

User's Guide

The logo for PC-MILER 28. It features a shield-shaped icon on the left, divided into red, white, and blue sections. To the right of the icon, the text "PC-MILER" is written in white, with a small blue star between "PC" and "MILER". The number "28" is written in a large, bold, green font to the right of "MILER".

PC-MILER[®] 28

The background of the cover is a stylized map with a grid of roads. A prominent feature is a thick, green, double-lined path that curves from the top left towards the bottom right. The path is set against a dark blue background that transitions into the map area.

Technology Beyond Miles





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Welcome to ALK Technologies' PC*MILER! By purchasing a PC*MILER product, you have made a cost-effective investment in the transportation and logistics industry's leading routing, mileage, and mapping software solution. Accuracy, reliability, and stability have positioned PC*MILER as the technology used by 98% of the top motor carriers and 92% of the top freight transportation firms in North America. The U.S. Department of Defense (DoD), the General Services Administration (GSA) and the Federal Motor Carrier Safety Administration (FMCSA) also rely on PC*MILER as their worldwide distance standard. If you're seeking to maximize revenues and minimize costs while utilizing the safest, most cost-effective routing for your vehicles and shipments, PC*MILER is the answer.

PC*MILER is both easy to learn and easy to use. You simply enter an origin, a destination, and any stops in between, and PC*MILER goes to work to calculate truck-specific routing that is displayed on a map. Distances are returned along with time and cost estimates based on adjustable speed, time, and cost parameters. Detailed driving directions and a state mileage summary can quickly be generated with a click of the mouse. Multiple routing options and additional features provide the tools you need to work effectively and productively.

PC*MILER can be used for rate determination and quotes, trip cost and time estimates, dispatch, driver pay calculation, fuel tax reporting, driver log auditing, load planning, carrier selection, freight bill auditing, and logistics analysis.

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1.1 What is PC*MILER?

PC*MILER generates point-to-point mileage, routes, and driving instructions over complete highway systems in North America, Bermuda, Greenland and Puerto Rico. It can be supplemented with the PC*MILER|Worldwide global highway network as a separate purchase.*

** All instructions for PC*MILER|Worldwide included in this User's Guide pertain only when PC*MILER|Worldwide or DTOD data has been purchased and installed with PC*MILER. PC*MILER|Worldwide data is updated and released yearly after the release of the North American version of PC*MILER.*

PC*MILER will calculate an unlimited number of routes and mileage on a single personal computer or a network installation.

PC*MILER calculates point-to-point mileage for an origin-destination pair of locations with intermediate stop-off points. It provides leg and cumulative mileage, time and cost estimates, state/country distance summaries, driving directions, and much more. PC*MILER provides Practical, Shortest, Fastest, and Least Cost routing, as well as additional options in North America for National Network, Toll Discouraged, 53'/102" Trailer and Twins, and Hazardous Material routing and (optionally in the U.S. and Canada) local street networks.

PC*MILER Version 28 includes the following major features:

- **Time-based routing** gives users the ability to define a departure or arrival time for more precise calculation of ETA/ETD.
- **Fastest Routing** – In addition to standard PC*MILER Practical and Shortest route types, Fastest routing calculates the quickest feasible way to get to a destination. *(North America only, PC*MILER/Traffic required)*
- **Least Cost Routing** – Least Cost routing generates several alternative routes based on multiple user-specified trip cost values. *(PC*MILER/Tolls required for toll cost calculation)*
- Optional **traffic data feed** for more realistic transit times and real-time, historical or typical traffic display on the map *(North America only, PC*MILER/Traffic required)*
- **ALK's RouteSync®** provides a direct link between PC*MILER in the back office and ALK's CoPilot Truck GPS navigation software in the cab. *(RouteSync license purchase required)*
- **User-specified vehicle dimensions** for routing and toll calculation (includes an automobile routing option for vehicles classed less than 9,000 lbs./ 4,082 kgs. and custom vehicle profiles). *(PC*MILER/Tolls required for toll cost calculation)*
- **Custom Routing Preferences** – Avoid, favor, or override specific roads, and create and manage multiple sets of routing preferences.
- **Custom Route and Vehicle Profiles** for custom routes and vehicle dimensions you use often.

-
- **Toll Calculation** with the purchase of the PC*MILER|Tolls add-on. (*U.S. and Canada only*)
 - **Greenhouse Gas Estimator** – For estimating greenhouse gas emissions by route.
 - **Ability to customize place names** to conform to the name of your facilities and customer locations.
 - **Import Custom Place feature**, allowing seamless importing of custom address and pickup/delivery information to eliminate manual trip entry.
 - **RouteMap™**, "the electronic road atlas" for map quality graphics.
 - A **Drag Route** map feature for instant route customization and visualization.
 - **Via Points** creation and management for customized routing.
 - **Geofence Tools** – Create geofenced areas on the map and have PC*MILER avoid these areas or send a warning if routes travel in or out of them.
 - **Location Radius** – For rate determination and operations planning, this tool lets you search for all cities, ZIP and postal codes, towns, points of interest, and custom points within a specified mileage radius around any location.
 - **Unlimited number of stop-off locations.**
 - **Multiple route generation** with on-screen comparison reports to determine the best route.
 - **Points of Interest (POI)** database with customizable categories.
 - **County name designations** for all U.S. locations.
 - **Comprehensive height and weight restrictions**, including 53'/102" Trailer or Twins and enhanced Light and Heavy Vehicle routing.
 - **Reports and maps** that can be exported via clipboard for use with spreadsheet, word processing and database software.
 - Ability to **point and click on the map** to select origin, stop-offs and destination, plus mouse-driven map customization.
 - **Custom cost/time estimates** for empty/loaded miles.
 - **Custom average road speed estimates.**
 - **Optional remaining U.S. DOT Hours of Service (HOS)** user input, with HOS breaks included in driving instructions.
 - A **Border Wait Time** option that takes into account expected delays at international border crossings.
 - **Hub mode** that determines routing, total mileage and state mileage summaries from one origin point to unlimited destinations.
 - **State/Country mileage summaries** including ferry miles.
 - **Latitude/Longitude routing** that generates point to point routes and mileage between lat/long coordinates.
 - **Speed limits** by state/province/estado.
 - A system of **Help files** that is easy to use and comprehensive.

