural resources identified in regional and local natural resource inventories. Integrate natural resource conservation strategies into regional system plans for infrastructure improvements and development and to restore degraded natural resources of regional importance and to support an interconnected network of natural resources.
- Provide technical assistance to communities regarding the adoption and enforcement of environmental preservation and conservation techniques and ordinances.
- Promote development practices and patterns that protect natural resource areas and the integrity of the region's water supply.

Rural Centers and Rural Growth Centers

- Expand the regional parks system, as appropriate, to conserve, maintain and connect natural resources identified as high quality or of regional importance. Invest in acquisition and development of land for the regional parks system.
- Partner with state agencies, counties, communities, builders and developers, and nonprofits to conserve, maintain and restore natural resources identified in regional and local natural resource inventories. Integrate natural resource conservation strategies into regional system plans for infrastructure improvements and development and to restore degraded natural resources of regional importance and to support an interconnected network of natural resources.
- Provide technical assistance to communities regarding the adoption and enforcement of environmental preservation and conservation techniques and ordinances.

Rural Residential Areas

- Expand the regional parks system, as appropriate, to conserve, maintain and connect natural resources identified as high quality or of regional importance. Invest in acquisition and development of land for the regional parks system.
- Partner with state agencies, counties, communities, builders and developers, and nonprofits to conserve, maintain and restore natural resources identified in regional and local natural resource inventories. Integrate natural resource conservation strategies into regional system plans for infrastructure improvements and development and to restore degraded natural resources of regional importance and to support an interconnected network of natural resources.
- Provide technical assistance to communities regarding the adoption and enforcement of environmental preservation and conservation techniques and ordinances.

- Within available resources, provide technical assistance to communities to plan for adequate infrastructure to address current needs and to accommodate forecast growth using development practices that protect the integrity of the region's water supply and natural resources identified in regional or local inventories.

Diversified Rural Areas

- Partner with state agencies, counties and communities to conserve, maintain and restore natural resources identified in regional and local natural resource inventories. Integrate natural resource conservation strategies into plans for infrastructure improvements and development.
- Develop additional tools for resource protection including model conservation easements.

Agricultural Areas

- Partner with state agencies, counties and communities to conserve, maintain and restore natural resources identified in regional and local natural resource inventories. Integrate natural resource conservation strategies into plans for infrastructure improvements and development.
- Provide information to communities about how to incorporate environmentally sensitive development techniques into farm-related construction.

Local Strategies

- **Conserve natural resources** − particularly water resources - and **protect vital natural areas when designing and constructing local infrastructure and planning land use** patterns.
- Incorporate innovative stormwater management techniques, **natural resources conservation practices, and habitat restoration projects** into development plans and projects.
- Complete **local natural resource inventories** as they deem appropriate. Give strong consideration to **integrating natural resources**, including aggregate, identified in regional and local natural resources inventories **into local land use decision-making**.
- Adopt and enforce erosion control ordinances and other **environmental preservation and conservation techniques and ordinances**.
- Include as a part of **local park systems natural resources** that are identified as high quality or of local and regional importance.

Local Strategies by Geographic Area

Developing Communities and Rural Centers (including Rural Growth Centers)

- Complete local natural resource inventories as they deem appropriate. Give strong consideration to integrating natural resources, including aggregate, identified in regional and local natural resources inventories into local land use decision-making.

- Adopt and enforce erosion control ordinances and other environmental preservation and conservation techniques and ordinances.
- Include as a part of local park systems natural resources that are identified as high quality or of local and regional importance.

Rural Residential Areas

- Adopt conservation subdivision ordinances, cluster development ordinances, or environmental protection provisions in land use ordinances.

Diversified Rural Areas and Agricultural Areas

- Conserve, maintain and restore natural resources identified in regional and local natural resource inventories. Integrate natural resource conservation strategies into development plans.

Transportation Policy Plan Strategies

- The Council will promote strategies to **reduce transportation emissions of pollutants** identified in the federal Clean Air Act and its amendments.
- Transportation investment decisions will give **funding priority to projects that help the region comply with federal air quality standards**.
- The Council will support and implement initiatives to **reduce greenhouse gas emissions**. Initiatives include programs that reduce the impact of transit on energy use and the environment, such as **Metro Transit's "Go Greener" initiative**.
- Regional transportation projects should give special consideration to the **preservation and enhancement of the region's cultural and natural resources**, and should be consistent with regional plans and policies for parks and open space to the extent feasible.

Manage Congestion and Improve Performance

Regional Strategies

- **Expand the capacity** of the regional transportation system **to slow the growth of congestion**. Support **improvements** to principal arterials and A-minor arterials, including county roads.
- Support implementation of the most appropriate and **cost-effective technologies to manage and optimize the use of both the highway and transit systems** (examples: HOT lanes, ramp metering).

Regional Strategies by Geographic Area

Developed Communities

- Plan to complete 6-lane ring route, eliminate bottlenecks, make select capacity improvements and improve system management.

Local Strategies

- Coordinate with business and other public agencies **congestion-reduction measures** such as collaboration with employers, provision of information or incentives to minimize or decrease peak-period impacts.
- Adopt improved design principles to support better **access and traffic management**.

Local Strategies by Geographic Area

Developed Communities

- Coordinate with business and other public agencies congestion-reduction measures such as collaboration with employers, provision of information or incentives to minimize or decrease peak-period impacts.

Transportation Policy Plan Strategies

- Mn/DOT and the Council will produce an investment strategy for metropolitan trunk highways. The **Metropolitan Highway System Investment Study** will define the most cost-effective projects to optimize highway performance as measured by person, rather than vehicle throughput.[26] Low-cost, high-benefit approaches will better manage existing capacity.[27] The study will lead to an amendment to or update of the *2030 Transportation Policy Plan*.
- As part of the study above, Mn/DOT and the Council will **reexamine major highway expansion plans** in the previous *Transportation Policy Plan* (2004) and devise an investment strategy reflecting funding constraints. Implementation will stress innovation, technology, multimodal solutions and strategic capacity expansions. The goal of investment priorities will be to mitigate congestion by moving more people and more vehicles more reliably.[28]
- The Council is working with Mn/DOT to develop a **Congestion Management Process** that meets federal requirements. This process will incorporate and coordinate activities of Mn/DOT, transit providers, counties, cities and Transportation Management Organizations (TMOs) to increase the efficiency of the multimodal transportation system, reduce vehicle use and provide low-cost safety and mobility projects.
- Two studies will inform the process above. A **Travel Demand Management** strategic plan will be developed by the Council, Mn/DOT and other partners to guide activities to manage travel demand. In a second study, Mn/DOT will lead a congestion and safety management plan to identify system-management techniques. Criteria will select low-

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[26] Throughput is the number of vehicles/persons that pass a point on a roadway over a specified period of time. Person throughput includes passengers of vehicles while vehicle throughput only includes vehicles. *2030 Transportation Policy Plan, Appendix A.*

[27] Metropolitan Council, *Metro Area Highway Investment: Technology-Based and Multi-Modal*, http://www.metrocouncil.org/newsletter/transit2010/HwyInvStudyFeb10.htm (accessed April 9, 2010).

