Gateway Cities Council of Governments ITS Implementation Plan for Goods Movements
Public Surveys Parts 1 and 2

final report

prepared for
Gateway Cities Council of Governments

prepared by
Cambridge Systematics, Inc.

May 2012
Gateway Cities Council of Governments ITS Implementation Plan for Goods Movements

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Executive Summary

The Gateway Cities Council of Governments (GCCOG) is evaluating ways to use transportation technology to make goods movement more efficient in the areas around the Ports of Los Angeles and Long Beach. As a result, one of the outcomes of this effort will be to reduce congestion and reduce the time it takes trucks to move in and out of the Ports on to other logistics industries. The study area was defined as the travel region within a 15-mile radius of the Ports.

The results of the study effort will help shape the potential system alternatives for a freight-focused traveler-information system that will be developed in a subsequent phase of the study.

Data collection was divided into two phases. In the first phase, a telephone survey was conducted with freight firms that travel within the study area. Respondents ranged from dispatchers to CEOs. A telephone survey was conducted between January 25 and February 15, 2012, with firms that have trucks that travel within the study area. Respondents represented a range of positions from executives to dispatchers, with the interview being conducted with the person most knowledgeable about the company’s fleet management practices.

The overall study findings for the dispatcher/manager survey have a margin of error of ± 6.5 percent at a 95-percent confidence level.

In the second phase of the study, intercept interviews were conducted with drivers that travel in the study area. An intercept survey was conducted with 405 drivers between March 14 and 28, 2012, at three locations within the port area with the survey distribution almost equally divided between Port of Los Angeles and Port of Long Beach drivers. Drivers participated in a self-administered survey to collect information on how they use a variety of information sources and technologies to plan and manage their trips. Respondents were asked their opinions of the usefulness of selected information sources as they pertained to trip planning and management.

The study has a margin of error of ± 4.9 percent at a 95-percent confidence level.

**Key Findings of the Dispatcher Manager Survey**

- Almost two-thirds of all truck trips (62 percent) made by firms that travel in the study area are between 11 and 50 miles long. Eleven percent of the firms report average trip lengths of more than 200 miles, while 10 percent of trips are 10 miles or less.
• The top three freeways used for port access/egress are the I-710 (95 percent), I-110 (68 percent), and SR 47/103/Terminal Island Freeway (59 percent). Firms with an average trip distance of 10 miles or less are more likely to use SR 57/103 as this is only a local freeway. Trips that exceed 10 miles use more of the freeway network and are more likely to also include travel on the I-405, I-605, and SR 91.

• Alameda Street/Harry Bridges Boulevard (60 percent) and Anaheim Street (40 percent) are the most commonly used surface streets for truck travel in or out of the Port. As average trip distance increases, use of surface streets decreases. When the average trip distance is less than 50 miles, 80 percent of the trips involve a surface street, compared to 55 percent of trucks trips longer than 50 miles.

• More than three-quarters (77 percent) of companies use a routing system that is either manual or a combination of a manual system and an automated system. Twenty-one percent of the firms indicate that routing is handled by the drivers, and this is more prevalent among firms with 25 or more trucks, where 29 percent say drivers handle routing, compared to 18 percent for firms with less than 25 trucks.

• Thirty-eight percent of the companies say they rely, at least in part, on Automatic Vehicle Location (AVL) systems or Global Positioning Systems (GPS) or technologies for fleet management. More than one-half of the firms (54 percent) with a fleet size greater than 25 use such a system, compared to just under one-third (32 percent) of firms with smaller fleet sizes that employ AVL/GPS as a fleet management tool.

• Information sources with the highest usage were those that were perceived to have the most current information as it related directly to the trip and the Ports. E-Modal scored the highest (84 percent), followed by driver calls (80 percent) and direct communication with the Ports (74 percent) via either web sites or calls to port personnel. Traveler information web sites and electronic freeway signs also are important sources of information being used by 62 percent and 55 percent of all firms, respectively.

• Trucking companies rely on these information sources to make daily operating decisions. Eighty-four percent of all firms use information from sources, such as E-Modal blasts, traveler information web sites and driver calls to make operational changes that change pick-up or delivery times (70 percent), reroute trucks either before departure (70 percent) or while on route (68%), or to change driver assignments (54 percent).

• Information sources that have a direct impact on time have the highest overall value to respondents. On a five-point scale where 1 is least valuable and 5 is most valuable, knowledge about queue lengths at the Port scored the highest at 4.03. Real-time route information between origin and destinations also has a high value to respondents, with a mean rating of 3.83. Travel times along freeway segments and information about the location of bottlenecks
with travel time through the obstructed area received similar ratings at 3.74 and 3.70, respectively.

