CHAPTER 3
FUTURE TRENDS / DEVELOPMENT PATTERN

Introduction

Future Trends Affecting Trip Making

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3.1 Introduction

Anticipating how the future will unfold and how travel characteristics will be affected is a challenge. Forecasters and planners tend to extrapolate existing travel and development patterns because significant change is difficult to anticipate. Generally, the short-term five-to-10 year period can be predicted with relative accuracy since change is often smaller and the lead time of most large scale projects require that planning preparations be underway today. Longer-term projections are much more difficult since lifestyle shifts / attitudes, economic patterns, and other actions affecting society are hard to foresee.

This chapter identifies some of the future trends that have been considered, and it describes the underlying assumptions behind the 2030 HC-TSP. One important element of anticipating transportation change is having a strong link to individual city comprehensive plans. This chapter discusses why land use is an important basis for transportation planning and it documents the process of how future land development trends have been incorporated into the 2030 HC-TSP. Similarly, this chapter discusses how the impact of transportation infrastructure investments on land use and development patterns will be considered.

3.2 Future Trends Affecting Trip Making

Generally, the ability to anticipate or project future trends is limited by our tendency to view the future in the context of the present. For this reason, many transportation plans expect the future to function and look similar to the present. The challenge is to recognize the seeds of change that will affect future trip making patterns.

The 2030 HC-TSP incorporates much of the regional thinking of Mn/DOT, the Metropolitan Council and the State Planning Agency. The future assumptions of these agencies are built into the county’s forecasting process as well. The document also reflects the expanded emphasis on all modes of travel and county policies stressing the emphasis for Active Living – integrating physical activity into daily routines through biking, walking and taking transit – as well as Complete Streets – roads designed and operated to assure safety and accessibility for all users of our roadways, including pedestrians, bicyclists, motorists, and more.
3.2.1 Socio-Economic Trends

The State Planning Agency (Demographer’s Office) expects:

- Hennepin County will continue to grow in suburban areas. This trend is supported by projections by the Metropolitan Council in the mid-1990s (see Exhibit 3-1).

Exhibit 3-1 Hennepin County Projected Population Growth Patterns 1990 to 2030

- The county will continue to grow more racially diverse.
- Employment will continue to disperse throughout the suburbs and beyond the edge of the metropolitan area.
The Metropolitan Council 2030 Development Framework assumptions include:

- In the next 20 years, no significant changes are expected in the fertility or death rates (consistent with U.S. Census Bureau).
- Continued strong in-migration is expected that will account for approximately one-third of all regional growth – this assumption has the greatest potential to significantly alter future forecasts.
- The Twin Cities share of national growth will reflect the average past historical trends since 1950.
- Continued aging of the baby-boom population will lead to a drop in demand for single-family housing and an increase in demand for townhouses, apartments/condominiums, Accessory Dwelling Units1 and other non-traditional housing types in neighborhoods that are more walkable with more compact development and amenities.
- Shifts in demographics and housing types will create challenges in providing for the transportation needs of residents of all ages who are living and working in the county.
- Regional labor force participation rates will continue to be higher than national averages.

Based on these trends and assumptions, the Metropolitan Council prepared System Statements in 2005 of population, household and employment forecasts for all cities and counties in the region. These forecasts suggest Hennepin County will continue to grow for all of these indicators (Table 3-1 below). The densities of population and economic activity are also projected to increase.

<table>
<thead>
<tr>
<th></th>
<th>1990</th>
<th>2000</th>
<th>Revised Development Framework</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>2010</td>
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<tr>
<td>Population</td>
<td>1,032,431</td>
<td>1,116,206</td>
<td>1,213,600</td>
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<tr>
<td>Households</td>
<td>419,060</td>
<td>456,131</td>
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<td>Employment</td>
<td>723,105</td>
<td>856,838</td>
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Source: Metropolitan Council 2005 System Statements for Hennepin County  
September 12, 2005

Additional information regarding the Metropolitan Council 2005 System Statements is included in the Support Documents section for Chapter 3.

