

SECTION 3

FUTURE CONDITIONS ANALYSIS

Future Conditions Analysis

Current transportation conditions were described in Section 2 of this report. Future population and employment growth is likely to aggravate traffic conditions that are currently being experienced. This section provides an analysis of potential transportation demand based on future transportation conditions, population and employment growth. The need for future roadway improvements can be quantified, in part, by examining traffic flow patterns, and by forecasting traffic growth. This type of analysis is called travel demand estimation, and the procedure enables the assessment of needed transportation improvements.

This section describes the technical procedures and assumptions used in the estimation of future growth in Kootenai County. The purpose of developing a transportation computer model is to provide a tool that can be used to evaluate future impacts of population growth on the transportation network. The model allows the simulation of future traffic conditions from which impacts can be determined and transportation mitigation strategies identified and evaluated.

The average daily PM traffic volumes from KMPO's Travel Demand Model and traffic counts for the long-term (2030) are depicted in Figures 3.1 to 3.1h.

The overall transportation system serves the underlying land use of an area. As such, there is a direct relationship between land use and transportation. Under the Federally enacted Safe and Efficient Transportation Equity Act - Legacy for Users (SAFETEA-LU), core metropolitan and statewide transportation requirements mandate the study of the relationship between land-use and transportation. This act requires that transportation plans reflect land-use plans, and prescribes a balance between future land-use development and infrastructure needs.

Intersection and Roadway Capacity Future Conditions Analysis

Results of intersection and roadway capacity analysis are summarized in Tables 7,8,9 and 10 on the following pages. These ratios were obtained from the average of intersection delay times from the KMPO Travel Demand Model and have not been through a discreet analysis.

All of the Post Falls area traffic data collected in 1997 by the city is based on signalized intersection AM and PM peak hour level of service analysis. Post Falls intersection analyses are therefore based on the level of service values outlined above.

Table 7. Kootenai County Future Conditions 2015 No Build Intersections => 75% Capacity

Intersection	Jurisdiction	=> 75% Capacity
4th St. & Honeysuckle Ave.	Hayden	106%
7th St. & Best Ave.	Coeur d'Alene	100%
9th St. & Best Ave.	Coeur d'Alene	99%
Strahorn Rd. & Honeysuckle Ave.	Hayden	99%
15th St. & Harrison Ave.	Coeur d'Alene	98%
US 95 & Wilbur Ave.	Coeur d'Alene	95%
Atlas Rd. & Prairie Ave.	Post Falls Highway District	94%
Northwest Blvd. & Ironwood Dr.	Coeur d'Alene	93%
Atlas Rd. & Hanley Ave.	Coeur d'Alene	91%
Pleasant View Rd. & Poleline Ave.	Post Falls Highway District	91%
Idaho St. & Seltice Way	ITD	90%
US 95 & Ramp to Northwest Blvd.	Coeur d'Alene	90%
Honeysuckle Dr. & Best Ave.	Coeur d'Alene	89%
Government Way & Wyoming Ave.	Hayden	88%
4th St. & Harrison Ave.	Coeur d'Alene	87%
Ramsey Rd. & Prairie Ave.	Post Falls Highway District	87%
Park Dr. & Garden Ave.	Coeur d'Alene	87%
US 95 & Wyoming Ave.	ITD/Hayden	86%
US 95 & Hayden Ave.	ITD/Hayden	85%
Pleasant View Rd. & Prairie Ave.	Post Falls Highway District	84%
US 95 & Hanley Ave.	ITD/Cd'A	84%
US 95 & Lancaster Rd.	ITD/Hayden	84%
US 95 & Prairie Ave.	ITD/Hayden	84%
Government Way & Ironwood Dr.	Coeur d'Alene	83%
Government Way & Wilbur Ave.	Coeur d'Alene	83%
US 95/Lincoln Way & I-90 E12 EB Ramp	Coeur d'Alene	82%
SH 41 & Mullan Ave.	ITD	81%
US 95 & Honeysuckle Ave.	ITD/Hayden	81%
US 95 & Miles Ave.	ITD/Hayden	81%
15th St. & I-90 WB On Ramp	Coeur d'Alene	80%
Atlas Rd. & Seltice Way	Post Falls Highway District	80%
Idaho St. & Mullan Ave.	Post Falls	80%
Ramsey Rd. & Hanley Ave.	Post Falls Highway District	80%
SH 41 & I-90 E7 WB Ramp	ITD	80%
SH 41 & Prairie Ave.	Post Falls Highway District	80%
SH 41 & Hayden Ave.	Post Falls Highway District	79%
5th St. & Front Ave.	Coeur d'Alene	78%
Government Way & Miles Ave.	Hayden	78%
Lincoln Way & Walnut Ave.	Coeur d'Alene	78%
15th St. & Nettleton Gulch Rd.	Coeur d'Alene	77%
4th St. & Lunceford Ln.	Coeur d'Alene	77%
Atlas Rd. & Appaloosa Rd.	Coeur d'Alene	77%
Huetter Rd. & Poleline Ave.	Post Falls Highway District	77%
Ramsey Rd. & Kathleen Ave.	Coeur d'Alene	77%
Fruitland Ln. & Cherry Ln.	Coeur d'Alene	76%
Government Way & Lancaster Rd.	Lakes Highway District/Hayden	76%
Northwest Blvd. & Seltice Way	Coeur d'Alene	75%
SH 41 & 16th Ave.	ITD	75%

