

GTFS: Three Steps to Trip Planning

October 2, 2024 October 9, 2024 October 16, 2024

National RTAP
Rural Transit Assistance Program

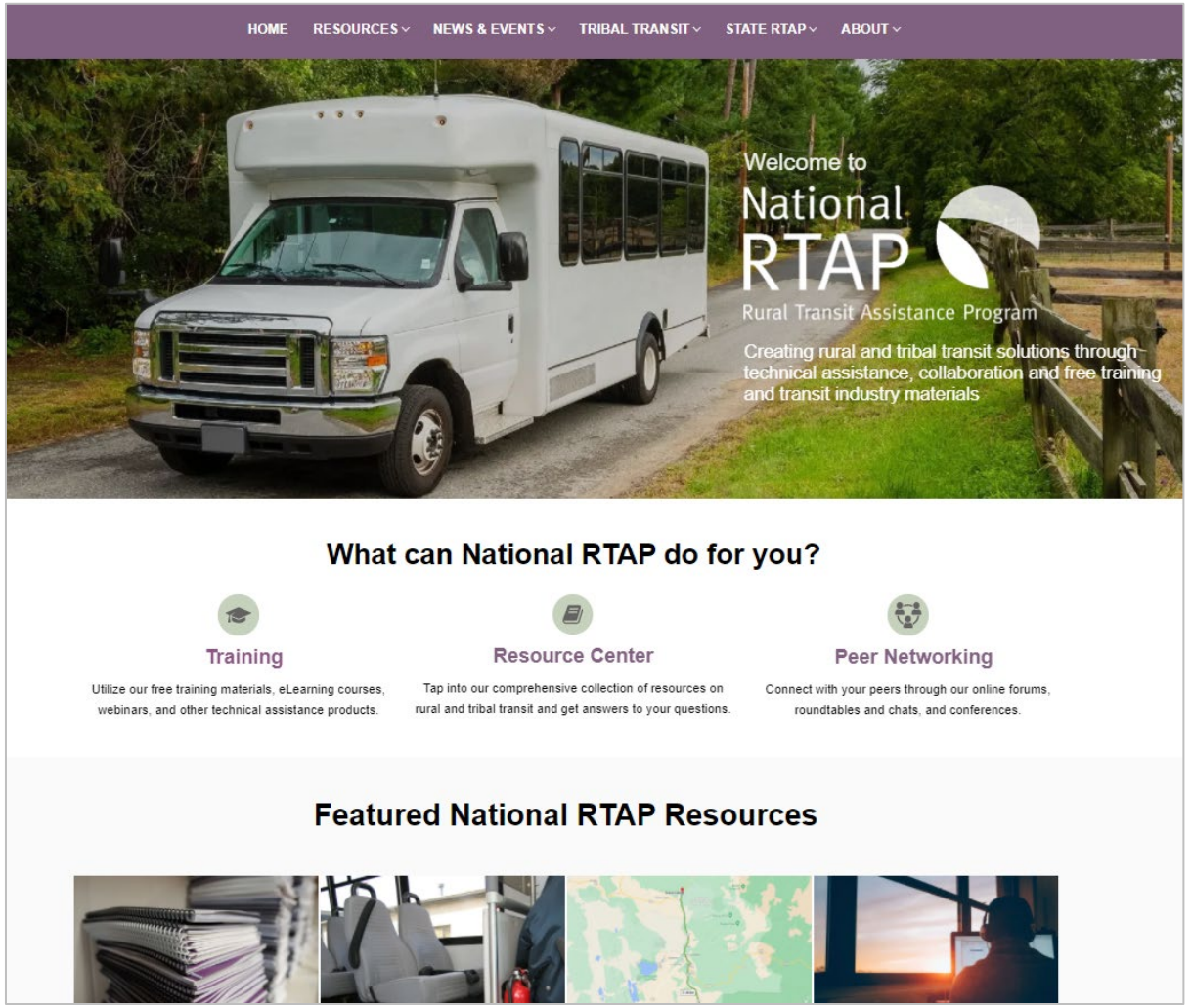
FTA
U.S. Department of Transportation
Federal Transit Administration

National Rural Transit Assistance Program

- Technical assistance center funded by FTA through Section 5311
- No-cost training and technical assistance resources and services

Vision: Safe, compliant, efficient and effective rural and tribal transit that reflects community needs and values.

- Guided by a 14-member Review Board
- Learn more at nationalrtap.org



National RTAP Resources and Services

Training

Manuals, videos, PPTs, eLearning, webinars

Information

Technical briefs, toolkits, eNews, research

Technology Tools

For procurement, GTFS, websites, cost allocation

Peer Networking

Conferences, roundtables, online forums

Assistance

Reference services – bring us your questions!

Questions?

Please use the chat for questions.

Join weekly zoom, Thursdays at 1pm EST no registration needed

This training is recorded and will be available by Friday at the National RTAP website

Speaker Introductions



Marcy Jaffe
GTFS Consultant
Transnnovation, Inc.

Roadmap

Week 1, Oct 2

Why GTFS?