[28] Arlene McCarthy, Director, Metropolitan Transportation Services Division, "*Metropolitan Highways System Investment Study*" (presentation, Metropolitan Council meeting, St. Paul, MN, January 13, 2010).

cost, high-benefit projects to mitigate safety and mobility issues on the regional highway system.

- To help mitigate congestion, highway planning and corridor studies will give **priority to transit advantages.** Examples of transit advantages include high-occupancy vehicle (HOV) lanes, high-occupancy toll (HOT) lanes, bus-only shoulders and priced dynamic shoulders.
- The region will continue to implement **alternatives to traveling on congested highways**. Alternatives include bus-only shoulders, HOV lanes, HOT lanes, and priced dynamic shoulders.
- The Council and Mn/DOT will use and implement **cost-effective technology** to manage and optimize highway performance as measured by person throughput.
- The Council will work to **reduce impacts of highway congestion on freight** movement.
- The Council will continue to work with its Transportation Demand Management partners to help define the relationship of **parking** supply, demand, location and cost relative to the use of the single-occupant automobile versus transit and other modes.
- The Council supports **roadway pricing**, including HOT lanes and priced dynamic shoulder lanes, to provide an alternative to congestion and will consider implementing pricing on any expansion project.

Expand and Enhance Transportation Choices

Regional Strategies

- Plan a **multi-modal, interconnected transportation system** in cooperation with state agencies, counties and local governments.
- Support a variety of **freight transport modes** to link the region with state, national and international markets.
- **Expand the regional trails system**.

Regional Strategies by Geographic Area

Developed Communities

- Implement, maintain and operate (along with the opt-outs) transitways, transit stations and transit service; plan appropriate station-area land uses with local governments and businesses.
- Plan regional highway and transit systems, pedestrian and bicycle investments to improve connections between workplaces, residences, retail, services and entertainment activities to accommodate growth and reinvestment.

Developing Communities

- Plan for regional highway and transit systems, pedestrian and bicycle investments to improve connections between workplaces, residences, retail, services and entertainment activities to accommodate growth.

Rural Growth Centers

- Provide park-and-pool or park-and-ride and express-bus links to urban areas based on demand and the availability of resources.

Rural Residential Areas

- Plan for regional transportation infrastructure consistent with a rural level of service.

Diversified Rural Areas

- Plan regional transportation infrastructure consistent with a rural level of service.

Agricultural Areas

- Plan regional transportation infrastructure consistent with market access and the agribusiness needs of the area.

Local Strategies

- Plan and develop an **interconnected local transportation system** that is integrated with the regional system.

Local Strategies by Geographic Area

Developed Communities

- Make local transportation, transit, pedestrian and bicycle investments to improve connections between workplaces, residences, retail, services and entertainment activities.

Developing Communities

- Make local transportation, transit, pedestrian and bicycle investments to build connections between workplaces, residences, retail, services and entertainment activities and to support the transportation needs of the planned build-out of the community.

Rural Centers and Rural Growth Centers

- Plan for an interconnected system of local streets, pedestrian and bicycle facilities.

Rural Residential Areas

- Plan for and construct local transportation infrastructure sufficient to serve local needs.
- Construct an interconnected local public street system.

Diversified Rural Areas

- Plan for and construct local transportation infrastructure including trails sufficient to serve local needs.

Agricultural Areas

- Plan for and construct local transportation infrastructure sufficient to serve local and agricultural needs.

Transportation Policy Plan Strategies

- The Council, Mn/DOT, local governments and transit providers will plan for and implement a **multimodal roadway system**.
- Investments will **expand the local and express bus system** and **develop a network of rail and bus transitways** to help meet the Council's goal of doubling ridership by 2030.
- **Prioritize regional transportation investments**. The first priority is to preserve, operate and maintain existing transportation systems and facilities. The second priority is to effectively manage systems. The third priority is using capital and operating investments to expand the local and express bus system and develop a network of rail and bus transitways to meet a goal of doubling transit ridership by 2030.
- The Council will identify and pursue an **adequate level of resources** available and needed for regional transportation investments. Transitway infrastructure **investments will not occur unless operating funds** have been identified.
- **Transitway investment decisions** will be based on multiple factors. Selection **criteria** include ridership, mobility improvements, operating efficiency and effectiveness, environmental impacts, regional balance, economic development impacts and cost-effectiveness. Readiness, priority and timing will also be considered as will local commitment to transitway implementation and land use.
- Transit providers will work with cities to **expand regional park-and-ride facilities** to support service expansion as expected growth occurs within express corridor areas and along dedicated transitways.
- **Transitways will be coordinated** with other transit, highway, bicycle and pedestrian projects, facilities, and investments.
- The Council will support **enhanced transit service along transitways** and integrating routes along transitway corridors to take advantage of transitway improvements.
- The Council will encourage transit and roadway **investments to include bicycle and pedestrian travel**. Funding priority for bicycle and pedestrian improvements will be based on their ability to accomplish regional transportation objectives for biking and walking.
- For federal funding, the region will use criteria **prioritizing projects that encourage multimodal investments. Examples include** bicycle and pedestrian connections to transit stations and corridors, bus-only shoulders on highways, high-occupancy vehicle (HOV) and high-occupancy toll (HOT) lanes, priced dynamic shoulder lanes, HOV bypasses at highway interchanges, and rail-truck intermodal terminals.