Table 8: Kootenai County 2030 No Build Intersections = > 75% Capacity

Intersection	Jurisdiction	=> 75% Capacity
Government Way & Wyoming Ave.	Hayden	120%
4 th St. & Honeysuckle Ave.	Hayden	118%
Atlas Rd. & Prairie Ave.	Coeur d'Alene	111%
Government Way & Miles Ave.	Hayden	113%
Pleasant View Rd. & Prairie Ave.	Post Falls Highway District	113%
Pleasant View Rd. & Poleline Ave.	Post Falls highway District	112%
Strahorn Rd. & Honeysuckle Ave.	Hayden	112%
Atlas Rd. & Hanley Ave.	Coeur d'Alene	111%
US 95 & Lancaster Rd.	ITD/Lakes Highway District	111%
US 95 & Wilbur Ave.	Coeur d'Alene	111%
15th St. & Harrison Ave.	Coeur d'Alene	110%
Northwest Blvd. & Ironwood Dr.	Coeur d'Alene	110%
Atlas Rd. & Seltice Way	Coeur d'Alene	109%
Ramsey Rd. & Prairie Ave.	Coeur d'Alene/Hayden	108%
Huetter Rd. & Poleline Ave.	Post Falls Highway District	106%
SH 41 & Mullan Ave.	ITD	106%
7th St. & Best Ave.	Coeur d'Alene	105%
9th St. & Best Ave.	Coeur d'Alene	105%
English Pt. Rd. & Lancaster Rd.	Lakes Highway District / Hayden	105%
Government Way & Wilbur Ave.	Coeur d'Alene	104%
Idaho St. & Polston Ave.	Post Falls	104%
Atlas Rd. & Appaloosa Rd.	Post Falls	103%
McGuire Rd. & SH 53	Post Falls Highway District	102%
Chase Rd. & Prairie Ave.	Post Falls Highway District	101%
Huetter Rd. & Prairie Ave.	Post Falls Highway District	101%
Atlas Rd. & Kathleen Ave.	Coeur d'Alene	100%
McGuire Rd. & Midway Ave.	Post Falls	100%
SH 41 & WB Off Ramp 7	Post Falls	100%
US 95 & Honeysuckle Ave.	ITD/Hayden	100%
US 95 & Prairie Ave.	ITD/Hayden	100%
US 95 & Wyoming Ave.	ITD/Hayden	99%
Government Way & Honeysuckle Ave.	Hayden	98%
15th St. & Hazel Ave.	Coeur d'Alene	97%
Fruitland Ln. & Cherry Ln.	Coeur d'Alene	97%
Huetter Rd. & Mullan Ave.	Post Falls Highway District	97%
Church Rd. & SH 53	Post Falls Highway District	96%
Huetter Rd. & Seltice Way	Post Falls Highway District	96%
Idaho St. & Mullan Ave.	Post Falls	96%
Idaho St. & Poleline Ave.	Post Falls	96%
Player Dr. & Kathleen Ave.	Coeur d'Alene	96%
Government Way & Ironwood Dr.	Coeur d'Alene	95%
McGuire Rd. & Hayden Ave.	Post Falls Highway District	95%
McGuire Rd. & Poleline Ave.	Post Falls	95%
Ramsey Rd. & Hanley Ave.	Coeur d'Alene	95%
US 95/Lincoln Way & On/Off Ramp south of I-90	Coeur d'Alene	95%
Honeysuckle Dr. & Best Ave.	Coeur d'Alene	94%
SH 41 & Hayden Ave.	Post Falls Highway District	94%
SH 41 & Prairie Ave.	Post Falls Highway District	94%
US 95 & Boekel Rd.	ITD/Lakes Highway District	94%
US 95 & Hanley Ave.	Coeur d'Alene	94%
US 95 & Hayden Ave.	ITD/Hayden	94%