Required Tools/Set-up

Data Entry

How to Map Stops

Week 2, Oct 9

Routes vs. Trip Groups

Schedules

Generate a GTFS

NTD Weblink

Week 3, Oct 16

Validation

Deeper Dive: NTD

Shapes (optional)

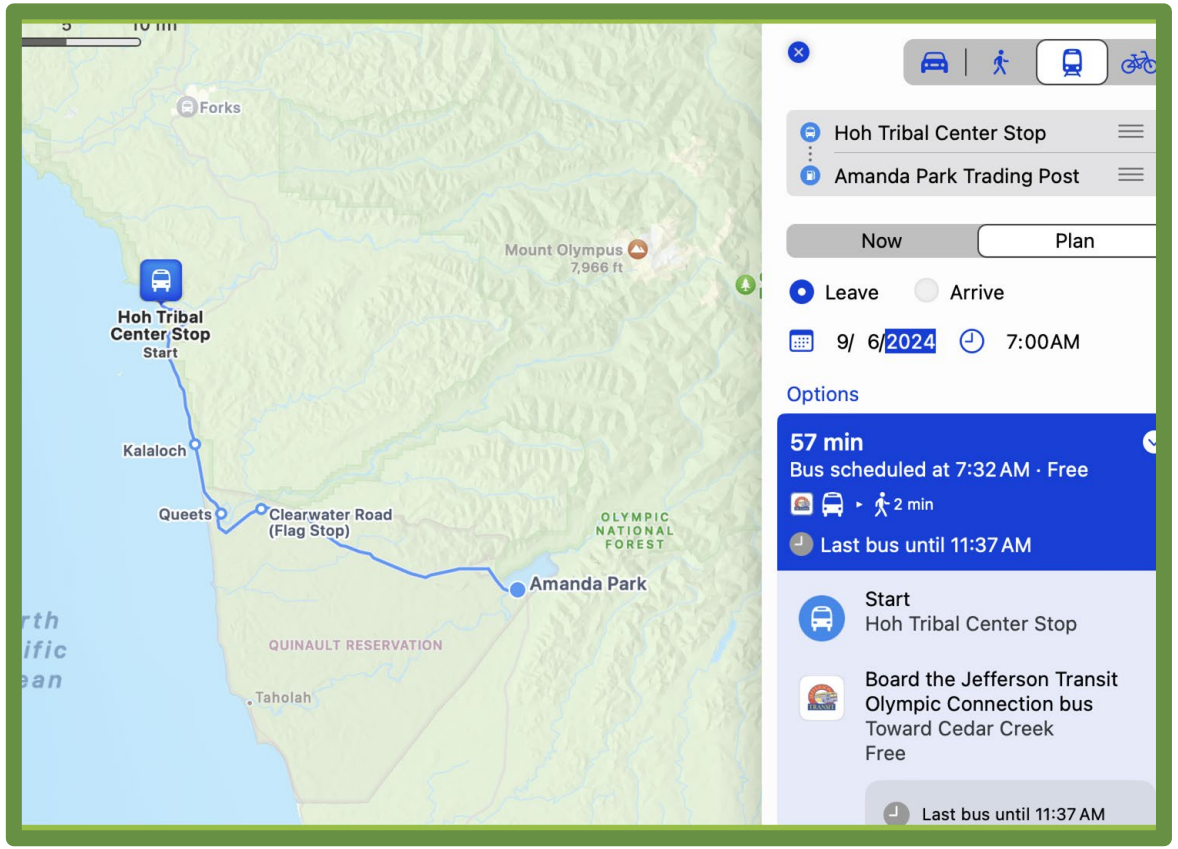
Fares (optional)

