



## **TECHNICAL MEMORANDUM**

# **NATIONAL TRANSIT DATABASE SAMPLING and REPORTING PROCESS FOR COAST TRANSIT AUTHORITY**

**Fiscal year 2008**



**Prepared by:**

GULF REGIONAL PLANNING COMMISSION

GULFPORT, MISSISSIPPI

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Task C-2

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## **INTRODUCTION**

Gulf Regional Planning Commission (GRPC), as part of its Fiscal Year 2008 UPWP administered the National Transit Database (NTD) survey process for Coast Transit Authority (CTA).

The NTD process is conducted to collect transit ridership data that is “used in the formula allocation of Federal transit funds for the Urbanized Area Formula Program (§5307) and for the Fixed Guideway Modernization Program (§5309, in part). The NTD data are also used in the formula allocations of Federal transit funds. Prior to the Safe, Accountable, Flexible, and Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), only NTD data for urbanized areas with populations of 200,000 or more were used. With the passage of SAFETEA-LU, NTD data for urbanized areas with populations fewer than 200,000 are also used in the allocation of Federal transit funding. ([www.ntdprogram.gov/ntdprogram](http://www.ntdprogram.gov/ntdprogram))<sup>3</sup>

GRPC initiated the process in October of 2007 at the beginning of the fiscal year. The survey (data collection) process was completed by September of 2008 at the end of the fiscal year. Final NTD data was submitted to CTA in December of 2008.

GRPC scheduled trip surveys and collected data for CTA’s fixed-route and demand response systems. The largest number of surveys completed and man hours expended in conducting the process were used in conducting the fixed-route survey process. 549 trips were scheduled to survey for the fixed-route system, compared to 52 trips for demand response system.

## **FIXED ROUTE PROCESS**

### **Survey Process Overview**

GRPC staff used the general guidelines provided by the *National Transit Database* to manage the NTD survey process. Much of information needed to conduct the survey process is shown in federal circular, UMTA C 2710. 1A.

The survey process was initiated by first creating a master trip ID list that contained a total of 1775 possible bus trips that would take place in any given week (7 day period). A list of 549 randomly sampled survey trips was generated from the original list. These random samples were then divided up over a 48 week period, and assigned to a schedule.

All trips chosen to survey were chosen by random sample. A trip ID number was assigned to each trip that was surveyed. This trip ID number matched up with a specific arrival and departure time of a specific route.

## **Survey Trip Sheet**

GRPC staff used the standard NTD format in creating new blank survey trip sheets for every segment of each route. This included the following routes: Routes 7, 24, 31 Red, 31 Blue, 34, 37, 38, and the Casino Hopper. Many of the street and intersection names had to be changed or updated on each survey trip sheet for every route. Calculations were made to determine the distance between each stop on every survey sheet. These changes were necessary due to the many route changes that had taken place since Hurricane Katrina.

## **Survey Trip Sheet Completion Process**

CTA drivers and GRPC staff both filled out NTD survey trip sheets. The person conducting the trip survey would fill out items 1 to 14 on the survey trip sheet. Once the survey was finished being filled out, it was submitted to a GRPC staff member to complete items 15 to 22 which included ridership data calculations. GRPC staff would check and verify that all of the information in the survey was complete and filled out correctly. Any surveys that contained errors or questionable data were returned to the CTA route supervisor to resurvey.

Each blank survey sheet contained the following information to fill out:

1. Trip serial number
2. Date of survey
3. Day of week
4. Time period
5. Route number
6. Vehicle inventory number
7. Total vehicle capacity
8. Seated capacity
9. Stop number
10. Stop description
11. Odometer reading
12. Passengers boarded
13. Passengers De-boarded
14. Passengers on Board
15. Distance between stops
16. Passenger Miles for each stop
17. Total Passengers boarded
18. Total Passengers on board
19. Total distance between stops
20. Total Passenger miles
21. Capacity Miles
22. Seat Miles

A sample survey trip sheet can found on the following page.