Table 8: Kootenai County 2030 No Build Intersections = > 75% Capacity (Cont'd)

Intersection	Jurisdiction	=> 75% Capacity
4th St. & Harrison Ave.	Coeur d'Alene	93%
SH 41 & 16th Ave.	Post Falls	93%
Government Way & Lancaster Rd.	Hayden	92%
Greensferry Rd. & Hwy. 53	Post Falls Highway District	92%
Idaho St. & 15th Ave.	Coeur d'Alene	92%
5th St. & Front Ave.	Coeur d'Alene	91%
15th St. & WB On/Off Ramp	Coeur d'Alene	91%
Lincoln Way & Walnut Ave.	Coeur d'Alene	91%
Ramsey Rd. & Wilbur Ave.	Coeur d'Alene	91%
Park Dr. & Garden Ave.	Coeur d'Alene	90%
Ramsey Rd. & Kathleen Ave.	Coeur d'Alene	90%
Government Way & Hayden Ave.	Hayden	89%
Ramsey Rd. & Hayden Ave.	Hayden	89%
Spokane St. & Poleline Ave.	Post Falls	89%
US 95 & Miles Ave.	Hayden/ITD	89%
US 95 & NB Ramp to Northwest Blvd.	Coeur d'Alene	89%
Meyer Rd. & Hayden Ave.	Post Falls Highway District	88%
Chase Rd. & Mullan Ave.	Post Falls Highway District	87%
Courcelles Pkwy. & Hanley Ave.	Coeur d'Alene	87%
Government Way & Prairie Ave.	Hayden	87%
4th St. & Honeysuckle Dr.	Hayden	86%
4th St. & Prairie Ave.	Hayden	86%
15th St. & Nettleton Gulch Rd.	Coeur d'Alene	86%
SH 41 & Lancaster Rd.	Post Falls Highway District	86%
SH 41 & 12th Ave.	ITD	86%
4th St. & Lunceford Ln.	Coeur d'Alene	85%
15th St. & Ramp at Spokane St.	ITD	80%
Burma Rd. & Hwy. 97	ITD	85%
Government Way & Appleway Ave.	Coeur d'Alene	85%
Ramsey Rd. & Appleway Ave.	Coeur d'Alene	85%
Rimrock Rd. & Lancaster Rd.	Lakes Highway District/Hayden	85%
Spokane St. & 15th Ave.	Coeur d'Alene	85%
US 95 & Dalton Ave.	Coeur d'Alene/ITD	85%
4th St. & Ramp	Coeur d'Alene	84%
Chase Rd. & Poleline Ave.	Post Falls	84%
US 95 & Kathleen Ave.	Coeur d'Alene/ ITD	84%
4 th St. & Wlibur Ave.	Dalton	83%
EB Off Ramp at Seltice Way & I-90	ITD	83%
Idaho St. & Prairie Ave.	Post Falls	83%
Pleasant View Rd. & EB Ramp	ITD	83%
SH 41 & Poleline Ave.	Post Falls	83%
US 95 & North WB On Ramp of I-90	Coeur d'Alene	83%
Chase Rd. & Hayden Ave.	Post Falls	82%
Fruitland Ln. & Bosanko Ave.	Coeur d'Alene	82%
Government Way & Aqua Ave.	Hayden	82%
Government Way & Kathleen Ave.	Coeur d'Alene	82%
Lincoln Way & Ironwood Dr.	Coeur d'Alene	82%
Pleasant View Rd. & SH 53	Post Falls Highway District	81%
15th St. & Best Ave.	Coeur d'Alene	80%
Ramsey Rd. & Golf Course Rd.	Coeur d'Alene	80%
Spokane St. & 6th Ave.	Post Falls	80%

