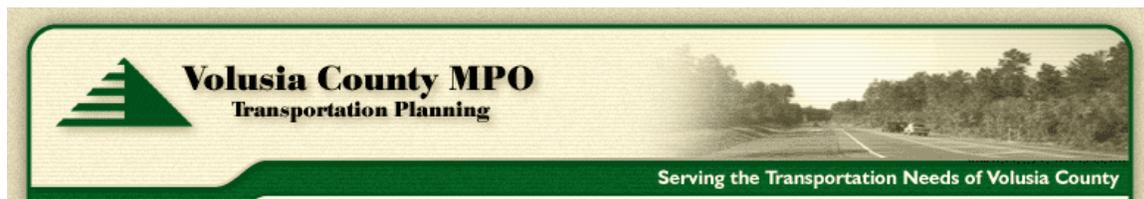




VOTRAN EAST SIDE TRANSIT STUDY

FINAL REPORT

June 2009



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Section 1

Documentation

INTRODUCTION

In 2007, the Volusia MPO and VOTRAN asked the Center for Urban Transportation Research to conduct a Comprehensive Operations Analysis (COA) of the eastern and southeastern portions of the VOTRAN service area. These two service areas are centered primarily on Daytona Beach, South Daytona, Ormond Beach, Port Orange, and New Smyrna Beach. The study is intended to complement a similar effort conducted for the western service area in Deland and Deltona.

Unlike other COAs that require manual ridechecks to count passengers boarding and alighting buses, VOTRAN installed Automatic Passenger Counters (APCs) on their fleet in 2007 that automatically takes these counts and also time stamps the location of the bus at each stop. Replacing manual, human-collected data with automated data creates opportunities to enhance levels of analysis that were not possible in the past. This report summarizes the analyses that were conducted for each route in the east and southeast service area and provides recommendations for improvements over the next ten years. The overall objectives of the study are as follows:

- Evaluate performance of fixed route service in East Volusia and Southeast Volusia;
- Provide benchmark profiles of existing routes;
- Utilize and test Automatic Passenger Counter (APC) technology and data to apply on-off activity to route and network performance;
- Define route network composition and classification in terms of route performance
- Gather input and opinions from various VOTRAN employees;
- Develop service alternatives and improvement recommendations based on network classification; and
- Prepare Service Improvement Priorities and an Implementation Program including a financial plan.

Relationship of VOTRAN East Side Transit Study to Transit Development Plan

In December 2006, CUTR prepared a major Transit Development Plan (TDP) Update 2007-2016 for VOTRAN. Several portions of the TDP were helpful in defining the overall direction of this study. Those portions include Demographics utilizing 2000 census data, an on-board survey of transit customers providing rider demographics and satisfaction, and an implementation plan that included a total of 46 initiatives of which ten initiatives were directly related to VOTRAN service. Each element of the TDP is summarized below.

Demographics

Presentation of overall population density, household density, and other demographic factors related to propensity for transit usage indicated that VOTRAN's current route network is in alignment with the population served. Map 1-1 below shows block groups with persons and households that have the highest propensity for using transit including population under the age of 18, over the age of 65, household income below the poverty line, and zero vehicles available in the household. VOTRAN's route network serves portions of Port Orange and also southeastern Volusia County that do not have significant population meeting all four characteristics. However, one goal VOTRAN is pursuing under the TDP is to make transit service more attractive to choice riders.

On-board Survey of Transit Riders

An on-board survey of transit riders indicated that 83 percent of VOTRAN riders use the bus because they do not drive, do not own a vehicle or do not have a valid driver's license. Additionally, 68 percent of VOTRAN riders indicated having a household income of \$20,000 or less. A total of 47 percent of riders indicated a need to make a transfer to complete their trip; in the east side, Routes 6, 10, 12 and 60 were the most cited routes for transfers.

When asked to provide levels of satisfaction with 21 service characteristics on a 1 to 5 scale, with one being very dissatisfied and 5 being very satisfied, the characteristics with which VOTRAN riders were most dissatisfied included the following:

- Time of day latest buses run on weekends (3.32 on a 5.0 scale)
- Time of day latest buses run on weekdays (3.50 on a 5.0 scale)
- Time of day earliest buses run on weekends (3.65 on a 5.0 scale)
- Frequency of service (3.67 on a 5.0 scale)
- Time it takes to make trip by bus (3.68 on a 5.0 scale)

Customer feedback was valuable to this study effort in focusing service improvement priorities.

Implementation Plan

As mentioned above, there were ten initiatives for VOTRAN service that were included in the TDP. Four of those initiatives are not addressed in the East Side Study, as follows:

- Implementation of the West Side Service Area COA recommendations (VOTRAN completed this initiative)
- Continue to operate express bus service to Orlando (CUTR did not disagree but continuation of this service is contingent upon funding and continued cooperation with LYNX)
- Commuter Rail bus feeder service (future consideration)
- Additional express bus route service (not addressed in analyzing east and southeast service areas).

The six initiatives that will be addressed in this study include the following:

- Conduct east side comprehensive operations analysis (COA)
- Increased service frequencies on U.S. 1 corridor

- Improvements to Beach Service Area
- East-West Service (Route 60) service frequency improvements
- Improve service frequencies on selected routes
- Review Saturday, Sunday, and Evening schedules

Methodology

In October 2007, CUTR prepared a sampling plan for each run and block in the system. The sampling plan was transmitted to VOTRAN operations staff and was implemented over the next month. Correspondingly, Avail Technologies, the technology integration firm employed by VOTRAN, was setting up and managing APC data in Datapoint. Avail later made the raw data from the APCs available to CUTR for the month of October 2007. CUTR then organized the raw data for the analysis presented in this report. When multiple samples of a particular trip of a route were available, the on-off data was averaged to create a typical weekday profile. A detailed discussion of the analyses for each route is provided below.

VOTRAN's Route Network

Daytona Beach (East Side)

In Daytona Beach, VOTRAN operates 15 routes that are anchored by the main transfer plaza located at the corner of Ridgewood and Dr. Mary McLeod Bethune Boulevard and an Intermodal Transit Facility on the beachside located west of Atlantic Avenue between Ora and Earl Streets. All 14 routes serve the Transfer Plaza and two serve the Intermodal Transfer Facility (ITF). Night service and Sunday service utilize the ITF to include the Routes 1, 3, 4, 10, 15 and 17. In addition, there are two remote transit transfer facilities and one on-street transfer location that connect two or more routes. Dunlawton Square, in the south sector of the east service area is served by Routes 4, 7, 12, 17B and 40. Volusia Mall, in the west sector, is served by Routes 9, 10, 11 and 60. In the north sector of the service area, there is an on-street transfer point on Thompson Creek Road in Ormond Beach that is served by the Routes 1B, 3 and 6.

New Smyrna Beach (Southeast)

The southeast service area is comprised of New Smyrna Beach, Edgewater, and Oak Hill. There are five routes serving this service area that are the 40 series (Routes 40, 41, 42, 43 and 44), with the Route 40 connecting to the Daytona service area at Dunlawton Square. The market for transit service in the southeast service area is not ripe as these routes are among the poorest generators of ridership in the entire eastern VOTRAN service area. Current transfer

connections are being made near U.S. 1 and Canal Street. VOTRAN is working to develop a transfer point on the southeast corner of Sams Avenue and Canal Street.

Analysis

For each route in the eastern and southeastern service area, there is a detailed analysis below that includes the following data sets:

- Daily Service Characteristics
- Performance Measures
- Considerations for Improvement and Priority
- On-Off Activity by Trip (Inbound and Outbound)
- Maximum Line Load by Trip (Inbound and Outbound)
- Ridership by Hour of Day (Inbound and Outbound)
- Maps showing aggregated daily boarding and alighting activity

The route by route analyses, combined with the Performance Report detailed below, were used in forming conclusions for this study that identify a series of improvements that could be immediate with zero cost growth to the system, near term changes that could involve service and cost growth, and longer term service improvements that are desirable and to be considered over the next ten years.

Performance Report

For this study, CUTR produced a performance report for VOTRAN for the fiscal year 2007 (October 2006 through September 2007) and the available months of fiscal year 2008 (October 2007 through June 2008). Inputs to the performance report include: ridership, revenue hours, revenue miles, passenger revenue and total cost. From these inputs, a calculation was made for each of the following performance indicators:

- Operating Ratio (revenue:cost), expressed in a percentage return on the dollar;
- Passengers per revenue hour;
- Passengers per revenue mile;
- Cost per passenger
- Subsidy per passenger

Each of these indicators was then expressed as a percentage of system average which can be found in the "TOTAL" line at the bottom of each indicator in the table below. The scores for each

VOTRAN EAST SIDE TRANSIT STUDY FINAL REPORT

indicator are expressed as either greater than 100% of system average, at system average, or a percentage below system average. Then, each of the five scores were added and divided by 5 to calculate a final composite score for each route. It is the composite score that gives the route a ranking, meaning that the routes with the highest percentage scores in relation to system average are the best performers and the lower ranking routes are, from a productivity perspective, lesser performing routes. A performance report provides a sketch of the entire system and helps to define the route network for purposes of the COA.

In presentations to the MPO committees, a request was made to provide a national standard for farebox recovery in relation to VOTRAN's actual farebox recovery. A recent study by CUTR entitled, "Best Practices in Transit Service Planning," revealed that there is no national standard. Of relevance to this study is a comparison of Florida Transit systems as identified in the Florida Transit Handbook. In 2005, data compiled for all Florida transit systems indicated operating expenses of \$797.8 million with operating revenues of \$201.5 million for an overall 25.25 percent ratio of revenue to expense. In 2006, this overall operating ratio declined a bit with \$883.2 million in expenses and \$216.7 million in operating revenues for an overall 24.76 percent ratio of revenue to expense. Correspondingly, in FY 2007 VOTRAN had a 19.5 percent ratio of revenue to expense that increased to 20.4 percent in FY 2008. At 20.4 percent, VOTRAN's operating ratio is 82 percent of the FY 2006 statewide operating ratio of 24.76 percent.

In addition, VOTRAN staff asked that Night, Sunday and trolley service be added to the performance report. Night service consists of five routes that operate Monday through Saturday and Sunday service consists of the same five routes. Tables 1-1 and 1-2 below show the results of the performance reports.

VOTRAN EAST SIDE TRANSIT STUDY FINAL REPORT

**Table 1-1
VOTRAN Performance Report
October 2006 – September 2007**

Routes	Total Passengers	Total Revenue	Total Miles	Total Hours	Total Cost	Operating Ratio	Total Passengers/ Total Revenue Hours	Total Passengers/ Total Revenue Miles	Cost per Passenger	Subsidy/ Passenger	Composite	Rank
4	193,206	\$128,921	100,702	6,635	\$428,819	30.1%	29.12	1.92	\$2.22	\$1.55	157.9%	1
15	129,712	\$78,056	52,694	4,857	\$313,907	24.9%	26.71	2.46	\$2.42	\$1.82	150.7%	2
Sunday*	95,243	\$57,783	55,586	3,526	\$227,856	25.4%	27.02	1.71	\$2.39	\$1.79	140.8%	3
1	425,323	\$309,004	245,009	16,876	\$1,090,693	28.3%	25.20	1.74	\$2.56	\$1.84	139.4%	4
3	177,561	\$123,419	95,758	7,163	\$462,932	26.7%	24.79	1.85	\$2.61	\$1.91	137.5%	5
17	277,357	\$200,750	200,521	12,585	\$813,375	24.7%	22.04	1.38	\$2.93	\$2.21	118.5%	6
7	169,568	\$107,357	116,887	8,418	\$544,065	19.7%	20.14	1.45	\$3.21	\$2.58	106.9%	7
60/61	174,288	\$108,881	179,012	8,225	\$531,611	20.5%	21.19	0.97	\$3.05	\$2.43	103.7%	8
10	221,633	\$130,996	147,736	11,974	\$773,886	16.9%	18.51	1.50	\$3.49	\$2.90	98.9%	9
12	114,531	\$73,821	89,563	6,314	\$408,045	18.1%	18.14	1.28	\$3.56	\$2.92	95.8%	10
8	66,018	\$44,297	56,933	3,907	\$252,540	17.5%	16.90	1.16	\$3.83	\$3.15	89.3%	11
Trolley	43,255	\$36,696	41,781	2,759	\$178,302	20.6%	15.68	1.04	\$4.12	\$3.27	87.3%	12
11	120,817	\$75,190	102,718	8,135	\$525,792	14.3%	14.85	1.18	\$4.35	\$3.73	79.2%	13
Night**	157,069	\$101,655	161,475	10,257	\$662,930	15.3%	15.31	0.97	\$4.22	\$3.57	78.7%	14
40	62,273	\$40,487	86,813	3,933	\$254,179	15.9%	15.83	0.72	\$4.08	\$3.43	77.1%	15
9	55,137	\$31,205	49,918	3,985	\$257,571	12.1%	13.83	1.10	\$4.67	\$4.11	72.4%	16
5	59,538	\$38,319	54,559	4,623	\$298,777	12.8%	12.88	1.09	\$5.02	\$4.37	70.0%	17
6	110,040	\$73,760	115,477	8,418	\$544,062	13.6%	13.07	0.95	\$4.94	\$4.27	69.3%	18
41	35,323	\$30,482	68,183	3,675	\$237,528	12.8%	9.61	0.52	\$6.72	\$5.86	51.0%	19
43	9,587	\$6,423	24,098	1,956	\$126,407	5.1%	4.90	0.40	\$13.19	\$12.52	26.2%	20
42	16,613	\$12,804	52,650	3,877	\$250,549	5.1%	4.29	0.32	\$15.08	\$14.31	23.1%	21
44	8,148	\$6,086	25,761	1,959	\$126,604	4.8%	4.16	0.32	\$15.54	\$14.79	22.4%	22
TOTAL	2,722,239	1,816,392	2,123,835	144,057	\$9,310,431	19.5%	18.90	1.28	\$3.42	\$2.75		

*Six routes operating 52 days

**Six routes operating 309 evenings

VOTRAN EAST SIDE TRANSIT STUDY FINAL REPORT

**Table 1-2
VOTRAN Performance Report
October 2007 – June 2008**

Routes	Total Passengers	Total Revenue	Total Miles	Total Hours	Total Cost	Operating Ratio	Total Passengers/ Total Revenue Hours	Total Passengers/ Total Revenue Miles	Cost per Passenger	Subsidy/ Passenger	Composite	Rank
4	148,986	\$104,142	75,528	4,936	\$318,997	32.6%	30.19	1.97	\$2.14	\$1.44	164.3%	1
15	96,895	\$59,109	39,696	3,630	\$234,582	25.2%	26.70	2.44	\$2.42	\$1.81	149.2%	2
Sunday*	73,511	\$50,393	44,710	2,806	\$181,371	27.8%	26.19	1.64	\$2.47	\$1.78	138.8%	3
1	318,568	\$238,906	184,988	12,706	\$821,219	29.1%	25.07	1.72	\$2.58	\$1.83	138.1%	4
3	132,227	\$94,352	70,827	5,293	\$342,077	27.6%	24.98	1.87	\$2.59	\$1.87	138.0%	5
17	193,989	\$145,286	150,645	9,455	\$611,053	23.8%	20.52	1.29	\$3.15	\$2.40	109.4%	6
7	129,446	\$85,880	87,714	6,327	\$408,933	21.0%	20.46	1.48	\$3.16	\$2.50	108.6%	7
12	94,591	\$62,821	67,367	4,739	\$306,288	20.5%	19.96	1.40	\$3.24	\$2.57	105.3%	8
60/61	129,555	\$86,600	136,949	6,171	\$398,855	21.7%	20.99	0.95	\$3.08	\$2.41	103.0%	9
10	158,015	\$96,408	103,917	9,011	\$582,405	16.6%	17.54	1.52	\$3.69	\$3.08	94.7%	10
40	56,059	\$34,102	65,254	2,953	\$190,850	17.9%	18.98	0.86	\$3.40	\$2.80	90.5%	11
8	50,248	\$34,992	42,915	2,935	\$189,664	18.4%	17.12	1.17	\$3.77	\$3.08	90.2%	12
Trolley	32,052	27,161	30,374	1,996	\$129,002	21.1%	16.06	1.06	\$4.02	\$3.18	88.2%	13
11	91,453	\$59,936	77,206	5,918	\$382,507	15.7%	15.45	1.18	\$4.18	\$3.53	81.9%	14
Night**	114,401	\$76,421	121,861	7,626	\$492,861	15.5%	15.00	0.94	\$4.31	\$3.64	76.5%	15
9	42,343	\$25,827	36,904	2,981	\$192,636	13.4%	14.21	1.15	\$4.55	\$3.94	74.9%	16
5	45,436	\$30,755	41,242	3,456	\$223,361	13.8%	13.15	1.10	\$4.92	\$4.24	71.3%	17
6	81,464	\$59,125	86,824	6,341	\$409,812	14.4%	12.85	0.94	\$5.03	\$4.30	68.6%	18
41	28,433	\$28,198	51,250	2,760	\$178,363	15.8%	10.30	0.55	\$6.27	\$5.28	56.2%	19
43	7,017	\$5,457	18,070	1,465	\$94,680	5.8%	4.79	0.39	\$13.49	\$12.72	26.1%	20
42	11,318	\$12,094	39,516	2,850	\$184,169	6.6%	3.97	0.29	\$16.27	\$15.20	22.9%	21
44	5,675	\$4,043	19,315	1,517	\$98,073	4.1%	3.74	0.29	\$17.28	\$16.57	19.8%	22
TOTAL	2,041,682	1,422,005	1,593,071	107,872	\$6,971,760	20.4%	18.93	1.28	\$3.41	\$2.72		

*Six routes operating 52 days

**Six routes operating 231 evenings

The results of the performance report were used to differentiate the routes in the system as described in the Network Composition below. Interestingly, Sunday service, which is comprised of five routes operating over 52 days in a year, is very efficient in terms of its overall performance. At a cost of just over \$225,000 in FY 07, Sunday service generated 95,200 passengers and had strong indicators in operating ratio, passengers per hour, and overall subsidy per passenger. Therefore, Sunday service when aggregated ranks third overall in system performance in both FY 07 and 08. Night service, which operated over 309 evenings in FY 07 and generated 157,000 passengers, has a cost of just under \$500,000 14th in FY 07 and 15th in FY 08. Trolley service is seasonal operating between mid-January to Labor Day and ranked 12th in FY 07 and 13th in FY 08 in terms of overall performance.

Network Composition

For purposes of this analysis, and for considerations for improvements to the VOTRAN system over the next ten years, the network has been subdivided into four parts as follows:

- Network Spine Routes
- Core Route Network
- Lower Performing Routes
- Southeast Service Area

Network Spine Routes

There are three major arteries in the VOTRAN east side network that generated 49 percent of all east side ridership in FY 2008. The three arteries are A1A (Atlantic Avenue), U.S. 1 (Ridgewood Avenue), and International Speedway (U.S. Highway 92). The routes that comprise the spine route network are the Routes 1, 3, 4, 17 and 60. Map 1-2 below shows the network spine routes.

Core Route Network

The core route network consists of the network spine routes plus the remaining highest performing routes, which are the Routes 7, 10, 12, and 15. Three of these routes are in the southwest portions of the east side service area, south of International Speedway and west of U.S. 1. Only the Route 10, as part of the core route network, serves north of International Speedway. When adding the sum of ridership for the network spine routes and the core network routes, these 9 routes account for 76 percent of all system ridership in FY 2008. Map 1-3 below shows the core route network.

Lower Performing Routes

Actually, the lower performing routes are all remaining routes in the east side service area plus the southeast service area; however, the southeast is treated separately in this classification system. The routes comprising the lower performing routes are all north and west of International Speedway and U.S. 1. These are the Routes 5, 6, 8, 9 and 11, and together they account for 17.7 percent of system ridership in FY 08. Map 1-4 below shows the lower performing routes.

Southeast Service Area

As noted above, the southeast service area is comprised of New Smyrna Beach, Edgewater and Oak Hill. These are the 40 series routes. The highest performing of the 40 series routes is the Route 40 itself which connects the southeast service to Daytona Beach, indicating that the primary travel demand is not within the southeast service area but rather north to Daytona. The Southeast Service Area consists of the Routes 40, 41, 42, 43, and 44, and together they account for 6.2 percent. Map 1-5 below shows the southeast service area.

VOTRAN EAST SIDE TRANSIT STUDY FINAL REPORT

Map 1-2
Network Spine Routes



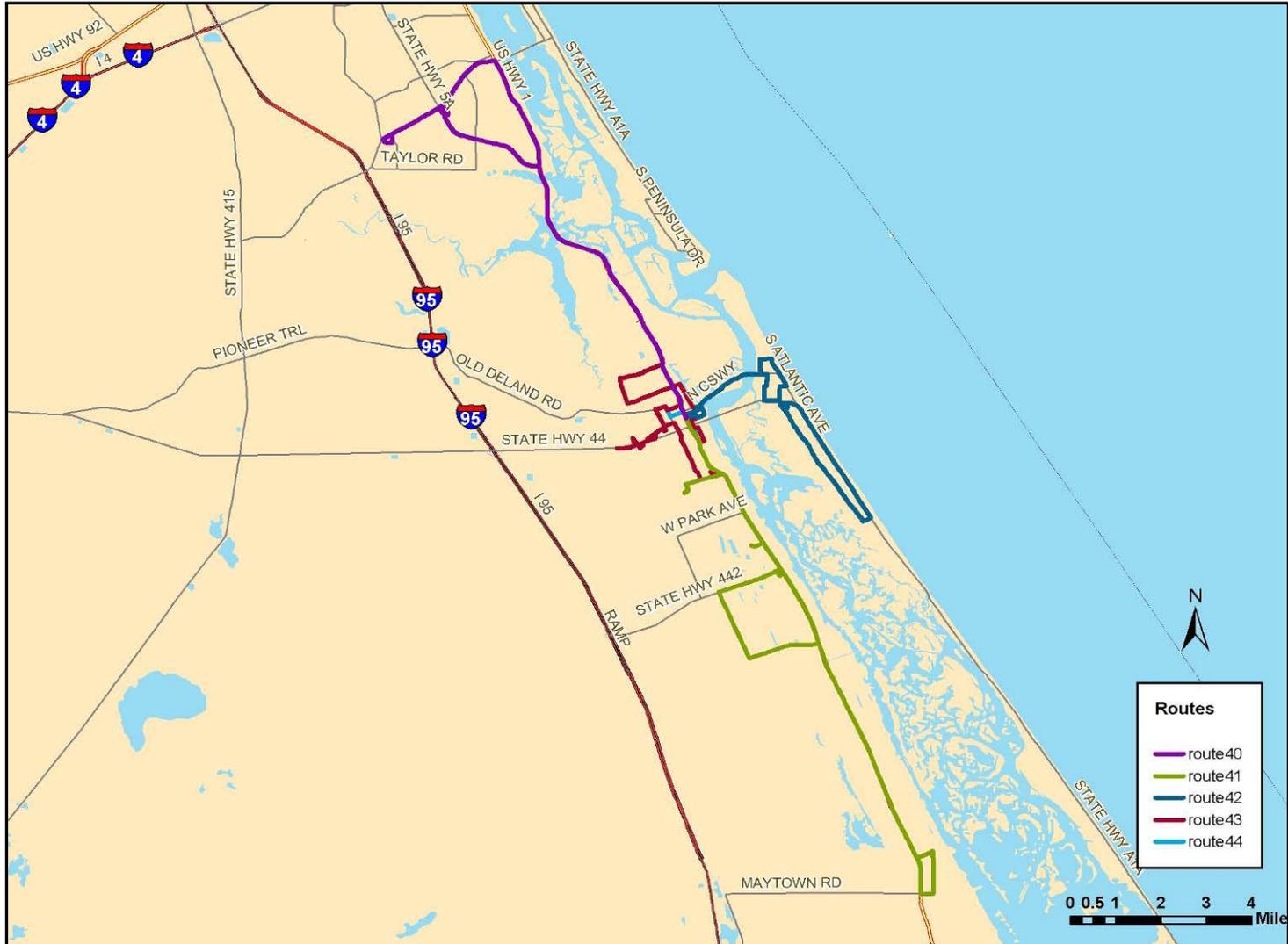
VOTRAN EAST SIDE TRANSIT STUDY FINAL REPORT

Map 1-4 Lower Performing Routes



VOTRAN EAST SIDE TRANSIT STUDY FINAL REPORT

Map 1-5 Southeast Service Area Routes



Guiding Principles for this Comprehensive Operations Analysis

- **Examine opportunities to enhance and improve the existing system** – The analysis should focus on the design of the current network and whether there is a need for extensive route network re-design. Network re-design is a risky proposition and in some cases can cause more problems with existing riders than any route change improvements to service that are thought to be worthwhile.
- **Prioritize improvements based on the network composition and classification** – In making the existing a better service to Volusia County residents, priority should be given to improvements for network routes that already generate significant proportions of system ridership and have the potential to attract greater levels of ridership to VOTRAN.
- **Enhance connectivity** – Whether by creating new outlying transit transfer centers or creating greater levels of on-street transfers, enhancing connectivity always provides customers with greater travel choices that can reduce overall travel times for their trips.
- **Consideration of route and/or network realignment should only occur if good for the customer** – Examine routing configurations that are circuitous or that contain branches and/or spurs that are inefficient for the traveling customer. There may be opportunities for some route realignments to reduce those branches by creating new routes.
- **Explore alternative service configurations for the southeast service area** – Alternative service configurations will ultimately provide the same levels of service to the public but deliver service in a more efficient and cost-effective manner.
- **Consider future service areas** – Developments of Regional Impact (DRIs) are an inevitable part of the development of every county. However, developers often design and request DRIs of such magnitude with mixed uses and intensities that may or may not have the market forces to reach fruition in the timeframe the developer expects. As these DRIs are developed in the future, transit should be a consideration when possible.
- **Consider destinations not currently served** - VOTRAN should plan to serve the new Ormond Hospital (Hand and Williamson) as well as the Dunlawton/I-95 area with a new commercial development.

Service Analysis – Route Level

Sections 2, 3, 4 and 5 below present service analyses at the route level based on the tiered classification system established for the VOTRAN east side network.

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Section 2

Service Analysis

SPINE ROUTE NETWORK

As described earlier, the Spine Route Network serves the three major arteries in the service area (U.S. 92, U.S. 1 and A1A) and consists of the Routes 1, 3, 4, 17 and 60. Together, these routes produced 49 percent of system ridership in FY 2008. The analyses for Routes 3 and 4 will be presented first in this section followed by the Routes 1 and 17, and then the Route 60.

In this section, the Routes 3 and 4 are analyzed first because the two routes are linked by the same corridor, with the Route 3 serving U.S. 1 north of Ridgewood and the Route 4 serving U.S. 1 south of Ridgewood. Correspondingly, the Routes 1 and 17 are presented next because these two routes are linked by the same corridor, with the Route 1 serving A1A north of Ridgewood and the Route 17 serving A1A south of Ridgewood. Finally, the Routes 60/61 are presented at the end of this section as they are already linked by the fact that the routing configuration is the same but the Route 60 is the westbound service to Deland and the Route 61 is the eastbound service to Daytona.

Route 3

Route 3 serves the U.S. 1 corridor (Ridgewood Avenue and Yonge Streets) north of the VOTRAN Transfer Plaza on Ridgewood Avenue. There are three branches to this route. All branches serve U.S. 1 between the Transfer Plaza and north of Granada Boulevard. The 3A continues on U.S. 1 north to Hawaiian Tropics with a frequency of one trip every two hours. The 3B operates from U.S. 1 and Wilmette east on Rosewood with a loop on Beach, Domicillio Avenue and Ridgewood with one trip every two hours. The 3C operates two trips daily to I-95 and the Ormond Beach Industrial Park. Weekday and Saturday service operates between 6:02 a.m. and 7:38 p.m. North U.S. 1 is a high growth area with Destination Daytona, Ormond Crossings DRI, and new business parks.

As a network spine route, the Route 3 operates service at night and on Sundays. The routing configuration for Night and Sunday service primarily follows the U.S. 1 north Granada west to the Trails Shopping Center on Nova Road. Night service operates with 60 minute frequencies from 7:05 p.m. to 11:54 p.m. On Sunday, service operates with hourly frequency from 7:05 a.m. to 6:48 p.m. Table 2-1 below shows the Daily Service Characteristics and Table 2-2 displays the Performance Measures for the Route 3A, 3B and 3C combined. However, it should be noted

that the most intensive ridership segment for this route is the core corridor from the Transfer Plaza to Granada Boulevard along U.S. 1.

Table 2-1
Daily Service Characteristics
Routes 3A, 3B and 3C Combined

Daily Service Characteristics	Weekday/ Saturday	Night	Sunday
Span of Service	6:02 - 19:38	19:05 - 23:54	7:05 - 18:48
Peak/Base Frequency	60/60	60/60	60/60
Peak/Base Buses	2/2	1/1	1/1
1-way Runtime OB	46/40/29	23	23
1-way Runtime IB	38/45/31	26	26
Daily Revenue Hours	20.82	4.55	11.9
Daily Revenue Miles	277.6	86	203.2
Average Daily Passengers (Wk)	573	N/A	N/A
Average Daily Passengers (Sat)	401	N/A	N/A

Table 2-2
Performance Measures
Route 3 Combined

Performance Measures	Measure
FY 07 Overall Composite Score	138%
FY 08 Overall Composite Score	138%
FY 07 Rank	5
FY 08 Rank	5
Passengers/Revenue Hour (FY 08)	24.98
Passengers/Revenue Mile (FY 08)	1.87
Overall Cost/Passenger (FY 08)	\$2.59
Overall Subsidy/Passenger (FY 08)	\$1.87
Operating Ratio (Revenue:Cost)	27.6%

Considerations for Improvements and Priority

Weekday Frequency Improvements – Routes 3A and 3B

Priority: Highest

Ridecheck Data from Automatic Passenger Counters (APCs)

The following tables, figures and maps depict data obtained from the APC data supplied by VOTRAN.

On-Off Activity by Trip

The APC data shows the inbound trips experience their greatest levels of on-off activity on the 2:48 p.m. trip with significantly declining levels of activity on the 6:32 and 7:32 trips. The outbound trips have their greatest activity in the 8:02 a.m. and 2:02 p.m. trips. For the Route 3B, ridership is more balanced throughout the day with the greatest level of activity for inbound trips occurs on the 7:42 a.m. trip while the outbound trips spike are consistent for the 3:02, 4:02 and 5:02 trips. Figures 2-1 and 2-2 below show the on-off activity by trip for the Routes 3A and 3B.

**Figure 2-1
On-Off Activity by Trip
Route 3A**

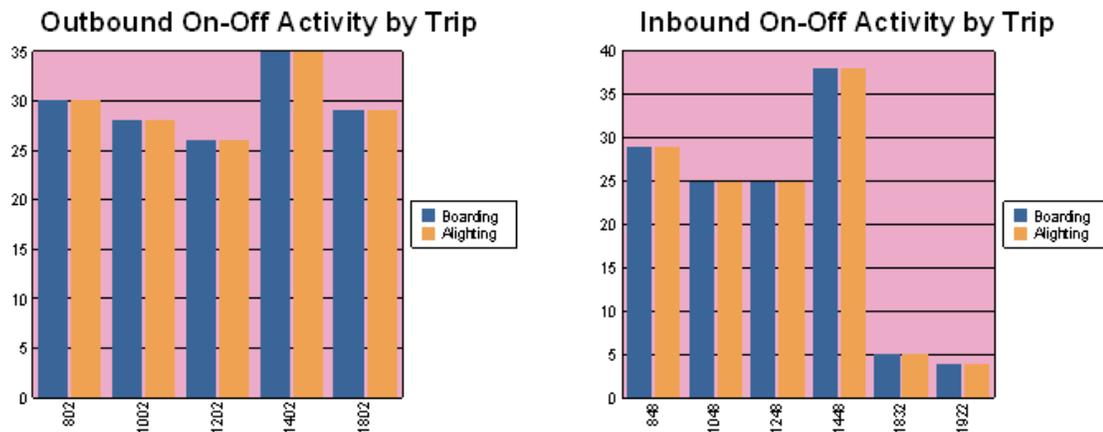
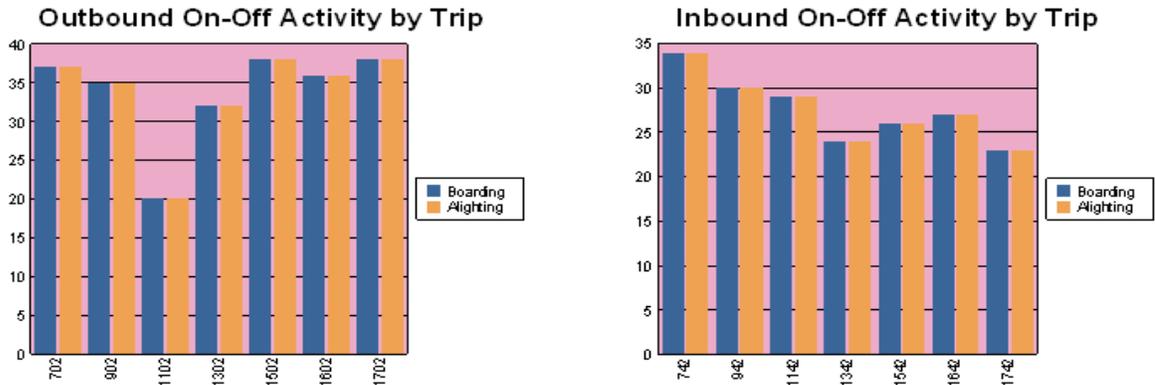


Figure 2-2
On-Off Activity by Trip
Route 3B



Max Line Load by Trip

The maximum line load is the moment in a bus trip when there is the greatest number of passengers on board the bus. Figure 2-3 below shows that the max line loads for the Route 3A occur during the 2:48 p.m. inbound and the 10:02 a.m. outbound trips. Figure 2-4 below shows that the max line loads for the Route 3B occur during the 7:42 a.m. inbound and the 5:02 p.m. outbound trips.

Figure 2-3
Max Line Load by Trip
Route 3A

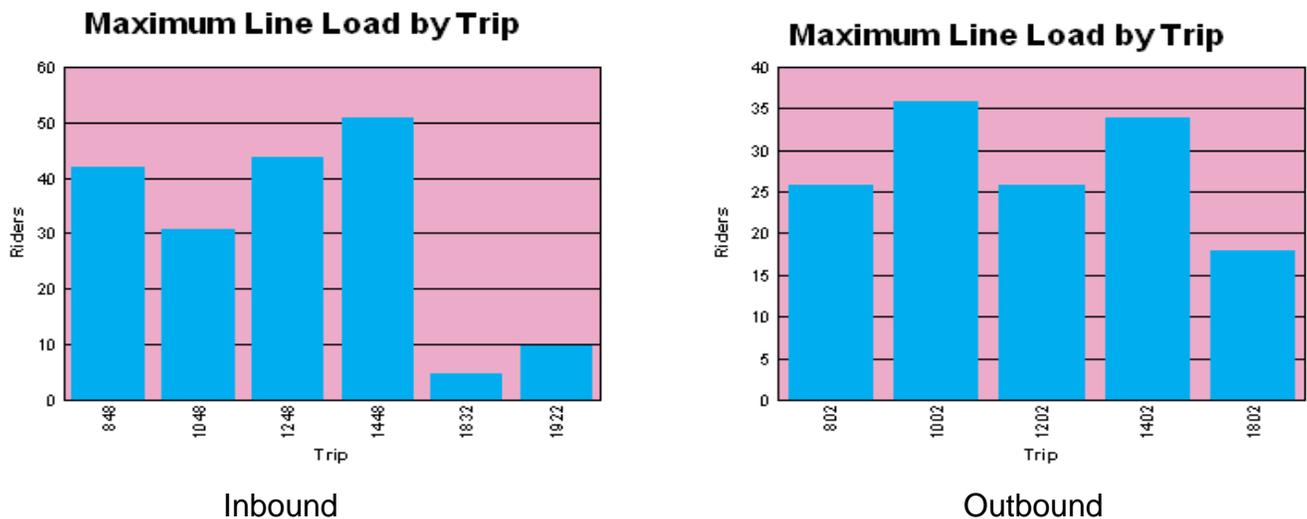
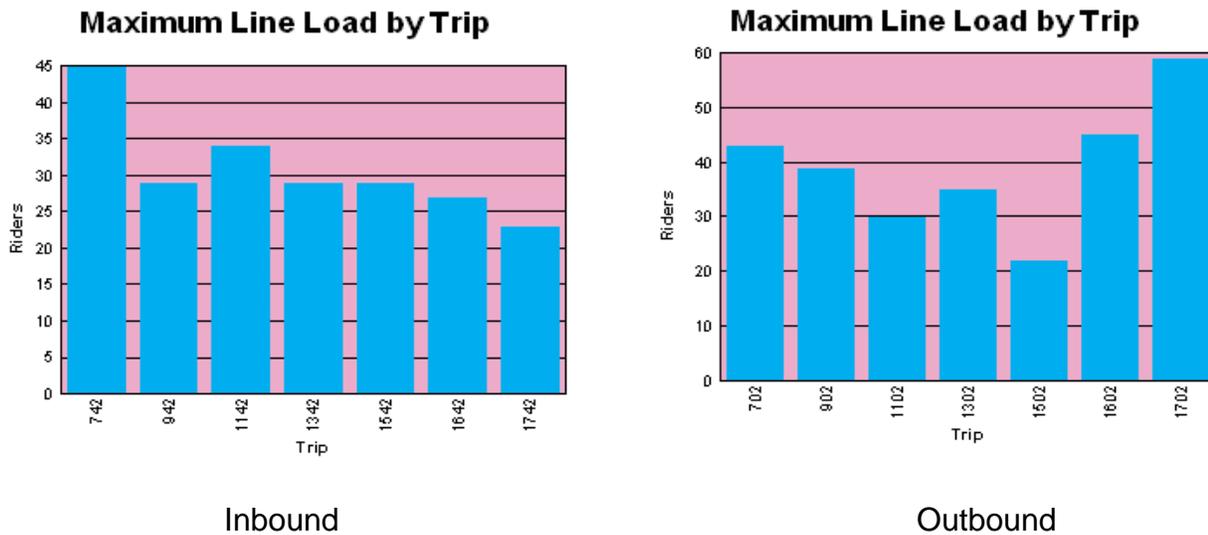


Figure 2-4
Max Line Load by Trip
Route 3B



Ridership by Hour of Day

Since APCs have a timestamp for every stop, CUTR was able to take the APC data and project ridership by hour of day for each branch. Figure 2-5 below shows that the Route 3A had the greatest levels of boardings and alightings during the 3:00 – 4:00 p.m. outbound trips had the greatest levels of boardings and alightings during the 2:00 p.m. to 3:00 p.m. hour. Figure 2-6 shows that for the Route 3B, the greatest levels of boardings and alightings for inbound trips occurred during the 8:00 -9:00 a.m. hour. Outbound trips experienced the greatest levels of boardings and alightings during the 3:00 – 4:00 p.m. hour and the 5:00 p.m. to 6:00 p.m. hours.

Figure 2-5
Ridership by Hour of Day
Route 3A

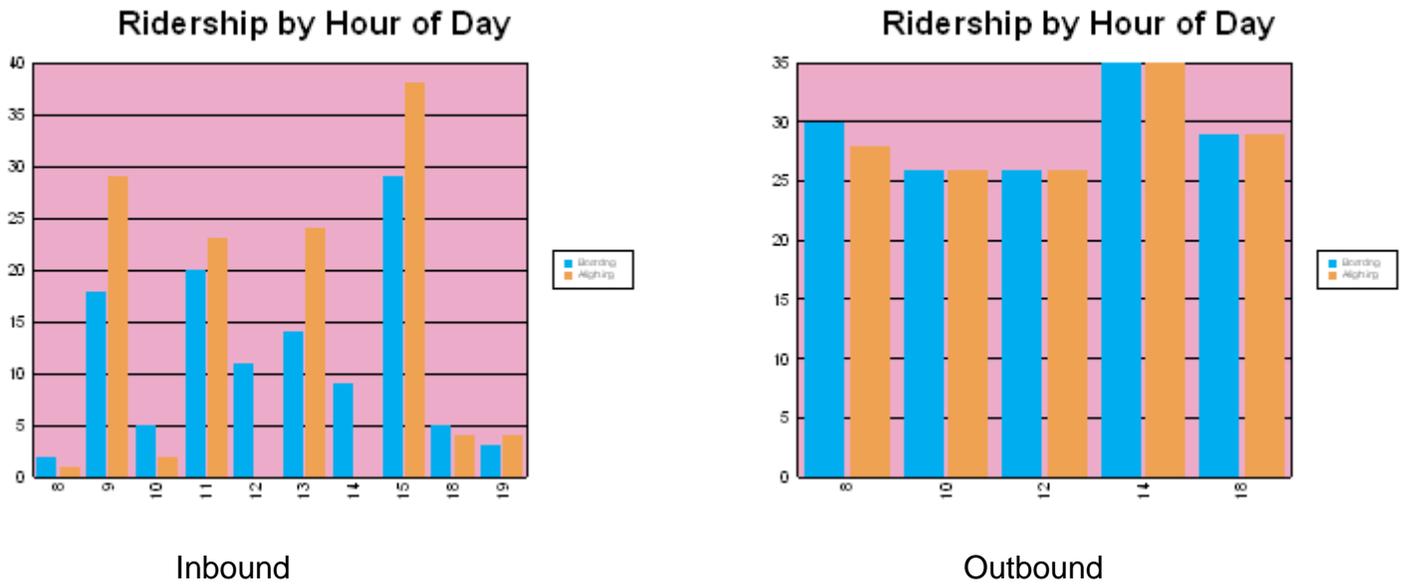
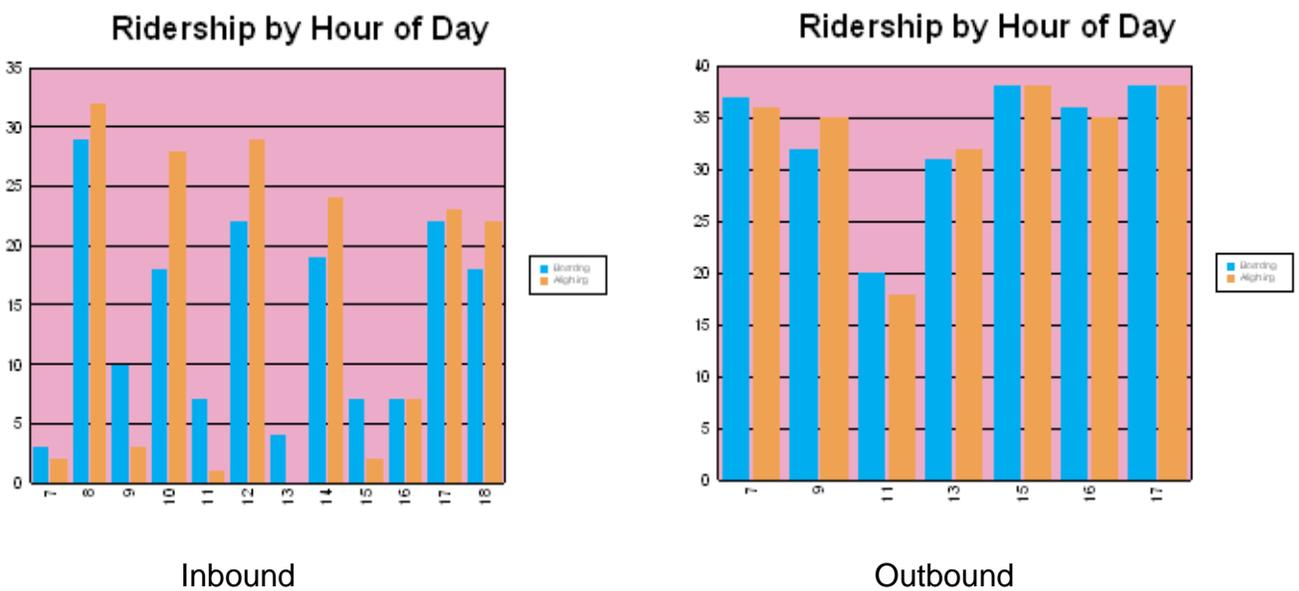


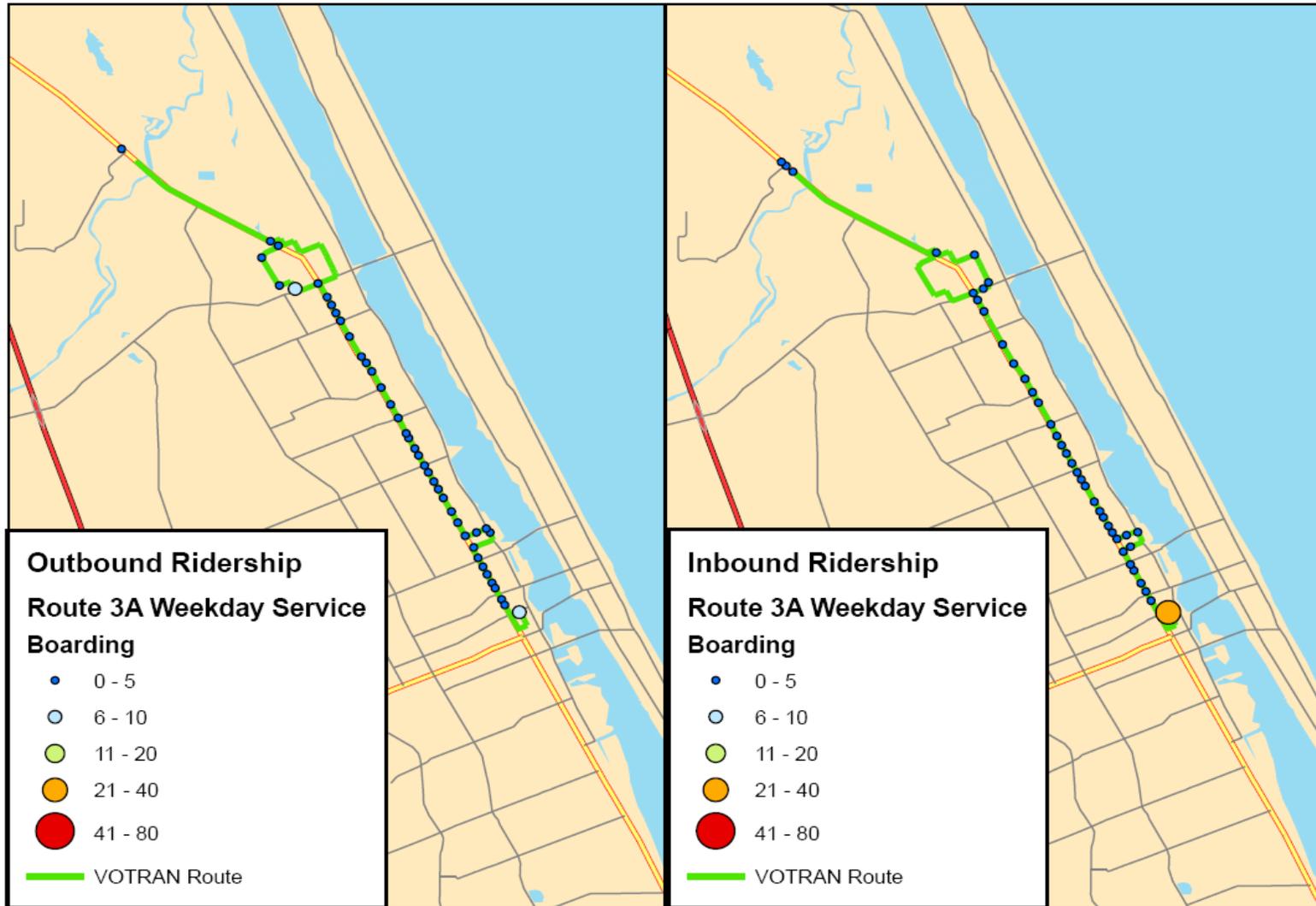
Figure 2-6
Ridership by Hour of Day
Route 3B



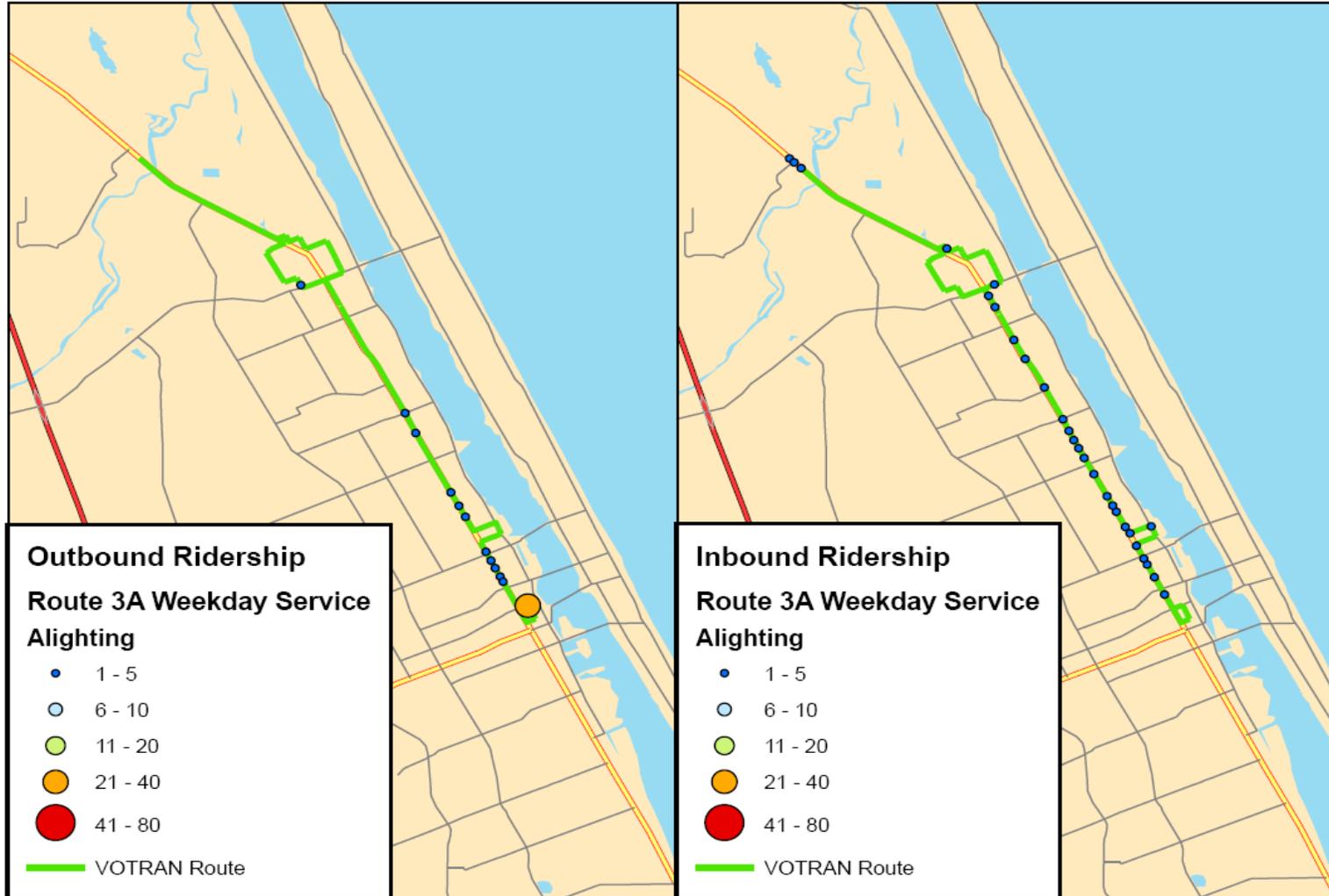
Mapping of APC Data

Maps 2-1 through 2-8 display weekday boardings and alightings for the Routes 3A and 3B as well as boarding and alighting activity for Route 3 Night and Route 3 Sunday services. As a Network Spine route, the Route 3 shows good levels of activity for all segments except for the northern branch of the 3B on weekdays. Night service shows lower levels of activity while boarding and alighting activity on Sunday is much stronger than night service.

