3. Process overview

To determine the optimal locations for a statewide network of park and ride facilities, a data-driven analysis was developed by Iowa DOT staff. The primary assumption behind this analysis is that the demand for park and ride facilities will increase as the percent of the workforce leaving their place of residence for work increases. For the purposes of this plan, place of residence and place of employment were analyzed at the county level. This was done primarily due to data availability, but this approach also compliments the rural nature of the state of Iowa and its commuting patterns.

3.1 Existing inventory

Before candidate locations could be identified, the existing inventory of park and ride locations needed to be confirmed and updated. For this process, the Iowa DOT's Office of Systems Planning had discussions with Iowa DOT district staff to confirm the existing state-owned inventory of locations and identify other county-owned locations within their respective Iowa DOT districts. From this process, an inventory of 26 state-owned locations and 12 county-owned locations was compiled and confirmed. A table listing the locations is shown below.

Table 3.1: Existing state-owned inventory

County	Location
Benton	U.S. 30/U.S. 218 (NW quadrant)
Boone	U.S. 30/S Story St (SE quadrant)
Buchanan	U.S. 20/Iowa 187
Cass	I-80/Co Rd N28 (NE quadrant)
Chickasaw	U.S. 63/U.S. 18/Iowa 346 (SE quadrant)
Crawford	U.S. 59/Iowa 141 (SE quadrant)
Dallas	I-80/U.S. 169 (NW quadrant)
Guthrie	Iowa 4/Iowa 141
Iowa	U.S. 6/Co Rd V77
Iowa	Iowa 21/Iowa 212

Jasper	U.S. 65/Iowa 117
Lee	U.S. 218/Co Rd J40 (NW quadrant)
Lee	U.S. 218/Iowa 16
Mahaska	Iowa 163/Eaton Ave (NW quadrant)
Marion	Iowa 5/Co Rd G71
Marion	Iowa 5/Iowa 92/Co Rd S45 (SE quadrant)
Monona	Iowa 37/290th St (NW quadrant)
Osceola	Iowa 9/Northwest Blvd (SE quadrant)
Poweshiek	Iowa 146/Co Rd F57
Poweshiek	Iowa 21/Iowa 85/Co Rd F52 (SE quadrant)
Shelby	U.S. 59/Iowa 37 (NW quadrant)
Sioux	U.S. 75/Iowa 10
Story	U.S. 69/Iowa 210 (SE quadrant)
Tama	U.S. 30/Iowa 21 (SW quadrant)
Union	U.S. 34/Quail Ave (East of Afton)
Van Buren	Iowa 1/Iowa 16

Source: Iowa DOT

Table 3.2: Existing county-owned inventory

County	Location
Benton	U.S. 30/Co Rd V40
Bremer	U.S. 63/Co Rd C33 (NW quadrant)
Clarke	I-35/Co Rd R35 (SW quadrant)
Dallas	Co Rd F65/El Paso Ave/Old U.S. 6 (NW quadrant)
Dallas	Iowa 44/Co Rd P58 (NW quadrant)
Dallas	I-80/Co Rd P57 (NE quadrant)

Johnson	Iowa 1/Co Rd F62 (SE quadrant)
Mitchell	Iowa 9/Co Rd T26 (Foothill Ave)
Pocahontas	Iowa 3/Co Rd N65 (SE quadrant)
Sioux	U.S. 18/Co Rd K42/Garfield Ave
Washington	Iowa 1/Co Rd G36
Washington	U.S. 218/Co Rd G36 (SW quadrant)

Source: Iowa DOT

Once this process had been completed, the Office of Systems Planning could then determine a methodology for identifying candidate park and ride locations. It should be noted that the existing inventory of state-owned locations did not factor into the overall analysis until the end, during the gap analysis explained in Chapter 5. The intent behind the overall analysis was to identify locations based on data indicating demand and need as opposed to identifying additional locations based on the existing system, due to the provisional nature of development for park and ride locations prior to this plan. Therefore, to achieve unbiased results, the initial analysis was approached and locations were identified without consideration of the existing system.

3.2 Initial conceptualization

In analyzing potential demand, counties that had the greatest interaction in terms of commuting activity had to be identified. That is, which county pairs have the highest residence-to-workplace passenger flows traveling between them? To answer this question, the following data sources were examined.

- 2000 Census residence county to workplace county flows
- 2006-2010 American Community Survey (ACS) county-to-county commuting flows

Each of these data sources has strengths and weaknesses. The 2000 census data is the most complete and accurate data set – the last data of this type to be collected through the old census long form – yet it is fairly dated. The ACS data is the opposite in that it does not provide a single year snapshot but is much more current. The solution was to examine both of these data sources in combination.

For the sake of this initial examination, it was recognized that exact commuter volumes may not be as important as the relative commuter volumes when comparing different county pairs against each other. Therefore, while the absolute number of commuters has undoubtedly changed since the 2000 census, it was anticipated that a ranking of those county pairs with the greatest interactions would not have changed significantly since that time.