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- **U.S. Department of Defense compliance.**
 - The **complete North American highway network** that includes the United States, Canada, and Mexico plus Bermuda, Greenland and Puerto Rico.
 - ALK Technologies' **complete Worldwide Highway Network**, updated yearly to include the most current data available. *(PC*MILER/Worldwide or DTOD data required for global routing)*
 - Optional add-on data modules for **street-level addresses and map detail** in the **United States and Canada, Europe, India**, and available countries in **Africa, the Middle East, Oceania and South America**. *(PC*MILER/Worldwide required for address data outside North America)*
 - Optional add-on data module for **hazardous material routing**. *(U.S. and Canada only; PC*MILER/HazMat add-on module required)*

1.2 What can PC*MILER be used for?

You can use PC*MILER for:

- Truck-specific routing and mileage calculations for Shortest, Practical, Fastest and Least Cost routes, with additional options for Toll Discouraged, National Network, and 53'/102" Trailer routing in North America
- A direct link between PC*MILER in the back office and CoPilot Truck in the cab *(ALK's RouteSync license required)*
- Hazardous material routing for safety and compliance *(with the PC*MILER/HazMat add-on module, U.S. and Canada only)*
- Toll cost calculation *(with the PC*MILER/Tolls add-on module, U.S. and Canada only)*
- Least Cost routing
- Dispatch
- Driver pay
- Rate determination
- Instant customer quotes
- Fuel tax reporting
- Trip time and/or cost estimation
- Driver log audits
- Load planning
- Empty and loaded mile reporting
- Stop optimization
- Carrier selection
- Logistics analysis
- Freight bill auditing
- IFTA and IRP auditing
- FHWA safety auditing

1.3 What's New in PC*MILER Version 28?

NOTE for PC*MILER|Worldwide and DTOD Data Customers: Beginning with Version 28, the .1 versions of PC*MILER have been discontinued. PC*MILER|Worldwide and DTOD Data users who historically purchased a .1 version of PC*MILER can now install the base version of PC*MILER and then install PC*MILER|Worldwide or DTOD data as a separate add-on – see section 2.5.4 for installation instructions. This is the same seamless data installation as in the past, only the additional .1 version number has been dropped.

NOTE: Beginning in Version 27, the PC*MILER interface was redesigned and now looks very different from previous versions. For users of Version 26 and earlier who are updating, a Feature Reference Guide provides the new locations for features that you are already familiar with. To access it, select the Windows® **Start** menu > All Programs (or the equivalent in your version of Windows) > PCMILER 28 > *User Guides* > *Feature Reference Guide*.

NOTE Also: PC*MILER includes an easy way to check for updates from within the application. **Keeping current on updates is important to maintain the usability of your copy of PC*MILER.** See section 15.3, *PC*MILER Updates*, or the *Check for Updates* topic in the PC*MILER Help files.

Version 28 includes the following new features and enhancements:

- **NEW!... PC*MILER|Energy.** Available as a data add-on module that is separately purchased and licensed, PC*MILER|Energy provides oil- and gas-specific data and facilities including bonded or leased access roads. Users can now generate driving directions that take them directly to facilities including off-road wells, compressor stations and plants.
- **NEW!... Custom Route Profiles.** A new Route Profiles Manager enables you to create and save Custom Route profiles that include routing preferences and vehicle dimensions you use often. See section 11.3.
- **NEW!... Vehicle Type Identifier.** When setting vehicle dimensions in the Route Options dialog, a new Vehicle Type field now clearly identifies the PC*MILER routing characteristics that will be factored in when the route is generated. See section 9.6.1 and 9.6.3.
- **NEW!... Import Default Configuration and Route Settings.** Many additional custom default settings can now be imported from the previous version of PC*MILER, including route options, custom road speeds, custom vehicle profiles, and more. See section 2.8.
- **NEW!... Copy Geocoded Stops.** For ease of use, a geocoded stop can now be copied or moved from one route window to another, or dragged to a different position in the same window. See section 3.6.25.

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- **NEW!... A Column Chooser In Route Windows and Reports.** The new Column Chooser lets you hide, display or change the order of data columns in any route window or report. To access it, right click any stop on the stop list in a route window or the column headers in any report. See section 3.9.2.
 - **NEW!... Print Reports With User-Defined Views.** When columns in a report are hidden, repositioned or resized by the user, these changes are now retained for printing and can be seen in Print Preview mode.
 - **NEW!... Report Location Menu To Place the Reports Pane Where You Want It.** Now choose where the Reports pane will appear when a report is generated. This menu in the Window tab replaces the *Reports Window* button in PC*MILER 27.
 - **NEW!... Individual Routes and Reports In Their Own Modal Windows.** Each individual route or report can now be floated in its own window. See section 3.3 and Chapter 8.
 - **NEW!... Proxy Server Setup Option.** This new option in PC*MILER 28 is for those users who need to bypass their current corporate security settings to access the internet during license activation and while using PC*MILER (for example, when accessing real-time traffic data or periodic PC*MILER updates). See section 2.5.2 or 2.7.
 - **NEW!... Assign Custom Road Speeds to the New “Ramp” Road Class.** PC*MILER road categories now include “Ramp” for access ramps on and off major highways or interstates. The default road speed assigned to ramps is 20 MPH and can be changed using the Route Options dialog. See section 9.7.1.
 - **NEW!... Ability to Hide/Display the Comment Box for Road Preferences.** If you don’t want to have the Add Comments box pop up every time you designate a road preference on the RouteMap, a new setting in the Application Settings dialog provides the option to hide these prompts. See section 11.1.
 - **ENHANCED!... Custom Categories in the Custom Place Manager.** Using updated tools for creating custom places, users can now create and save their own custom place categories. See section 3.13.
 - **ENHANCED!... New Custom Road Manager Dialogs.** The Custom Roads Manager in earlier versions of PC*MILER has been replaced with two Manager dialogs, the Avoid/Favor Manager and the States/Roads Manager. These dialogs include an interactive map for easier selection of road preferences, eliminating the need to switch between the RouteMap and the Manager. See section 11.1.
 - **ENHANCED!... “Special Restrictions” Supported in Routes and Reports.** Time-based routing now integrates road restrictions that are active only during specific times. When you select an arrival or departure time for a trip, PC*MILER will now route around roads that have time-based restrictions. See section 5.4.

