7 FUTURE TRANSPORTATION NEEDS

7.1 Steps to Determine the Preferred Transportation Alternative

There are multiple steps in the process of determining future transportation needs and the preferred transportation alternative to address these needs:

- Forecasting population and employment for the ultimate horizon year (2031);
- Preparing the travel demand model for forecasting;
- Identifying strategic alternative road networks for testing;
- Producing a list of projects for each alternative;
- Running each alternative in the transportation model;
- Comparing system metric outputs computed by the model to evaluate the performance of the network for each alternative, such as: volume to capacity ratio; vehicle kilometres traveled; vehicle hours traveled, emissions and cost;
- Reviewing each alternative in light of the Transportation Principles identified for Greater Sudbury in **Section 5.2**: healthy communities, sustainability and economic vitality; and
- Selecting the preferred strategic alternative.

Forecasting population and employment and preparing the travel demand model are covered in this section. The other steps are addressed in **Section 8**.

7.2 Population and Employment Projections for the Year 2031

The first step in identifying the preferred transportation alternative is to project the population and employment for the city in the ultimate 2031 horizon year. Population and employment data are the key inputs to the travel demand model and fundamentally influence the anticipated travel demands. **Figure 30** shows the population levels in the City of Greater Sudbury in 2006. The population has been divided into Transportation Analysis Zones (TAZs) for use in the travel demand model. Working with the City's Planning Department, projections of the employment and population levels in the year 2031 were made for each TAZ. The 2031 population projection is shown in **Figure 31**.

