

GTFS: Three Steps to Online Trip Planning

March 8, 2023 March 15, 2023 **March 27, 2023**

National RTAP
Rural Transit Assistance Program

FTA
U.S. Department of Transportation
Federal Transit Administration

Speaker Introductions



Marcy Jaffe
GTFS Consultant
Transnnovation, Inc.



Andrew Carpenter
Director
N-CATT

Agenda

1. Your Progress/Questions
2. Recap & Hosting/Publishing
3. Display Route Alignment & Trip with a “Shape”
4. Demand Response Services - workaround
5. N-CATT Keeping Your GTFS Current

GTFS Builder Guidebook: Checklist



National RTAP GTFS Builder Checklist

Agency Name: _____ Staff Contact: _____

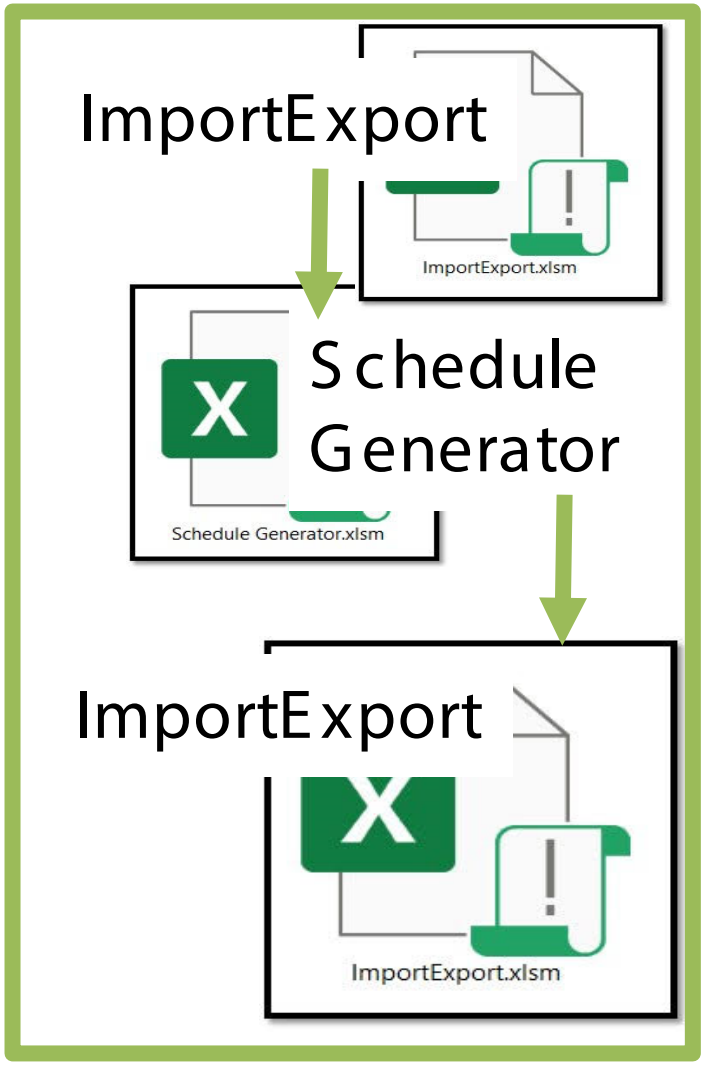
Task	Guidebook Section	Time Estimate	Begin Task Date	End Task Date	Notes
REQUIRED TASKS					
If Google Transit is the preferred trip planner, confirm the agency can agree to the Google Licensing Agreement.		60 min.			
Download Google Earth Desktop to the PC for this project	1	15 min.		X	
Configure project folder for macros	1	10 min.		X	
Complete the ImportExport tabs: agency, calendar, calendar dates and routes	2,3,4,5	60 min.		X	
Determine if agency bus stop coordinates are available from other organizations. If so, obtain them.	6	30 min.		X	
If not, identify bus stop coordinates from MyMaps and/or Google Earth.	6	60 min.		X	
Enter bus stop coordinates from MyMaps or Google Earth or file into the ImportExport stop tab.	7	20 min.		X	
Complete the Schedule Generator file Schedules_V3 tab by entering timetable/schedule, stop by stop.	8	30 min. (per route)		X	
Complete the ImportExport tab: feed_info.	10	5 min.		X	
OPTIONAL TASKS					
In the ImportExport file complete the transfers tab.	13	5 min.			
In the ImportExport file complete the fares and fare_attributes tabs.	13	20 min.			
Using MyMaps or other tools, create trip shapes.	14	20 min. (per shape)	X		
Copy the shape files into the ImportExport shapes tab (by trip)	14	10 min.	X		
Confirm the shape_id is entered in the Schedules_V3 tab	14	5 min.	X		
REQUIRED TASKS					
In the Schedule Generator file, using the macro generate stop_times and trips data.	8	2 min.		X	
Copy/paste data in the stop times & trips tabs in Schedule Generator into the similarly named ImportExport file tabs.	9	2 min.		X	
If shapes were created, calculate distance between stops and shape.	14	10 min.			
In the ImportExport file, using the macro, generate GTFS text files.	10	2 min.		X	
Compress (.zip) the text files.	12	2 min.		X	
Validate the .zip & resolve all errors/evaluate warnings	12	10 min.		X	
Upload fully valid GTFS .zip to trip planner	16	10 min.			