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- **ENHANCED!... PC*MILER/Tolls Discount Program Update.** NEXUS has been removed from the PC*MILER database of toll discount programs. No new toll discount programs were added in Version 28. (*PC*MILER/Tolls must be installed*)
 - **ENHANCED!... Yearly Database Enhancements and Routing Improvements in North America and Worldwide (Includes U.S. ZIP Code & SPLC Updates)** – The PC*MILER industry-standard highway network database is updated yearly to include the most current data available. Throughout the year, ALK Technologies’ team of network editors and Geographic Information System (GIS) specialists spend countless hours gathering new data, researching current road construction and other changes, and incorporating customer feedback.

The PC*MILER|Worldwide 28 release integrates the following routing improvements: extensive updates in 61 countries, with upgrades to Comprehensive coverage in Egypt, Lesotho, Morocco, Namibia, South Africa, Swaziland, India, Bahrain, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia and United Arab Emirates. See *Appendix I* for more on worldwide data coverage and postal code access.

Additionally, a new Middle East region was added and the following countries were reclassified:

- Bahrain, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, United Arab Emirates, Iran, Iraq, Israel, Syria, West Bank and Yemen are now grouped in Middle East.
- Cyprus is now included in Europe instead of Asia.
- Central American countries of Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama, Curacao, Saint Barthelemy, Saint Martin, Sint Maarten are now grouped with South America.
- US Virgin Islands is included in North America.

Version 28 also includes the following improvements to ALK’s North American highway network:

- Addition of newly built roads along with new road names to the database
- Improved routing results when selected vehicle dimensions match a medium duty sized vehicle
- Realignment of the existing road network to GPS standards
- Update and addition of exit interchanges and alignment of ramp structures
- Reclassification of roads where necessary (e.g. changing a road from secondary to primary, confirming one-way designations) to provide safer navigation and guidance
- Update of street-level address changes
- Improvement of ZIP/Postal Code placement and alignment

- Specifically for commercial vehicles, additional updates include but are not limited to:
 - Defining urban-classed roads to keep commercial vehicles out of city centers and on higher-classed beltway roads
 - Verifying and coding truck-designated routing attributes throughout the network with a special focus on metropolitan areas (e.g. keeping drivers on roads designated by local and state authorities as preferred/ designated for truck travel)
 - Reclassing vertical clearance data to accurately model low viaducts
 - Defining specific routing designations for truck-through travel within a city's limits
 - Verifying truck restrictions and allowances (classifications include truck designated roads, truck discouraged roads, height/weight restrictions and allowances, commercial prohibited road classifications, hazardous materials restrictions/allowances, and others)

- **ENHANCED!... Annual Updates of Defaults for US\$/CAD\$ Conversion Rate and Trip Costs.** In Version 28, the default US dollar/Canadian dollar conversion rate as applied to toll rates (if PC*MILER|Tolls is installed) and default fuel/trip costs are as follows (in U.S. dollars):

<i>Cost/Time Parameter</i>	<i>Version 28</i>	<i>Version 27</i>
US\$/Canadian\$ Conversion Rate	\$1.00/\$.951	\$1.00/\$.995
Fuel Cost Per Gallon	\$3.95	\$3.94
Fuel Cost Per Liter	\$1.04	\$1.0408
Fuel Cost Per Mile (Loaded or Empty)	\$.61	\$.6080
Fuel Cost Per Kilometer (Loaded or Empty)	\$.61	\$.3778
Other Cost Per Mile (Loaded or Empty)	\$.18	\$.19
Other Cost Per Kilometer (Loaded or Empty)	\$.11	\$.1180
Labor Cost Per Hour (Loaded or Empty)	\$31.64	\$36.19

1.4 The PC*MILER Highway Database

All PC*MILER products are based on ALK Technologies' proprietary computer representation of the North American and Worldwide highway systems. The distances contained in PC*MILER are derived from official highway maps obtained from state, provincial, and national governments, state DOT maps, county maps, local maps, and information received from thousands of industry contacts. All U.S. Interstate, Federal and truck-specific State highways are included.

PC*MILER Version 28 data features thousands of new and updated North American road miles and locations including: **bridges and tunnels, border crossings, highway exits, truck stops, state weigh stations, CAT Scale weigh stations, all year-2014 five-digit U.S. ZIP codes**, all U.S. Department of

Defense **military installations**, **commercial truck restrictions** in the United States, Canada, and Mexico, plus all **highway junctions** and hundreds of thousands of **cities**, **towns**, and **points of interest**.

With the purchase of separate add-on data modules, updated databases of **Canadian Postal Codes**, **SPLC**, and **comprehensive U.S. federal, state, and local Hazardous Material restrictions and designations** are available as well.

In addition, ALK offers several other regularly updated add-on data modules for use with the base PC*MILER product: **PC*MILER|Streets** for address-to-address routing (see below); **PC*MILER|Energy** for oil and gas specific data and facilities; **PC*MILER|Worldwide** for global point-to-point routing; **PC*MILER|Tolls** for toll calculation.

1.4.1 PC*MILER Local Street and International Data

In North America, users have the ability to add street-level detail to generate door-to-door routes and mileage. PC*MILER's local street-level databases, included with the purchase of the PC*MILER|Streets data module, cover the United States and Canada* and include a comprehensive address database, along with related routing options and map detail.

