

ROUTE GUIDANCE

PSDC's Oversize/Overweight Route Guidance Application



TABLE OF CONTENTS

Introduction	1
How Does the App Work?.....	2
Driver Workflow.....	3
Testing the App – ProMiles Permitting and Routing System.....	4
Testing the App – Non-ProMiles System	4
State Approval for Production	4
Frequently Asked Questions	5

INTRODUCTION

ProMiles Software Development Corporation (PSDC) is committed to the safe travel of Oversize/Overweight (OS/OW) loads. PSDC feels complex routes created by modern Permitting and Routing Systems may be difficult to follow. This difficulty may lead to vehicles going off route at times with tragic results. PSDC's OS/OW Route Guidance application (app) is designed to help truck drivers follow complicated routes, utilizing a hands-free tool specifically designed to enhance the expertise of the driver, making safe transportation of OS/OW loads a reality rather than a hope.

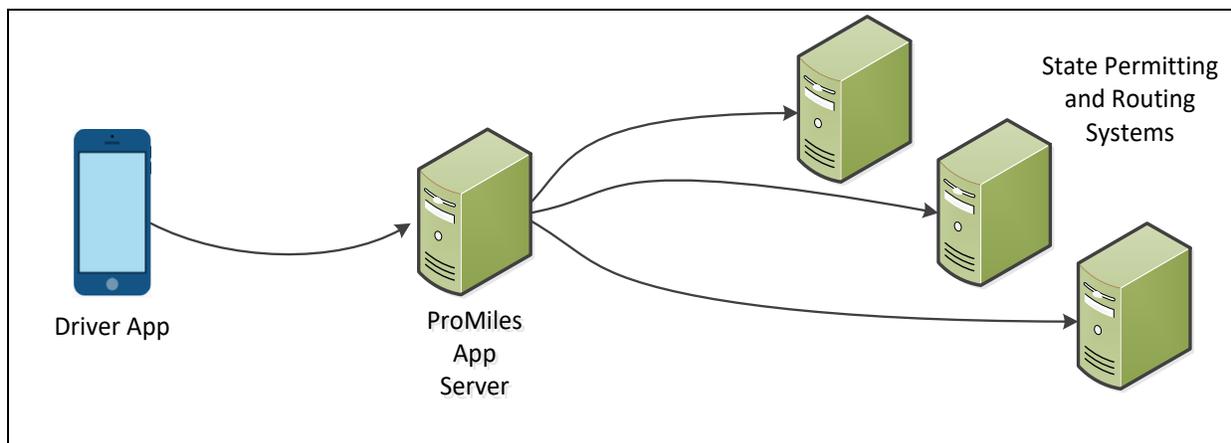
The FHWA in its 2018 report "U.S. Department of Transportation – Best Practices in Permitting Oversize and Overweight Vehicles" <https://ops.fhwa.dot.gov/publications/fhwahop17061/fhwahop17061.pdf> concluded "The lightning speed at which technology develops is creating new opportunities for the industry. Moving forward, specialized transportation will reap the benefits of accurate global positioning system (GPS) data, geo-fencing, and software integration strategies. Similarly, as the technology expands, the cost of using these applications should decrease. This will provide State and local authorities with a broader list of options to serve carriers". PSDC feels that its Route Guidance app is a very significant step in the direction recommended by the FHWA in this report.

PSDC spent approximately two years reaching out to the trucking/mobile communication industries to see if they would implement OS/OW route guidance for the mobile communication device already in the truck; however, none of these providers were able to work with route guidance. They all needed to route the permit based on via points and this would not work with OS/OW route guidance. Because of this, PSDC has implemented the Permit Route Guidance app.

In keeping with PSDC's commitment to safety, PSDC is providing this service/app to the trucking industry at no cost indefinitely. This service is available for states that use PSDC's Permitting and Routing Systems, as well as for states that use other vendors to create their own permitting system.

HOW DOES THE APP WORK?

When the OS/OW Permitting and Routing System creates a route for a permit, it obtains a list of road segments that describe the route. Each of these road segments consist of two or more lat/lon points. The Permitting and Routing System uses this information to draw the route line on the map. This information is called a breadcrumb trail for the route. This trail describes the roads the vehicle is traveling on at a high level of precision. This breadcrumb trail and the associated maneuver directions are utilized to create the data for the Permit Route Guidance app. When the route is created and the permit is issued, the Permitting and Routing System will save the route information needed for the app. When a driver selects a route to follow, the app will reach out to a ProMiles App server to obtain the information for the permit. The ProMiles App server will then connect to the State Permitting and Routing System to find the route guidance information. If the route information is available in the State Permitting and Routing System, it will be sent back to the ProMiles App server. This server will configure the data as is needed for the app and then send the information to the app. See diagram:

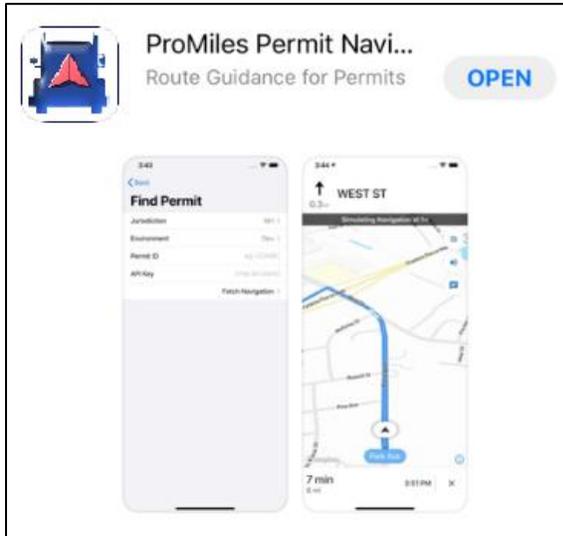


The app will obtain the current lat/lon coordinate of the device and truck, and if within the threshold of on the route, the app will enter Route Guidance mode. In this mode, the app will display the trip line, the vehicle, location, and the next maneuver. The app will speak the next maneuver as the driver approaches the maneuver.

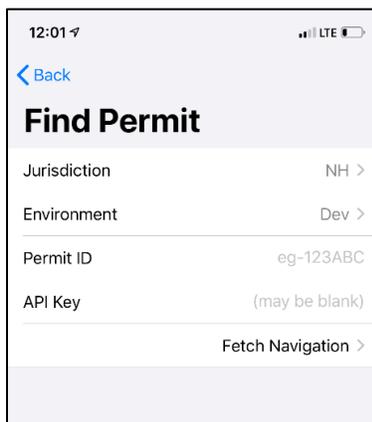
If the driver gets off route, the app will shut down Route Guidance mode and will display a message configured by the Permit Office asking the driver to contact the Permit Office to return to the route.

DRIVER WORKFLOW

In order for a driver to utilize the app they will need to download it from either the Apple or Google app store. The driver will search for ProMiles Permit Route Guidance. The app appears in the store as follows:



The user will then download and open the app. To follow a route, users can either scan the QR code on their Permit or enter the Permit Number. If the user chooses to enter the Permit Number, they will be required to select the jurisdiction and environment before entering the Permit Number.



The State can require that the user enter an API Key.

Note: The API Key is only applicable during testing.

Once your state is using this app in Production, drivers will only have to enter the Permit Number. After the user enters the information, they will click the Fetch Navigation link. The app will go off and retrieve the navigation information if it is available.

The driver must be on the permit route in order for the navigation to start working. The app will provide route guidance to the destination.

TESTING THE APP – PROMILES PERMITTING AND ROUTING SYSTEM

If you would like to start testing the Permit Route Guidance app for your state, please contact your PSDC Project Lead. You and the Project Lead will identify the following information:

- Which environment you wish to use for testing
- What API key or other code to use to limit access to the routes while testing
- Message to display once the device is off route
- Disclaimer

After the system has been configured, your state and the environment will be added to the ProMiles app server and you will be able to download the app and start testing. If an API key has been set up for testing, the Permit Office will need to provide that key to any State staff or beta testers the Permit Office would like to use for testing.

TESTING THE APP – NON-PROMILES SYSTEM

Please contact Dan Wells (dan@promiles.com) for information with setting up Permit Route Guidance for your Non-ProMiles State Permitting and Routing System.

STATE APPROVAL FOR PRODUCTION

After testing the app, the Permit Office must notify PSDC in writing that they are ready for the app to be made available to the public.

FREQUENTLY ASKED QUESTIONS

- Q. Does the app tell the Permitting and Routing System when a permit is used?
A. No
- Q. Does the app tell the Permitting and Routing System, or the Permit Office, when a user goes off the route?
A. No
- Q. Does the app tell the driver when a route change has happened for the permit?
A. Not at this time. PSDC is working on implementing this in the near future.
- Q. Does the app perform any navigation?
A. No. The app has no routing capabilities and does not have any restriction information. It only has a breadcrumb trail of points that describes the route and has the driving directions associated to these points.
- Q. How does the app know what the next driving direction is?
A. All driving directions are created within the Permitting and Routing System and then delivered to the app.
- Q. Where does the background map data displayed on the app come from?
A. The app is able to utilize any vector map tile source. If the State does not provide a vector source, PSDC utilizes an OSM based vector map service if the State does not provide one.
- Q. Does the app connect directly to the Permitting and Routing System?
A. No. The app connects to a ProMiles app server, which then obtains the information for a permit.
- Q. What security practices are put in place for this app?
A. All communication between the app and the ProMiles app server are encrypted. All communication between the ProMiles app server and the State Permitting and Routing Systems are encrypted. If a State wishes to use an API Key (or other security tokens) to connect to their system, PSDC will implement such practices as requested by the State.
- Q. Does the ProMiles app server store the route information?
A. No. The ProMiles app server receives the route information from the State Permitting and Routing System, configures the data as needed for the app, and then forwards it to the app. The ProMiles app server will record the state, Permit Number, and time the app requested the route, but that is all of the Meta data stored for the route.
- Q. Does the app store the route?
A. No. The driver will have to retrieve the route each time they start the app.
- Q. Does the app notify the driver if a restriction violation has been identified for the permit?
A. Not at this time. PSDC plans on adding this feature before the end of the year.