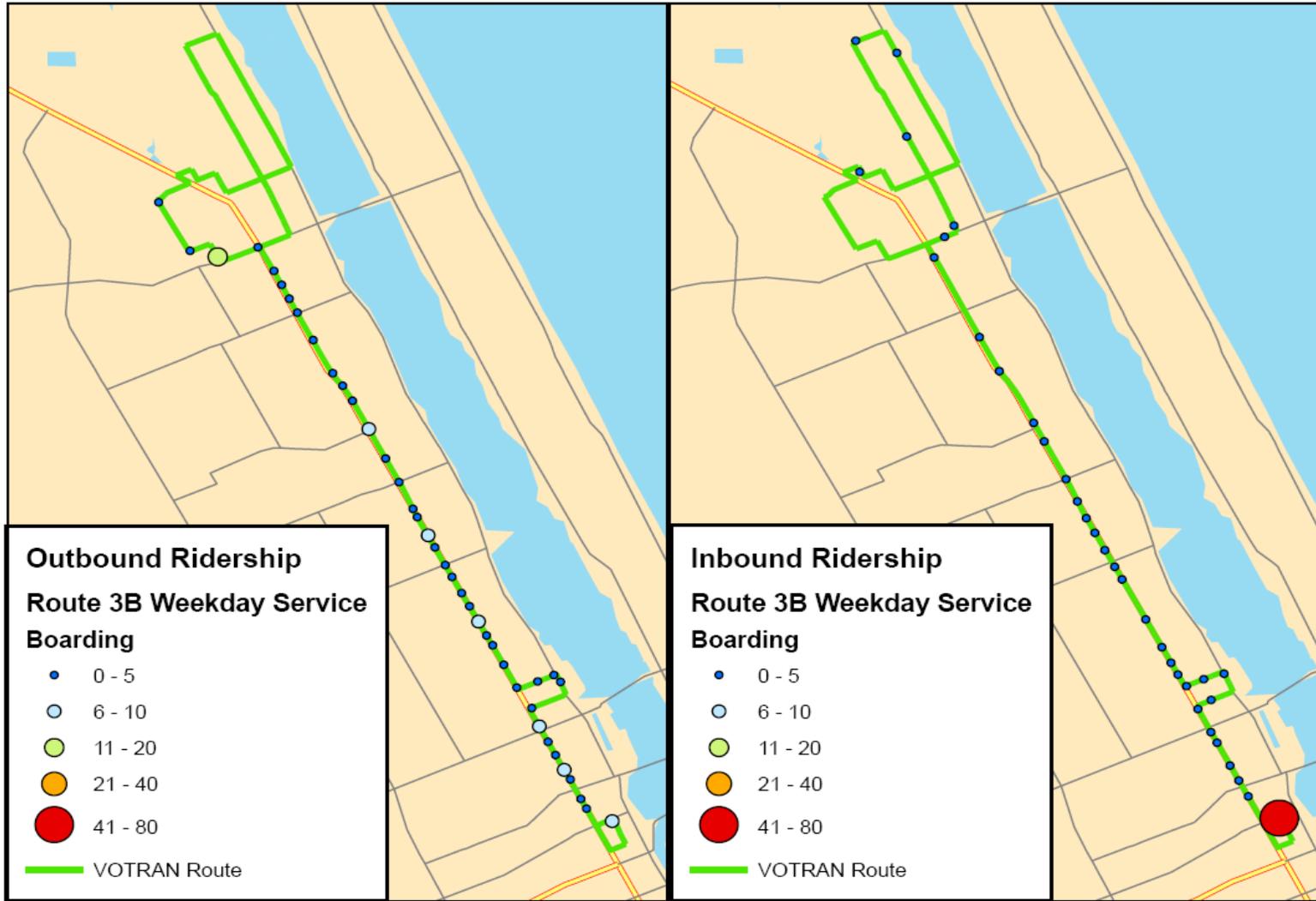
Map 2-1
Route 3A Weekday Boardings



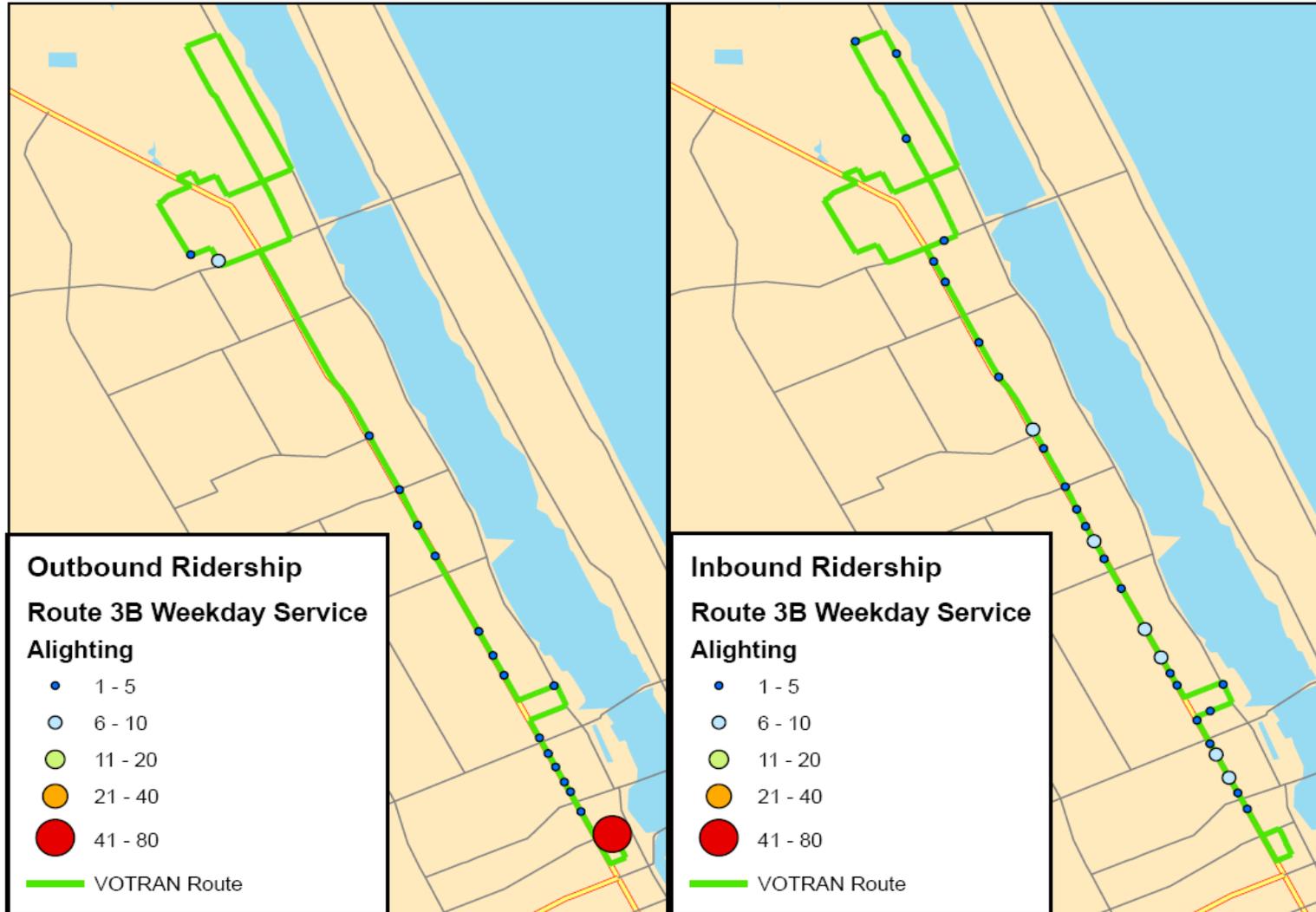
Map 2-2
Route 3A Weekday Alightings



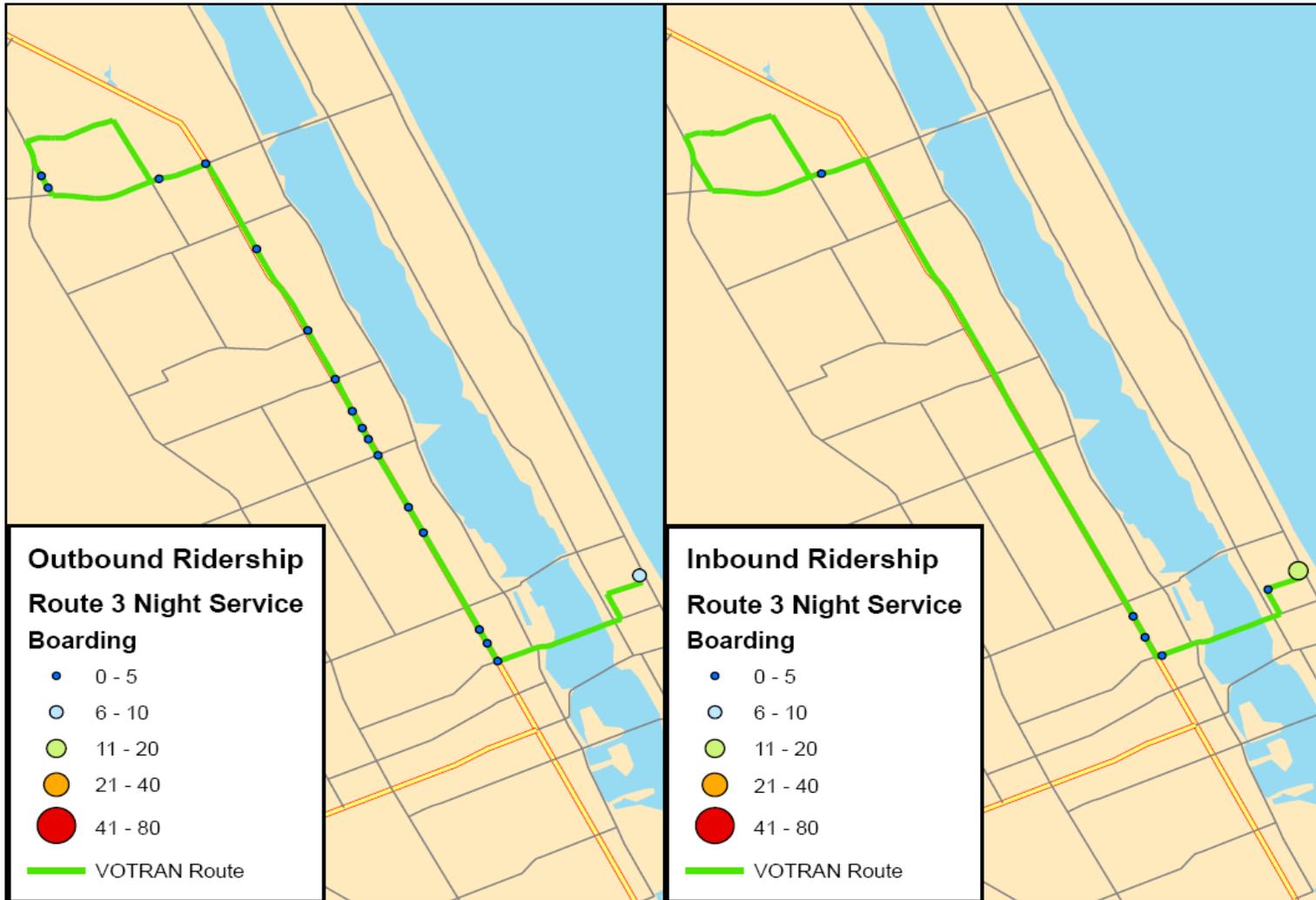
Map 2-3
Route 3B Weekday Boardings



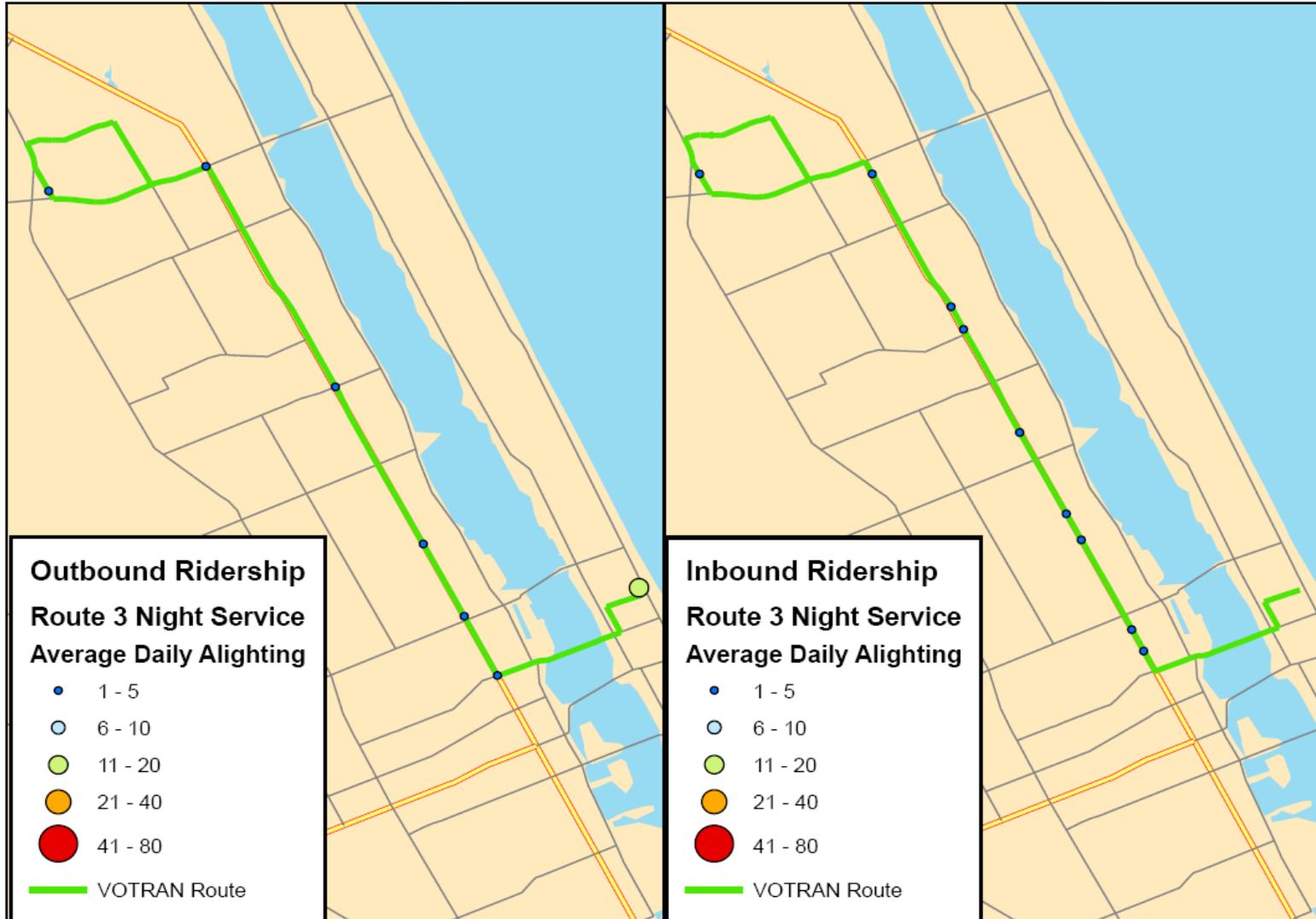
Map 2-4
Route 3B Weekday Alightings



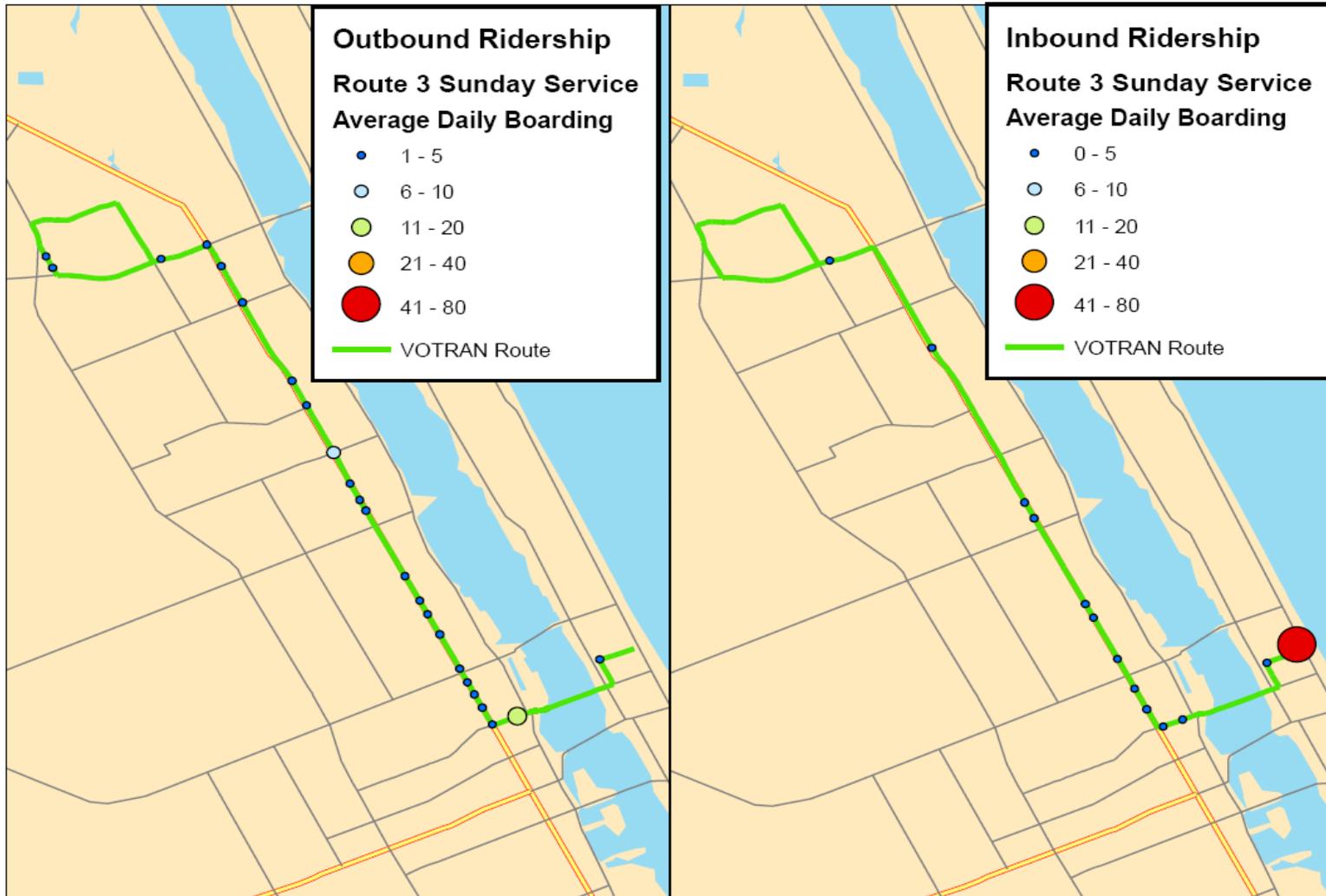
Map 2-5
Route 3 Night Boardings



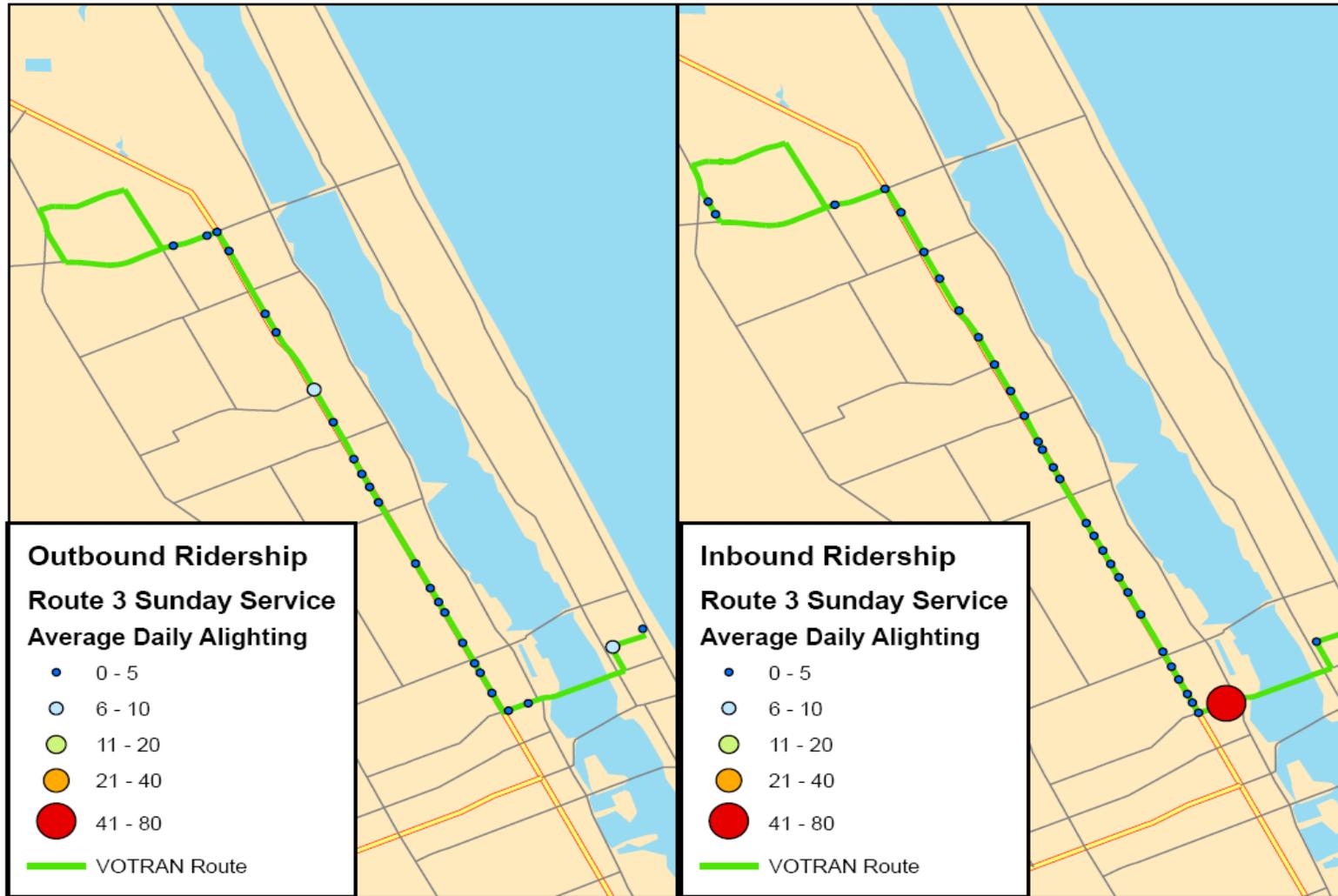
Map 2-6
Route 3 Night Alightings



Map 2-7
Route 3 Sunday Boardings



Map 2-8
Route 3 Sunday Alightings



Route 4

Route 4 serves the U.S. 1 corridor (Ridgewood Avenue) south of the VOTRAN Transfer Plaza to Harbor Oaks and then west on Nova Road to Dunlawton Square Shopping Center in Port Orange. The Route 4 connects with the Routes 7, 12, 17B and 40 at Dunlawton Square. Weekday and Saturday service operates between 6:32 a.m. and 6:52 p.m. with 60 minute frequency. There is significant added development along U.S.1 including Riverwalk DRI which will likely increase ridership activity for this route.

As a network spine route, the Route 4 operates service at night and on Sundays. The routing configuration for Night and Sunday service primarily follows the U.S. 1 south to Dunlawton Avenue and does not serve Harbor Oaks and Dunlawton Square. Night service operates with 60 minute frequencies from 7:00 p.m. to 1:07 a.m. On Sunday, service operates with hourly frequency from 6:41 a.m. to 6:56 p.m. Table 2-3 below shows the Daily Service Characteristics and Table 2-4 displays the Performance Measures for the Route 4. In terms of performance, the Route 4 is ranked #1 in the east side service area.

**Table 2-3
Daily Service Characteristics
Route 4**

Daily Service Characteristics	Weekday/ Saturday	Night	Sunday
Span of Service	6:32 - 18:52	19:00 - 1:07	6:41 - 18:56
Peak/Base Frequency	60/60	60/60	60/60
Peak/Base Buses	2/2	1/1	1/1
1-way Runtime OB	35	24	24
1-way Runtime IB	40	20	20
Daily Revenue Hours	19.7	5.53	12.07
Daily Revenue Miles	300.6	88	186.9
Average Daily Passengers (Wk)	653	N/A	N/A
Average Daily Passengers (Sat)	393	N/A	N/A

Table 2-4
Performance Measures
Route 4

Performance Measures	Measure
FY 07 Overall Composite Score	158%
FY 08 Overall Composite Score	164%
FY 07 Rank	1
FY 08 Rank	1
Passengers/Revenue Hour (FY 08)	30.19
Passengers/Revenue Mile (FY 08)	1.97
Overall Cost/Passenger (FY 08)	\$2.14
Overall Subsidy/Passenger (FY 08)	\$1.44
Operating Ratio (Revenue:Cost)	32.6%

Considerations for Improvements and Priority

Weekday Frequency Improvements – Route 4

Priority: Highest

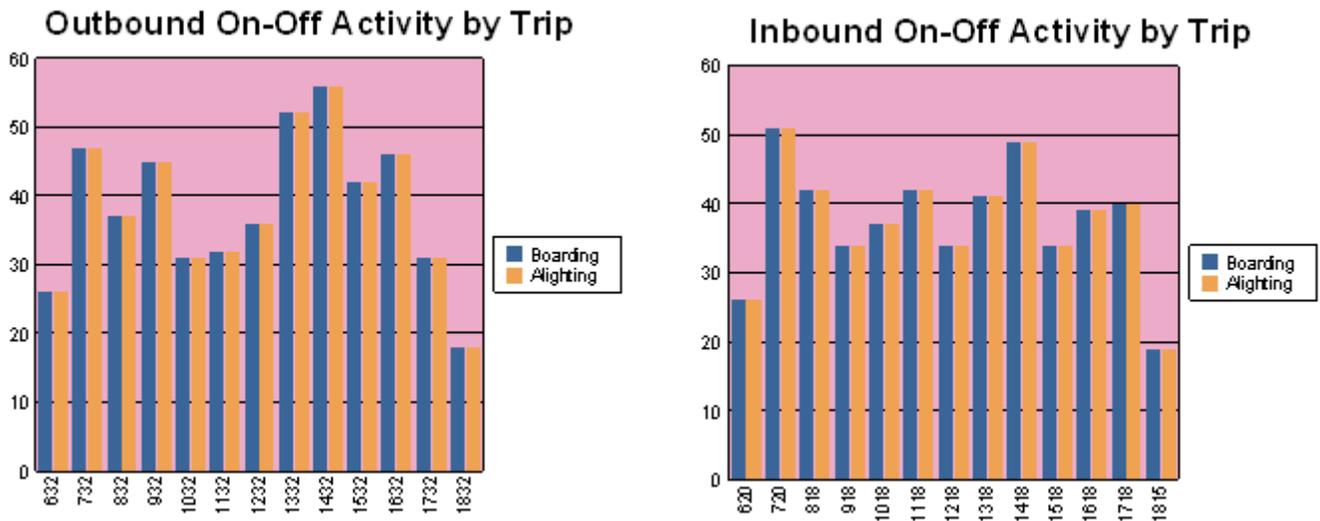
Ridecheck Data from Automatic Passenger Counters (APCs)

The following tables, figures and maps depict data obtained from the APC data supplied by VOTRAN.

On-Off Activity by Trip

The APC data shows the inbound trips experience their greatest levels of on-off activity on the 7:20 a.m. trip. The outbound trips have their greatest activity on the 2:32 p.m. trip. Figure 2-7 displays the on-off activity by trip for the Route 4.

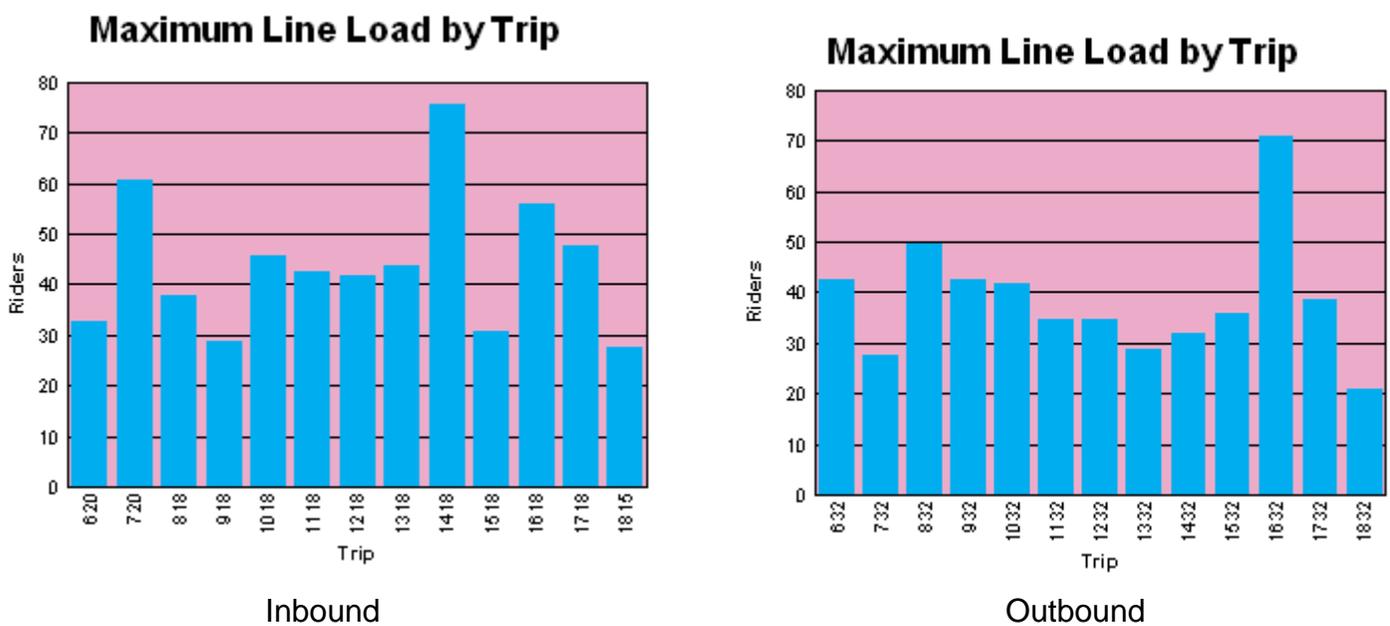
**Figure 2-7
On-Off Activity by Trip
Route 4**



Max Line Load by Trip

Figure 2-8 below shows that the max line loads for the Route 4 occur during the 2:18 p.m. inbound and the 4:32 p.m. outbound trips.

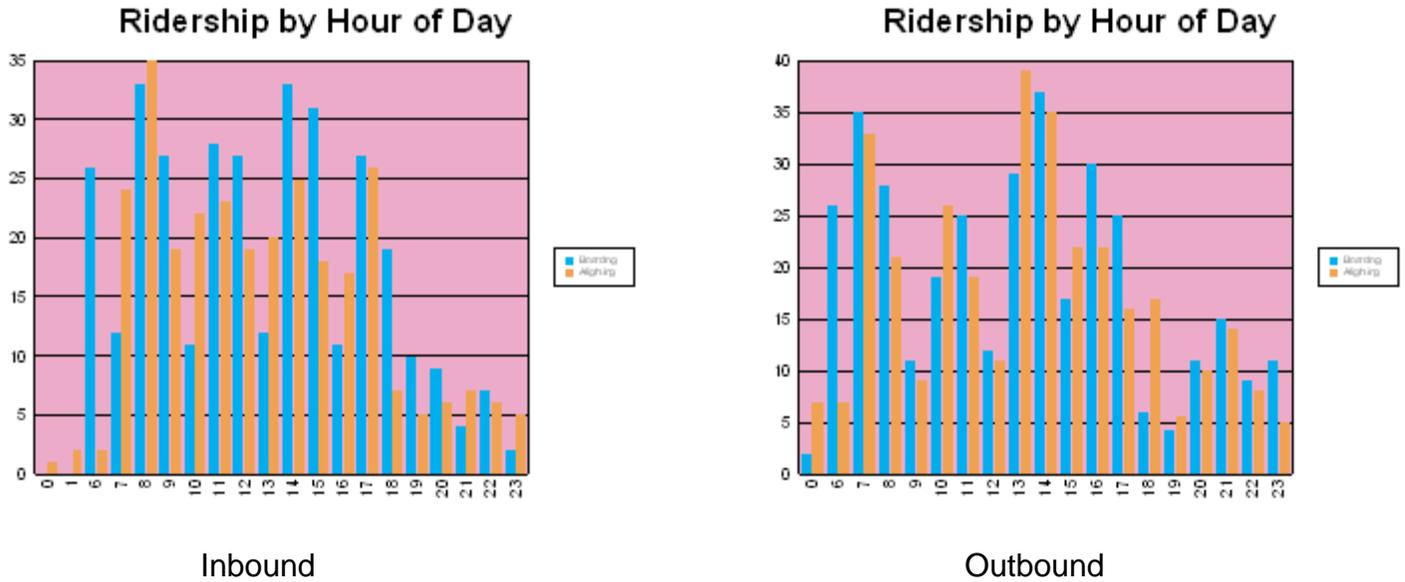
**Figure 2-8
Max Line Load by Trip
Route 4**



Ridership by Hour of Day

Figure 2-9 below shows that the Route 4 had the greatest levels of boardings and alightings during the 8:00 – 9:00 a.m. hour for inbound trips and the 1:00 p.m. to 3:00 p.m. hours for outbound trips.

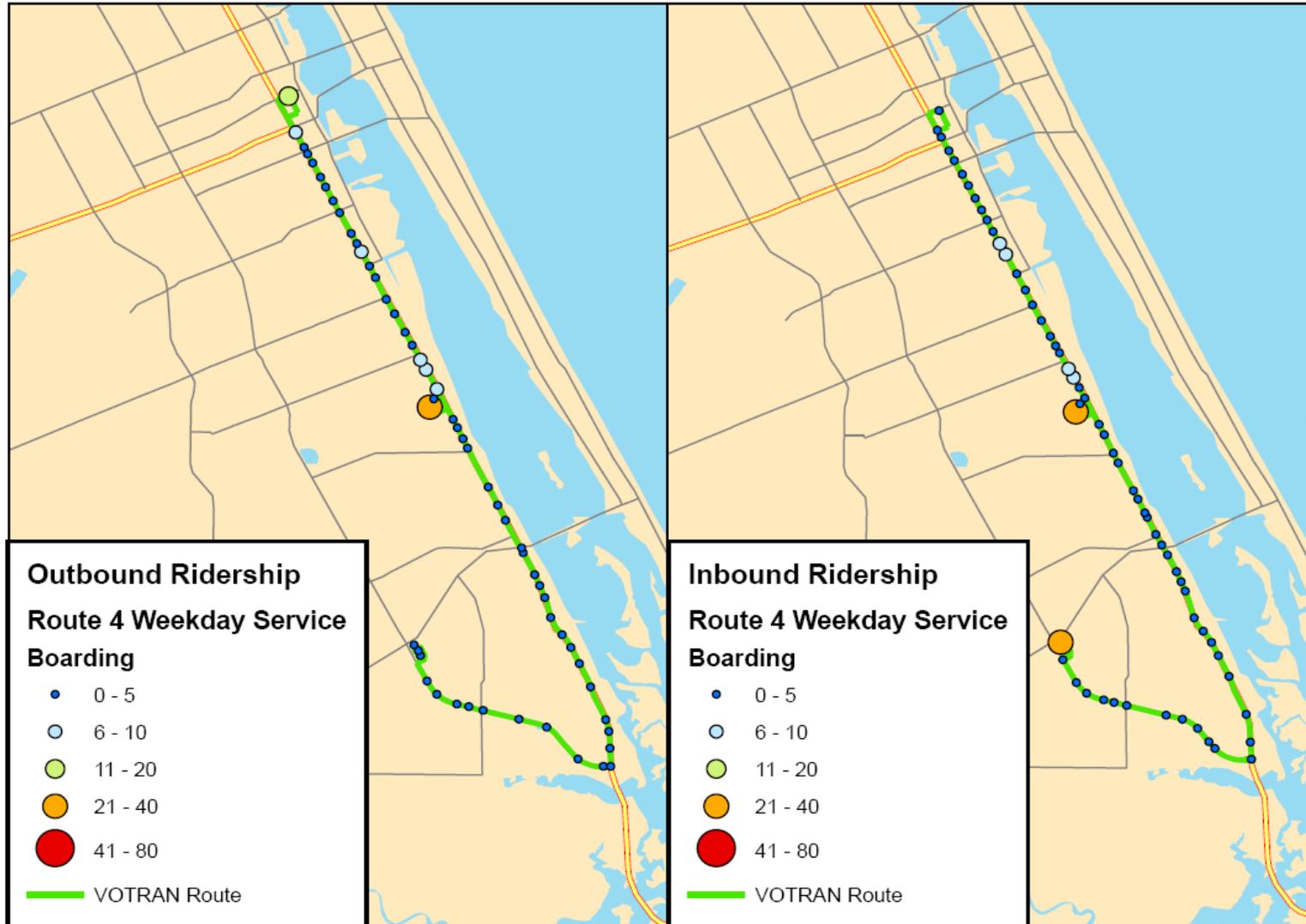
**Figure 2-9
Ridership by Hour of Day
Route 4**



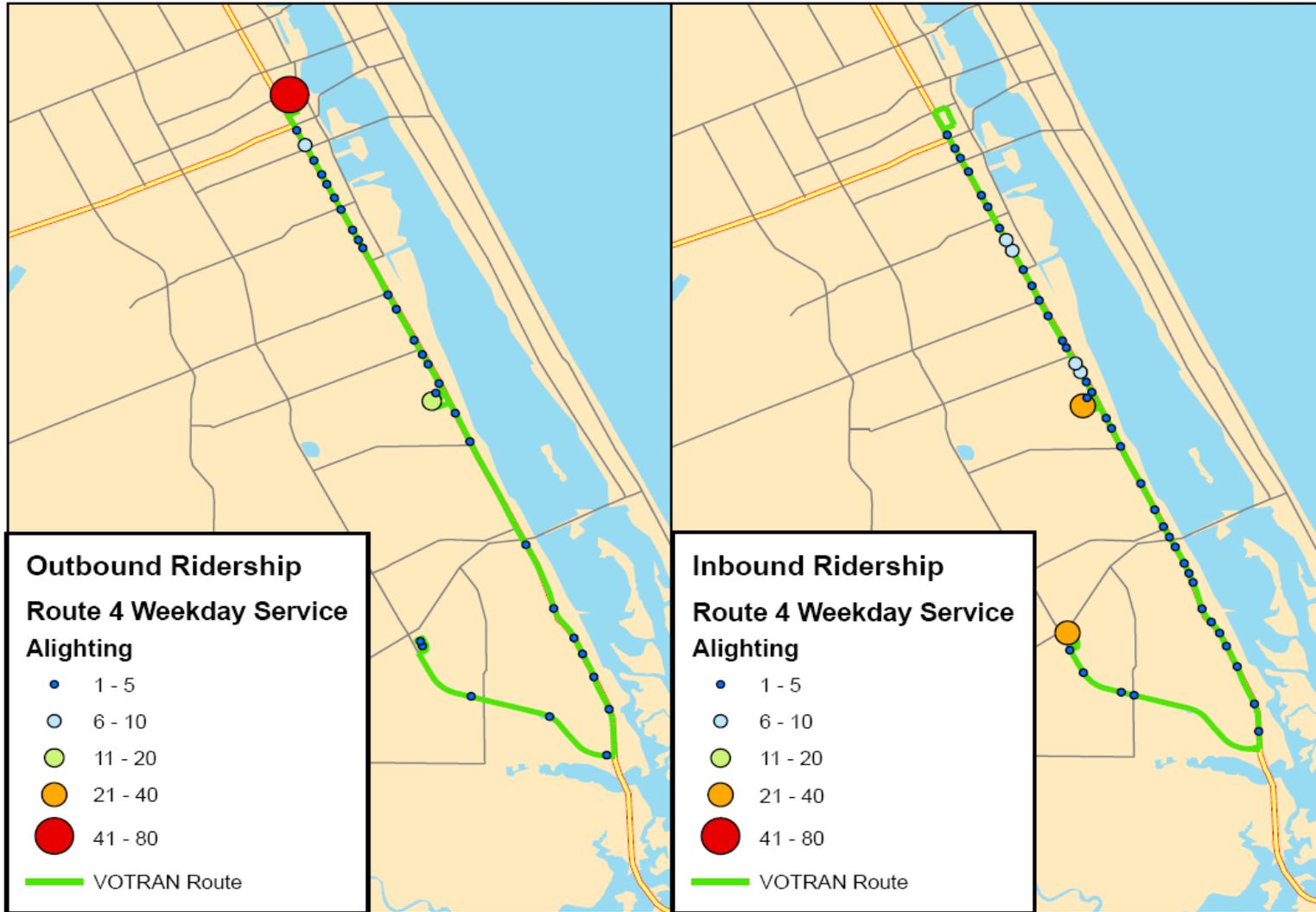
Mapping of APC Data

Maps 2-9 through 2-14 display weekday boardings and alightings for the Route 4 as well as boarding and alighting activity for Route 4 Night and Route 4 Sunday services. As a Network Spine route, the Route 4 shows good levels of activity for all segments on weekdays. Night service shows lower levels of activity while boarding and alighting activity on Sunday is much stronger than night service.

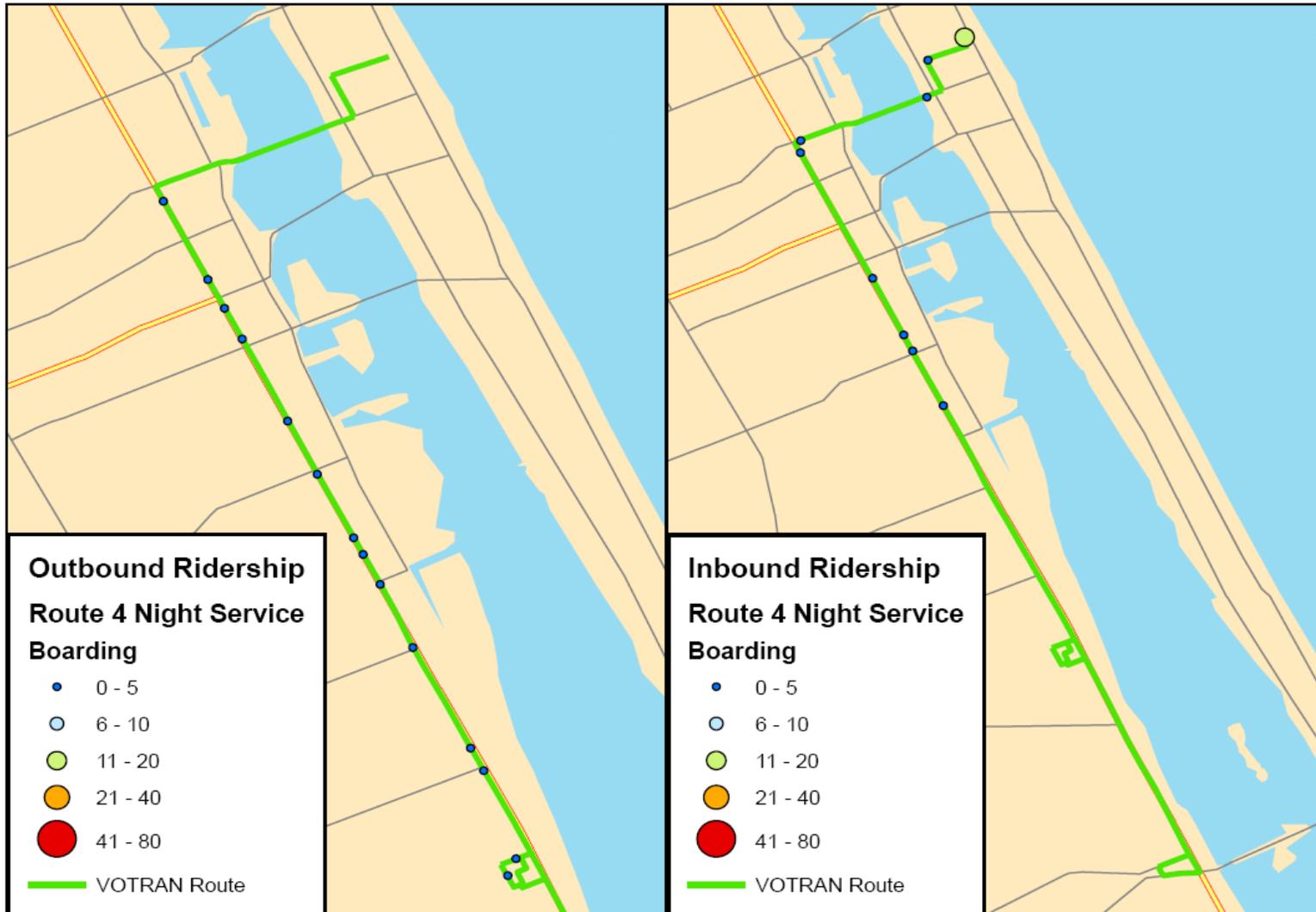
Map 2-9
Route 4 Weekday Boardings



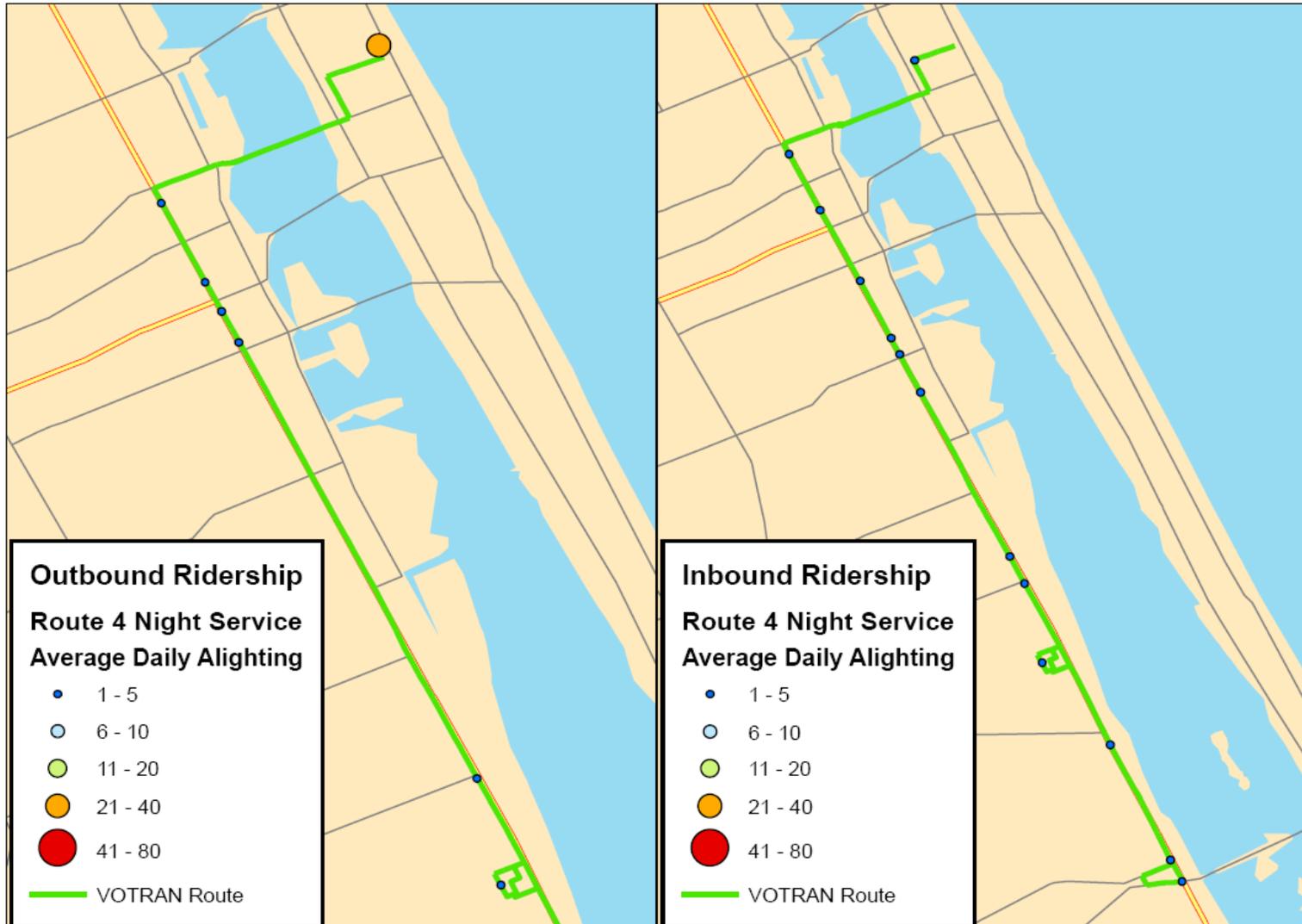
Map 2-10
Route 4 Weekday Alightings



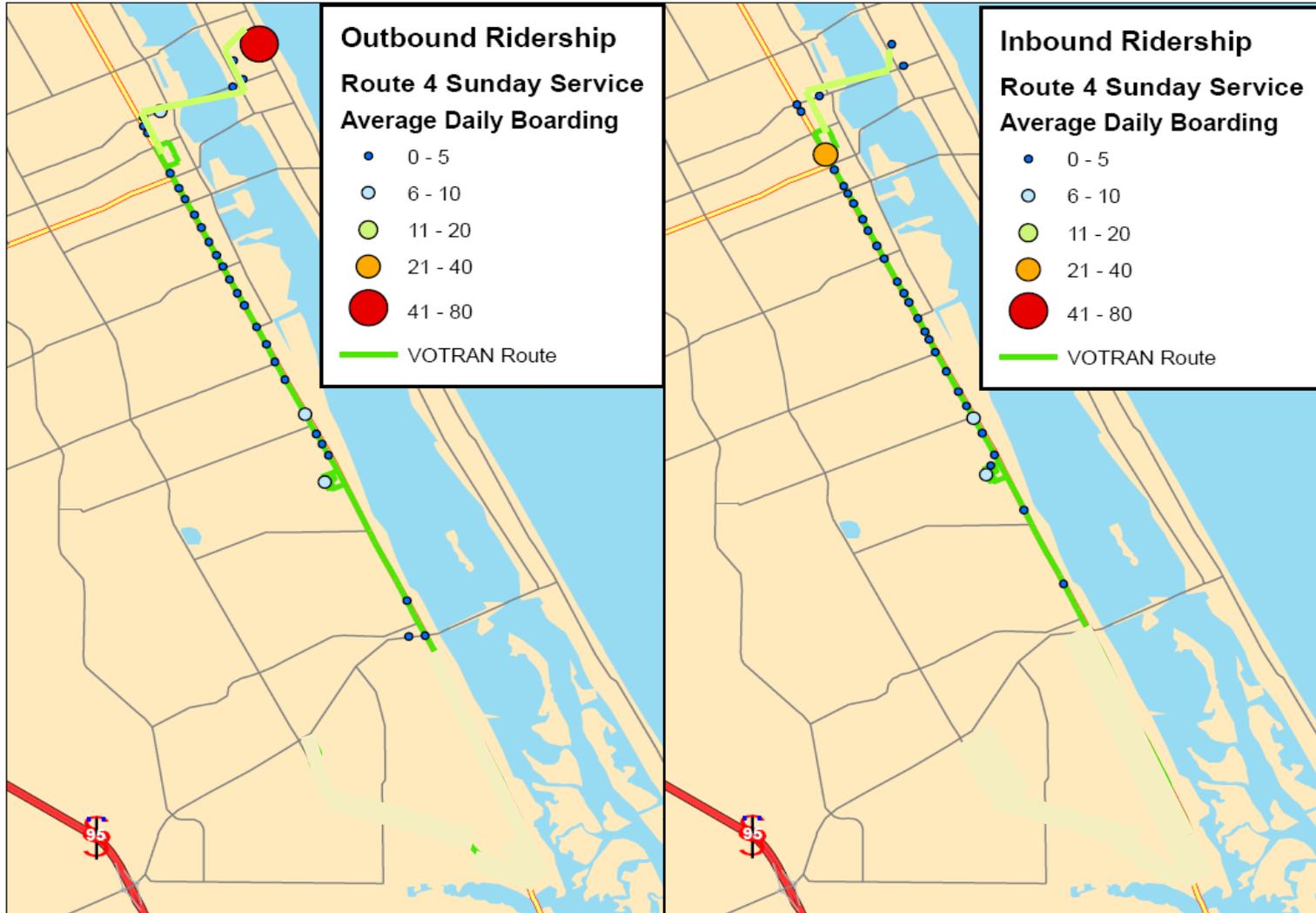
Map 2-11
Route 4 Night Boardings



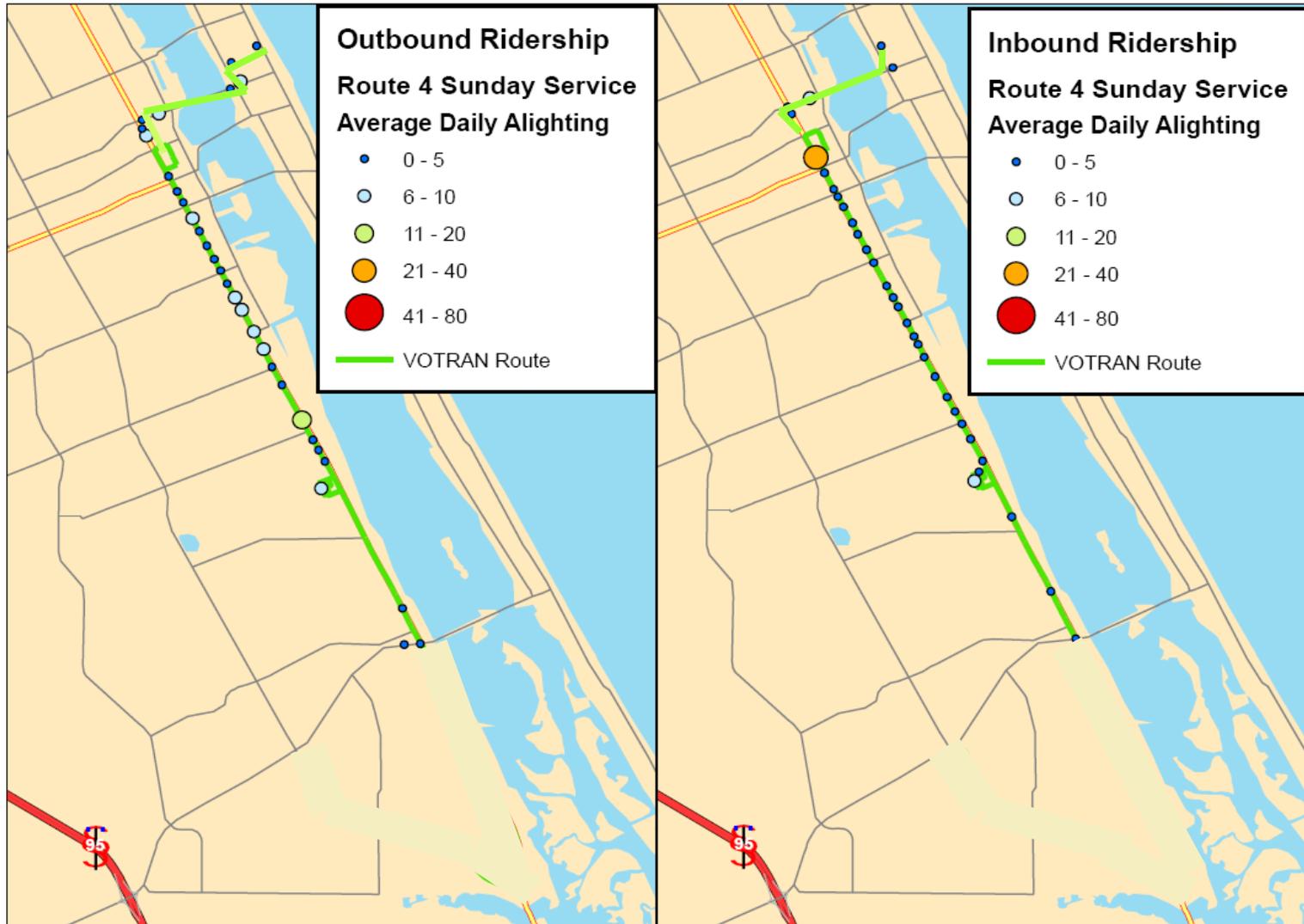
Map 2-12
Route 4 Night Alightings



Map 2-13
Route 4 Sunday Boardings



Map 2-14
Route 4 Sunday Alightings



Introduction to Routes 1 and 17

The analyses for Routes 1 and 17 are presented below. These two routes are critical to the spine network because the Route 1 with its branches serves A1A north of ISB and the Route 17 with its branches serves A1A south of ISB. Together, these two routes generated just over 700,000 passenger trips in FY 07. Both routes are augmented by trolley service on the spine of A1A, meaning that trolley serves from Granada to Dunlawton on A1A. At night, the trolley actually operates as the Route 1 and the Route 17. There are factors that diminish the support provided to Routes 1 and 17 by the trolley. First, the service is seasonal, operating between mid-January and Labor Day. Second, the trolley service does not have the same span as the Routes 1 and 17, beginning at noon and ending at the end of the night service span. Finally, the trolley service operates at a 45 minute frequency with two buses and departures are not currently offset to increase frequencies for Routes 1 and 17. Although the Routes 1 and 17 are both eligible for frequency improvements as spine network routes defined in this COA, it is possible to increase the frequency on the corridor by adding a bus to the trolley thereby increasing the frequency to 30 minutes and also changing trolley service to operate year round and at the same span as the Routes 1 and 17. This would be a significantly less expensive alternative to increase frequency on the corridor but also maintain the focus of making actual frequency improvements to the Routes 3 and 4, which are the highest priority.

Route 1

Route 1 serves the A1A corridor north of the VOTRAN Transfer Plaza. There are two branches to this route. The 1A (A1A North) serves primarily Atlantic Avenue and Ocean Shore Boulevard north to Tarpon Avenue and Bass Drive in Ormond Beach. The 1A operates hourly service between the Transfer Plaza and Ormond Beach. The 1B (Granada) serves Atlantic Avenue north to Granada Boulevard and then west to the Wal-Mart Super Center at Granada and Williamson Boulevards. The 1B also operates hourly service between the Transfer Plaza and the Wal-Mart Super Center. Both branches operate the same schedule on weekdays and Saturdays. Routes 1A and 1B are offset by 30 minutes from each other in terms of departures from the transfer plaza in order to provide 30 minute frequency on A1A between the International Speedway Boulevard and Granada.

As a network spine route, the Route 1 operates service at night and on Sundays. The routing configuration for Night and Sunday service primarily follows the 1B except that the service truncates at Granada and Nova Road to allow transfers to and from Route 3 and does not serve the Wal-Mart Super Center. Night service operates with 60 minute frequencies from 7:00 p.m. to

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12:36 a.m. On Sunday, service operates with hourly frequency from 7:00 a.m. to 6:23 p.m. Table 2-5 below shows the Daily Service Characteristics and Table 2-6 displays the Performance Measures for the Route 1A and 1B combined.

Table 2-5
Daily Service Characteristics
Route 1A and 1B

Daily Service Characteristics	Weekday/ Saturday	Night	Sunday
Span of Service	5:40 - 19:17	19:00 - 24:36	7:00 - 18:23
Peak/Base Frequency	60/60	60/60	60/60
Peak/Base Buses	2/2	1/1	1/1
1-way Runtime OB	46	25	25
1-way Runtime IB	58	23	23
Daily Revenue Hours	53.27	5.62	12.04
Daily Revenue Miles	777.1	93.1	166.2
Average Daily Passengers (Wk)*	1,346	N/A	N/A
Average Daily Passengers (Sat)*	1,131	N/A	N/A

*VOTRAN reports combine route 1; therefore 1A & 1B ridership are combined to determine pass/rev hr and pass/rev mi

Table 2-6
Performance Measures
Route 1A and 1B Combined

Performance Measures	Measure
FY 07 Overall Composite Score	139%
FY 08 Overall Composite Score	138%
FY 07 Rank	4
FY 08 Rank	4
Passengers/Revenue Hour (FY 08)	25.07
Passengers/Revenue Mile (FY 08)	1.72
Overall Cost/Passenger (FY 08)	\$2.58
Overall Subsidy/Passenger (FY 08)	\$1.83
Operating Ratio (Revenue:Cost)	29.1%

Considerations for Improvements and Priority

Increase Trolley Service: Add one trolley, operate at 30 minute frequencies, add service days to operate year round, and add operating hours to match the span of Route 1. Discontinue serving the Bellaire Shopping Plaza and Wal-Mart to allow for additional running time to access Ormond Memorial Hospital.

Weekday Frequency Improvements – Routes 1A and 1B

Priority: Medium

Ridecheck Data from Automatic Passenger Counters (APCs)

The following tables, figures and maps depict data obtained from the APC data supplied by VOTRAN.

On-Off Activity by Trip

The APC data shows the inbound trips experience their greatest levels of on-off activity on the 2:21 p.m. trip with slightly less activity on the 3:21 and 4:21 trips. The outbound trips have their greatest activity in the 2:35 and 3:35 trips. For the Route 1B, the 2:06 and 3:06 inbound trips show the greatest level of activity while the outbound trips spike at the 5:02 trip. Figures 2-10 and 2-11 below show the on-off activity by trip for the Routes 1A and 1B.

**Figure 2-10
On-Off Activity by Trip
Route 1A**

Weekday Activity

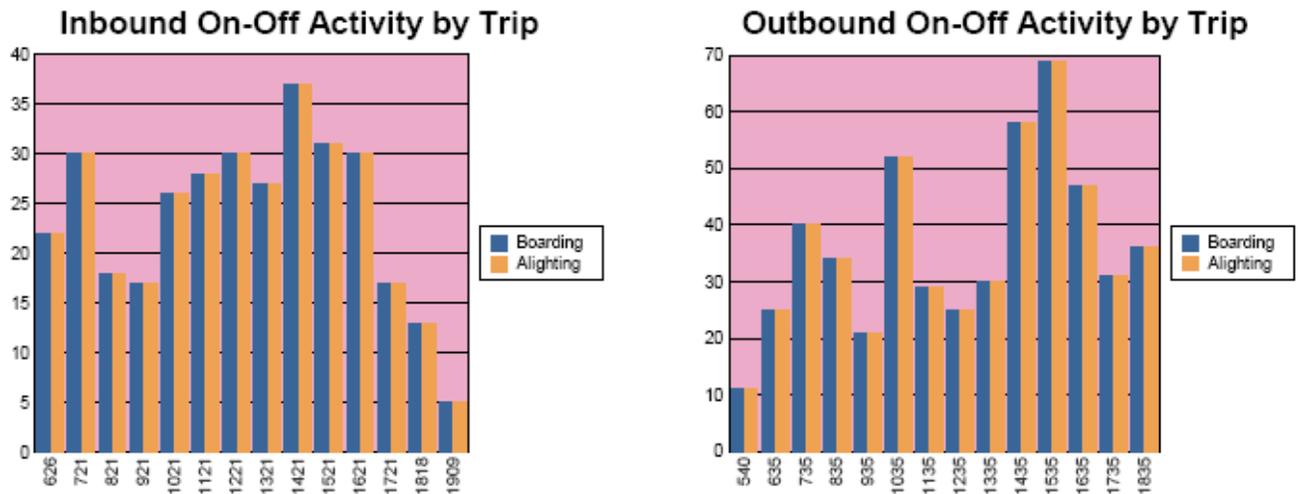
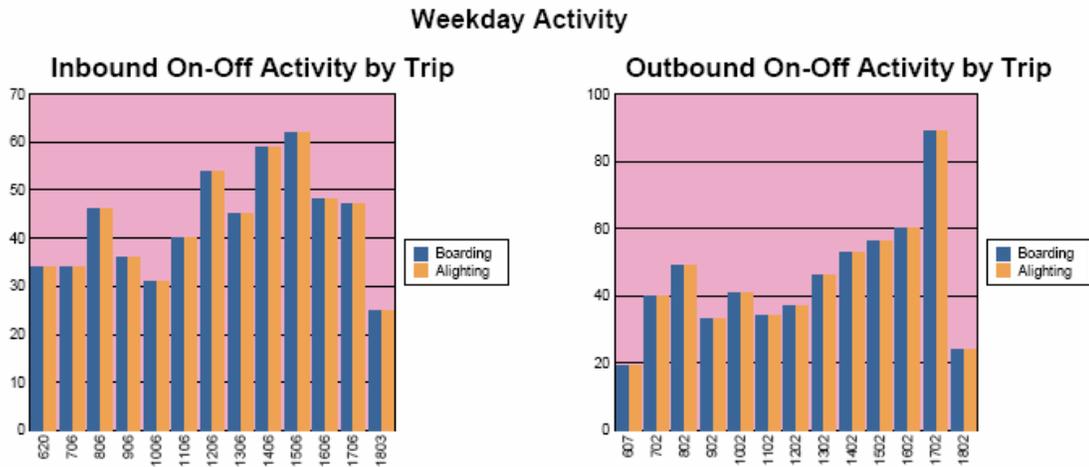


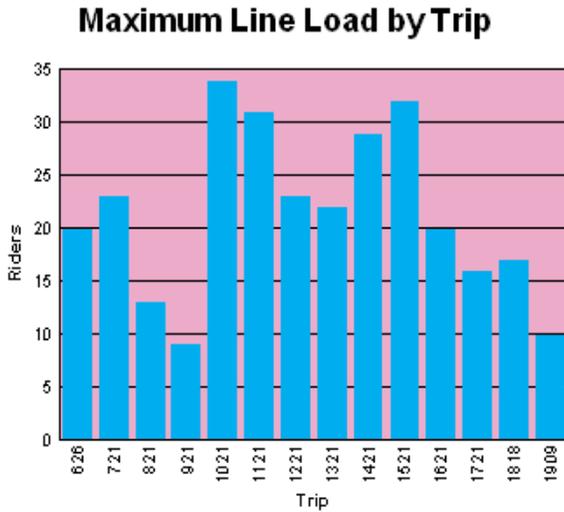
Figure 2-11
On-Off Activity by Trip
Route 1B



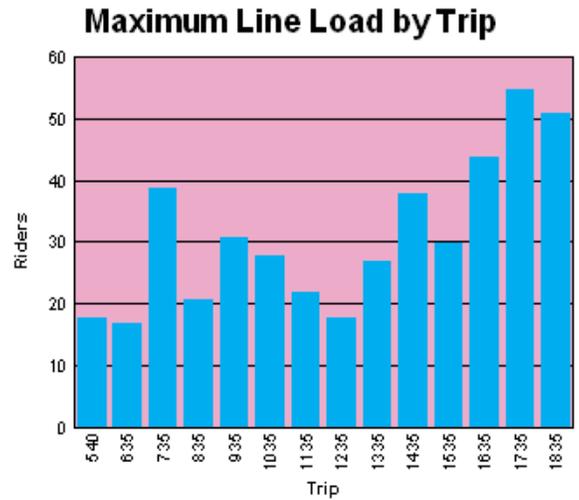
Max Line Load by Trip

The maximum line load is the moment in a bus trip when there is the greatest number of passengers on board the bus. Figure 2-12 below shows that the max line loads for the Route 1A occur during the 10:21 a.m. inbound and the 5:25 outbound trips. Figure 2-13 below shows that the max line loads for the Route 1B occur during the 2:06 p.m. inbound and the 2:02 p.m. outbound trips.