** Note that with the purchase of PC*MILER|Streets, street-level detail in the U.S. comes standard and a separate purchase of the Canadian Street-Level Add-On is necessary to access related data in Canada.*

Also available for purchase is the PC*MILER|Worldwide data add-on to generate point-to-point truck-specific mileage, driving directions and maps over the entire international highway network. PC*MILER|Worldwide includes access to highway data in Africa, Asia, Europe, Middle East, North America, Oceania, and South America. Worldwide data is updated yearly after the base release is completed. Optional street-level data in many countries and regions can be purchased along with a PC*MILER|Worldwide installation.

1.5 Distance Calculation

NOTE for PC*MILER|Streets Users: By default, routes in North America are calculated with the “Use Highway Only” option turned on in the Route Options dialog box. This option can affect distance calculation, and may be turned off – see section 9.3.2 for a description of distance calculations for highway-only and street-level routing.

Distances and routing directions are calculated by first determining which roads a vehicle will travel to get between two points and then adding up the distances over each section of road to arrive at a total mileage, similar to the manual task that one might follow if using an atlas.

Routing to all stops will “clean up” to the nearest truck-usable road on the highway or local street network. This local distance equals the short air distance between where the point is plotted on the map and the closest truck-usable road. In the Detailed Route report, which lists every route segment and interchange on a route, this distance may appear as “Local”.

1.6 PC*MILER Route Types

PC*MILER offers three basic route types: Practical, Shortest and Fastest. For routing in North America, any of these may be combined with one or more of the three other PC*MILER route types (Toll Discouraged and National Network or 53'/102" Trailer or Twins Routing).

Light Vehicle routing for vans, automobiles, pickup trucks, SUVs, etc. is also available (*North America only*), and Least Cost routing may be generated for the Practical, Shortest or Fastest route type. See sections 1.6.1 – 1.6.8 below for detailed descriptions of each route type. See Chapter 9 for route options.

1.6.1 PC*MILER Practical Routes

PC*MILER Practical Routes represent distances and driving routes that a driver would normally take to minimize time and cost. Practical Routes model the trade-off between taking the most direct path and staying on major, high quality highways. Interstate highways are given a higher priority than toll roads, which, in turn, are given a higher priority than secondary highways, and so on. Routing instructions and mileage can be used when actual travel distances and directions are needed.

PC*MILER Practical routings consider distance, road quality, terrain, urban/rural classifications, truck-restricted roads, and designated principal and secondary through routes.

In the United States, PC*MILER Practical Route mileage and state-by-state mileage breakdowns can be used to supplement your regular fuel tax reporting documents for many states. Many state audit departments have purchased licenses to incorporate PC*MILER into their audit procedures.

NOTE: A PC*MILER user may still be assessed additional taxes even by those states using PC*MILER in their audit procedures. However, your chances of being assessed additional taxes greatly diminishes by utilizing a computerized mileage system in conjunction with your driver logs, trip sheets, invoices, and bills of lading.

In order to minimize the possibility of significant tax assessments, you must verify that the PC*MILER generated route is the *same* as that reported on your driver logs and/or trip sheets. In addition, you must add the appropriate vicinity miles to the PC*MILER generated mileage so that the following equation is true:

TOTAL ODOMETER MILES = PC*MILER Miles + Vicinity Miles

NOTE: PC*MILER accounts for some vicinity miles if non-Keypoints (generally postal code locations and/or place names not associated with the downtown metropolitan area) are used as stop-off locations.

ALK Technologies continues to work closely with the member states of the International Fuel Tax Agreement (IFTA) and the International Registration Plan (IRP). Currently many IFTA/IRP states are using PC*MILER as an auditing tool in their fuel and mileage tax audit procedures.

1.6.2 PC*MILER Shortest Routes

PC*MILER Shortest Routes represent distances and driving routes that a vehicle would take to minimize total distance traveled while still following a reasonable route. For instance, Shortest Route mileage and routes will also avoid truck-restricted roads and, in some cases, may favor a beltway rather than traveling directly through a city.

ALK believes, however, that carriers and shippers alike would all be better served by using a mileage tariff based on *actual miles traveled* (i.e. similar to those generated using the PC*MILER Practical Route option), which would more accurately reflect true transportation costs.

1.6.3 PC*MILER Fastest Routing *(North America only)*

*(PC*MILER/Traffic must be installed and activated.)* In addition to the standard Practical and Shortest routing types, PC*MILER now provides a Fastest routing type. Fastest routing uses any day of the week or time of day information that has been set for a route (these are optional settings for Fastest routing) in conjunction with Inrix® real-time and/or historic traffic data to calculate the quickest route to the trip's destination(s). Users who ship time-sensitive freight can select a Fastest route that may be longer in distance but save time over the standard Practical route.

Additionally, Least Cost routing (see section 1.6.8) now considers Fastest and Fastest with Toll Avoidance route types, increasing the number of routes considered to six. Users can opt to utilize Least Cost routing to select the route that arrives on time but costs the least, using default or user-specified costs.

1.6.4 PC*MILER National Network Routes *(U.S. only)*

The National Network is a U.S. government-designated system of highways originally established by the Surface Transportation Assistance Act of 1982 (STAA). This routing option is based on the federally-designated National Network system updated in the April, 1992 Code of Federal Regulations, Part 658, Appendix A. The National Network includes the Interstate System (several minor segments are not included), and many selected U.S. and state highways. Highways continue to be added to the National Network by federal and state governments.

PC*MILER National Network routing represents distances and driving routes which are most reasonable and legal for the larger trucks authorized by the Surface Transportation Assistance Act of 1982.