- Mn/DOT, the Metropolitan Council and other agencies will **pursue improved freight connections** between the Twin Cities and other regions through improved state highways, interregional rail service, a strong air freight system and the Mississippi River system.
- The Council will work with its partners to analyze needs for **freight terminal access**.
- The Council will work cooperatively with Mn/DOT, adjacent area transportation partnerships and local units of government to **support connections between the metropolitan highway system and the counties surrounding** the seven-county metropolitan area.
- The Council and its regional partners will **promote and market transportation choices** for travelers to avoid and help lessen congestion. Alternatives include transit, priced lanes, bicycling, walking, vanpooling or carpooling.

Improve Connections and Access

Regional Strategies

- Invest Council resources to assist communities and community projects that increase the variety of housing types and costs, appropriately **mix land uses, increase transportation choices**, and leverage private investment.
- Provide guidance and negotiate lifecycle and affordable **housing goals** in implementing the Livable Communities Act (LCA) and Metropolitan Land Planning Act (MLPA).
- **Invest Council resources**—infrastructure improvements, grant programs and technical assistance – to accommodate regional growth while using regional systems and land efficiently.
- Help cities comply with Mn/DOT's **access management guidelines**.

Regional Strategies by Geographic Area

Developed Communities

- Provide and improve transit connections by coordinating planning for infill and redevelopment projects with state agencies, counties and local communities.
- Maintain and expand existing regional infrastructure to adequately support reinvestment as identified in local comprehensive plans.
- Use regional system investments and incentives to help developed communities maintain and preserve the existing housing stock and to add new higher density housing that responds to changing demographic and market trends.
- Invest Council resources to facilitate reinvestment (infill, adaptive reuse and redevelopment).
- Support the reclamation of contaminated lands for redevelopment and restore natural resources.

Developing Communities

- Plan, coordinate and invest in regional infrastructure (roads, transit, wastewater treatment, airports, and parks and open space) and resources to support staged development, and centers with convenient access to transportation and transit corridors.
- Commit to provide regional system infrastructure to support local development consistent with approved local comprehensive plans.
- Work with the Transportation Advisory Board to ensure the efforts of cities and counties that coordinate their development and transportation planning are recognized in the competition for federal transportation funds.
- Work with communities to identify and protect an adequate supply of land within the region to accommodate urban development that will occur after 2030.
- Provide technical assistance to developing communities to establish and implement strategies to protect lands for future urban development.
- Provide technical assistance to assist developing communities to devise ordinances and projects for lifecycle and affordable housing that respond to changing market and demographic trends.

Rural Growth Centers

- Work with Rural Growth Centers, surrounding townships and counties to provide for the orderly expansion of these cities and to preserve low densities in the surrounding rural areas (e.g., not to exceed 1 unit per 40 acres in agricultural areas and 1 unit per 10 acres in diversified rural areas).
- Plan for improvements to regional infrastructure to support expected growth at residential densities of 3-5 plus units per acre; for wastewater services consider acquiring and operating the plant or locating a new wastewater treatment facility in the rural growth center if doing so would be more efficient and cost effective, and provide other regional benefits.
- Provide guidance and negotiate lifecycle and affordable housing goals in implementing the Livable Communities Act (LCA) and Metropolitan Land Planning Act (MLPA).
- Invest Council resources to assist communities and community projects that increase the variety of housing types and costs, appropriately mix land uses, increase transportation choices, and leverage private investment.

Rural Residential Areas

- Discourage rural residential patterns (unsewered areas of 2 ½ acre lots) elsewhere in the region.

- Provide guidance and negotiate lifecycle and affordable housing goals in implementing the Livable Communities Act (LCA) and Metropolitan Land Planning Act (MLPA).
- Invest Council resources to assist communities and community projects that increase the variety of housing types and costs, appropriately mix land uses, increase transportation choices, and leverage private investment.
- Support the limiting of access points to state and county roads systems (consistent with state and county access management policies) and emphasize construction of an interconnected local public street system.

Diversified Rural Areas

- Work with communities to plan development patterns that will: protect natural resources; preserve areas where post-2030 growth can be provided with cost-effective and efficient urban infrastructure; and accommodate forecasted growth through 2030 without requiring the provision of regional urban services.
- Provide guidance and negotiate lifecycle and affordable housing goals in implementing the Livable Communities Act (LCA) and Metropolitan Land Planning Act (MLPA).
- Invest Council resources to assist communities and community projects that increase the variety of housing types and costs, appropriately mix land uses, increase transportation choices, and leverage private investment.

Agricultural Areas

- Support local efforts to preserve prime agricultural soils and land uses by supporting township and county activities that maintain agricultural land uses through at least 2030. Should post-2030 growth forecasts indicate a need to develop some agricultural lands at urban densities, agricultural land uses will enable the efficient expansion of regional urban infrastructure. Wastewater services to these areas will be reviewed on a case-by-case basis to determine feasibility.
- Invest Council resources to assist communities and community projects that increase the variety of housing types and costs, appropriately mix land uses, increase transportation choices, and leverage private investment.
- Provide guidance and negotiate lifecycle and affordable housing goals in implementing the Livable Communities Act (LCA) and Metropolitan Land Planning Act (MLPA).

Local Strategies

- Plan for development that accommodates growth forecasts at **appropriate densities**.
- Use local official controls and resources to facilitate development of a **range of housing densities**, types and costs.

- Adopt and implement a Council-approved **comprehensive plan**.
- Develop and implement comprehensive plans that provide land appropriate for a variety of affordable and life-cycle **housing options**.
- Adopt **local housing goals** and implementation plans.
- Develop local **land uses linked to the local and regional transportation systems**.
- Plan for **connections** between housing and centers of employment, education, retail and recreation uses.
- Use Mn/DOT's **access management guidelines** to prepare local plans and ordinances.