Figure 2-12
Max Line Load by Trip
Route 1A

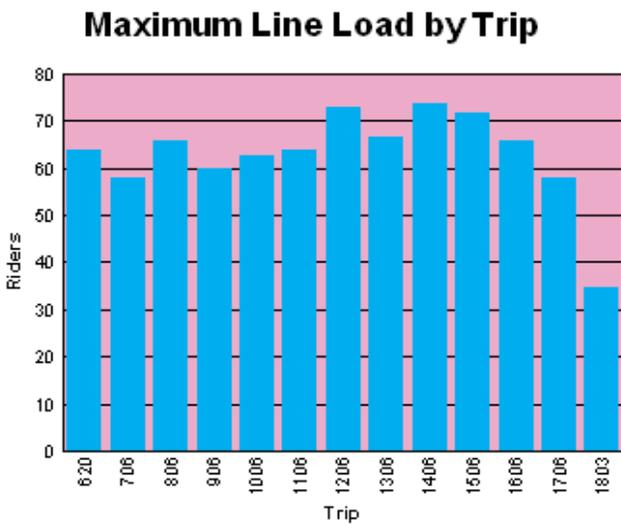


Inbound

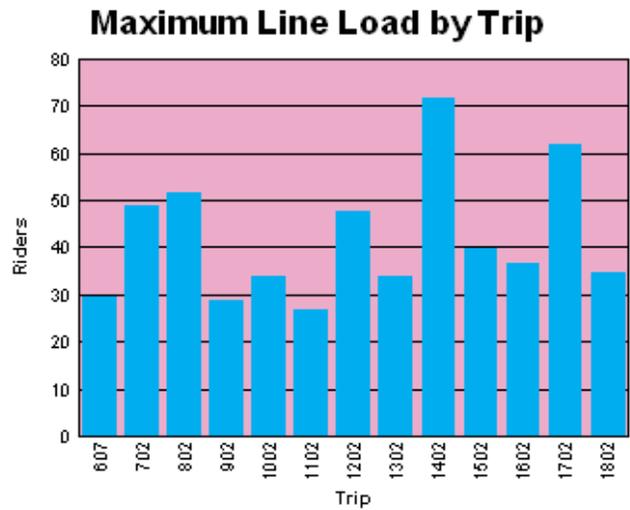


Outbound

Figure 2-13
Max Line Load by Trip
Route 1B



Inbound



Outbound

Ridership by Hour of Day

Since APCs have a timestamp for every stop, CUTR was able to take the APC data and project ridership by hour of day for each branch. Figure 2-14 below shows that the Route 1A had the greatest levels of boardings during the 12:00 – 1:00 p.m. hour while the greatest level of alightings occurred during the 8:00 – 9:00 a.m. hour. Outbound trips had the greatest levels of boardings and alightings during the 3:00 p.m. to 4:00 p.m. hour. For the Route 1B, the greatest levels of boardings for inbound trips occurred during the 2:00 -3:00 p.m. hour while the greatest level of alightings occurred during the 3:00 – 4:00 p.m. hour. Outbound trips experienced the greatest levels of boardings and alightings during the 5:00 p.m. to 6:00 p.m. hour.

Figure 2-14
Ridership by Hour of Day
Route 1A

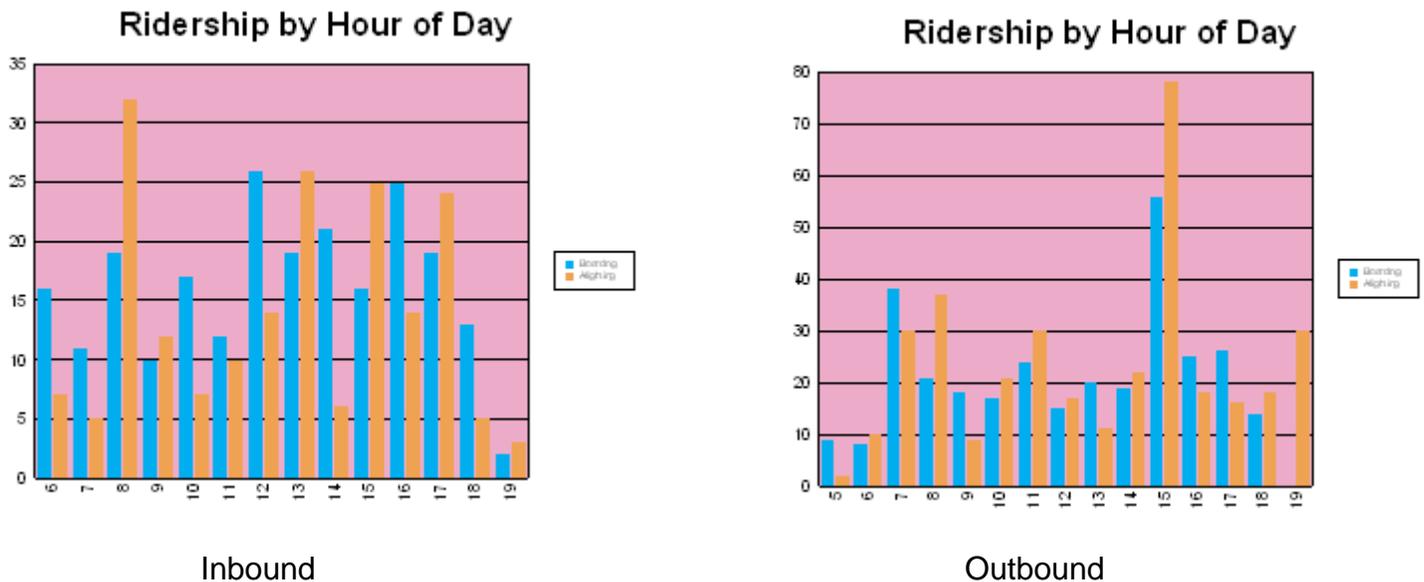
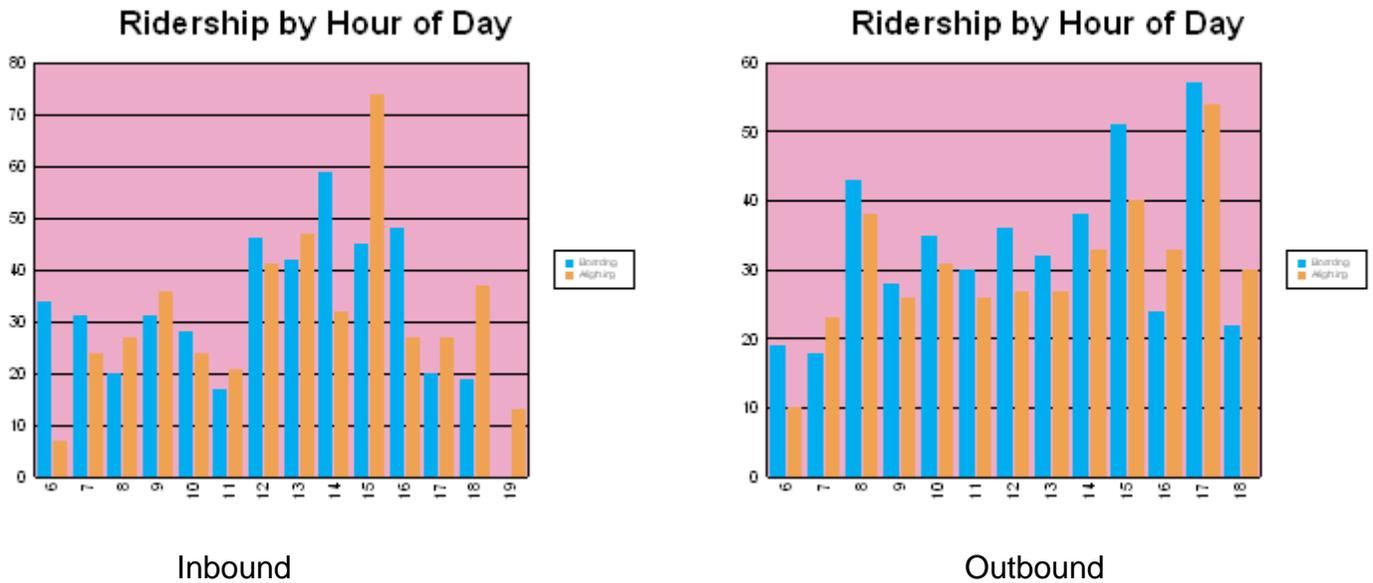


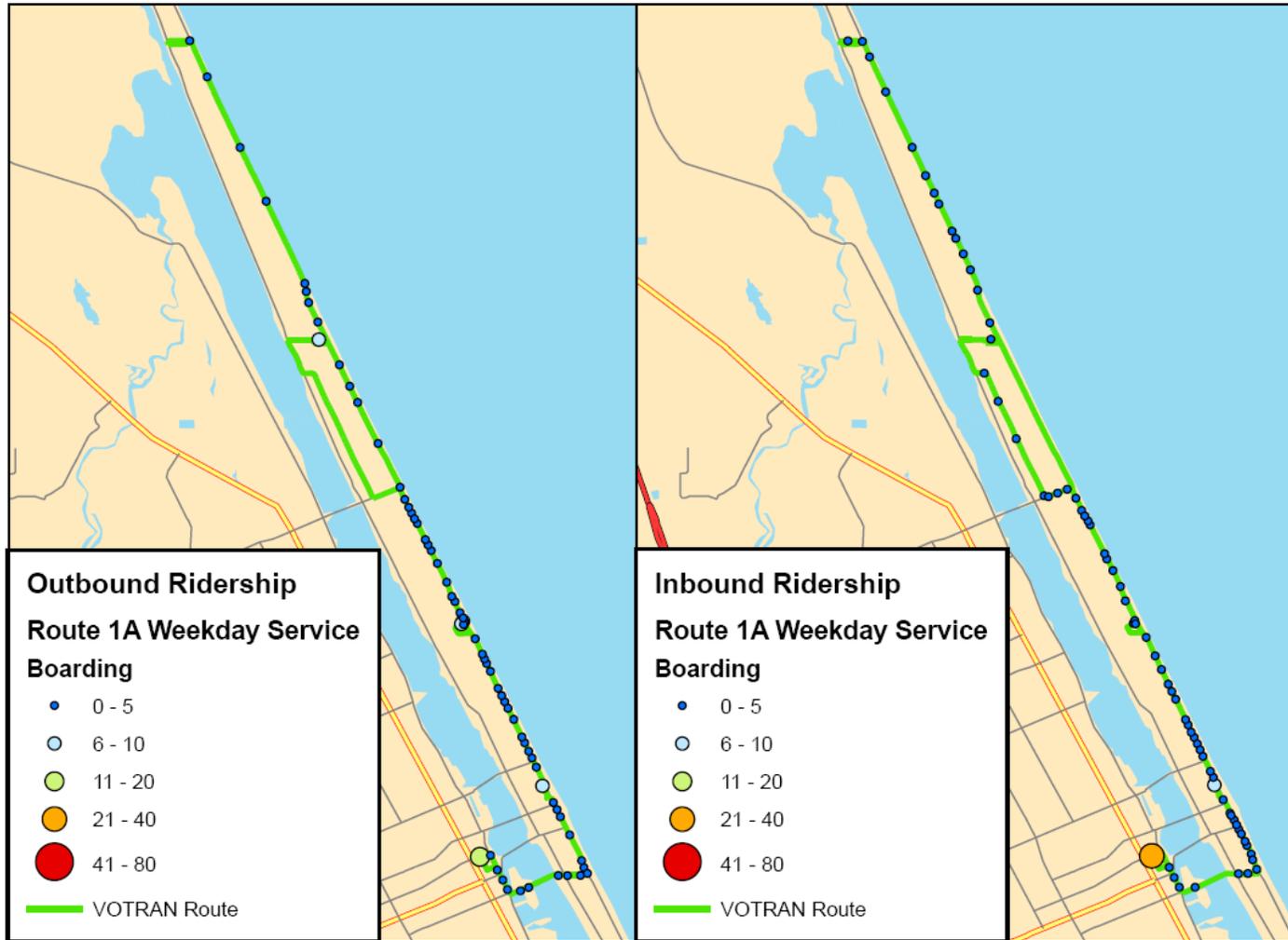
Figure 2-15
Ridership by Hour of Day
Route 1B



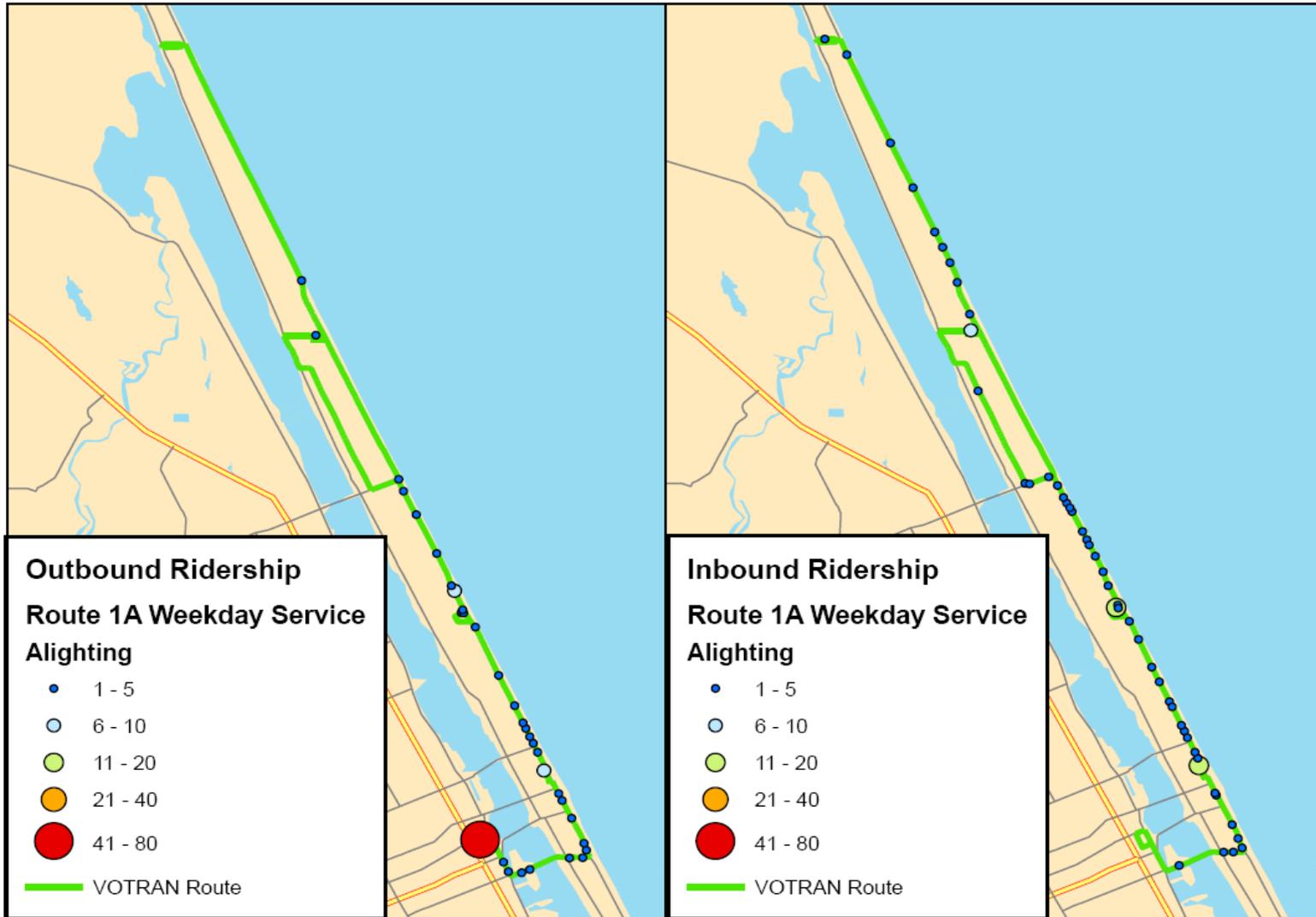
Mapping of APC Data

Maps 2-15 through 2-22 display weekday boardings and alightings for the Routes 1A and 1B as well as boarding and alighting activity for Route 1 Night and Route 1 Sunday services. As a Network Spine route, the Route 1 shows good levels of activity for all segments and branches with highest activity levels at the VOTRAN Transfer Plaza and the Intermodal Transit Center.

Map 2-15
Route 1A Boardings

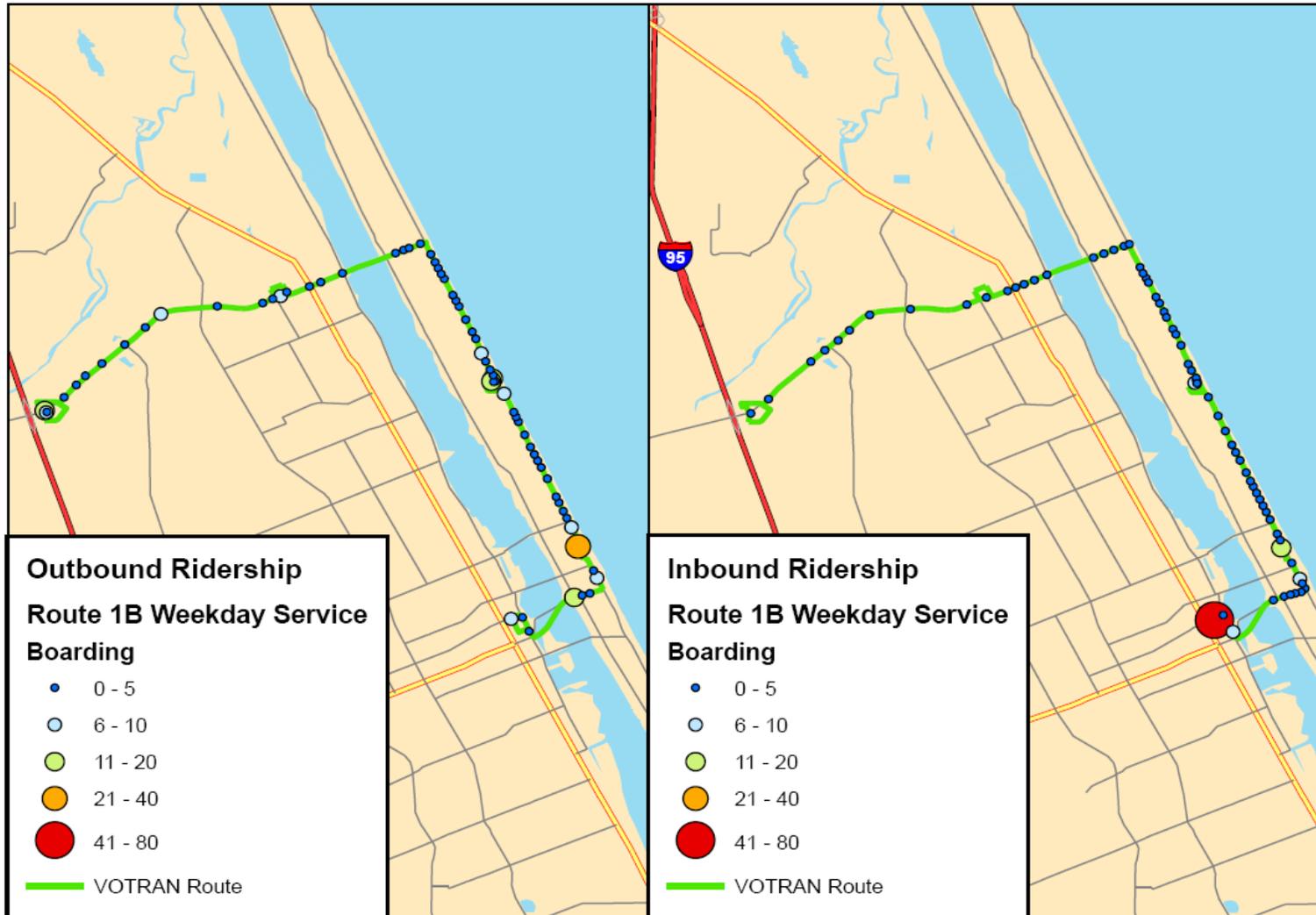


Map 2-16
Route 1A Alightings



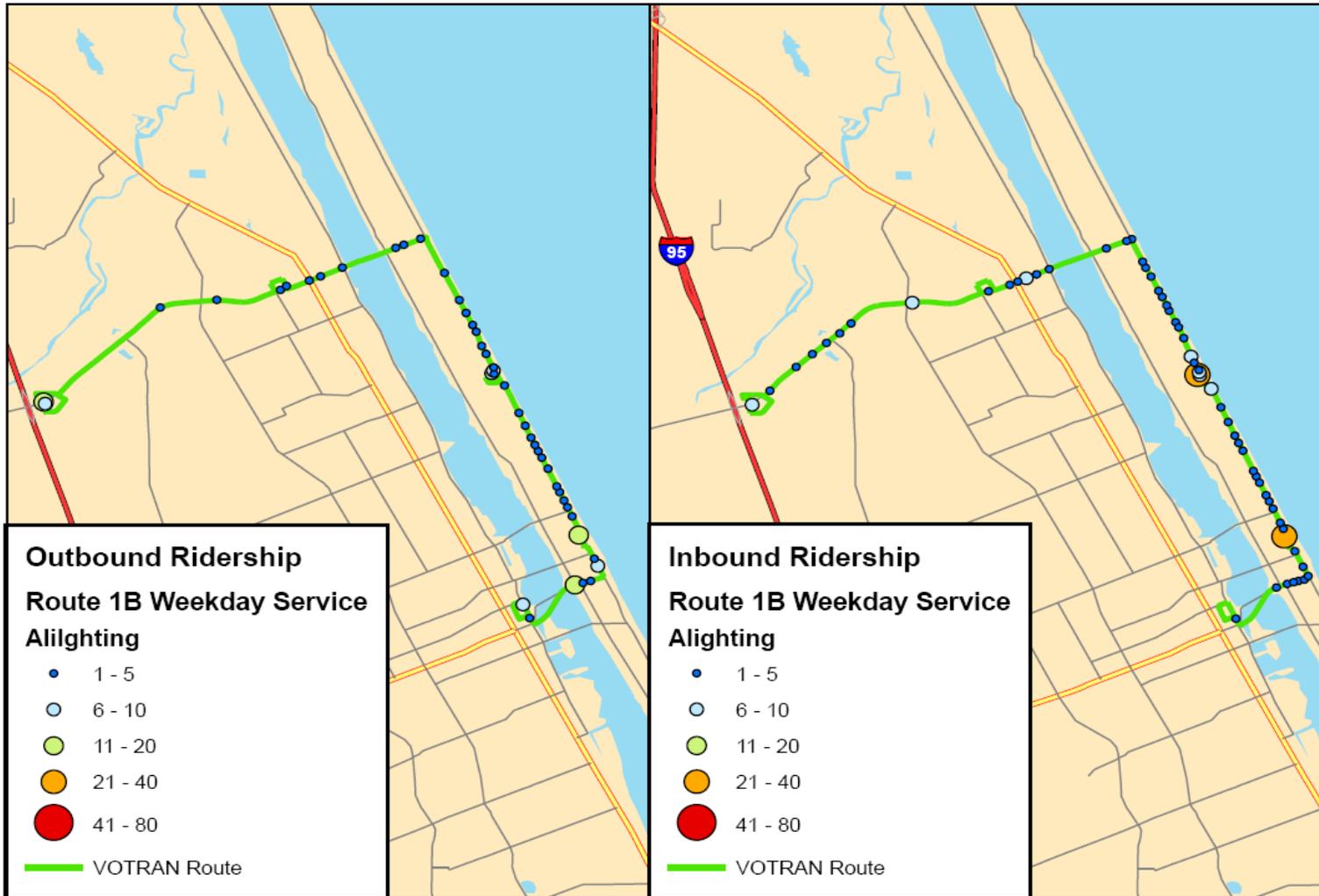
VOTRAN EAST SIDE TRANSIT STUDY FINAL REPORT

Map 2-17 Route 1B Boardings

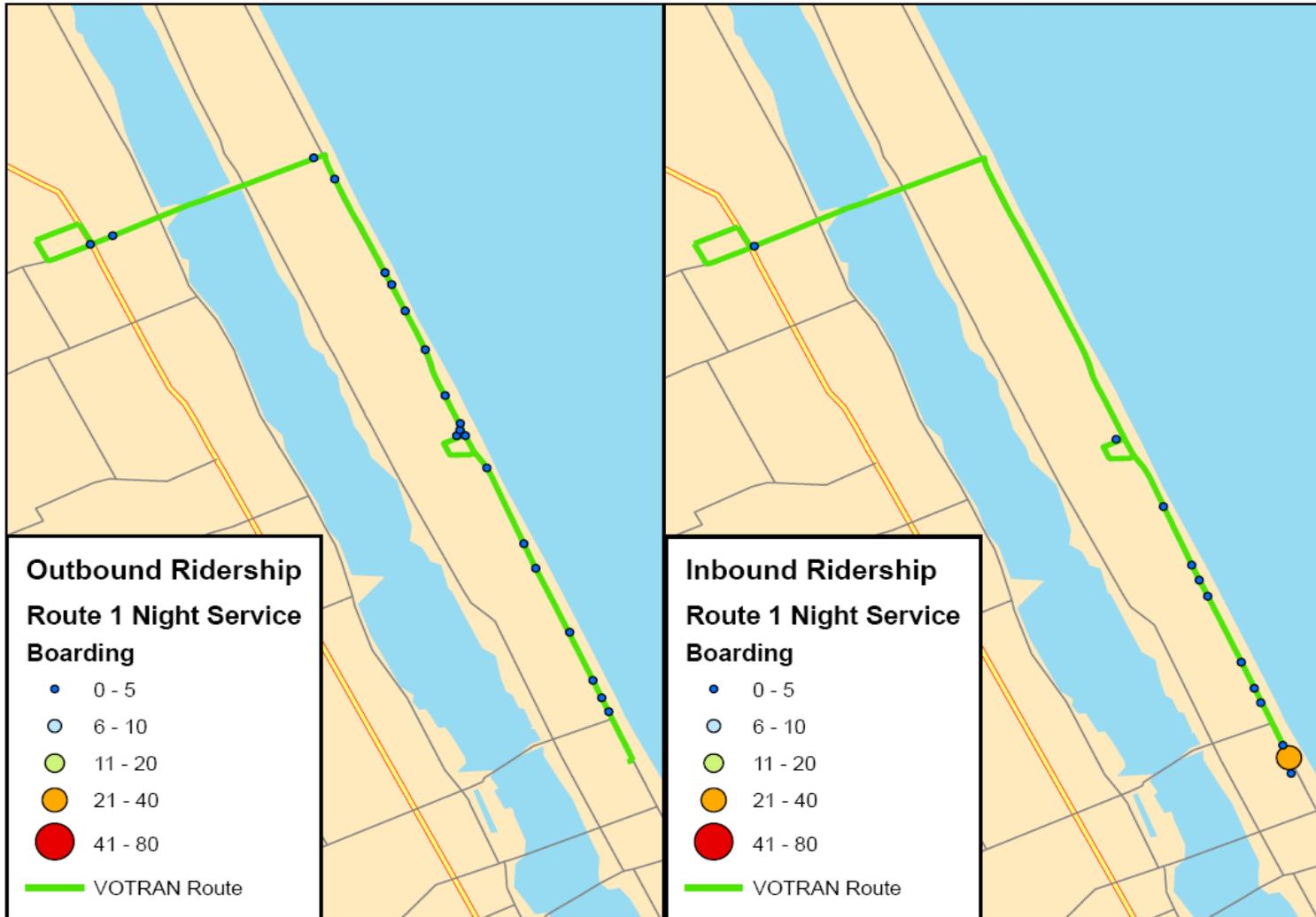


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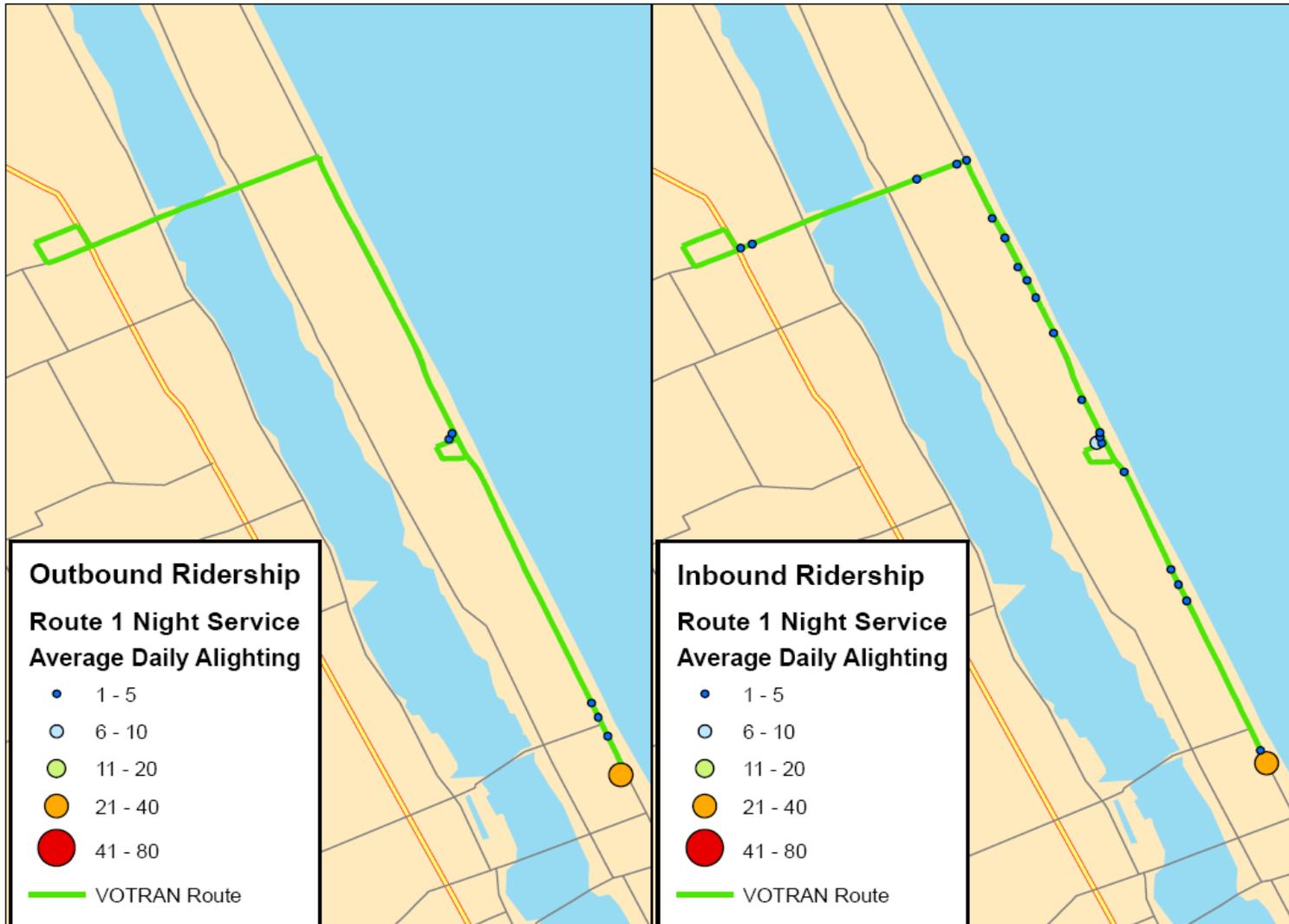
Map 2-18
Route 1B Alightings



Map 2-19
Route 1 Night Service - Boardings



Map 2-20
Route 1 Night Service - Alightings

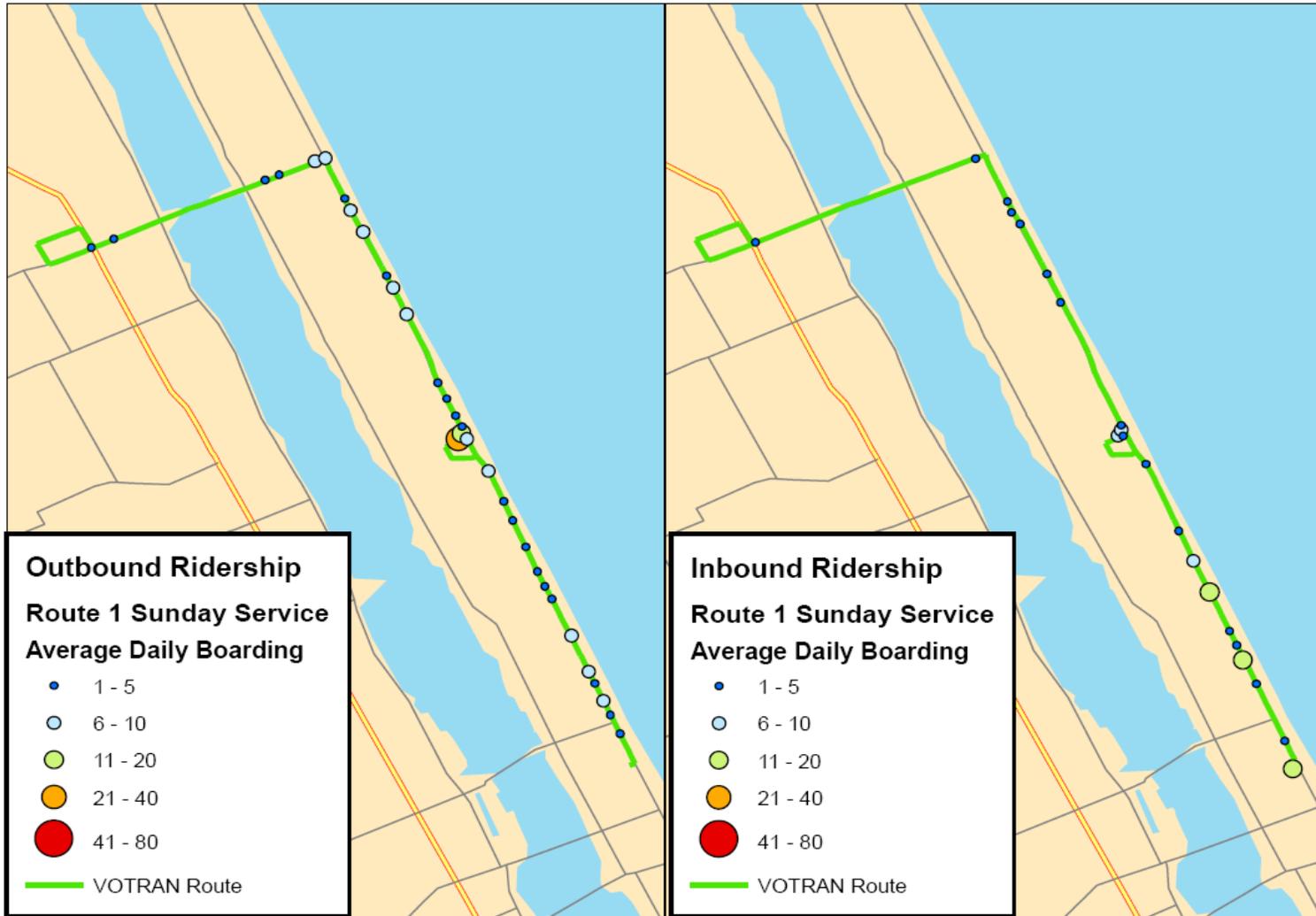


Section 2

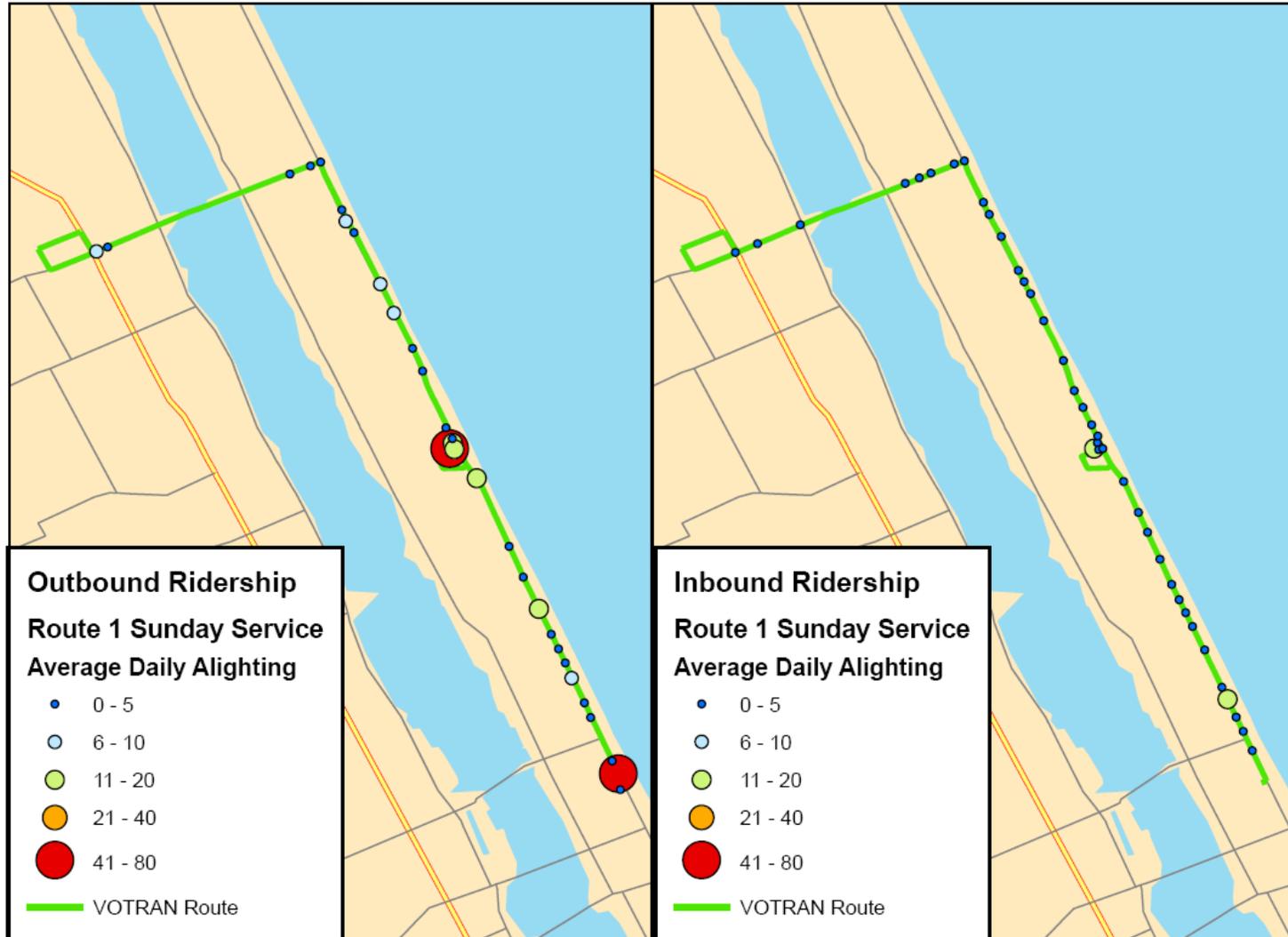
Service Analysis

VOTRAN EAST SIDE TRANSIT STUDY FINAL REPORT

Map 2-21
Route 1 Sunday Service - Boardings



Map 2-22
Route 1 Sunday Service - Alightings



Route 17

Route 17 serves the A1A corridor south of the VOTRAN Transfer Plaza on Ridgewood. There are two branches to this route. The 17A (South Atlantic) serves primarily Atlantic Avenue to Lighthouse Boat Yard in Ponce Inlet. The 17A operates hourly service between the Transfer Plaza and Ponce Inlet. The 17B (Dunlawton) serves Atlantic Avenue south to Dunlawton Avenue and Dunlawton Square Shopping Center. The 17B connects with the Routes 4, 7, 12 and 40 at Dunlawton Square. The 17B also operates hourly service between the Transfer Plaza and the Dunlawton Square. Both branches operate the same schedule on weekdays and Saturdays. VOTRAN staff indicates that Daytona Beach Shores is undergoing re-development with enhanced streetscape plans, pedestrian circulation and transit access. Densities in the re-development should support greater levels of transit service and ridership.

As a network spine route, the Route 17 operates service at night and on Sundays. The routing configuration for Night and Sunday service primarily follows the 17B except that the service terminates at U.S. 1 and Dunlawton Avenue. Night service operates with 60 minute frequencies from 7:00 p.m. to 12:36 a.m. On Sunday, service operates with hourly frequency from 7:00 a.m. to 6:23 p.m. Tables 2-7 and 2-8 below show the Daily Service Characteristics for the Route 17A and 17 B separately and Tables 2-9 displays the Performance Measures for the Route 17 combined.

**Table 2-7
Daily Service Characteristics
Route 17A**

Daily Service Characteristics	Weekday/ Saturday	Night	Sunday
Span of Service	6:07 - 19:16	19:00 - 1:00	7:00 - 18:23
Peak/Base Frequency	60/60	60/60	60/60
Peak/Base Buses	3/3	1/1	1/1
1-way Runtime OB	40	23	23
1-way Runtime IB	38	25	25
Daily Revenue Hours	39.29	5.94	11.77
Daily Revenue Miles	624.7	90.8	186.7
Average Daily Passengers (Wk)	797	N/A	N/A
Average Daily Passengers (Sat)	644	N/A	N/A

Table 2-8
Daily Service Characteristics
Route 17B

Daily Service Characteristics	Weekday/ Saturday	Night	Sunday
Span of Service	6:30 - 18:54	19:00 - 1:00	7:00 - 18:23
Peak/Base Frequency	60/60	60/60	60/60
Peak/Base Buses	3/3	1/1	1/1
1-way Runtime OB	35	23	23
1-way Runtime IB	40	25	25
Daily Revenue Hours	Incl 17A	5.94	11.77
Daily Revenue Miles	Incl 17A	90.8	186.7
Average Daily Passengers (Wk)	443	N/A	N/A
Average Daily Passengers (Sat)	397	N/A	N/A

Table 2-9
Performance Measures
Route 17 Combined

Performance Measures	Measure
FY 07 Overall Composite Score	119%
FY 08 Overall Composite Score	109%
FY 07 Rank	6
FY 08 Rank	6
Passengers/Revenue Hour (FY 08)	20.52
Passengers/Revenue Mile (FY 08)	1.29
Overall Cost/Passenger (FY 08)	\$3.15
Overall Subsidy/Passenger (FY 08)	\$2.40
Operating Ratio (Revenue:Cost)	23.8%

Considerations for Improvements and Priority

Increase Trolley Service: Add one trolley, operate at 30 minute frequencies, add service days to operate year round, and add operating hours to match the span of Route 17.

Weekday Frequency Improvements – Route 17A and 17B

Priority: Medium

Ridecheck Data from Automatic Passenger Counters (APCs)

The following tables, figures and maps depict data obtained from the APC data supplied by VOTRAN.

On-Off Activity by Trip

The APC data shows the Route 17A inbound trips experience their greatest levels of on-off activity on the 1:50 and 2:50 p.m. trips with significantly declining activity on the 5:46 and 6:39 p.m. trips. The outbound trips have their greatest activity on the 8:02 a.m. and 2:02 p.m. trips. For the Route 17B, the 7:18 a.m. inbound trip and the 8:32 outbound trip show the greatest level of activity. Figures 2-16 and 2-17 below show the on-off activity by trip for the Routes 17A and 17B.

**Figure 2-16
On-Off Activity by Trip
Route 17A**

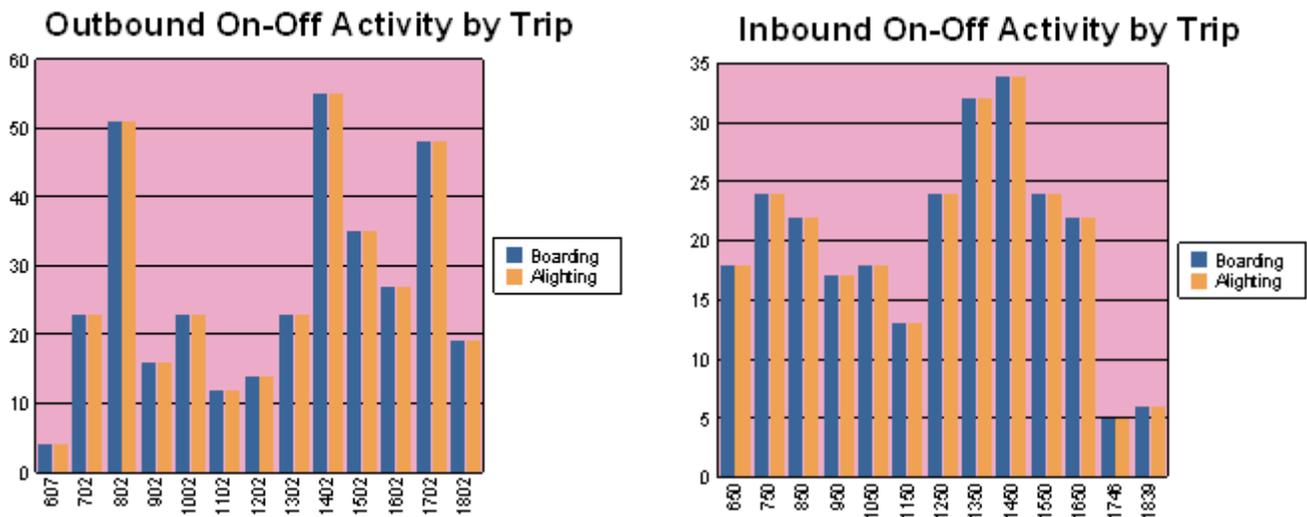
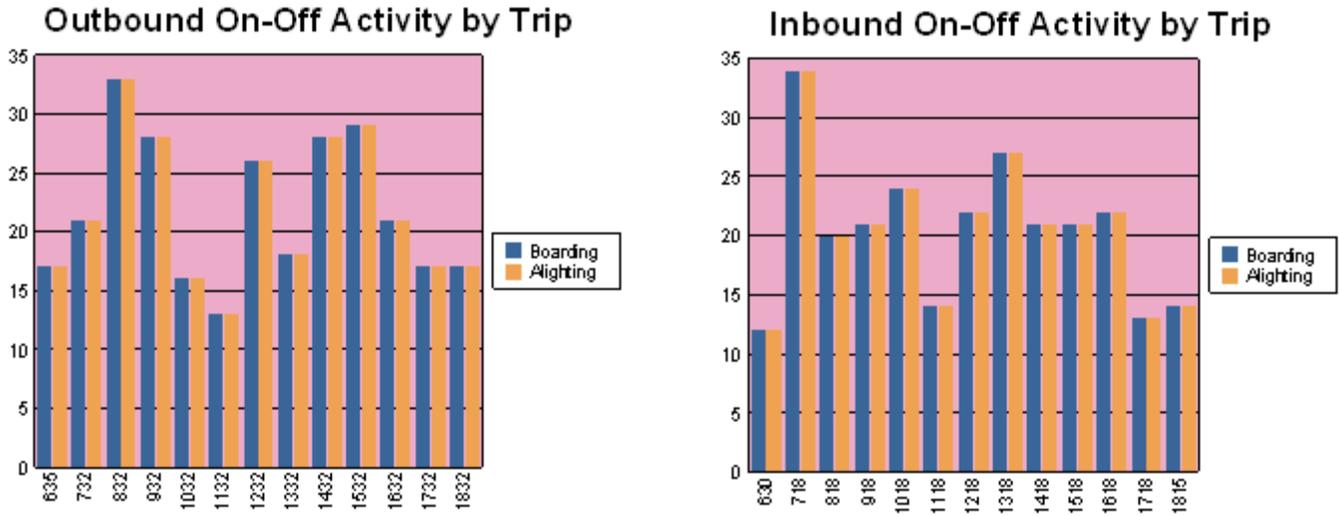


Figure 2-17
On-Off Activity by Trip
Route 17B



Max Line Load by Trip

Figure 2-18 below shows that the max line loads for the Route 17A occur during the 1:50 p.m. inbound and the 5:02 p.m. outbound trips. Figure 2-19 below shows that the max line loads for the Route 17B occur during the 7:18 a.m. inbound and the 12:32 and 1:32 p.m. outbound trips.

Figure 2-18
Max Line Load by Trip
Route 17A

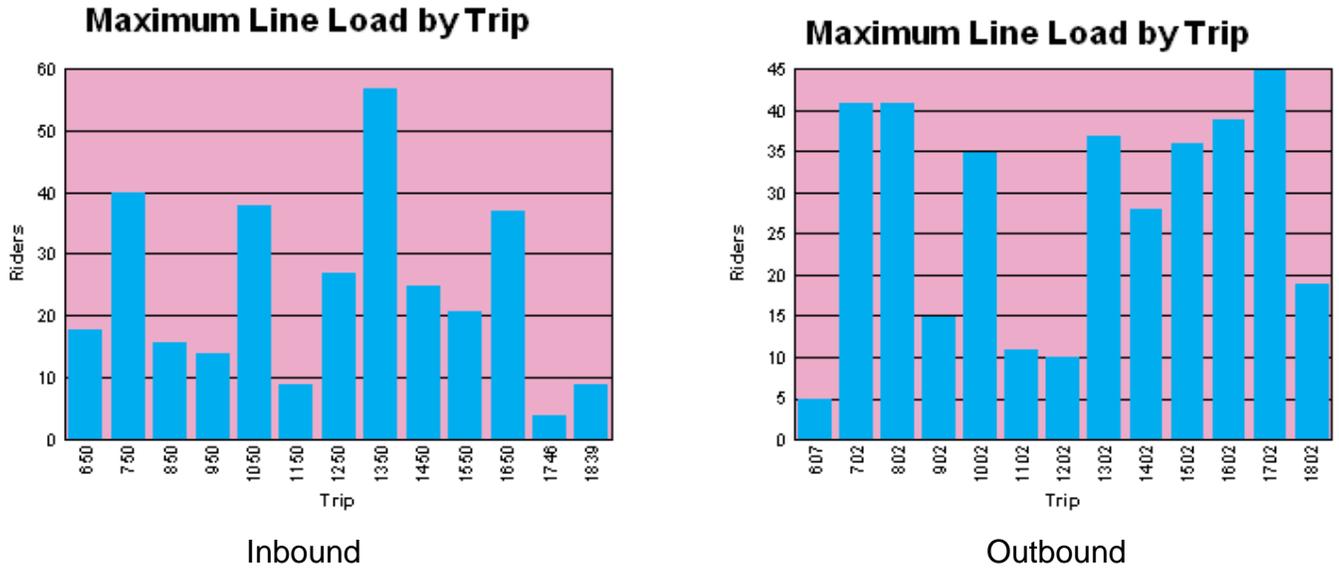
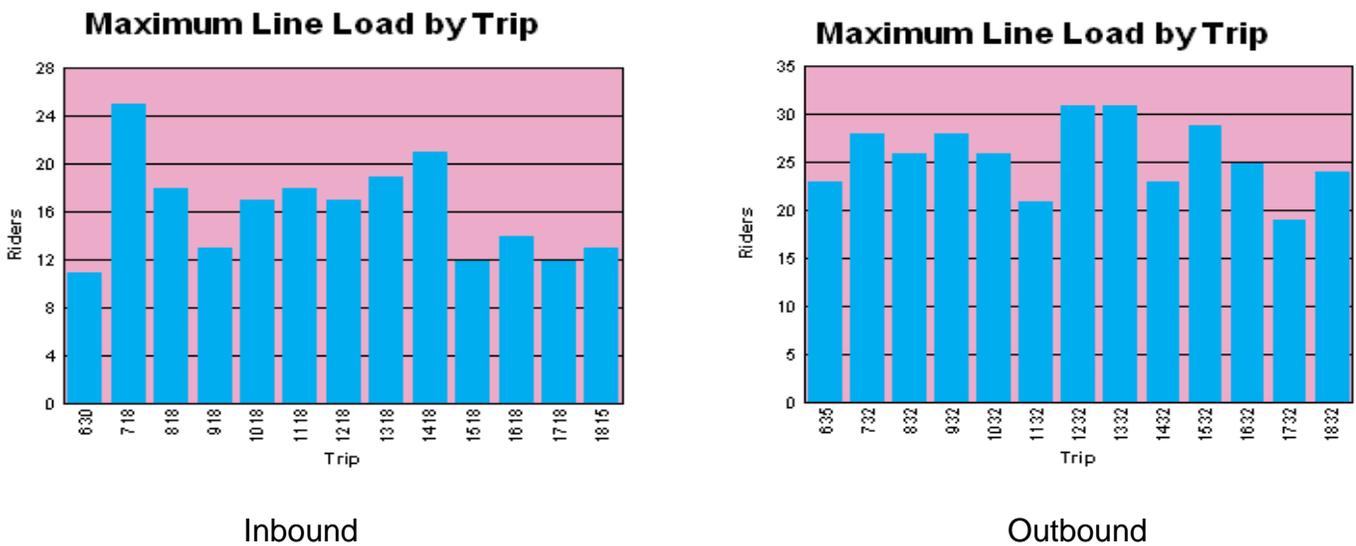


Figure 2-19
Max Line Load by Trip
Route 17B



Ridership by Hour of Day

Figure 2-20 below shows that the inbound Route 17A had the greatest levels of boardings during the 12:00 – 2:00 p.m. hours while the greatest level of alightings occurred during the 2:00 – 3:00 p.m. hour. Outbound trips had the greatest levels of boardings and alightings during the 8:00 a.m. to 9:00 a.m. hour. Figure 2-21 shows that for the Route 17B, the greatest levels of boardings for inbound trips occurred during the 4:00 - 5:00 p.m. hour while the greatest level of alightings occurred during the 2:00 – 3:00 p.m. hour. Outbound trips experienced the greatest levels of boardings and alightings during the 8:00 a.m. to 9:00 a.m. hour.