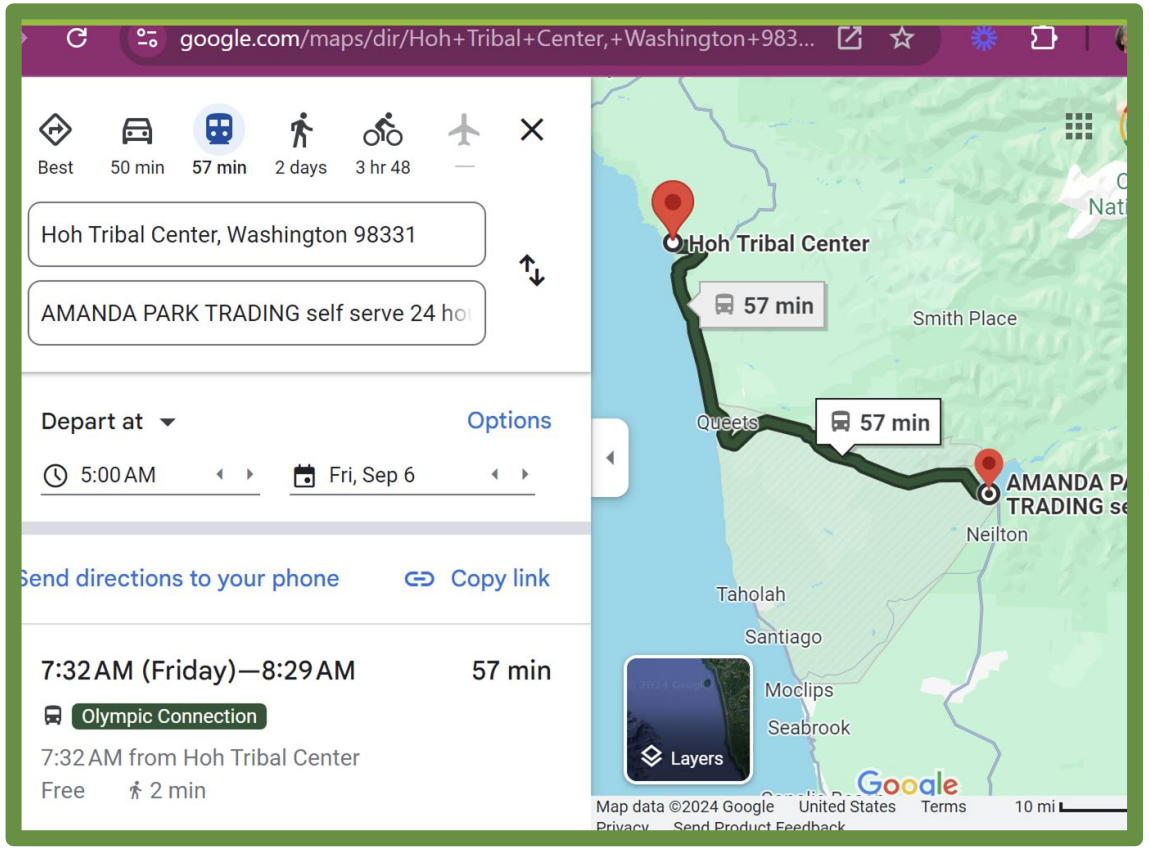
On-Demand workaround

Why GTFS?

To Meet NTD Reporting Requirement (P -50) for
All Fixed and Deviated Fixed Routes
&
Riders Can Plan Trips Online

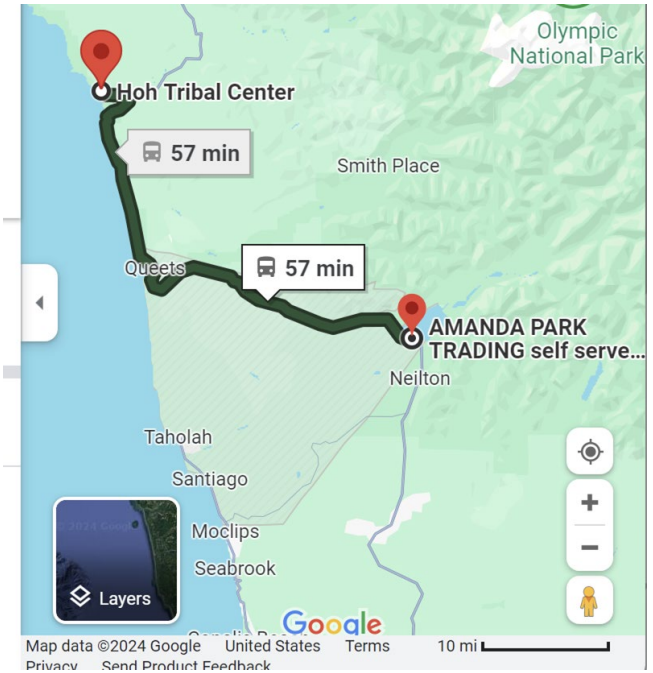
Standardized GTFS Data - Apple (left) or Google (right) Maps

