Step 2 Analyze Existing and Future Conditions

Overview

The second step in undertaking a corridor management study is to research, document and analyze existing and expected future conditions, issues, and needs in the corridor. This step will provide a foundation for identifying, evaluating, and selecting corridor management and improvement strategies.

Research and Document Existing and Future Conditions – Major Activities

- Collect information on existing conditions;
- Analyze future conditions and performance; and
- Present findings to stakeholders.

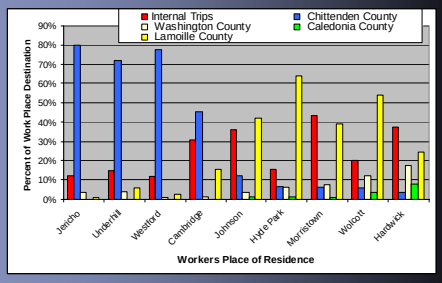
Collect Information on Existing Conditions

Weigh the costs of collecting data against its value.

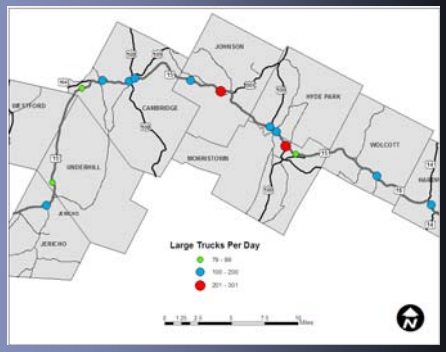
Data collection can be one of the most costly elements of a corridor study. It is important to tailor the data collection activities to the concerns expressed by stakeholders, and to those identified in the statement of study goals. Wherever possible, already existing data should be used. Some new data collection may be required, but the costs of obtaining this data should be carefully weighed against the value that this information will provide.

The data gathering effort should answer the following questions:

- What types of travel is the corridor now serving?
  - Travel composition: local, regional, interregional, or a mixture?
  - Trip purposes: commuter, recreational, other?
  - Traffic volumes, including both passenger and truck/freight movement.
- What transportation facilities and options now exist, what roles are they playing in the corridor and how are they performing?
  - Highways/roadways: functionality, capacity, safety, speed, access management category (if designated), and current spacing of access points;
  - Intersections/interchanges: capacity, traffic control in place;
  - Bicycle and pedestrian facilities;
  - Transit service (fixed route and paratransit);
  - Airports; and
  - Parallel rail facilities.



Source: Resource Systems Group, Inc.



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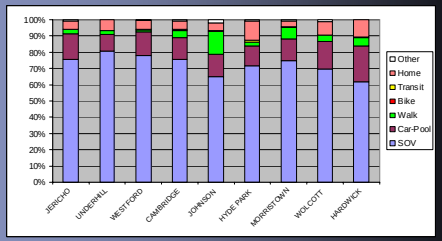


Source: Resource Systems Group, Inc.

- Where and when are transportation problems occurring?
  - Congestion/bottlenecks (data collection may need to be targeted to certain times of the day or seasons);
  - Operational issues (e.g., signal timing);
  - Traffic safety (accident rates, enforcement issues, identified hazards);
  - Railroad crossings; and
  - Vehicle/pedestrian conflicts.
- What characteristics of the corridor influence the range of solutions that could be considered?
  - Natural environment (e.g., topography, wetlands);
  - Built environment (e.g., location of buildings in relation to the right-of-way);
  - Land use and ownership; and
  - Environmental justice issues.
- What are possible and likely future development patterns that will affect transportation demand in the corridor?
  - Current, and allowable land uses in the corridor study area;
  - Permitted developments; and
  - Growth trends.

Describe the roles and functions of the transportation corridor.

Recommended specific types of information to be considered for any corridor study are presented below. Information on state highway characteristics can be obtained from the VTrans route log system. Appendix A provides information about this and a variety of other data sources. While the primary data collection focus should be on the roadway corridor being studied, it also may be desirable to collect and map data such as functional classification, ownership, and traffic volumes for other major roads in the study area, especially those that serve as parallel or relief routes.

While much of the information will be quantitative (e.g., traffic volumes, crash rates), some information will be qualitative or descriptive in nature. Examples of qualitative information include roadside aesthetics and the historic character of communities served by the corridor. Information will typically include or be presented as a combination of maps, narrative text, tables, and graphs. Aerial photographs also can be a very effective way to present information on the corridor. Information should include relevant historical information (e.g., 10-year population or traffic trends) in addition to a "current year" snapshot.

The information assembled and collected should be used to describe the primary roles and functions of the transportation corridor (e.g., local travel, interregional travel, truck travel, tourism, bicycle touring route). The roles and functions of the corridor also can be determined based on discussions with stakeholders and public input. Key issues should continue to be addressed in the study process, even if quantitative data are not available to document these issues (e.g., pedestrian and bicycle travel).