Local Strategies by Geographic Area

Developed Communities

- Accommodate growth forecasts through reinvestment at appropriate densities (5 units plus in developed areas and target higher density in locations with convenient access to transportation corridors and with adequate sewer capacity).
- Approve and permit reinvestment projects that make cost effective use of infrastructure and increase density.
- Plan land use patterns that support transit service and development.
- Identify opportunities to improve transportation connections and address transportation issues such as travel demand management, access management, safety and mobility when planning infill and redevelopment projects.
- Plan for and guide infill development, redevelopment, and adaptive reuse of structures to diversify housing, connect housing and jobs, and integrate new development into existing neighborhoods.
- Support the conversion or reuse of underutilized lands in order to accommodate growth forecasts, ensure efficient utilization of existing infrastructure investments and meet community needs.
- Adopt ordinances to accommodate growth and use land and infrastructure efficiently (examples: innovative zoning techniques for mixed use development, transit oriented development, overlay districts, planned unit development provisions, and traditional neighborhood development overlay zones).
- Adopt and pursue reinvestment strategies to achieve MLPA/LCA housing goals.
- Adopt ordinances to increase lifecycle and affordable housing (examples: increased multi-family use, reduced front and interior setback requirements; cluster development ordinances).
- Adopt ordinances to support integrated land use (examples: ordinances encouraging or allowing shared parking; centers; transit oriented developments).

Developing Communities

- Plan and stage development that accommodates the forecasts for local growth through 2030 at appropriate densities (3-5 units plus per acre overall in developing communities for areas outside the current staged development as shown in local plans and target higher density in locations with convenient access to transportation corridors and with adequate sewer capacity).
- Stage local infrastructure and development plans to accommodate 20 years worth of forecasted growth.
- Adopt ordinances to accommodate growth and use land and infrastructure efficiently (examples: innovative zoning techniques for mixed use development, transit oriented development, overlay districts, planned unit development provisions, adequate public facilities ordinances, community impact statements and traditional neighborhood development overlay zones).
- Adopt ordinances designed to encourage lifecycle and affordable housing (examples: increased multi-family zoning, reduced front and interior setback requirements; cluster development ordinances).
- Plan for the conversion or reuse of declining or underutilized lands in order to accommodate growth forecasts, ensure efficient utilization of infrastructure investments and meet community needs.
- Plan for the entire community and consider the need for additional serviceable land for growth beyond 2030.
- Identify areas reserved for future urban development and develop strategies to minimize development in those areas that could preclude future urban development.
- Plan for necessary infrastructure improvements including, as appropriate, executing orderly annexation agreements.
- Select and implement local controls and tools for timing and staging of development throughout the community.
- Plan land use patterns to support transit development and service expansion.
- Coordinate development planning with the county to ensure highway capacity is available when and where needed.
- Adopt ordinances to support integrated land use (examples: ordinances encouraging or allowing shared parking; centers; transit oriented developments).
- Identify opportunities to improve transportation connections and address transportation issues such as commuting (park and rides, express bus service), access management, safety and mobility when planning new development.

Rural Growth Centers

- Identify areas that will accommodate post-2030 growth forecasts and implement strategies to preserve these areas for future growth (e.g. clustered development not to exceed 1 unit per 10 acres in Diversified Rural Areas and clustered development not to exceed 1 unit per 40 acres in agricultural preservation areas). Plan for necessary infrastructure improvements.
- Use local official controls and resources to facilitate development of a range of housing densities, types and costs.
- Execute orderly annexation agreements.
- Adopt ordinances that time development with infrastructure availability.
- Develop and implement comprehensive plans that provide land appropriate for a variety of affordable and life-cycle housing options.
- Adopt local housing goals and implementation plans.

Rural Residential Areas

- Use local official controls and resources to facilitate development of a range of housing densities, types and costs.
- Develop and implement comprehensive plans that provide land appropriate for a variety of affordable and life-cycle housing options.
- Adopt local housing goals and implementation plans.
- Adopt improved design techniques for access management.

Diversified Rural Areas

- Accommodate growth not to exceed forecasts at clustered development not to exceed 1 unit per 10 acres.
- Plan development patterns that will protect natural resources. Preserve areas where post-2030 growth can be provided with cost-effective and efficient urban infrastructure and accommodate growth without requiring the provision of regional urban services.
- Develop and implement comprehensive plans that provide land appropriate for a variety of affordable and life-cycle housing options.
- Use local official controls and resources to facilitate development of a range of housing densities, types and costs.
- Adopt local housing goals and implementation plans.

Agricultural Areas

- Adopt zoning ordinances and/or other official controls to maintain densities of no more than 1 housing unit per 40 acres in areas designated for agricultural use.
- Develop and implement strategies for protecting farmlands, such as exclusive agricultural zoning, agricultural security districts, and lower densities such as 1 housing unit per 80 acres.
- Maintain agricultural land uses through at least 2030 to preserve prime agricultural lands and to preserve land for efficient expansion of post-2030 regional urban infrastructure, limit residential development.
- Use local official controls and resources to facilitate development of a range of housing densities, types and costs.
- Develop and implement comprehensive plans that provide land appropriate for a variety of affordable and life-cycle housing options.
- Adopt local housing goals and implementation plans.

Transportation Policy Plan Strategies

- The Council will promote land use planning and development practices that **maximize accessibility** to jobs, housing and services.
- **Transitways and the bus system should be catalysts for development** and growth of major employment centers and residential nodes. The bus system and transitways should form an **interconnected network of higher density nodes along transit corridors**. Local units of governments are encouraged to develop and implement local comprehensive plans, zoning and community development strategies that ensure more intensified development along transitways and bus routes.
- Local governments should plan for and implement a **system of interconnected streets, pathways and bikeways** to meet local travel needs without using the regional highway system. Interconnections should reduce congestion, provide access to jobs, services and retail, and support transit.
- Recognizing the importance of walking and bicycling to a multimodal transportation system, the Council will strongly encourage local units of government to develop a safe and attractive **pedestrian environment near major transit corridors and stations** with linkages for pedestrians and bicyclists to buses and trains.
- The Council encourages **local planning for bicyclists and pedestrians**. To be eligible for federal transportation funding, a local bicycle or pedestrian project must be consistent with an adopted plan.
- State, county and local governments will **manage access** to the metropolitan highway system to optimize the performance of existing facilities. New or reconstructed trunk highway interchanges to expand capacity or meet safety concerns will be considered only

if they are consistent with the Transportation Policy Plan and Mn/DOT's criteria and cost-sharing policies.

- Local governments within the Metropolitan Urban Service Area (MUSA) should plan for the next 20 years and **stage transportation infrastructure** to meet the needs of forecasted growth. Outside the Metropolitan Urban Service Area transportation plans and facilities and land use patterns must be compatible with the region's need for future sewered development and protection of agriculture.

- Local **comprehensive plans must conform to the *Transportation Policy Plan***. Local plans should recognize special transportation opportunities and problems that planning areas present for transportation and land uses.