Table 8: Kootenai County 2030 No Build Intersections = > 75% Capacity (Cont'd)

Intersection	Jurisdiction	=> 75% Capacity
Fruitland Ln. & Haycraft Ave.	Coeur d'Alene	79%
Northwest Blvd. & Seltice Way	Coeur d'Alene	79%
Spokane St. & Seltice Way	Post Falls	79%
US 95 & SH 53 & Govt. Way	ITD/Lakes Highway District	79%
4th St. & Best/Appleway Ave.	Coeur d'Alene	78%
15th St. & Elm Ave.	Coeur d'Alene	78%
15th & Thomas/Highwood Ln.	Coeur d'Alene	78%
Atlas Rd. & Nez Perce Rd.	Coeur d'Alene	78%
Government Way & Hanley Ave.	Coeur d'Alene	78%
Pleasant View Rd. & Midway Ave.	Post Falls Highway District	78%
Greensferry Rd. & Poleline Ave.	Post Falls	77%
Ramsey Rd. & Dalton Ave.	Coeur d'Alene	77%
Ramsey Rd. & Lancaster Rd.	Lakes Highway District/Hayden	77%
Spokane St. & Prairie Ave.	Post Falls Highway District	77%
Government Way & Dalton Ave.	Coeur d'Alene	76%
Huetter Rd. & Hayden Ave.	Post Falls Highway District	76%
Chase Rd. & 15th Ave.	Post Falls	76%
Fruitland Ln. & Neider Ave.	Coeur d'Alene	76%
I-90 & EB On Ramp	ITD	76%
McGuire Rd. & Seltice Way	Post Falls	76%
Ramsey Rd. & Honeysuckle Ave.	Hayden	76%
Greensferry Rd. & Mullan Ave.	Post Falls	75%
Syringa St. & Mullan Ave.	Post Falls	75%
US 95 & SB Ramps to Northwest Blvd.	Coeur d'Alene	75%

Table 9. Kootenai County 2015 No Build Roads => 75% Capacity

Road	Jurisdiction	=> 75% Capacity
Sunshine St. from Sunburst Ave. to Hanley Ave.	Coeur d'Alene	116%
4th Street CDA Under I-90	Coeur d'Alene	90%
Pleasant View Rd. from Midway to Hwy. 53	Post Falls Highway District	79%
Huetter Rd. North of Seltice Way	Post Falls Highway District	78%
Riverbend Ave. from Elm Rd. to McGuire Rd.	Post Falls	78%
15th St. from Harrison Ave. to Hazel Ave.	Coeur d'Alene	77%
Best Ave. from 7th St. to Honeysuckle Dr.	Coeur d'Alene	77%
Riverbend Ave. from Clearwater Lp. To Pleasant View	Post Falls	77%
SH 41 from 12th Ave. to 16th Ave.	Post Falls	77%
Walnut Ave. from Government Way to 2nd St.	Coeur d'Alene	77%
Locust Ave. East of Government Way	Coeur d'Alene	76%
Best Ave. from 4th St. to 6th St.	Coeur d'Alene	75%
Lancaster Rd. West of Strahorn Rd.	Lakes Highway District/Hayden	75%