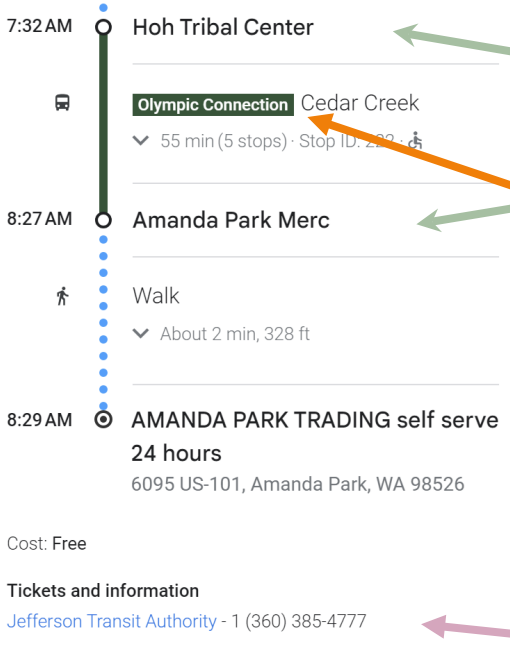




Online, Digitized Trip Plan

Live link to:
https://maps.app.goo.gl/Uy1GhdAkzsVUFYHQ9





stops

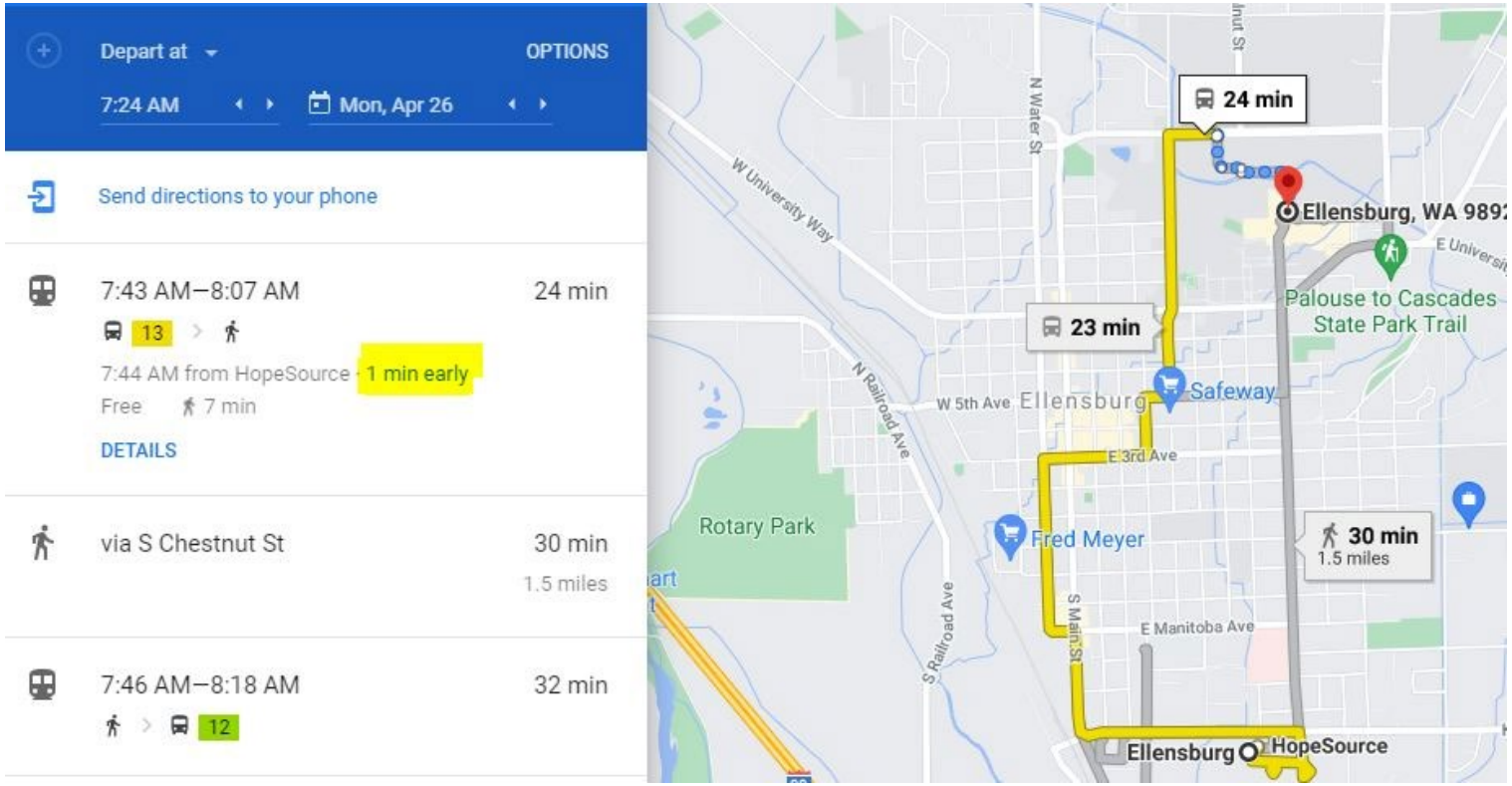
route (name, #, color)

agency (name, URL, phone)

GTFS: Static (NTD) and Dynamic

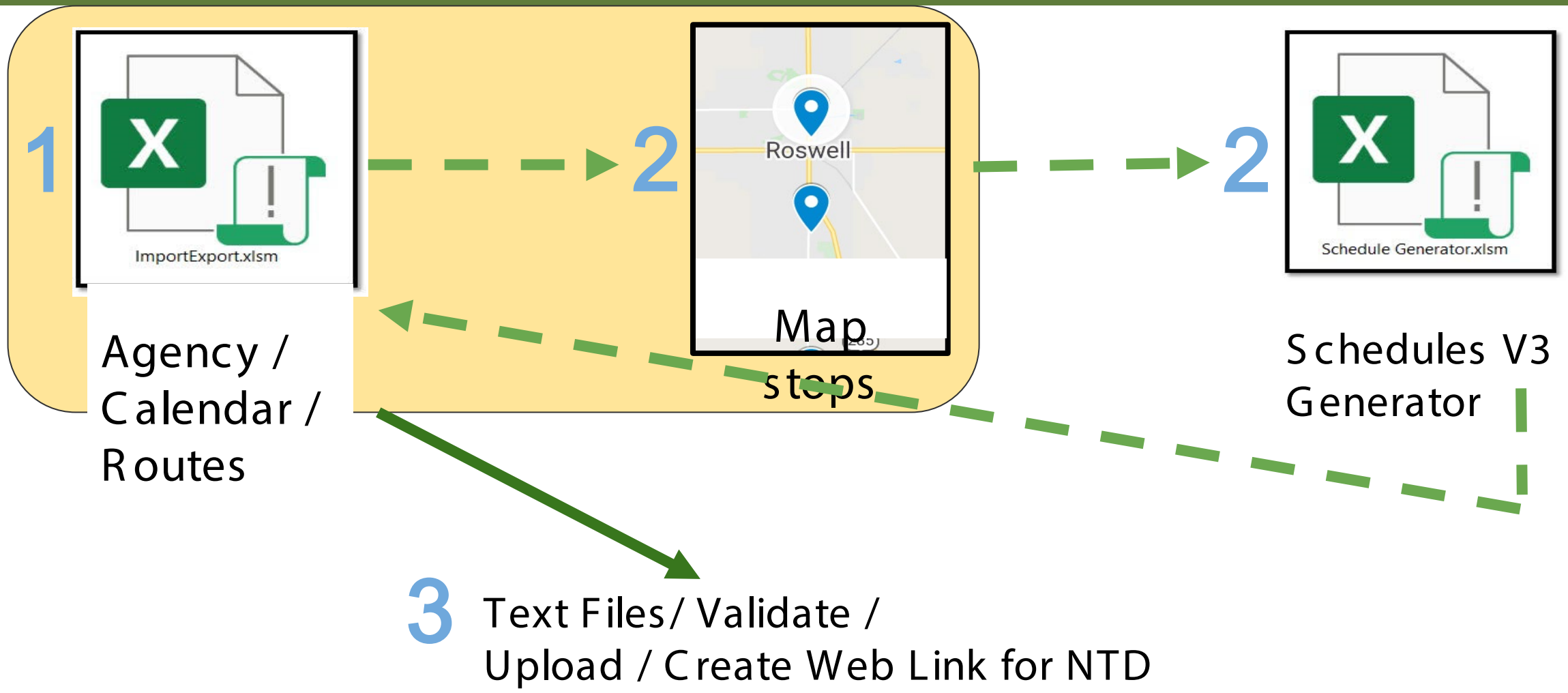
Static/Schedule

Real-time (requires on-board AVL)