**Key Findings of the Truck Driver Survey**

- Twentieth century technology still dominates as the sources of information for drivers visiting the Ports, with CB radio and broadcast radio being by far the most frequently used technology.
- The first finding is echoed in the sources of information that they use, with only other drivers (68 percent) and radio/TV (32 percent) being cited by more than 5 percent of drivers.
- E-Modal, web sites, and closed-circuit television (CCTV) are each currently used by less than five percent of drivers.
- Only one-fifth of drivers use an in-vehicle GPS system. Garmin accounts for 64 percent of all systems mentioned, and TomTom is a distant second at 11 percent.
- Ninety percent of drivers use information to change routes as appropriate, either in-route (47 percent) or before leaving (43 percent). However, only 11 percent each either use it to change pick-up/delivery times, or accept or decline assignments. This suggests that there is limited flexibility in driver’s ability to determine when they are on the road. Truckers only control the route they use to get to the Ports.
- Knowing the fastest routes, the location and delay time associated with bottlenecks and times to travel different freeway segments were all assessed as top value information. Cameras at the Ports, on freeways, and on major surface streets were perceived to be of less value.
- The key improvements desired by drivers are better freeway traffic information and information that is easier to use, more accurate, and delivered faster. Each of these improvements was rated as useful or very useful by at least 90 percent of drivers, suggesting that there is a strong desire to see better delivery of accurate and actionable information.
- The top two requests for improved information mentioned on an open-ended basis were for more information about port conditions and for more information about traffic conditions. Accident reporting information also was requested at about one-half the level of the previous two items.
- Sixty percent of the surveys were conducted in Spanish. This indicates that any information systems should be bilingual to maximize their value.
GENERAL CONCLUSIONS

- The two surveys in aggregate captured a comprehensive picture of traveler information sources currently used by the trucking industry in the Port and Gateway Cities area, as well as desired improvements. Both surveys obtained a good distribution of both long-haul and short-haul operators. Both dispatchers/managers and truck drivers indicated that they use traffic information for operational purposes. In the case of managers and dispatchers, information is used primarily to modify pick-up and delivery schedules, while drivers are more focused on their choice of route to and from the Port. While both groups expressed an interest in more information about conditions and delays within the Port area, drivers noted a strong need for real-time information on freeway conditions and delays.

- Both dispatchers/managers and drivers currently use relatively “low tech” methods of obtaining up-to-date traffic information. Both groups rely heavily on verbal reports from the field, delivered by drivers. Drivers network through mobile phones to obtain information on conditions within the Port and on area roadways. Dispatchers make heavy use of the E-Modal system and frequent use of traffic web sites. Drivers also rely heavily on radio and television reports. Dynamic Message Signs are heavily used by drivers while on route, although comments indicated that information related to delays is often received too late to be of use.

- Through rating of various traveler information improvements, both groups indicated a need for more timely information on freeway conditions and delays incurred within the Port area. Improved information on arterial streets received lower ratings, but was still of significant interest to both groups. While both groups make use of existing sources, there is clearly a need for traveler information that is targeted to the needs of freight traffic in and around the Port area. Specific information is desired on freeways, arterials, and Port area roadways, as well as on delays within the terminals. Information should be delivered through a variety of methods that serve the needs of each group. Dispatchers/managers are better able to take advantage of web sites, for example, while drivers need delivery methods that do not cause distraction. While use of navigation and smart phones to deliver real-time traffic information is limited at the moment, it can be expected to increase in the future and needs to be considered as intelligent transportation systems (ITS) concepts for the Gateway Cities area are developed.
1.0 Introduction

The Gateway Cities Council of Governments (GCCOG) and the Los Angeles County Metropolitan Transportation Authority (MTA) are evaluating ways to use transportation technology to make goods movement more efficient in the Gateway Cities and in and around the Ports. Specifically, the study is designed to understand whether or not the freight community can use, understand, and value traveler information and how the MTA and GCCOG can both address current and future user needs, and further enhance traveler information services in the region for the freight community.

Results of the study effort will help shape the potential system alternatives for a freight-focused traveler-information system that will be developed in a subsequent phase of the study.

Two distinct surveys were conducted as part of this effort: one of dispatchers and managers that represent trucking companies serving the port area, and other of truck drivers who work in the area. The dispatcher/manager survey is summarized in Part 1 of this report, while the truck driver survey is summarized in Part 2. Additional information is provided in appendices, including the dispatcher/manager survey (Appendix A), the truck driver survey (Appendix B), open-ended comments from the dispatcher/manager survey (Appendix C) and from the truck driver survey (Appendix D), and the full cross-tabs from the dispatcher/manager survey (Appendix E) and the truck driver survey (Appendix F).
2.0 Part 1 – Dispatcher/Manager Survey

To better understand truck traveler information needs and uses, a telephone survey was conducted with firms that traveled within the study area and respondents ranged from dispatchers to CEOs. Participants were selected because they were identified as the most knowledgeable individual at the firm in regards to the company’s fleet management practices.

Respondents were asked a series of questions by executive interviewers to obtain a general profile of trip purpose, as well as the routes used for these trips and the ways those routes are selected. See Appendix A for the form and questions that were used for the survey. Respondents also were asked to detail how much, if at all, their firms used a variety of information sources and technologies to plan and manage these trips. Finally, respondents were asked their opinions of the usefulness of selected information sources as they pertained to trip planning and management. The average interview time was 20 minutes and 40 seconds.