## **Survey Scheduling**

The NTD survey process was based on the 52 week year. GRPC initiated the process at the beginning of FY 2008 starting in October 2007 and ending in September of 2008. CTA bus routes were surveyed over a period of 48 weeks, with 4 weeks being allowed to make up or resurvey trips. A total of 549 trips were surveyed. On average, a total of twelve trips were scheduled to be surveyed each week, of which CTA drivers did seven and GRPC staff did five. For the last few months of the survey process, CTA drivers conducted all of the surveys.

GRPC planning staff created schedules for GRPC staff and CTA drivers each week. Schedules were sent by email in excel spreadsheet to the CTA fixed route supervisor and the GRPC surveyor in advance of the schedule survey week. CTA would drop off completed surveys once every week or two at the GRPC office.

## **Bus Survey Process**

A GRPC surveyor would ride a bus for the scheduled trips every week, and would fill out part of the survey form on the bus. The rest of the data calculations would be completed back at the office. CTA drivers would fill out their assigned trips to survey while they were driving their routes. They would then turn in their completed survey forms to the CTA route supervisor, who would then submit them to GRPC staff every week or two.

## **Survey Calculation Process**

CTA staff did not complete any of the calculations on the NTD survey forms that they filled out. Their completed surveys were turned in to a GRPC staff member who would complete the calculations on each survey sheet. This data was then entered into a weekly summary sheet in an excel spreadsheet. This data included the day of week, time period, and each trip serial number was surveyed; trip Id numbers, passengers boarded, and passenger miles. Totals for the week in each category were calculated and summarized. (For a total of 48 weeks)

## **Completed survey filing and organization**

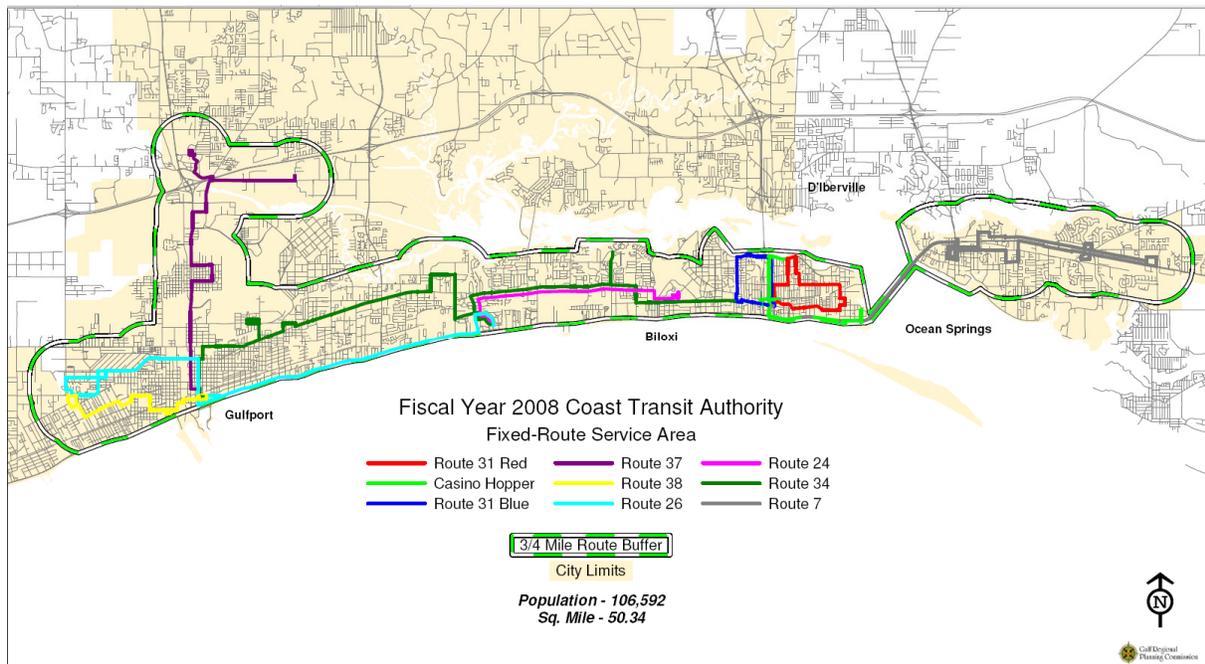
During, and after the NTD process, GRPC staff kept a record of all completed NTD survey trip sheet forms. All completed surveys were filed in manila folders that were labeled for each survey week. A total of 48 manila folders were used, with each folder being labeled from week 1 through week 48. These files are stored together in a file cabinet at GRPC in the event that the data would need to be reexamined or reviewed.