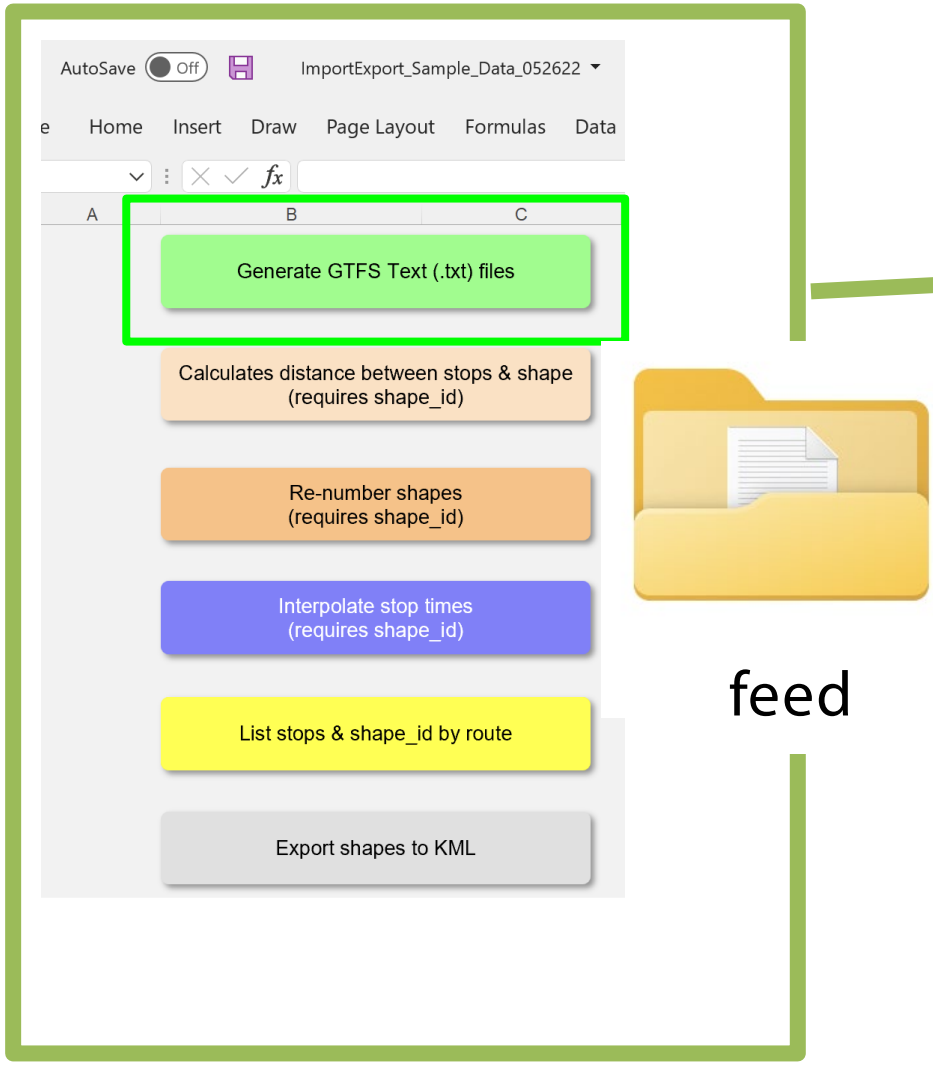
Re-cap: March 15

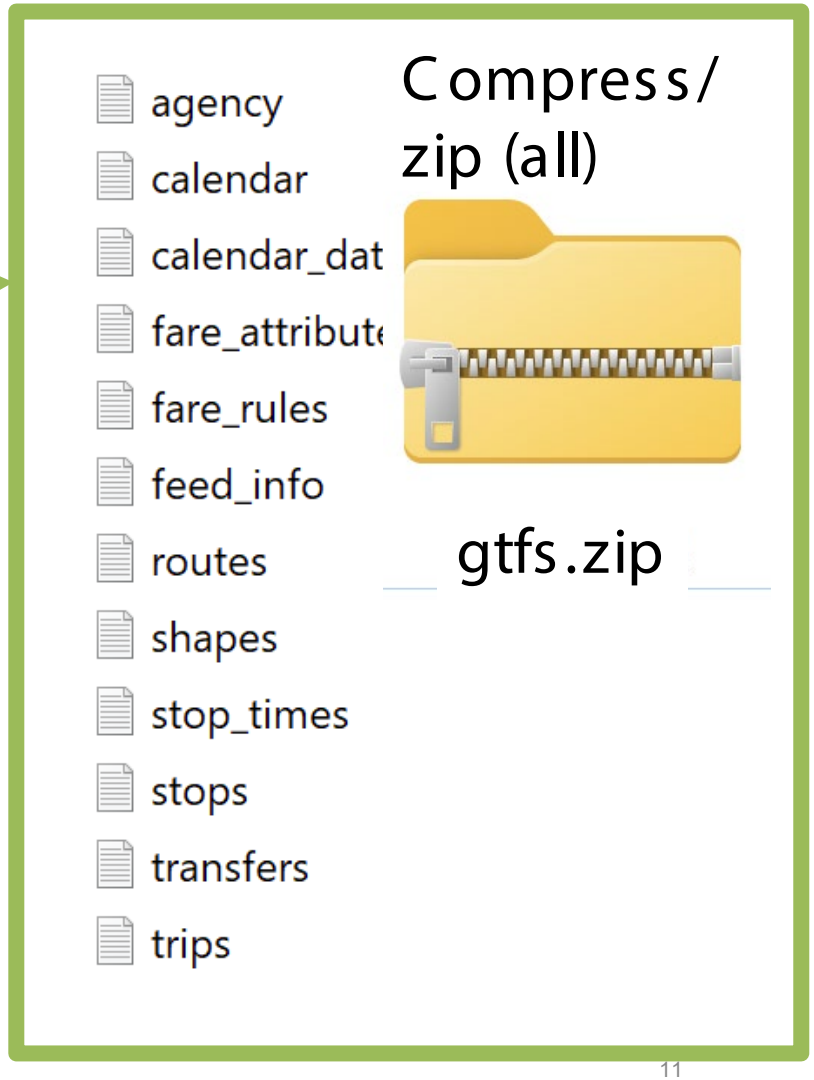
1. Schedule Generator file: Generate one route or a trip group
    a. Reference route_id, service_id and stop_id from ImportExport file
    b. Create trip groups or patterns for consecutive stops assigned to service_id
    c. Generate and copy two tabs: stop_times and trips into ImportExport file
    d. Highlighted three trip groups - as sample data (day of week or variation add/remove stop)
2. ImportExport file: Generate GTFS and compress (.zip)
3. All Required Data Completed!
4. Validate and Resolve Errors - review warnings
5. Hosting Options