This assumption held true when the 2000 census data was compared to the 2010 ACS data. When ranking the top 20 county pairs by residence-to-workplace passenger flows using both of these data sources, the average deviation in ranking between the two lists was just over one. With this knowledge, it was decided that the ACS data was reliable as well as current, and thus would be the basis for the analysis going forward.

3.3 Analysis structure

County pair and origin-destination identification

Using the ACS data that was discussed in the previous section, a ranking of county pairs was developed based on the level of commuting interaction between those counties. This ranking would eventually be used to constrain the analysis to a reasonable number of locations, and would also be the basis for the prioritization discussed later in this section. The next step was to identify an origin and destination for each county pair.

For the sake of this initial analysis, the origin was defined as the geographic center of the most significant cluster of population in the residence county, and the destination was defined as the geographic center of the most significant cluster of employment in the workplace county. While destination identification was fairly straightforward, two scenarios existed that presented challenges in identifying a small number of residence county origins. This included residence counties with dual population centers or residence counties with no obvious population cluster at all. In these rare cases, a close examination of the passenger traffic data and local agency input was critical.

Commuter route identification

After the origin and destination had been identified, the next step was to identify the most heavily traveled commuter route between each county pair. In many cases, the primary commuter route was self-evident, particularly in areas where a single major highway connects obvious population and employment centers. In most of the remaining cases, the most heavily-traveled commuter route could be identified by examining passenger traffic data along the possible connecting routes. Typically, there was an obvious confluence of traffic onto the preferred route within the residence county.

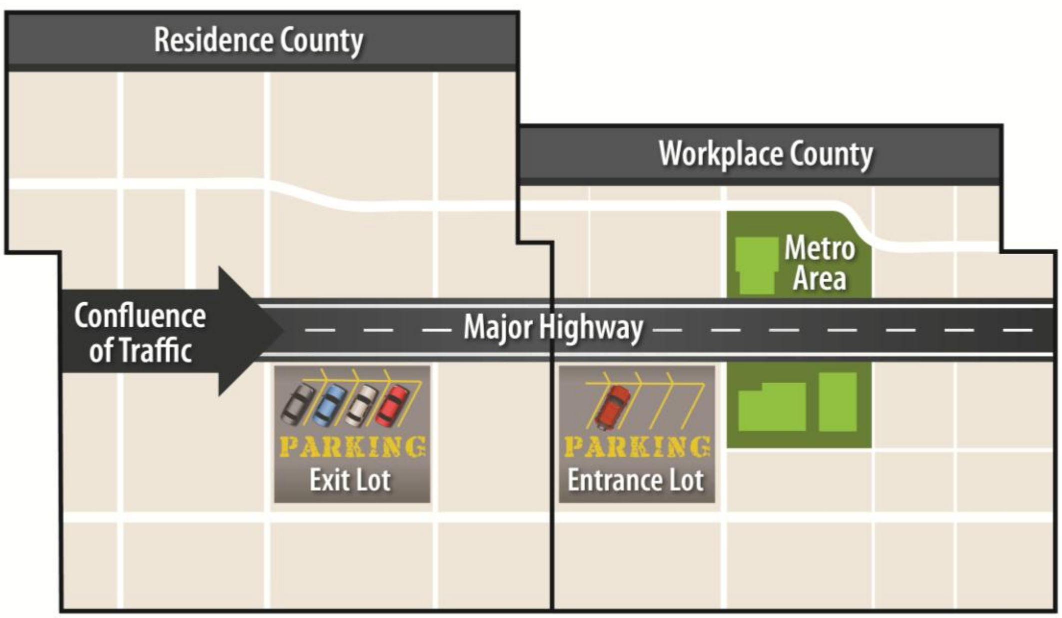
In a few rare instances, local authorities such as Iowa DOT district offices were consulted in order to identify the appropriate route(s). This was typically in situations that involved comparable parallel commuter routes or multiple river crossings in interstate areas.

Candidate location identification

Once the origin, destination, and primary commuter route were identified for each county pair, the analysis could then shift to identifying possible candidate locations for park and ride facilities. In doing so, the nature of commuting in Iowa first had to be considered. Since Iowa does not have large, expansive metropolitan areas like Minneapolis or Chicago, commuters are typically utilizing park and ride facilities or similar parking and transfer locations as they exit their place of residence, before they have traveled significantly toward their workplace. These types of facilities are often referred to as exit lots.

In areas like Minneapolis or Chicago, commuters often utilize the opposite, which are entrance lots located at the outskirts of the destination city. These lots, which often involve a transfer to a public transit service, are intended to assist the commuter in avoiding significant traffic congestion or a lack of parking near their workplace. This is a relative nonfactor in Iowa. With this in mind, initial candidate locations were identified along the primary commuter routes near the most significant confluence of traffic within the county of residence (see Figure 3.1).

Figure 3.1: “Exit” and “entrance” lots



Source: Iowa DOT

Prioritization

Initially, it was assumed that priority would be given to those locations that have the potential to achieve the largest reduction in commuter-vehicle volume. One limitation with this approach is that it does not acknowledge commuting distance and the increased inefficiencies and externalities associated with longer commutes. Also, a prioritization based solely on a reduction in volume would likely be biased toward those counties in and around metropolitan areas. To address this, the Office of Systems Planning investigated the potential of factoring commute distance into the analysis. The commute distance was to be calculated as the distance along the previously identified commuter route between each origin-destination pair.