Flex - *published in state or regional Open Trip Planners or Transit App*

Filling-in Excel



What Does Trip Planning Data Look Like?

routes tab

route_id	agency_id	route_short_name	route_long_name	route_desc	route_type	route_url
JTOC	jta		Olympic Connection		3	https://jeffersontransit.com/olympic-connection-reduced-service-schedule-fall-2020/

stops tab

stop_id	stop_code	stop_name	stop_desc	stop_lat	stop_lon
222	222	Hoh Tribal Center		47.745200	-124.422517
224	224	Cedar Creek		47.727141	-124.386552
230	230	Cedar Creek		47.726919	-124.386419

Routes may have Trip Groups (or Pattern variations)

Routes - A single route may have one or more trip groups

- Route A - Trip Group AM/PM
- Route A - Trip Group Mid Day
- Route A - Trip Group Sat

Trip Groups - Consists of and are unique based on

- a route
- service days
- consecutive bus stops
- travel direction (inbound/outbound/loop)
- route alignment/shape (optional)

Trip Groups - For Days of the Week

Trip_group	route_id	service_id	direction_id	trip_headsign	stop_id	stop_name	time point	wheelchair_accessible	bikes_allowed	T01
jtoc_weekday2AmandaPark								1	1	
	JTOC	mtwtf	0	Quinault	222	Hoh Tribal Center	1			7:32
	JTOC	mtwtf	0		224	Cedar Creek	1			7:38
	JTOC	mtwtf	0		225	Kalaloch	1			7:56
	JTOC	mtwtf	0		226	Queets	1			8:02
	JTOC	mtwtf	0		229	Clearwater Road (Flag stop	0			*
	JTOC	mtwtf	0		228	Amanda Park	1			8:27
Leave a blank row between trip groups										
jtoc_Sat2AmandaPark								1	1	
	JTOC	sat	0	Quinault	222	Hoh Tribal Center	1			7:52
	JTOC	sat	0		224	Cedar Creek	1			7:58
	JTOC	sat	0		225	Kalaloch	1			8:16
	JTOC	sat	0		226	Queets	1			8:22
	JTOC	sat	0		229	Clearwater Road (Flag stop	0			*
	JTOC	sat	0		228	Amanda Park	1			8:47

Trip Groups - Omits Last Stops - No Variation

Trip_group	route_id	service_id	direction_id	trip_headsign	stop_id	stop_name	wheelchair_accessible	bikes_allowed	T01	T02
jtoc_weekday2AmandaPark							1	1		
	JTOC	mtwtf	0	Quinault	222	Hoh Tribal Center			7:32	11:37
	JTOC	mtwtf	0		224	Cedar Creek			7:38	11:43
	JTOC	mtwtf	0		225	Kalaloch			7:56	12:01
	JTOC	mtwtf	0		226	Queets			8:02	12:07
	JTOC	mtwtf	0		229	Clearwater Road (Flag stop			*	
	JTOC	mtwtf	0		228	Amanda Park			8:27	

GTFS Builder Resources

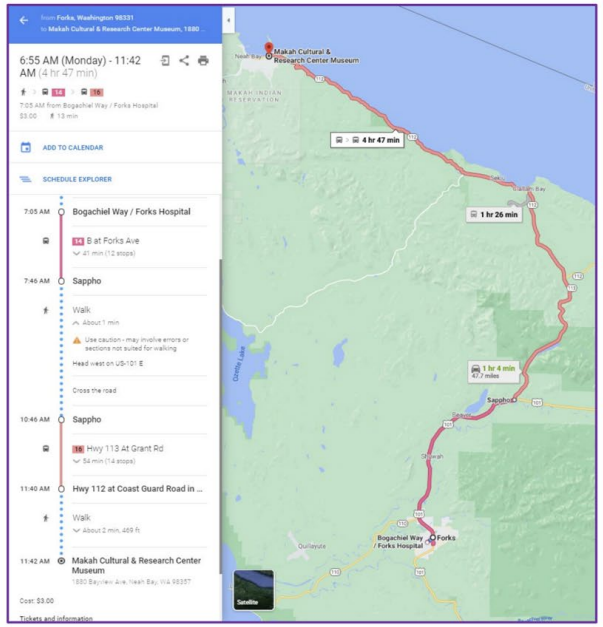
National RTAP's GTFS Builder Support/Guidebook/Videos

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

GTFS Builder "How-to" Resources

GTFS Builder Guidebook	The GTFS Builder Guidebook provides a simple step by step instructions for entering data into each tab of the ImportExport file and describes how to use the corresponding Schedule Generator file. The Guidebook includes a checklist which may help to estimate the time to complete each step and track progress.
Tutorial Videos	
What is GTFS and Should My Agency Proceed?	This first video provides an introduction to GTFS and what GTFS looks like on a published trip plan. It also discusses resources needed to develop GTFS, including software and time, and presents options for developing GTFS files.
Trip Planner Licensing Agreements	Understanding trip plan data licensing agreements and what, if any, are the risks. An attorney translates a sample agreement from legalese into English in this video.
An Introduction to GTFS Builder (Download and Setup)	This video offers an introduction to National RTAP's GTFS Builder tool and describes how is it used to develop GTFS data. The video reviews how the application is downloaded from National RTAP's website and how to set up a folder/workspace on a desktop appropriate for GTFS. Other topics include enabling GTFS Builder macros, common GTFS terminology and where to find comprehensive GTFS resources. The video expands on information provided in Section 1 of the GTFS Builder Guidebook.
Agency, Calendar, Calendar_dates, Routes, Fare and Transfer Tabs in the ImportExport File	This video demonstrates how data is entered into each of these tabs. The video supports Sections 2, 3, 4, 5 and 13 of the GTFS Builder Guidebook.