Figure 30: Map of 2006 Sudbury Population

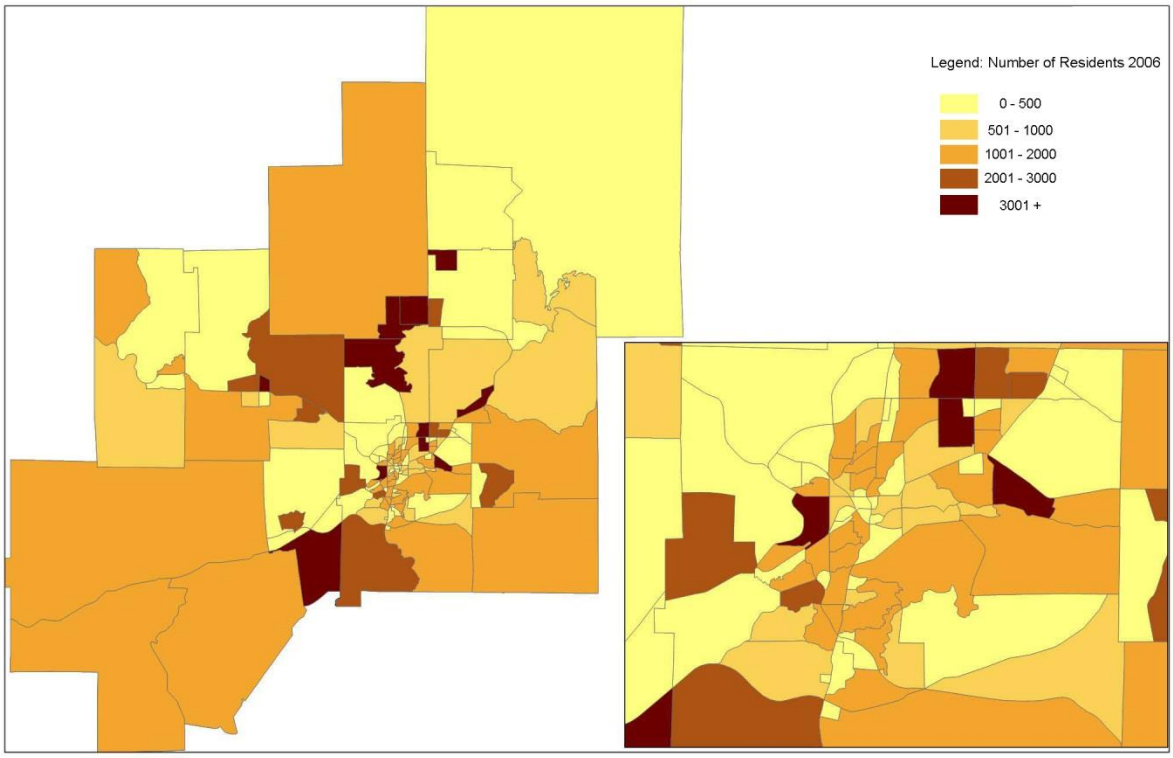
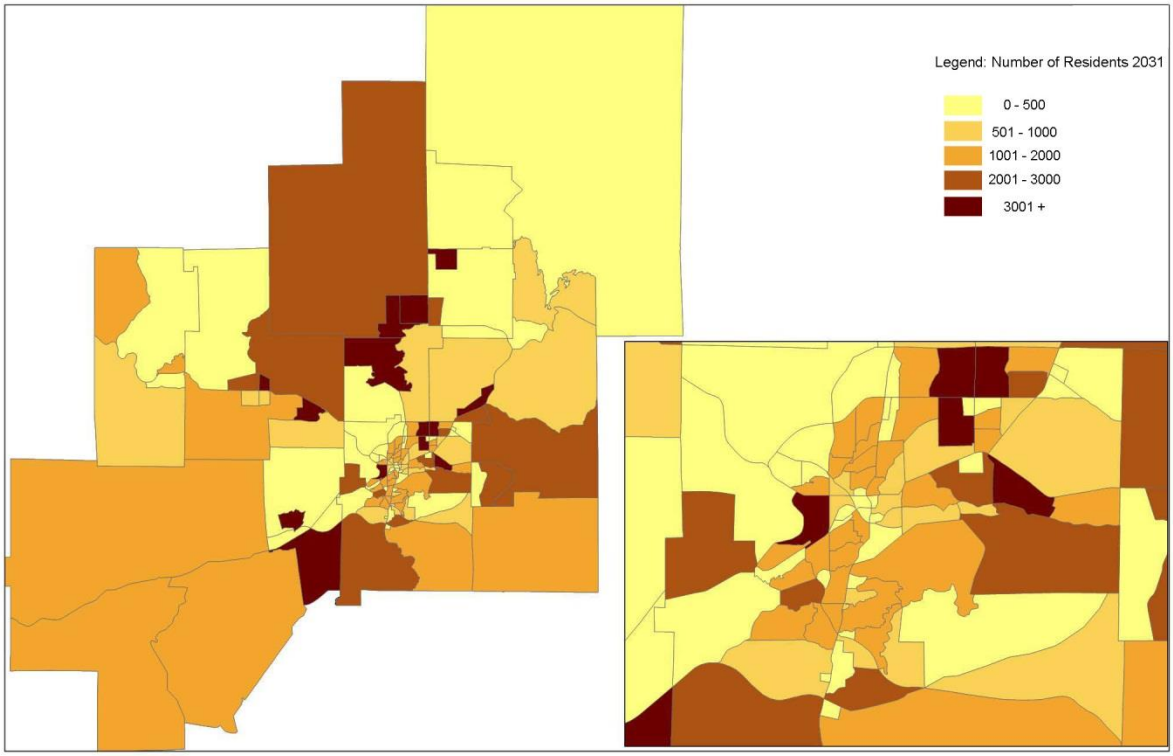


Figure 31: Map of Forecast 2031 Sudbury Population



The overall change in population between 2006 and 2031 is portrayed in **Figure 32**. Based on these projections, it can be determined that the areas of New Sudbury, Valley East, and Sudbury South are anticipated to experience the greatest proportion of the forecast population growth.