- The Council will work with local units of government to ensure that **transitways promote efficient development and redevelopment**.

- Transportation investments and land development along major transportation corridors will be coordinated to **intensify job centers, increase transportation links** between job centers and medium-to-high density residential developments **and improve jobs-housing connections**.

- Transportation investments and land development will be coordinated to **create an environment supportive of travel by modes other than automobiles**, including travel by transit, walking and bicycling.

Appendix C: Sources for Baseline Air Pollution Estimates

Twin Cities Regional Travel Demand Model

The following provides a summary of the traffic forecast models used to generate vehicle miles traveled (VMT) in the creation of base data for the air pollution impacts tool. Detailed technical information on the models is found in technical memorandums developed as part of the 2000 Travel Behavior Inventory (TBI). The information is available through the Council's website or the Council's Metropolitan Transportation Services Division.

Highway Model Network

Travel analysis zones (TAZs) are used in the traffic modeling process as the common geographic unit for data summary. The system of TAZs covers the entire seven-county, Twin Cities metropolitan area, plus the adjoining collar counties. All data drawn from home interviews and selected other trip and socioeconomic data were compiled by TAZ. In addition, the TAZ system forms the geographic framework for coding highway and transit networks. Each TAZ is linked to all others by the highway network. Inside the core seven counties, most are linked to one another by the transit network as well.

The most significant application of the TAZ is to serve as the geographic unit used by the models to predict attractions and productions of person trips. (A person trip is a one-way journey by one person between two points.) An example of a TAZ is a shopping mall. A mall has a homogeneous commercial land use that attracts people to work or shop. Another type of TAZ produces person trips generated in proportion to the number of households, type of household, size of household, and an income variable such as the number of automobiles that each household has available on a daily basis for trip-making.

The year-2000 zone system consists of 1,201 zones. Zones are within the region (Anoka, Dakota, Carver, Hennepin, Ramsey, Scott, and Washington Counties); 35 "inner" external station zones around these seven counties; 364 zones in the 13 collar or ring counties (Chisago, Isanti, Mille Lacs, Sherburne, Wright, McLeod, Sibley, LeSueur, Rice, Goodhue, Pierce, WI; St. Croix, WI; and Polk, WI); and 32 zones representing "outer" external stations around the ring counties. Internal zone boundaries most often lie along major highways or arterial streets or on any other significant physical boundary that shapes and directs trip movements, such as a large lake or major river. County boundaries also form edges of zones where appropriate. An external station is a point at the edge of the 20-county area where vehicle trips leave or enter the system without being associated with the local land use. In other words, one end of the trip is outside the 20-county area.

The development of the year-2000 highway network was completed by the Council with assistance from the Minnesota Department of Transportation (Mn/DOT), and the transportation departments of counties and cities. The rebuilt network is based on data from the 2000 regional TBI.

To reflect some key parameters for related transportation modeling, such as typical speeds by location in the region, the network links are related to geographical areas. Types of areas include rural, developing, developed, residential core, business core and outlying business center.

Area types are used to create a matrix by facility types. Facility types are categories of roads which operate in a similar manner. These facility types are:

1. Metered freeway
2. Unmetered freeway
3. Metered ramp
4. Unmetered ramp
5. Divided arterial
6. Undivided arterial
7. Collector
8. High occupancy vehicle (HOV)
9. Centroid connector
10. HOV ramp

Geographic Information System (GIS) software was used to assign default speed based on speed survey data from the 2000 TBI and capacity values for all the network links. In this process, area-type polygons are created that automatically identify all the links inside of the polygon. The area-type value is automatically assigned to the link.

Transit Model Network

The transit network consists of bus routes coded to an underlying street and highway network. Primary attributes associated with these routes include type of service (express, local, LRT, etc.), run time by link or stop to stop, and frequency of service. Also included in the transit network are drive and walk access links to connect the bus routes to TAZ centroids.

The Trip Generation Model

The trip generation model produces productions and attractions for each TAZ based on the population, number of households, employment level and socio-economic characteristics of each zone. The model was calibrated through the use of the 2000 TBI Home Interview Survey.

Destination Choice Model

The destination choice model (also known as the trip distribution model) estimates the probability of selecting a particular destination zone, given a particular zone of production, as defined by the regional network and zone system.

The model generates the number of person trips that are anticipated to be made between any two zones in the regional model on an average weekday, regardless of mode. The model was calibrated through the use of the 2000 TBI Home Interview Survey which provided a database of observed daily trips.

Mode Choice Model

The mode choice model applies a logic model to home-based work, home-based other, and nonhome-based trips. In addition, nonhome-based trips are further divided into work-related and non-work related. Home-based University of Minnesota trips are dealt with separately, using the work model. The model uses different parameters to estimate peak versus off-peak mode choices. As in the past, the model estimates transit, single-occupancy vehicle (SOV)

and high-occupancy vehicle (HOV) trips. In addition, the model, as updated by the 2000 TBI, estimates walk and bicycle trips.

Mode choice models use the travel times and costs of the highway and transit systems to estimate the proportion of trips that are allocated to the transit system, SOV trips and HOV trips.

Temporal Distribution Model

The temporal distribution model splits the daily trip tables into 24 time segments to replicate the peak hours, peak period and off-peak travel periods.

Assignment Models

The highway assignment model distributes vehicle trips onto the highway system through a capacity-restrained equilibrium method. Given the capacity of the highway system, an increase in the volume of travel assigned to each link in an iteration results in a decrease in speed on the link. The relationship between volume and capacity was adjusted for certain facility types based on 2000 TBI Highway Speed Survey data, rather than solely using the default Bureau of Public Roads ratios.

The transit assignment model distributes person trips onto the transit system based on shortest travel time paths. The paths are built taking into consideration the time to travel to a bus stop, wait for a bus, in-vehicle time, number of delays, time waiting for a transfer to another bus, and time to get from last bus stop to final destination.