National RTAP's GTFS Builder Support/Guidebook



GTFS BUILDER

GTFS BUILDER GUIDEBOOK

May 2024

2. Complete the agency Tab in the ImportExport File

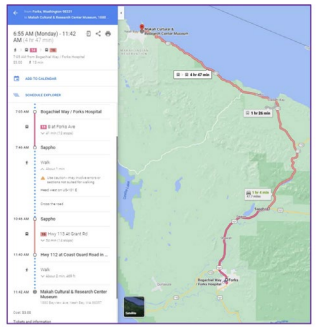
Using the example data and explanatory information in Table 2.1 enter data in the **agency** tab. Figure 2.1 depicts how the public facing data is depicted on a trip plan. Additional support and a demonstration of the explanations provided in this section are available in this **video**.

Table 2.1 agency Tab

Field	**agency_id**	**agency_name**	**agency_url**	**agency_timezone**
Sample Data	CTS	Clallam Transit System	https://www.clallamtransit.com	America/Los_Angeles
				America/Phoenix
Public Facing	No	Yes	Yes	Yes
Required/Optional	**Required**	**Required**	**Required**	**Required**
Format	Text	Text	URL	Time zone
Notes	Any name, abbreviation or number is acceptable.	Agency name is identical to what is published at the agency_url.	This is the URL of the agency's public website. It allows riders to link back to the agency website for additional information. If an agency does not have a website, visit **Website Builder 3.0** for information on a no-cost Website Builder tool.	For a list of time zones, refer to: **https://en.wikipedia.org/wiki/List_of_tz_database_time_zones** In this website, and in the table called List, use the TZ database name shown in the third column. Timezones (TZ), in this specification are not "Pacific" or "Mountain" or "Central".

This table continues on the next page.

GTFS Builder Guidebook: Checklist



GTFS BUILDER GUIDEBOOK

May 2024

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.			
Configure project folder for macros	1	10 min.			
Complete the ImportExport tabs: agency, calendar, calendar dates and routes	2,3,4,5	60 min.			
Determine if agency bus stop coordinates are available from other organizations. If so, obtain them.	6	30 min.			
If not, identify bus stop coordinates from MyMaps and/or Google Earth.	6	60 min.			
Enter bus stop coordinates from MyMaps or Google Earth or file into the ImportExport stop tab.	7	20 min.			
Complete the Schedule Generator file Schedules_V3 tab by entering timetable/schedule, stop by stop.	8	30 min. (per route)			
Complete the ImportExport tab: feed_info.	10	5 min.			
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.			

Set-up GTFS Builder Workspace

What You Need



image courtesy: wikipedia

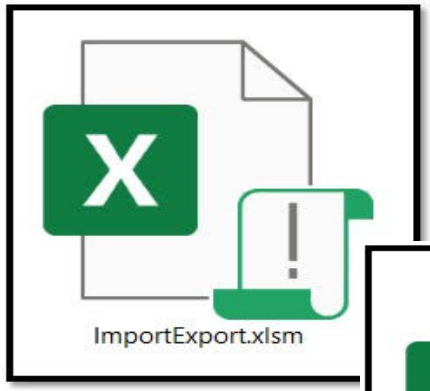
Google Earth Pro
Desktop Version
https://www.google.com/earth/