With this in mind, the analysis was to be conducted with the goal of developing two separate priority lists intended to achieve two different but important goals:

1. **Commuter-vehicle volume reduction**: Priority is given to those corridors that have the potential to achieve the largest reduction in commuter-vehicle volume.
2. **Commuter-mileage reduction**: Priority is given to those corridors that have the potential to achieve the largest reduction in commuter-miles, calculated by multiplying the county-to-county passenger flows by the distance between the origin and destination in miles.

The following example illustrates how two different county pairs could be prioritized differently when analyzed within the context of these two goals.

5,000 residents of County A commute to County B for work. The distance between the identified origin-destination for this pair of counties is 20 miles.

3,000 residents of County X commute to County Y for work. The distance between the identified origin-destination for this pair of counties is 40 miles.

Potential commuter-vehicle volume reduction:

County A to County B (5,000 commuters)

County X to County Y (3,000 commuters)

Potential commuter-mileage reduction:

County X to County Y (3,000 commuters x 40 miles = 120,000 commuter-miles)

County A to County B (5,000 commuters x 20 miles = 100,000 commuter-miles)

While a prioritization process that accounts for both commuter-vehicle volume reduction and commuter-mileage reduction is preferable, the data sources and methods currently available cannot accommodate a commuter-mileage reduction analysis at this time. However, as data sources and analysis methods develop over time, this issue may be revisited and the plan could be updated to include this second prioritization. Therefore, to place the candidate locations more in line with the goals and intent behind the PRSP, the commuter-vehicle volume reduction process was utilized to identify locations that would serve the largest share of commuters on the roadway.

3.4 Input

The analysis outlined in this chapter was applied statewide. Once a draft network was identified by Iowa DOT central office staff, these candidate locations were vetted through an input process that included a review by the following.

- Iowa DOT's district staff
- MPO and RPA planning staff
- Public transit providers
- The public (e.g., comment solicitation, online survey, public meetings)

This external review was particularly useful in obtaining local knowledge and input. Local transportation professionals and residents have an intimate knowledge of their area's unique commuter behavior, which occasionally involves interactions that cannot be easily understood through an examination of census or traffic data. Ultimately, this local knowledge was used to either confirm or modify the candidate locations identified through the initial analysis. A summary of stakeholder input, which includes Iowa DOT districts, MPOs, RPAs, and public transit providers, is contained in Appendix 1.

In addition to stakeholder input, public input is a primary component of the planning process. For this plan the Iowa DOT presented the draft plan for public comment from September 2, 2014 through October 16, 2014, for a total of 45 days. To gather input the Iowa DOT solicited comments through an online survey and via email, and held seven public input meetings at locations around the state. Through the survey and comments submitted, social media outreach, and project webpage, the Iowa DOT reached at least 8,000 individuals, and received direct input from approximately 280 members of the public across the state. For more detailed information regarding public input that was received, please refer to Appendix 2.

Despite 80.2 percent of respondents having indicated that they do not currently carpool or rideshare, 92.5 percent of respondents were still supportive of the state identifying opportunities for park and ride facilities in Iowa.

Overall, feedback on the plan and candidate locations from stakeholders and the public was very positive. One of the most compelling forms of support comes from the online survey. Despite 80.2 percent of respondents having indicated that they do not currently carpool or rideshare, 92.5 percent of respondents were still supportive of the state identifying opportunities for park and ride facilities in Iowa. Additionally, 52 percent of respondents indicated that if a designated car pool location was available and convenient, they would use one and approximately the same number (51 percent) indicated that those in their community would as well. One can infer from this that there is a public desire for facilities to support ridesharing, and adding park and ride facilities may provide the opportunities for more commuters to make that choice.

However, having a park and ride facility available is not the only factor in an individual's decision to rideshare, as was indicated in the survey results. When those that do not currently rideshare were asked for the reasons why, work schedule, personal schedule, access to a vehicle during the day, and not finding anyone to carpool with were among the top reasons cited. These survey results support the assumption that facilitating an effective rideshare system requires a comprehensive approach to travel demand management. Ridesharing programs, transit systems, employer incentives, and park and ride facilities are all components of a system that works best when they are coordinated together. For these reasons, and those cited earlier in Chapter 1, the Office of Systems Planning and Office of Public Transit will be working together to implement this plan and the statewide ridesharing program in a coordinated fashion.

Input was also received on candidate locations via stakeholder discussions and through the online survey and public meetings. Although some of the candidate locations were modified slightly based upon input received through this process, most modifications were minor and resulted from input related to items such as ease of access for locations, proximity of locations to the local commuter base, and proximity of locations to local transit service. The following chapters will present the network of candidate park and ride locations developed through this process, compare them to the existing system to identify gaps, and then prioritize those gaps based on the commuter-vehicle volume reduction goal mentioned previously. As these chapters will demonstrate, the strength of this data-driven analysis is in its objectivity and impartiality.