Figure 2-20
Ridership by Hour of Day
Route 17A

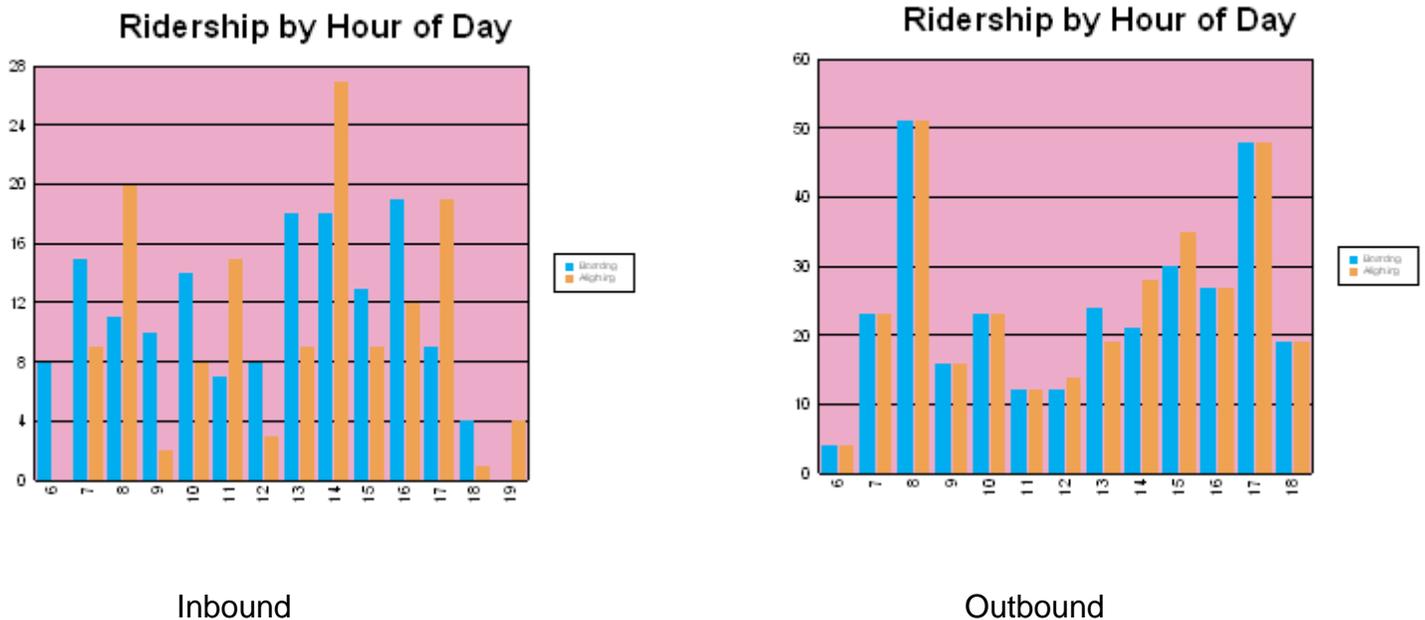
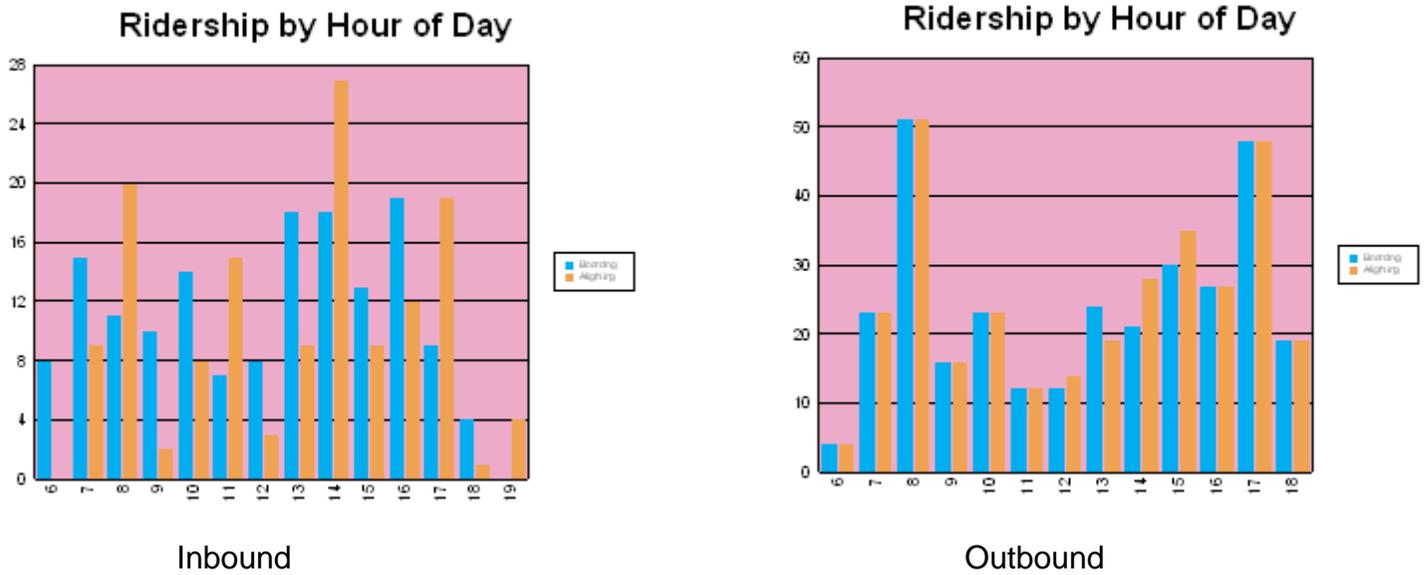


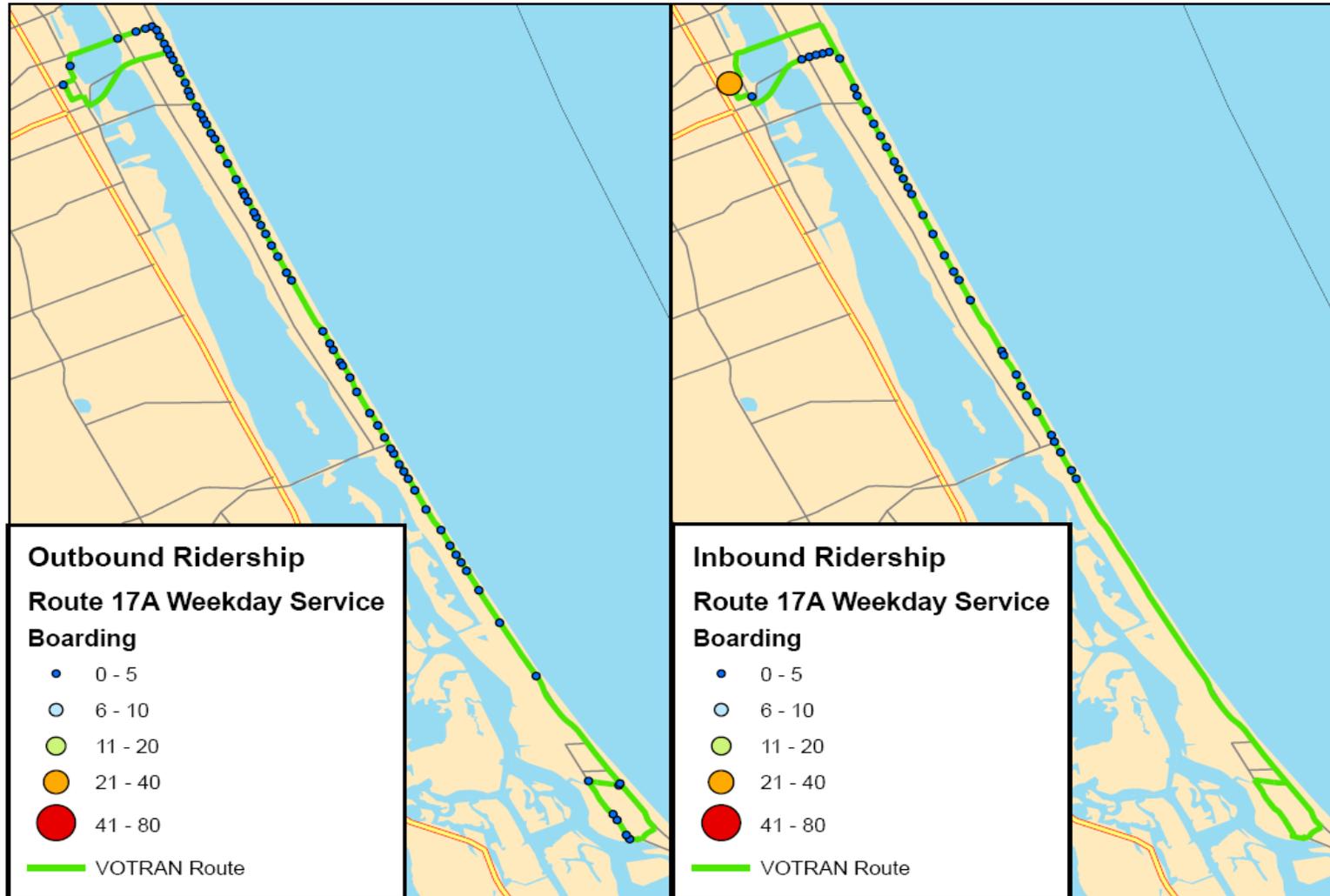
Figure 2-21
Ridership by Hour of Day
Route 17B



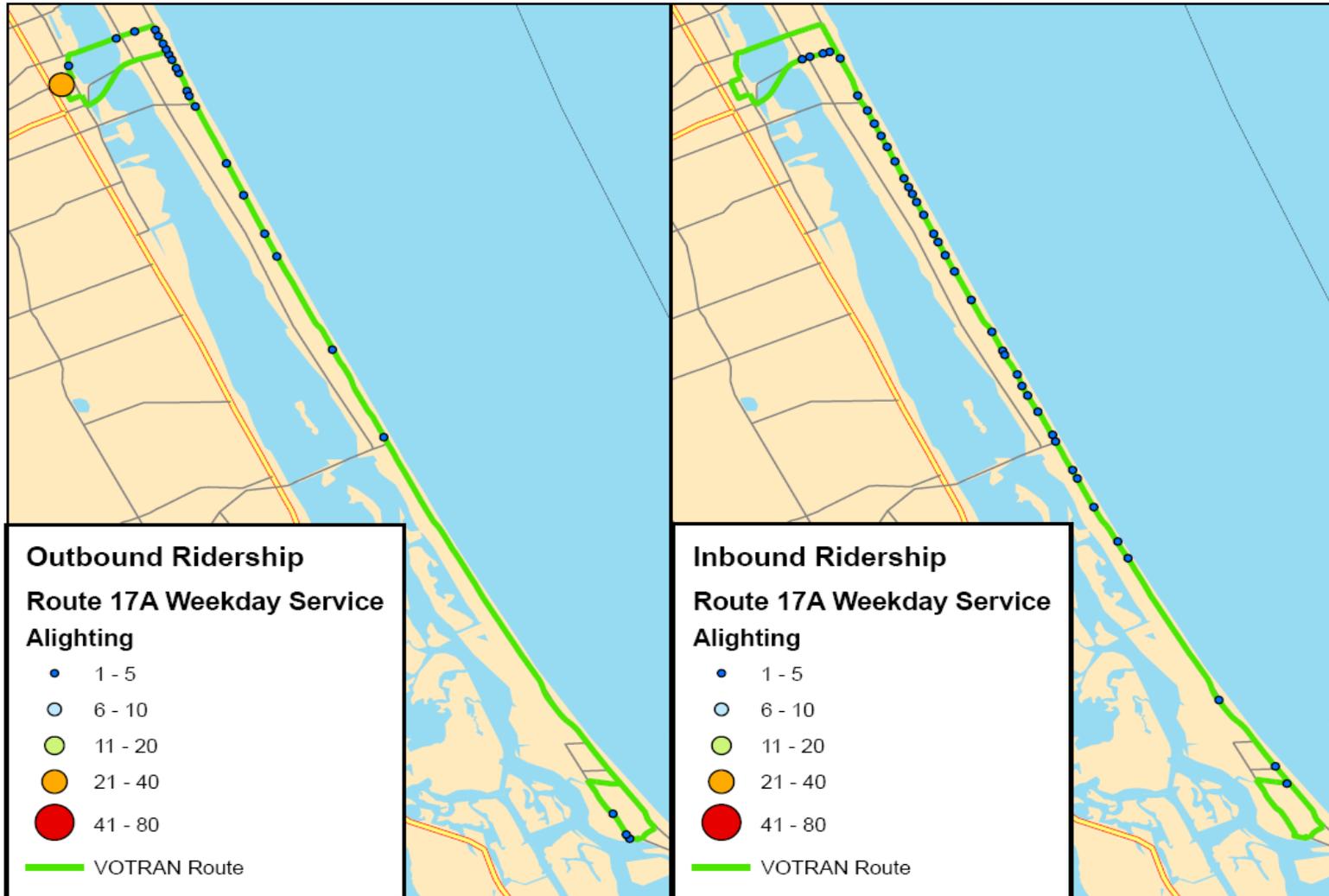
Mapping of APC Data

Maps 2-23 through 2-30 display weekday boardings and alightings for the Routes 17A and 17B as well as boarding and alighting activity for Route 17 Night and Route 17 Sunday services. As a Network Spine route, the Route 17 shows good levels of activity for all segments and branches. Night service activity drops off but Sunday activity is much stronger than night service.

Map 2-23
Route 17A Weekday Boardings



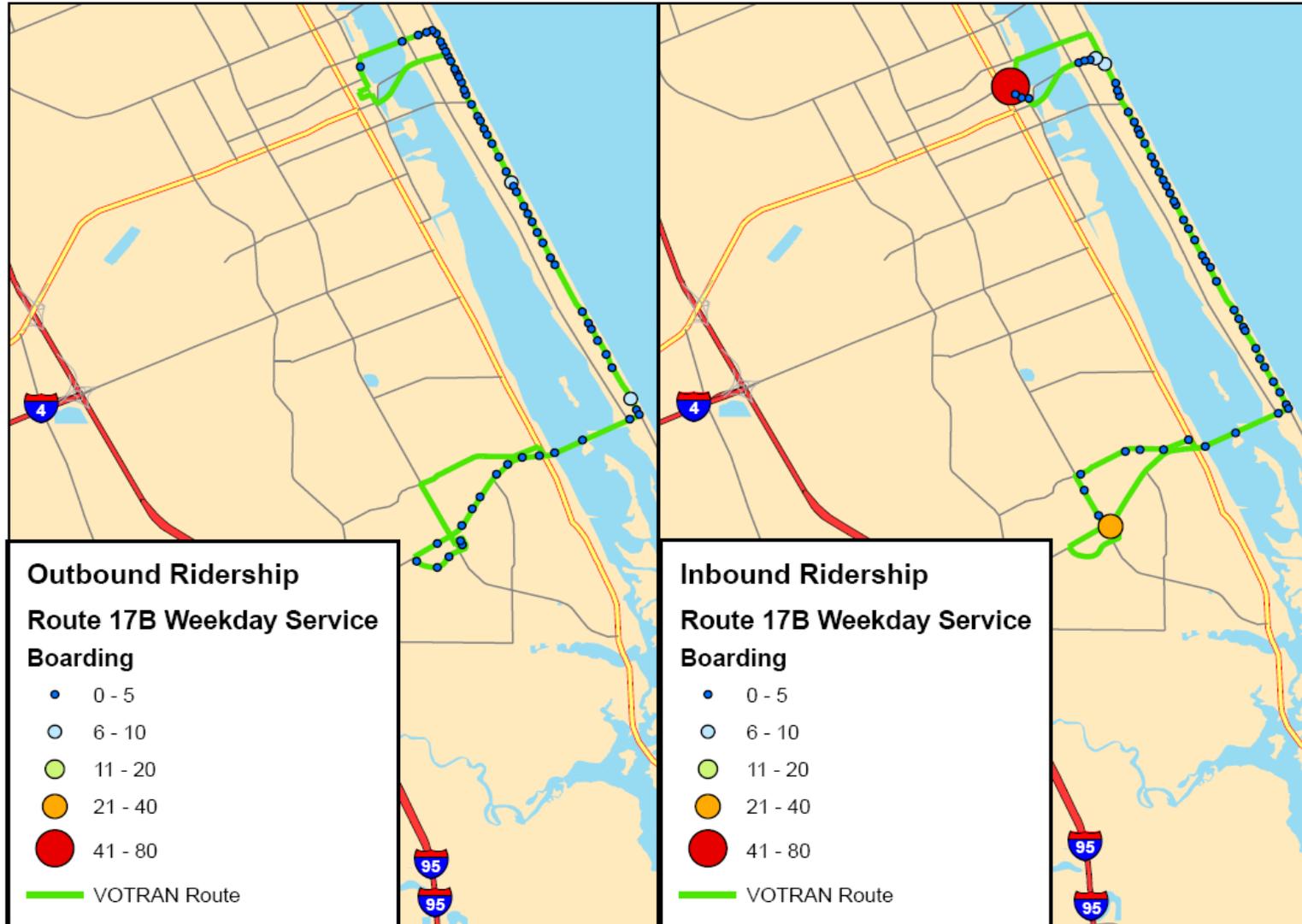
Map 2-24
Route 17A Weekday Alightings



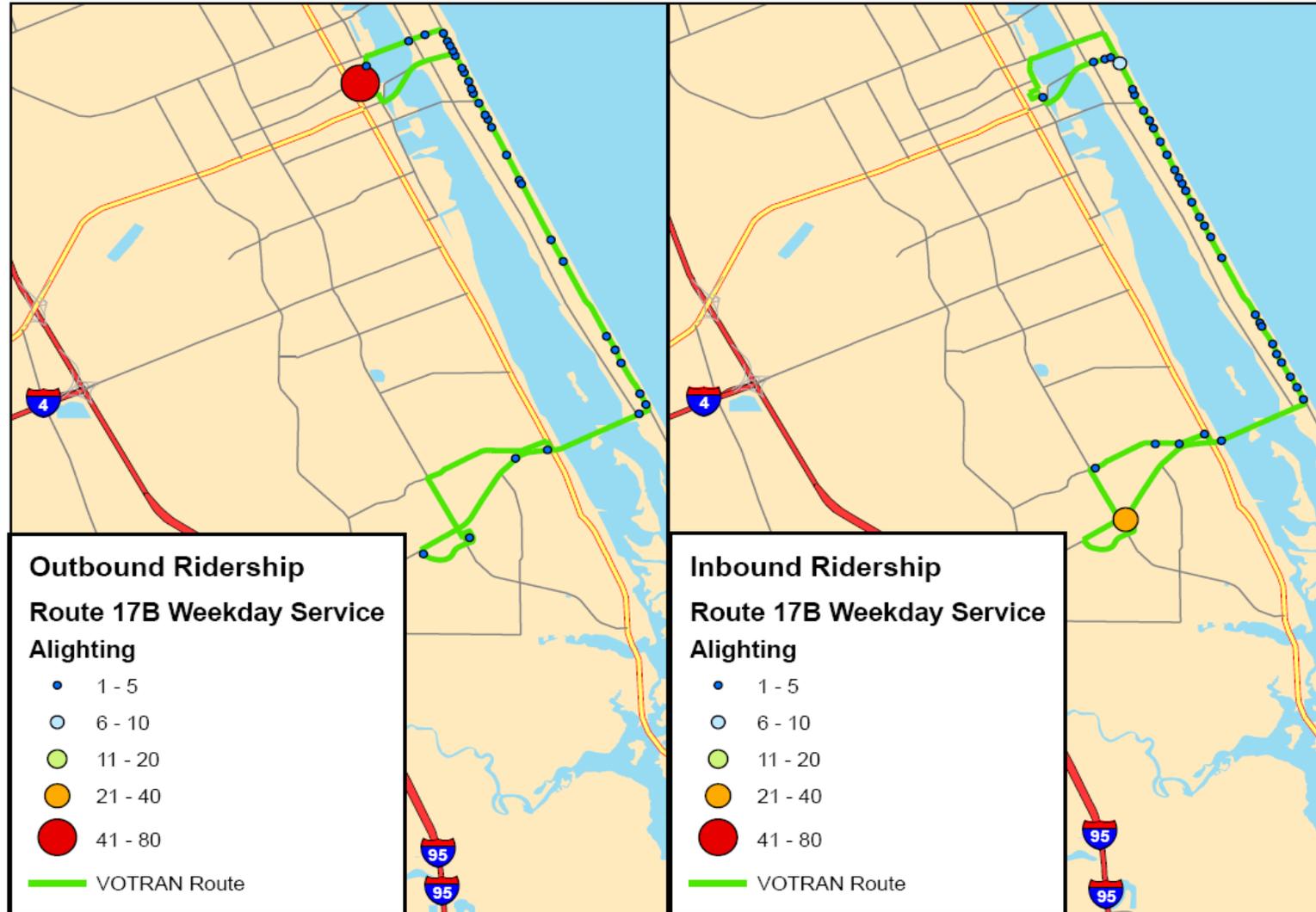
Section 2

Service Analysis

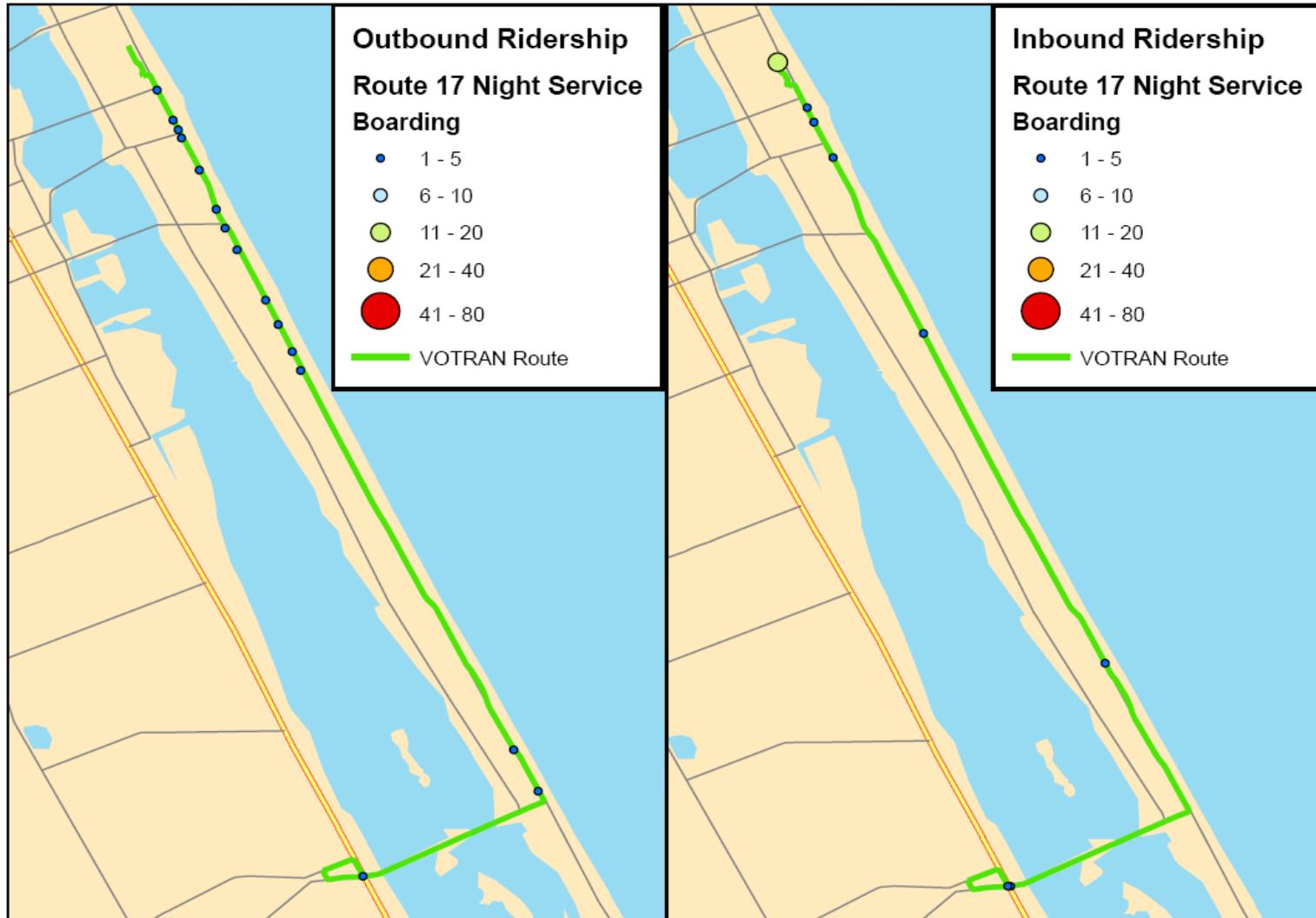
Map 2-25
Route 17B Weekday Boardings



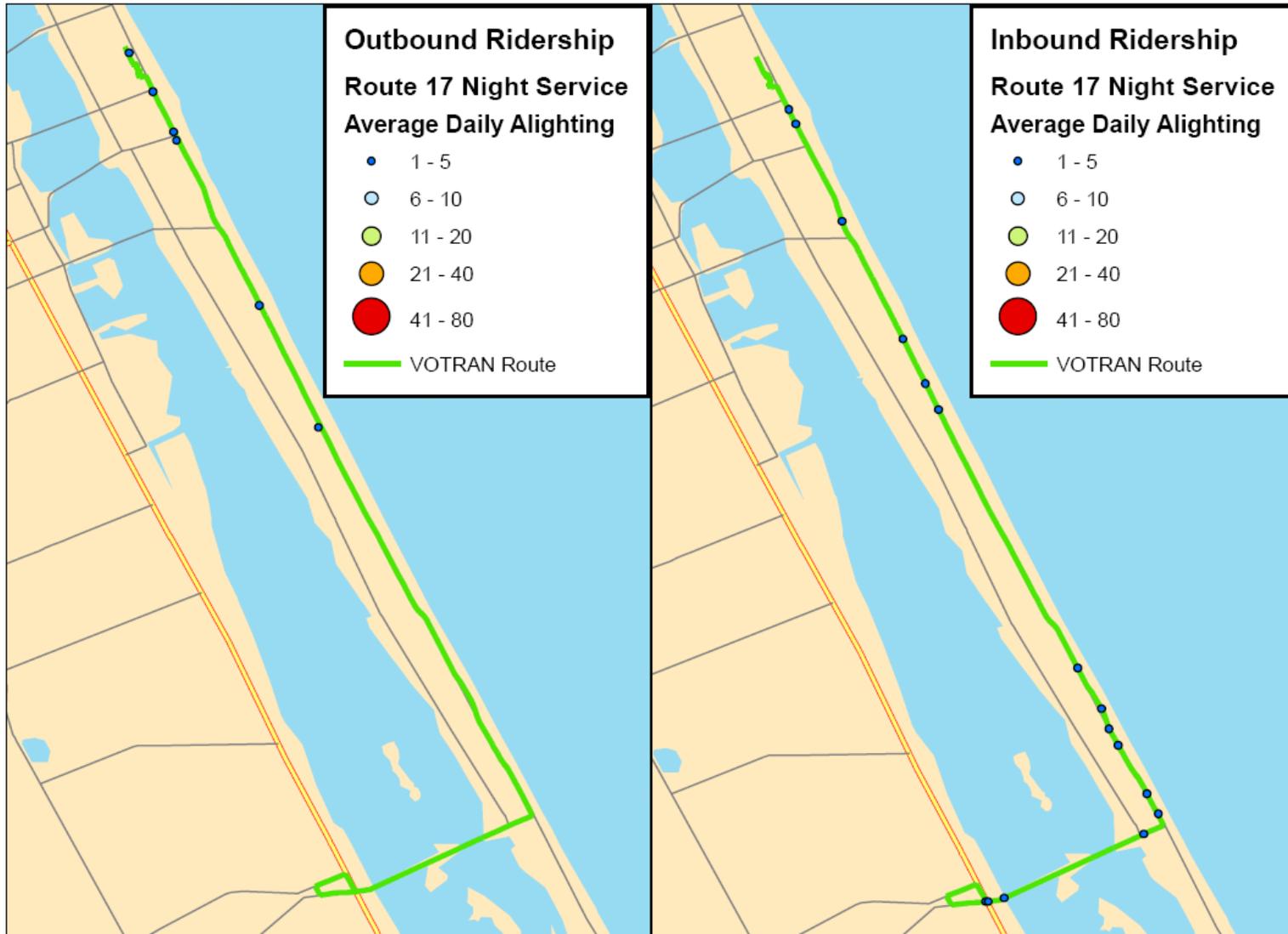
Map 2-26
Route 17B Weekday Alightings



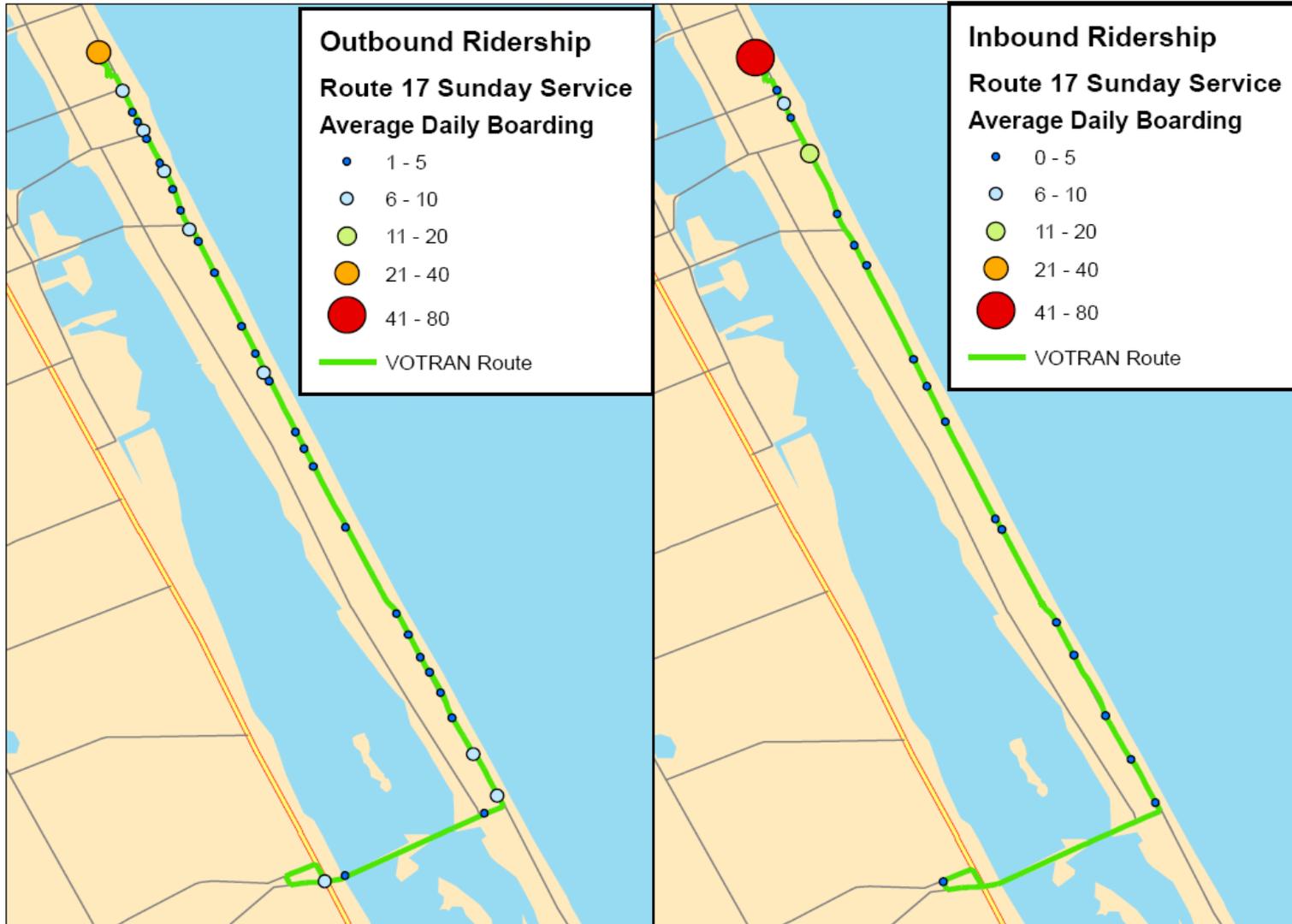
Map 2-27
Route 17 Night Boardings



Map 2-28
Route 17 Night Alightings



Map 2-29
Route 17 Sunday Boardings



Map 2-30
Route 17 Sunday Alightings



Route 60

Route 60 serves the International Speedway/U.S. Highway 92 corridor from the VOTRAN Transfer Plaza to U.S. 17 at the Northgate Plaza in Deland. The Route 60 is the primary connector between the east side and west side service areas and connects with the 20 series routes in Deland. Weekday service operates between 6:35 a.m. and 7:02 p.m. with 60 minute frequency. The Route 60 changes to Route 61 when operating inbound from Deland to the VOTRAN Transfer Plaza.

Although the Route 60/61 is a network spine route, there is no service at night and on Sundays. There is no need for span and/or weekend improvements for the Route 60 because the west side routes terminate service in the early evening and do not operate on weekends. Table 2-10 below shows the Daily Service Characteristics and Table 2-11 displays the Performance Measures for the Route 60/61. Although the Route 60/61 is not one of the highest ridership routes, it is very productive in terms of overall performance, ranking 8th in the east side service area in FY 2007 and 9th in FY 2008.

Table 2-10
Daily Service Characteristics
Routes 60

Daily Service Characteristics	Weekday/ Saturday	Night	Sunday
Span of Service	6:35 - 19:02	N/S	N/S
Peak/Base Frequency	60/60	N/S	N/S
Peak/Base Buses	2/2	N/S	N/S
1-way Runtime OB	48	N/S	N/S
1-way Runtime IB	58	N/S	N/S
Daily Revenue Hours	12.97	N/S	N/S
Daily Revenue Miles	283.3	N/S	N/S
Average Daily Passengers (Wk)	603	N/S	N/S
Average Daily Passengers (Sat)	294	N/S	N/S

Table 2-11
Performance Measures
Route 60

Performance Measures	Measure
FY 07 Overall Composite Score	104%
FY 08 Overall Composite Score	103%
FY 07 Rank	8
FY 08 Rank	9
Passengers/Revenue Hour (FY 08)	22.56
Passengers/Revenue Mile (FY 08)	1.03
Overall Cost/Passenger (FY 08)	\$2.86
Overall Subsidy/Passenger (FY 08)	\$2.19
Operating Ratio (Revenue:Cost)	23.4%

Considerations for Improvements and Priority

One issue with the Route 60 is that there is solid activity east of I-95 and significantly diminished activity along SR 92 until the bus reaches Deland. Because of the reduced productivity west of I-95, this justifies a frequency improvement that entails a turnback at Volusia Mall with more frequent service operating between the Transfer Plaza and the Mall.

Weekday Frequency Improvements – Route 60 between Transfer Plaza and Volusia Mall

Priority: Medium

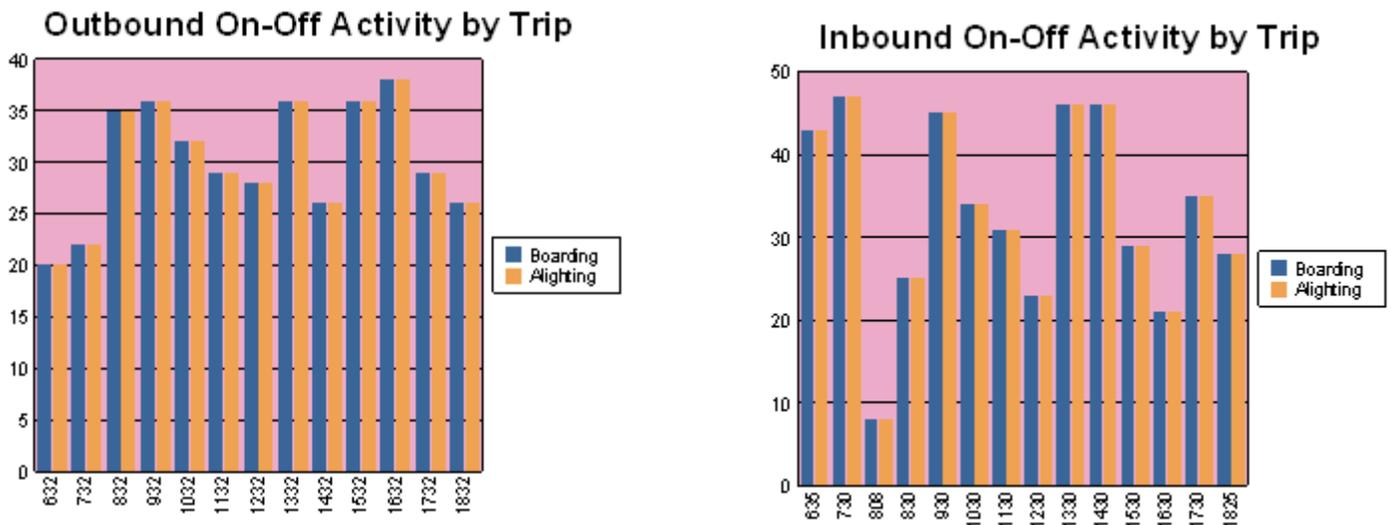
Ridecheck Data from Automatic Passenger Counters (APCs)

The following tables, figures and maps depict data obtained from the APC data supplied by VOTRAN.

On-Off Activity by Trip

The APC data shows the inbound trips experience their greatest levels of on-off activity during the 7:30 a.m., 9:30 a.m., 1:30 p.m. and 2:30 p.m. trips. The outbound trips have their greatest activity on the 4:32 p.m. trip. Figure 2-22 displays the on-off activity by trip for the Route 60.

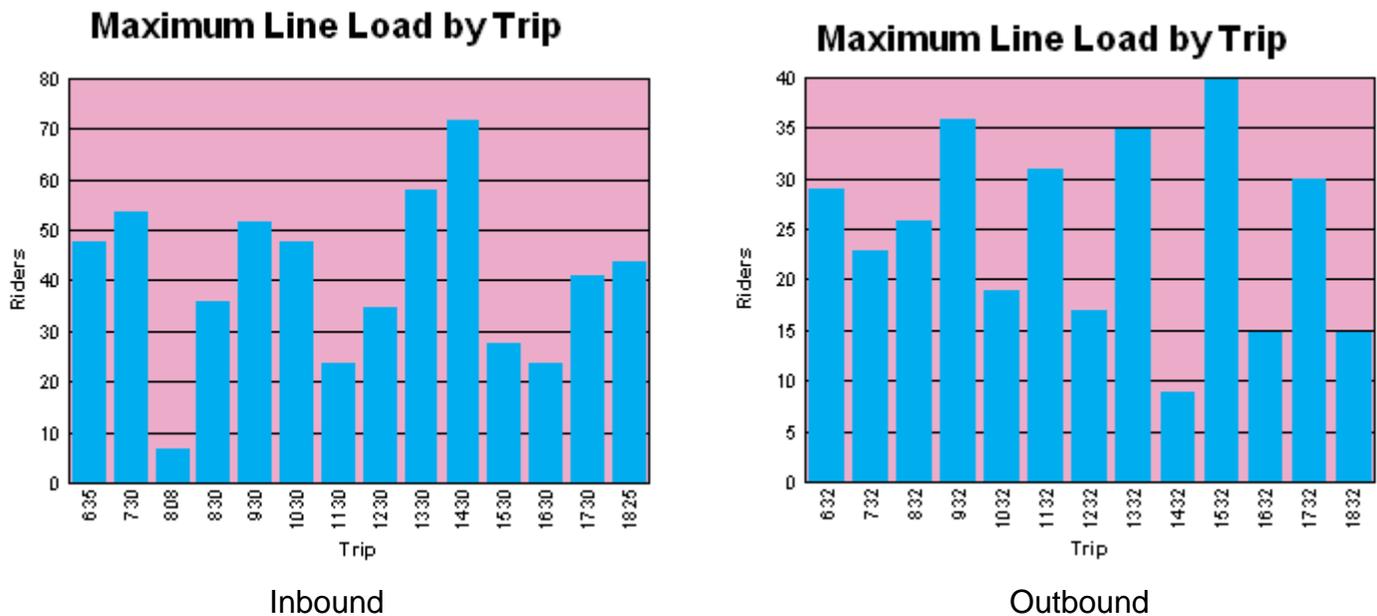
Figure 2-22
On-Off Activity by Trip
Route 60



Max Line Load by Trip

Figure 2-23 below shows that the max line loads for the Route 60 occur during the 2:30 p.m. inbound and the 3:32 p.m. outbound trips.

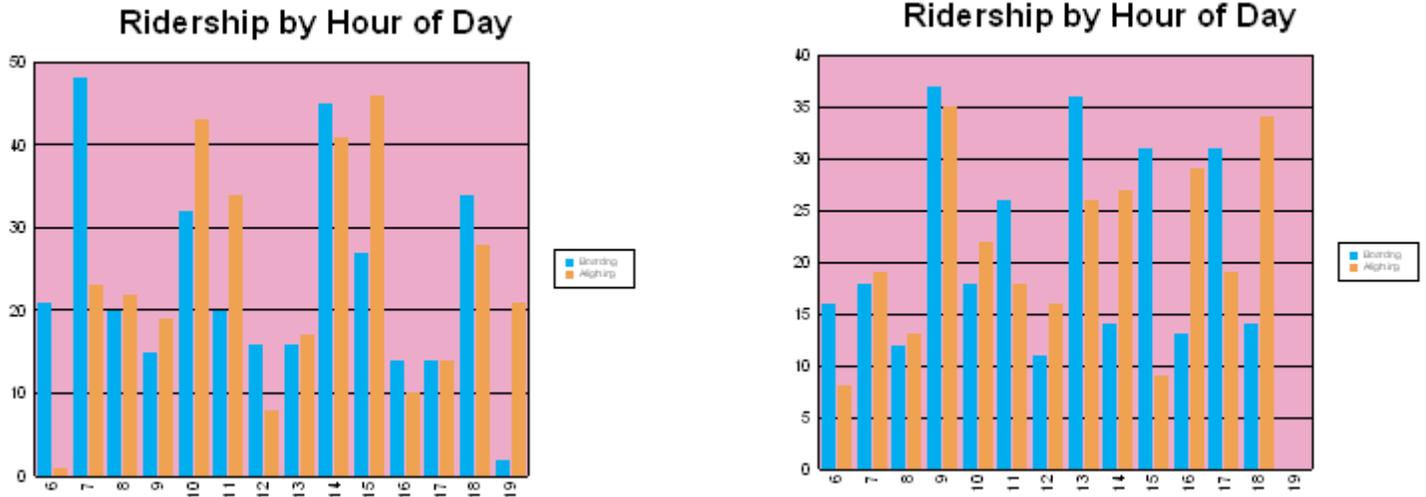
Figure 2-23
Max Line Load by Trip
Route 60



Ridership by Hour of Day

Figure 2-24 below shows that the Route 60 had the greatest levels of boardings and alightings during the 7:00 – 8:00 a.m. hour for inbound trips and the 3:00 p.m. to 4:00 p.m. hours for outbound trips.

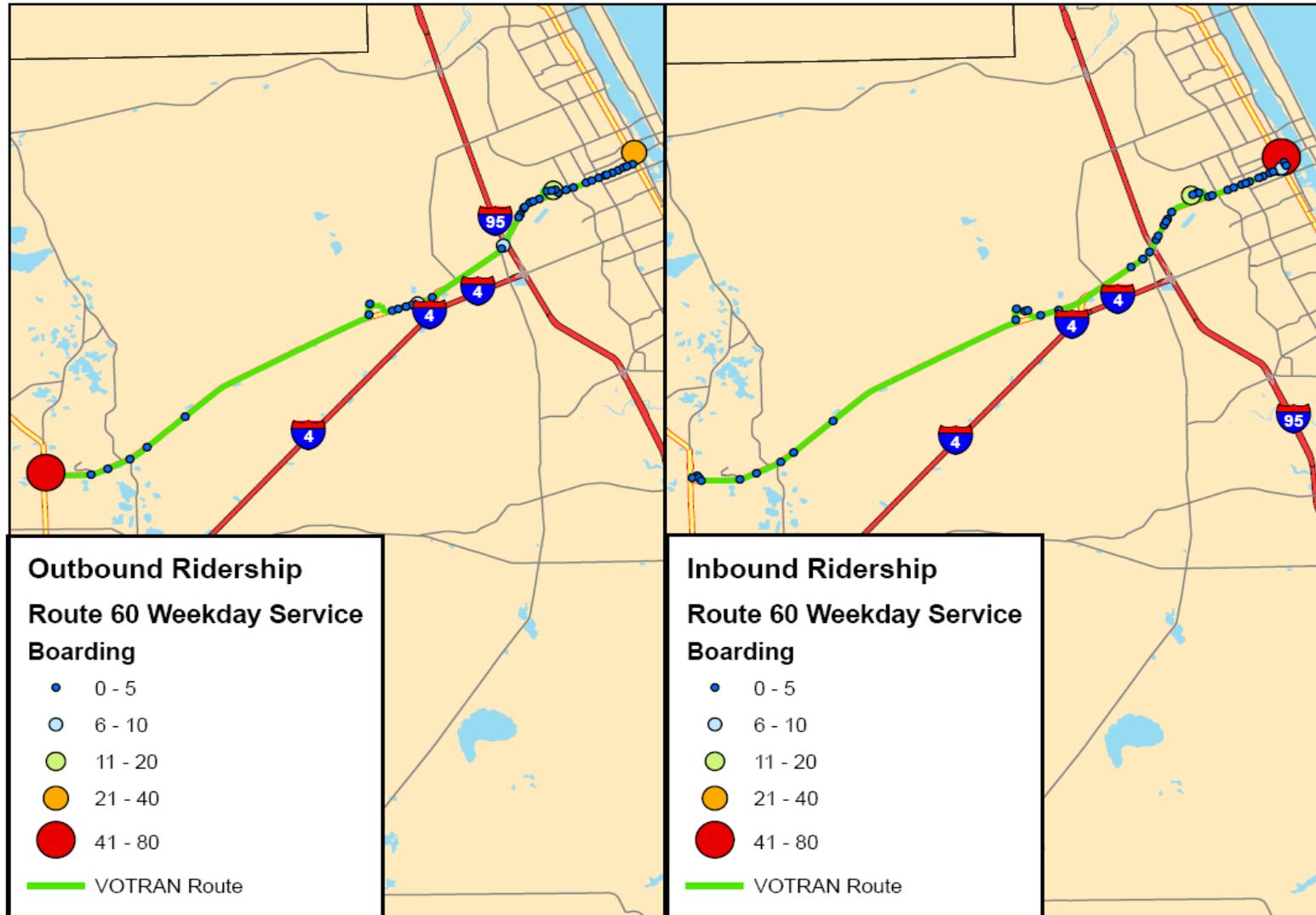
Figure 2-24
Ridership by Hour of Day
Route 60



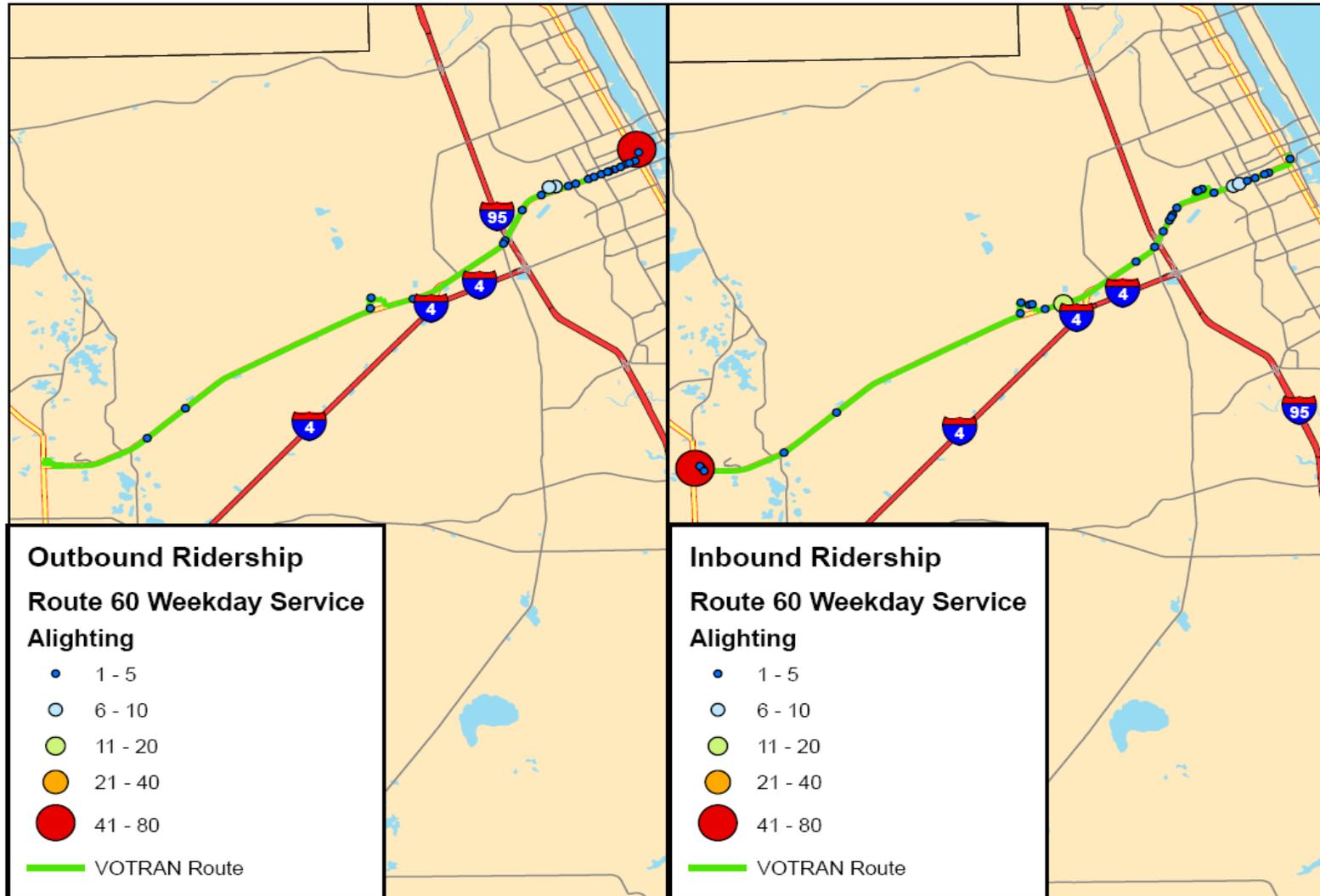
Mapping of APC Data

Maps 2-31 through 2-32 display weekday boardings and alightings for the Route 60. As a Network Spine route, the Route 60 is primarily an origin-destination route with the greatest levels of activity at the VOTRAN Transfer Center and the Northgate Plaza in Deland. Activity between the two points is not significant.

Map 2-31
Route 60 Weekday Boardings



Map 2-32
Route 60 Weekday Alightings



Section 3

Core Network Routes

As noted above, the Core Route Network consists of the Network Spine Routes plus the remaining four highest performing routes, including the Routes 7, 10, 12 and 15. When ridership for all nine routes is combined, the core network routes account for 76 percent of all system ridership in FY 2008. The other factor that unites the core route network is that almost all of these routes serve south of U.S. 92 and west of U.S. 1. Within the core route network, only the Route 10 serves north of, but parallel to, U.S. 92.

Route 7

Route 7 serves the south Nova Road (S.R. 5A) corridor from the VOTRAN Transfer Plaza to Dunlawton Square Shopping Center in Port Orange via Ridgewood and Bellevue Avenue. The Route 7 then continues south and west of Dunlawton Square to serve Spruce Creek and Westport Square Shopping Center on Williamson Boulevard. The Route 7 connects with the Routes 4, 12, 17B and 40 at Dunlawton Square in Port Orange. Weekday service operates between 6:05 a.m. and 7:18 p.m. with 60 minute frequency.

Although the Route 7 is a core network route, there is no service at night and on Sundays. Table 3-1 below shows the Daily Service Characteristics and Table 3-2 displays the Performance Measures for the Route 7. In terms of productivity, the Route 7 ranks 7th in terms of overall performance in both FY 2007 and FY 2008. During the period of this study, the Route 7 was experiencing on-time performance deficiencies as a result of increased ridership activity. VOTRAN realigned this route and should continue to monitor route performance for ridership and schedule adherence.

Table 3-1
Daily Service Characteristics
Route 7

Daily Service Characteristics	Weekday/ Saturday	Night	Sunday
Span of Service	6:05 - 19:18	N/S	N/S
Peak/Base Frequency	60/60	N/S	N/S
Peak/Base Buses	2/2	N/S	N/S
1-way Runtime OB	52	N/S	N/S
1-way Runtime IB	58	N/S	N/S
Daily Revenue Hours	27.33	N/S	N/S
Daily Revenue Miles	378.2	N/S	N/S
Average Daily Passengers (Wk)	571	N/S	N/S
Average Daily Passengers (Sat)	439	N/S	N/S

Table 3-2
Performance Measures
Route 7

Performance Measures	Measure
FY 07 Overall Composite Score	107%
FY 08 Overall Composite Score	109%
FY 07 Rank	7
FY 08 Rank	7
Passengers/Revenue Hour (FY 08)	20.46
Passengers/Revenue Mile (FY 08)	1.48
Overall Cost/Passenger (FY 08)	\$3.16
Overall Subsidy/Passenger (FY 08)	\$2.50
Operating Ratio (Revenue:Cost)	21.0%

Considerations for Improvements and Priority

Weekday Span (Night) Improvements – Route 7

Priority: Medium

Implementation of Sunday Service – Route 7

Priority: Medium

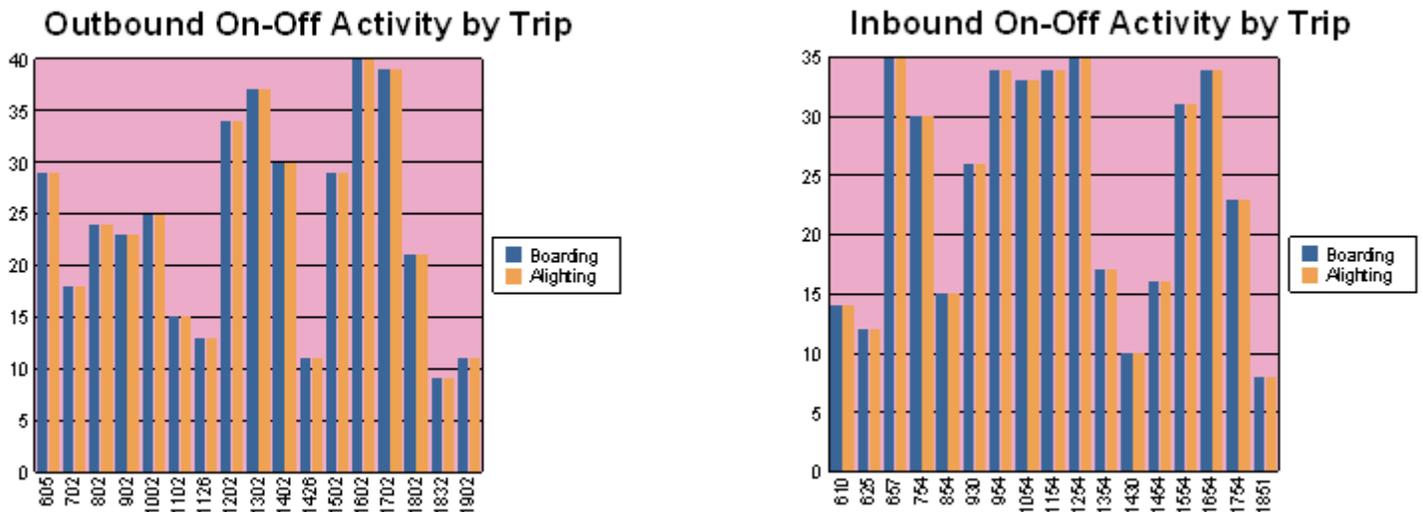
Ridecheck Data from Automatic Passenger Counters (APCs)

The following tables, figures and maps depict data obtained from the APC data supplied by VOTRAN.

On-Off Activity by Trip

The APC data shows the inbound trips experience their significant levels of on-off activity during the a.m. peak, mid-day and the p.m. peak period. Outbound trips are stronger in the mid-day and p.m. peaks than the a.m. peak period. Outbound trips experience the greatest level of activity on the 4:02 p.m. trip. Figure 3-1 displays the on-off activity by trip for the Route 7.

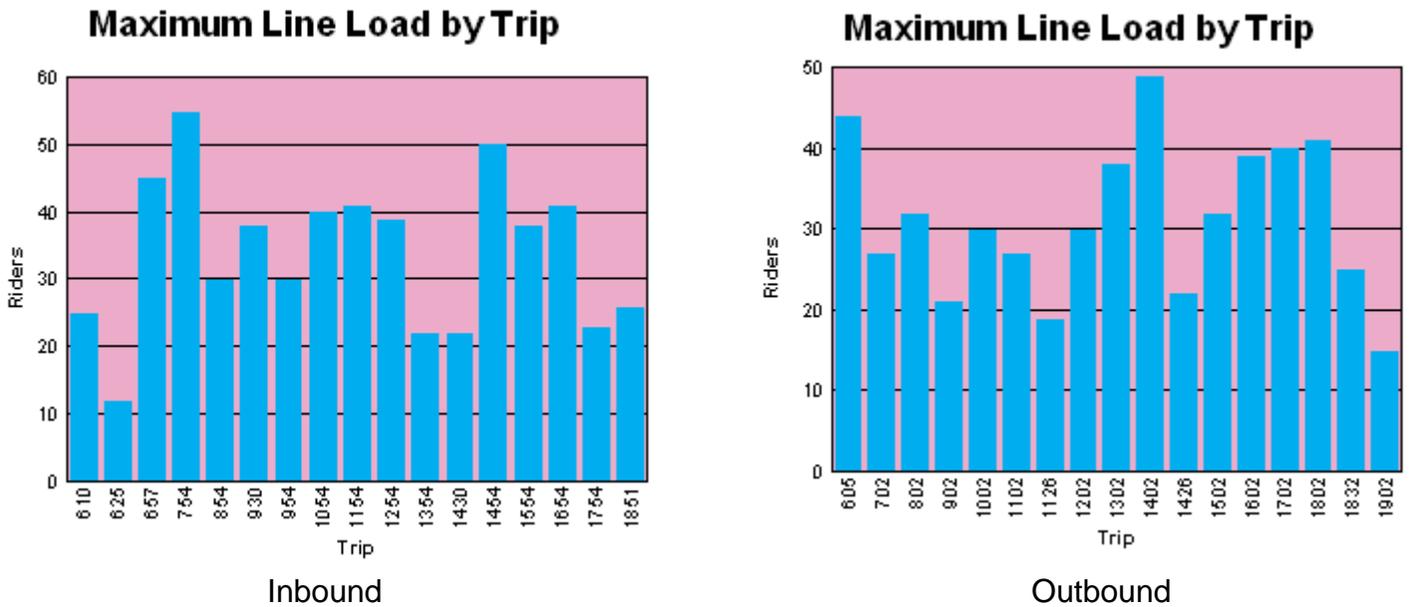
**Figure 3-1
On-Off Activity by Trip
Route 7**



Max Line Load by Trip

Figure 3-2 below shows that the max line loads for the Route 7 occur during the 7:54 a.m. inbound and the 2:02 p.m. outbound trips.