Table 10. Kootenai County 2030 No Build Roads => 75% Capacity

Road	Jurisdiction	=> 75% Capacity
Sunshine from Sunburst Ave. to Hanley Ave.	Coeur d'Alene	112%
Maple St. from honeysuckle Ave. to north of Wyoming Ave.	Hayden	108%
Riverbend Ave. from Moyie St. to McGuire Rd.	Post Falls	102%
Ironwood Dr. from Northwest Blvd. To Hwy. 95	Coeur d'Alene	97%
Syringa St. from Polston Ave. to Mullan Ave.	Post Falls	97%
SH 41 from 12th Ave. to 16th Ave.	Post Falls	96%
US 95 from Clovis Rd. to Boekel Rd.	ITD	95%
Atlas Rd. from Seltice Way to Appaloosa Ave.	Coeur d'Alene	94%
Kathleen Ave. from St. Michelle Dr. to Player Dr.	Coeur d'Alene	93%
Buckles Rd. from Government Way to Pinetree Rd.	Lakes HD/Hayden	92%
Honeysuckle Ave. from 4 th St. To Strahorn Rd.	Hayden	92%
Huetter Rd. from Seltice Way to Mullan Ave.	Post Falls Highway District	92%
Mullan Rd. from Park Dr. to Government Way	Coeur d'Alene	92%
Prairie Ave. from Courcelles Pkwy. To Ramsey Rd.	Hayden/Lakes Highway District	92%
Lancaster Rd. from Rimrock Rd. to Hayden Lake Rd.	Hayden/Lakes Highway District	90%
Spokane St. from 15th Ave. to Poleline Ave.	Post Falls	90%
Walnut Ave. from Government Way to 2nd St.	Coeur d'Alene	90%
Hayden Lake Rd. from Lancaster Rd. to Dodd Rd.	Hayden	89%
Poplar from Government Way to 2nd St.	Coeur d'Alene	89%
Ramsey Rd. From Wilbur Ave. to Prairie Ave.	Post Falls	89%
Atlas Rd. from Hanley Ave. to Newbrook Ave.	Coeur d'Alene	88%
Government Way from Orchard Ave. to Buckles Rd.	Hayden/Lakes Highway District	88%
Hanley Ave. from Madellaine Dr. to Courcelles Pkwy.	Coeur d'Alene	88%
US 95 from Canfield Ave. to Lancaster Rd.	ITD	88%
4 th St. from Wilbur Ave. to Honeysuckle Ave.	Hayden	87%
Government Way South of Honeysuckle Ave.	Hayden	
Pleasant View Rd. from Midway Ave. to Hwy. 53	Post Falls Highway District	87%
Seltice Way from Atlas Rd. to Northwest Blvd.	Coeur d'Alene	87%
Best Ave. from 4th St. to Honeysuckle Ave.	Coeur d'Alene	86%
Locust Ave. from Government Way to 2nd St.	Coeur d'Alene	86%
Canfield Ave. from Hwy. 95 to Access	Coeur d'Alene	84%
Chase Rd. from Fisher Ave. to Prairie Ave.	Post Falls Highway District	84%
Lancaster Rd. from Ramsey to Government Way	Hayden/Lakes Highway District	84%
Northwest Blvd. From Ironwood Dr. to Emma Ave.	Coeur d'Alene	84%
SH 53 from Pleasant View Rd. to Church Rd.	Post Falls	84%
Dalton Ave. from Ramsey Rd. to Harcourt Rd.	Coeur d'Alene	83%
I-90 from Hwy. 41 to Seltice Ramps	Post Falls	83%
McGuire Rd. from Riverbend Rd. to Poleline Ave.	Post Falls	83%
Bosanko Ave. from Howard St. to Fruitland Ln.	Coeur d'Alene	81%
15th St. from Harrison Ave. to Hazel Ave.	Coeur d'Alene	81%
Government Way from Locust Ave. to Appleway Ave.	Coeur d'Alene	81%
Chase Rd. from Mullan Ave. to Poleline Ave.	Post Falls	80%
Idaho Rd. from Seltice Way to Polston Ave.	Post Falls	80%
Upriver Dr. from Riverview Dr. to Hwy. 95	Post Falls Highway District	80%
Atlas Rd. from Kathleen Ave. to Industrial Ave.	Coeur d'Alene	79%

Table 10. Kootenai County 2030 No Build Roads => 75% Capacity (Cont'd)

Road	Jurisdiction	=> 75% Capacity
SH 41 from Wyoming Ave. to Lancaster Rd.	Post Falls	79%
SH 97 from Burma Rd. to I-90	ITD	79%
4th St. from Spruce Ave. to I-90 EB Ramps	Post Falls	78%
Fruitland Ln. from Appleway Ave. to Stoddard Ave.	Coeur d'Alene	78%
SH 41 from I-90 to Mullan Ave.	Post Falls	78%
Fisher Ave. from McGuire Rd. to Howell Rd.	Post Falls	77%
McGuire Rd. from Prairie Ave. to Bodine Ave.	Post Falls Highway District	77%
US 95 from Hwy. 53 to Garwood Rd.	Lakes Highway District	76%
Hayden Ave. from Chateaux Dr. to Ramsey Rd.	Hayden	76%
I-90 between Ramsey & Hwy. 95	ITD	76%
I-90 E13 WB On Ramp from 4th St. to I-90	ITD	75%
Mullan Ave. from Empire Center Blvd. To Chase Rd.	Post Falls	75%
Newbrook Dr. from Loxton Loop to Atlas Rd.	Coeur d'Alene	75%
Prairie Ave. East of Chase Rd.	Post Falls Highway District	75%