Google My Maps

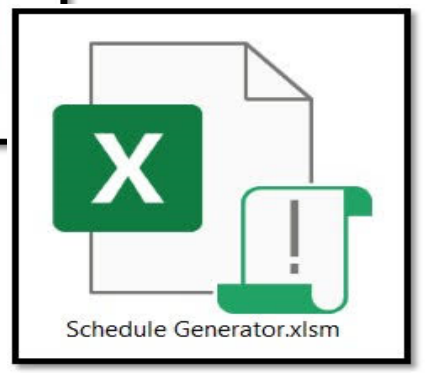
https://www.google.com/maps/d/

GTFS Builder

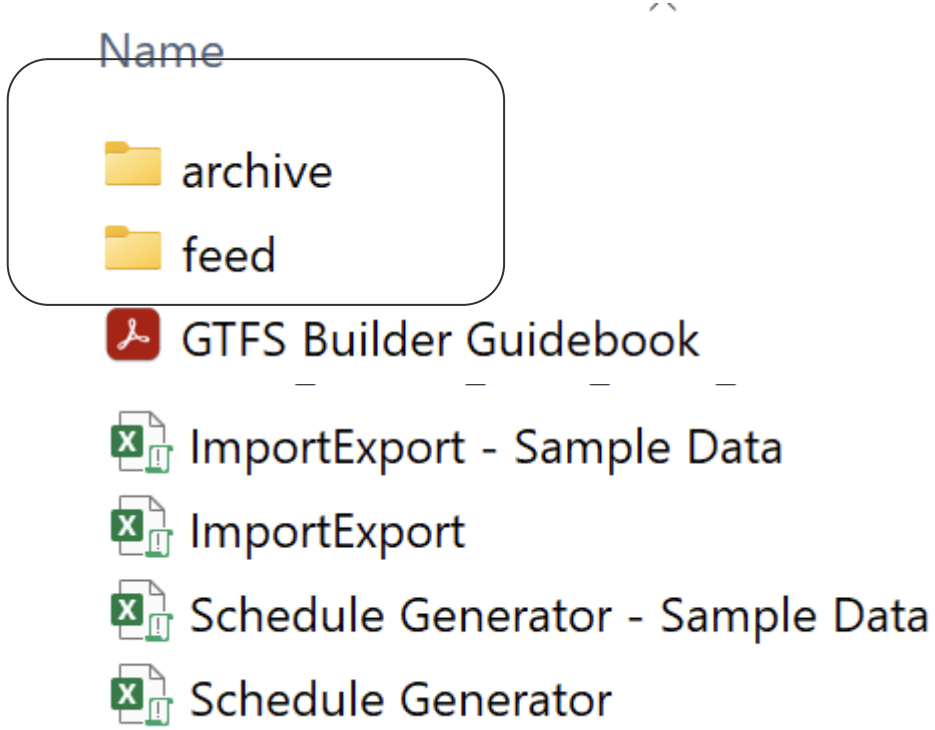
ImportExport

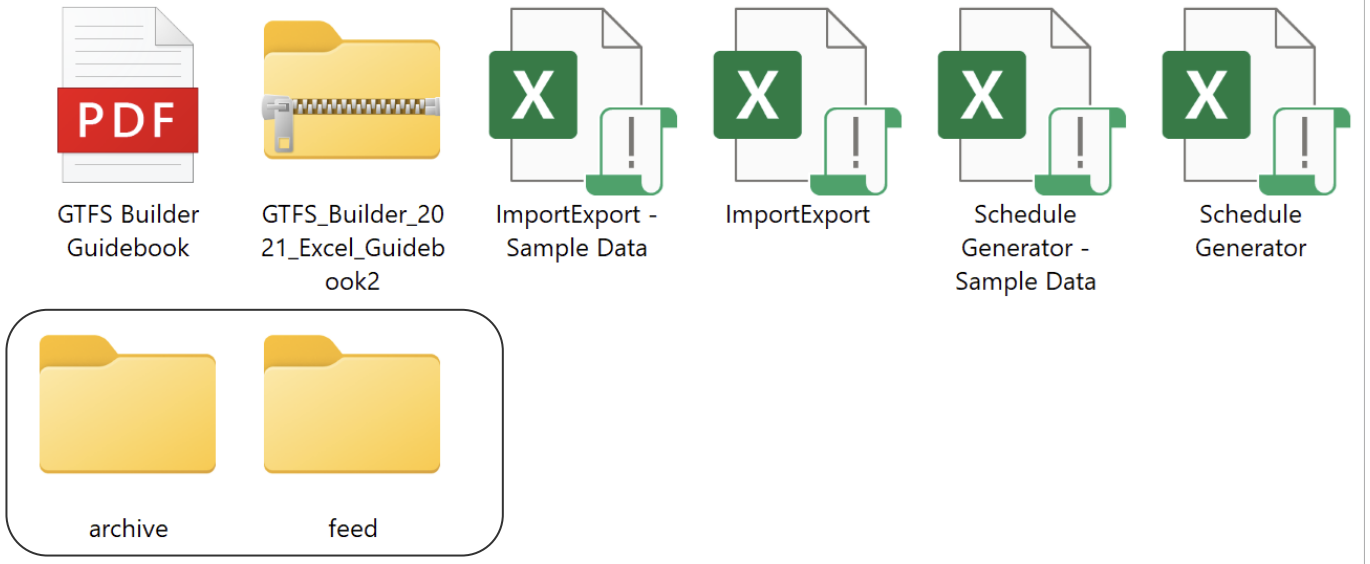


Schedule Generator

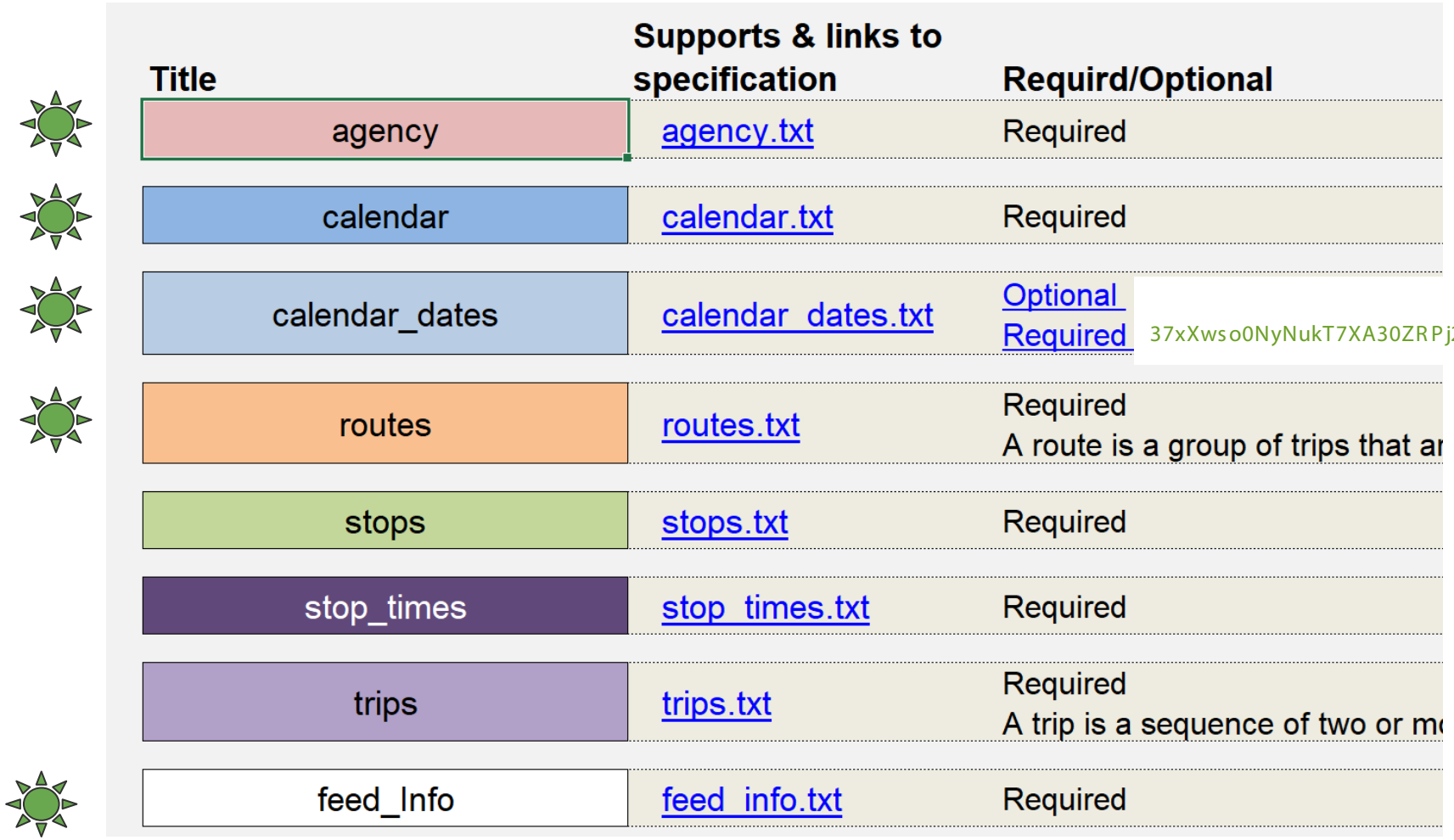


GTFS File Folder





ImportExport Notes tab: Required Tabs (for one route or trip)



Title	Supports & links to specification	Requird/Optional
agency	agency.txt	Required
calendar	calendar.txt	Required
calendar_dates	calendar_dates.txt	Optional Required
routes	routes.txt	Required A route is a group of trips that ar
stops	stops.txt	Required
stop_times	stop_times.txt	Required
trips	trips.txt	Required A trip is a sequence of two or m
feed_Info	feed_info.txt	Required

37xXwso0NyNukT7XA30ZRPj2R-i6Ns/edit?usp=sharing

My Maps or Google Earth? Geocode Bus Stops

Bus Stop Locations/Coordinates

Latitude and Longitude in Decimal Degrees, WGS84

Operations/Contractor

GIS office

Software: Paratransit, scheduling, realtime

Tribal, Regional, County, or Town Planning Office

Other?

Geocoding Bus Stops

Method I Google My Maps	Method II Google Earth Pro
Best for: • For 5 or more stops	**Best for:** 1 to 4 stops
Advantages • Coordinates stored in a Google Map • Easy to share/edit • Expedites shapes creation	**Advantages:** Quick and easy
Requires: • Google Account/Google MyMaps • Google Earth Pro	**Requires:** Google Earth Pro

MyMaps: Locate 3-5 stops

Oct 9: Schedule Generator and Validate

Prep for next Wednesday:

1. Complete ImportExport tabs: agency, calendar, calendar_dates, routes, feed_info
2. Place or view your bus stops on MyMaps &
3. Copy bus stops into the ImportExport file/stops tab (review video / our GTFS Builder support page)
4. Open your Guidebook > Update your Checklist