Appendix D: Collaboration and Outreach

Members of Land Use Advisory Committee

Tony Pistilli, Chair and Metropolitan Council member
Duane Arens, former Metropolitan Council member
David Beaudet, Mayor of Oak Park Heights
Tami Diehm, Columbia Heights City Council member
Karl Drotning, Lakeville Planning Commission
Steve Elkins, Bloomington City Council member
David Elvig, Ramsey City Council member
Deborah Haugh, St. Paul
Marvin Johnson, Mayor of Independence
Bob Kermes, White Bear Township Board supervisor
Jerry McDonald, Chanhassan City Council member
J. Michael Noonan, Builders Association of the Twin Cities member
Terry Schneider, Mayor of Minnetonka
Nancy Schouweiler, Dakota County Commissioner
Bob Shaffer, Golden Valley City Council member
Barb Thomas, former Moundsview City Council member
Jon Ulrich, Scott County Commissioner.

Members of Technical Advisory Committee of Transportation Advisory Board

Tim Mayasich, Chair, Ramsey County
Chuck Ahl, Metro Cities – Maplewood
Ann Braden (secretary - nonvoting member), Metropolitan Council
Carolyn Braun, Metro Cities - Anoka
Pat Bursaw, Minnesota Department of Transportation
Don Elwood, Minneapolis - engineering
Innocent Eyoh, Minnesota Pollution Control Agency
Lisa Freese, Scott County
Kate Garwood (alternate), Anoka County
Gene Goddard, Minnesota Department of Employment and Economic Development
Jim Grube (alternate), Hennepin County
Ken Haider (alternate), Ramsey County
Steven Hay, Minneapolis - planning
Brian Isaacson (alternate), Minnesota Department of Transportation
Tom Johnson, Hennepin County
John Kari, Metropolitan Council
Karl Keel, Metro Cities – Bloomington
Mike Klassen, St. Paul - engineering

Mark Krebsbach (alternate), Dakota County
Jennifer Levitt, Metro Cities – Cottage Grove
Kim Lindquist, Metro Cities – Rosemount
Alan Lovejoy, St. Paul - planning
Richard McCoy, Metro Cities - Robbinsdale
Beverly Miller, Minnesota Valley Transit
Bob Moberg, Metro Cities - Plymouth
Susan Moe (nonvoting member), Federal Highway Administration
Jon Olson, Anoka County
Carl Ohrn, Metropolitan Council
Ed Petrie, Metro Transit
John Powell, Metro Cities - Savage
Lyndon Robjent, Carver County
Kevin Roggenbuck, Transportation Advisory Board Coordinator
Wayne Sandberg, Washington County
Ted Schoenecker (alternate), Washington County
Brian Sorenson, Dakota County
Robert Vorpahl, Metropolitan Airports Commission
Lezlie Vermillion (alternate), Scott County
Bill Weckman (alternate), Carver County

Members of Planning Committee of Technical Advisory Committee of Transportation Advisory Board

Steven Hay, Chair, City of Minneapolis
Holly Anderson, Dakota County
Carolyn Braun, Metro Cities - City of Anoka
Robert Byers, Hennepin County
Jack Corkle, Anoka County
Paul Czech, Minnesota Department of Transportation
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John Kari, Metropolitan Council
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Robert Paddock (secretary - nonvoting member), Metro Council
John Powell, Metro Cities – Savage

Ann Pung Terwedo,Washington County
Lyndon Robjent (alternate), Carver County
Mike Rogers, Ramsey County/Ramsey County Regional Rail Authority
Kevin Roggenbuck, Transportation Advisory Board Coordinator
Ted Schoenecker (alternate), Washington County
Mike Sobolewski (alternate), Minnesota Department of Transportation
Brian Sorenson (alternate), Dakota County
David Vessel, Metropolitan Council
Bill Weckman, Carver County

Stakeholder Participants

John Bailey, 1000 Friends of Minnesota
Lynne Bly and Ethan Fawley, Fresh Energy
Jim Erkel, Minnesota Center for Environmental Advocacy
Jenna Fletcher, Embrace Open Space and Trust for Public Land
Dave Van Hattam, Transit for Livable Communities

Appendix E: Community Conversations

Introduction

During January and February, 2010, Council staff conducted informal interviews, or community conversations, with 18 communities about local activities related to the *Land Use and Planning Resources Report*. Conversations took place with city managers, community development directors and planning directors. These participants shared information on how their cities are addressing links between land use and transportation planning − emphasizing air pollution, traffic congestion, efficient use of transportation infrastructure and travel demand management. In addition, participants were also asked about community interest in a new transportation carbon footprint tool (later renamed "air pollution impacts tool").

Participating Communities

Selected communities represent a variety of communities from all Metropolitan Council member districts. Communities include the two central cities, developed suburbs and developing suburbs. Where applicable, communities are further defined by major transportation corridors, both existing and planned by 2020. Types of corridors include freeway, light rail transit (LRT), commuter rail, and bus rapid transit (BRT).

- Central cities: Minneapolis (LRT and commuter rail) and St. Paul (LRT planned)
- Developed suburbs: Apple Valley (BRT), Bloomington (LRT), Burnsville, Coon Rapids (commuter rail), Minnetonka (LRT planned), Roseville, St. Louis Park (LRT planned)
- Developing suburbs: Blaine, Brooklyn Park, Eden Prairie (LRT planned), Hugo, Lakeville (BRT), Maple Grove (LRT/BRT corridor planned), Shakopee, Victoria, Woodbury

The summary below represents the substance of conversations, although comments are not attributed to specific communities.

Overall Comments

- A wide range of local activities address objectives of the *Land Use and Planning Resources Report*. Activities are known by various terms and are seen as part of other, ongoing activities. Terms used to describe activities include: sustainable development, environmental stewardship, quality of life, efficient and cost-effective operations, community development and jobs, comprehensive planning, plan implementation and conservation.
- Communities recognize strong links between transportation and land use or land-use patterns. Many local government officials see an increasing role for transit. Transitways, in particular, are seen as influencing future development decisions and land-use patterns (primarily infill and redevelopment). Most considered policies and strategies for new development as more likely to gain community support than ones addressing or retrofitting existing development.

Many communities focus on city operations − energy use, city fleets, public buildings and facilities, and purchasing − to set an example for others in the community to follow. This included working with ICLEI-Local Governments for Sustainability and getting green certificates for new or renovated facilities.

- A common theme among communities is "going our own way" to meet locally defined needs and directing activities toward meeting multiple objectives when addressing greenhouse gases, carbon footprint and energy efficiency/alternatives. The latter are seen as secondary benefits of local planning and development activities.
- There is interest − cautious in some communities − in a local carbon footprint tool. Such a tool is seen as potentially helping local decision-making. The "voluntary" use of the tool, by local initiative and with local direction, was received positively.
- Communities focus on development within their jurisdiction, where they have land-use control. However, communities recognize the influence and importance of transportation corridors (under the control of county, regional and state agencies). Communities are increasingly aware of how development patterns outside their communities influence them. More cooperation and coordination of land use and transportation at the subregional and corridor level is of interest.