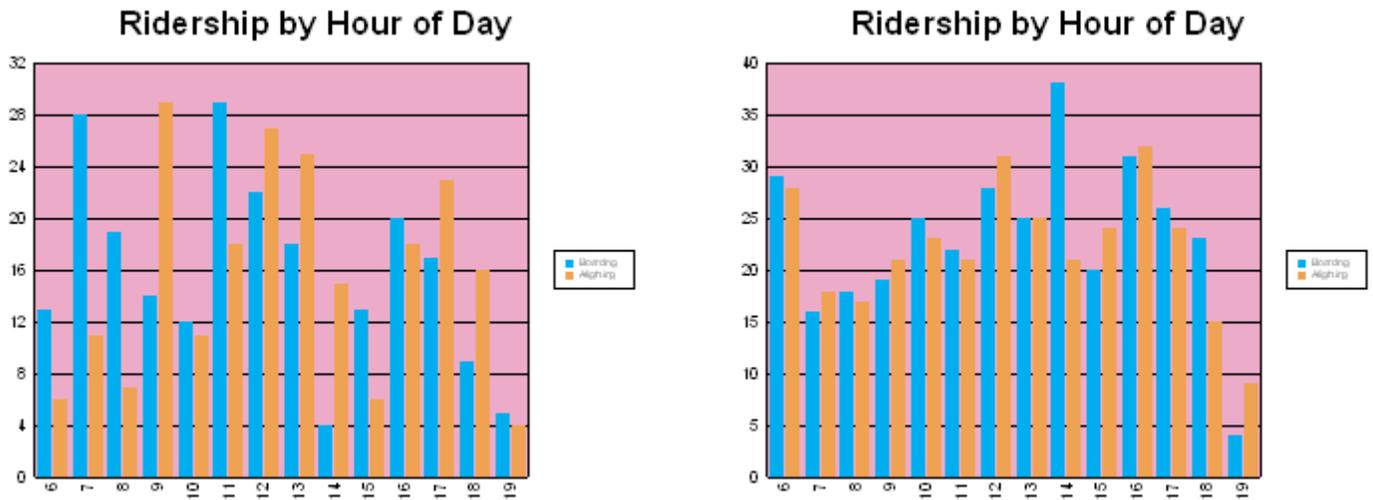
Figure 3-2
Max Line Load by Trip
Route 7



Ridership by Hour of Day

Figure 3-3 below shows that the Route 7 inbound trips had the greatest levels of boardings during the 7:00 – 8:00 a.m. hour and the 11:00 a.m. to 12:00 p.m. hour. Alighting activity for the inbound trips was strong during the 9:00 a.m. to 10:00 a.m. hour as well as the 12:00 p.m. to 2:00 p.m. period. For outbound trips, highest levels of boardings occurred from the 2:00 p.m. to 3:00 p.m. hour while the highest number of alightings occurred from the 4:00 p.m. to 5:00 p.m. hour.

Figure 3-3
Ridership by Hour of Day
Route 7

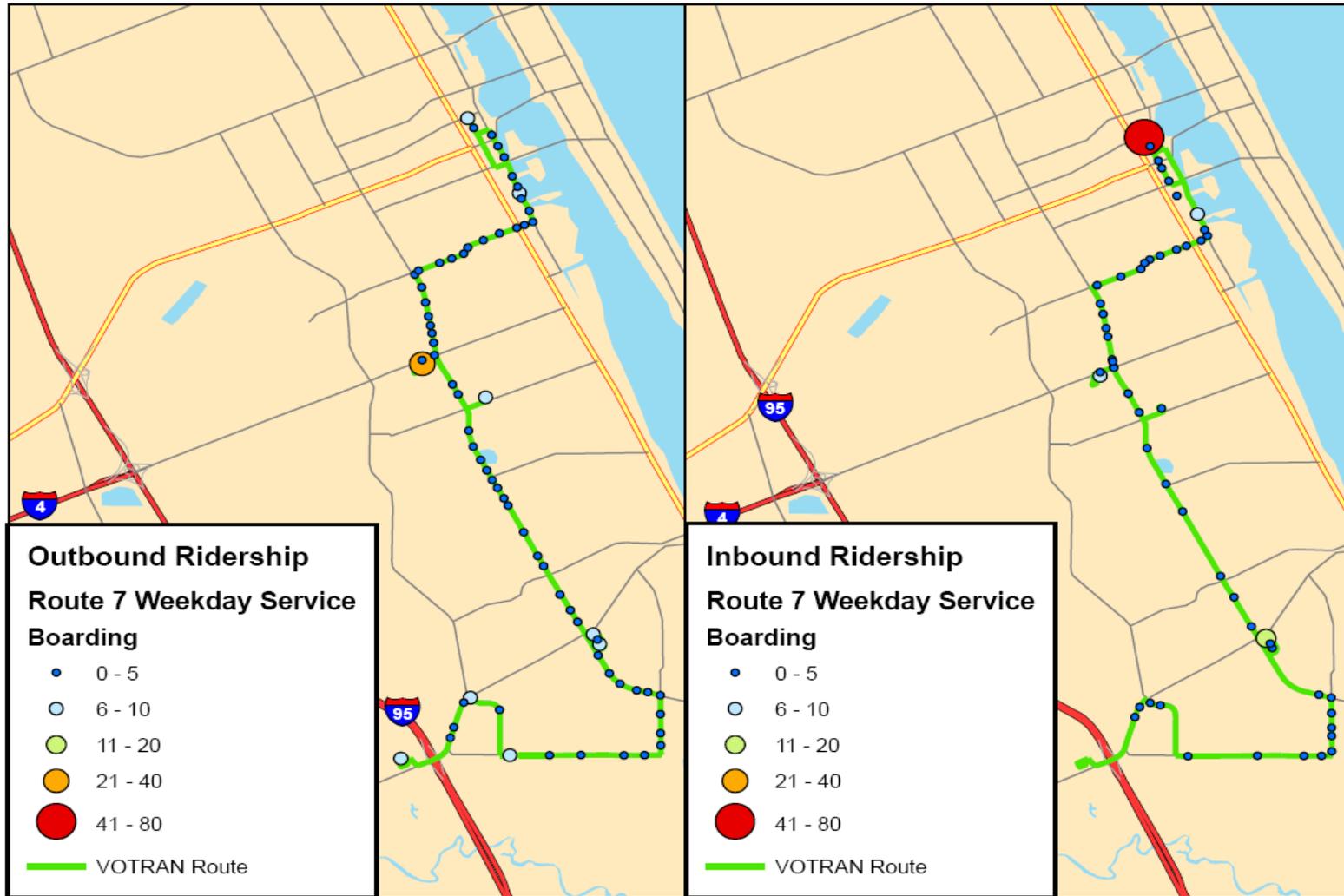


Mapping of APC Data

Maps 3-1 through 3-2 display weekday boardings and alightings for the Route 7. As a Core Network Route, the Route 7 is good on-off activity for all segments.

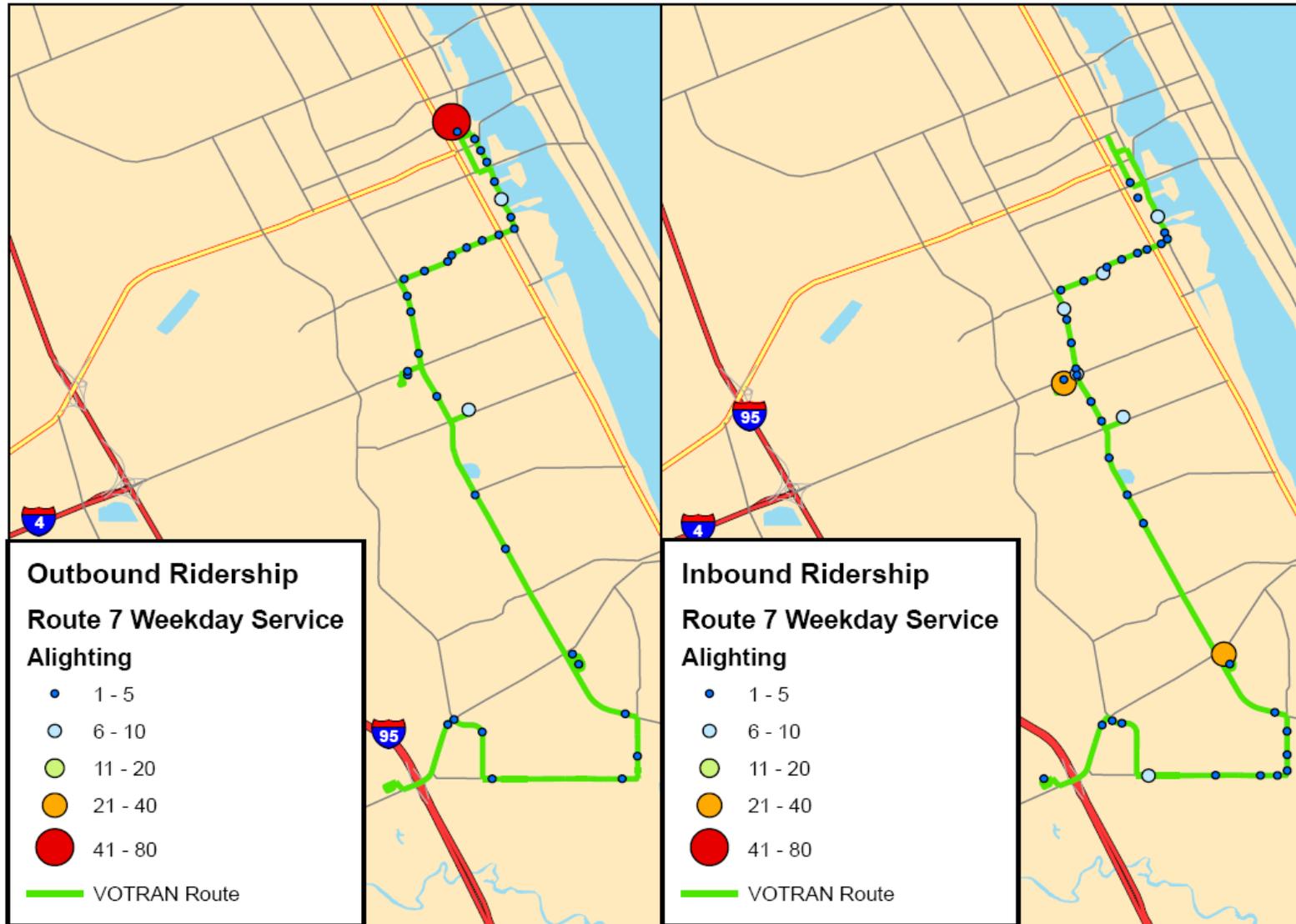
VOTRAN EAST SIDE TRANSIT STUDY FINAL REPORT

Map 3-1
Route 7 Weekday Boardings



VOTRAN EAST SIDE TRANSIT STUDY FINAL REPORT

Map 3-2
Route 7 Weekday Alightings



Section 3

Core Network Routes

Route 10

Route 10 serves the area north and west of International Speedway (U.S. 92) from the VOTRAN Transfer Plaza to Volusia Mall. Beyond Volusia Mall, there is a one-way loop branch serving north on Bill France Boulevard, west on Mason Avenue, and south on Williamson Boulevard to ISB (U.S. 92) and the Industrial Park. The Route 10 connects with the Routes 9, 11 and 60 at Volusia Mall and has on-street transfer connecting points with the Routes 6, 9 and 11. Weekday and Saturday service operates between 6:37 a.m. and 7:16 p.m. with 30 minute frequency.

As a Core Network Route, Route 10 operates service at night and on Sundays. The routing configuration for night service terminates the Route 10 at ISB and Williamson and Sunday service operates west to the Daytona Flea & Farmers Market on most trips. Night service operates with 60 minute frequencies from 7:00 p.m. to 12:03 a.m. On Sunday, service operates with hourly frequency from 7:00 a.m. to 6:10 p.m. Table 3-3 below shows the Daily Service Characteristics and Table 3-4 displays the Performance Measures for the Route 10. In terms of performance, the Route 10 was ranked 8th in FY 07 and slipped to 9th in FY 08.

**Table 3-3
Daily Service Characteristics
Route 10**

Daily Service Characteristics	Weekday/ Saturday	Night	Sunday
Span of Service	6:37 - 19:16	19:00 - 24:03	7:00 - 18:10
Peak/Base Frequency	30/30	60/60	60/60
Peak/Base Buses	3/3	1/1	1/1
1-way Runtime OB	29	23	30
1-way Runtime IB	57	27	21
Daily Revenue Hours	37.55	5.33	11.95
Daily Revenue Miles	419.4	77.5	201.3
Average Daily Passengers (Wk)	740	N/A	N/A
Average Daily Passengers (Sat)	396	N/A	N/A

Table 3-4
Performance Measures
Route 10

Performance Measures	Measure
FY 07 Overall Composite Score	99%
FY 08 Overall Composite Score	95%
FY 07 Rank	9
FY 08 Rank	10
Passengers/Revenue Hour (FY 08)	17.54
Passengers/Revenue Mile (FY 08)	1.52
Overall Cost/Passenger (FY 08)	\$3.69
Overall Subsidy/Passenger (FY 08)	\$3.08
Operating Ratio (Revenue:Cost)	16.6%

Considerations for Improvements and Priority – None – The Route 10 already operates at 30 minute frequencies and has night and Sunday service. No improvements are needed.

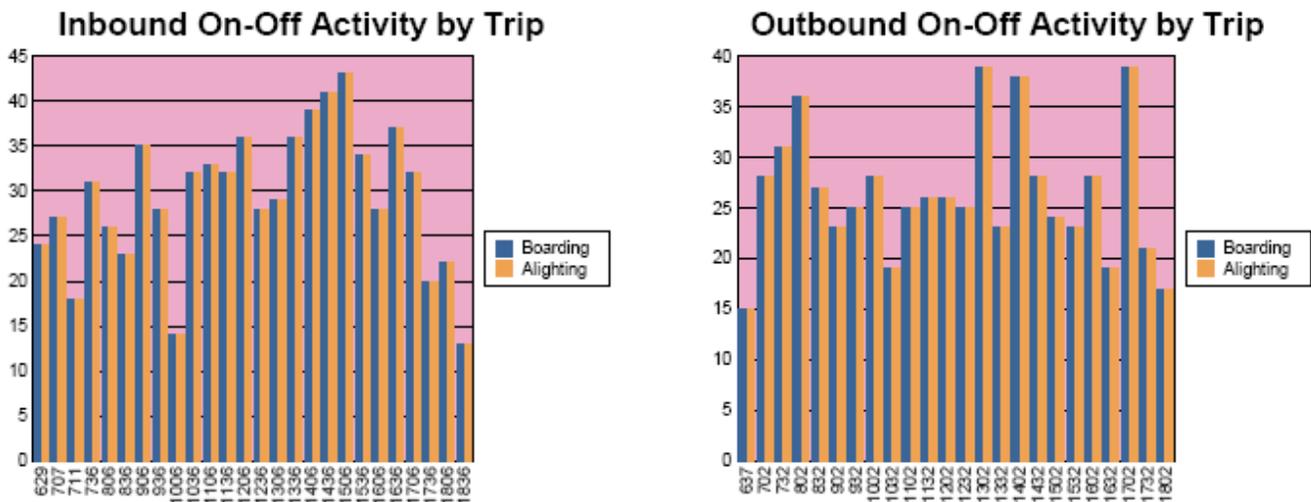
Ridecheck Data from Automatic Passenger Counters (APCs)

The following tables, figures and maps depict data obtained from the APC data supplied by VOTRAN.

On-Off Activity by Trip

In the case of the Route 10, the APC data shows significant activity throughout the service day that when all boardings are added, the ridership is roughly double what the farebox shows as average daily ridership. It is likely that the order of magnitude of trips is correct in Figure 3-4 below; however, the numbers from the APC data are not consistent with farebox data. This is one reason for the Datapoint system at VOTRAN that separates farebox data from APC data and provides mechanisms for comparison. The inbound trips experience their greatest levels of on-off activity on the 7:20 a.m. trip. The outbound trips have their greatest activity on the 2:32 p.m. trip.

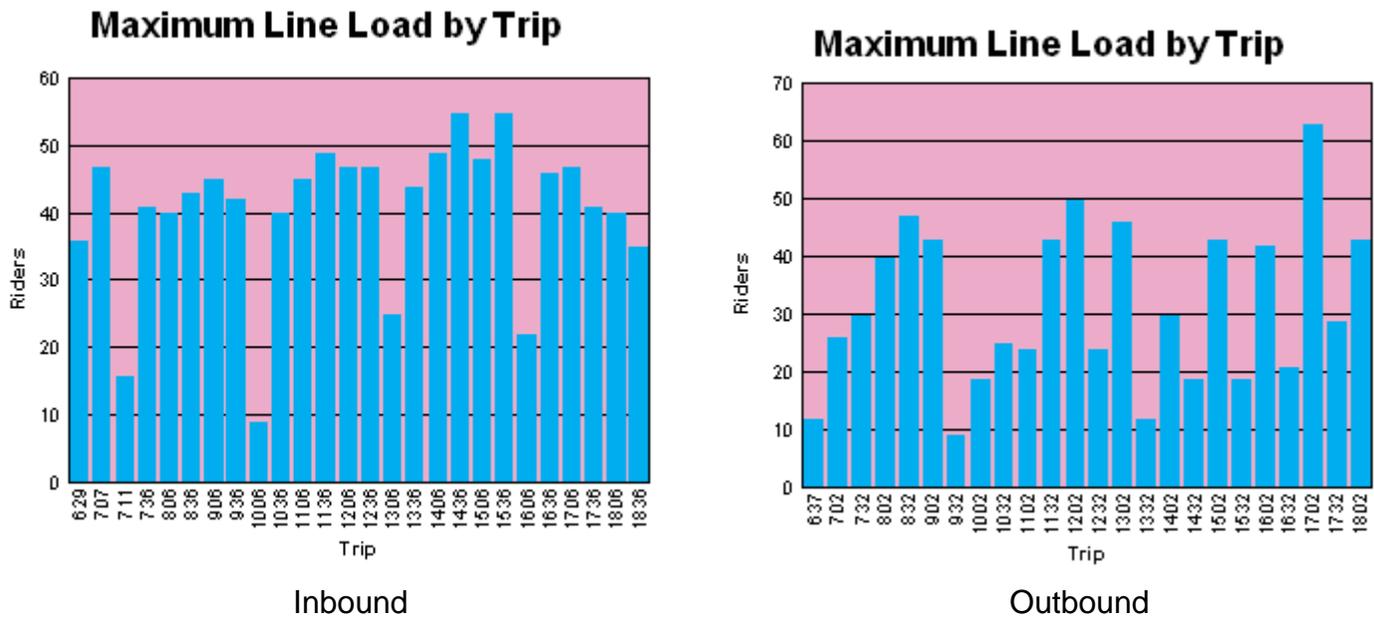
**Figure 3-4
On-Off Activity by Trip
Route 10**



Max Line Load by Trip

Figure 3-5 below shows that the max line loads for the Route 10 occur during the 2:36 and 3:36 p.m. inbound trips and the 5:02 p.m. outbound trip.

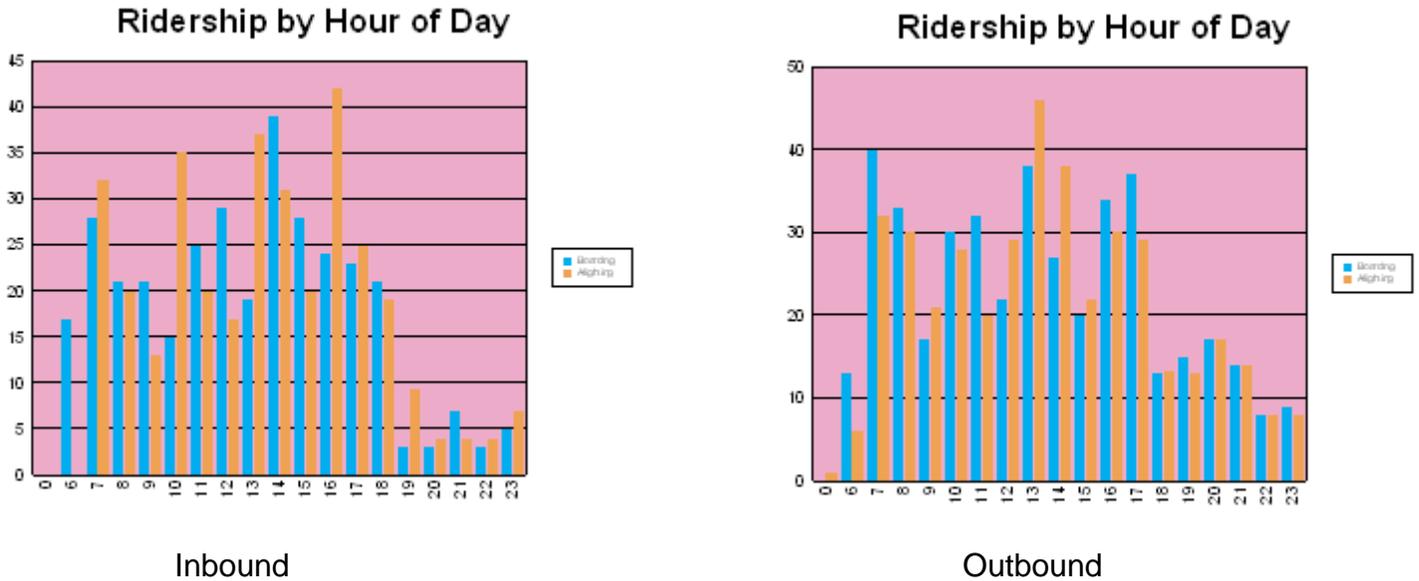
Figure 3-5
Max Line Load by Trip
Route 10



Ridership by Hour of Day

Figure 3-6 below shows that the Route 10 inbound trips had the greatest levels of boardings during the 2:00 p.m. to 3:00 p.m. and alightings during the 5:00 p.m. – 6:00 p.m. hour. Outbound trips have the highest number of boardings during the 7:00 a.m. to 8:00 a.m. hour and alightings during the 1:00 p.m. to 2:00 p.m. hour.

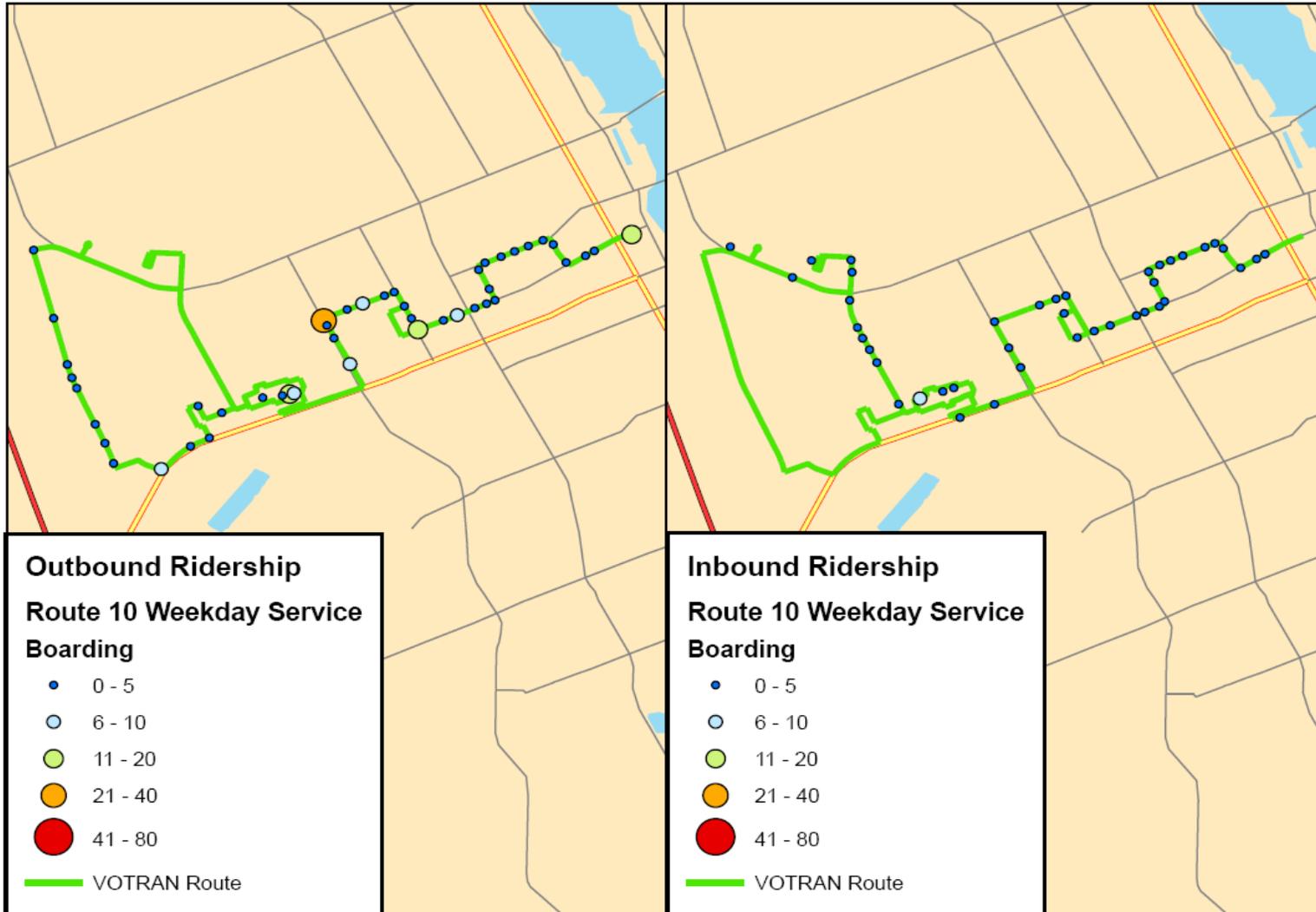
Figure 3-6
Ridership by Hour of Day
Route 10



Mapping of APC Data

Maps 3-3 through 3-8 display weekday boardings and alightings for the Route 10 as well as boarding and alighting activity for Route 10 Night and Route 10 Sunday services. As a Core Network route, the Route 10 shows good levels of activity for all segments on weekdays. Night service shows lower levels of activity while boarding and alighting activity on Sunday is much stronger than night service.

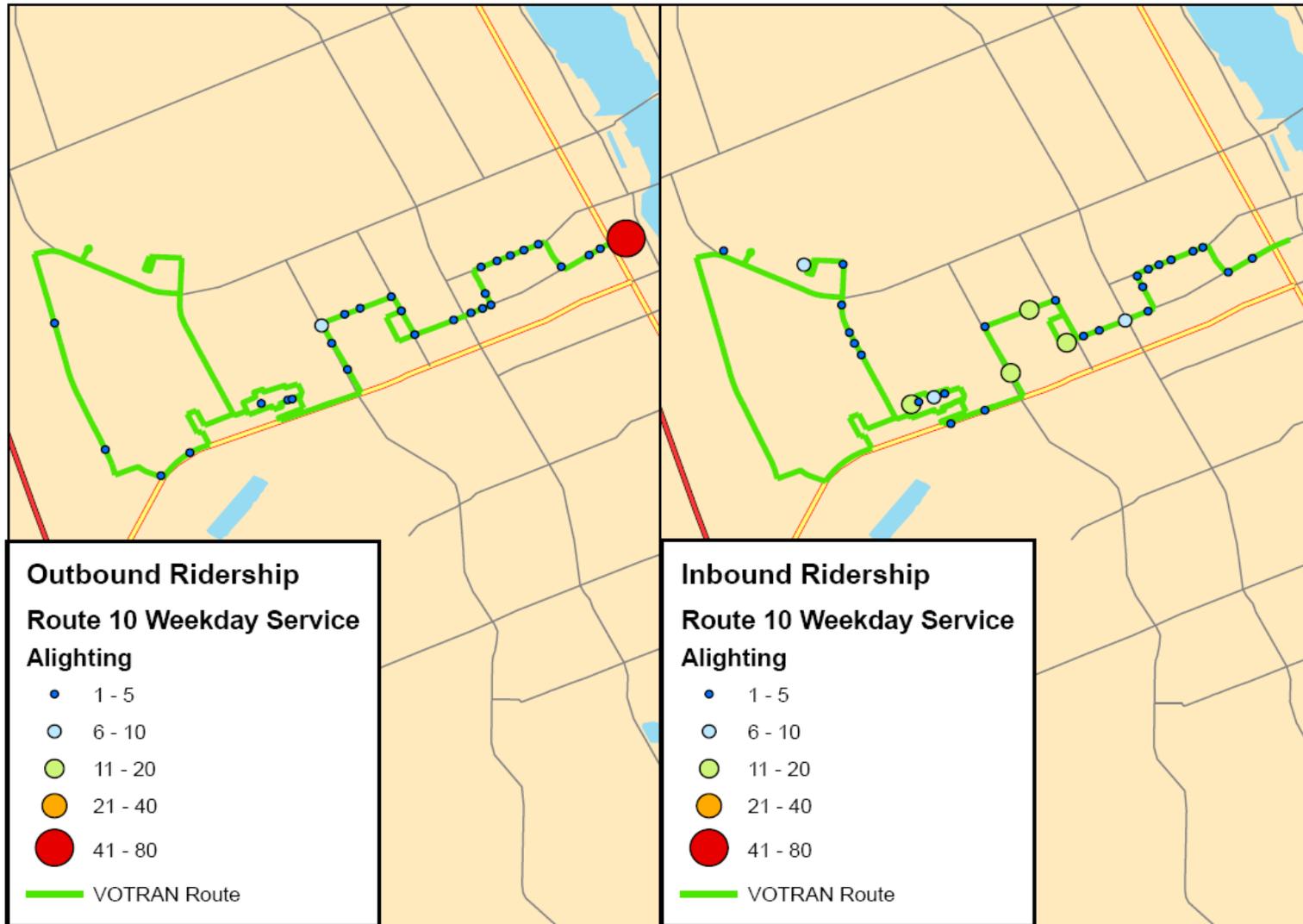
Map 3-3
Route 10 Weekday Boardings



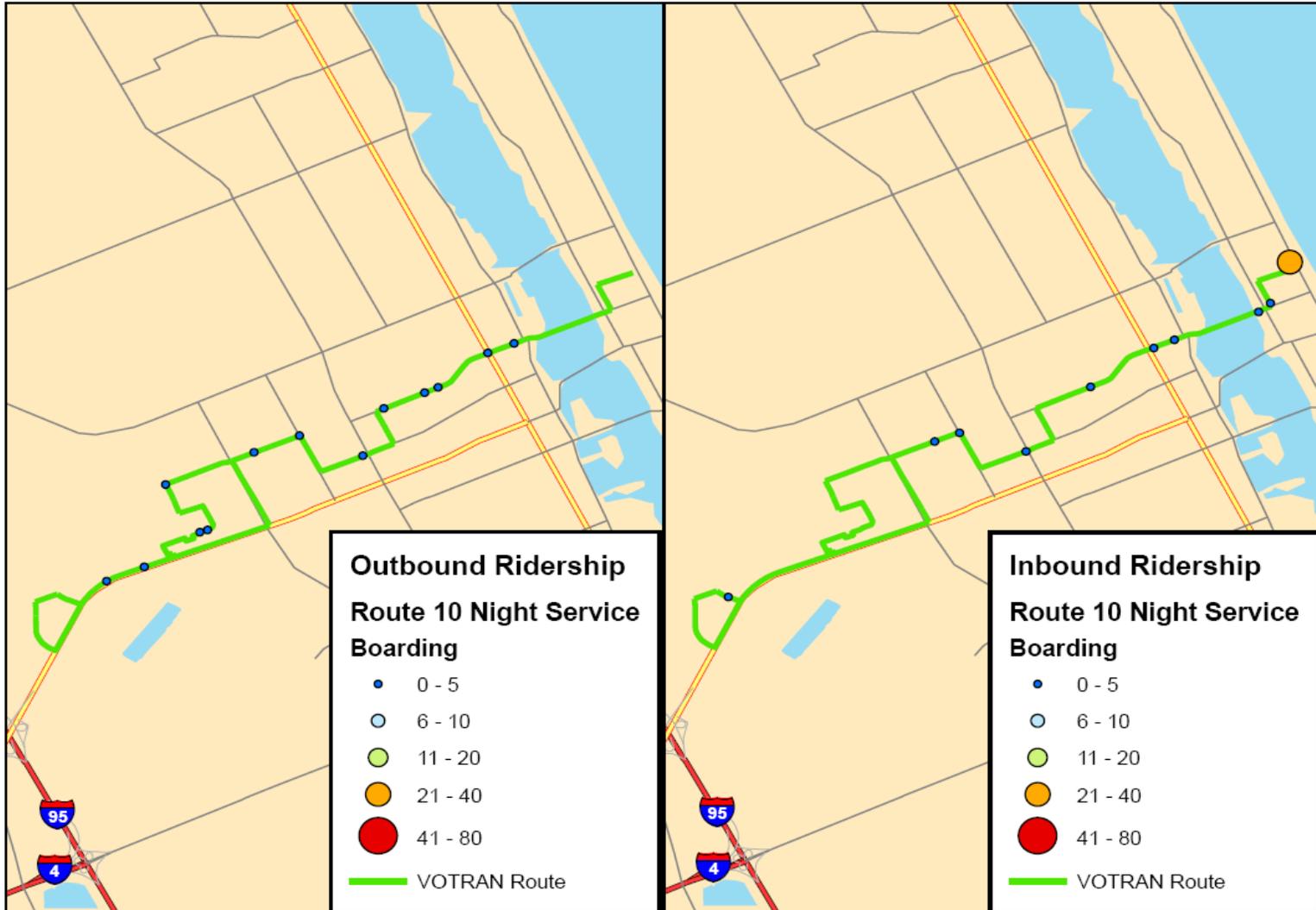
Section 3

Core Network Routes

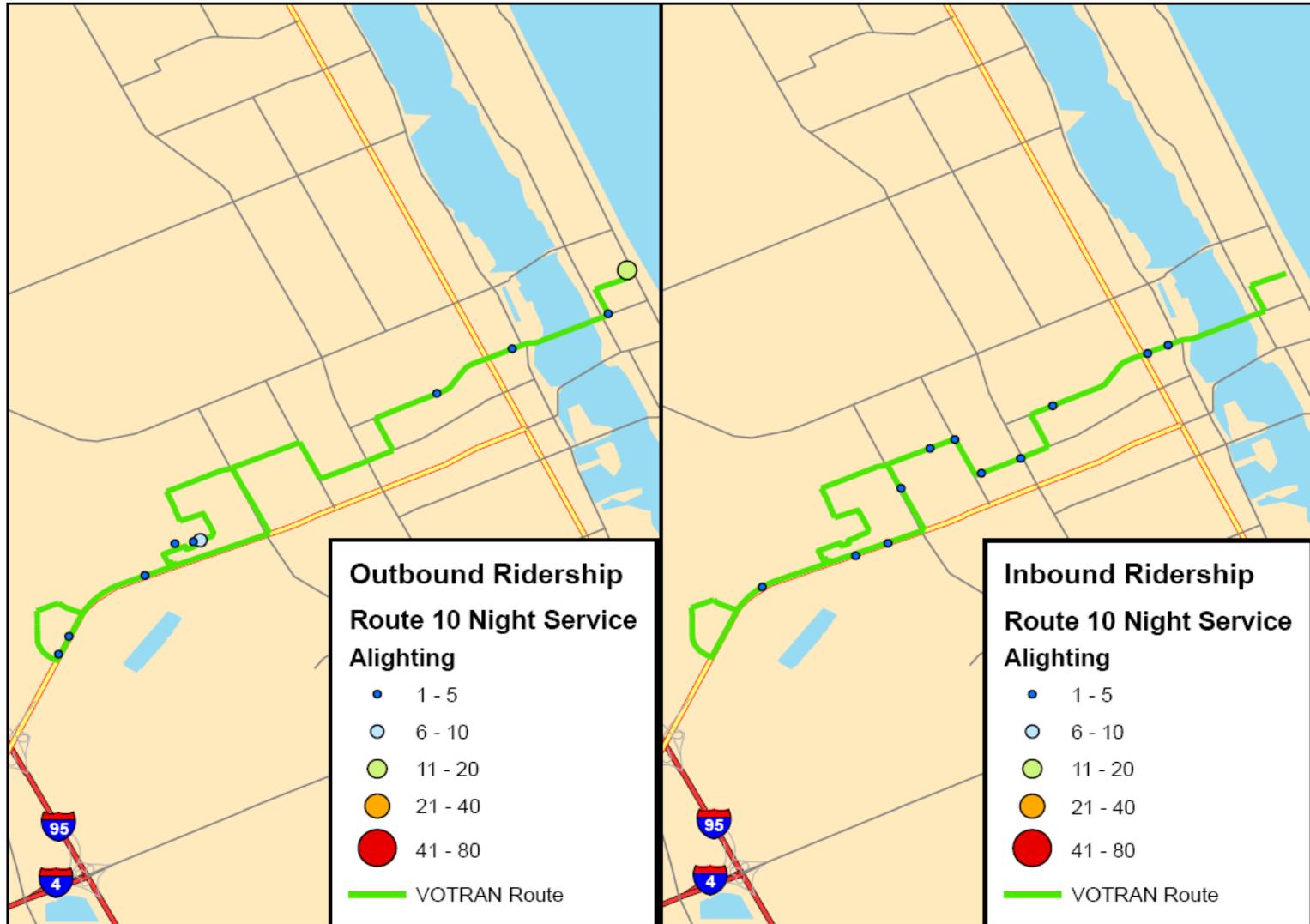
Map 3-4
Route 10 Weekday Alightings



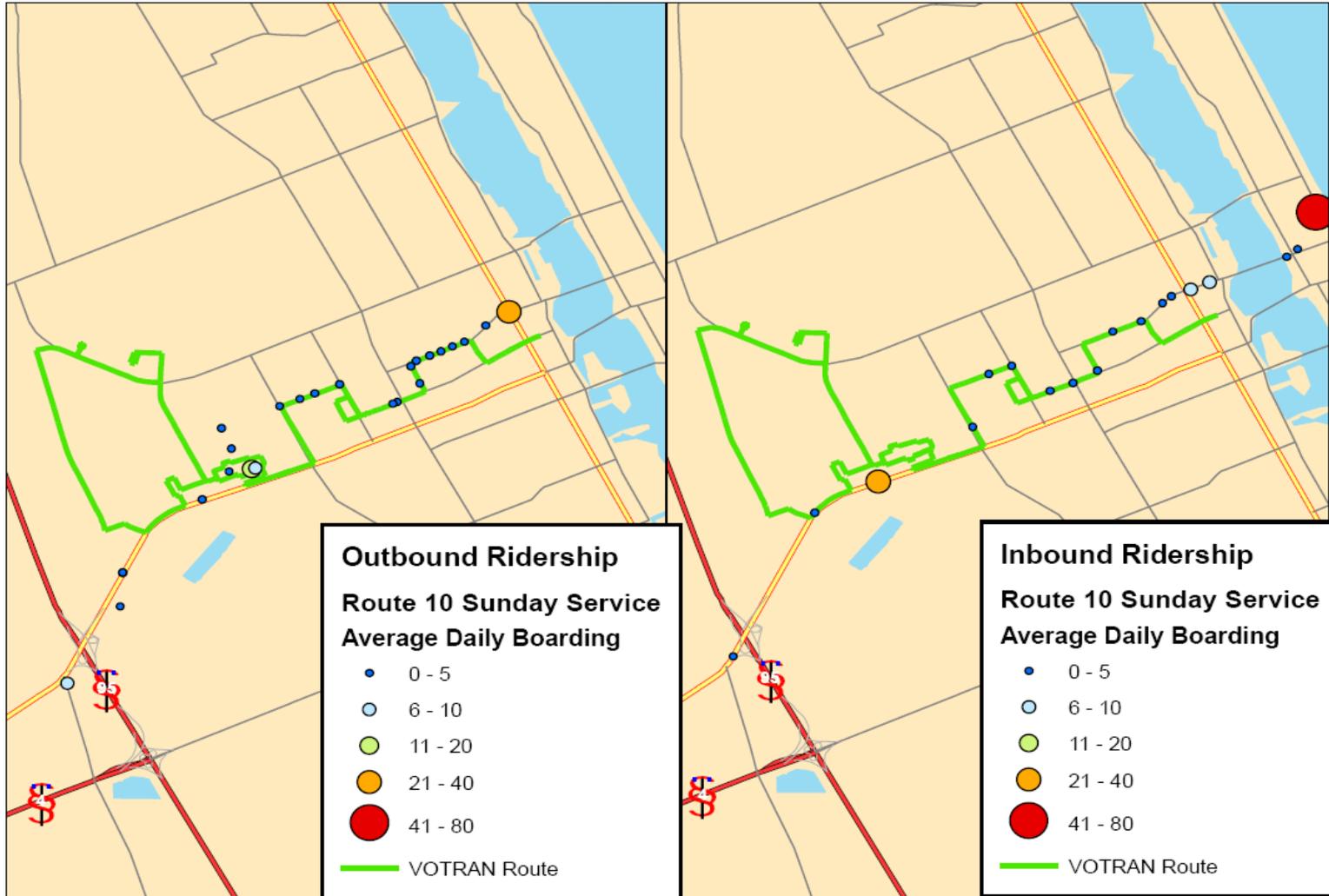
Map 3-5
Route 10 Night Boardings



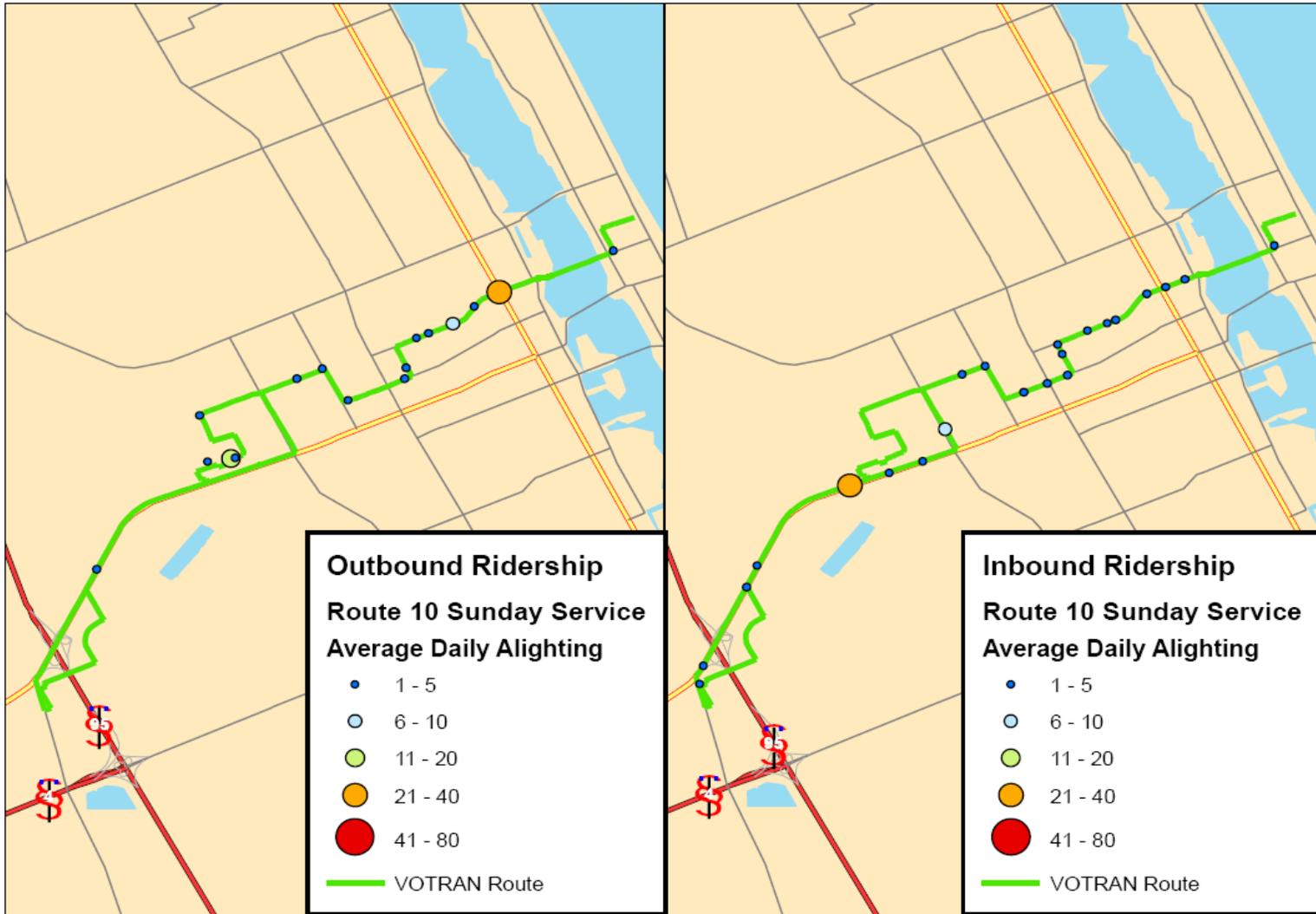
Map 3-6
Route 10 Night Alightings



Map 3-7
Route 10 Sunday Boardings



Map 3-8
Route 10 Sunday Alightings



Route 12

Route 12 serves from the VOTRAN Transfer Plaza to Dunlawton Square in Port Orange via Bellvue Avenue and south Clyde Morris Boulevard. The Route 12 connects with the Routes 4, 7, 17B and 40 at Dunlawton Square in Port Orange. Weekday and Saturday service operates between 6:32 a.m. and 6:54 p.m. with 60 minute frequency.

Although the Route 12 is a core network route, there is no service at night and on Sundays. Table 3-5 below shows the Daily Service Characteristics and Table 3-6 displays the Performance Measures for the Route 12. In terms of productivity, the Route 12 ranked 9th in FY 2007 and moved up to 8th in FY 08 for overall performance.

**Table 3-5
Daily Service Characteristics
Route 12**

Daily Service Characteristics	Weekday/ Saturday	Night	Sunday
Span of Service	6:32 - 18:54	N/S	N/S
Peak/Base Frequency	60/60	N/S	N/S
Peak/Base Buses	2/2	N/S	N/S
1-way Runtime OB	36	N/S	N/S
1-way Runtime IB	40	N/S	N/S
Daily Revenue Hours	20.64	N/S	N/S
Daily Revenue Miles	293.2	N/S	N/S
Average Daily Passengers (Wk)	416	N/S	N/S
Average Daily Passengers (Sat)	302	N/S	N/S

Table 3-6
Performance Measures
Route 12

Performance Measures	Measure
FY 07 Overall Composite Score	96%
FY 08 Overall Composite Score	105%
FY 07 Rank	10
FY 08 Rank	8
Passengers/Revenue Hour (FY 08)	19.96
Passengers/Revenue Mile (FY 08)	1.40
Overall Cost/Passenger (FY 08)	\$3.24
Overall Subsidy/Passenger (FY 08)	\$2.57
Operating Ratio (Revenue:Cost)	20.5%

Considerations for Improvements and Priority

Weekday Span (Night) Improvements – Route 12

Priority: Medium

Implementation of Sunday Service – Route 12

Priority: Medium

The Route 12 was realigned during the course of this study to serve the West Port Shopping Center. In addition, construction of the Pavilion DRI is underway nearby and will be realigned to serve the development when complete. VOTRAN will continue to monitor route ridership and on-time performance after all changes are made.

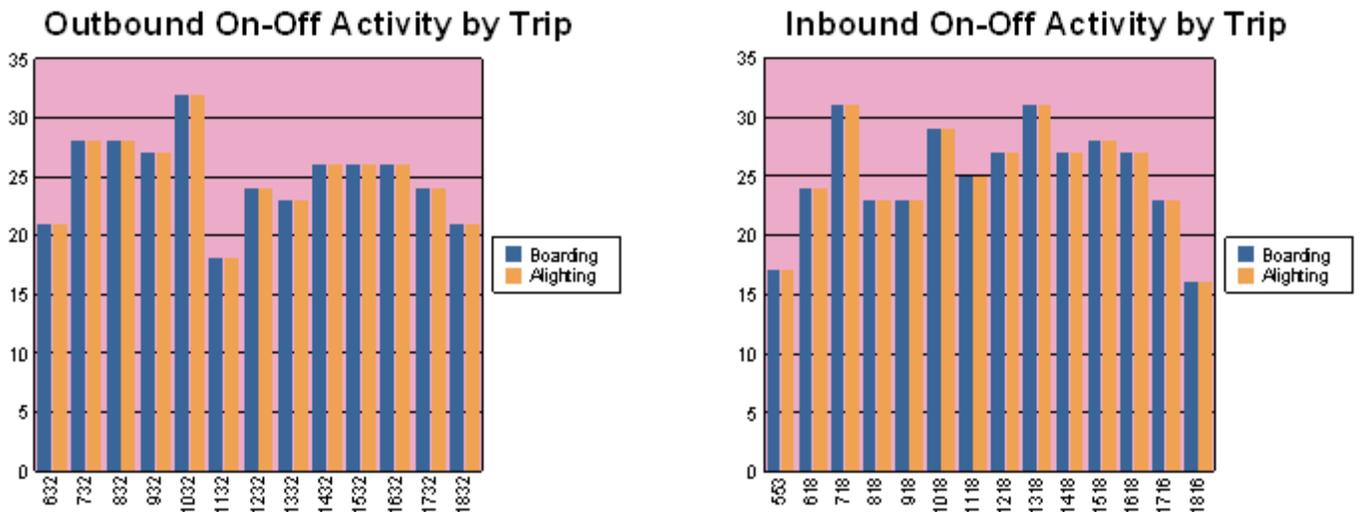
Ridecheck Data from Automatic Passenger Counters (APCs)

The following tables, figures and maps depict data obtained from the APC data supplied by VOTRAN.

On-Off Activity by Trip

The APC data shows the inbound trips experience their consistent levels of on-off activity during the a.m. peak, mid-day and the p.m. peak period. Outbound trips are stronger in the a.m. peak and consistent during the p.m. peak period. Outbound trips experience the greatest level of activity on the 10:32 a.m. trip. Figure 3-7 displays the on-off activity by trip for the Route 12.

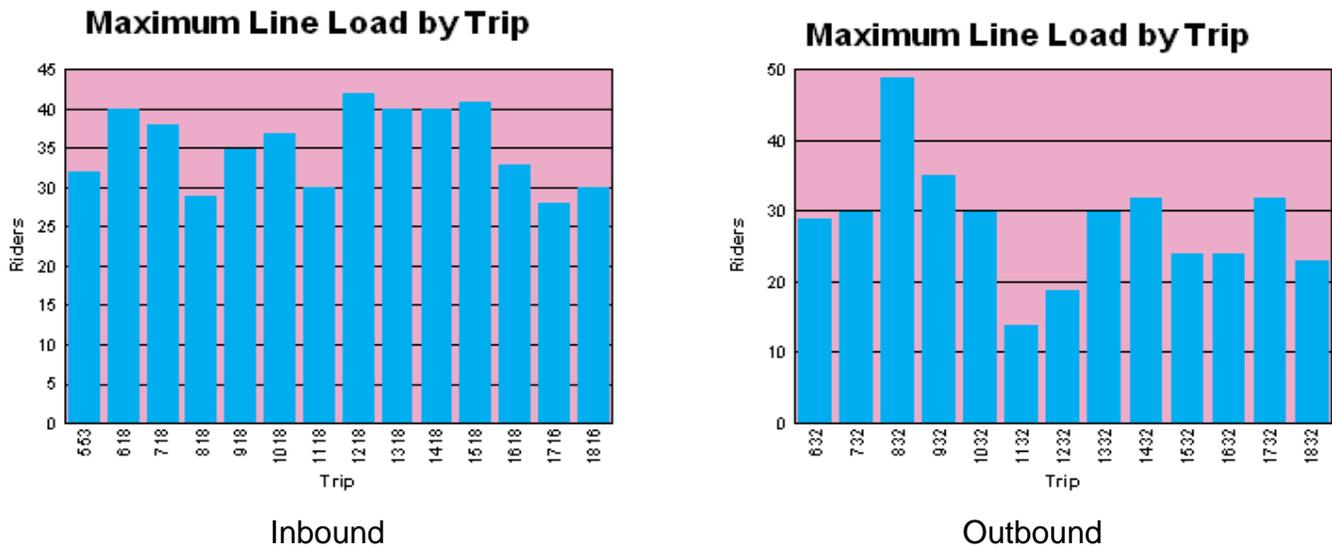
**Figure 3-7
On-Off Activity by Trip
Route 12**



Max Line Load by Trip

Figure 3-8 below shows that the max line loads for the Route 12 occur during the 12:18 p.m. inbound and the 8:32 a.m. outbound trips.

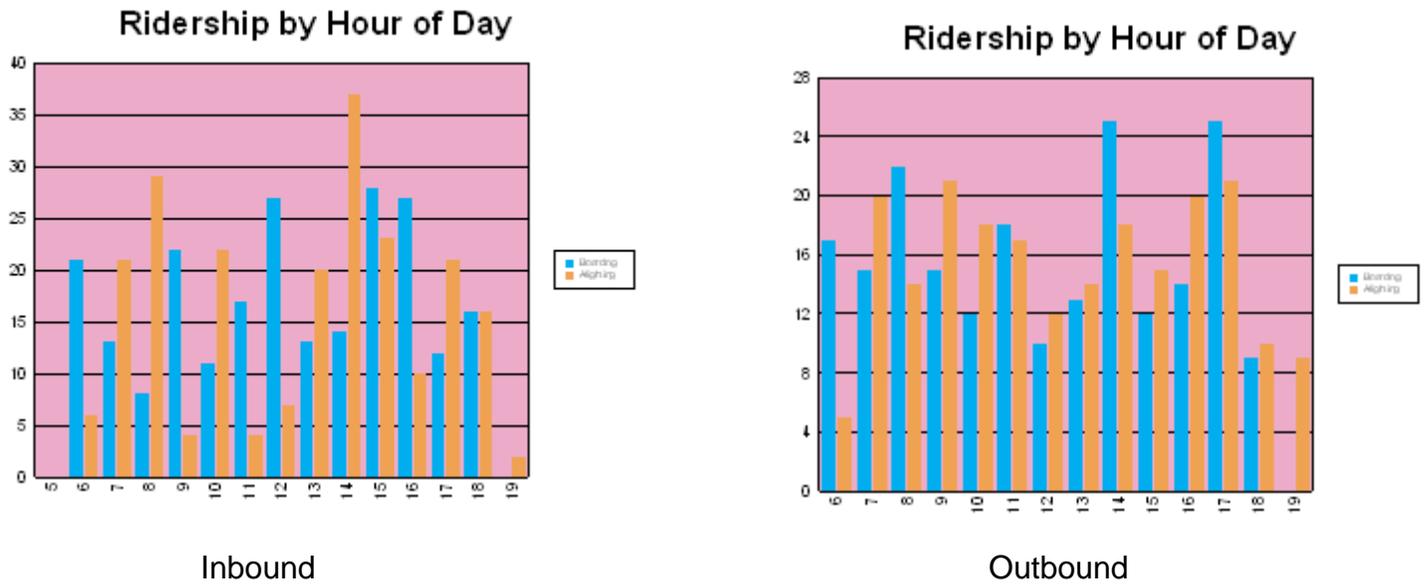
Figure 3-8
Max Line Load by Trip
Route 12



Ridership by Hour of Day

Figure 3-9 below shows that the Route 12 inbound trips had the greatest levels of boardings during the 3:00 p.m. to 5:00 p.m. hour and greatest number of alightings during the 2:00 p.m. to 3:00 p.m. hour. For outbound trips, highest levels of boardings occurred from the 2:00 p.m. to 3:00 p.m. hour while the highest number of alightings occurred from the 4:00 p.m. to 5:00 p.m. hour.

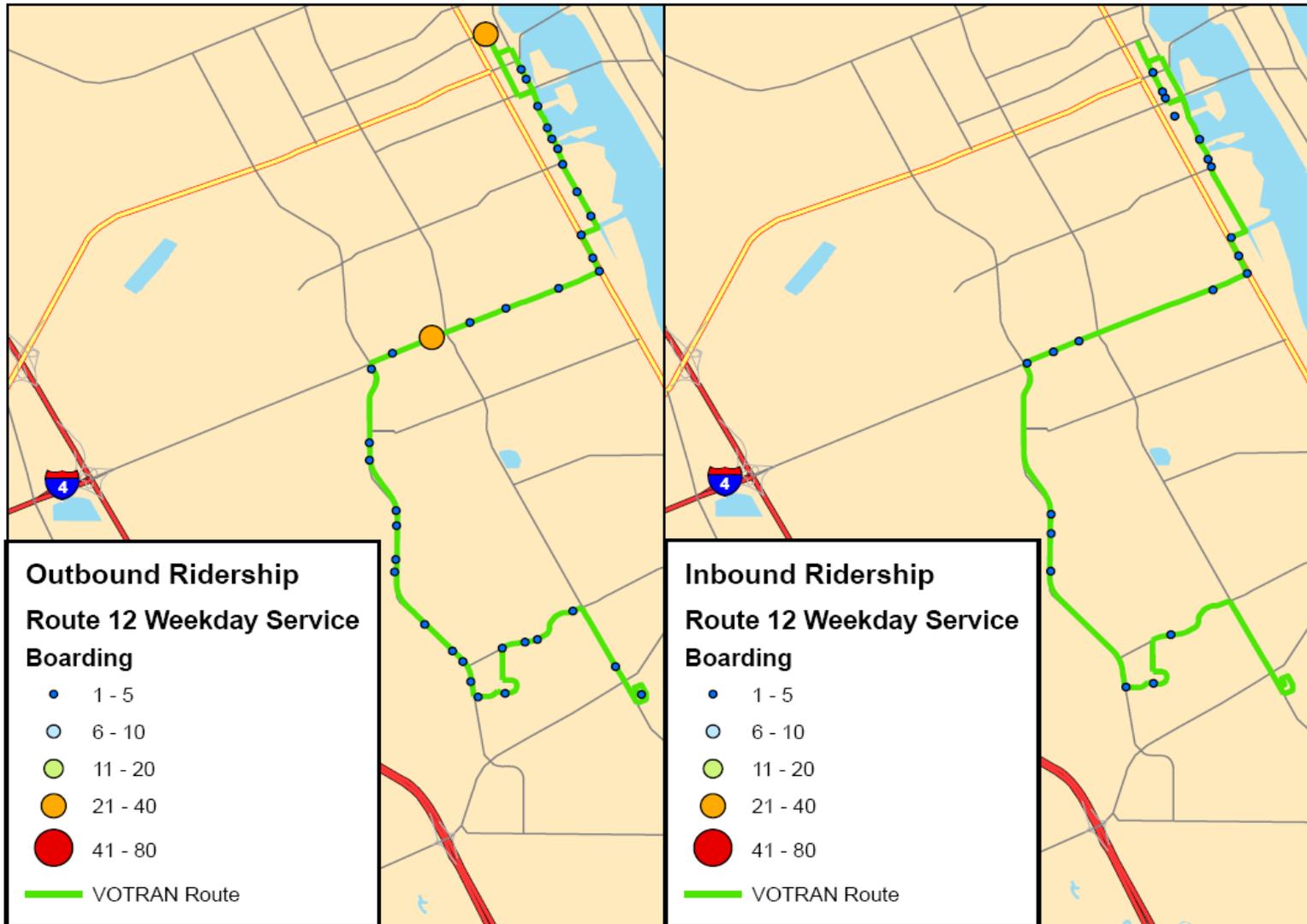
Figure 3-9
Ridership by Hour of Day
Route 12



Mapping of APC Data

Maps 3-9 through 3-10 display weekday boardings and alightings for the Route 12. As a Core Network Route, the Route 12 is good on-off activity for all segments.