Figure 32: Forecast Change in Sudbury Population between 2006 and 2031

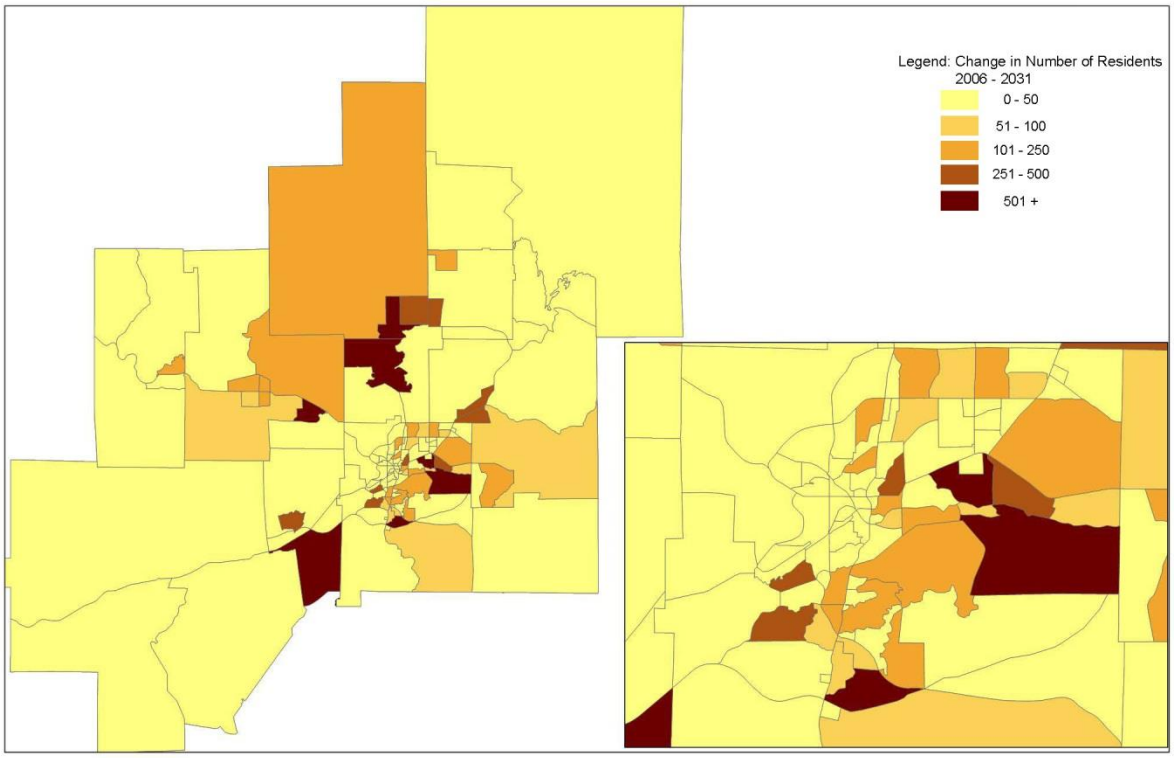


Figure 33 shows the level of employment in various areas of Sudbury in 2006. A 2031 projection for employment is shown in **Figure 34**. The overall change in employment between 2006 and 2031 is portrayed in **Figure 35**. Based on the projected change, it can be determined that the areas of Copper Cliff, Lively, and Chelmsford are expected to experience the greatest proportion of employment growth by the year 2031.