## Daily Record Sheet

After the NTD survey process was completed, GRPC submitted copies of all survey trip sheets, schedules, and weekly summary spreadsheets to a consultant, Burk-Keinpeter, to complete the daily record sheets. The daily record sheets were used to combine all of the information that was needed to submit to CTA.

## FY 2008 CTA Fixed-Route Service Area Map

As part of the NTD process, GRPC staff created the following map that shows all of the bus routes with a ¾ mile buffer zone showing estimated populations surrounding the entire transit system. The routes shown in the map were in service during the FY 2008 survey process.



## Fixed-Route Data Summary

Final data was submitted to CTA using FTA Form 4014. In summary, a total of 657,278 of unlinked passenger trips and a total of 2,588,012 passenger miles were recorded for FY 2008. A copy of the form with all of the final data is shown below.

**NTD Fixed Route Data Summary**  
Coast Transit Authority (FTA Id 40-1)

Line No.	Accumulations from Daily Record Sheet	Weekday					Saturday	Sunday	Total
		AM Peak	Midday	PM Peak	Other (Night)				
1	(20) Passengers Boarded	464	1,116	900	289	684	358	3,811	
2	(21) Passengers-On Board	1,675	3,827	2,532	651	1,844	779	13,258	
3	(22) Bus Trip Distance	777.82	1,186.96	835.27	407.82	667.78	404.86	4,281	
4	(23) Passenger Miles	2,791.26	4,464.47	3,226.59	1,066.90	2,817.59	1,114.65	15,001	
5	(26) Capacity Miles	24,255.49	35,821.55	23,964.78	12,869.61	20,849.33	12,152.04	129,723	
6	(27) Seat Miles	16,789.20	25,511.59	17,809.69	8,929.58	15,063.04	9,438.28	93,543	
7	(28) Trips in Sample	94	147	111	51	82	47	512	
8	(29) Total Number of Bus Trips	340	462	355	161	273	182	1,773	
<b>Sample Averages</b>									
9	(17) Unlinked Passenger Trips	4.94	7.59	8.11	5.67	8.34	7.62	42	
10	(47) Passenger Miles per Trip	24.38	30.37	29.07	20.92	34.60	23.72	163	
<b>Annual Totals</b>									
11	(9'8) Unlinked Passenger Trips	87,271	182,386	149,676	47,441	118,415	72,087	657,278	
12	(10'8) Passenger Miles	430,952	729,622	536,602	175,139	491,249	224,448	2,588,012	

**Notes:**

- Ln (7) Trips in Sample Drawn and Administered by GRPC using Plan 2, UMTA Circular, C 2713.1A
- Ln (11) (12) Formula shown as outlined in UMTA Circular (pg V.1). In FY 2005, these values appeared to have been calculated using a 52 week schedule. The same has been applied to Lines 11 and 12 (see grey fields), although this is not clear in the UMTA Circular C2710.1A.
- Ln (29) Total number of bus trips for the entire week for the time period, not just the sample days (UMTA Circular, pg N-1)

FTA Form 4014

Dec 16 2008 Fixed Route Data Specific (pgs 4)

as collected by GRPC, FY 2008

Data Entry by BKJ, 12/2008

## **DEMAND RESPONSE PROCESS**

GRPC staff used the general guidelines provided by the *National Transit Database* to manage the NTD survey process. Much of information needed to run the survey process is shown in federal circular, *UMTA C 2710. 2A*.