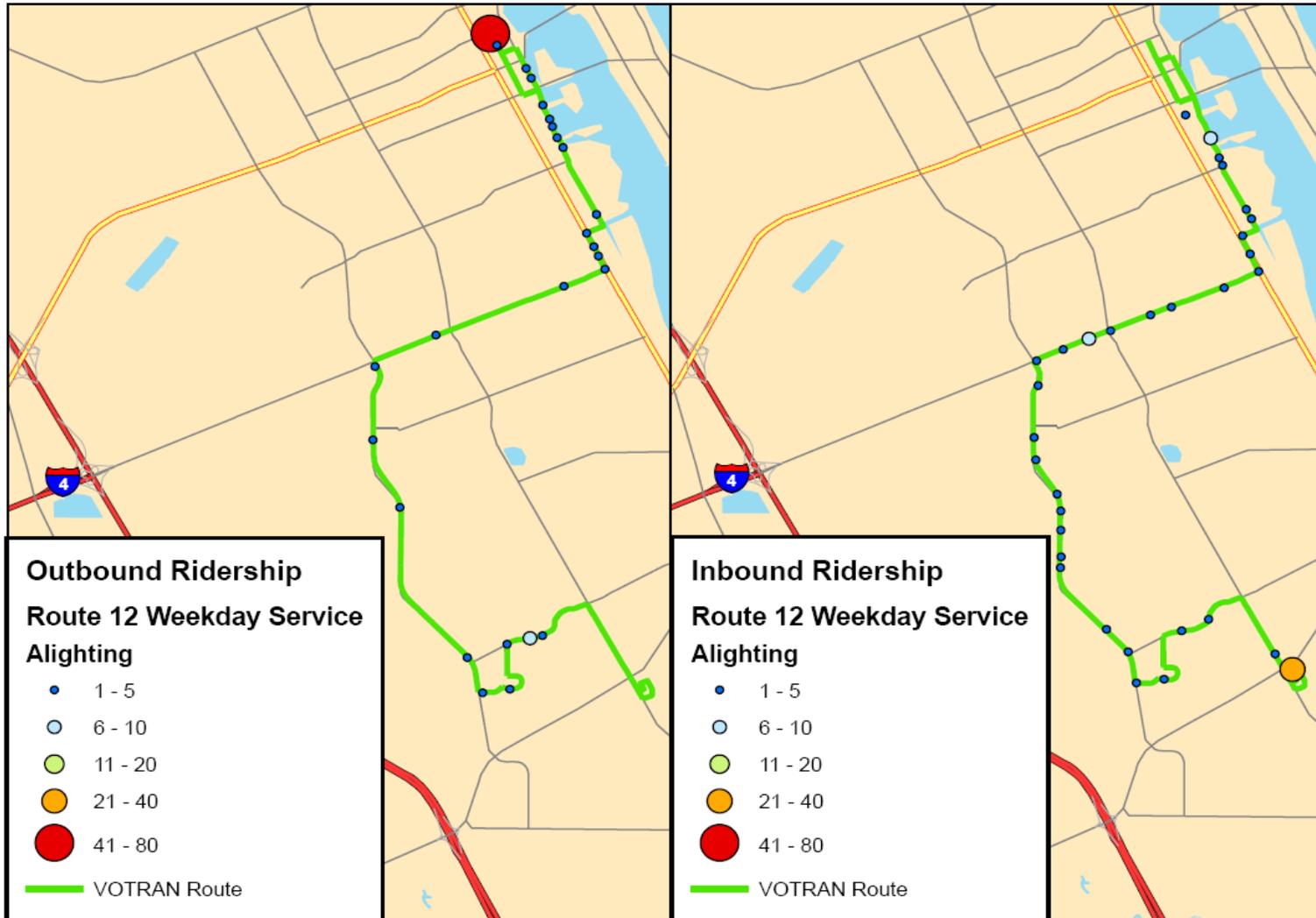
Map 3-9
Route 12 Weekday Boardings



Section 3

Core Network Routes

Map 3-10
Route 12 Weekday Alightings



Route 15

Along with the Routes 4, 7 and 12, Route 15 completes the southern portion of the east side service area south of ISB and west of U.S. 1 and completes the Core Route Network. In terms of route mileage, the Route 15 is the shortest route in the system and requires only 23 minutes to complete a round trip. Route 15 serves in a clockwise loop with Orange Avenue, Dr. Martin Luther King Blvd, South Street, and Keech Streets completing the loop. Weekday and Saturday service operates between 5:31 a.m. and 6:47 p.m. with 60 minute frequency.

As a Core Network Route, the Route 15 operates service at night and on Sundays. The routing configuration for night and Sunday service primarily varies from weekday by the Route 15 continuing south on Nova Road to the Wal-Mart at Nova Road and Beville Road. Night service operates with 60 minute frequencies from 7:00 p.m. to 12:18 a.m. On Sunday, service operates with hourly frequency from 6:43 a.m. to 6:23 p.m. Table 3-7 below shows the Daily Service Characteristics and Table 3-8 displays the Performance Measures for the Route 15. In terms of performance, the Route 15 is ranked #2 in the east side service area in both FY 2007 and FY 2008.

**Table 3-7
Daily Service Characteristics
Routes 15**

Daily Service Characteristics	Weekday/ Saturday	Night	Sunday
Span of Service	5:31 - 18:47	19:00 - 24:18	6:43 - 18:23
Peak/Base Frequency	30/30	60/60	60/60
Peak/Base Buses	1/1	1/1	1/1
1-way Runtime OB	12	26	26
1-way Runtime IB	11	29	29
Daily Revenue Hours	13.75	6.05	12.23
Daily Revenue Miles	140	91.9	202.1
Average Daily Passengers (Wk)	383	N/A	N/A
Average Daily Passengers (Sat)	214	N/A	N/A

Table 3-8
Performance Measures
Route 15

Performance Measures	Measure
FY 07 Overall Composite Score	151%
FY 08 Overall Composite Score	149%
FY 07 Rank	2
FY 08 Rank	2
Passengers/Revenue Hour (FY 08)	26.70
Passengers/Revenue Mile (FY 08)	2.44
Overall Cost/Passenger (FY 08)	\$2.42
Overall Subsidy/Passenger (FY 08)	\$1.81
Operating Ratio (Revenue:Cost)	25.2%

Considerations for Improvements and Priority – None – The Route 15 operates at 30 minute service and serves weekdays, Saturdays, night and Sunday. No service improvements are necessary.

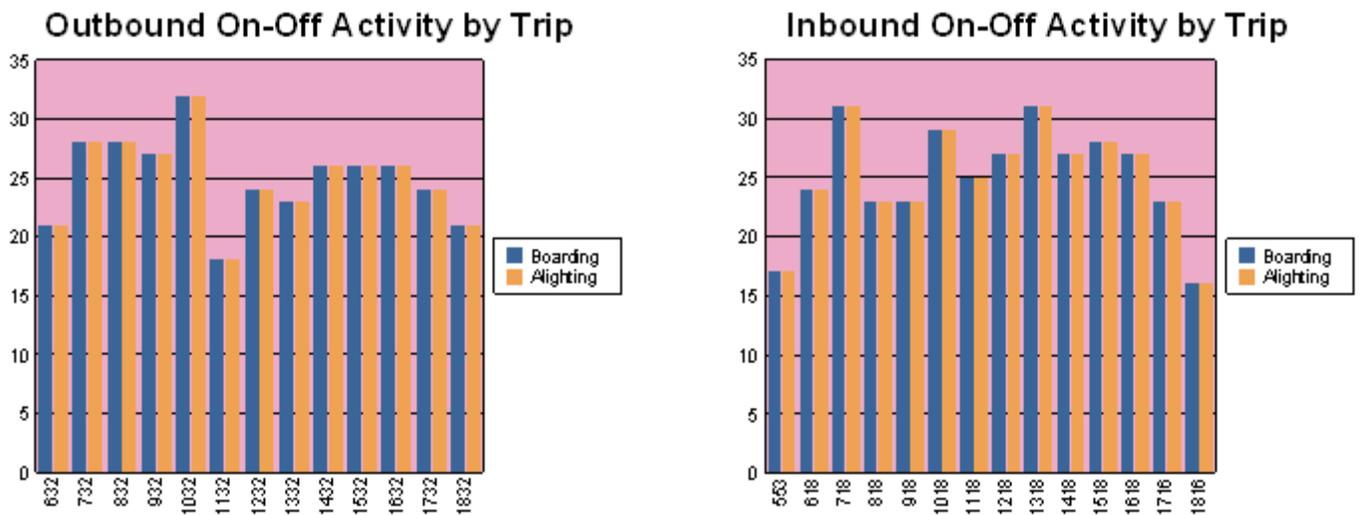
Ridecheck Data from Automatic Passenger Counters (APCs)

The following tables, figures and maps depict data obtained from the APC data supplied by VOTRAN.

On-Off Activity by Trip

The APC data shows the inbound trips have consistent on-off activity in the a.m. peak, mid-day and p.m. peak periods. Outbound trips have greater activity in the a.m. peak than the p.m. peak period. Figure 3-10 displays the on-off activity by trip for the Route 15.

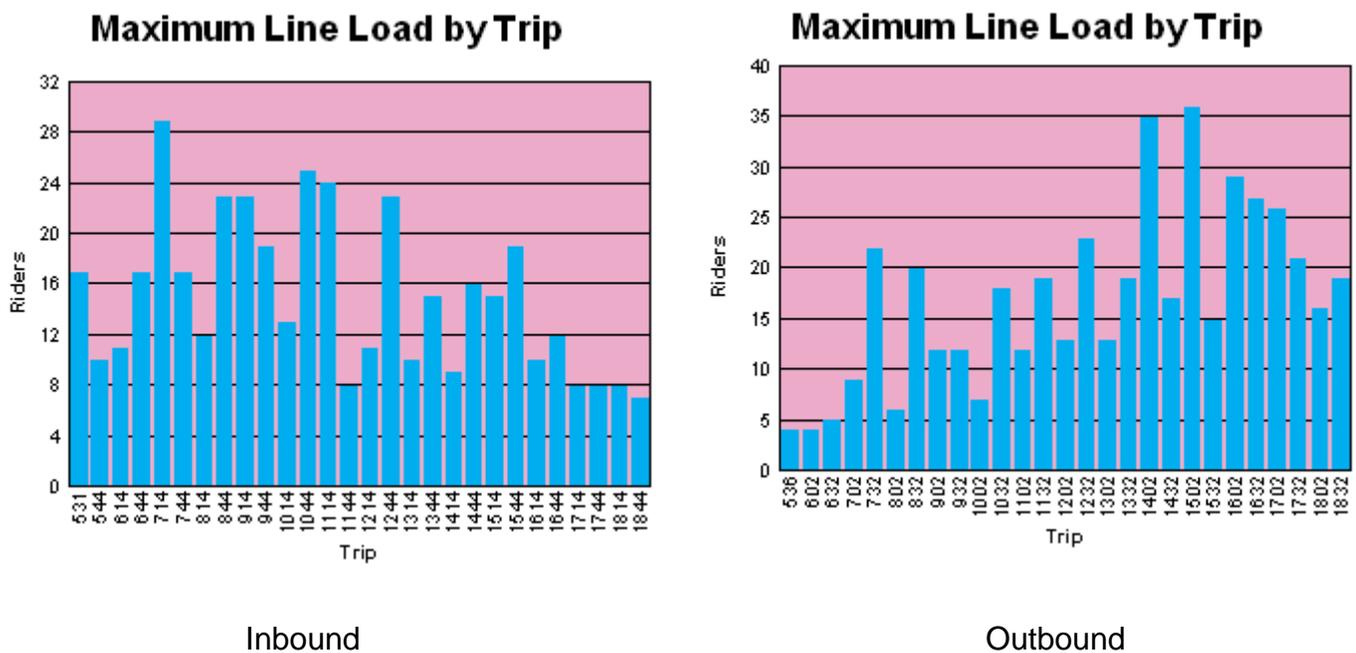
**Figure 3-10
On-Off Activity by Trip
Route 15**



Max Line Load by Trip

Figure 3-11 below shows that the max line loads for the Route 15 occur during the 7:14 a.m. inbound and the 3:02 p.m. outbound trips.

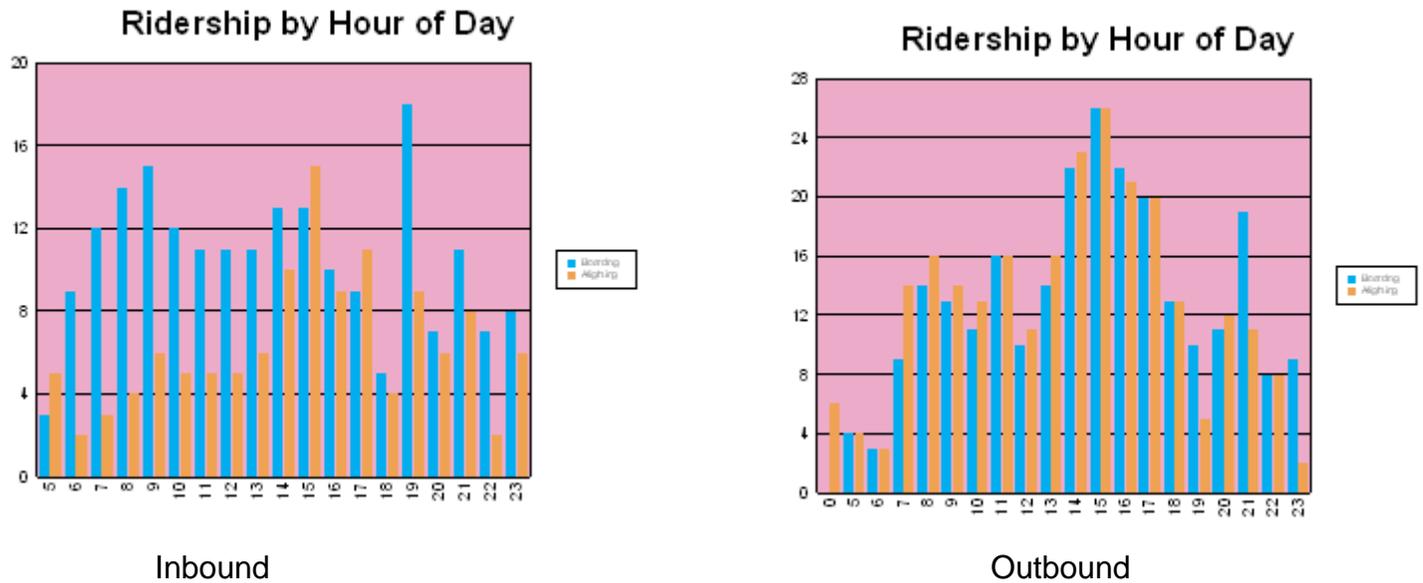
Figure 3-11
Max Line Load by Trip
Route 15



Ridership by Hour of Day

Figure 3-12 below shows that the Route 15 has highest level of boardings during the 7:00 to 8:00 p.m. hour for the inbound trips while outbound trips experiencing a peak form the 3:00 p.m. to 4:00 p.m. period.

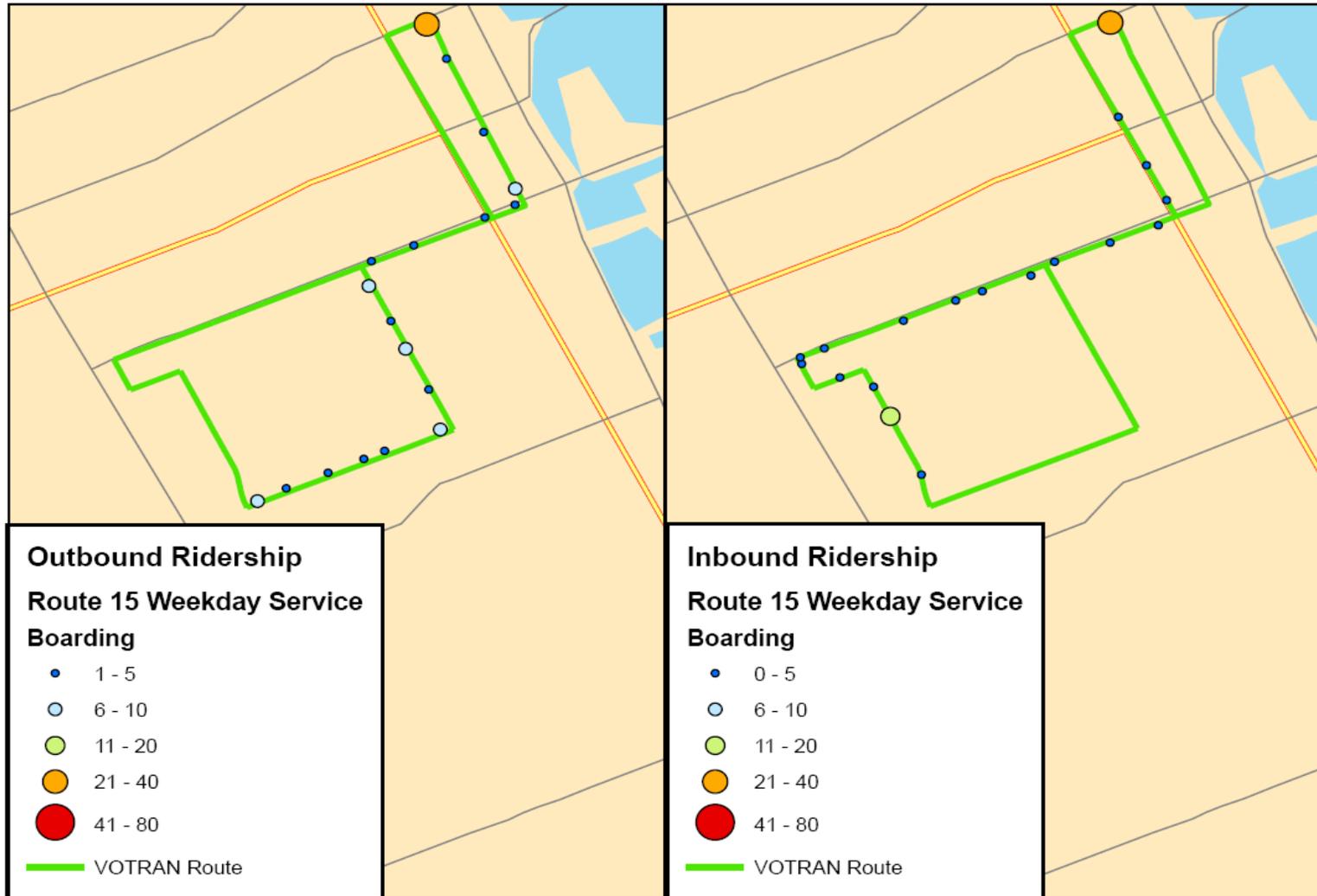
Figure 3-12
Ridership by Hour of Day
Route 15



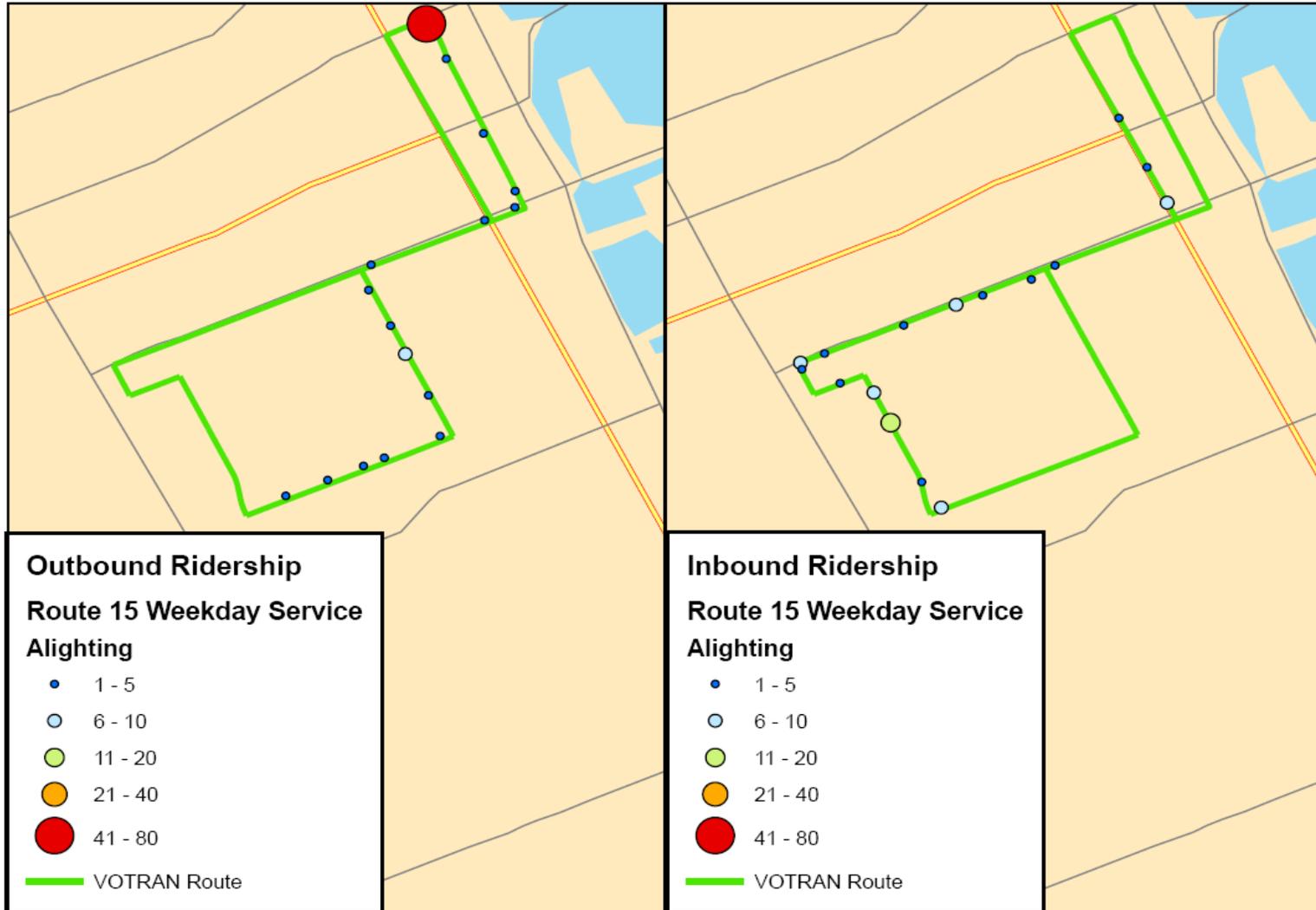
Mapping of APC Data

Maps 3-11 through 3-16 display weekday boardings and alightings for the Route 15 as well as boarding and alighting activity for Route 15 Night and Route 15 Sunday services. As a Core Network Route, the Route 15 shows good levels of activity for all segments on weekdays. Night service shows lower levels of activity while boarding and alighting activity on Sunday is much stronger than night service.

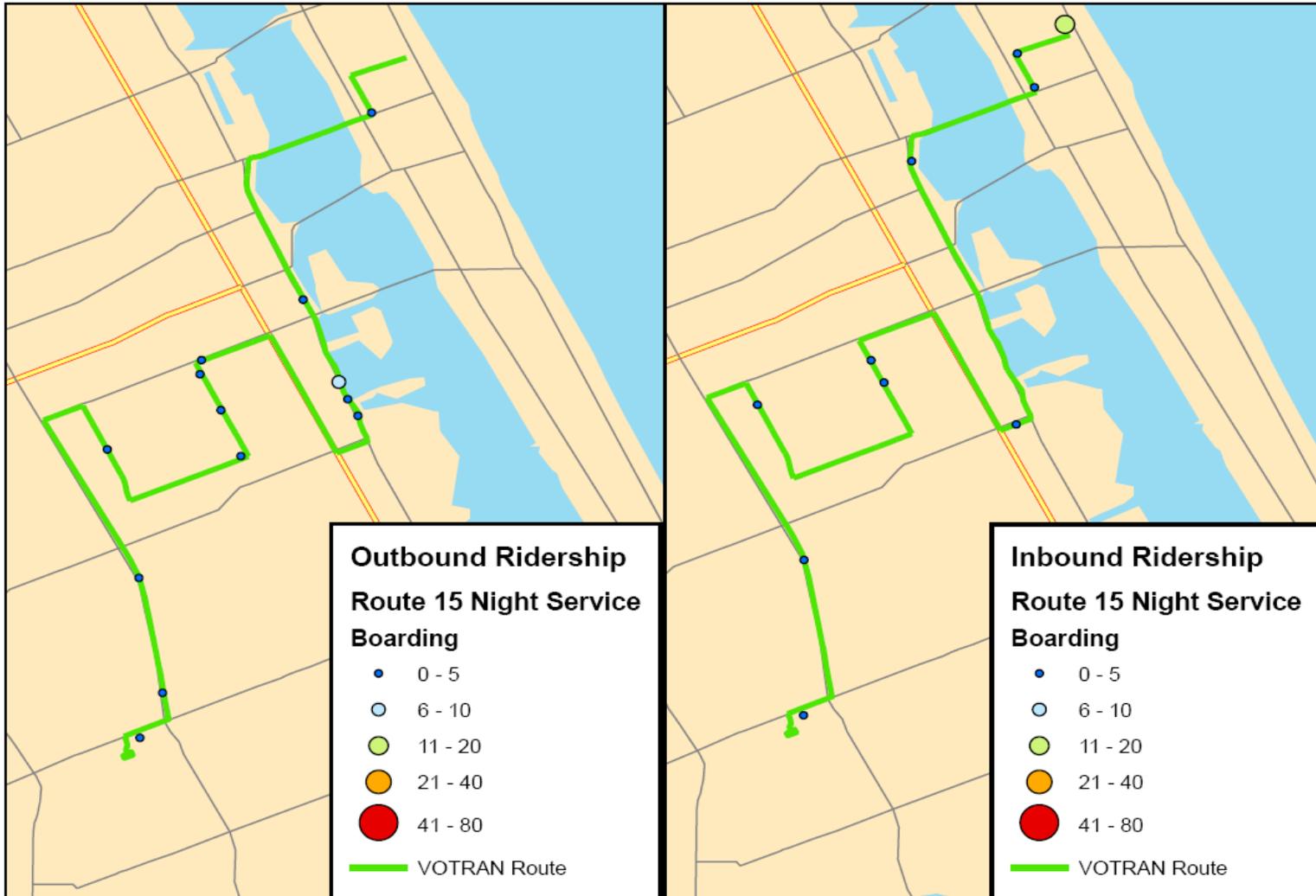
Map 3-11
Route 15 Weekday Boardings



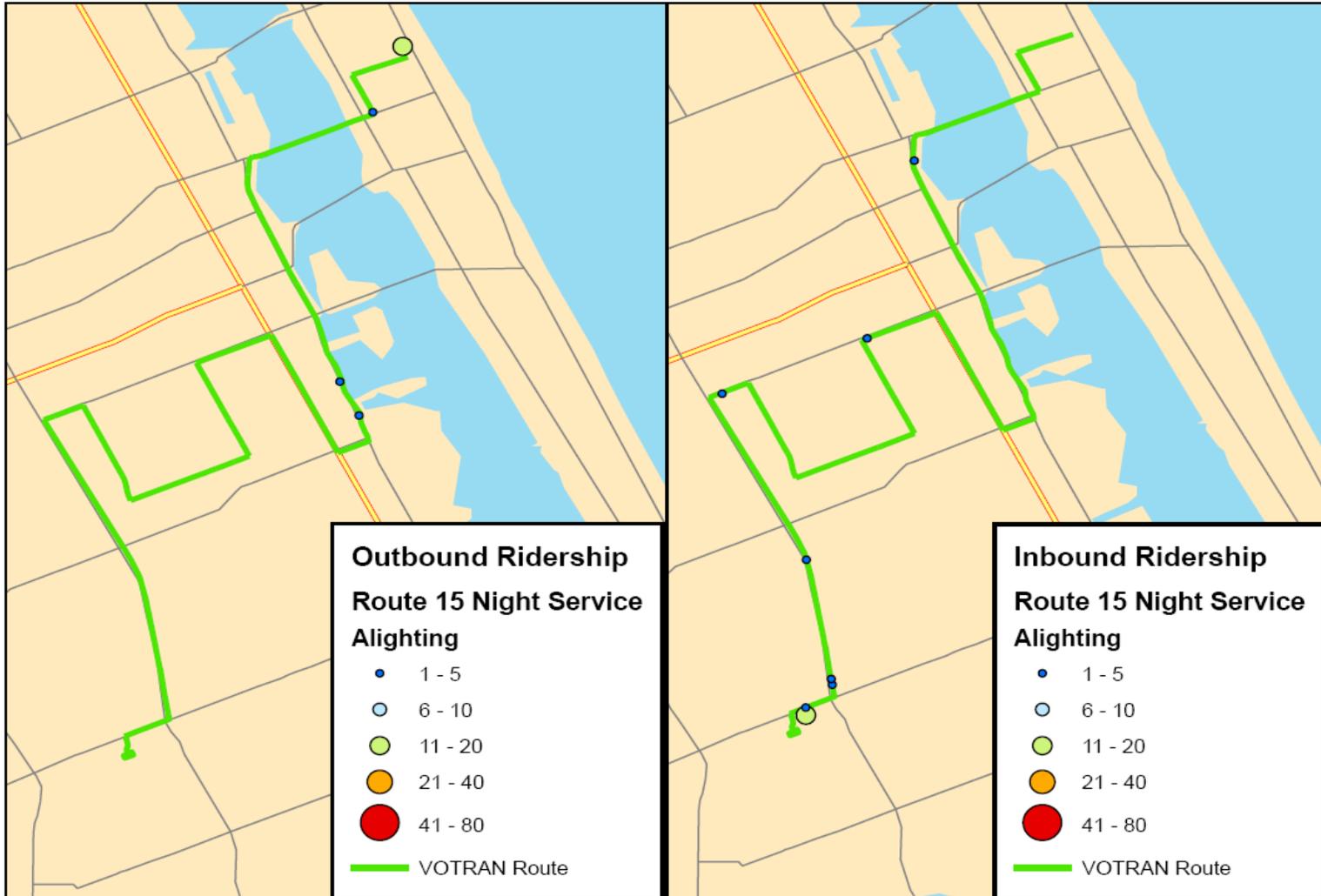
Map 3-12
Route 15 Weekday Alightings



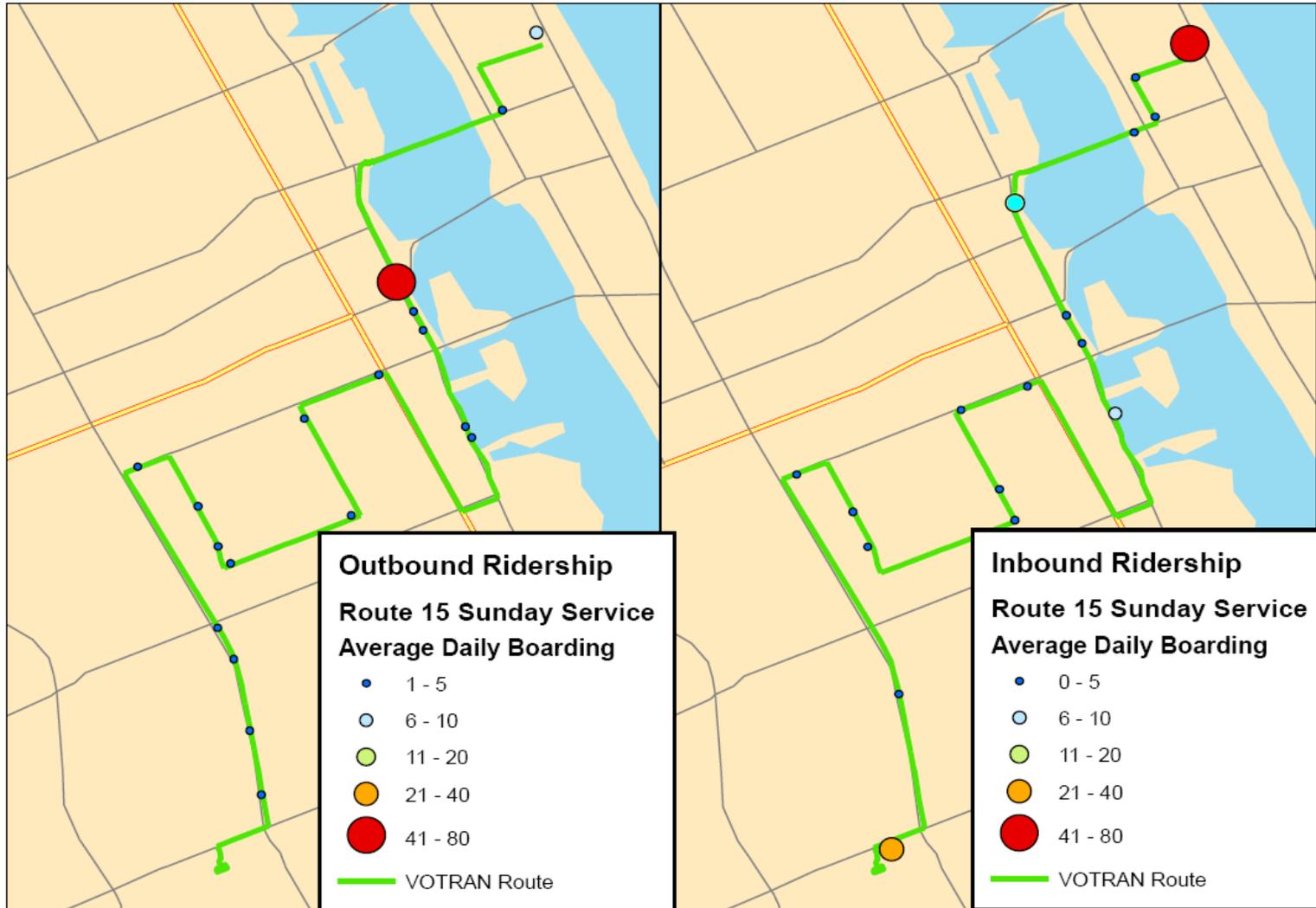
Map 3-13
Route 15 Night Boardings



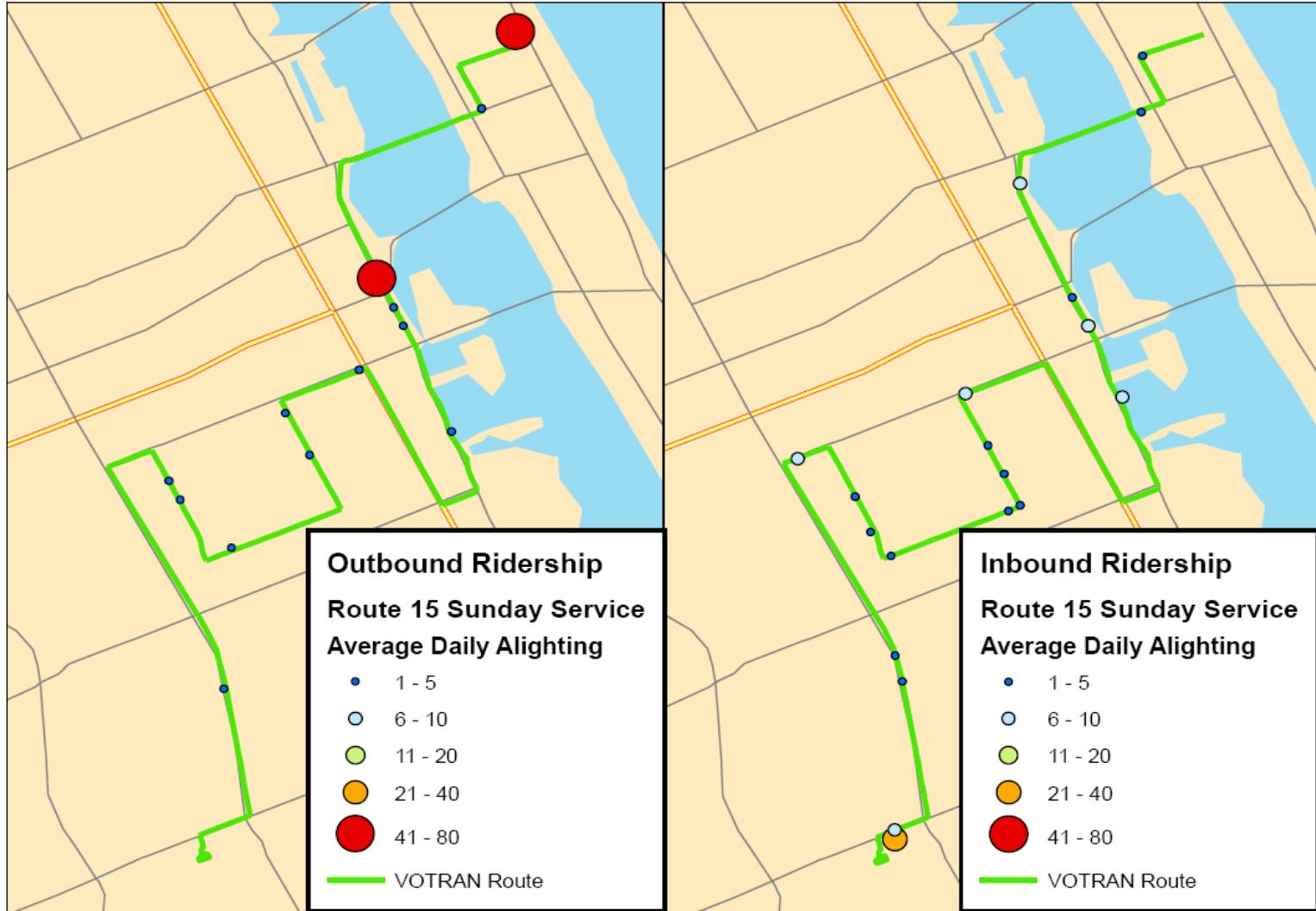
Map 3-14
Route 15 Night Alightings



Map 3-15
Route 15 Sunday Boardings



Map 3-16
Route 15 Sunday Alightings



Section 4

Lower Performing Routes

The lower performing routes all have in common that they operate in the northern sector of the east side service area, north of ISB (US 92) and west of US 1. The five routes that comprise the lower performers, Routes 5, 6, 8, 9, and 11 account for 17.7 percent of east side system ridership in FY 2008.

Route 5

Route 5 serves the north sector of the east side service area (north of ISB (US 92) and west of US 1). The configuration of the route is such that many streets are served in an east-west and north-south pattern. Major east-west streets served include Dr. Mary McLeod Bethune Boulevard, Mason Avenue, 2nd Street, 3rd Street, LPGA Boulevard, 13th Street, Walker Street and Flomich Street. Major north-south portions of the route include Center Street and Beach Street. The Route 5 has a few on-street transfer points with the Routes 3, 6 and 11. VOTRAN reports that recently the Routes 5 and 6 have been interlined. VOTRAN staff also reports that the circuitous nature of the Route 5 is based on several key destinations that require service. However, numerous turns slow service and tends to reduce performance. Route 5 is the only route in the east side network that does not operate Saturday service and there is no night or Sunday service. Weekday service operates between 6:10 a.m. and 6:20 p.m. with 60 minute frequency.

Table 4-1 below shows the Daily Service Characteristics and Table 4-2 displays the Performance Measures for the Route 5. In terms of productivity, the Route 5 ranked 14th in both FY 2007 and FY 2008.

Table 4-1
Daily Service Characteristics
Route 5

Daily Service Characteristics	Weekday	Night	Sunday
Span of Service	6:10 - 18:20	N/S	N/S
Peak/Base Frequency	60/60	N/S	N/S
Peak/Base Buses	2/2	N/S	N/S
1-way Runtime OB	36	N/S	N/S
1-way Runtime IB	32	N/S	N/S
Daily Revenue Hours	18	N/S	N/S
Daily Revenue Miles	214.8	N/S	N/S
Average Daily Passengers (Wk)	227	N/S	N/S
Average Daily Passengers (Sat)	N/S	N/S	N/S

Table 4-2
Performance Measures
Route 5

Performance Measures	Measure
FY 07 Overall Composite Score	69%
FY 08 Overall Composite Score	71%
FY 07 Rank	18
FY 08 Rank	17
Passengers/Revenue Hour (FY 08)	13.15
Passengers/Revenue Mile (FY 08)	1.10
Overall Cost/Passenger (FY 08)	\$4.92
Overall Subsidy/Passenger (FY 08)	\$4.24
Operating Ratio (Revenue:Cost)	13.8%

Considerations for Improvements and Priority

As a means of making this route less circuitous, VOTRAN realigned the Route 5 to eliminate a major loop that was bound by 3rd Street to the north, Nova Boulevard to the west, Mason Street to the South and Center Avenue to the east. Now, from Riverside Drive, the route travels west on 3rd Street and north on Center Avenue directly to LPGA Boulevard. This change should help in improving service and ridership such that Saturday service could be considered in later years.

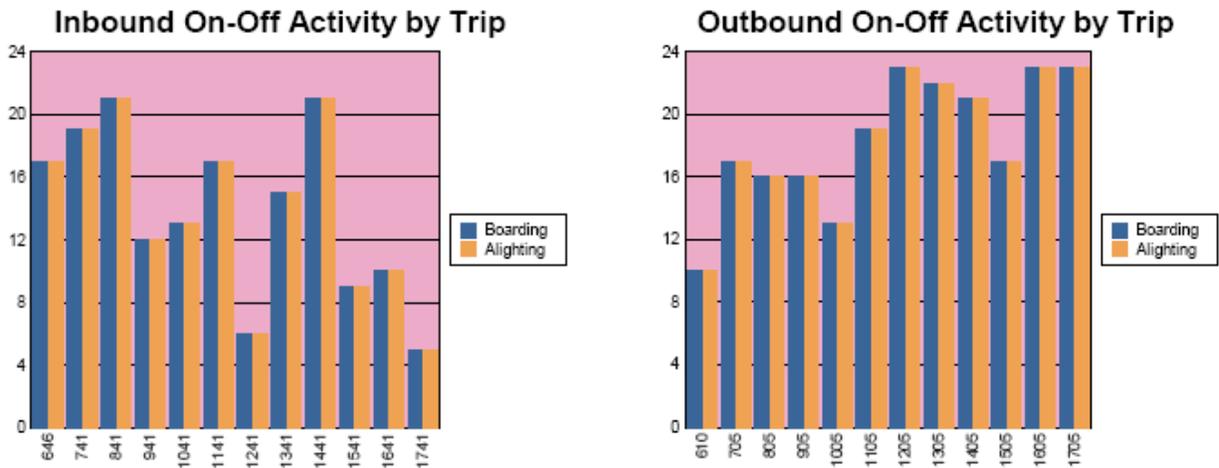
Ridecheck Data from Automatic Passenger Counters (APCs)

The following tables, figures and maps depict data obtained from the APC data supplied by VOTRAN.

On-Off Activity by Trip

The APC data shows the inbound trips experience their significant levels of on-off activity during the a.m. peak period. Outbound trips are stronger in the mid-day and p.m. peaks than the a.m. peak period. Figure 4-1 displays the on-off activity by trip for the Route 5.

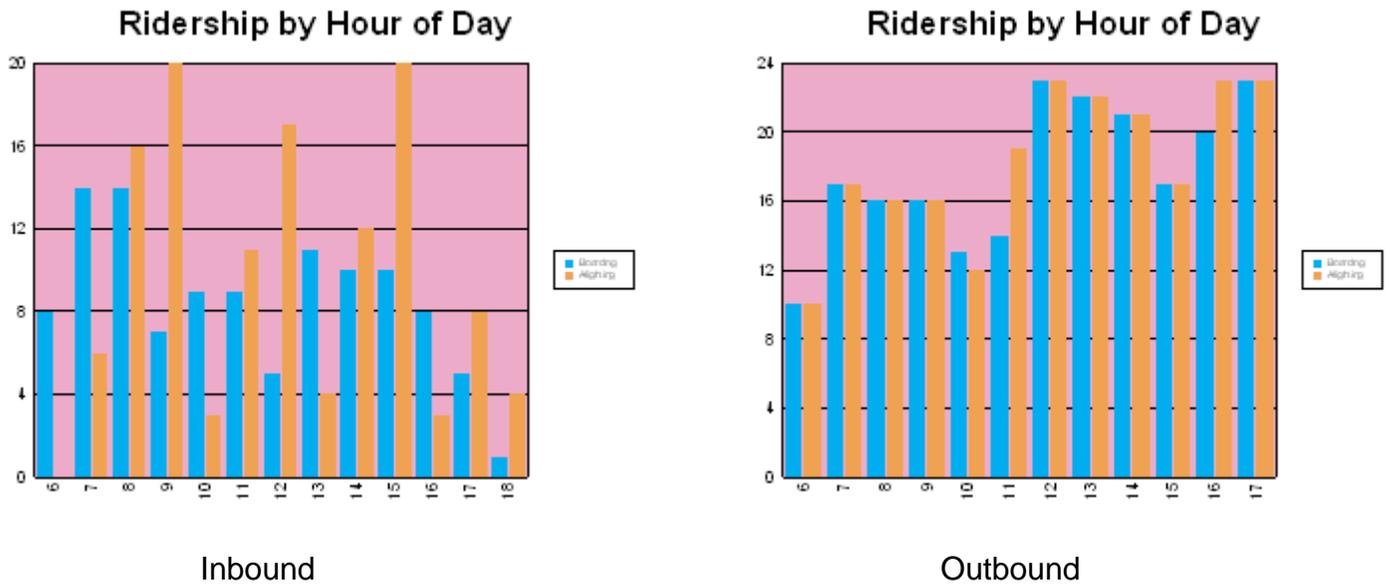
**Figure 4-1
On-Off Activity by Trip
Route 5**



Ridership by Hour of Day

Figure 4-2 below shows that the Route 5 inbound trips had boardings during the 7:00 a.m. to 9:00 a.m. hours and alightings during the 9:00 a.m. to 10:00 a.m. hour. Outbound trips had their highest use during the 12:00 p.m. to 2:00 p.m. hours.

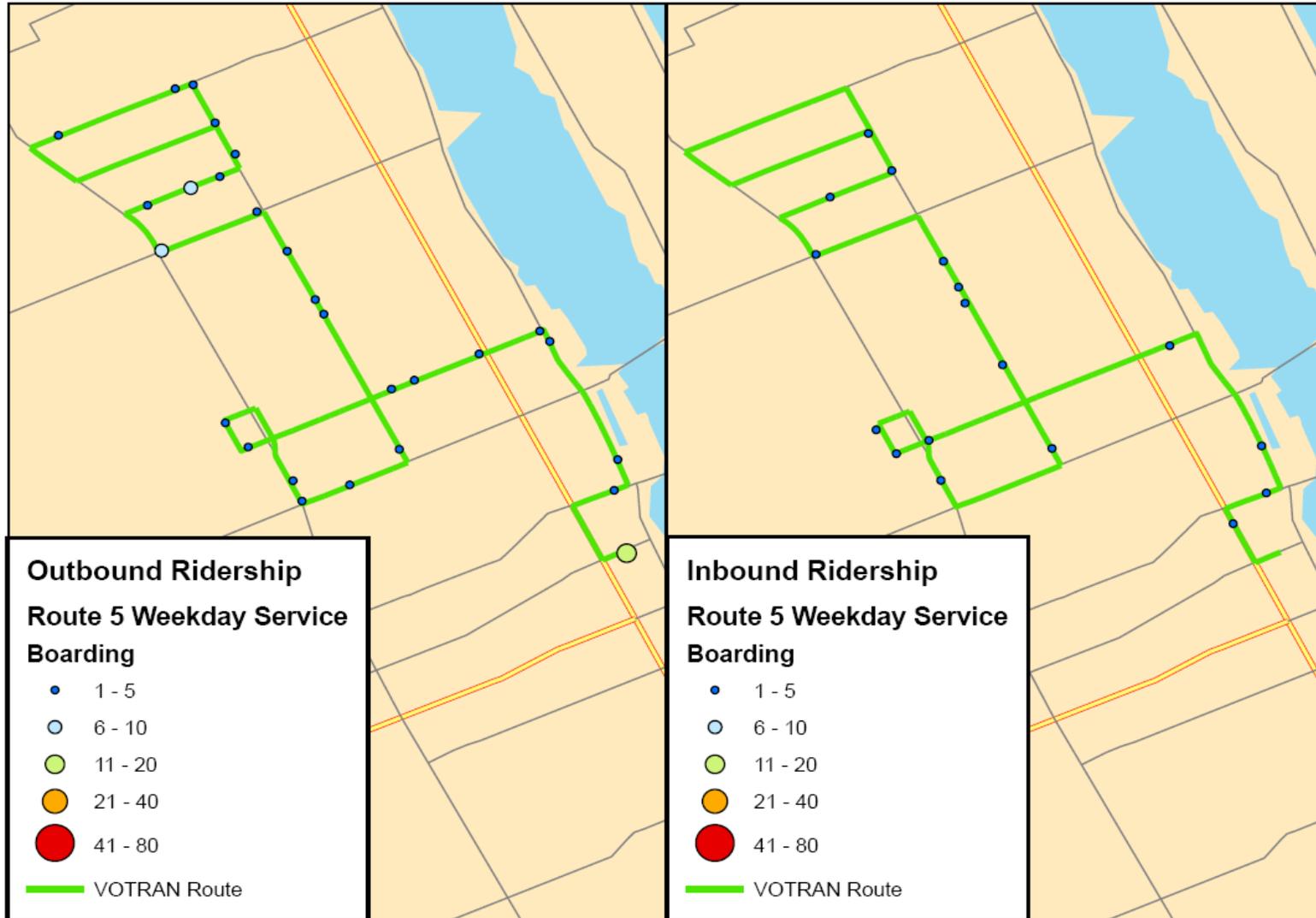
Figure 4-2
Ridership by Hour of Day
Route 5



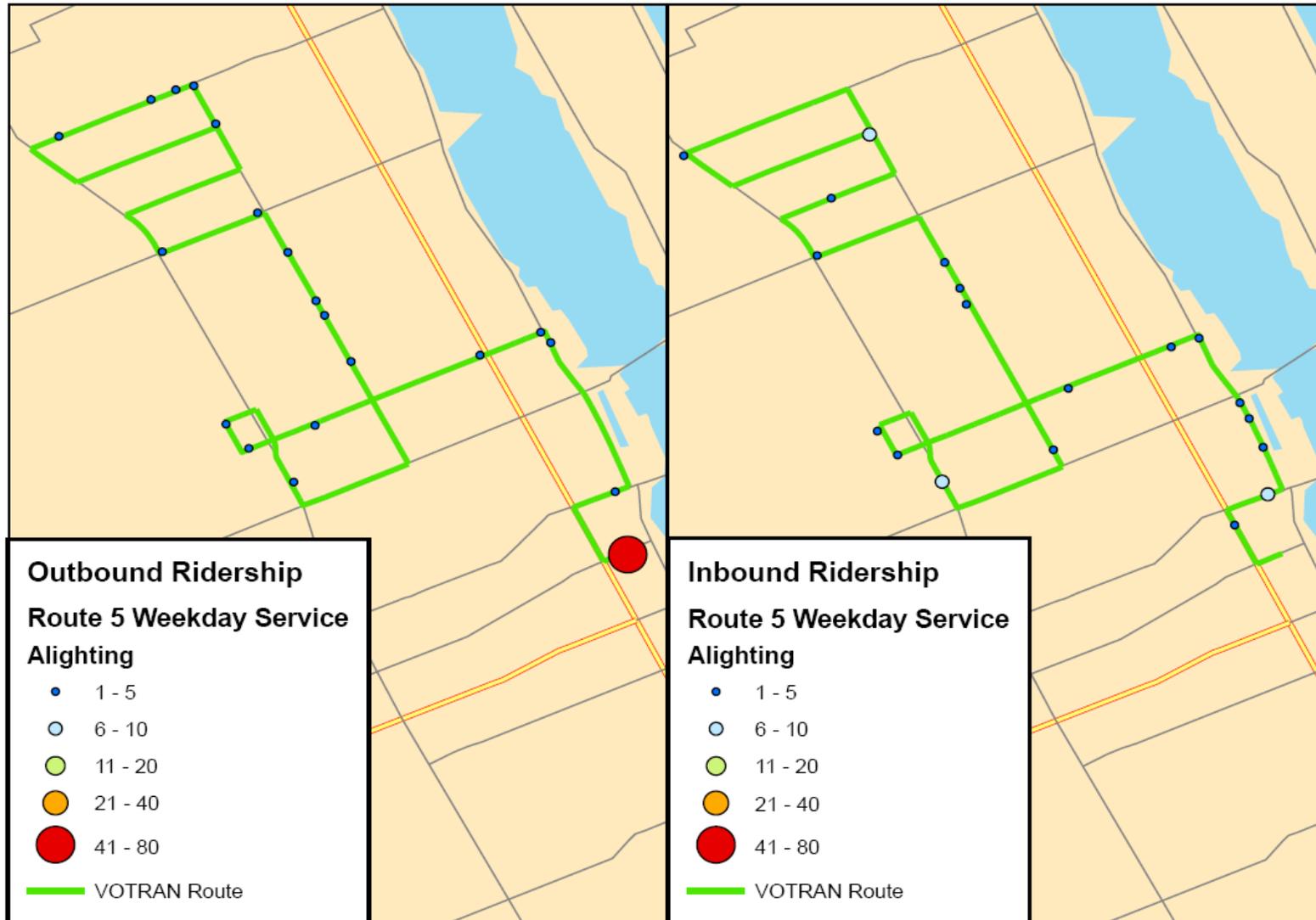
Mapping of APC Data

Maps 4-1 through 4-2 display weekday boardings and alightings for the Route 5.

Map 4-1
Route 5 Weekday Boardings



Map 4-2
Route 5 Weekday Alightings



Route 6

Route 6 serves from the VOTRAN Transfer Plaza to the Florida Hospital Ormond Memorial on North Nova Road. Like the Route 5, portions of the routing configuration are circuitous but the Route 6 does have two major north south corridors: Carolina Avenue and Derbyshire Road. One strength of the Route 6 is that it has on-street transfer connecting points with the Routes 1B, 3, 5, 10 and 11 as well as connections to all 13 east side routes at the VOTRAN Transfer Plaza. Weekday and Saturday service operate between 5:52 a.m. and 7:07 p.m. with 60 minute frequency.

Table 4-3 below shows the Daily Service Characteristics and Table 4-4 displays the Performance Measures for the Route 6. In terms of productivity, the Route 6 ranked 15th in both FY 2007 and FY 2008.

**Table 4-3
Daily Service Characteristics
Route 6**

Daily Service Characteristics	Weekday/ Saturday	Night	Sunday
Span of Service	5:52 - 19:07	N/S	N/S
Peak/Base Frequency	60/60	N/S	N/S
Peak/Base Buses	2/2	N/S	N/S
1-way Runtime OB	55	N/S	N/S
1-way Runtime IB	49	N/S	N/S
Daily Revenue Hours	27.58	N/S	N/S
Daily Revenue Miles	372.5	N/S	N/S
Average Daily Passengers (Wk)	377	N/S	N/S
Average Daily Passengers (Sat)	276	N/S	N/S

Table 4-4
Performance Measures
Route 6

Performance Measures	Measure
FY 07 Overall Composite Score	69%
FY 08 Overall Composite Score	69%
FY 07 Rank	18
FY 08 Rank	18
Passengers/Revenue Hour (FY 08)	12.85
Passengers/Revenue Mile (FY 08)	0.94
Overall Cost/Passenger (FY 08)	\$5.03
Overall Subsidy/Passenger (FY 08)	\$4.30
Operating Ratio (Revenue:Cost)	14.4%

Considerations for Improvements and Priority

In the future, Route 6 should truncate the north loop that serves the current Florida Hospital Ormond and realign the route west on Granada to Williamson south to Hand. The exact routing of the north segment will have to be assessed as a transit transfer center in the north service area is refined and finalized. However, the new routing west on Granada may be used to serve the new Ormond Memorial Hospital at Williamson and Hand.

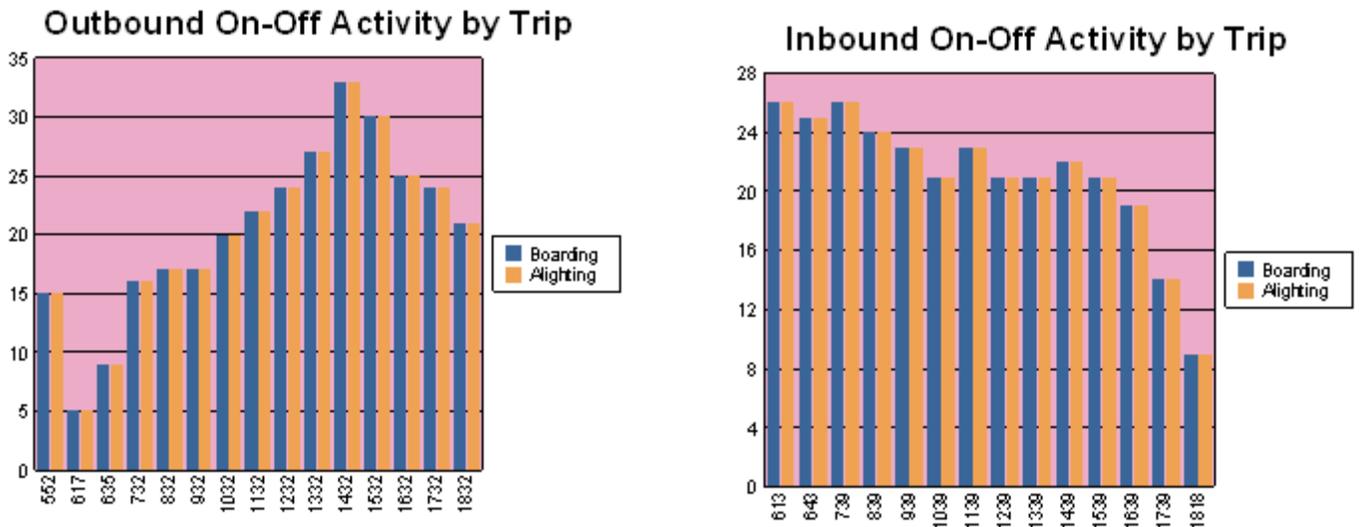
Ridecheck Data from Automatic Passenger Counters (APCs)

The following tables, figures and maps depict data obtained from the APC data supplied by VOTRAN.

On-Off Activity by Trip

The APC data shows the outbound trips experience their less on-off activity during the a.m. peak and mid-day period with greater levels of activity during the p.m. peak period. Inbound trips are stronger in the a.m. peak and consistent during the mid-day and p.m. peak periods. Figure 4-3 displays the on-off activity by trip for the Route 6.