The overall study findings have a margin of error of ± 6.5 percent at a 95-percent confidence level.

2.1 METHODOLOGY

The respondent pool consisted of all Port of Los Angeles Clean Truck Program concessionaires. A list of companies (838) was identified for participation. All potential respondents were contacted by phone and invited to participate. Multiple attempts were made to reach each potential respondent, which resulted in 235 companies participating. The resulting participation rate was 72 percent, and a complete breakdown of the call disposition is shown below in Table 2.1.

Once a firm was reached, the person most knowledgeable about the company’s fleet management practices was identified and interviewed.

Survey Design

The survey instrument (see Appendix A) was designed to elicit the responses that provided insight to support survey objectives. Input was received from the entire project management team prior to finalization. Prior to the pretest, the survey was programmed into a CATI (Computer-Aided Telephone Interviewing) system, which enabled handling of complex skip and rotation patterns in order to minimize survey bias. The survey consisted of 65 questions and included both open-ended and close-ended responses. A copy of the survey instrument is included in Appendix A.
Table 2.1  Participation Rate

<table>
<thead>
<tr>
<th>List Size</th>
<th>838</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonworking numbers(^a)</td>
<td>169</td>
</tr>
<tr>
<td>Language barrier</td>
<td>8</td>
</tr>
<tr>
<td>Answering machines/busy(^b)</td>
<td>334</td>
</tr>
<tr>
<td>Net firms available</td>
<td>327</td>
</tr>
<tr>
<td>Refused</td>
<td>92</td>
</tr>
<tr>
<td>Participated</td>
<td>235</td>
</tr>
<tr>
<td>Resulting participation rate</td>
<td>72%</td>
</tr>
</tbody>
</table>

\(^a\) Disconnects, faxes, no longer in business.

\(^b\) Number never reached.

Pretest

Prior to conducting the survey, a pretest comprising executive interviews was conducted with 10 firms between January 3 and 9, 2012. The pretest was used to determine that all questions were phrased clearly and flowed in a logical pattern and that respondents understood the questions. Following the pretest, the survey was revised to improve user response and question clarity.

Survey Execution

Telephone interviews were conducted with 235 respondents between January 25 and February 15, 2012. Surveys were conducted on weekdays during regular business hours (8:00 a.m. to 5:00 p.m.). Respondents answered a series of questions administered by a surveyor following a CATI questionnaire. If desired, callbacks were made at a time of the respondent’s preference.

Interviewers were given extensive training on both the purpose of the project and the survey instrument.

2.2  TRIP DISTANCE AND CHARACTERISTICS

Trip Distance

\((Q5 \text{ to } Q12)\)

Almost two-thirds of all firms (62 percent) have average trip distances between 11 and 50 miles. Eleven percent of the firms report average trip lengths of more than 200 miles, while 17 percent of trips are between 51 and 200 miles. Ten percent of companies’ trips average 10 miles or less.
Figure 2.1  Trip Distance

Freeway Access

(Q10)

The top three freeways used for Port access/egress are the I-710, I-110, and SR 47/103. The most commonly used freeway for port access/egress is the I-710 with 95 percent of respondents traveling on the I-710 freeway in order to either enter or exit the port area. More than two-thirds (68 percent) of trucks use the I-110 during their trip, and 59 percent of the respondents use SR 47/103.
Freeways Used for Port Access/Egress

Figure 2.2  Freeways Used for Port Access/Egress

Freeway usage is consistent regardless of fleet or driver size, but shows variation when trip distance is considered. Firms with an average trip distance of 10 miles or less are more likely to use SR 57/103 as this is only a local freeway. When the average trip length is less than 10 miles, less than one-quarter of firms (21 percent) include travel on either the I-405, the I-605, or the SR 91. By comparison, firms with average trip lengths that exceed 11 miles use more of the freeway network and, while they are equally likely to use the freeways surrounding the Ports, these firms are much more likely to also travel on the I-405, the I-605, and the SR 91.

Surface Streets Use

(Q11 and Q12)

Seventy-three percent of firms use key surface streets in addition to major highways in order to enter or exit the port area. While a majority of firms uses these surface streets, their use declines as the average trip distance increases. When the average trip distance is less than 50 miles, 80 percent of trips involve a surface street. This compares to 55 percent of trucks trips greater than 50 miles.

Among the key local surface streets near the Ports used, Alameda Street/Harry Bridges Boulevard is the most commonly mentioned, with 60 percent of firms indicating their trucks travel on that road while getting in or out of the Port. Forty percent of companies also report using Anaheim Street.
Figure 2.3  Use of Key Surface Streets

As this is a multiple response question, combined percentages may exceed 100 percent.