Topic Areas

Sustainability or Sustainable Development

- Several communities reported work on sustainability − establishing sustainability commissions and taskforces and also assigning staff.
- Several communities participate in ICLEI-Local Governments for Sustainability USA activities. ICLEI is an international association of local governments, as well as national and regional local government organizations, that have made a commitment to sustainable development. ICLEI provides technical consulting, training, and information services to build capacity, share knowledge, and support local government in the implementation of sustainable development at the local level.
- Several communities are a part of GreenStep Cities, a voluntary program offering support for local implementation of sustainable best practices that focus on greenhouse gas reduction.
- Sustainability is seen as a useful, broad framework for improving not only city operations but guiding new development and redevelopment projects. Some communities have spent several years studying sustainable topics and including recommendations in their updated comprehensive plans. Several have sustainability coordinators and commissions.
- Examples of sustainable land use and transportation links include using rain gardens to handle storm water runoff from parking lots and streets, and incorporating tree canopy in streetscape plans.

Density

- Most communities plan their highest density residential uses near trails and commercial areas. Those uses are planned ¼ to ½ mile from trails and in nodes/station stops along existing and planned transitways for easy and short access to commercial areas.
- As noted by several communities, the case for increased density and intensity of development within the Interstate 494-694 beltway and along transit corridors needs to be made regionally. Local governments need financial assistance and new tools to implement higher density, mixed-use developments.

Leverage LRT/Transitway Development

- Communities along existing and planned transitways (LRT, commuter rail and BRT) want to leverage that investment to support economic development. In doing so, communities see a range of development opportunities (size and scale). They are developing zoning ordinances accordingly, but see the need for other tools.
- Communities want to use market analyses to determine mix, scale and timing of station area plans and development.

Park-and-Ride and Express Transit

- Developing communities see new park-and-rides as ways to build support for transit and support smaller-scale, mixed-use development. They look to the market and developers, however, to take the lead in determining what will work.

Complete Streets

- Resolutions of support for Complete Streets have been passed by many communities. Complete Streets are designed and operated to enable safe access for all users. Pedestrians, bicyclists, motorists and bus riders of all ages and abilities are able to safely move along and across a complete street. Resolutions by communities include those in Hennepin County that also support the county's active living program.
- Several communities included Complete Streets concepts and provisions in their comprehensive plans.
- Several communities have moved toward eliminating cul-de-sacs from neighborhood design. Furthermore, some assign new development plans negative points in the development review process if cul-de-sacs are part of the plan.
- Some communities have focused on "complete corridor" connectivity (for travel by auto, bus/transit, bike or foot) rather than connectivity for a single roadway.

Street Planning

- One city worked through a transportation/street building process that expands criteria for street design. The time-consuming facilitation process among engineers, planners and others went beyond safety and mobility to include livability and sustainability. The process resulted in a new plan for roadways and how they will be built.

Trails and Sidewalks

- The 2030 Comprehensive Plan Updates include plans for community-wide networks of trails and sidewalks to connect people and places through pedestrian and bicycle travel. Some have city-wide grid plans for bicycle and pedestrian pathways/sidewalks. Other communities noted that sidewalks and trails are not acceptable in some neighborhoods.

- For community support of trails and sidewalks, health concerns, recreation and active living programs are seen as more important than commuting to work and shopping.

Transit-Oriented Development

- Communities along transitway corridors are planning for mixed-use and walkable developments. Most anticipate that such development will happen over time with the market. Some communities are reluctant to lead in this regard, preferring to leave the initiative to the development community.

- LRT, much more than BRT, is seen as an opportunity to think about redevelopment differently, in terms of market area, project-area access, and mix of uses.

    - Several communities have projects that incorporate "new urbanism" and predate the *2030 Transportation Policy Plan.*

Centers/Urban Village

- Several communities are encouraging development of "urban villages" or "town centers" to provide a focus for community identity or neighborhood identity in the central cities. These concepts include mixed-use, walkable, and transit-friendly retail/commercial development. The level of transit service (LRT versus express bus/regular route) is important in determining the scale of these centers and their development potential.

- Parks and trails are seen as key amenities for higher-density nodes.

Tree Planting/Canopy

- Most cities have urban forestry polices and codes that require tree plantings along roadways and preserving trees in developments. Most face challenges maximizing these planting schemes because county and state roadway safety standards control the level of and location of trees along major roadways.

Travel Demand Management

- Most communities with large, regional employment centers have travel demand management (TDM) organizations and plans to address commuting and commercial development design and access.

- Several communities support an e-workplace initiative. (Telework is an off-site work arrangement that permits employees to work away from the office for part or all of the work week.) Companies that implement effective telework strategies report an increase in competitive edge, efficiency and performance. Telework can be an effective strategy to reduce costs associated with real estate, increase employee retention, and improve employee productivity and morale overall.

- Several communities are considering new TDM ordinances for employers with more than 100 employees.

GIS and Redevelopment Implementation

- Most communities use Geographic Information Systems (GIS) as a planning tool. One community conducted a city-wide analysis of land parcels and public facility capacity to identify infill and redevelopment opportunities. The city used the information to identify a limited number of areas for city investment and leverage.

Other Related Community Activities

A. Greenhouse Gas Emission Reduction Protocol ICLEI - Local Governments for Sustainability

Background. Local governments join the Cities for Climate Protection (CCP) campaign by passing a resolution pledging to reduce greenhouse gas (GHG) emissions from their local government operations and throughout their communities. To help cities achieve their goals, ICLEI then assists cities undertaking the CCP's five milestones.

The five milestones of the CCP and the methodology behind them provide a simple, standardized means of calculating GHG emissions; establishing targets to lower emissions; reducing GHG emissions; and monitoring, measuring and reporting performance. ICLEI has developed several software tools that help cities comply with the methodology.