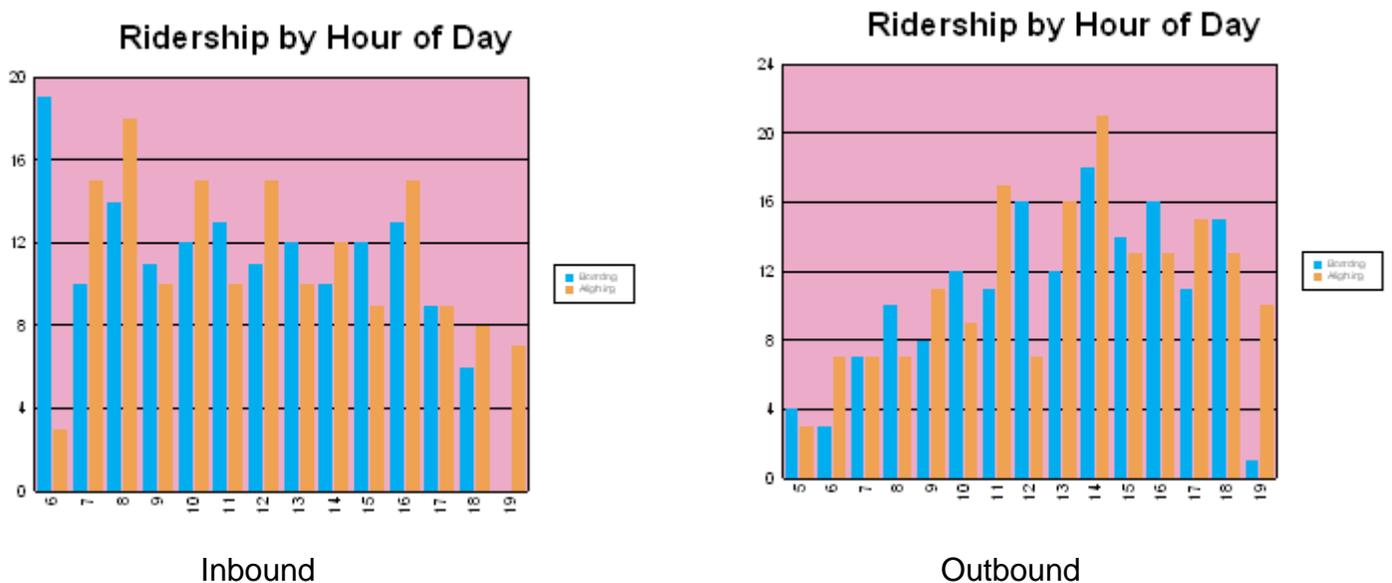
**Figure 4-3
On-Off Activity by Trip
Route 6**



Ridership by Hour of Day

Figure 4-4 below shows that the Route 6 inbound trips had the greatest levels of boardings during the 6:00 – 7:00 a.m. hour and the highest levels of alighting activity during the 8:00 a.m. to 9:00 a.m. hour as well as the 12:00 p.m. to 2:00 p.m. period. For outbound trips, highest levels of boardings and alightings occurred from the 2:00 p.m. to 3:00 p.m. hour.

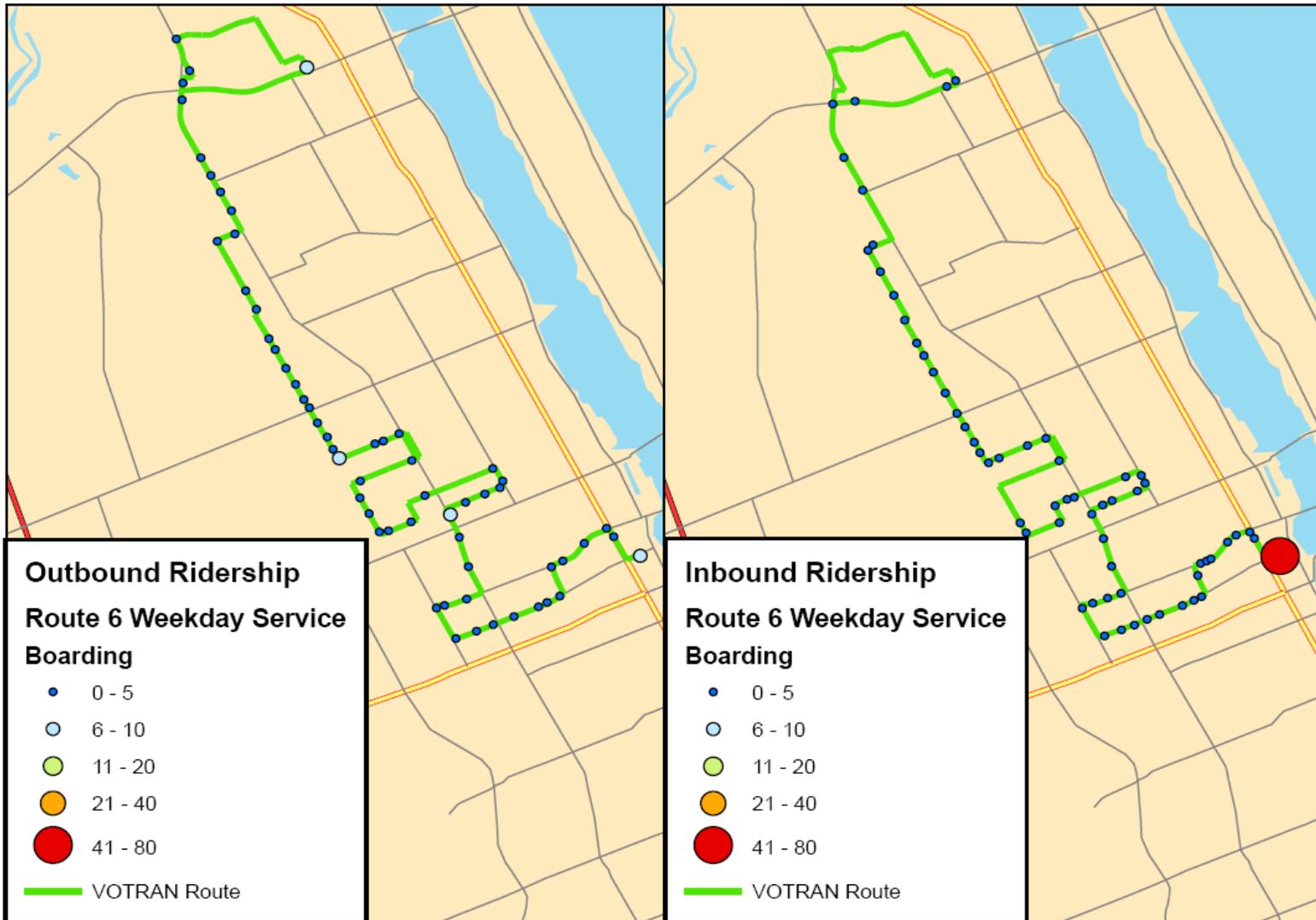
Figure 4-4
Ridership by Hour of Day
Route 6



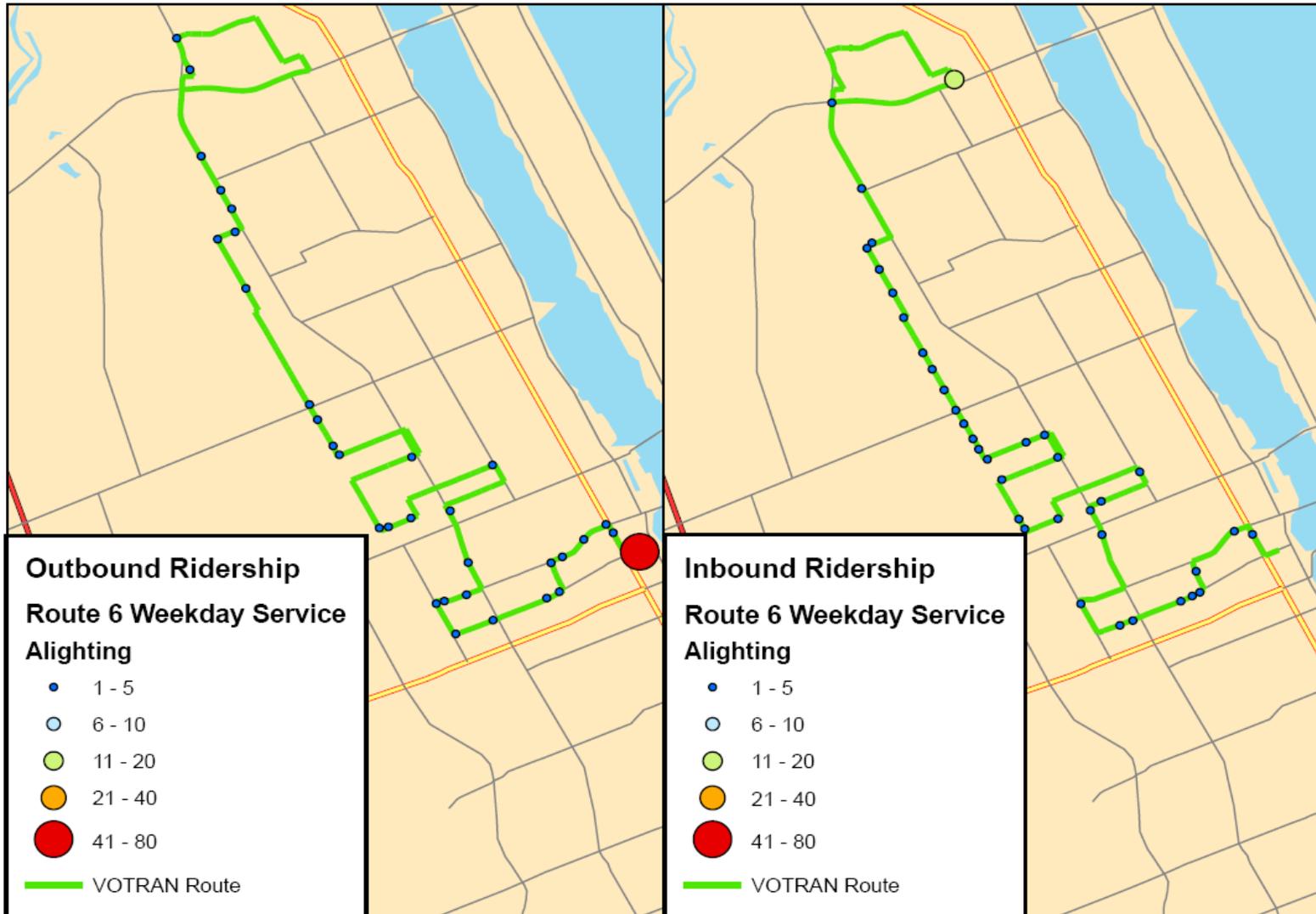
Mapping of APC Data

Maps 4-3 through 4-4 display weekday boardings and alightings for the Route 6.

Map 4-3
Route 6 Weekday Boardings



Map 4-4
Route 6 Weekday Alightings



Route 8

Route 8 serves from the VOTRAN Transfer Plaza to Cardinal Drive via the Halifax Drive corridor, which is the parallel north-south corridor to A1A. The Route 8 connects with the Routes 1A and 1B at the Bellair Plaza on Atlantic Avenue (A1A). Weekday and Saturday service operate between 5:52 a.m. and 7:07 p.m. with 60 minute frequency.

Table 4-5 below shows the Daily Service Characteristics and Table 4-6 displays the Performance Measures for the Route 8. In terms of productivity, the Route 8 ranked 10th in FY 2007 and slipped to 11th in FY 2008 for overall performance.

**Table 4-5
Daily Service Characteristics
Route 8**

Daily Service Characteristics	Weekday/ Saturday	Night	Sunday
Span of Service	6:32 - 19:20	N/S	N/S
Peak/Base Frequency	60/60	N/S	N/S
Peak/Base Buses	1/1	N/S	N/S
1-way Runtime OB	21	N/S	N/S
1-way Runtime IB	35	N/S	N/S
Daily Revenue Hours	13.09	N/S	N/S
Daily Revenue Miles	191.1	N/S	N/S
Average Daily Passengers (Wk)	234	N/S	N/S
Average Daily Passengers (Sat)	179	N/S	N/S

Table 4-6
Performance Measures
Route 8

Performance Measures	Measure
FY 07 Overall Composite Score	89%
FY 08 Overall Composite Score	90%
FY 07 Rank	11
FY 08 Rank	12
Passengers/Revenue Hour (FY 08)	17.12
Passengers/Revenue Mile (FY 08)	1.17
Overall Cost/Passenger (FY 08)	\$3.77
Overall Subsidy/Passenger (FY 08)	\$3.08
Operating Ratio (Revenue:Cost)	18.4%

Considerations for Improvements and Priority - None

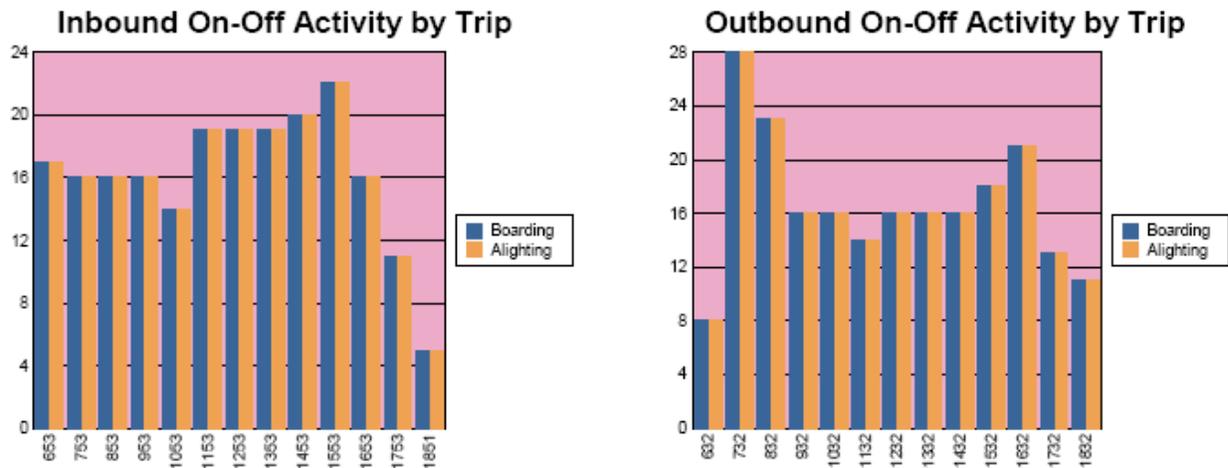
Ridecheck Data from Automatic Passenger Counters (APCs)

The following tables, figures and maps depict data obtained from the APC data supplied by VOTRAN.

On-Off Activity by Trip

The APC data shows the outbound trips experience strong on-off activity during the a.m. peak with lower levels of activity in the mid-day period and the p.m. peak period. Inbound trips are stronger in the p.m. peak and consistent during the a.m. peak and mid-day peak periods. Figure 4-5 displays the on-off activity by trip for the Route 8.

**Figure 4-5
On-Off Activity by Trip
Route 8**



Ridership by Hour of Day

Figure 4-6 below shows that the Route 8 inbound trips had the greatest levels of boardings during the 6:00 – 7:00 a.m. hour and the highest levels of alighting activity during the 8:00 a.m. to 9:00 a.m. hour. For outbound trips, highest levels of boardings and alightings occurred from the 2:00 p.m. to 3:00 p.m. hour.

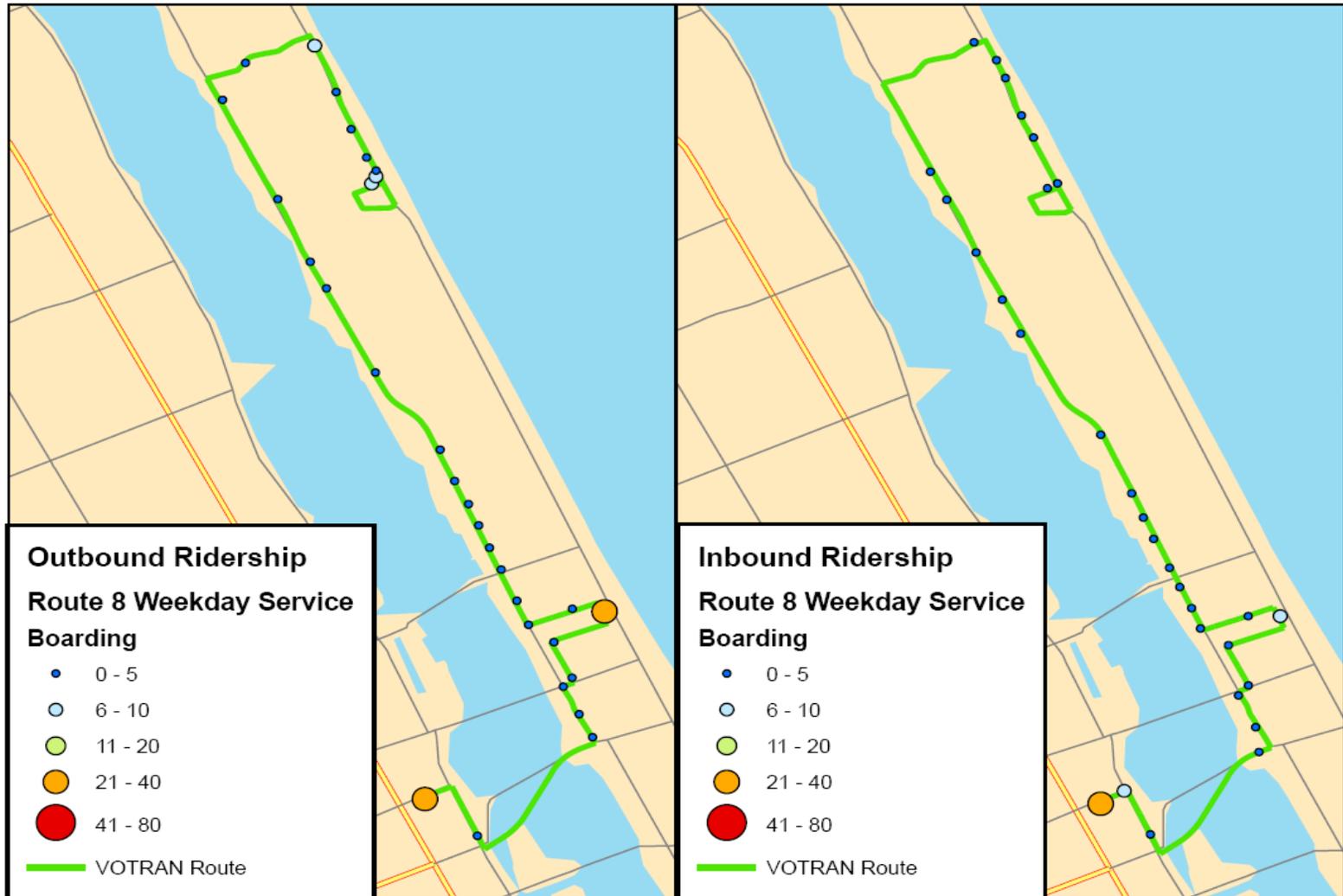
Figure 4-6
Ridership by Hour of Day
Route 8



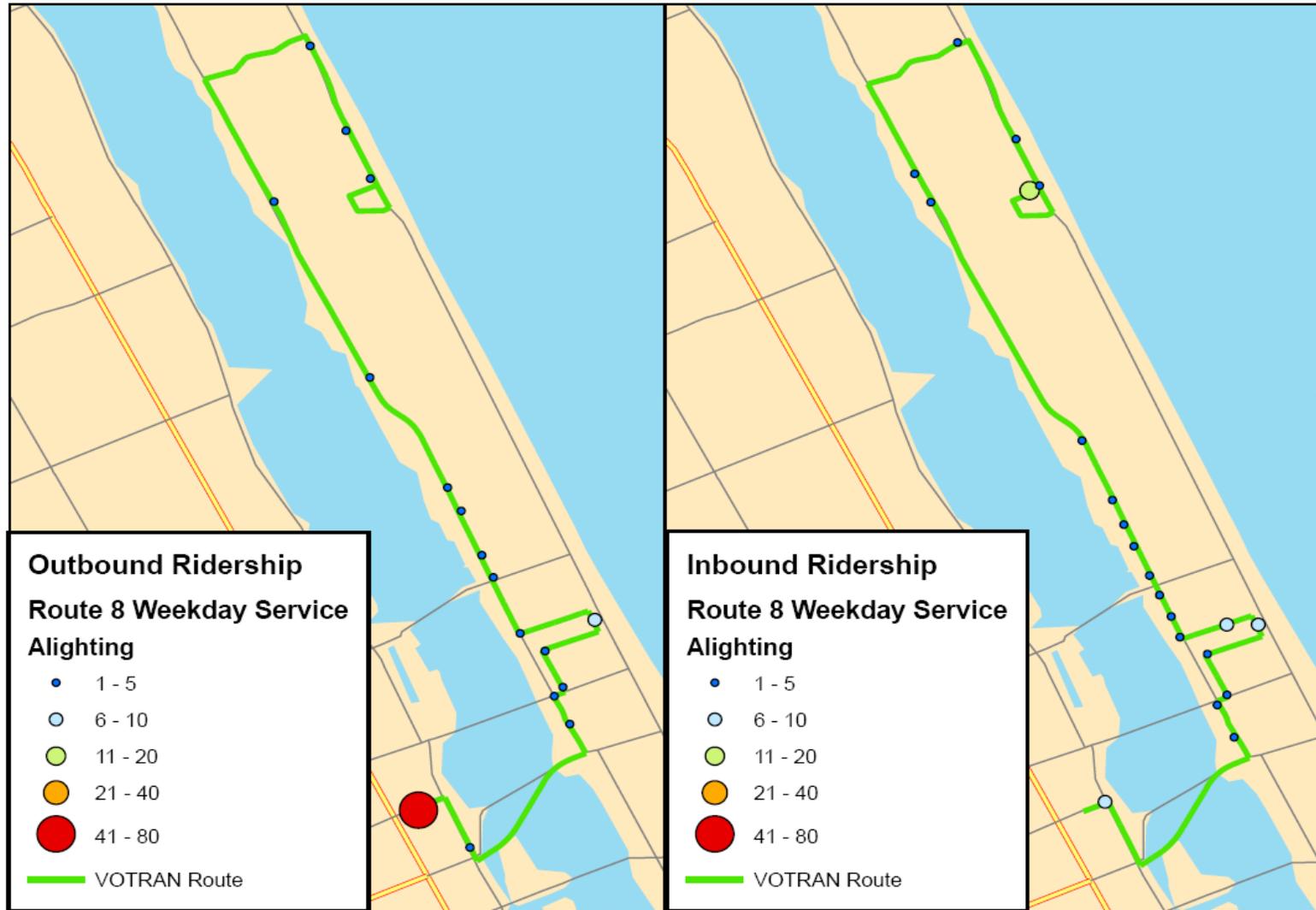
Mapping of APC Data

Maps 4-5 through 4-6 display weekday boardings and alightings for the Route 8.

Map 4-5
Route 8 Weekday Boardings



Map 4-6
Route 8 Weekday Alightings



Route 9

Route 9 serves from the VOTRAN Transfer Plaza along ISB (US 92) to Volusia Mall and also serves the airport and Embry Riddle Aeronautical University south of ISB. This is the routing configuration for weekdays only. On Saturdays, the Route 9 has a different schedule and serves west of Volusia Mall to the Branch jail west of I-95. Weekday service operates from 7:02 a.m. to 6:50 p.m. with 60 minute frequencies and Saturday service operates from 7:17 a.m. to 6:09 p.m. with 60 minute frequencies.

Table 4-7 below shows the Daily Service Characteristics and Table 4-8 displays the Performance Measures for the Route 9. In terms of productivity, the Route 9 ranked 13th in both FY 2007 and FY 2008.

**Table 4-7
Daily Service Characteristics
Route 9**

Daily Service Characteristics	Weekday/ Saturday	Night	Sunday
Span of Service	(W)7:02 - 18:50/ (S)7:17 - 18:09	N/S	N/S
Peak/Base Frequency	60/60	N/S	N/S
Peak/Base Buses	1/1	N/S	N/S
1-way Runtime OB	29/37	N/S	N/S
1-way Runtime IB	21/49	N/S	N/S
Daily Revenue Hours	12	N/S	N/S
Daily Revenue Miles	135.6	N/S	N/S
Average Daily Passengers (Wk)	184	N/S	N/S
Average Daily Passengers (Sat)	163	N/S	N/S

Table 4-8
Performance Measures
Route 9

Performance Measures	Measure
FY 07 Overall Composite Score	72%
FY 08 Overall Composite Score	75%
FY 07 Rank	16
FY 08 Rank	16
Passengers/Revenue Hour (FY 08)	14.21
Passengers/Revenue Mile (FY 08)	1.15
Overall Cost/Passenger (FY 08)	\$4.55
Overall Subsidy/Passenger (FY 08)	\$3.94
Operating Ratio (Revenue:Cost)	13.4%

Considerations for Improvements and Priority

VOTRAN has modified Saturday service to be consistent with weekday schedules. No further improvements are recommended.

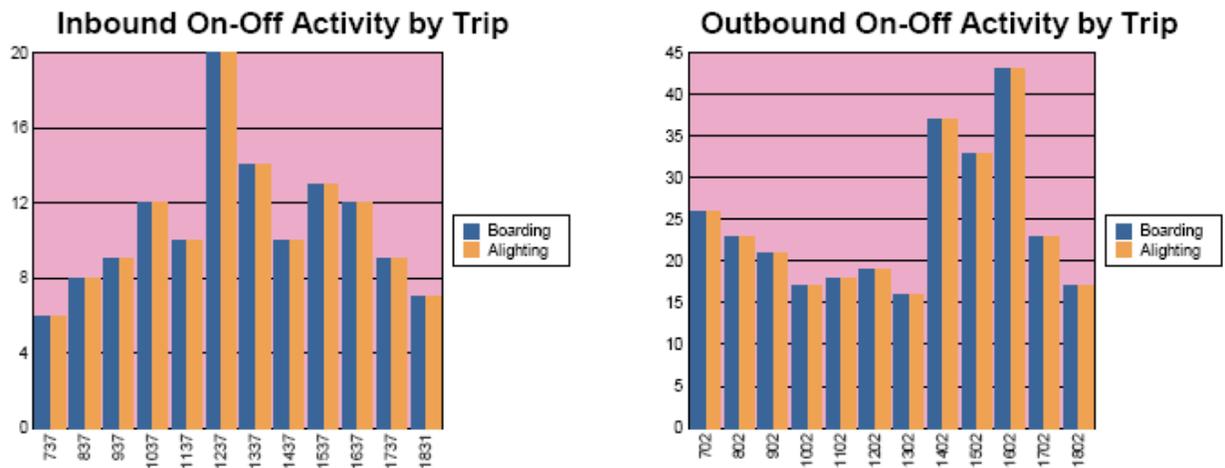
Ridecheck Data from Automatic Passenger Counters (APCs)

The following tables, figures and maps depict data obtained from the APC data supplied by VOTRAN.

On-Off Activity by Trip

The APC data shows the outbound trips experience strong on-off activity during the p.m. peak with lower levels of activity in the mid-day period and the p.m. peak period. Inbound trips have greater activity in the mid-day period. Figure 4-7 displays the on-off activity by trip for the Route 9.

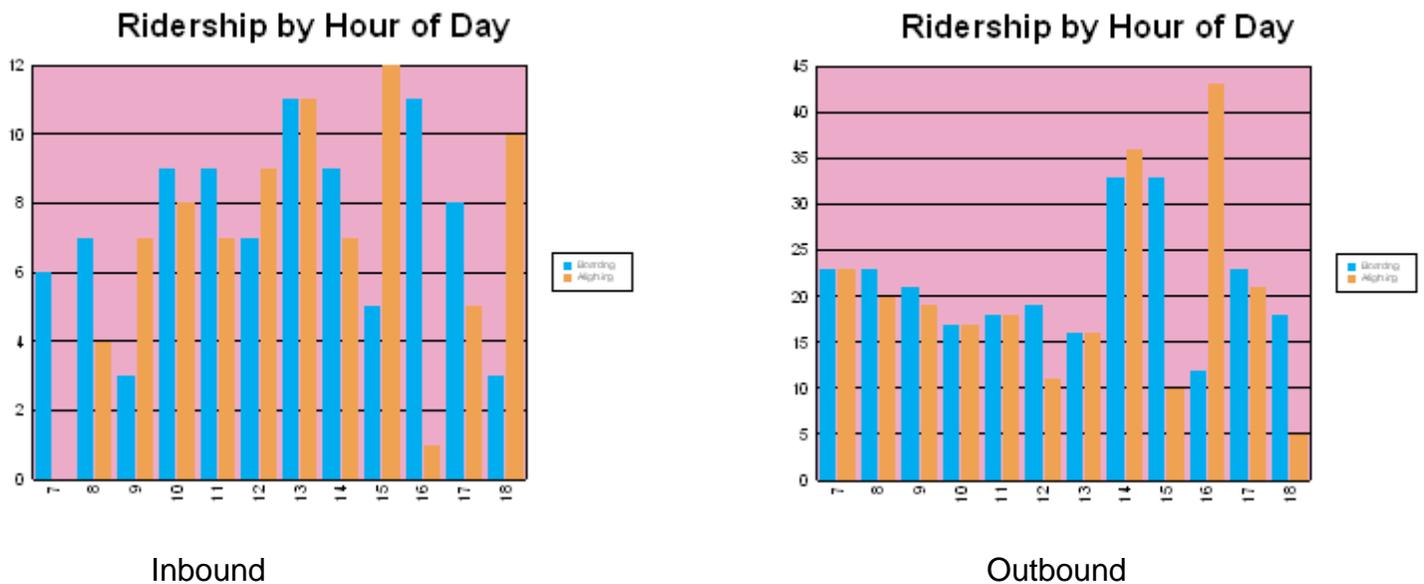
**Figure 4-7
On-Off Activity by Trip
Route 9**



Ridership by Hour of Day

Figure 4-8 below shows that the Route 9 inbound trips had the greatest levels of boardings during the 1:00 – 2:00 p.m. hour and the highest levels of alighting activity during the 3:00 p.m. to 4:00 p.m. hour. For outbound trips, highest levels of boardings occurred from the 2:00 p.m. to 4:00 p.m. hour with alightings peaking during the 4:00 – 5:00 p.m. hour.

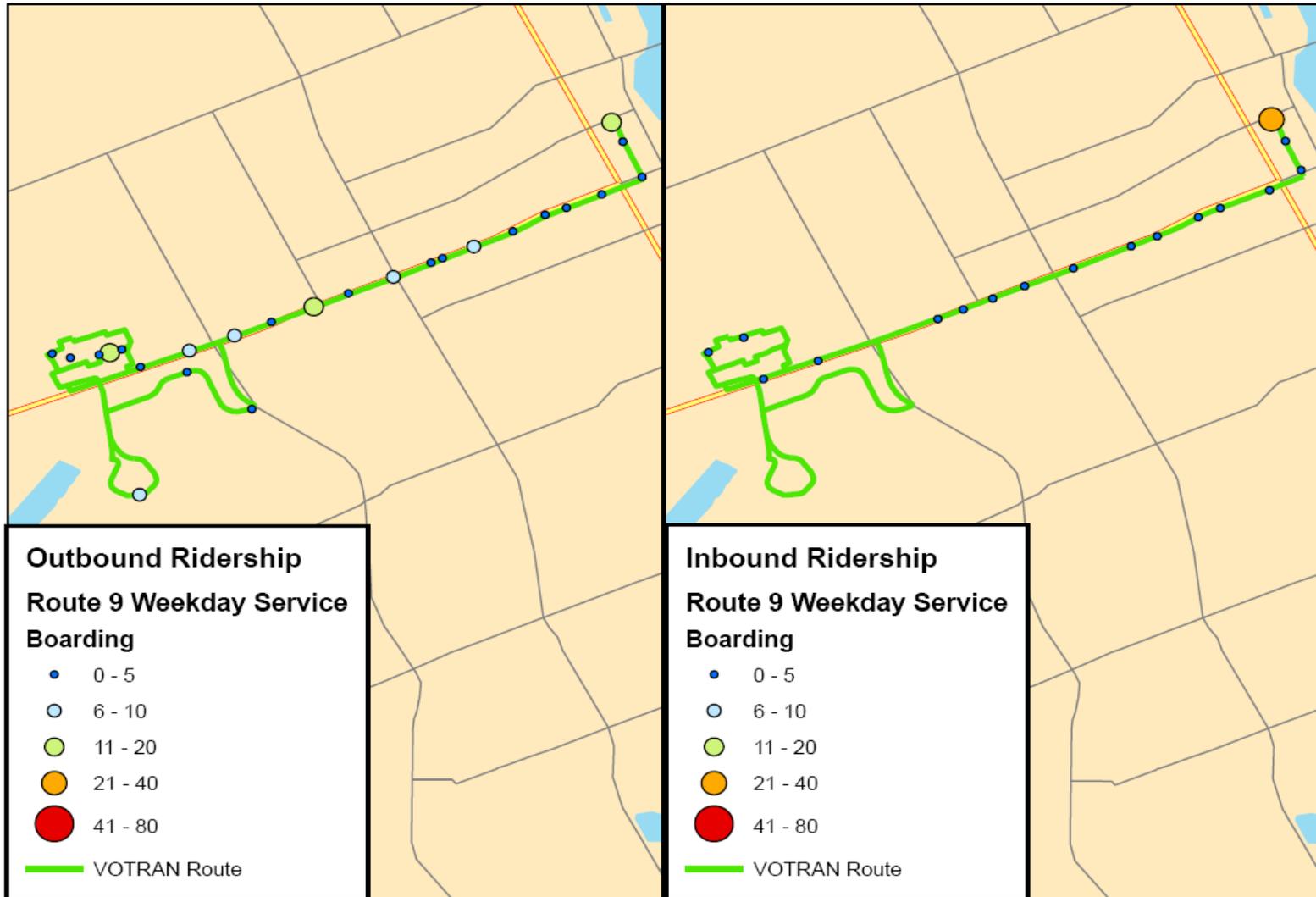
Figure 4-8
Ridership by Hour of Day
Route 9



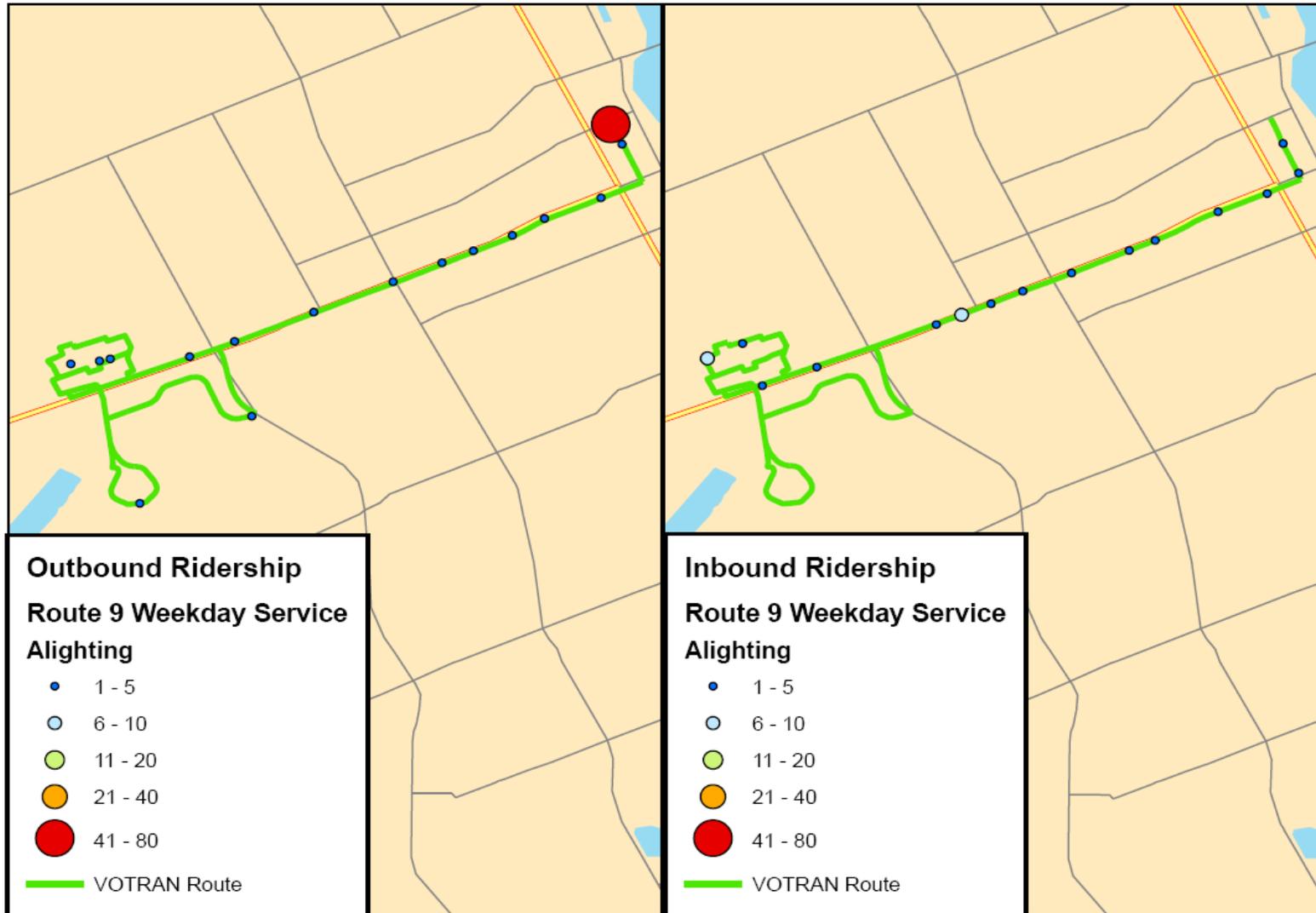
Mapping of APC Data

Maps 4-7 through 4-8 display weekday boardings and alightings for the Route 9.

Map 4-7
Route 9 Weekday Boardings



Map 4-8
Route 9 Weekday Alightings



Route 11

Route 11 serves from the VOTRAN Transfer Plaza to Volusia Mall via numerous corridors in the north sector of the east side service area. Corridors include Madison Avenue, 3rd Street, Derbyshire, Mason Avenue, Clyde Morris Boulevard and Dunn Street into Volusia Mall. North and west of Volusia Mall there is a loop that serves Bill France Blvd, Mason Avenue and Fentress Boulevard, as well as a branch to Twin Lakes Medical Center. Also, the Advanced Technology Center on north Williamson Boulevard is served twice a day. In addition to the northern branch, there is also a western branch that serves west on US 92 to the Volusia Flea and Farmers Market on Bellevue and Tomoka Farms Road. Weekday and Saturday service operate from 6:30 a.m. to 6:28 p.m. with 60 minute frequencies.

Table 4-9 below shows the Daily Service Characteristics and Table 4-10 displays the Performance Measures for the Route 9. In terms of productivity, the Route 11 ranked 11th in FY 2007 and slipped to 12th in FY 2008.

**Table 4-9
Daily Service Characteristics
Route 11**

Daily Service Characteristics	Weekday/ Saturday	Night	Sunday
Span of Service	6:30 - 18:28	N/S	N/S
Peak/Base Frequency	60/60	N/S	N/S
Peak/Base Buses	2/2	N/S	N/S
1-way Runtime OB	60	N/S	N/S
1-way Runtime IB	56	N/S	N/S
Daily Revenue Hours	25.17	N/S	N/S
Daily Revenue Miles	334	N/S	N/S
Average Daily Passengers (Wk)	413	N/S	N/S
Average Daily Passengers (Sat)	287	N/S	N/S

Table 4-10
Performance Measures
Route 11

Performance Measures	Measure
FY 07 Overall Composite Score	79%
FY 08 Overall Composite Score	82%
FY 07 Rank	13
FY 08 Rank	14
Passengers/Revenue Hour (FY 08)	15.45
Passengers/Revenue Mile (FY 08)	1.18
Overall Cost/Passenger (FY 08)	\$4.18
Overall Subsidy/Passenger (FY 08)	\$3.53
Operating Ratio (Revenue:Cost)	15.7%

Considerations for Improvements and Priority

Route Realignment – Route 11

Priority: High

- Eliminate the branches north to the Twin Lakes Medical Center and the Advanced Technology Center in favor of a new route from the Wal-Mart Super Center/Ormond Town Square to Volusia Mall via Williamson Boulevard, LPGA Boulevard, and Clyde Morris Boulevard.
- Eliminate the western branch to the Volusia Flea and Farmers Market and serve with scheduled “trippers” (intentional deviations built into the schedule but not serving every scheduled trip) since the market only operates on Friday, Saturday and Sunday.

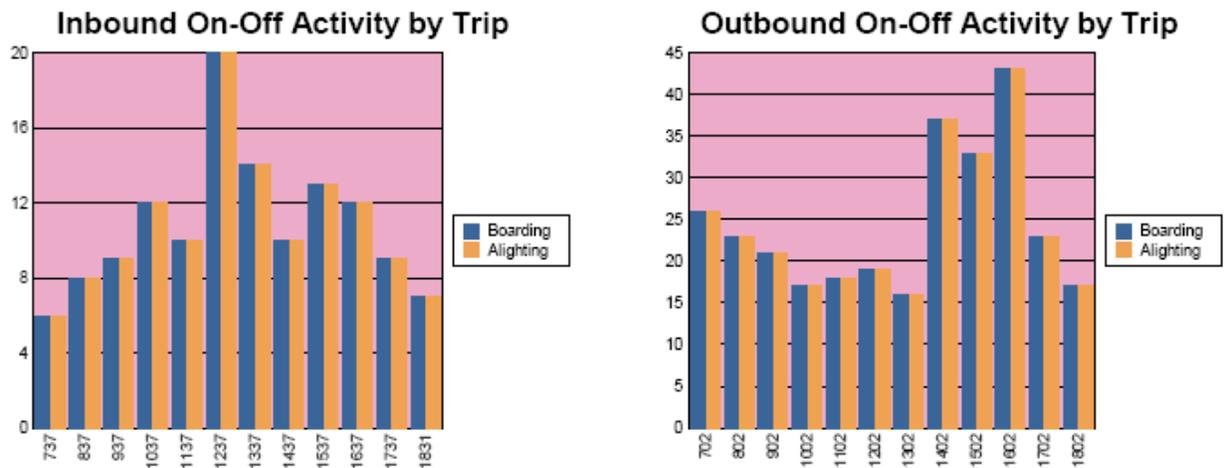
Ridecheck Data from Automatic Passenger Counters (APCs)

The following tables, figures and maps depict data obtained from the APC data supplied by VOTRAN.

On-Off Activity by Trip

The APC data shows the outbound trips experience strong on-off activity during the p.m. peak with lower levels of activity in the mid-day period and the a.m. peak period. Inbound trips have greater activity in the mid-day period. Figure 4-9 displays the on-off activity by trip for the Route 11.

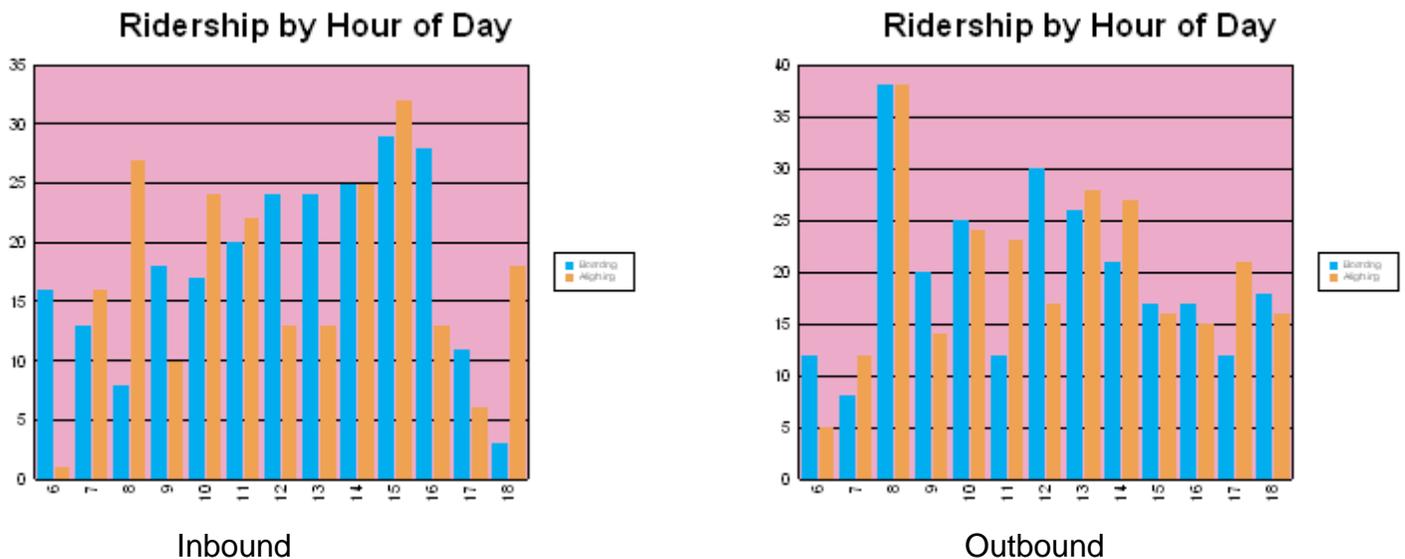
**Figure 4-9
On-Off Activity by Trip
Route 11**



Ridership by Hour of Day

Figure 4-10 below shows that the Route 11 inbound trips had the greatest levels of boardings during the 3:00 – 5:00 p.m. hours and the highest levels of alighting activity during the 3:00 p.m. to 4:00 p.m. hour. For outbound trips, highest levels of boardings and alightings occurred from the 8:00 a.m. to 9:00 a.m. hour.

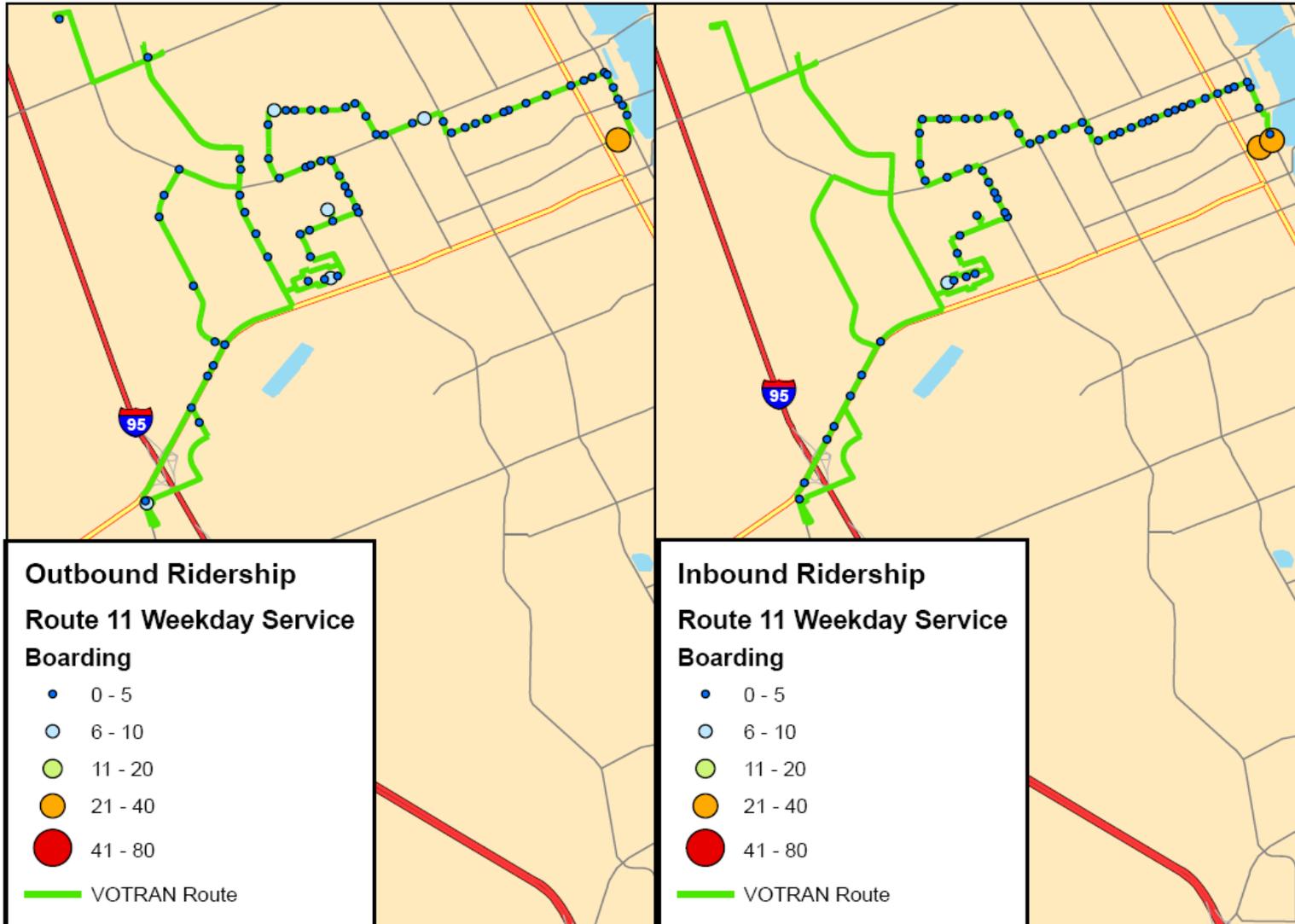
Figure 4-10
Ridership by Hour of Day
Route 11



Mapping of APC Data

Maps 4-9 through 4-10 display weekday boardings and alightings for the Route 11.

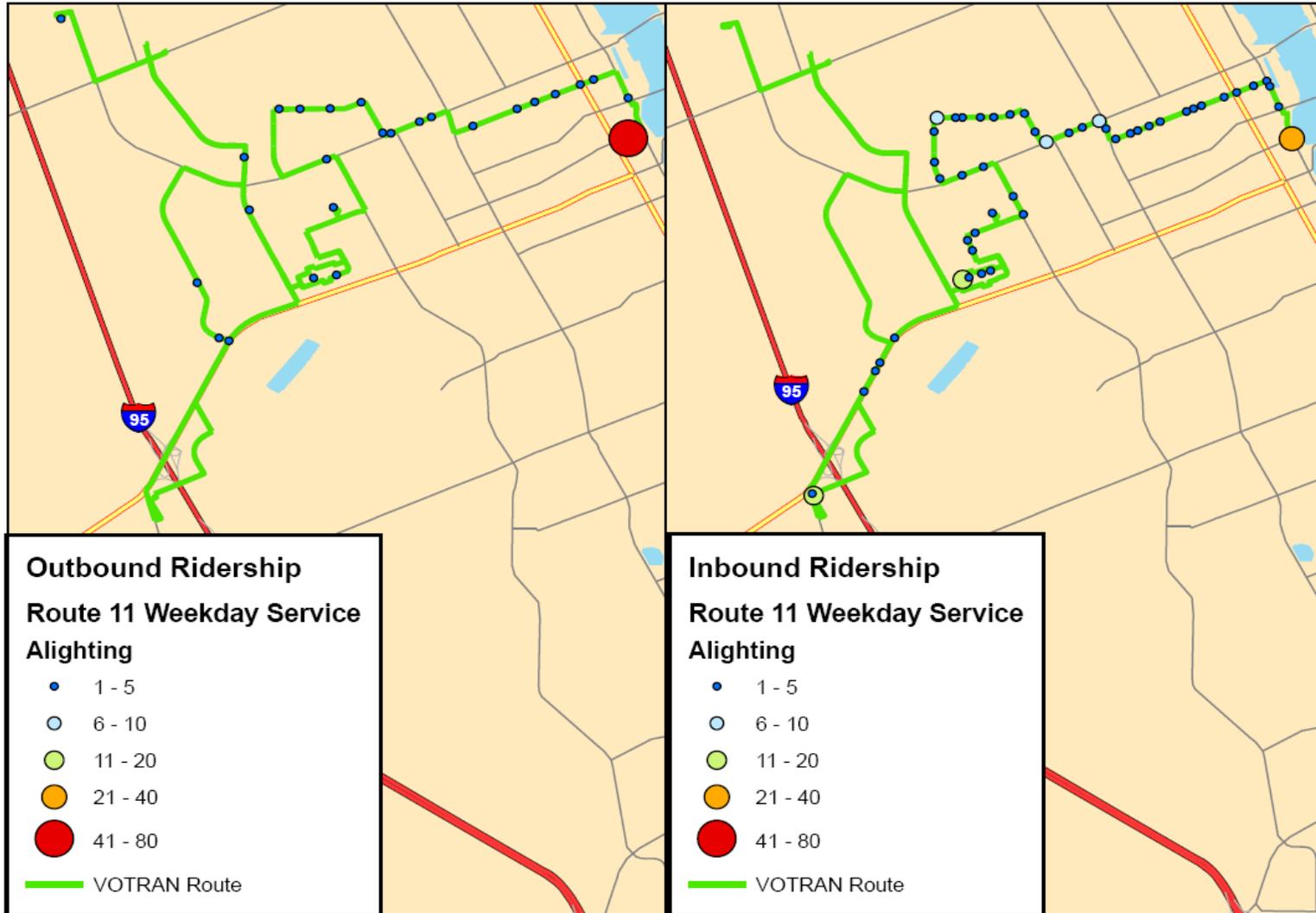
Map 4-9
Route 11 Weekday Boardings



Section 4

Lower Performing Routes

Map 4-10
Route 11 Weekday Alightings



VOTRAN EAST SIDE TRANSIT STUDY FINAL REPORT

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Section 5
Southeast Service Area

The southeast service area is comprised of those services in New Smyrna, Edgewater and Oak Hill. The Routes 40, 41, 42, 43, and 44 account for 6.2 percent of east side system ridership in FY 2008, with the Route 40 performing the best at 56,000 trips, more than double any of the other four routes. The Routes 41, 42, 43 and 44 ranks last in the system in terms of performance with the cost per passenger trip for the Routes 42, 43, and 44 ranging from \$13.49 to \$17.28. Only the Route 40 will be discussed in detail below. CUTR is recommending that all other fixed-routes in the southeast service area be converted to a flex service that would utilize vans instead of buses and would allow customers to contact operators directly within specified zones to connect to the Route 40 or to a destination within that zone. A more detailed analysis of ridership for fixed-route and paratransit service is needed to fully develop this plan; however, the potential for cost savings is that VOTRAN could contract for a private provider to operate the service at a lower cost per hour than VOTRAN's traditional fixed-route service.

Route 40

Route 40 serves US 1 from Dunlawton Square to Downtown New Smyrna Beach at the intersection of US 1 and Canal Street. This route connects with VOTRAN routes 4, 7, 12 and 17B at Dunlawton Square. Weekday and Saturday service operate from 6:30 a.m. to 6:28 p.m. with 60 minute frequencies.

Table 5-1 below shows the Daily Service Characteristics and Table 5-2 displays the Performance Measures for the Route 40. In terms of productivity, the Route 40 ranked 12th in FY 2007 and increased to a rank of 10th in FY 2008.

Table 5-1
Daily Service Characteristics
Route 40

Daily Service Characteristics	Weekday/ Saturday	Night	Sunday
Span of Service	6:36 - 19:00	N/S	N/S
Peak/Base Frequency	60/60	N/S	N/S
Peak/Base Buses	1/1	N/S	N/S
1-way Runtime OB	20	N/S	N/S
1-way Runtime IB	38	N/S	N/S
Daily Revenue Hours	12.74	N/S	N/S
Daily Revenue Miles	281.5	N/S	N/S
Average Daily Passengers (Wk)	230	N/S	N/S
Average Daily Passengers (Sat)	149	N/S	N/S

Table 5-2
Performance Measures
Route 40

Performance Measures	Measure
FY 07 Overall Composite Score	77%
FY 08 Overall Composite Score	91%
FY 07 Rank	15
FY 08 Rank	11
Passengers/Revenue Hour (FY 08)	18.98
Passengers/Revenue Mile (FY 08)	0.86
Overall Cost/Passenger (FY 08)	\$3.40
Overall Subsidy/Passenger (FY 08)	\$2.80
Operating Ratio (Revenue:Cost)	17.9%

Considerations for Improvements and Priority

Route Realignment: Extend the Route 40 south of Canal Street to the Edgewater Winn Dixie located at the corner of Indian River Boulevard and Ridgewood to extend the southern terminus of the regional route network in the southeast service area. The Edgewater Winn Dixie would then become the central connection point with flex services operating in zones to deliver customers to the VOTRAN regional system.

Priority: Medium

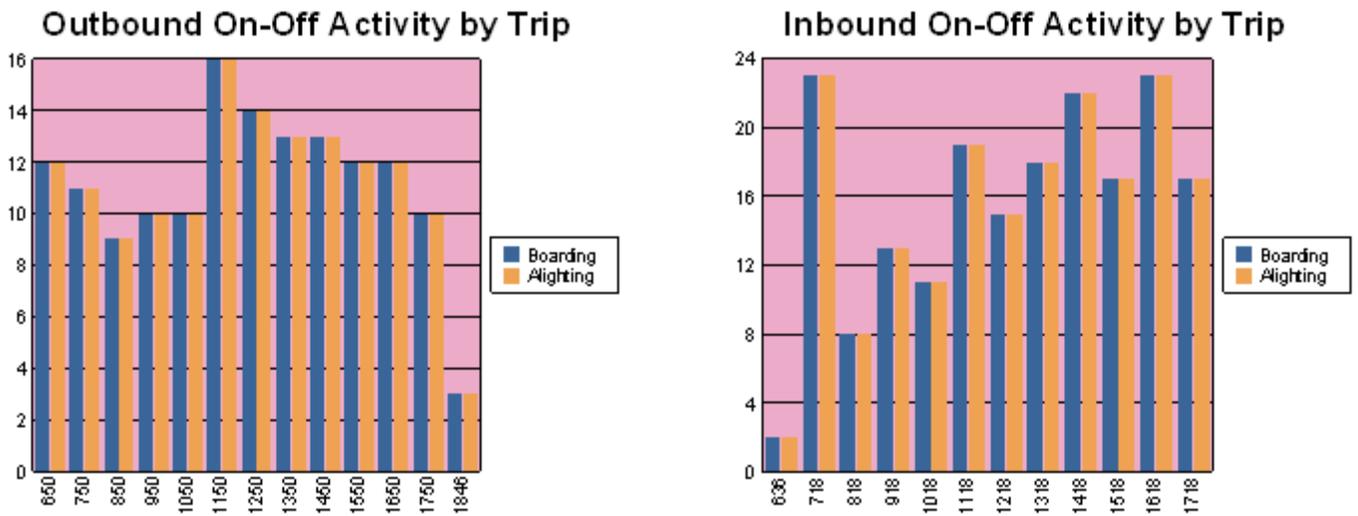
Ridecheck Data from Automatic Passenger Counters (APCs)

The following tables, figures and maps depict data obtained from the APC data supplied by VOTRAN.