### **Survey Process Overview**

The survey process was based on a 52 week year, with one demand response bus trip being sampled every week for a total of 52 samples for the fiscal year.

A list of all of demand response buses was obtained from CTA. Each bus number was assigned to a Randomized Bus Number List. One bus number was assigned to be surveyed for each week. Each bus number that was scheduled to be surveyed was determined by a random sample process.

### **Survey Trip Sheet**

CTA drivers were responsible for filling out a portion the survey trip sheets. They would fill out sections 1 through 14 of each survey sheet. Once the driver had filled out the initial part of the form, it was submitted to a GRPC staff member to complete items 15 to 25 which included ridership data calculations. GRPC staff would check and verify that all of the information in the survey was complete and filled out correctly. Any surveys that contained errors or questionable data were returned to the CTA route supervisor to resurvey.

A copy of a sample demand response NTD survey sheet is shown below.



## **Survey Scheduling**

The NTD survey process was based on the 52 week year. GRPC initiated the process at the beginning of FY 2008 starting in October 2007 and ending in September of 2008. CTA bus routes were surveyed over a period of 52 weeks, with a total of 52 sample trips.

GRPC planning staff created schedules for CTA drivers each week. Schedules were sent by email in excel spreadsheet to the CTA fixed route supervisor and the GRPC surveyor in advance of the schedule survey week. CTA would drop off completed surveys once every week or two at the GRPC office.

## **Bus Survey Process**

A GRPC surveyor would ride a bus for the scheduled trips every week, and would fill out part of the survey form on the bus. The rest of the data calculations would be completed back at the office. CTA drivers would fill out their assigned trips to survey while they were driving their routes. They would turn in their completed survey forms to the CTA route supervisor, who would then submit them to GRPC staff every week or two.

## **Survey Calculation Process**

CTA staff did not complete any of the calculations on the demand response survey forms that they filled out. Their completed surveys were turned in to a GRPC staff member who would complete the calculations on each survey sheet. This data was then entered into a weekly summary excel spreadsheet. The data columns in the spreadsheet included sections for: scheduled survey dates, actually survey date surveyed, vehicle number, passengers boarded, total vehicle trips, total trip distance, passenger miles, capacity miles, and seat miles. Totals for each category were calculated for the 52 period.

## **Completed survey filing and organization**

During, and after the NTD process, GRPC staff kept a record of all completed demand response survey trip sheet forms. All 52 completed survey sheets were filed in a manila folder. These files are stored together in a file cabinet at GRPC in the event that the data needs to be reexamined or reviewed.

## **Demand Response Data Summary**

Final data was submitted to CTA using FTA Demand Response Form 4014. In summary, of the trips sampled; a total of 340,980 of unlinked passenger trips and a total of 3,252,691 passenger miles were recorded for FY 2008. A copy of form 4014 for demand response is shown on the following page.

NTD Demand Response Data Summary  
Coast Transit Authority (FTA ID: 4041)

FY 2008

Line No.	Accumulations from Daily Record Sheet	Weekday	Saturday	Sunday	Total
1	(20) Passengers Boarded	1,177	6		1,183
2	(21) Passengers On-Board	4,177	6		4,183
3	(22) Bus Trip Distance	9,114	42		9,156
4	(23) Passenger Miles	11,377	42		11,419
5	(26) Capacity Miles	228,135	630		228,765
6	(27) Seat Miles	175,577	546		176,123
7	(28) Trips in Sample	49	1		50
8	(29) Total Number of Bus Trips	260	52		312
<b>Sample Averages</b>					
9	(1/7) Unlinked Passenger Trips	24.02	6.00		30.02
10	(4/7) Passenger Miles per Trip	232.18	42.00		274.18
<b>Annual Totals</b>					
11	(9*8) Unlinked Passenger Trips	324,756	16,224		340,980
12	(10*8) Passenger Miles	3,139,123	113,568		3,252,691