Future Land Use

Kootenai County's transportation plan reflects the special dynamics of the area, such as population, employment changes, and the distribution of these activities. Because the plan analyzes the local transportation network for 23 years (2007-2030), an important component of the modeling involves scrutiny of local population, employment, and land-use trends.

Land use projections for Kootenai County are based on observations of where growth has occurred, where it is now occurring, and where it can and is likely to occur in the future. Projections were based on statistical analysis, reliable sources, investigation and study.

Kootenai Metropolitan Planning Organization planners determined the base 2005 population using Kootenai County assessor's information. The Kootenai County Mapping Department provided a database consisting of all tax-assessed structures for the year 2005. Each structure within the database had an x-y location assigned by the county mapping department. Through extensive manipulation of the data, KMPO planners were able to determine the use of each structure within the database. Residential structures were extracted and imported into a Geographic Information System (GIS). The GIS assigned each structure to the TAZ in which it was located and returned the number of residential structures within each TAZ. Population estimates were determined by multiplying the total number of residential structures within each TAZ by the average number of persons per household according to US Census data.

Projecting the population for Kootenai County from 2005-2030 required a number of sources. US Census population count (2000) and estimates (2005 and 2006) were also used.

Table 11: Population Projections

County	2005	2015	2030
Kootenai County	137,937	158,628	231,891
Coeur d'Alene	38,066	43,776	63,995
Post Falls	22,768	26,183	38,276
Hayden	12,454	14,322	20,937
Rathdrum	6,006	6,907	10,097

Source: US Census Data, Kootenai Metropolitan Planning Organization.

Kootenai County is expected to add 17,263 new dwelling units by 2015 and 36,217 new dwelling units by 2030. This will bring the county's overall population from its current (2005) total to approximately 231,891 by the year 2030. This represents a 1.5 percent annual growth rate.

Placing housing densities into three categories from the highest to the lowest, Figure 3.4 graphically depicts the projected housing density change for each Transportation Analysis Zone (TAZ) between the years 2005 and 2030. Community planners expect increased housing density north of I-90 between the area of Government Way and 15th Street and in the Post Falls area south of I-90. Increased housing density is also expected along the Huetter Corridor.

Figure 3.5 depicts Kootenai County's existing and projected commercial and industrial density with four categories from lowest to highest. Planners expect future commercial and industrial development to occur primarily within the same TAZ areas as present. The exceptions are significant new growth in Post Falls and the area surrounding the City of Rathdrum. Kootenai County and city land use policies encouraged this pattern of infill development.

Transportation Network Analysis

Network Development

A computerized network of the study-area's existing street system was built using Vissum software. The network includes most routes within the study-area classified as collector or higher by the federal functional classification system. Other roads were added to represent important local streets, and to provide for additional connections between these facilities (these are known as zonal connectors). The model was then calibrated with existing 2005 traffic counts mentioned in Section 1.

At its simplest level, a network is a computerized representation of the street system. As such, it can be analyzed by the computer to study the effects of certain variables, to plan changes in the existing street system, or to forecast new patterns if the system is upgraded or modified. The street network is comprised of street segments that are represented in the computer model as links, and intersections that are represented as nodes.

Trip Generation

After the land-use data is attributed to each TAZ, the number of trips generated by each zone is calculated. This procedure, called trip generation, is a compilation of several mathematical formulas that determine the number of trips produced and attracted to each TAZ.

The Transportation Research Board (TRB), in National Cooperative Highway Research Program (NCHRP) Report 187, describes a methodology for trip generation that includes the following trip purposes:

- Home-Based Work (HBW) trips
- Home-Based Non-Work (HBNW) trips
- Non-Home-Based (NHB) trips

Typically, a trip generation rate is provided for each trip type (home-based work, home-based other, non-home-based), or for each type of use (households, employment type). It is important that the model generate different trip productions and attractions for different trip purposes so that different travel characteristics can be accounted for in the gravity distribution portion of the model process.