Steps for GTFS Hosting / Feed Registries

ImportExport: Generate GTFS > “Notes” tab







GTFS > Hosting > Stable URL



	Your Agency Website
ZIP	Through your National RTAP Cloud Account
	Dropbox
Drive	Google Drive
	Other Secure hosting

GTFS > Hosting > NTD, National Transit Map + Apps



gtfs.zip

Stable URL

https://myagencyurl.org/gtfs

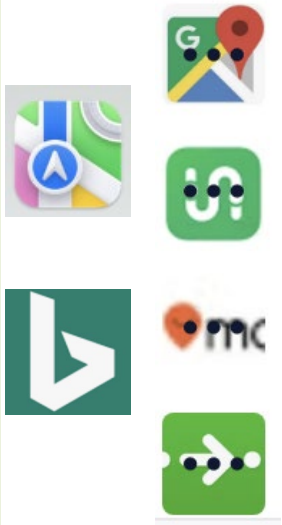
https://rapid.nationalrtap.org/GTFSFileManagement/userUploadFiles/1234/gtfs.zip

Publish / Link to

NTD: FACES login

National Transit Map Data

NTM: FACES login



Maps & Apps

Feed Registries:
Transit.land/others

Demand Responsive & NTD Reporting

Geospatial - for Demand Responsive

(1) Do you serve residents in another State besides your State?

(2) Select the Counties that you serve…

part, where you pick up residents for a new trip origination.

(3) Select Census `Places' served in these counties; indicate whether these Places (*e.g.,* Township) are served, and whether these Places are partially or wholly served.

(4) Is your demand response service intended to meet the Americans with Disabilities Act (ADA) complementary paratransit requirements for a fixed route system?

(5) If yes to #4, is your service area limited to the ADA complementary paratransit distance for:

a. Your own NTD Reporter ID; or

b. Select all those that are not your NTD Reporter ID.

(6) Within your service area, do you have different passenger eligibility requirements or different terms and conditions of

How many days per week do you operate?

(8) For each day of the week, what are your hours of operation, and is your service open to:

a. Only those persons found eligible for complementary paratransit under the ADA through your local eligibility process?