Figure 33: Map of 2006 Sudbury Employment

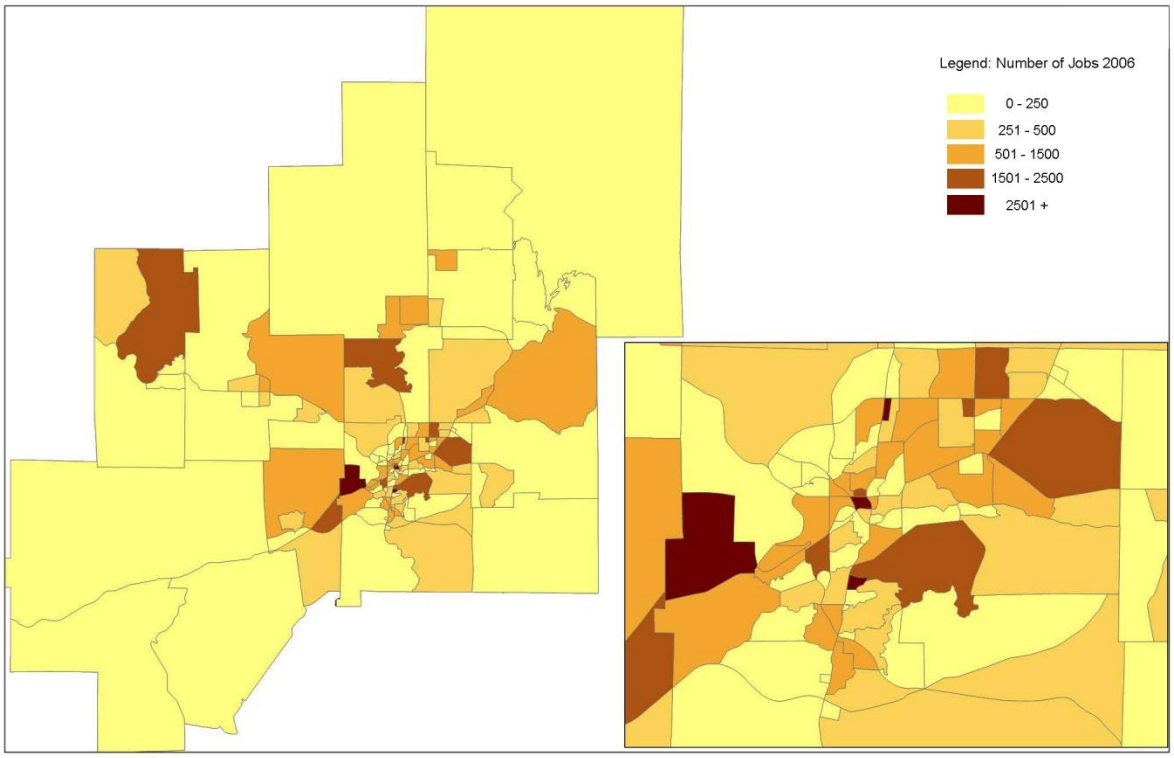


Figure 34: Map of Forecast 2031 Sudbury Employment

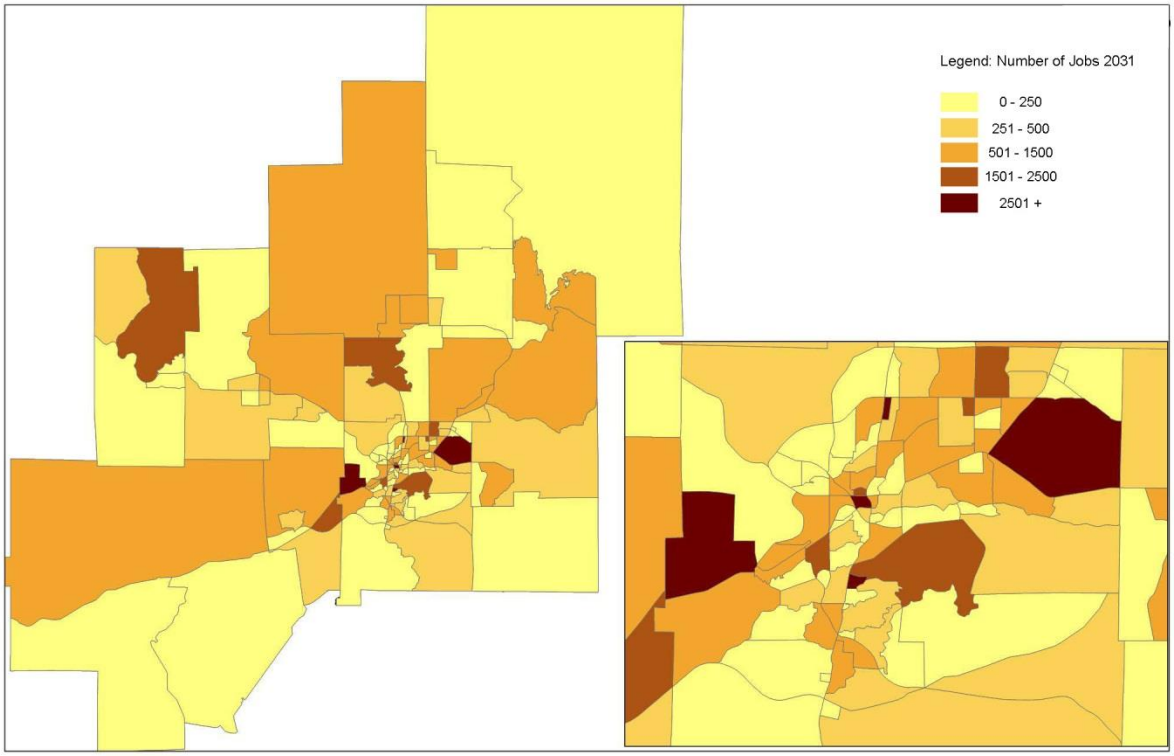
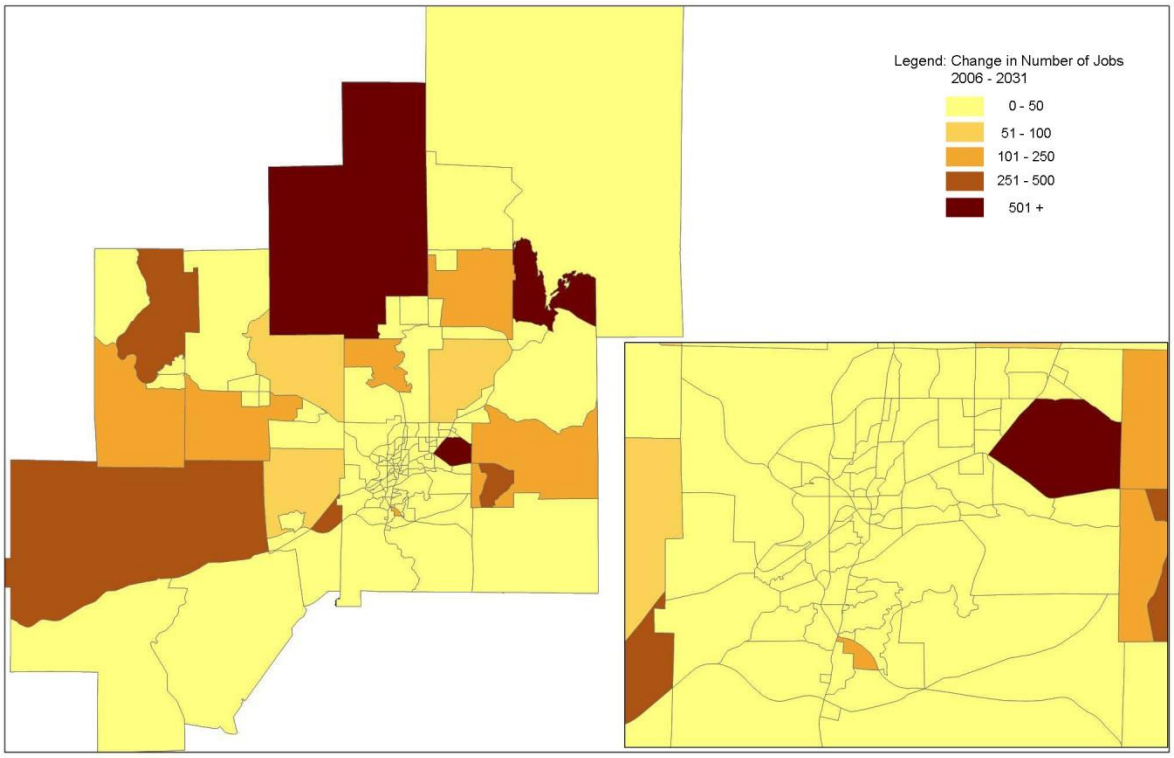


Figure 35: Forecast Change in Sudbury Employment between 2006 and 2031



7.3 Travel Demand Forecasting Model

The modelling of general travel demand involves four stages of analysis incorporating Trip Generation, Trip Distribution, Mode Split, and Trip Assignment. Household survey data collected for the 2005 Transportation Study was utilized again as the basis for the first three steps of the model. It was deemed that travel patterns in the city had not changed significantly in the years since the household survey was undertaken and that the survey results reported in the 2005 Transportation Study were still representative of existing conditions in the city.

The 2005 Transportation Study included a travel demand model prepared using TransCAD software, so this was used again to perform trip assignment for this report. Changes in travel patterns were predicted by the model and several iterations were necessary to take into account the resulting travel times on various routes. The overall model outputs were validated by considering projected volumes at several screenlines and road links, and these were found to be reasonable.

TransCAD is limited in that it does not consider driver behaviour, intersection delays, or the impact of opposing traffic. This results in the model not being able to predict intersection turning movements with a great deal of accuracy. However, the model does show general travel patterns and provides forecasts for link volumes. When combined with data on the capacity of road links, volume / capacity ratios can be determined and links approaching capacity can be highlighted. The model helps to identify where improvements are needed and allows for the testing of multiple alternatives to determine the most appropriate improvements to implement.