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1 ADUs are most commonly understood to be a separate additional living unit, including separate kitchen, sleeping, and bathroom facilities, attached or detached from the primary residential unit, on a single-family lot. ADUs are usually subordinate in size, location, and appearance to the primary unit.
In addition, the 2030 HC-TSP assumes:

- Job growth by 2030 will be fairly robust as assumed by the Metropolitan Council (560,000 new jobs), however no major influx of new workers will occur at a magnitude similar to the rising participation of women in the workforce over the last 20 years. 90 percent of women in the 25-40 age bracket now work, making the Twin Cities the highest metropolitan area for employment participation in the U.S.

- The automobile will continue to be the predominant mode for transportation in Hennepin County although significant increases in mode share will be seen in transit and bicycle / walk modes.

### 3.2.2 Travel Characteristics

The following list describes general travel characteristics.

- Increased trip making linkages will occur between Hennepin County and the adjacent counties of Carver, Sherburne and Wright.

- Average trip lengths will likely continue to increase for most travel modes – National trends show Vehicle Miles of Travel (VMT) may increase for these modes as a result; statewide trends show VMT growth leveling. Exhibit 3-2 illustrates the anticipated trend of VMT from 1992 to 2010 for Minnesota.

#### Exhibit 3-2 Statewide Annual VMT Growth Trends
• The VMT has posted recent declines due to the economic conditions and spiked fuel costs; however, it is expected to resume increasing, possibly at a slower rate. The short-term conditions may have some effect on travel patterns, and could produce longer term changes in people’s trip making behaviors. Further discussion of long-term fuel availability and pricing is included later in this chapter.

• The recent major economic recession in 2008-09 has had a temporary short-term impact on traffic volumes in Hennepin County resulting in a reduction of VMT of about two percent from the previous 2007 to 2008 levels. Travel is anticipated to grow as the economy recovers from the 2008 to 2009 recession.

• The predominant mode of travel used today is the automobile. According to the 2000 Metropolitan Council Travel Behavior Inventory (TBI), vehicle trips on the metropolitan roadway system have increased 22 percent since the last TBI in 1990 (Exhibit 3-3). This growth equates to a rate of about two percent per year, similar to that observed for Hennepin County. Metropolitan roads now carry 7.7 million vehicle trips per day (more than 70 percent of all trips in the state of Minnesota).

Exhibit 3-3 Trends in Daily Person Trips and Vehicle Trips

Source: Metropolitan Council 2000 Travel Behavior Inventory (TBI)

• Non-home based travel will continue to increase. This is somewhat a function of increased intermediate trips between home and work (such as to daycare, convenience stores, etc.).

• Suburb to suburb travel will continue to grow, increasing work commuting distances and dispersing trips throughout the region.
• Urban downtowns and activity centers will continue to grow. Development along transit corridors which link urban activity centers will provide an opportunity to accommodate growth at higher densities.

• Auto predominance may lessen somewhat over the next 20 to 25 years, however it is expected that the automobile will continue to be the primary means of travel during this planning period.

• Hennepin County has a strong role in supporting all modes of travel by its involvement in road planning, design, construction, and operations activities.

• Hennepin County has as an active role in the planning and implementation of transitway projects in the region through HCRRA and CTIB. Investments in transit infrastructure will provide people expanded transportation opportunities helping limit VMT growth.

• The county’s newly adopted Complete Streets and Active Living policies have given Hennepin County a much stronger role in supporting the development of a balanced, multimodal transportation system that provides choice in automobile, transit, bicycle or pedestrian travel.

### 3.2.3 Transit Trends

The 2030 HC-TSP\(^2\) relies exclusively on regional transit assumptions from the Metropolitan Council. These assumptions include:

• Total transit ridership is anticipated to double from the base year of 2003 to 2030. This was a goal established in 2004 and was recently reaffirmed in the 2030 Transportation Policy Plan (TPP) adopted in January 2009. In 2030, the ridership goal is to reach 145 to 150 million rides per year, compared with 73 million existing rides in 2003\(^3\). Bus rides are projected to be 100 million, 69 percent of the total, and rail rides projected to 45 million, 31 percent of the total.