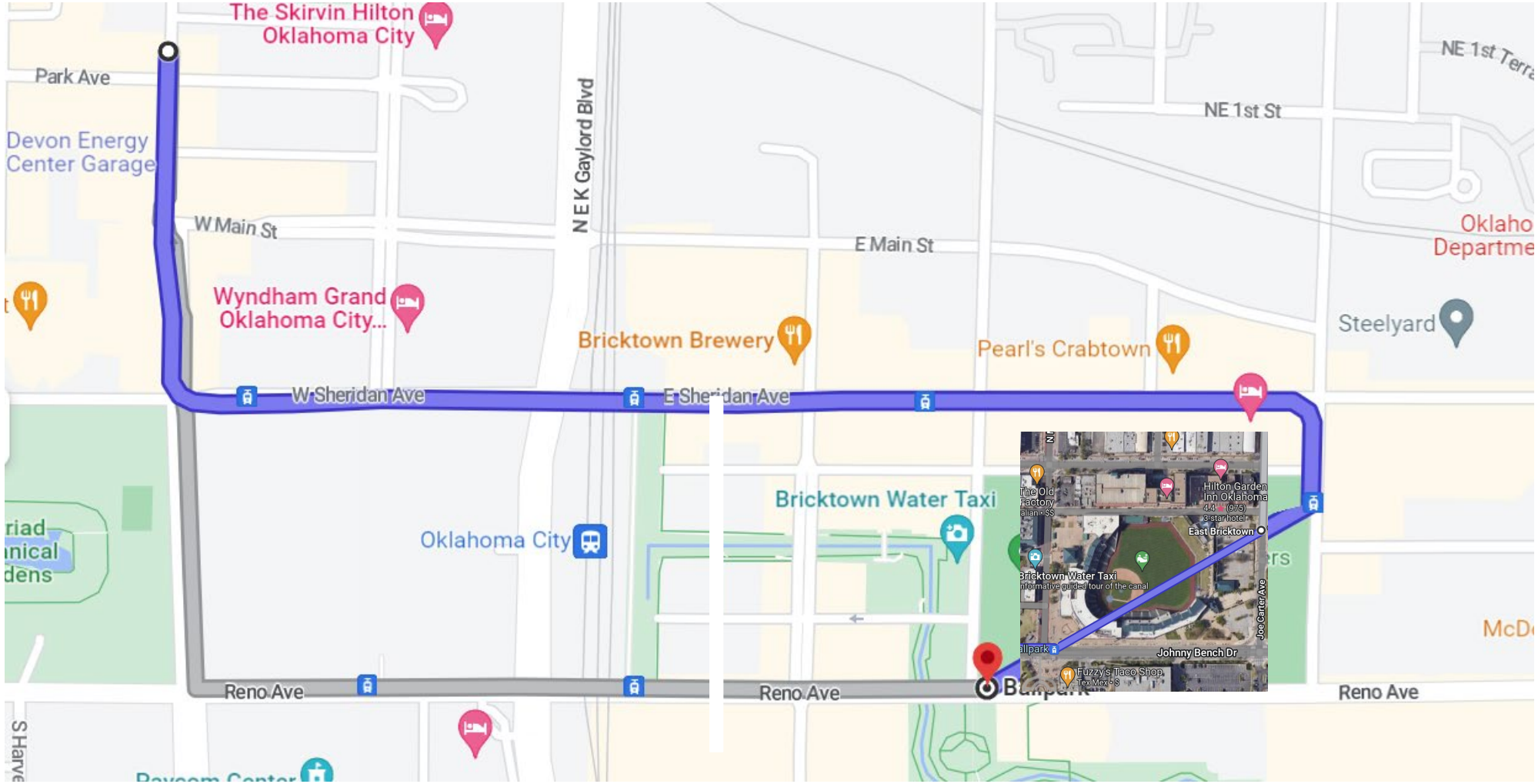
b. Another specific segment of the population defined by age or disability?

9) What is the minimum advanced reservation time for your service? Select days or hours.

(10) What is the fare charged?

Shapes

Display Trip Group Path on The Road: “Shapes”



National RTAP's GTFS Builder Support/Guidebook

https://www.nationalrtap.org/Web-Apps/GTFS-Builder/Support

14. Optional - Complete Shapes Tab - Guidebook page 35

14. Optional – Complete shapes Tab

On a map, a shape helps snap the trip to roads. Without shapes the route often displays the trip "stop to stop" with straight lines over buildings, rivers and parks. Shapes are associated with trip groups, and consist of a sequence of points on a map through which a vehicle passes in a unique stop order. Establishing and entering shape data into the **shapes** tab is optional and may be time consuming. However, shapes are required elements and must be established if continuous pick-up and drop-off are allowed on a trip group or route. Similar to establishing bus stop locations, Google MyMaps and Google Earth are used to detail the trip's shape. The shape data also assures that all the stops on that trip are in the correct stop order. Agencies can use other mapping software if available. Some prior experience with Google Maps "MyMaps" products may be helpful.

A shapes "line" is generated in .kml. The kml data is entered in the ImportExport file in the **shapes** tab as a list of points (latitude and longitude) which define the path of a trip.

Shapes points along a trip do not need to intersect the location of stops exactly, but all stops on a trip should lie within a short distance of the shape for that trip. GTFS Builder checks the distance between the stops and the trip shape, and provides an alert if the stop is located over 30 meters (approximately 100 feet) from the trip shape. It is recommended a shape_point be located ahead of the stop within 30 meters. Instructions on how to test the proximity of stops to trip shapes, and make corrections, are described below.

To observe and follow the steps of creating a new shape, refer to the *Creating Trip Group Shapes and Complete the Shapes Tab in the ImportExport File* video.