Figure 2.4  Key Surface Streets Used\(^a\)

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\(^a\) As this is a multiple response question, combined percentages may exceed 100 percent.
2.3 ROUTE DECISION PROCESS

Automated versus Manual Dispatch Systems

(Q13 and Q15)

The most commonly cited dispatch practice is the use of a combination of manual and automated systems (40 percent). Only 3 percent of respondents use a completely automated process, while 37 percent rely completely on manual dispatching. Twenty-one percent of firms report that drivers make the routing decisions.

Figure 2.5 Trip Routing Systems

Larger firms are more likely to report that drivers make routing decisions. Twenty-seven percent of firms with 25 or more drivers indicate that drivers control routing. This compares to 18 percent for firms with less than 25 drivers. A similar relationship is seen (29 percent vs. 18 percent) when comparing the number of trucks in the fleet.

Control of routing by drivers is inversely related to trip distance. For firms that have an average trip distance of 0 to 10 miles, almost one-half (46 percent) say that drivers control routing. This drops to 26 percent for firms averaging 11 to 20 miles, and then drops to 14 percent for firms that average more than 20 miles.
Automated Dispatching Systems Used

One-quarter of the firms (26 percent) reported using an automated system that was proprietary. Trinium (12 percent) was the most frequently mentioned commercially available system, followed by Profit Tools (9 percent) and Sprint Nextel (7 percent). The remaining companies reported using different systems.

Figure 2.6  Automated Dispatching Systems Used

As this is a multiple response question, combined percentages may exceed 100 percent.

AVL and GPS Systems

Thirty-eight percent of the companies report they rely, at least in part, on AVL systems or GPS technologies for fleet management. Firms with a fleet size of 25 or more were more likely to use AVL/GPS tools than firms with a fleet size of less than 25, with more than one-half of the firms (54 percent) with a fleet size of 25 or more compared to just under one-third (32 percent) for firms with smaller fleet sizes stating they use AVL/GPS.

Among firms using AVL/GPS systems, Teletrac was the most frequently used, with 25 percent of firms having it installed on their fleets. Qualcomm (9 percent) was the second most common, followed by Sprint Nextel (8 percent), Fleetmatics (7 percent), and Garmin (7 percent).
Figure 2.7  Use of AVL/GPS Technology

Figure 2.8  AVL/GPS Technologies

As this is a multiple response question, combined percentages may exceed 100 percent.
2.4 **INFORMATION SOURCES AND USE**

(Q17 to Q40)

Information sources that showed the highest usage were those that were perceived to have the most current information as it related directly to the trip and the Ports. E-Modal scored the highest (84 percent), followed by driver calls (80 percent) and direct communication with the Ports via port web sites or calls to port personnel (74 percent).

**Figure 2.9 Information Sources Used**

![Chart showing information sources used by percentage]

**E-Modal**

(Q21)

Eighty-four percent of firms use the E-Modal system, making it the most frequently used information source in truck travel planning. This level of usage is similarly high in both small firms and larger firms. However, firms that travel
longer distances (more than 50 miles) are less likely to use E-Modal (71 percent) than are firms that make trips of less than 50 miles (89 percent).

**Direct Communications**

(Q37 to Q38)

Direct communication from the Ports, which includes both access to Port web sites and phone calls to the Port, is another frequently used source of information, with almost three-quarters (74 percent) of companies reporting that they rely on direct communications with the Ports for current information. Among those who utilize direct communications other than E-Modal, the most common ways are by visiting the Ports or individual terminals web sites (82 percent), followed by directly calling the terminals or Ports (78 percent).

**Driver Calls**

(Q17)

Eighty percent of respondents use driver calls as a means of gathering information for travel planning. Driver calls are more likely to be used at firms with larger fleets (85 percent) than at firms with fewer than 10 trucks (77 percent), and are most common at firms where routing decisions are made by drivers (94 percent) instead of a central dispatcher (77 percent).

**Traveler Web Sites**

(Q23 to Q24)

Sixty-two percent of firms use traveler information web sites. Among traveler web site users, Google is the most common at 64 percent, followed by MapQuest at 47 percent.

**Electronic Highway Signs**

(Q22)

Fifty-five percent of firms use information gathered from electronic highway signs. Highway signs are particularly used by firms where the drivers make the routing decisions. Eighty-six percent of these firms use electronic highway signs, compared to 57 percent of firms with a manual routing system and 39 percent of firms with a combination manual and automated routing system. This is not surprising considering that if the drivers are the ones making the routing decisions and changes, they would be likely to rely on more immediate information sources that can be easily accessed while on the road.
Smart Phones

(Q19)
The majority of trucking firms (51 percent) uses smart phones for travel planning. Smaller firms with fewer than 10 trucks (59 percent) are more likely to use smart phones than are firms with 10 or more trucks (45 percent).

Media Reports

(Q33 to Q40)
Media reports are used by one-third of firms, and this is fairly consistent across firms of different sizes. However, firms that do not use the E-Modal system are more likely to make use of media reports (59 percent) than firms that do (28 percent), possibly because these firms need to find different sources of information.

Construction Information

(Q29 and Q30)
Construction information is used in travel planning by 32 percent of firms. Firms with fleets of 25 or more (46 percent) are more likely to use this information than are smaller firms (27 percent). Of the information obtained, the highest percentages come from either the E-Modal system (45 percent) or Caltrans (30 percent).