• In 2010, regional transit ridership was 90.9 million, an approximate 24 percent increase over 2003. In 2020, regional transit ridership is projected to reach 118 to 120 million, approximately 61 percent greater than the base year 2003, and approximately 33 percent greater than 2007. Bus rides are projected to be 87 million, 74 percent of the total, and rail rides projected to be 31 million, 26 percent of the total.

• Overall, the mode split of transit trips will experience a modest growth from three to five percent of all trips today to five to seven percent in 2030.

\(^2\) Hennepin County and CTIB desire doubling ridership in the region sooner than 2030; however, this has not been analyzed. This would depend on a number of factors, including, assumptions for build-out of major transitways, density of land uses adjacent to transitways, and level of bus service operations. These scenarios could be analyzed in the future.

\(^3\) The Counties Transit Improvement Board (CTIB) believes that transit ridership can double sooner than the Metropolitan Council’s stated goal of doubling by 2030.
In order to reach the goal of doubling transit ridership by 2030, the Metropolitan Council is planning for a 50 percent increase in transit usage by 2020, which is anticipated to come from:

1. Normal growth (20 percent)
2. Fare pricing and incentives (11 percent)
3. Arterial corridor enhancements (three percent)
4. Express corridor network enhancements (five percent)
5. Dedicated transitways (11 percent)\(^4\)

LRT has recently enjoyed a resurgence of interest and support.

The Hiawatha LRT line was opened in 2004 in the Twin Cities linking downtown Minneapolis to the Minneapolis-St. Paul International Airport and Mall of America.

The Central Corridor LRT, which will connect downtown St. Paul and Minneapolis, is currently under construction and will be in operation in 2014.

The Southwest LRT Project is nearing completion of a Draft Environmental Impact Statement (DEIS). An application to enter Preliminary Engineering has been submitted to the Federal Transit Administration (FTA). It is anticipated that the Southwest LRT would be in operation in 2017 to 2018.

The Bottineau Transitway Project has started the DEIS process. The DEIS will evaluate four alternatives: three LRT and one BRT. The DEIS will be completed by the end of 2012.

### 3.2.4 Pedestrians and Bicycles

Pedestrian/bicycle trips are anticipated to continue with significant growth. Investments in completing gaps in the bicycle system and corridors such as the Midtown Greenway have shown significant increases in usage beyond original expectations. The county policy is to continue to integrate pedestrian and bicycle facilities into infrastructure projects as well as to close existing gaps to complete the bicycle system. Additional detail on bikeways is available in the 1997 Hennepin County Bicycle Transportation Plan.

### 3.2.5 Financial / Economic Trends

No catastrophic economic events are expected that would significantly change the nature of trip making in the long term. No significant shift to major Toll roadway facilities are anticipated, however additional High Occupancy Toll (HOT) lanes may be added such as those recently implemented on I-35W.

\(^4\) Metropolitan Council 2005 Transportation Policy Plan
3.3 Elements Having Impacts Difficult to Quantify Today

There are a number of current trends that may affect future trip making; however, the potential impact of these items is difficult to quantify. These trends include energy availability and fuel/energy costs, new transportation modes, communication technology, societal attitudes/lifestyle choices, and improved transportation technology. These trends are described in more detail in the following sections.

3.3.1 Energy Availability and Fuel/Energy Costs

- The spike in gasoline prices in 2008 had an effect on overall travel VMT and consumer choices as to what type of vehicles they are purchasing and how much consumers choose to drive. Traffic counts appear to be leveling off, the segment of large pickup trucks and SUVs appear to be experiencing decreased demands.

- Although the price of gasoline later moderated, further gasoline price increases are expected which may reduce vehicular travel, at least initially. Over the 20-year long term, consumers are likely to compensate by shifting to more fuel efficient vehicles and increasing the usage of other modes of transportation.

- The likelihood or timing of future energy shortages is difficult to anticipate. While some short interruptions may occur, the 2030 HC-TSP assumes that gasoline and diesel fuel will continue to be available in sufficient quantities and at reasonable prices.

- Research into alternate energy sources was spawned by the energy shortages of the 1970’s. Recent strides have been made in battery design, hybrid systems, and fuel cell technology. Although vehicles using alternate energy sources may become more popular in the next 20 years, the 2030 HC-TSP assumes that gasoline and diesel powered vehicles will continue to dominate the fleet mix. Alternate fuel vehicles are expected to be used similarly to current vehicles in their trip making characteristics.