14.1. Instructions

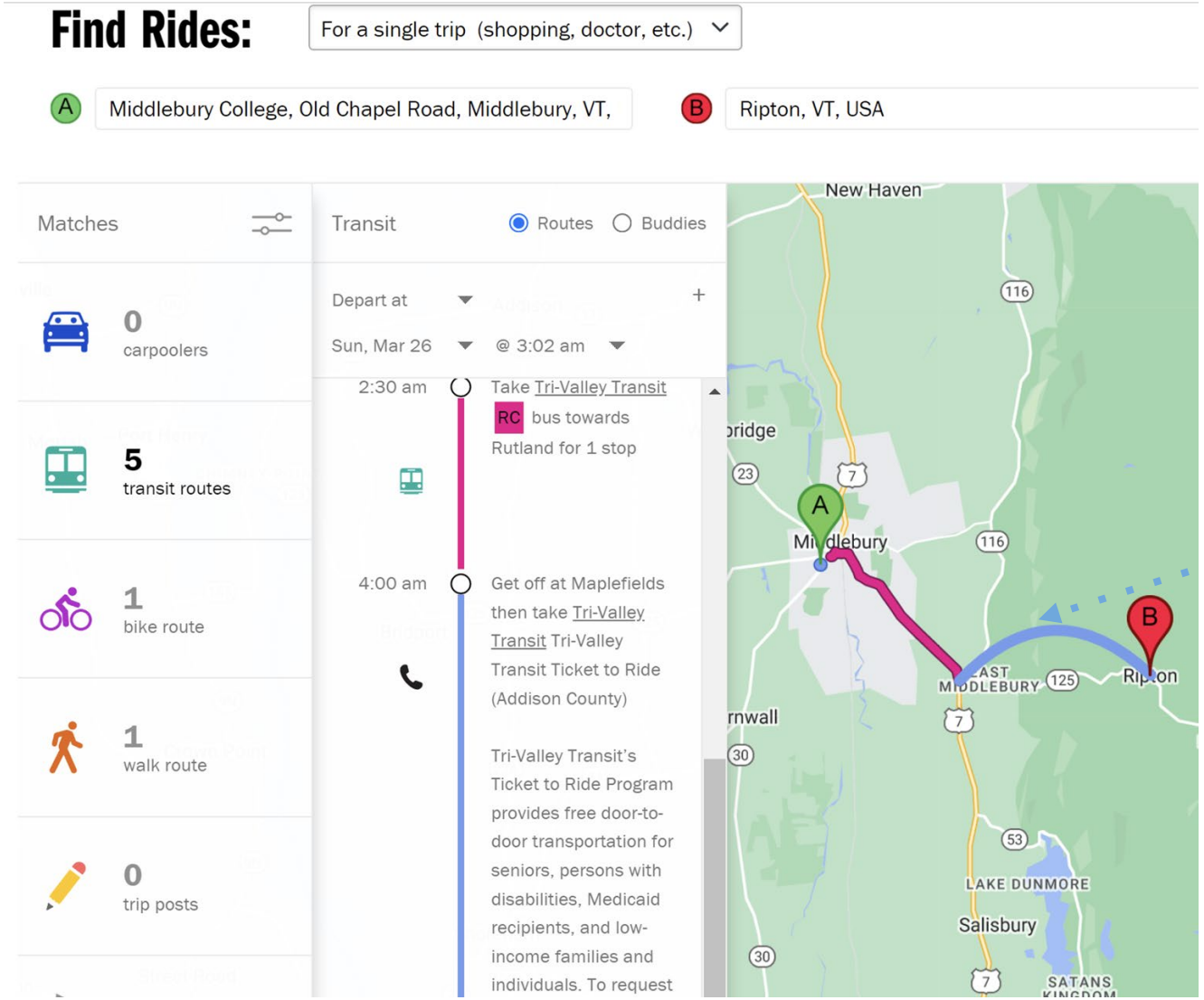
1. Open the ImportExport file and **shapes** tab.
2. Go to mymaps.google.com
    a. Select the map used to establish the bus stop coordinates in *Section 6 Identify Bus Stop Locations.*

Shapes: Overview with How-to Video: Creating Trip Group Shapes

1. Sketch Route in MyMaps
2. Output KML > Drop in Google Earth
3. Copy Globe > Paste to ImportExport Blank Row Shapes Tab with shape_id
4. Name Shape_id, Add shape_id to Schedule Generator for the Trip Group
5. Select Trip tab, Double Click Trip and view/edit in Google Earth
6. Edit Google Earth where > 50 meters
7 Copy Globe > Paste to ImportExport Blank Row Shapes Tab with shape id

Flex-On-Demand Workaround

Regional or State Trip Planners May Publish GTFS-Flex



Vermont State-funded trip planner

https://www.connectingcommuters.org/travel-apps/trip-planner/

"Call for" Tri-Valley Transit Ticket to Ride (flex) connector 48 hours ahead if you are senior, Medicaid, low-income, etc

National RTAP's GTFS Builder Support/Guidebook

https://www.nationalrtap.org/Web-Apps/GTFS-Builder/Support

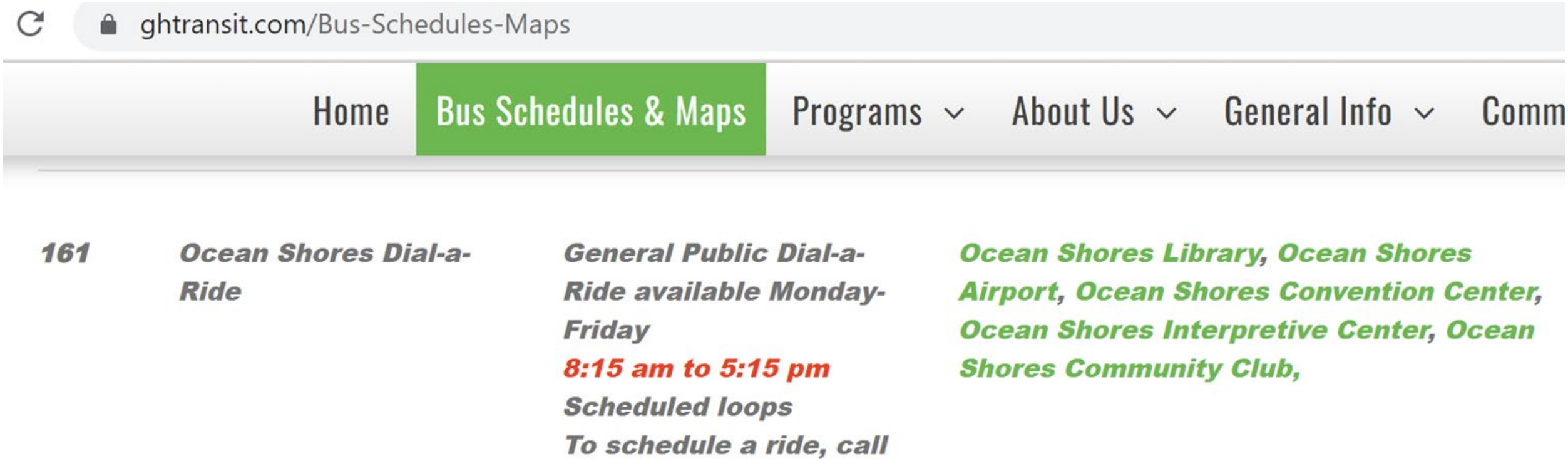
15. GTFS Flex Workaround - Guidebook page 39