**Notes:**

- Ln (1) Value from Total Passengers
- Ln (2) Assumed to be same as Total Passengers
- Ln (8) Assumes minimum 1 trip per day

## **CONSULTANT ASSISTANCE**

GRPC contracted with Burk- Kleinpeter, Inc. (BKI) to assist with the final review and tabulation of FY 2008 NTD. BKI provided assistance to GRPC as described in the following work assistance agreement:

### **NTD Sampling and Reporting Process Request of Assistance from BKI**

The purpose of this work task is to provide technical support to the GRPC to complete the data tabulation for the National Transit Database (NTD) data report. Samples have been collected by the GRPC and CTA through the Fiscal Year in accordance with FTA policy. Where required, BKI will examine calculations completed by GRPC as part of the data assembly step and make the necessary corrections. Guidance for this effort will be provided by the UMTA circulars for data reporting.

The following is a list of work tasks which will be completed by Burk-Kleinpeiter (BKI) under this work task to support existing work completed by GRPC:

#### **Fixed Route (Requested assistance from BKI):**

- Review individual trip sheets to check data totals and trip calculations collected by GRPC and/or CTA;
- Complete calculations for passenger and vehicle capacity left blank on forms;
- Compile final data into an Excel spreadsheet;
- Sort and tabulate by Weekday peak period (AM, Midday, PM, Other), Saturday and Sunday;
- Compile results into summary form provided by UMTA Circular 2710.1A;
- Provide files electronically to GRPC for their project file;
- Address review comments/questions;
- Submit final electronic file with summary information included.

#### **Demand Response (Requested assistance from BKI)**

- Review individual trip sheets to check data totals and trip calculations collected by GRPC and/or CTA;
- Complete calculations for forms left blank;
- Review GRPC supplied data entered into the summary Excel sheet;
- Compile results into summary form provided by UMTA Circular 2710.2
- Provide files electronically to GRPC for their project file;
- Address review comments/questions;
- Submit final electronic file with summary information included.

## **FINAL REPORTING**

GRPC staff submitted final NTD data to CTA on December 16, 2008. The data was submitted using *FTA Form 4014* for NTD Fixed-Route data summary and *FTA Form 4014* for NTD Demand Response data summary.

## **LESSONS LEARNED**

As in any process, constant evaluation and changing of methodology is helpful in making improvements to the overall process. The following guidelines were found to be helpful in conducting the NTD process in a more efficient manner and reducing the chance of making errors:

- Maintain good coordination and communication between GRPC planning staff and CTA route supervisors.
- Complete the *Daily Record Sheet* and *Weekly Summary Sheets* on a daily and weekly basis.
- Review completed surveys every week to catching errors and mistakes, and making the corrections on a weekly basis.
- Make sure that the route supervisors have trained their drivers early on in the process on how to correctly fill out the survey forms.
- Send out survey schedules to route supervisors in advance of the week that they are to conduct the surveys.
- Make sure that completed surveys are turned in the following week after they are completed.

## REFERENCES

1. FTA Circular UMTA C 2710. 1A: SAMPLING PROCEDURES FOR OBTAINING FIXED ROUTE BUS OPERATING DATA REQUIRED UNDER THE SECTION 15 REPORTING SYSTEM
2. FTA Circular UMTA C.2710. 2A: SAMPLING PROCEDURES FOR OBTAINING DEMAND RESPONSIVE BUS SYSTEM OPERATING DATA REQUIRED UNDER THE SECTION 15 REPORTING SYSTEM
3. National Transit Database Website: [www.ntdprogram.gov/ntdprogram](http://www.ntdprogram.gov/ntdprogram)