- It should also be noted that any significant shifts in energy sources or major changes in the average fuel efficiency of the vehicle fleet could impact the generation of revenue from traditional funding sources such as the gas tax.

3.3.2 New Transportation Modes

- BRT is being implemented on several routes in the Twin Cities (Cedar Avenue and I-35W), and is being considered in a number of additional corridors. It has been used in a variety of U.S. and international urban settings. BRT examples with amenities and superior service characteristics have been found to attract patronage similar to typical LRT systems at lower costs.
• Commuter Rail is another mode recently implemented in the region. Commuter Rail is characterized as rail transit that runs on conventional railroad track and is designed to meet the rail transit needs of commuters who live outside the immediate core cities. The Northstar Commuter Rail was completed in 2009. The corridor connects Big Lake to downtown Minneapolis.

• In 2010, Mn/DOT completed the Minnesota Comprehensive Statewide Freight and Passenger Rail Plan which establishes a vision for additional passenger rail in Minnesota. In recent years, new federal funding has been allocated for Inter-city Passenger Rail and High Speed (110 miles per hour or greater) rail planning and implementation. Hennepin County, along with an alliance of other regional railroad authorities, cities, and Mn/DOT, is involved with efforts for establishing inter-city passenger rail between Minneapolis and Duluth. Hennepin County is also coordinating with Mn/DOT and others regarding efforts to introduce high-speed rail service between the Twin Cities and Chicago. The implementation of these options could occur within the 20-year timeframe of the 2030 HC-TSP; however, its affect on trip making is difficult to estimate today.

3.3.3 Communication Technology

• Telecommuting (where the employee can work from the home for all or a portion of the week) is being tried by a number of industries and some governmental agencies including Hennepin County. The county has implemented programs involving hundreds of employees. Telecommuting rates are growing and some researchers believe that telecommuting could grow considerably in the next 20 years. Whether this will become widespread, and how it affects trip making patterns is difficult to quantify today.

• Results Only Work Environment (ROWE)\textsuperscript{5} is being implemented in large organizations, such as Best Buy (the program’s founder) and Hennepin County\textsuperscript{6}. ROWE may impact commuting in the metro area as it is implemented by more organizations.

• The use of the Internet is another technology that is difficult to gauge in terms of affecting transportation. The phenomenal growth it has already undergone has not appeared to affect trip making to date. However, the seeds of changing the way we do business and how we shop and a number of other activities could be modified by this technology.

• Technological improvements in communication (cellular & personal digital assistants (PDAs), microcomputers, and global positioning systems (GPS) have experienced explosive growth over the past 5-10 years. How these elements will ultimately affect travel has yet to be determined.

\textsuperscript{5} ROWE is a management strategy where employees are evaluated on performance, not presence.

\textsuperscript{6} Hennepin County Human Services and Public Health Department participates in ROWE.
3.3.4 Societal Attitudes / Lifestyle Choices

The predominant attitudes and desires of society can greatly affect how future transportation issues are viewed and what solutions are perceived as being good for society as a whole.

- A large segment of society in the United States continues to view suburban living as a desired setting. Other groups view lower density rural or high density urban settings as desirable. Currently, Hennepin County provides for all these desired lifestyles, however as the county matures, the mix of lower density suburban and rural housing alternatives may change.

- Future housing choices will also be affected by anticipated increases in the population of senior residents. This group will likely prefer housing and transportation choices that favor denser, mixed-use and TOD types.

- There is a heightened awareness of how roadway designs impact travel choices. Many residents desire roadways to provide safe and attractive routes for vehicles, pedestrians and bicycles and safe connections to transit. The county’s adopted Complete Streets policy takes into account all users of roads – those using cars, transit, walking or bicycling – and of all ages and abilities, from the earliest stage of planning.

- There is also heightened sensitivity to how corridor design affects neighborhoods and communities, and an increased desire to include streetscaping amenities in road projects. Addressing these desires may require tradeoffs with other desires when dealing with the existing right of way of county roads.