15. GTFS Flex Workaround

Until Google and other trip planners allow flexible on-demand services to be published with the forthcoming GTFS-Flex specifications, GTFS Builders offers an easy workaround to ensure these services are seen on trip planners. The following details how to build a "flex workaround" solution within the current constraints of "fixed and timed" schedules required by Google and other trip planners. Additional support and a demonstration of the explanations provided in this section are available in the *Demand Response Services* **video.**

1. Create a simple "workaround route" on the agency website. The route can consist of a few stops (4 to 8 stops) and include as few as one trip per day or even one trip per week. The "workaround route" must be shown on the agency website and it must indicate on the website that riders are not required to call-in to travel using the "workaround route." As described above in *Section 8.3 Generate a Schedule for Agency Website*, a simple schedule can be created using the **Schedule Generator** file and copied onto the agency website.

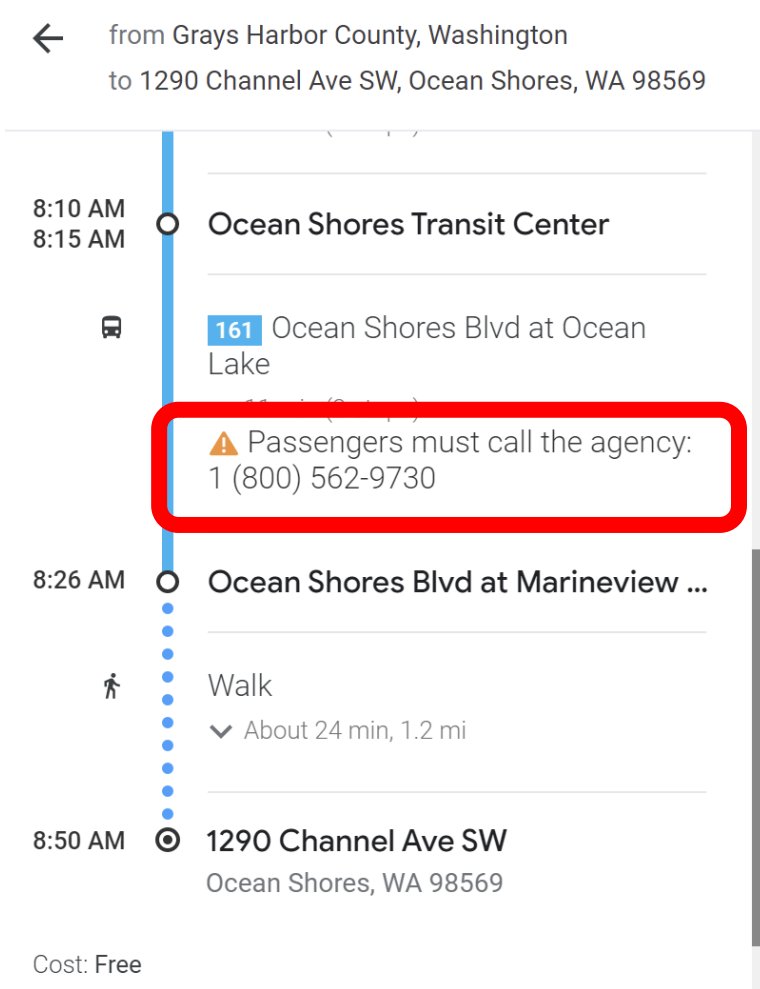
Ocean Shores, Washington - Dial-A-Ride “161”