Members. Local members of ICLEI-Local Governments for Sustainability

- Dakota County
- Edina
- Mahtomedi
- Minneapolis
- Oakdale
- Roseville
- St. Paul
- White Bear Lake

Five Milestones. The five milestones provide a flexible framework that can accommodate varying levels of analysis, effort, and availability of data. This increases its transferability among local governments, making the CCP both unique and innovative.

Milestone 1. Conduct a baseline emissions inventory and forecast. Based on energy consumption and waste generation, the city calculates GHG emissions for a base year (e.g., 2000) and for a forecast year (e.g., 2015). The inventory and forecast provide a benchmark for measuring progress.

Milestone 2. Adopt an emissions reduction target for the forecast year. The city establishes an emission reduction target for itself. The target both fosters political will and creates a framework to guide planning and implementation measures.

Milestone 3. Develop a Local Action Plan. Through a multi-stakeholder process, the city develops a Local Action Plan that describes policies and measures the local government will take to reduce GHG emissions and achieve its emissions reduction target. Most plans include a timeline, a description of financing mechanisms, and an assignment of responsibility to departments and staff. In addition to direct GHG reduction measures, most plans also incorporate public awareness and education efforts.

Milestone 4. Implement policies and measures. The city implements policies and measures contained in their Local Action Plan. Typical policies and measures implemented by CCP participants include: energy efficiency improvements to municipal buildings and water treatment facilities; streetlight retrofits; public transit improvements; installation of renewable power applications; and methane recovery from waste management.

Milestone 5. Monitor and verify results. Monitoring and verifying progress implementing measures to reduce or avoid GHG emissions is an ongoing process. Monitoring begins once the city implements its measures. Monitoring continues for the life of these measures, which provides important feedback that can be used to improve measures over time.

B. U.S. Conference of Mayors Climate Protection Agreement

Website: http://usmayors.org/climateprotection/agreement.htm

Background. Scientific evidence and consensus continues to strengthen the idea that climate disruption is an urgent threat to the environmental and economic health of our communities. Many cities, in this country and abroad, already have strong local policies and programs in place to reduce global warming pollution, but feel more action is needed at the local, state, and federal levels to meet the challenge. The Kyoto Protocol became law on February 16, 2005. Since then, 141 countries have ratified it to date. The Kyoto Protocol is an international agreement to address climate disruption. At that time, Seattle Mayor, Greg Nickels, launched this initiative to advance the goals of the Kyoto Protocol through leadership and action by at least 141 American cities.

By the U.S. Conference of Mayors Annual Meeting in June, 2005, 141 mayors had signed the Agreement – the same number of nations that ratified the Kyoto Protocol. In May, 2007, Tulsa Mayor, Kathy Taylor, became the 500th mayor to sign on.

Metro Area Mayors – Members

Mary Hamann-Roland	Apple Valley	MN

Tim Willson	Brooklyn Center	MN
Elizabeth Kautz	Burnsville	MN
Mike Maguire	Eagan	MN
Nancy Tyra-Lukens (former Mayor)	Eden Prairie	MN
James Hovland	Edina	MN
Peter Lindstrom	Falcon Heights	MN
Linda Loomis	Golden Valley	MN
George Tourville	Inver Grove Heights	MN
Judson Marshall	Mahtomedi	MN
Diana Longrie (former Mayor)	Maplewood	MN
R.T. Rybak	Minneapolis	MN
Janis Callison (former Mayor)	Minnetonka	MN
David Beaudet	Oak Park Heights	MN
William Droste	Rosemount	MN
Craig Klausing	Roseville	MN
Chris Coleman	St. Paul	MN
Molly Park	Sunfish Lake	MN
Paul Auger (former Mayor)	White Bear Lake	MN
William Hargis	Woodbury	MN

Actions taken under the agreement. Participating cities commit to take following three actions:

- Strive to meet or beat the Kyoto Protocol targets in their own communities, through actions ranging from anti-sprawl land-use policies to urban forest restoration projects to public information campaigns;
- Urge their state governments, and the federal government, to enact policies and programs to meet or beat the GHG emission reduction target suggested for the United States in the Kyoto Protocol (7% reduction from 1990 levels by 2012); and
- Urge the U.S. Congress to pass the bipartisan GHG reduction legislation, which would establish a national emission trading system.

Agreement:

The U.S. Mayors Climate Protection Agreement (as endorsed at the 73rd Annual U.S. Conference of Mayors meeting, Chicago, 2005):

1. We urge the federal government and state governments to enact policies and programs to meet or beat the target of reducing global warming pollution levels to 7 percent below 1990 levels by 2012, including efforts to: reduce the United States' dependence on fossil fuels and accelerate the development of clean,

economical energy resources and fuel-efficient technologies such as conservation, methane recovery for energy generation, waste to energy, wind and solar energy, fuel cells, efficient motor vehicles, and biofuels;

2. We urge the U.S. Congress to pass bipartisan greenhouse gas reduction legislation that 1) includes clear timetables and emissions limits and 2) a flexible, market-based system of tradable allowances among emitting industries; and

3. We will strive to meet or exceed Kyoto Protocol targets for reducing global warming pollution by taking actions in our own operations and communities such as:

    a. Inventory global warming emissions in City operations and in the community, set reduction targets and create an action plan;

    b. Adopt and enforce land-use policies that reduce sprawl, preserve open space, and create compact, walkable urban communities;

    c. Promote transportation options such as bicycle trails, commute trip reduction programs, incentives for car pooling and public transit;

    d. Increase the use of clean, alternative energy by, for example, investing in "green tags", advocating for the development of renewable energy resources, recovering landfill methane for energy production, and supporting the use of waste to energy technology;

    e. Make energy efficiency a priority through building code improvements, retrofitting city facilities with energy efficient lighting and urging employees to conserve energy and save money;

    f. Purchase only Energy Star equipment and appliances for City use;

    g. Practice and promote sustainable building practices using the U.S. Green Building Council's LEED program or a similar system;

    h. Increase the average fuel efficiency of municipal fleet vehicles; reduce the number of vehicles; launch an employee education program including anti-idling messages; convert diesel vehicles to bio-diesel;

    i. Evaluate opportunities to increase pump efficiency in water and wastewater systems; recover wastewater treatment methane for energy production;

    j. Increase recycling rates in City operations and in the community;

    k. Maintain healthy urban forests; promote tree planting to increase shading and to absorb CO_2; and

    l. Help educate the public, schools, other jurisdictions, professional associations, business and industry about reducing global warming pollution.