- There is growing understanding of the reciprocal relationship between transportation and land use. Roadway design and form also have an impact on the future land uses and development opportunities along corridors. Details of roadway design can impact the viability of different types of land uses, and influence land use decisions such as desirable setbacks, building orientation, and building scale. Subsequent land uses, in turn, influence the function of the roadway. Understanding this interrelationship requires collaborative analysis and planning.

- It is expected that taxpayers will continue to demand more efficiency and effectiveness from transportation agencies. Programs, which provide significant improvements using low-cost techniques will be necessary. An important element of the county’s Complete Streets policy is to maximize every infrastructure improvement as an opportunity to provide for safer and more attractive options for all modes of transportation, thereby more efficiently developing a multi-modal transportation network.

- To preserve the transportation system, there will be a need to reduce travel demands in the future. It is expected that TDM policies and strategies such as staggered work hours, carpooling and encouragement to bike, walk and take transit will continue to be important.
• Maturely developed cities will continue to express a strong interest in redevelopment. The county will need to closely monitor future development proposals to ensure that the in-place roadway and transit systems adequately support the redevelopment.

• TOD along major transitways is an opportunity to accommodate growth at higher densities, and is an opportunity to encourage a multi-modal transportation network which can reduce the reliance on motor vehicles.

• It is expected that society will continue to adopt and incorporate new technological improvements quickly. While the effect of these future technologies on transportation is debatable, the lead-time before their integration is anticipated to continue to shorten.

3.3.5 Improved Transportation Technology

• A number of new technologies are on the horizon that may greatly impact how we travel, what information is available to us, or could even include vehicle guidance systems that control our automobiles on the urban highway system. For example, integrating pedestrian countdown timers and bicycle traffic control devices also are technologies being considered or implemented here and around the country.

• Other software technologies such as GIS and GPS will likely be used to support the above ITS implementations and they may play an integral role in transportation operations.

• A resurgence of interest in roadway designs using roundabouts, 3-lane roadways (using a continuous left turn lane), and extensive access management techniques may help to improve the traffic operations and reduce delays when used under the proper circumstances.

3.4 Land Use Development Patterns

The future forecasts of the 2030 HC-TSP are based on expected land use development patterns. Land uses are classified by type – such as residential, commercial, office and industrial type uses. These uses are generally quantified in terms of the number of dwelling units, building square footages or acres of development.

Land use as an indicator of future development potential contrasts with the regional forecasting process that relies on socio-economic data such as population, households and employment. Although the 2030 HC-TSP builds on the regional process, this is one area where an alternate approach is used.

Population, household, and employment forecasts have been developed by the Metropolitan Council as part of the “System Statements.” The Support Documents (under separate cover) contain a copy of the 2005 System Statements for Hennepin County.
3.4.1 Why Land Uses Are Important to the 2030 HC-TSP

The reasons for basing the 2030 HC-TSP forecasts on land uses rather than the more traditional socio-economic variables stems from Hennepin County’s need to focus on the evaluation of the minor arterial roadway system. The precision of analysis necessary for the minor arterial system requires the ability to accurately estimate vehicle trips. A land use based forecast is better able to provide the level of detail needed for minor arterials.

The regional planning process administered by the Metropolitan Council is a “Top Down” allocation process that is based on market shares of growth for the United States split to individual states and then divided up to the metropolitan areas of the states. This process is important to ensure that the total estimated growth remains within expected limits.

Some of the characteristics of this regional top down process are:

- The process estimates future growth in socio-economic units of population, households, retail and non-retail employment.
- It allocates socio-economic data to portions of the metropolitan area and ultimately to individual cities.
- It defines or brackets the total amount of growth that the Twin Cities metropolitan area can support.
- The process includes recognition that differing growth potential exists between various cities.
- Data is verifiable through the U.S. Census and the State Department of Economic Security.
- Difficulties exist for adjusting or reallocating when cities land uses develop at different intensities and in different time periods than originally assumed.