Congestion Maps

(Q25 and Q26)
Thirty percent of firms use congestion maps in travel planning, and these maps are more likely to be used in larger firms with at least 25 trucks (37 percent) than in firms with smaller fleets (28 percent). Google is the most commonly-used congestion map system, with 66 percent of users saying that it is the map system they choose.

CCTV

(Q27 and Q28)
CCTV feeds have a lower usage rate (25 percent) in travel planning. These feeds are more likely to be used by firms with more trucks (34 percent) than in firms with smaller fleets (21 percent), probably due to the larger firms being more technically advanced. Eighty-four percent of respondents who use these feeds view cameras provided by the terminals and the Ports.
Sig-Alert

(Q20)

One-quarter of companies report using Sig-Alert in travel planning. Firms with a larger fleet (35 percent) are more likely to use Sig-Alert than are smaller firms (21 percent). In addition, companies whose trucks travel more than 50 miles (35 percent) are more likely to use Sig-Alert than firms with trucks that travel 50 miles or less (21 percent).

511

(Q18)

The least used form of information is calling 511. Only seven percent of firms call 511 in order to get travel planning information for their truck fleets.

Other Sources

(Q39 and Q40)

Of the 13 percent of respondents who referenced other sources for obtaining information, CB radios (33 percent) and e-mail/Internet (30 percent) topped the list.

Use of Information Sources for Making Operations Changes

Trucking companies rely heavily on these information sources to make daily operating decisions as seen in Figure 2.10.

Figure 2.10  Use Information for Operating Changes
Eighty-four percent of firms use information from such sources as E-Modal blasts, traveler information web sites, and driver calls in order to make operational changes.

Firms were specifically asked about four different types of operational changes that could be made based on the information sources discussed in the previous section. Of the firms that used these information sources, 83 percent change pick-up or delivery times, and 83 percent also use the information to reroute their trucks prior to departure. A slightly smaller percentage of firms, 81 percent, use this information to reroute trucks while the trucks are on the road. Finally, 64 percent of firms use this information to change driver assignments.

Figure 2.11 Use of Information for Operating Changes

<table>
<thead>
<tr>
<th>Change Type</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change Pick-up/Delivery</td>
<td>83%</td>
</tr>
<tr>
<td>Re-Route Before Departure</td>
<td>83%</td>
</tr>
<tr>
<td>Re-Route in Route</td>
<td>81%</td>
</tr>
<tr>
<td>Changes Assignments</td>
<td>64%</td>
</tr>
</tbody>
</table>

a As this is a multiple response question, combined percentages may exceed 100 percent.

Respondents were then asked if they used the information sources to make any other changes that affected operations. Ninety-three percent did not, while seven percent of firms use the information to make changes, such as determining a day’s work production or prioritizing which containers to pick up, or which terminals to visit first.

2.5 Gap Analysis

Companies were asked to identify gaps or deficiencies in the current network of information sources. Only 39 percent could identify any specific gaps or deficiencies.
Firms with routes determined by their drivers, however, were more likely than firms with other routing systems to identify gaps existing in traveler information. Fifty-three percent of firms with driver-routed trucks identified informational gaps, compared with 35 percent of firms that controlled routing in-house.

Of the firms that identified gaps or deficiencies, timeliness (63 percent) and accuracy of information (26 percent) were the most frequently cited.

Among those that indicate that the information they receive is not timely and is often out-of-date when it reaches them, many specifically mention the E-Modal system as being slow to update them, or slow to reflect current, real-time information.

Among the respondents that said that the information they receive is often not accurate, concerns range from incorrect information being sent out via E-Modal to incorrect information given out by the Ports, either in person or on their websites. Respondents also mentioned erroneous information regarding traffic conditions on Sig-Alert, as well as errors in television, radio, and on-line media in reporting on road and traffic problems.

Nine percent of respondents that identified a gap indicated that there needs to be more information for specific sections of the Port. Another seven percent said there are gaps in specific types of information; mainly the information they receive about operating conditions at the Ports, as well as traffic or road conditions. Two percent criticized either areas of inadequate geographic coverage or the inconsistency between information sources. One percent each
said there are gaps in freeway coverage, inadequate reporting at various times of day, or mentioned problems in the way information is displayed.

**Figure 2.13 Information Gaps/Deficiencies**

![Information Gaps/Deficiencies](image)

- **Timeliness**: 63%
- **Accuracy**: 26%
- **Port Area**: 9%
- **Info Types**: 7%
- **Source Inconsistency**: 2%
- **Geo. Coverage**: 2%
- **Display**: 1%
- **Time of Day**: 1%
- **Freeways**: 1%
- **Other**: 9%

*a As this is a multiple response question, combined percentages may exceed 100%

**Value of Information Sources**

*(Q55 to Q64)*

Respondents were asked to rate the value of nine additional information sources using a five-point scale, where 1 is least valuable and 5 is most valuable.