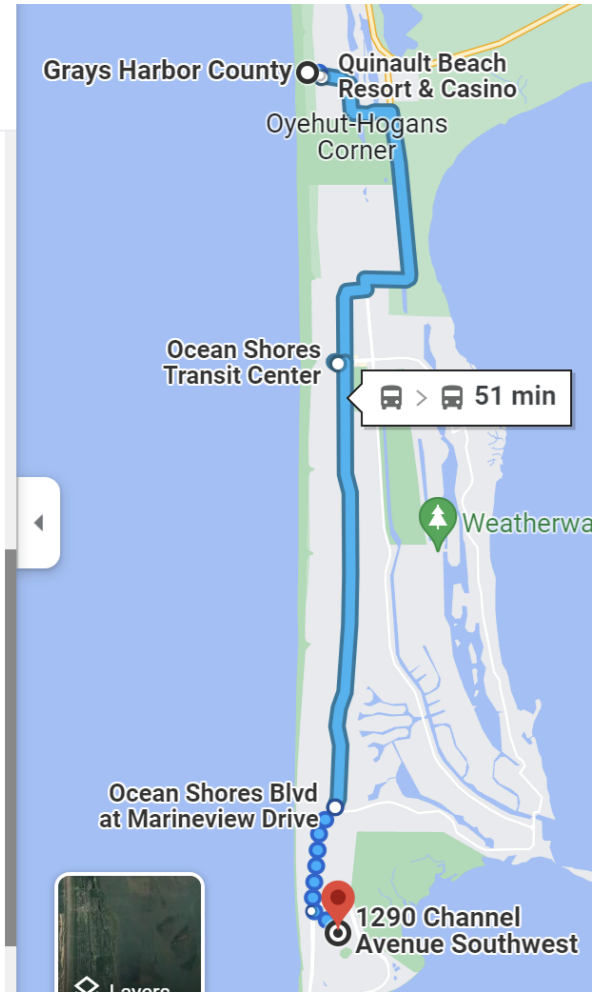


Ocean Shores, Washington

Route 161 - General Purpose Dial-a ride

⚠ Passengers must call the agency



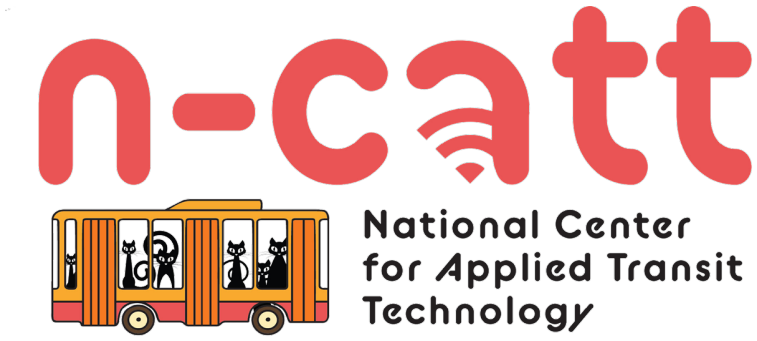


Flex On-Demand Workaround: When Publishing with Google

1. Create “stand-in” route
    a. Anyone can ride (not for veterans, or only seniors)
    b. Choose popular places
    c. Add non-timepoints
2. Publish this route’s “Timetable” on your website
3. Launch
4. Once Launched add “Rider Must Call for Pick-up” or “2” in pick_up/drop-off_type

NATIONAL CENTER FOR APPLIED TRANSIT TECHNOLOGY

The Rest of GTFS: Keeping the Magic Alive



PAIN POINTS

Governance:

- Conventions
- Cascading changes
- Terms/Conditions

Institutional Knowledge:

- Appropriate Staff
- Staff turnover
- Keeping track of information

Time/Inertia

SOLUTIONS

Agencies

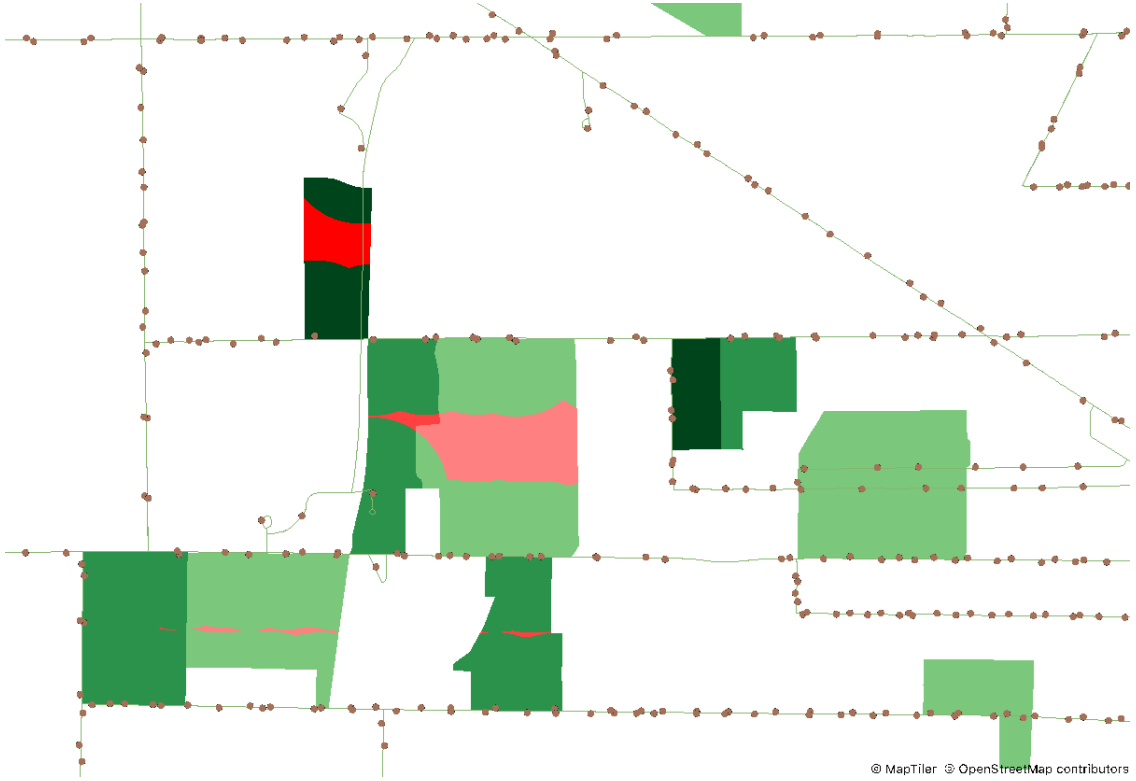
- Incorporate GTFS maintenance as part of internal job description
- Train multiple staff on the standard