National Network routing stays on the National Network to the maximum extent possible. Given that many areas are not directly served by the National Network, the origin and stop-offs of your route may not be on the National Network. In these cases PC*MILER will take the shortest reasonable path from the origin and stop-offs to the Network. Detailed Route Reports (driving directions) for PC*MILER National Network routes provide a warning wherever the route is forced to use a non-conforming link. These road segments should be checked before traveling.

National Network mileage tends to be higher than Shortest or Practical mileage.

These designated highways permit, at a minimum, 102" wide, single 48 ft. trailers and 28 ft. double trailers. The Interstate system and most, but not all, remaining designated routes are open to 80,000 pound vehicles. Certain states, notably Arkansas and Mississippi, have designated certain National Network segments with less than an 80,000 pound capacity.

In addition to the National Network highways, *access routes* and *access policies* are components of routing STAA dimensioned trucks. The Federal government has mandated that no state may prohibit travel from the National Network for a minimum of one road mile unless safety restrictions apply. Also, no state may deny reasonable access to terminals and facilities for food, fuel, repairs and rest.

Several states maintain more generous access policies and lists of specifically designated access routes to terminals and facilities. Should you need to travel beyond the National Network and the access roads, you must acquire the proper permit. See *Appendix A* for access rules by state. For detailed information about pre-approved access routes, contact the individual states.

NOTES: These suggested National Network routings are based on official highway maps, the Code of Federal Regulations, and information provided by state governments. It is provided without a warranty of any kind. The user

assumes full responsibility for any delay, expense, loss, or damage which may occur as a result of its use.

See Appendix A, *Access Policies From National Network Routes*, for the current status of National Network access policies. For detailed information about pre-approved access routes, contact the individual states.

1.6.5 PC*MILER 53' Trailer or Twins Routing *(U.S. only)*

Because every mile equals money, PC*MILER offers enhanced routing specifically for 53'/102" trailers or 28' tandem trailers (“twins”). The calculations for these routes are based on National Network routing, with the addition of roads that permit 53'/102" trailers or twins.

The regulations that govern the routing of trucks in North America are a function of weight, height, number of axles, distance between axles, number of trailers, and commodity. These regulations take two principal forms: restrictions and designations. In the case of designations, trucks may deviate from the designated road network, on any road that is not otherwise restricted, to access points of loading, unloading and services.

Under a 1991 U.S. federal law known as the STAA, the most important distinction in truck designations is between 96" wide, 48' long trailers on the one hand and 102" wide, 53' long trailers (and twin 28' long trailers) on the other hand. When the 53' Trailer and Twins routing option is used in PC*MILER, or when a width of greater than 96" or a length greater than 48' is entered into PC*MILER as the vehicle size, PC*MILER's routing algorithm switches to favoring roads designated by the states for “oversize” trucks (meaning over 96" wide or over 48' long).

In PC*MILER, the routing designations for the following equipment types are included in the 53' Trailer or Twins (formerly named “53' Trailer”) routing category:

- double trailers no more than 28' long and 102" wide;
- semi-trailers longer than 48' or wider than 96", but no longer than 53' and no wider than 102".

Detailed Route reports for PC*MILER 53' Trailer and Twins routes warn that a road is “Not Designated” if that road is necessary to reach an origin, destination or stop-off outside of the maximum access distance for that state. In this case a red bar also appears in the route window to the left of the stops on that link.

If such a warning appears, then a legal route for 53' equipment is either not possible under current state designations or would be so circuitous that you should either consider assigning smaller equipment or petitioning the state to designate a more direct access route. Users should check the legal requirements on these

roads because they vary; for example, delivery may be legal, but stopping for food or services may not be.

CA	West	I-80 - James Lick Frwy	0.7	0:01	+ I-80 Ramp
CA	Keep right	Ramp	0.4	0:01	Restriction
Warning * US-101 * Not Designated 53 Foot					
CA	North	US-101 - Central Skwy	0.3	0:00	+ US-101 Exit 434A
CA	Keep right	Exit 434A	0.2	0:01	Restriction
Warning * US-101 * Not Designated 53 Foot					
CA	North	US-101	0.2	0:00	+ US-101 US-101
CA	North	US-101	0.4	0:01	San Francisco, CA 94142
Arrive Loaded					
Dest: 94142 San Francisco, CA, San Francisco				0:00 (On-Duty) 0.00	

53' Trailer and Twins Restriction in Detailed Route Report

If the **Designated Truck Routes** layer in the Map Features dialog is turned on (see section 10.7), the RouteMap will display the 53-foot designated network with a blue underlay when the map scale is approximately 1" equals 8 miles or less. This underlay is hidden by default. (Note: If you have the PC*MILER|HazMat module installed and the **Hazardous Material** layer is turned on, you may want to turn it off for a better view of designated truck routes.)

1.6.6 PC*MILER Toll Discouraged Routes

For those who desire to avoid long stretches of toll roads, ALK provides a Toll Discouraged routing option. Toll Discouraged routing will avoid long stretches of toll roads but will not take long, impractical detours to avoid toll bridges and tunnels. For example, a routing from Boston, MA to Albany, NY will avoid the Massachusetts Turnpike, but a routing from Camden, NJ to Philadelphia, PA will include a toll bridge.

NOTE: PC*MILER chooses routes by minimizing a cost equation that combines distance, certain factors times distance, and certain fixed factors. When Toll Discouraged is selected for a route, the factor that is multiplied times distance for toll roads is higher than when Toll Discouraged is not chosen. This causes the route chosen to go a somewhat longer distance (all other factors being equal), but not an extremely longer distance, in order to avoid paying a toll.

To see whether the Toll Discouraged option is cost-effective for you or your fleet, you may want to consider using ALK's PC*MILER|Tolls add-on module and PC*MILER|Spreadsheets to analyze how much toll cost you will save versus how much additional mileage and time cost you will incur, for the particular origin-destination pairs that you run frequently. See Chapter 7, *Getting Toll Costs* for

more details about PC*MILER|Tolls. To purchase PC*MILER|Tolls and/or PC*MILER|Spreadsheets, contact your Enterprise Solutions account executive.