The 2030 HC-TSP uses a “Bottom Up” process where the land uses are accrued from the comprehensive plans of the 45 cities and the Township of Hassan. Hennepin County does not have land use classification or zoning powers. These powers reside in the individual cities. However, the county is involved in plat reviews of developments adjacent to its roadway system and it is part of the comprehensive planning process that involves all metropolitan counties and cities. Some of the characteristics of this process are:

- The process estimates land use intensity in units of dwellings, gross building square-footages and acres.
- The information is linked to actual or proposed development intensities from plats. Land use designations are tied to the individual city comprehensive planning process giving the county a relatively detailed view of future expectations.
• The data includes “blue sky” type future developments which may or may not actually develop. Development totals often exceed the amount of the metropolitan area totals as determined from the “Top Down” process.

• Trip making is closely correlated to land use types and intensities. These items are readily verifiable by plat and survey information, or they can be verified in the field.

Both the “Top Down” and “Bottom Up” processes have important outlooks that need to be incorporated into any future forecast. Ultimately, good long range planning will depend on obtaining realistic land use projections that fit within the overall growth potential of the metropolitan area.

### 3.4.2 Existing (2005) Land Use Database

Today, Hennepin County has over 350,000 individual parcels of land. Over 85 percent of these parcels are classified as a type of existing or future residential use. Table 3- shows a breakdown of the major land use types in the county database.

The best source of existing land uses was found to reside in the county’s tax assessor’s office records. This inventory was supplemented with detailed commercial development data from county field verifications. This database of uses was compared to other data sources to verify and supplement the information. Exhibit 3-4 shows an example of the parcel map land use classifications.

<table>
<thead>
<tr>
<th>Table 3-2 Hennepin County Parcel Database</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Suburban</strong></td>
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<tr>
<td>Residential</td>
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<tr>
<td>Industrial</td>
</tr>
<tr>
<td>Commercial</td>
</tr>
<tr>
<td>Other Misc. Uses</td>
</tr>
<tr>
<td>Vacant</td>
</tr>
<tr>
<td><strong>Total</strong></td>
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</table>
To be useful for trip estimation, the existing land uses were classified according to the conventions used by the Institute of Transportation Engineers (ITE). Non-residential uses were individually classified to a detailed use code. For example, under the general industrial use classification, specific uses could include manufacturing, general light industrial, and office / warehousing.

It should be noted that the ITE methodology is designed to analyze the trips produced by a development based on historical studies which cordoned off similar land uses for the purposes of counting peak hour and average daily vehicle trips. While some limited information exists regarding transit use for the developments, generally the data does not include other modes especially walking and bicycling.

Mixed-use developments and TOD can be problematic in the ITE methodology due to the interaction of the various land use components within them. The 2030 HC-TSP modeling attempts to account for these shortcomings, but trips can be overestimated in certain cases. Historically, previous county and metropolitan traffic forecasts have tended to be lower than the actual counts.
An initial time period of spring 2005 was used to represent the existing land use required to calibrate the transportation forecasting model. This period was chosen to coincide with available traffic count data and to delineate a period just prior to the 2005 construction season. Development that has occurred since spring 2005 was added to the future forecast for 2030.

3.4.3 Future Land Uses

The principal guide in the forecasting of future land use development was the comprehensive plans of the individual cities. All 45 cities and the Township of Hassan were asked to provide future land development information on what types of land uses and the intensities of development they would expect over the next twenty years.

Parcel land use maps were provided to each city identifying vacant parcels as defined by the tax assessor’s records. In return, the cities reviewed the maps identifying buildable parcels by subtracting those areas designated as park land, having steep unbuildable slopes or areas designated as wetlands. The cities were asked to estimate the expected phasing of development between now and 2030. The cities provided the marked-up parcel maps with their comments. The comments and expected developments were then quantified and summarized.

Land use planning, designations, and zoning are vested in the authority of individual cities. Hennepin County will continue to collaborate with these agencies during activities such as development reviews, corridor studies, and project improvements to encourage increased development densities, expanded access to transit, transit corridor and station area planning. Hennepin County actively promotes specific types of land use and development, including TOD, affordable housing, and brownfield redevelopment through the incentive-based funding programs, Transit-Oriented Development, Affordable Housing Incentive Fund, and the Environmental Response Fund, respectively.