The ratings were divided into three tiers using the mean rating for each information source. The top tier was composed of sources, which received mean ratings greater than or equal to 3.70, the middle tier received mean ratings of 3.40 to 3.69, and the lowest tier received ratings below 3.10.

A more detailed segmentation of the importance of each information sources is shown in Figure 2.15, Value Analysis Segmentation.
Queue Lengths (Q61)

Information sources that have a direct impact on time have the highest overall value to respondents. Knowledge about queue lengths at the Port scored the highest value with a score of 4.03.
highest at 4.03. Almost three-quarters (71 percent) of the respondents rate the value of information about queue lengths as either a four or five, where five is most valuable. Smaller firms, those with 10 or fewer trucks, gave a higher mean rating to queue length information, which may be a result of having fewer information resources, thus, giving smaller firms less flexibility to “fix” problems resulting from delays. Firms that reported trip distances of less than 10 miles were also more likely to assign a higher value to this information source with a mean rating of 4.58.

**Real-Time Route Information**

(Q63)

Real-time route information between origin and destination also has a high value to respondents, with a mean rating of 3.83. Almost two-thirds (65 percent) rated the value of this information source as a 4 or 5. Respondents with longer travel distances, defined as an average of more than 50 miles, assigned a higher value to real-time route information (3.95) than did firms with trips averaging 50 miles or less (3.79). When trips averaged 10 miles or less, the mean value of real-time route information dropped to 3.54.

**Freeway Travel and Bottlenecks**

(Q56 and Q62)

Travel times along freeway segments and information about the location of bottlenecks with travel time through the obstructed area received similar ratings at 3.74 and 3.70, respectively. Companies with 10 or fewer trucks placed a higher premium on travel times along freeway segments and information about travel bottlenecks than firms with larger fleets, which again suggests that smaller firms have fewer resources to address delays than firms with larger fleets and more drivers. Firms who rely on either manual dispatching or a combination system assigned a higher value (3.84) to freeway time information than firms use an automated dispatch system (3.33). Similar scores were observed for information on bottlenecks (3.81 compared to 3.17).

**Port/Freeway Cameras and Travel Time to Port**

(Q55, Q58, and Q59)

Three information sources fell into Tier 2: additional cameras at the Port (3.67), travel times from the Port to major pick-up and delivery locations or interchanges (3.60), and additional freeway cameras (3.40). Additional cameras at the Port were perceived to be of higher value to companies making trips of 50 miles or less (3.99), compared to a mean rating of 2.85 for fleets making trips of more than 50 miles, which suggests that the Port dwell time is a more
significant portion of the overall trip, and hence information that yields quicker passage has a greater impact on the trip.

A similar pattern was seen with the value of additional freeway cameras, with those companies making trips of less than 50 miles assigning a higher value to more freeway cameras. The value of travel times from the Port to major pick-up and delivery locations, similar to other travel time-related information sources, had a higher value for firms with smaller fleets (10 or less) and fewer drivers (10 or less).

**Surface Street Travel Time and Street Cameras**

*(Q57 and Q60)*

Additional information on surface street travel times and more surface street cameras had the least value to respondents, with mean ratings of 3.09 and 2.83, respectively. This finding may suggest that the percentage of total trip time traveled on surface streets is of less significance than the distance traveled on freeways, and that surface street travel provides more options to bypass unexpected delays than does freeway travel.

### 2.6 DEMOGRAPHICS

**Respondent Position/Title**

*(Q2)*

One-half of the respondents were managers; 30 percent of those surveyed own the company or hold top positions in it, such as president, vice president, or CEO; and 16 percent are dispatchers/coordinators. The remaining 4 percent fall into the other category and their position titles can be found in the cross tabs. Respondents’ titles were relatively evenly distributed among firms of different fleet and personnel sizes.
Fleet Size

(Q3)

Forty percent of the companies surveyed have 1 to 9 trucks operating out of their location, while 32 percent have 10 to 24 trucks operating from their facility. The remaining 28 percent run 25 or more trucks out of their location on a routine basis.
Drivers at Location

(Q4)

There is a direct correlation between fleet size and number of truck drivers. The percentage distribution is almost identical with 41 percent under 10 drivers, 29 percent with 10 to 24 drivers, and 30 percent with 25 or more drivers.

Figure 2.18  Respondent Driver Count
3.0 PART 2 - TRUCK DRIVER SURVEY

3.1 METHODOLOGY

The respondent pool consisted of drivers who were traveling in the port area. On-line surveying was selected as the initial methodology for data collection. The data collection plan called for the distribution of an e-mail survey link to drivers traveling in the port area with the employer serving as the distribution link. The survey link was sent to the Port for distribution to trucking firms the week of February 13, 2012. The invitation to shipping firms also included a paper survey option, where Redhill Group would provide printed surveys to the shipping firms and pick them up after they had been completed by drivers.

This initiative resulted in six completed web surveys between February 22 and February 27, 2012, which were all completed in English. The on-line methodology was reevaluated and an in-field intercept survey methodology was adopted to reach a wider range of respondents and encourage participation.