1.6.7 Routing For Different Sizes of Vehicles, and Restriction Overrides

By default, PC*MILER generates routes and mileages for large, heavy trucks of a particular size and weight (in North America, 5-axle tractor-semitrailer combination, 96” wide, 48’ long trailer, 13’6” high, 80,000 lbs GVW; routing for 102” wide 53’ long trailers and 28’ twin trailers is available by checking “53’ Trailer or Twins” in the Route Options dialog box). You can route other sizes and weights of trucks by setting vehicle dimensions, choosing among pre-defined vehicle profiles, or creating a user-defined vehicle profile. See Chapter 9, *Using the Route Options Dialog Box*, specifically sections 9.2, 9.3 and 9.6.

PC*MILER also includes a routing option specifically for automobiles and other light vehicles (vans, pickup trucks, SUVs, etc.) that relaxes all truck and commercial vehicle regulations (see section 9.6.5).

Additionally, the “Override Restrictions” setting in the Route Options dialog box is available. This option relaxes truck restrictions for particular sizes and weights, but still avoids roads that are prohibited to or discouraged for all trucks. If a resulting route uses any roads that have restrictions for particular sizes and weights, the Detailed Route Report will list them. This allows you to determine the largest or heaviest vehicle you can assign to drive that route.

By default Override Restrictions is off, in which case PC*MILER routing will avoid both truck-prohibited and truck-discouraged roads, as well as truck-restricted roads that pertain to the size and weight set in the current vehicle dimensions or profile. In addition, nationwide 13’ 6” height restrictions will be taken into account.

1.6.8 Least Cost Routing

In response to the needs of our customers, ALK has developed the new “Least Cost” routing feature that considers user-specified values for miles per gallon, cost per gallon, fuel cost per mile, maintenance cost per mile, labor cost per hour, and stop cost – and includes a parameter for a greenhouse gas emission estimate. If PC*MILER|Tolls is installed, toll costs are factored in as well.

Least Cost routing presents a series of alternative routes with time and costs, identifying the route that is least-cost, and lets the dispatcher or driver (or an external system, such as a truck dispatch optimization system) choose the alternative route that’s optimal for them, considering the factors that are external to the route. See Chapter 4 for a full description of this routing type.

Before installing PC*MILER, please make sure that you have the required hardware and software configuration. All PC*MILER software, databases and auxiliary files are provided on the PC*MILER installation DVD.

2.1 System Requirements

NOTE: Please check for updates regularly in order to maintain the usability of your current copy of PC*MILER – select the Help tab > *Check for Updates*.

2.1.1 Platforms

- Windows® XP, 7 and 8 running in 32-bit compatibility mode as well as support for 64-bit native applications on Windows 7 and 8 – please see section 2.4 if installing connectivity products on a 64-bit machine
- AS/400
- CICS®/MVS
- UNIX® (AIX, HP-UX, Sun-Solaris) and Linux™
- Citrix® Metaframe
- Windows Server® (Terminal Servers, Server 2003, Server 2008 including Server 2008 R2 running in 32-bit compatibility mode for the Interactive GUI and on 64-bit processors for PC*MILER Connect, Mapping, BatchPro, and Spreadsheets)
- TCP/IP functionality for use with other platforms

NOTE: Platforms not supported include: SCO UNIX, Windows® 95, 98 First/Second Edition, Me, 2000, NT, 2003 and Vista.

2.1.2 Requirements

Environment:

- Stand-alone PC with a 1.5-2 GHz processor or networked personal computers (LANs and Server/Thin Client Networks)
- 512 MB RAM minimum, 1 GB strongly recommended for standard desktop users. For Citrix and Terminal Server, 200 MB RAM for each user running PC*MILER|Connect and PC*MILER|Spreadsheets.

Other Requirements:

- DVD-ROM or CD/DVD Drive
- Minimum screen resolution 800X600
- Color quality settings supported: 16-bit and 32-bit (8-bit & 24-bit not supported)
- Internet connection for license activation (recommended) and access to select features such as Satellite imagery and real-time Traffic data on the RouteMap.
- Email address for license activation

NOTE: The hard disk requirements listed below are *approximate*.

PC*MILER:

- PC*MILER – 2.6 GB hard disk space for full install (including all Add-Ons listed below except PC*MILER|Energy, and all Connectivity products)
 - PC*MILER|Tolls – 50 MB hard disk space
 - PC*MILER|Hazmat – 50 MB hard disk space
 - PC*MILER|Streets (U.S. Data) – 1.3 GB hard disk space
 - PC*MILER|Streets (Canadian Data) – 60 MB hard disk space
 - Canadian Postal Codes – 50 MB hard disk space
 - Standard Point Location Codes (SPLC) – 2 MB hard disk space
 - PC*MILER|Energy – 2.5 GB hard disk space

Connectivity Products:

- PC*MILER|Connect – 3 MB hard disk space
- PC*MILER|Mapping – 3 MB hard disk space
- PC*MILER|Spreadsheets – 3 MB hard disk space
- PC*MILER|BatchPro – 2 MB hard disk space
- PC*MILER|TCP/IP – 2 MB hard disk space

NOTE: PC*MILER|Connect and PC*MILER|Spreadsheets support x86-64 architecture. Our software was not ported to IA-64 architecture although it will still be supported through a hardware compatibility mode.