On-Off Activity by Trip

The APC data shows the outbound trips experience strong on-off activity during the mid-day and p.m. peak periods. Inbound trips have greater a.m. and p.m. peaks. Figure 5-1 displays the on-off activity by trip for the Route 40.

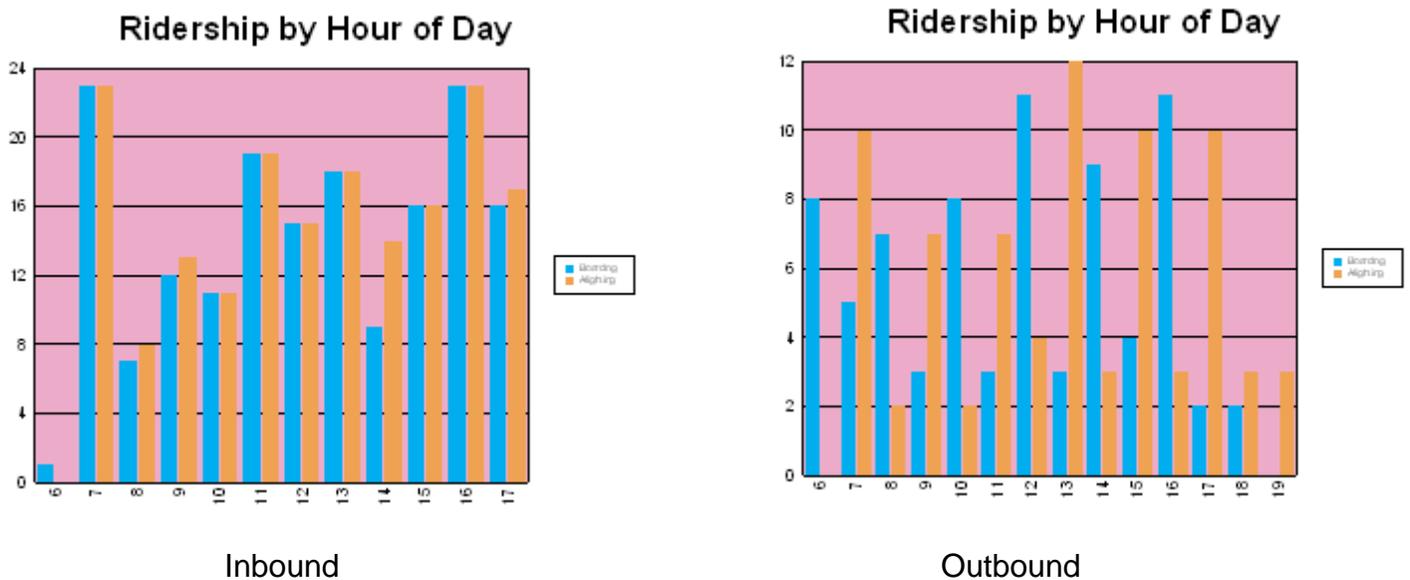
**Figure 5-1
On-Off Activity by Trip
Route 40**



Ridership by Hour of Day

Figure 5-2 below shows that the Route 40 inbound trips had the greatest levels of boardings and alightings during the 7:00 – 8:00 a.m. hour and the 4:00 p.m. - 5:00 p.m. hour. For outbound trips, highest levels of boardings was from 12:00 to 1:00 p.m. and alightings from 1:00 p.m. to 2:00 p.m.

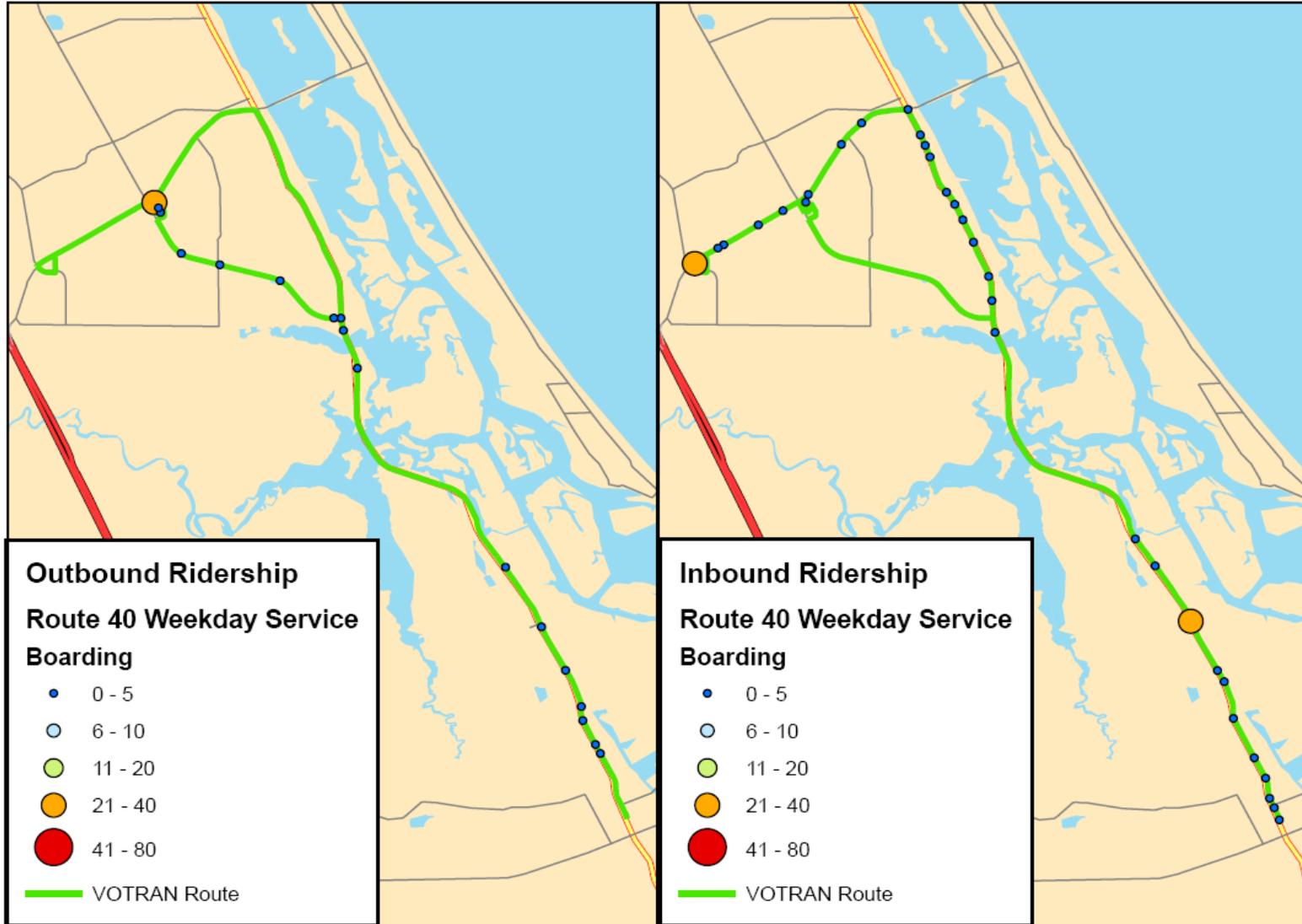
Figure 5-2
Ridership by Hour of Day
Route 40



Mapping of APC Data

Maps 5-1 through 5-2 display weekday boardings and alightings for the Route 40.

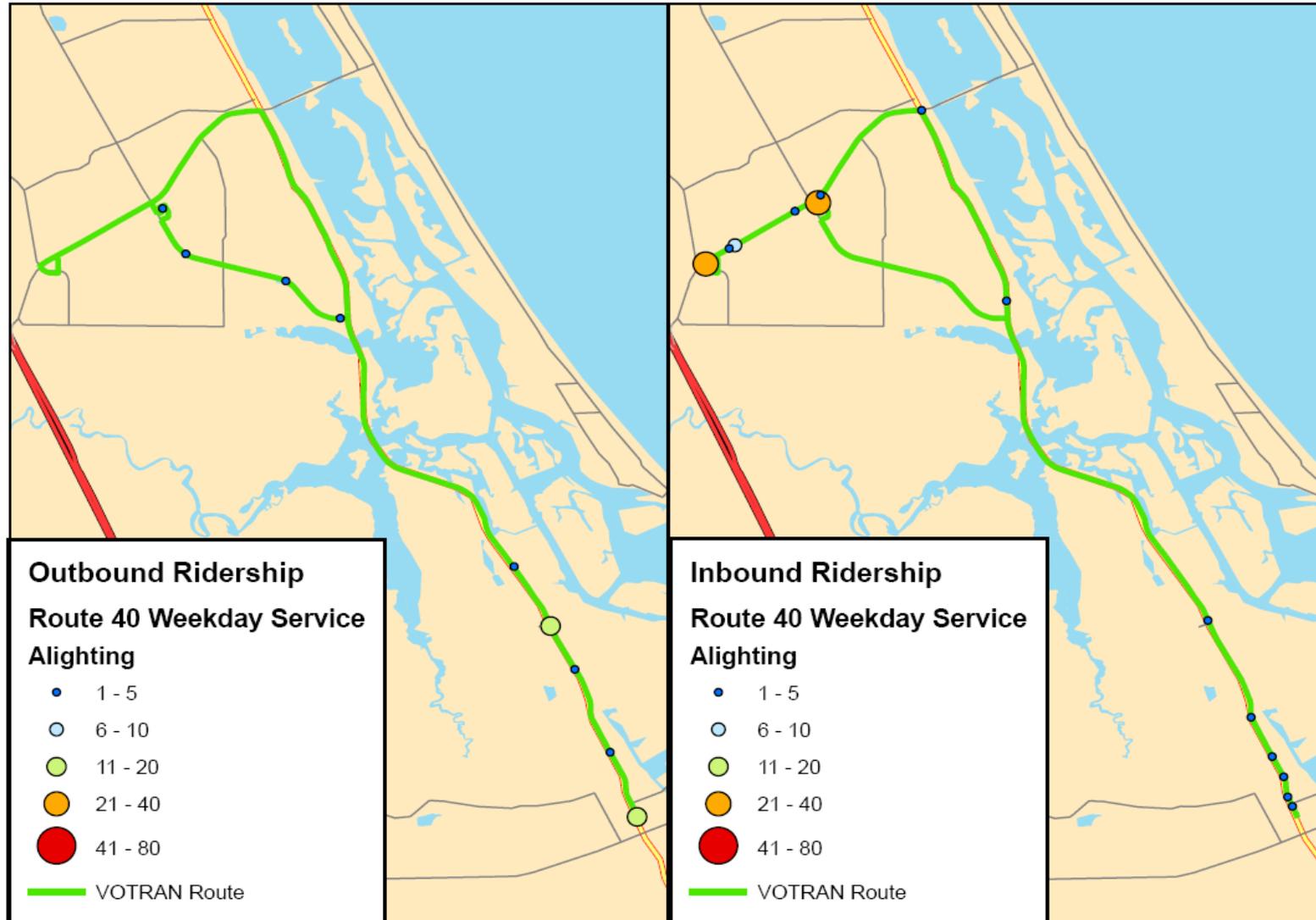
Map 5-1
Route 40 Weekday Boardings



Section 5

Southeast Service Area

Map 5-2
Route 40 Weekday Alightings



Routes 41, 42, 43, and 44

All of the remaining routes in the southeast service area are the lowest performing routes in the east side system with the Routes 42, 43 and 44 producing less than 5 passengers per revenue hour. Only the Route 41 generates slightly more than 10 passengers per hour. Tables 5-3 through 5-6 below show the performance statistics for the remaining southeast routes.

**Table 5-3
Performance Measures
Route 41**

Performance Measures	Measure
FY 07 Overall Composite Score	51%
FY 08 Overall Composite Score	56%
FY 07 Rank	19
FY 08 Rank	19
Passengers/Revenue Hour (FY 08)	10.30
Passengers/Revenue Mile (FY 08)	0.55
Overall Cost/Passenger (FY 08)	\$6.27
Overall Subsidy/Passenger (FY 08)	\$5.28
Operating Ratio (Revenue:Cost)	15.8%

**Table 5-4
Performance Measures
Route 42**

Performance Measures	Measure
FY 07 Overall Composite Score	23%
FY 08 Overall Composite Score	23%
FY 07 Rank	21
FY 08 Rank	21
Passengers/Revenue Hour (FY 08)	3.97
Passengers/Revenue Mile (FY 08)	0.29
Overall Cost/Passenger (FY 08)	\$16.27
Overall Subsidy/Passenger (FY 08)	\$15.20
Operating Ratio (Revenue:Cost)	6.6%

Table 5-5
Performance Measures
Route 43

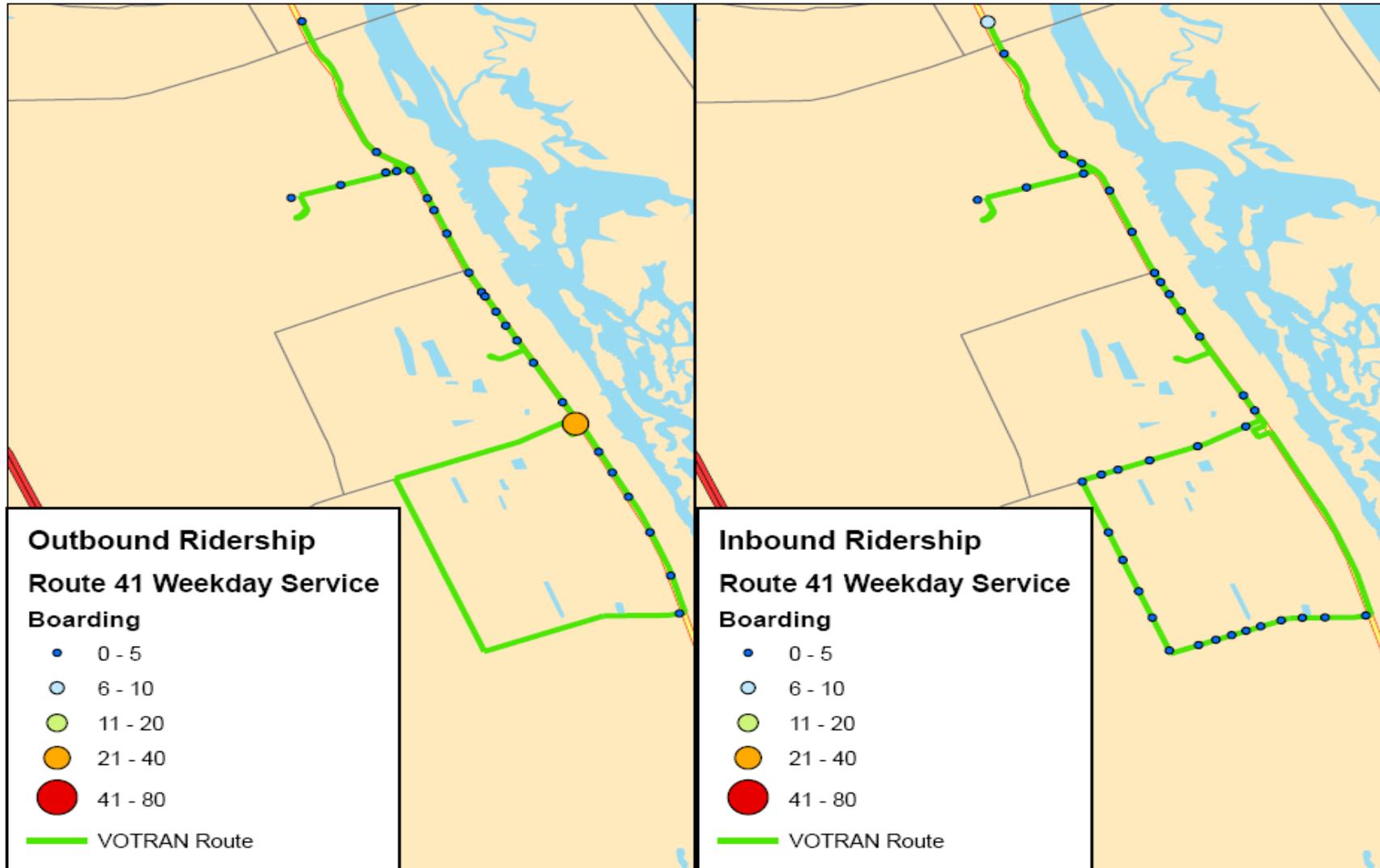
Performance Measures	Measure
FY 07 Overall Composite Score	26%
FY 08 Overall Composite Score	26%
FY 07 Rank	20
FY 08 Rank	20
Passengers/Revenue Hour (FY 08)	4.79
Passengers/Revenue Mile (FY 08)	0.39
Overall Cost/Passenger (FY 08)	\$13.49
Overall Subsidy/Passenger (FY 08)	\$12.72
Operating Ratio (Revenue:Cost)	5.8%

Table 5-6
Performance Measures
Route 44

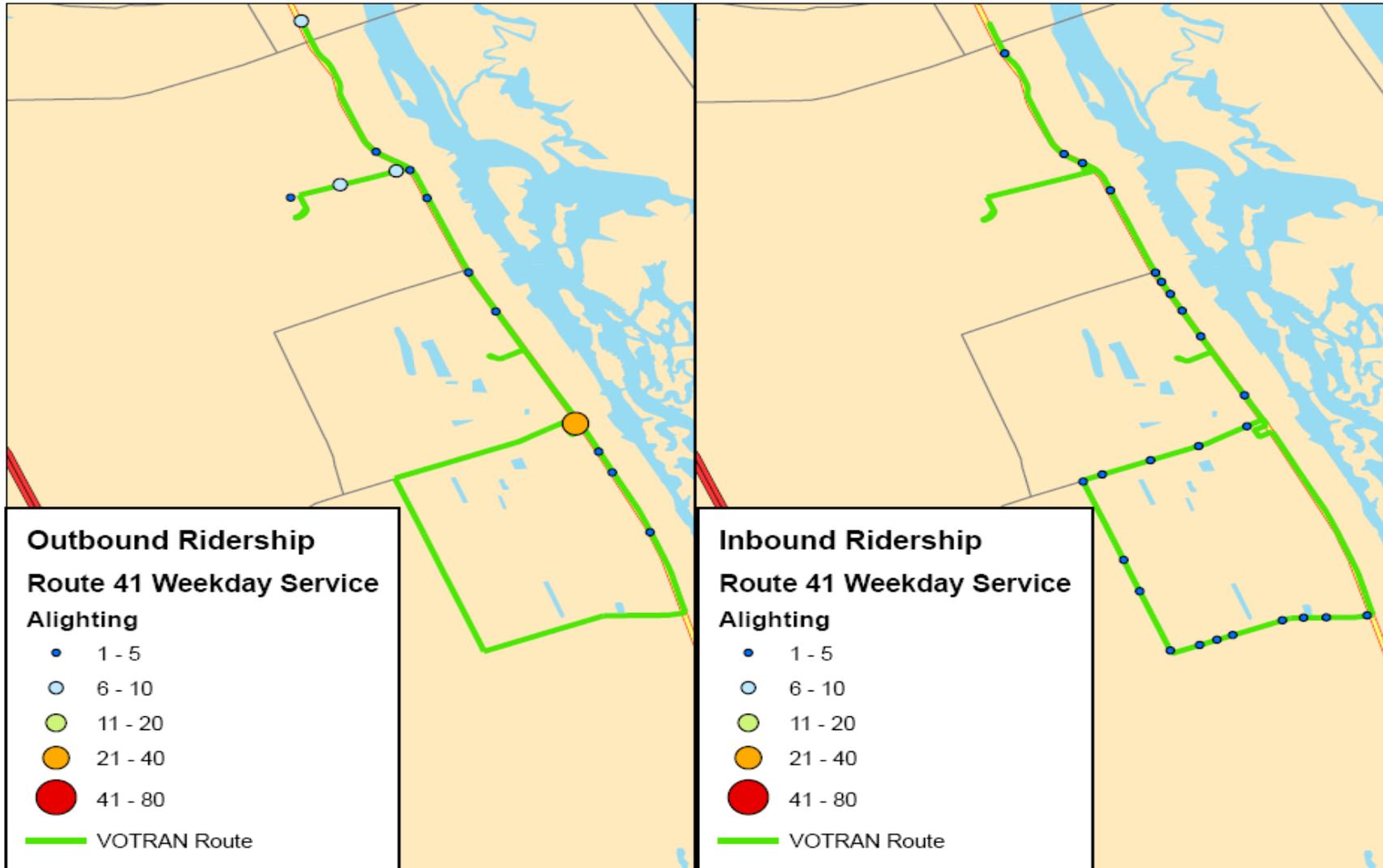
Performance Measures	Measure
FY 07 Overall Composite Score	22%
FY 08 Overall Composite Score	20%
FY 07 Rank	22
FY 08 Rank	22
Passengers/Revenue Hour (FY 08)	3.74
Passengers/Revenue Mile (FY 08)	0.29
Overall Cost/Passenger (FY 08)	\$17.28
Overall Subsidy/Passenger (FY 08)	\$16.57
Operating Ratio (Revenue:Cost)	4.1%

Maps 5-3 through 5-10 below show the boardings and alightings for the Routes 41, 42, 43 and 44 for weekday outbound and inbound trips.

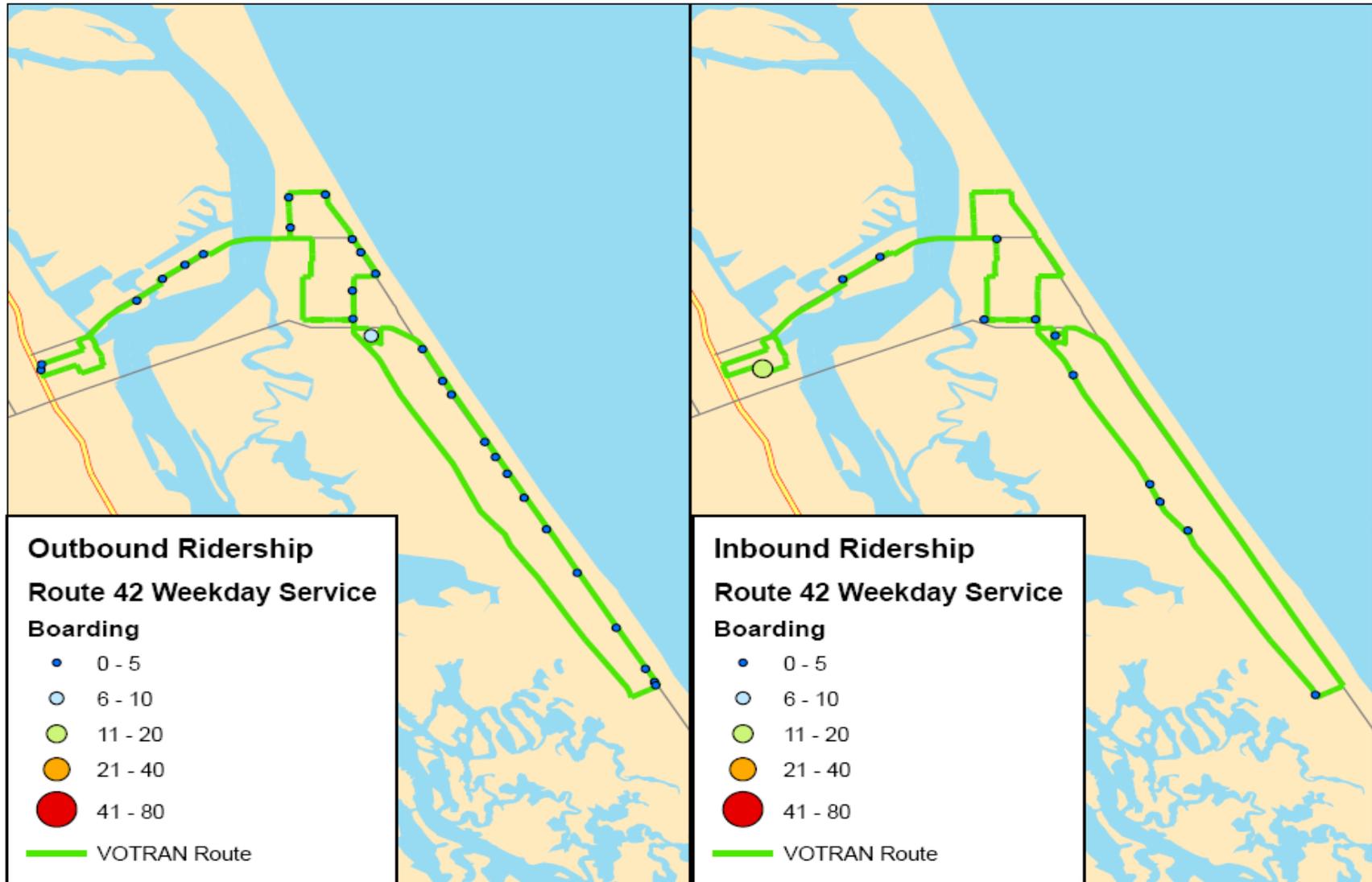
Map 5-3
Route 41 Weekday Boardings



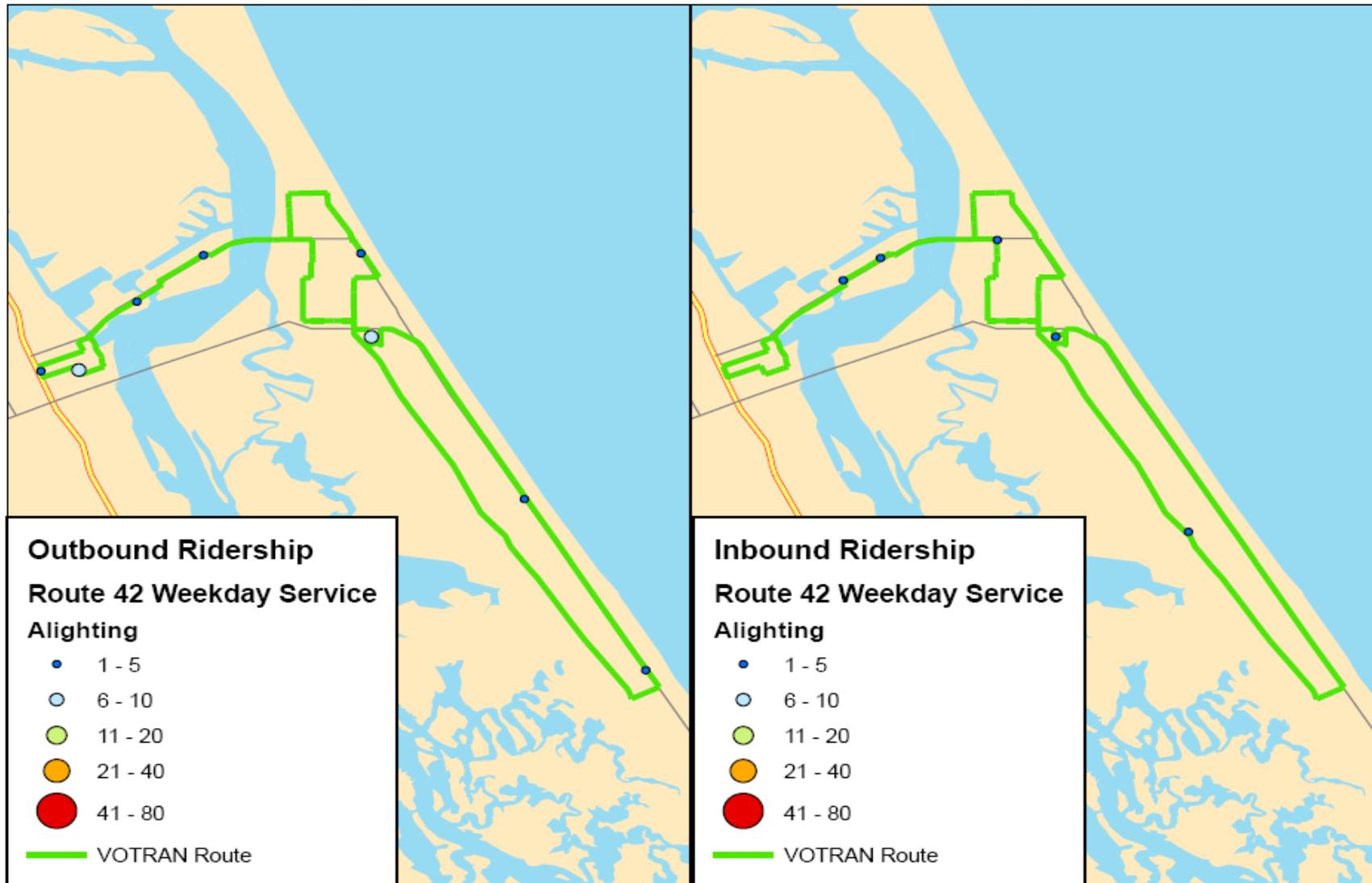
Map 5-4
Route 41 Weekday Alightings



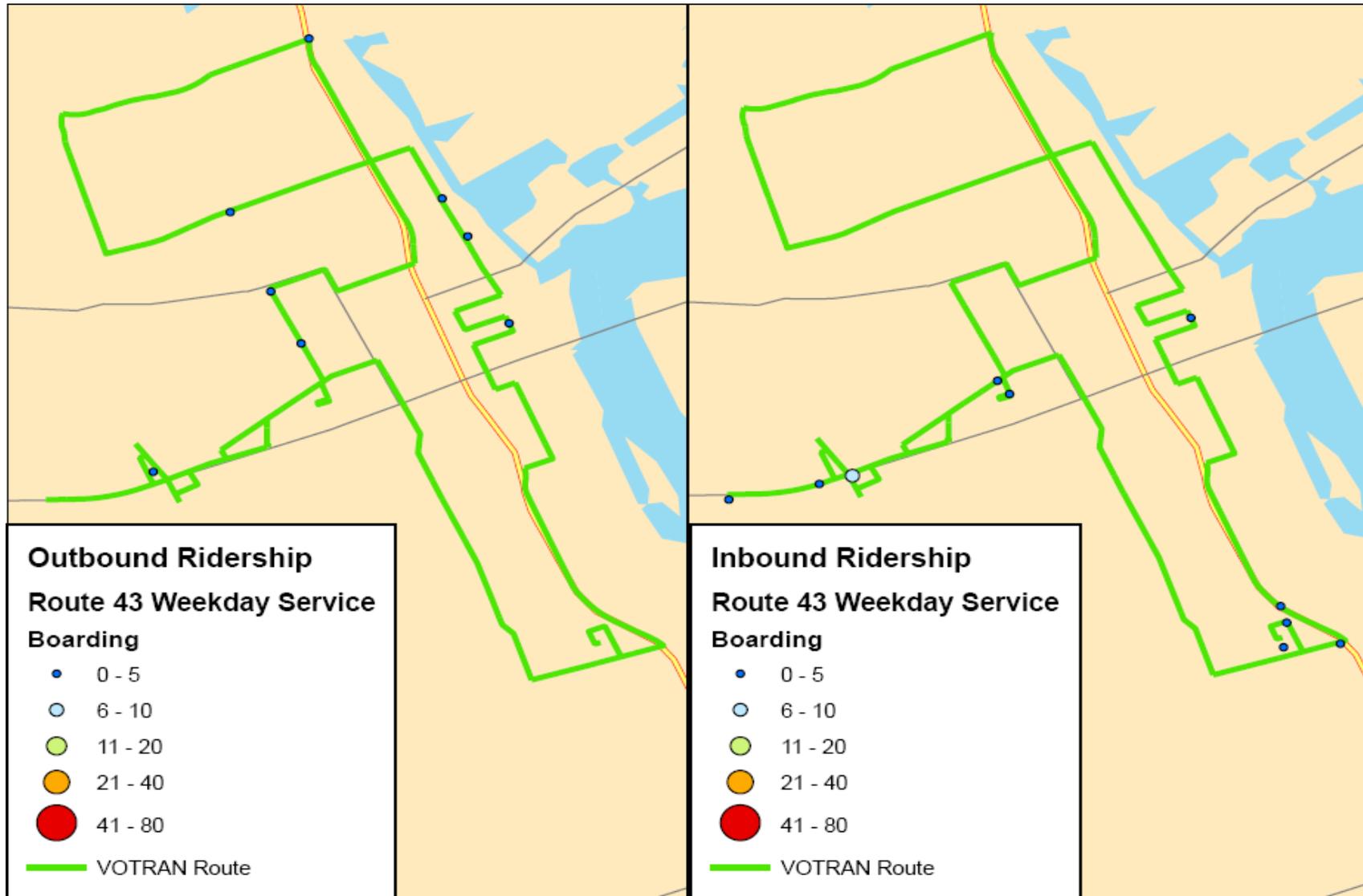
Map 5-5
Route 42 Weekday Boardings



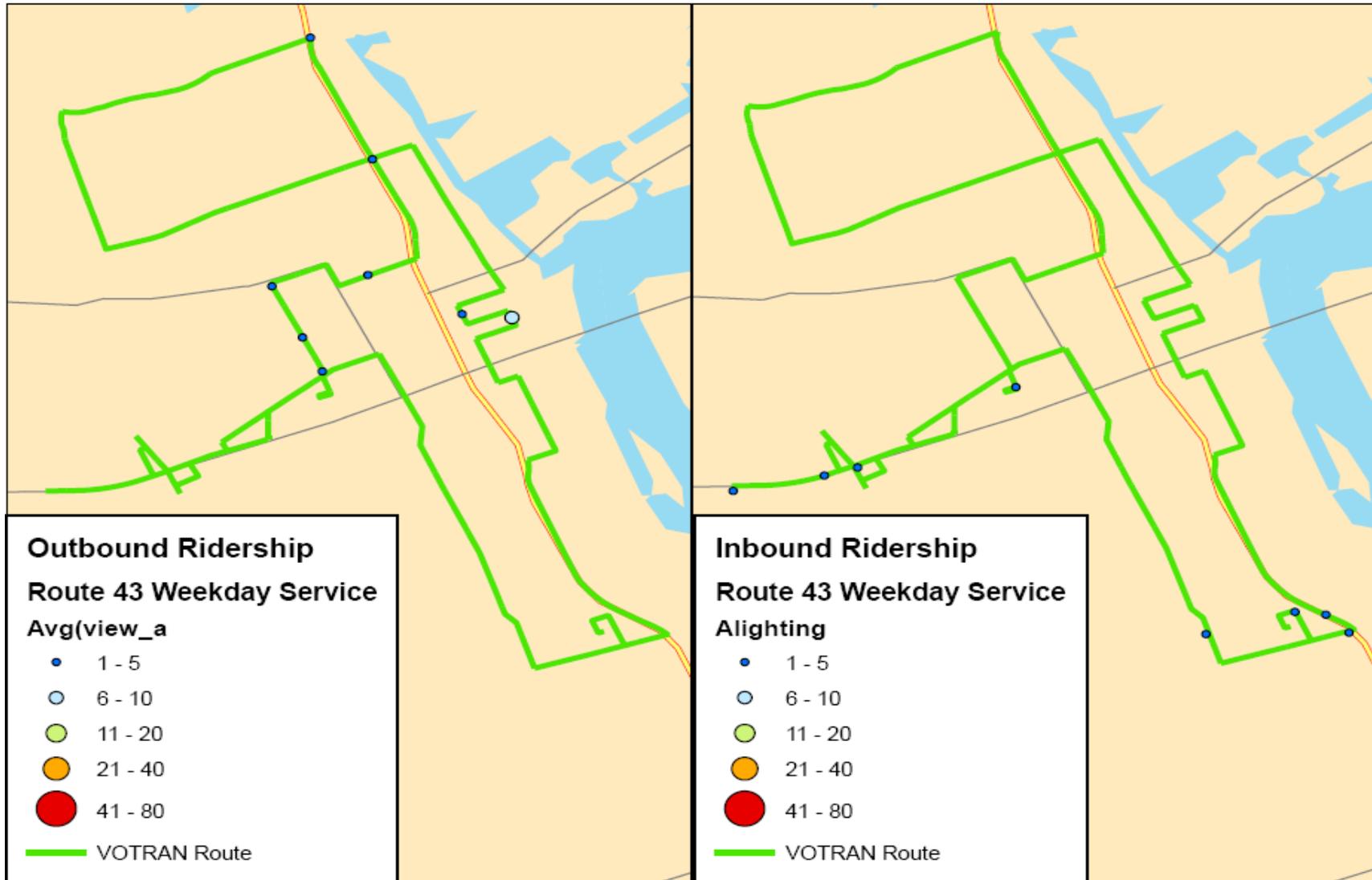
Map 5-6
Route 42 Weekday Alightings



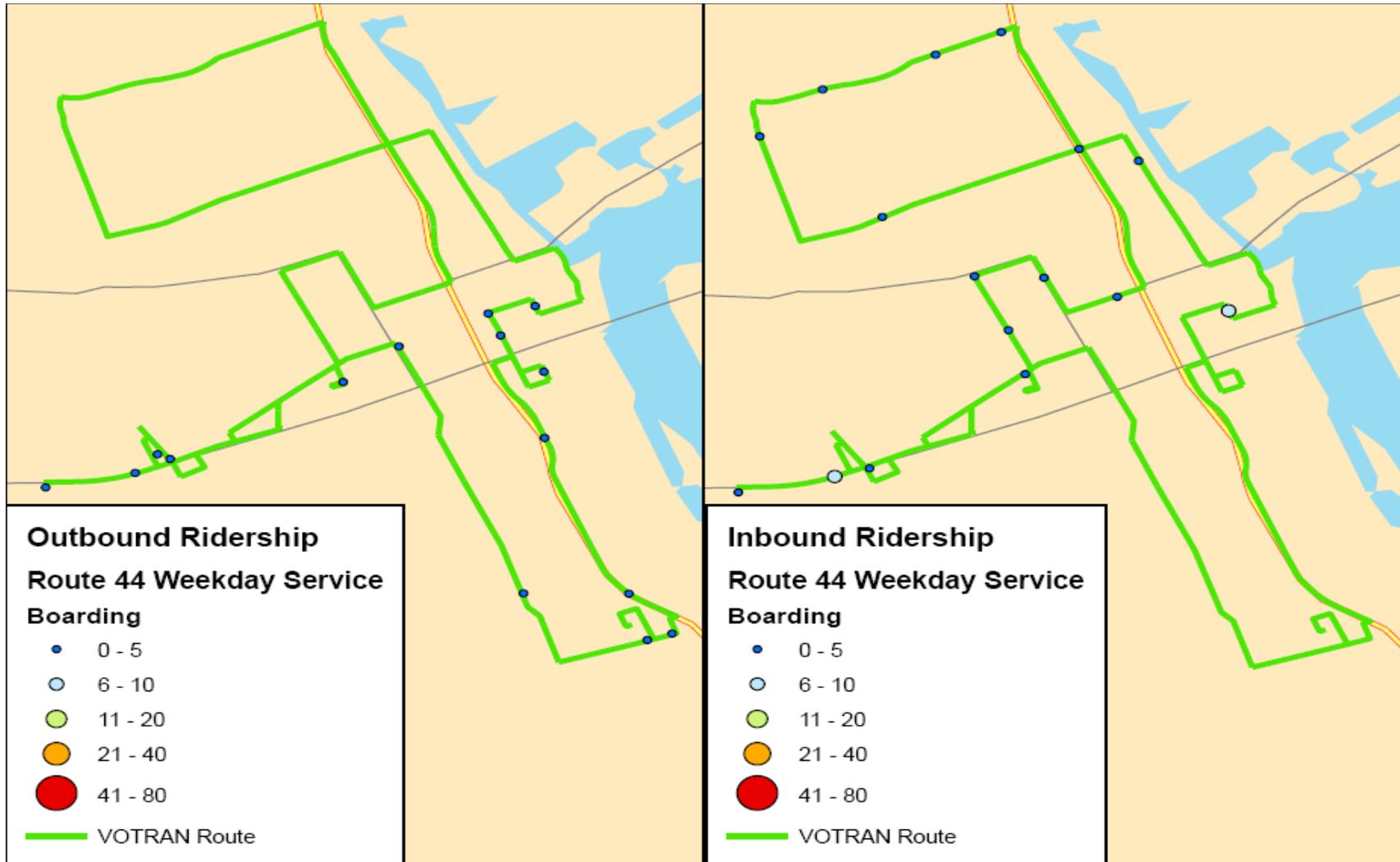
Map 5-7
Route 43 Weekday Boardings



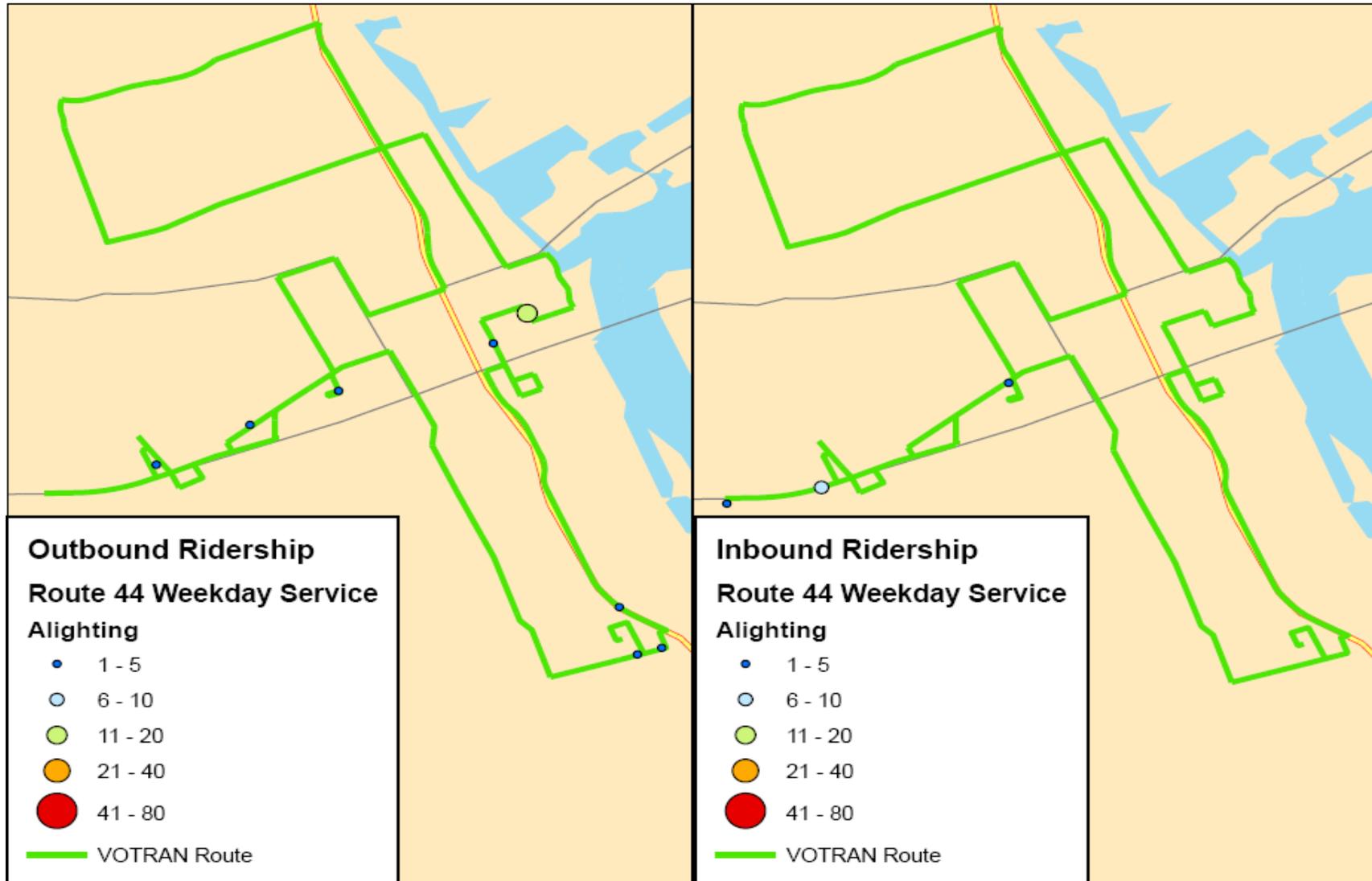
Map 5-8
Route 43 Weekday Alightings



Map 5-9
Route 44 Weekday Boardings



Map 5-10
Route 44 Weekday Alightings



Recommendations for Improvements and Priority

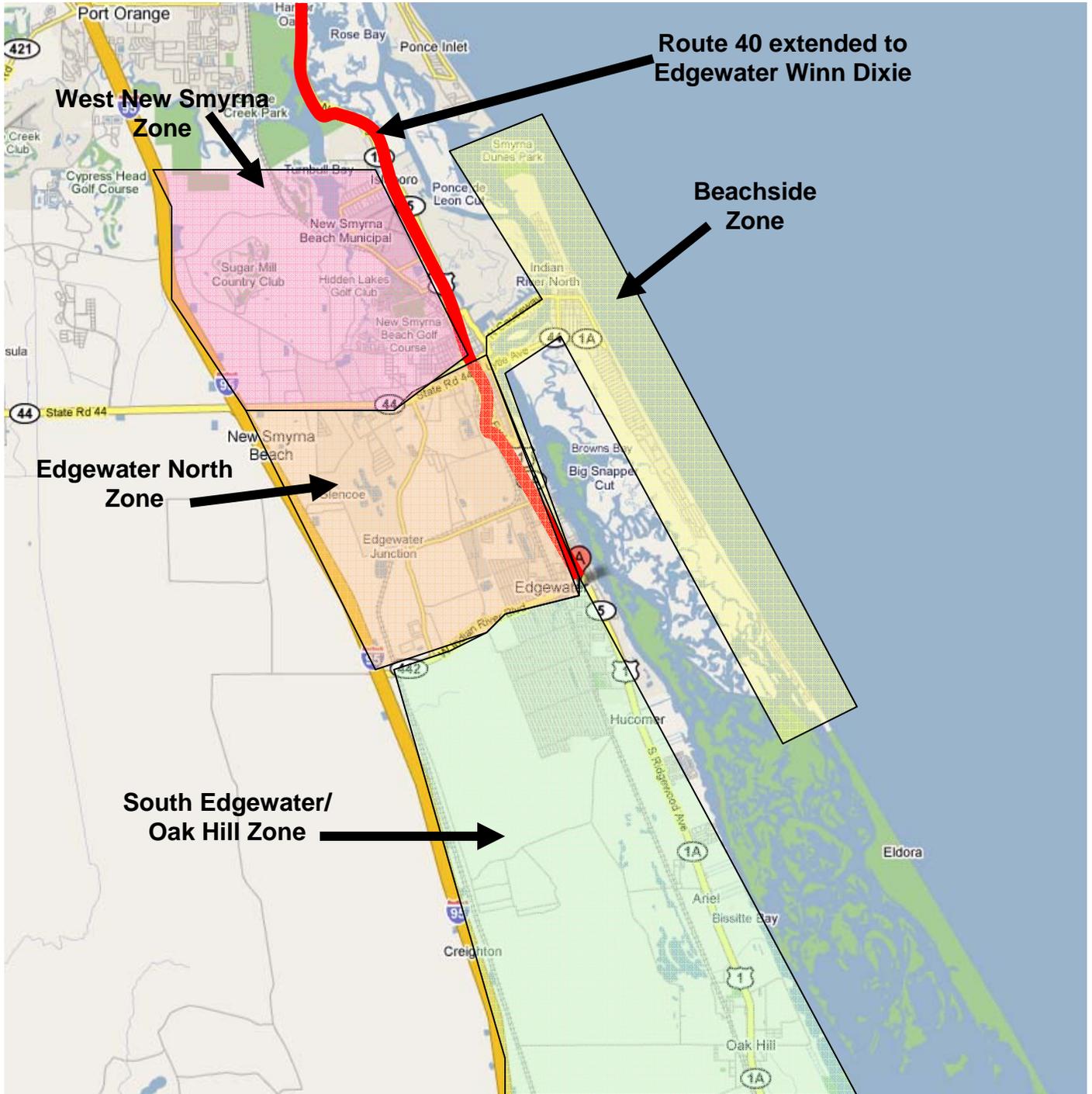
CUTR is not recommending elimination of service in the southeast service area. Rather, CUTR is recommending to eliminate fixed-routes as they operate today in favor of a van type service, called a flex service, wherein there are specific zones established and van operators pick up passengers and drop them off either within that zone or to the connection point with the regional transit system (Edgewater Winn Dixie, as recommended by extending the Route 40). The zones would be as follows:

- Beachside Zone – New Smyrna Beach area currently served by Route 42
- West New Smyrna Zone – Area currently served by the Routes 43 and 44
- Edgewater North Zone – Area currently served by Route 41
- South Edgewater/Oak Hill Zone – Area currently served by the Route 41

There are two means by which to operationalize flex service, as discussed below.

Ride Request – Ride Request service operates within a specifically designated zone wherein customers can travel from any origin within that zone to any destination within that zone, or, be dropped off at a location that connects to the regional system. One option is to give customers the ability to make reservations directly with the operator by equipping the operator with a cell phone. When customers can contact an operator directly, they can negotiate pick-up times and locations and drop-off times and locations. If advanced reservations are required (e.g. no direct contact with the operator), then a scheduler would have to establish a manifest for operators in the exact same manner as paratransit. When designed, Ride Request Services can be contracted to a private provider and could be operated for as much as half the operating cost per hour of a fixed-route bus. Figure 5-3 below shows a schematic of how a Ride Request service area is established.

Figure 5-3
Ride Request Zones – Southeast Volusia



Flex Transit Service

Flexible transit service, also referred to as Flex-Route is described in Transit Cooperative Research Program (TCRP) Synthesis 53 as all types of hybrid transit services that are not pure demand-responsive service or fixed-route service, but that fall somewhere in between these service models. In the case of Southeast Volusia, the routing configurations of the Routes 41, 42, 43 and 44 could remain the same except that they would all terminate at the Edgewater Winn Dixie; however, schedules would be re-written to allow more running time such that routes could deviate utilizing the same zones as the Ride Request zones in Figure 5-3.

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Section 6

Conclusions and Recommendations

Prioritization of Improvements and Ten Year Program of Improvements and Costs

Introduction

Utilizing the performance report, the network composition, the route by route analyses, and feedback from VOTRAN staff, this final section of the report presents the following:

- Major findings regarding the analyses;
- A summary of improvements that are revenue/cost neutral;
- A summary of improvements that require revenue hour and cost growth to the transit system;
- Prioritization of those improvements;
- A Ten Year Program of Improvements and associated costs to be included in the next Transit Development Plan Update.

Major Findings

With the exception of a few routes that are designed in a circuitous manner to serve specific destinations, the **overall design** of the VOTRAN East Side (Daytona area) route network **is strong** in terms of affording mobility to customers and residents and does not require an extensive overhaul that would significantly realign the existing network. The strengths of this route network are evidenced by the fact that there are two primary, centrally located transfer points in Daytona (one on the mainland) and on the beachside, there are two outlying transfer locations that are well spaced to the south (Dunlawton Square) and to the west (Volusia Mall), and many routes have a number of on-street transfers that do not require travel to a major transfer center. While the on-street transfer point on Thompson Creek Road will continue to be the primary north sector transit transfer center, there is a need to position the transit system for future network growth by using the Ormond Town Square or Wal-Mart Supercenter located at Granada and Williamson Boulevards, just east of I-95 as a secondary transit transfer center.

Regarding weekday frequency of service, the primary spine routes 1 and 17 have 30 minute frequencies on the A1A corridor from Granada Boulevard to Dunlawton Avenue. Routes 10 and 15, core route networks, operate with 30 minute frequencies on weekdays. However, the spine

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routes 3, 4 and 60 have 60 minute frequencies even though they are top performers and, as spine routes, account for 49 percent of all FY 08 system ridership. Therefore, the highest priority of the COA is to increase the frequencies of the Routes 3 and 4 to 30 minutes, with Route 60/61 recommended for 30 minute frequency between the Transfer Plaza and Volusia Mall.

The span of service for the majority of routes that do not have night service is from 6:00 a.m. to 7:00 p.m., which is commensurate with many other systems of VOTRAN's size in Florida. For those routes that do have night service, four are included in the spine route network (Routes 1, 3, 4 and 17) and two are included in the core route network (Routes 10 and 15) and all operate past midnight. Route 60 is the only spine network route that does not have night service because there is no night service in Deland. However, VOTRAN should definitely consider expanding night service to the remaining core route network routes as defined in this COA (Routes 7 and 12).

Regarding Sunday service, the performance report displayed that the six routes operating over 52 Sundays are very efficient in terms of ridership performance in relation to overall cost. The implication of this result is that VOTRAN should consider expanding Sunday service to include the entire spine route network and core route network as defined in this COA.

In regards to the lower performing routes as identified in this COA, VOTRAN should always strive to increase connectivity to the core network routes when possible. The lower performing routes, classified as the Routes 5, 6, 8, 9 and 11 currently have on-street transfer connections (Routes 5, 6 and 11), a transfer plaza and intermodal facility connection (Route 8), and connections with the core route network at the transfer plaza and Volusia Mall (Routes 9 and 11 to the Routes 10 and 60). In principle, if there are better connections for the northwest sector of the east service area, they should be explored.

In the northwest sector of the east side service area, there are routing configurations that are circuitous with branches and spurs that are designed to service specific destinations within that sector. There may be opportunities for some route realignments to reduce those branches by creating a new route that will connect Ormond Town Square with Volusia Mall along Williamson Boulevard and serve the new Ormond Memorial Hospital at Hand Avenue and Williamson Boulevard and also combine other segments of existing routes.

In the southeast (New Smyrna) service, the analysis found that in FY 2007 the average cost of a paratransit trip on VOTRAN was \$18.61 per one way trip while the average cost per passenger on the Routes 42, 43 and 44 was \$16.06 per passenger. When the cost to operate fixed-route service reaches the same cost on a per passenger basis as a paratransit trip, then it is time to

look at alternatives to fixed-route service. In principle, this report advocates for a flex type service that operates in zones and enables customers to contact an operator directly to arrange a trip to connect to the fixed-route system or to a destination within the zone (detailed in Section 5 above).

Finally, the COA concludes that VOTRAN should position itself for service areas beyond the existing route network as Developments of Regional Impact (DRIs) are an inevitable part of the development of every county. However, developers often design and request DRIs of such magnitude with mixed uses and intensities. As these DRIs are developed in the future, transit should be a consideration when possible. Also, VOTRAN should continue to refine plans to serve the new Ormond Memorial Hospital (Hand and Williamson) as well as the Dunlawton/I-95 area with a new commercial development.

Improvements that are Revenue/Cost Neutral or Cost Reductions

Improvements that are revenue/cost neutral are as follows:

- Route 5 realignment that eliminated a major loop to straighten the route from 3rd Street and Center Avenue to LPGA Boulevard and realignments to Route 6 (FY 2008)
- Extend Route 1B south on Williamson to serve new Ormond Memorial Hospital at Williamson Boulevard and Hand Avenue
- Running Time Adjustments to improve on-time performance for the Routes 7 and 12 (these were implemented)
- Modification of Route 9 Saturday service to be consistent with weekday schedules (FY 2008)
- Route Realignments – Eliminate segment of Route 11 west of Volusia Mall to Farmers Market and serve with scheduled trippers
- Extend Route 12 into the Pavilion DRI
- Implement Flex Routes to replace Routes 41, 42, 43 and 44

Improvements that Require Revenue Hour and Cost Growth to Improve Service:

- Frequency Improvements (Routes 3 and 4)
- Frequency Improvements to Trolley, year round service, increase span (Augment Routes 1 and 17)
- Frequency Improvement to Route 60 between Transfer Plaza and Volusia Mall
- Weekday Span (night) Improvements (Core Network Routes 7 and 12)
- Saturday Span (night) Improvements (Core Network Routes 7 and 12)

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- Sunday Service Implementation (Core Network Routes 7 and 12)
- Increase Route miles to serve Edgewater Winn Dixie, approximately (Route 40) with a one-way distance of 4.2 miles from U.S. 1 and Canal Street to the Edgewater Winn Dixie at Indian River Boulevard and U.S. 1
- New Route (Ormond Square to Volusia Mall via Williamson)
- Saturday Service Implementation (Route 5)

The highest priority as identified by the COA is weekday frequency improvements for the Routes 3 and 4. Table 6-1 below programs improvements by year, displays priority, associated annual revenue hour and net bus growth with an incremental annual cost based on current FY 2008 costs.

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**Table 6-1
Service Improvements and Associated Revenue Hour Growth**

Year	Affected Routes	Priority	Improvement	Daily Revenue Hour Increase	Net New Total Service Hours	Net New Buses	Cost per Service Hour	Annual Cost of Improvement (2008 \$)
FY 2010	Route 3	Highest	Frequency Improvement - Weekday (60 minutes to 30 minutes)	20.13	5,194	1.5	\$69.90	\$363,028
FY 2011	Route 4	Highest	Frequency Improvement - Weekday (60 minutes to 30 minutes)	20.13	5,194	1.5	\$69.90	\$363,028
FY 2012	Routes 1 and 17	Medium	Add one trolley on A1A, increase service to year round, add service hours to meet span, and offset trolley departures to augment frequency for Route 1 and 17	6.0	5,508	1	\$69.90	\$385,009
FY 2013	Route 60/61	Medium	Frequency Improvement - Weekday (60 minutes to 30 minutes between Transfer Plaza and Volusia Mall)	13.48	3,424	1	\$69.90	\$239,332
FY 2014	Routes 7 and 12	Medium	Weekday Night Service	10.60	2,735	0	\$69.90	\$191,163
FY 2015	Routes 7 and 12	Medium	Sunday Service Implementation	23	1,196	0	\$69.90	\$83,600
FY 2016	New Route - Ormond Town Square to Volusia Mall via Williamson	Medium	New Route	13	3,302	1	\$69.90	\$230,810
FY 2017	Route 40, 41, 42, 43, 44	Medium	Route Realignment, Flex Routes*	4	1,032	0	\$69.90	\$72,137
FY 2018	Routes 5	Low	Implement Saturday Service	17.83	927	0	\$69.90	\$64,808
			TOTALS		28,511	6		\$1,992,916

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