Survey Design

The survey instrument was a self-administered paper survey that was available in Spanish and English. Interviewers assisted drivers with literacy problems by reading the surveys and recording their responses. A copy of the survey instrument is included in Appendix B.

Pretest

Prior to data collection, a pretest was conducted with 12 respondents. The pretest was used to determine that all questions were phrased clearly and flowed in a logical pattern, and that respondents understood the questions. There were no issues with formatting or question clarity.

Survey Execution

Field surveys were conducted at three locations in the Port of Long Beach and the Port of Los Angeles area between March 14 and March 28, 2012:

- **Port of Long Beach.** Ocean Avenue and New Dock Street, Long Beach;
- **Port of Long Beach.** 260 North Pico Avenue, Long Beach; and
- **Port of Los Angeles.** North Front Street and Knoll Drive, Los Angeles.
Table 3.1 Survey Locations

<table>
<thead>
<tr>
<th>Location</th>
<th>Intercepts Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ocean Avenue and New Dock Street</td>
<td>160</td>
</tr>
<tr>
<td>260 North Pico Avenue</td>
<td>53</td>
</tr>
<tr>
<td>North Front Street &amp; Knoll Drive</td>
<td>192</td>
</tr>
</tbody>
</table>

A total of 409 intercept surveys was conducted with drivers who travel in the Port area. Surveys were conducted between 7:30 a.m. and 3:00 p.m.

Of the 409 surveys collected, 405 were determined to be complete. Of the 405 completed surveys, 60 percent (241) were completed in Spanish. The remaining surveys (164) were completed in English.

Interviewers were trained on both the purpose of the project and the survey instrument prior to the data collection phase.

### 3.2 Trip Distance and Characteristics

#### Trip Distance

 *(Q5 to Q12)*

For more than two-thirds of the trips (67 percent), drivers stated that the average number of miles from the Port to their first delivery was 50 miles or less.

**Figure 3.1 Average Trip Distance to First Delivery**
3.3 INFORMATION SOURCES

Tools Used to Check Traffic Conditions

(Q13 and Q15)

The data suggests that truckers currently rely on traditional tools for checking traffic conditions while in their trucks rather than newer technology-based alternatives. Almost one-half of the drivers (48 percent) use CB radios and radio phones, and 45 percent say they rely on AM/FM radio for traffic updates. Less than one-quarter of the respondents reported using more technologically advanced tools, such as smart phones (23 percent), in-vehicle GPS (22 percent), and electronic highway signs (23 percent), to determine traffic conditions.

Drivers with an average trip distance to the first delivery point of 200 or more miles appear to be more likely to use in-vehicle GPS to manage their trips (43 percent) than the overall average of 22 percent. However, the sample size for this group is too small for this difference to be statistically significant.

A small percentage of drivers (5 percent) reported that they do not use anything to check traffic conditions.

Figure 3.2 Tools for Checking Traffic

As this is a multiple response question, combined percentages may exceed 100 percent.

GPS Systems

Of the drivers that reported using GPS, almost two-thirds used Garmin. TomTom was the only other brand with a noticeable mention at 11 percent.
As this is a multiple response question, combined percentages may exceed 100 percent.

Drivers are most likely to depend on information from other drivers to assess traffic conditions at the Port, with more than two-thirds (68 percent) stating they use this method.

This is consistent with responses that CB radios and radio phones were the most frequently used tool by drivers. Radio and TV were cited by just under one-third
of drivers as a traffic information source. It follows that, with a low reported technology adoption, E-Modal, web sites and direct communications with the Ports are rarely used by drivers to determine current traffic conditions at the Ports.

Figure 3.5  Sources Used to Check Port Traffic

![Bar chart showing sources used to check port traffic. Drivers are the most commonly used source at 68%. Other sources include Radio/TV at 32%, None at 12%, E-Modal at 3%, Websites at 2%, Closed-Circuit TV at 1%, Other Direct Communication at 4%, and Other at 4%.]

As this is a multiple response question, combined percentages may exceed 100 percent.

Use of Information Sources for Making Operations Changes

Most drivers (90 percent) use the information they receive about traffic conditions near the Ports to make operational changes.
Drivers are most likely to use information about traffic conditions to make changes while in-route (47 percent) or make routing changes prior to departure (43 percent).

Eleven percent of drivers use the information to accept or decline assignments or to change pick-up and delivery times. Since drivers only infrequently use this information to change the time they are on the road, it suggests that they are required to make the pick-ups and deliveries in the timeframe required by clients.

As this is a multiple response question, combined percentages may exceed 100 percent.
3.4 **USEFULNESS OF INFORMATION SOURCES**

**Information Sources**

*(Q55 to Q64)*

Drivers were asked to rate the usefulness of five traffic information options on a three-point scale as either very useful, useful, or not useful. Information that drivers could directly relate to time savings was rated most useful to them.