Trip Distribution and Assignment

Trip distribution is the process of allocating trips between various zones of the network. The product of the distribution is a trip table that contains the number of trips between all zonal pairs. The process of distributing trips is accomplished using a gravity model formula. The gravity model is based on an analogy of Newton's Law of Universal Gravitation, where the gravitational force is directly proportional to the mass of both interacting objects, meaning more massive objects will attract each other with a greater gravitational force.

Input to the travel model is represented in terms of travel impedance between zones. The impedance is then used in the trip assignment process in which trips from each zone are assigned to the street network. The assignment is based on three factors: the logical shortest paths between origin and destination; the accumulation of vehicle trips on each link; and the computation of congestion reflected in vehicle speed.

The formula of the gravity model is adapted to each study-area by changes to exponents in the equation, which influence the distance function of the gravity model.

Network Calibration

Calibration is defined as the process used to adjust a model to replicate actual measured travel patterns and traffic volumes on the network. Calibration is completed through a series of model simulation runs. Land-use, trip generation rates, the gravity model exponents, and the computer network are reviewed following each simulation run.

The key to calibration is an assessment of acceptable error, and a determination of traffic count accuracy. Acceptable error is established per procedures outlined in NCHRP 255.

Baseline Traffic Conditions

The calibrated traffic model provides a baseline from which to examine future traffic impacts. Current traffic congestion levels can be indicated on the base year model. The level of current congestion can be compared with future year forecasts to determine whether the congestion is a result of existing conditions or projected growth in land use.

Level-of-service standards relate to measuring the performance of the transportation system and establishing criteria that determine whether a particular element of the system is or is not functioning within acceptable parameters. Determining what is acceptable should be based upon local policies.

Future Transportation Impacts

Future traffic conditions, *if no improvements are made to the existing infrastructure*, will be described in this portion of the report. Short and long-term design years for the study are 2015 and 2030, so any prediction must be evaluated with the full knowledge of assumptions used in the process and an inherent uncertainty of the future.

Information on the existing traffic conditions was also used to build a computer model of the traffic network in Kootenai County. The model has been calibrated to the existing conditions. After calibration, the predicted land-uses for 2015 and 2030 were applied to the model to obtain an image of the future traffic conditions as they are affected by these anticipated land-use changes.

The first computer simulation of future traffic conditions is used to reevaluate the roadways and intersections that were studied earlier. This first scenario is described as the “No-Build,” because it assumes there will be no improvements to the present roadway system, except those “committed” by the agencies in the near future.

Committed Road and Intersection Improvements

Each of the agencies involved in roadway improvements within Kootenai County provided a list of committed roadway improvements. These are improvements that are funded and expected to be complete by the agencies in the near future. The improvements were reviewed and included if they would make a difference in the capacity of roadway segments or intersections.

Looking at all of the proposed improvements, the following three general categories were reviewed for inclusion in the future model. All improvements complete or committed to be complete which added 1) additional lanes to a roadway segment; 2) lanes or a signal to an intersection; or 3) additional roadway width, are included in the model.

Using these criteria, ten pages of proposed and implemented projects were added to the future model. A complete spreadsheet of those projects is available by contacting KMPO.

Projected Future Transportation Impacts

Results of the traffic simulation model identify future congested roadways and intersections. The KCATT has initially defined congested roadways as those where volumes exceed 75% of capacity or Level-of-Service D. The capacity of each classified roadway type was previously established in Section 1 of this Plan. Intersections are evaluated for potential congestion when they reach 75% of entering capacity. This does not necessarily mean the intersections are congested. It is a forecast of potential problems, and they should be evaluated for signalization or geometric improvements in accordance with the *Manual of Uniform Traffic Control Devices* (MUTCD), the American Association of State Highway and Transportation Officials (AASHTO), and Highway Capacity Manual (HCM).

While it is unlikely that “no” roadway improvements will be made to support future growth, the ‘No Build scenario’ allows for a direct comparison of the impacts of future growth on the “current” street system. Roadways and intersections projected to be congested in Year 2015 and Year 2030 are presented in Figures 3.6 and 3.7, et al.