Minimum Data Requirements
Transportation Supply, Demand, and Performance

- Maps showing location of transportation facilities in the corridor, including major intersections or crossings;
- Average Annual Daily Traffic (AADT) on roadway segments of the corridor being studied, including historical (trend) data from the past 10 years if available;
- Volume and percentage of truck traffic;
- Characterization of freight movements in the corridor (e.g., types of commodities, tonnage if available);
- Turning movement volumes at major intersections (if available);
- Crash data – Locations of crashes, total number of crashes by severity (fatality, injury, property damage), and information on crash causes (to the extent available);
- Posted speed limits by roadway segment;
- Roadway functional class, ownership, and route designations (e.g., National Highway System, truck route, scenic byway);
- Roadway access control and existing access management classifications by segment;
- Roadway geometry by segment (number and width of lanes, shoulder widths);
- State Highway System sufficiency ratings;
- Type of intersection controls at major intersections (signalized, four-way stop, two-way stop, roundabout) and presence of turning lanes;
- Locations where sidewalks or parallel pathways exist;
- Locations of marked or signalized pedestrian crossings;
- Locations of railroads and railroad crossings;
- Public transportation services provided; and
- Locations of intermodal facilities (park-and-ride lots, rail terminals, airports, bus and train stations, ports) and description of size and/or services provided.

Additional Data from Analysis

Based on the above primary data items, analysis is required to produce the following measures of transportation system function and performance:

- Level of service*, volume-to-capacity ratios, and/or delay at major intersections;
- Level of service* and/or volume-to-capacity ratio along corridor roadway segments; and
- Crash rates (number of crashes per 100 million VMT) for intersections and roadway segments, and comparison to “critical” crash rates to identify high-accident locations.

*Level of service is a qualitative measure of traffic flow conditions, and is measured on a scale from A to F. Level of Service “A” represents free-flow traffic, “F” represents highly congested, stop-and-go conditions.

Minimum Data Requirements
Land Use, Socioeconomic, and Environmental

- Jurisdictional boundaries;
- Existing land use in the corridor study area (e.g., land use and zoning maps as available; allowable uses and densities; locations of buildings, orthophotographs);
- Existing policies regarding development and inventory of town plans, zoning, and subdivision regulations;
- Most recently available population, household, and employment estimates by town (including 10- or 20-year history/trends);
- Land use policy areas (designated growth centers, downtowns, historic districts);
- Key environmental features (rivers and streams, wetlands, farmland, conservation lands);
- Locations of major trip generators (e.g., ski resort, industrial park or plant), along with a description of size and demand characteristics;
- Identification of existing development patterns along the roadway corridor (rural, urban/village, transition);
- Description of the character of development along the roadway corridor (patterns; visual and aesthetic qualities; historic, cultural, and natural qualities); and
- Description of roadway terrain (flat, rolling, mountainous).

Analyze Future Conditions and Performance

The purpose of this task is to assess how land use and transportation conditions might be expected to change in the future, if additional corridor management or improvement strategies are not implemented. This work will help to develop a vision for the corridor (as discussed below in Step 3). To meet the long-term objectives of corridor planning, conditions should be evaluated over a 20-year time horizon. Key factors influencing these changes include the amount and nature of growth in population, employment, and special generators within the corridor; the characteristics of trips generated by this development; growth in background traffic levels (i.e., through traffic passing through the corridor); and any currently programmed transportation management or improvement projects.

Recognize uncertainty in future conditions.

Given the considerable uncertainty inherent in forecasting both future land use changes and traffic growth, it is recommended that "high" and "low" growth forecasts be developed and evaluated, rather than simply relying on a single forecast of future conditions. Evaluating a range of potential future conditions will be very helpful for development of strategies. For example, some strategies like signal retiming might be beneficial under both the "high" and "low" forecasts and therefore should be pursued regardless of conditions. On the other hand, other strategies like intersection redesign may become warranted only if "high" growth forecasts are realized. In such cases, the corridor study should define performance thresholds that trigger more detailed evaluation and/or implementation of the strategy. (See Step 4 for a discussion of thresholds and triggers.)

Appendix B provides a list of some available methods for forecasting future conditions, along with their applicability, advantages, disadvantages, and examples of their application in Vermont and other areas. Appendix A lists data sources that can be used in conjunction with these forecasting methods.

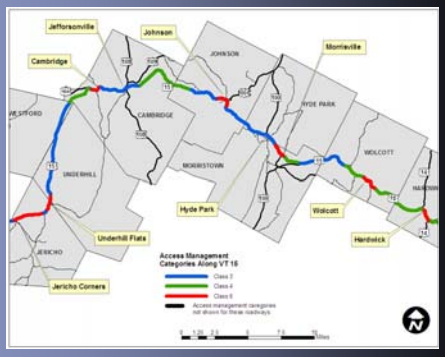
Future Conditions Data

At a minimum, the following data on future conditions should be evaluated:

- Twenty-year growth in corridor study area population, households, and employment;
- Land use and development patterns along the roadway in particular, as well as throughout the corridor study area;
- Future traffic volumes;
- Performance (level of service, volume-to-capacity ratios, delay, and/or queuing) at major intersections; and
- Performance (level of service, volume-to-capacity ratios, and/or travel speeds) along corridor roadway segments or for the corridor as a whole.

Supplemental data items that may be helpful include:

- Projected future truck volumes, especially if a truck route;
- Projected corridor travel times;
- Projected growth in visitor trip generation; and
- Projected changes in crash rates and total crashes.



Source: Resource Systems Group, Inc.

Present Findings to Stakeholders

This final task of Step 2 pulls together all of the information gathered so far, providing a resource base for identification of strategies.

The existing and future conditions and needs analysis should be documented in an interim report, including issues identified, methods used, and findings. Once the analysis and documentation of existing and future conditions is completed, the findings should be presented to corridor stakeholders and to the public for comment and validation. This second round of outreach will help ensure that key issues are not overlooked, and also will inform people on the findings of the existing and future conditions analysis.

After obtaining feedback from stakeholders and the public, the technical committee may consider revisions to the report as needed.

Have stakeholders and the public validate findings.