Almost two-thirds (64 percent) of drivers said that knowing the fastest route to access or egress the Port would be very useful. Combining the very useful and useful categories shows that 92 percent of drivers consider this information useful. Knowing freeway bottlenecks and freeway segment travel times also received high combined scores at 90 percent and 89 percent, respectively.

![Usefulness Ratings](image)

When combining the very useful and useful categories, knowing the fastest routes in and out of the Ports, freeway bottlenecks and the associated travel time, and travel time for different freeway segments scored in the top tier. Information on traffic using cameras formed the second tier.

The data suggests that, when drivers are given information that can be immediately acted upon, it is considered more useful than information that requires them to interpret the information or perform additional analysis in order to use it.
Drivers were asked to rate how useful specific improvements would be for seven different information sources. Improved information on freeway traffic (62 percent) and improved information on traffic in the port area (60 percent) were considered very useful by drivers.

When the useful and most useful categories are combined, better information on freeway traffic was still ranked as the most useful information overall.
The accuracy of freeway traffic information, ease of use, and the speed that information is delivered all received a rating of 90 percent or higher when the categories of very useful and useful are combined. This suggests that content, presentation, and speed of delivery could be improved. More information by time of day received the lowest overall rating in terms of a useful improvement at 80 percent. Drivers also were specifically asked to specify the time of day when additional information would be most beneficial.

Among truck drivers who said that having more information for specific times of day would be useful, a majority (58 percent) say they need more information for the morning hours between 4:00 a.m. and 11:59 a.m. An additional 47 percent say they need more information from 12:00 p.m. to 4:59 p.m., while 19 percent want more information for the time period of 5:00 p.m. or later. Twelve percent of respondents wanted additional information for all times of day.

Drivers also were asked what information they would like to receive that they currently do not receive. The responses were grouped into three categories: more information on port conditions (27 percent), better traffic information (25 percent), and more information about accidents (9 percent). A complete list of the open-ended responses can be found in the appendix.
Finally truckers were asked to identify one thing they would change about the information they receive to get in and out of the Port. While answers did mention desired changes in the information they were getting, drivers also commented on a variety of other topics. Thirty-eight percent of drivers commented about port operations with one-quarter of the drivers wanting information about the Ports that is either timelier or more complete. This ranges from requests to have information displayed by means, such as webcams and electronic signs, to requests for receiving more general information about the terminals, wait times, and gate conditions. Another 12 percent of respondents want more information about traffic conditions going to and from the port area. Eight percent of respondents mention a need for improvements to key infrastructure, such as roads and bridges, while another 20 percent mention changes that fell into the other category. A complete list of the open-ended responses can be found in the appendix.

### 3.5 SURVEY SUMMARIES

#### Key Findings

- Twentieth century technology still dominates as the sources of information for drivers visiting the Ports, with CB radio and broadcast radio being by far the most frequently used technology.
- The first finding is echoed in the sources of information that they use, with only other drivers (68 percent) and radio/TV (32 percent) being cited by more than 5 percent of drivers.
- E-Modal, web sites, and CCTV are each currently used by less than five percent of drivers.
• Only one-fifth of drivers uses an in-vehicle GPS system. Garmin accounts for 64 percent of all systems mentioned, and TomTom is a distant second at 11 percent.

• Ninety percent of drivers use information to change routes, as appropriate, either in-route (47 percent) or before leaving (43 percent). However, only 11 percent each either uses it to change pick-up/delivery times or accept or decline assignments. This suggests that there is limited flexibility in driver’s ability to determine when they are on the road. Truckers only control the route they use to get to the Ports.

• Knowing the fastest routes, the location and delay time associated with bottlenecks, and times to travel different freeway segments were all assessed as top value information. Cameras at the Ports, on freeways, and on major surface streets were perceived to be of less value.

• The key improvements desired by drivers are better freeway traffic information and information that is easier to use, more accurate, and delivered faster. Each of these improvements was rated as useful or very useful by at least 90 percent of drivers, suggesting that there is a strong desire to see better delivery of accurate and actionable information.

• The top two requests for improved information mentioned on an open-ended basis were for more information about port conditions and for more information about traffic conditions. Accident reporting information also was requested at about one-half the level of the previous two items.

• Sixty percent of the surveys were conducted in Spanish. This indicates that any information systems should be bilingual to maximize their value.

Summary and Recommendations

The current tools being used by most drivers are CB radio and traffic reports on AM/FM radio, and these tools rely more on other drivers than external sources of information. Smart phones are used by less than one-quarter of all drivers, and use of other mobile computing systems is essentially nonexistent.

However, drivers have a strong desire for any improvement in information that will give them more timely and accurate information that is easy to use and will help them determine the optimal way of getting into and out the Ports, given real-time information about traffic conditions.

While the use of smart phones is likely to continue to grow rapidly in the near term, it may be necessary to employ lower technology options, such as a low-power port traffic conditions channel, or a reverse-911 system that pushes out information using standard mobile phone technology to meet near-term needs. More advanced technology systems will likely have a greater impact in the longer term. Information systems also should be in both English and Spanish to maximize their impact.