Questions?

TACL: The Transportation Technical Assistance Coordination Library



http://transportation -tacl.org

TACL provides access to transportation coordination resources from the Federal Transit Administration (FTA)and a diverse range of transportation technical assistance centers, including:

- National Aging & Disability Transportation Center (NADTC)
- National Center for Applied Transit Technology (N-CATT)
- National Center for Mobility Management (NCMM)
- National Rural Transit Assistance Program (National RTAP)
- Shared-Use Mobility Center (SUMC)
- Transit Workforce Center (TWC)

Learn about TACL Resources

View Recording:
nationalrtap.org/Webinars

Upcoming National RTAP Events

Mobility Wallets 101

November 5, 2024, 2:00-3:00 PM ET

Succession Planning LinkedIn Learnalong

January 7, 2025, 2:00-3:00 PM ET

Updated Marketing Toolkit Introduction

November 12, 2024, 2:00-3:00 PM ET

Books in Transit Discussion Group – The Lost Ticket

February 20, 2025, 2:00-3:00 PM ET

To register go to: nationalrtap.org/Webinars.

National RTAP
Rural Transit Assistance Program

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Woburn, MA 01801
888-589-6821
http://nationalrtap.org
info@nationalrtap.org

Creating transit solutions through technical assistance, collaboration, and free training materials

Save the Date for our 6th Technical Assistance Conference

Hyatt Regency Austin
208 Barton Springs Road
Austin, Texas
December 7-12, 2025

www.nationalrtap.org

Thank You and See You Next Week

National Rural Transit Assistance Program
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National RTAP
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FTA
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