Agency/National Organizations

- Establish naming conventions for consistency
- More workshops – "buildathons"

USING GTFS FOR SERVICE PLANNING

- GTFS helps you visualize routes
- You can use this to identify:
  - Transit supportive areas
  - High-need/underserved areas
  - Connections with other systems
- Learn with GIS Course: https://ncatt.thinkific.com/courses/N-CATT-Intro-to-GIS



Transit Analysis by Census Block

WHY YOU CARE

- After this initial push, you want that work to last
- Lacking a plan increases risk the next update is another huge effort
  - If you lose staff, you want to be able to pick up where they leave off
- Outside IT vendors don't understand operations and can therefore leave information gaps
- You can use the information you generate for deeper understanding/planning for your system

Questions?
Published? Success!
Problems?
Please Share with
National RTAP

Upcoming and Recent National RTAP Events

UPCOMING:

GTFS Builder Weekly Office Hours

Thurs. 1-1:30 PM ET

Succession Planning 101

May 9, 2023, 2:00-3:00 PM ET

Mobility Management and Veterans Transportation to Healthcare Webinar 2

TBD - follow eNews or our Calendar

Rural Transit Day is July 16!



RECENT:

Risky Business Webinars: Insurance for Nonprofits and Small Transit Agencies

Six-Part Marketing Workshop Series

Resource Share: Learn about TACL

Technical Assistance Coordination Library

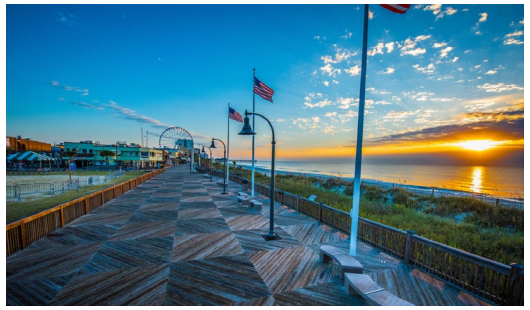
Microtransit vs. Micromobility

To register or to access recordings, slides, or summaries, go to:

nationalrtap.org/Training/Peer-Roundtables-and-Chats and nationalrtap.org/Webinars.

5th National RTAP Conference
Navigating the Tides of Change with Rural & Tribal Transit

December 3 -6, 2023





Marriott Myrtle Beach Resort & Spa

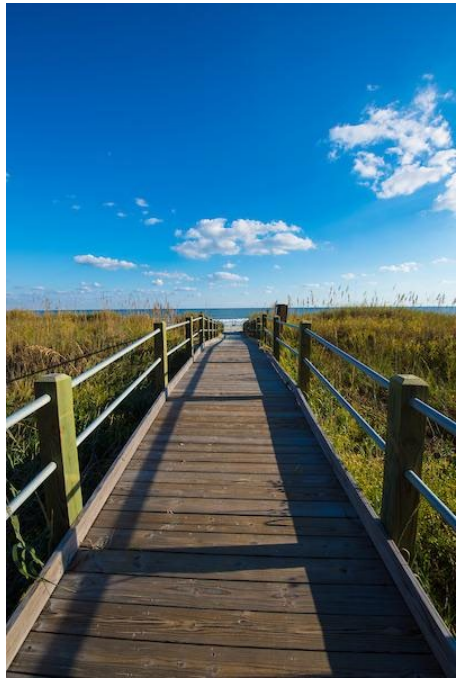
Night out at Brookgreen Gardens

NationalRtap.org/News/Conference/2023 -Myrtle -Beach

Call for presentations and **hotel booking link** are live!

Conference schedule and registration coming soon

Join us for training, networking & peer information sharing



Reach Out

National Rural Transit Assistance Program
nationalrtap.org
info@nationalrtap.org
Find us on Facebook, Twitter, YouTube, LinkedIn & Instagram
888-589-6821

Nancy Doherty
National RTAP
ndoherty@nationalrtap.org
781-404-5038

Marcy Jaffe
GTFS Builder Tech Support
marcy@mjcation.com
360-643-1002

Andrew Carpenter
Director
carpenter@ctaa.org

National RTAP
Rural Transit Assistance Program

n-catt
National Center for Applied Transit Technology

Thank You!

National RTAP
Rural Transit Assistance Program

National Rural Transit Assistance Program

888-589-6821 | nationalrtap.org | info@nationalrtap.org

Find us on Facebook, Twitter, YouTube, LinkedIn & Instagram

FTA
U.S. Department of Transportation
Federal Transit Administration