PC*MILER|Worldwide:

- Worldwide Highway Network Only – 5.3 GB hard disk space
- PC*MILER|Streets Data hard disk space requirements:
 - United States – 1.3 GB
 - Canada – 60 MB
 - Africa – 263 MB
 - Europe – 3.38 GB
 - Asia – 616 MB
 - Middle East – 179 MB
 - Oceania – 189 MB
 - South America – 339 MB

RouteSync™ Requirements:

- CoPilot® Truck™ running on one or more mobile devices and registered with CoPilot Live Messaging

-
- CoPilot Truck Version 9 supported platforms are: Windows® XP, Windows 7, Windows Mobile, Windows CE, iPhone, iPad, and Android
 - RouteSync license key code and street-level data in the US and/or Canada

These additional components will also be installed:

- Microsoft Visual C++ 2005 Redistributable Package (x86) – 6 MB disk space
- WindowsInstaller-KB884016-v2-x86.exe (x86) – 2 MB disk space
- .NET dotnetfx.exe (x86) – 280 MB disk space

2.1.3 AS/400 Requirements

PC to AS/400 Connectivity Options (Not Provided by ALK):

- PC with a 2+ GHz processor
- Client Access Express V4R4MO or higher, also known as iSeries Access (recommended)
- Supports OS/400, i5/OS and IBMi operating systems; Version 4.2 (V4R2) and higher on IBM AS/400, systemi and power Systems hardware.

2.1.4 CICS Requirements

Because PC*MILER-CICS employs a distributed processing solution, the following additional hardware is required to run the software:

- A dedicated PC with a high-end Pentium processor (1.5-2 GHz or greater)
- 512 MB RAM (minimum), 1 GB recommended
- Communication software from Quotium Technologies (formerly ICOM Informatics) called Winsurf+ can be found at www.Quotium.com

2.1.5 UNIX and LINUX Requirements

Contact PC*MILER Technical Support for more information.

2.2 General Licensing Information

Single-User License

A single-user license can be installed to only **one** PC or workstation locally.

Multi-User License

A multi-user license can be installed to a server environment, on the computer that will be sharing the licenses to other computers. It allows “x” number of concurrent workstation connections to PC*MILER at a time. For example, a 5-User License allows one installation on a central server or PC with as many

workstation PCs as you want having access, but only 5 users can access PC*MILER at the same time.

Enterprise License

An Enterprise License allows users to install PC*MILER on any combination of end-user PCs or workstations without license limitations. It's a cost-effective installation and licensing solution for larger companies with several users. It does not require license activation but requires signing an enterprise license supplemental agreement directly with ALK.

Additional Copy License

Users can install PC*MILER locally onto additional PCs by purchasing additional copy licenses. If you purchase 5-copy licenses, you can install PC*MILER locally onto five additional PCs or workstations. If you're installing onto a desktop PC and a laptop, two licenses are needed.

2.3 Installation Types

Non-Network (Local) Installations

A non-network installation allows you to install PC*MILER to a PC or workstation locally, not to be shared with other computers.

Network Installations

A networked installation allows you to install PC*MILER on network file servers where each end-user can save their own option settings or can share option settings that are stored on the server.

Citrix/Terminal Services Installations

PC*MILER can be installed onto a Citrix Server or Terminal Services environment, if you have purchased a license to do so. Each end-user must have a license to gain access to PC*MILER.

Trial Installation

A trial installation is a 15-day license to access PC*MILER's features and data. It includes an installation of PC*MILER that provides highway-level routing, mileage and mapping, with options for a trial installation of street-level routing, truck-specific toll costs, hazardous materials routing, and/or worldwide routing.

2.4 Important Notes

COM DLL's on a 64-Bit Computer: If you install PC*MILER|Connect or PC*MILER|Mapping Version 28 on a 64-bit computer, you are given the option of using either the 32-bit versions or the 64-bit versions of the COM dll's. To switch between the versions, you can run "Modify" in the setup to make the

decision again or run “UseCom32.bat” to switch to 32-bits or “UseCom64.bat” to switch to 64-bits. These .bat files are found in both your PC*MILER28/Mapping/com and your PC*MILER28/Connect/com folders.

PC*MILER Interfaces: For those who interface any PC*MILER component to a transportation management, logistics management or other third party software system, please contact the vendor directly to make sure that the interface to this new version of PC*MILER is updated and complete before you install.

Access to Updates and Patches: Check the PC*MILER Updater frequently for posted updates and patches applicable to your license type and components. In PC*MILER, go the Help tab > *Check for Updates*.

Microsoft® Windows® 7 and 8 Users Only: Your license must be installed and activated using an Administrator Account. Once installed, you do not have to *Run as Administrator* provided you install to the recommended default directory or to another directory that doesn’t require users to *Run as Administrator*.

2.5 Installing PC*MILER

2.5.1 Single User Local (Non-Network) Installation

NOTE: Have your Product Key Code on hand before beginning the installation process. It will be emailed to you from alkservices@alk.com in an email titled “PC*MILER Software Order...” (Enterprise License customers excluded, see note in Step 5 below.) You should see “Single” in this product key email.

CONVERTING SAVED FILES: To import saved custom settings and files from your previous version of PC*MILER, see section 2.8.

NOTE for PC*MILER|Traffic Installation: If PC*MILER|Traffic was purchased, a separate email will be sent with a second Product Key Code and you will need to upgrade the PC*MILER license with this code at the end of the installation. Instructions for installing **RouteSync** and/or **PC*MILER|Traffic** are included as options in the installation instructions below.

NOTE: For those installing to Windows 7 or 8, you must install as an Administrator. You do not have to “Run as an Administrator” to use PC*MILER 28, provided you install to the default directory or to another directory that does not require users to “Run as an Administrator”.

NOTE: If you have a Multi-User Product Key Code and need to perform a Single User install, you will need to contact PC*MILER Technical Support for assistance, as a new Product Key Code is needed. If you cannot get in touch with

Technical Support at the time of installation, you can install a Single User License by typing “FREE” in the Product Key field. After installing, please contact Technical Support to update your license status.

UNINSTALLING an OLDER VERSION: If you need to uninstall a previous version of PC*MILER on the computer that you are now installing to, you must do it **before** installing PC*MILER 28. If you do not need to uninstall, you can have both versions of the desktop program installed on the same system. Please note that PC*MILER|Connect, PC*MILER|Mapping and PC*MILER|Spreadsheets will be updated to the new version.

BEFORE INSTALLING, please double-check that the emailed Product Key Code(s) lists all purchased components. For example, the code shown below unlocks the following components: PC*MILER|BatchPro, RouteSync, PC*MILER|Tolls, PC*MILER|Streets (U.S. and Canada) and Worldwide highway data.

Order #: SO-000000001

Product Order #: PC*MILER 28

Date: 7/1/2014 10:33 AM

Product Key Code: 3QYKJ-V2KJ7-KJ2F5-82KJ2-KJ2F2

== PC*MILER 28 (Single) BatchPro, Canadian Streets, RouteSync, Tolls, US Streets, Worldwide Data V8

To install your single-user version of PC*MILER 28, follow these steps:

1. **If you are downloading the installation**, click the provided link in the email that was sent to you from ALK Technologies (mentioned above).

If you are installing using a DVD, place the PC*MILER Install DVD in the DVD or CD/DVD drive and the installation will start automatically. If it does not start automatically, click the Windows **Start** menu. Then, depending on your operating system, either 1) click **Run...**, then type “d:\setup.exe” and click **OK** (Windows XP – if the DVD drive is not the D drive, substitute the letter that designates the DVD drive); or 2) select *Computer > [DVD drive letter] > setup.exe*.

2. The Installshield Wizard **Welcome** screen will open. Click **Next** to review the End-User License Agreement. **NOTE:** Depending on the current status of your Windows operating system, some Windows updates may install automatically before the PC*MILER installation begins.
3. In the next screen, review the license agreement then choose “**I accept...**” If this option isn’t selected, the setup won’t continue. After selecting it, click **Next** to continue.
4. When prompted, enter a **User Name** and **Company Name** and click **Next**.

-
5. Enter the **Product Key Code**.^{*} This 25-character code will have been emailed from alkservices@alk.com in an email with the subject line “PC*MILER Software Order...”. It can be copied from the email and pasted in. If entering the code manually, dashes are not required – dashes, spaces, or no spaces are all acceptable. Click **Next** when finished.

*** NOTE:** As a convenience to Enterprise License customers, the Product Key Code is hard-coded into the installation and is valid for each install under the contracted terms.

6. In the next screen you will see a list of the **Licensed Features** that will be installed. Check to make sure all the purchased features are in the list, then click **Next** to continue.
7. Now you will see the **Destination Location** where all components will be installed. To install to the default directory^{*} (recommended), do not make any changes and click **Next**.

^{*} By default, PC*MILER 28 installs directly to C:\ALK Technologies\PCMILER28.

To install to a location other than the default, click **Browse** to select a directory. (Be sure to add “PCMILER28” to the end of the new path; for example, “C:\PCMILER\Version 28\PCMILER28”. If you don’t, PC*MILER will install to the root of the specified directory.) Click **OK** then **Next** to continue.

8. In the next screen you will **Start Copying Files**. To change any settings, select **Back**. If you are satisfied with the settings, click **Next** to continue.

If you have a previous version of PC*MILER|Connect or PC*MILER|Mapping installed, this alert will appear: “The install found a previous version of Connect (Mapping). These files will be renamed with a .bak extension”. If both products were previously installed, you will receive two alerts. Click **OK** in the dialog box(es) to continue.

9. Follow through with the rest of the installation. This may take some time depending on the speed of the computer you are installing to. **Do not exit or reboot the computer during the installation**. If any error messages appear, please contact PC*MILER Technical Support.
10. When the installation is complete, you will be prompted to **view the ReadMe.txt** and to **activate your license**. If you need to use a **Proxy Server** to access the Internet, skip to section 2.5.2, *Activation Using a Proxy Server*. Otherwise, leave these boxes checked and click **Finish** to proceed to the automatic activation (Step 11 below). When the ReadMe opens, review the information in it and then close the window.

IMPORTANT NOTE: ALK provides a 15-day temporary license prior to completing the activation process. If you make a second attempt to install you will lose this license. If you experience an activation error and need access to

PC*MILER before Technical Support is available, please do not attempt a second installation without assistance – you’ll be able to use PC*MILER for 15 days without completing the activation.

AUTOMATIC LICENSE ACTIVATION

11. The PC*MILER Product Activation window should be open. (If it is not open, select Start menu > Programs (or All Programs) > PCMILER 28 > License Status to open the License Tool window.)

If you are an Enterprise License Customer: You can bypass the following license activation steps of the install because you are already activated and registered with ALK. To continue, close the Product Activation window then **proceed to Step 15** to open PC*MILER and start using the application.

If you are not an Enterprise License Customer: If the computer you are installing to has an Internet connection and you have a valid email address, the license activation can be processed automatically. Enter your **Email Address** then click **Activate**. “**Manual Activation**” should be left unchecked.

If **RouteSync** is one of the components you are installing, before clicking “Activate” you will also need to enter an alphanumeric or alphabet-only password of your choosing. (Record this password and keep it handy, as you will be asked to enter it again when you use RouteSync for the first time in PC*MILER.)

NOTE: Internet license activation is available 24 hours a day. If you don’t have an active Internet connection or email address, please contact PC*MILER Technical Support during business hours for assistance.

12. When the activation process is complete, you will receive a message in the Product Activation window saying, “License Activation Complete!”. Close the window to continue. If the activation failed, skip to Step 16 below for manual activation.
13. To verify that PC*MILER is now licensed, go to the Windows **Start** menu > **Programs** (or **All Programs**) > **License Status**. In the PC*MILER License Tool window, verify that “**Licensed**” appears under **Status**. PC*MILER is now activated. If “Licensed” is NOT in the Status field, skip to Step 16 below for manual activation.

If **PC*MILER|Traffic** was purchased, you can install it now or it can be installed at a later time. See section 2.5.3 below for instructions on how to add the license to your base PC*MILER application.

14. If the automatic activation was completed, close the License Tool window. An email titled “PC*MILER 28 Activation Code for Product XXXXX...” from alkservices@alk.com will be sent to the email you entered in Step 11. You only need to keep this email for your records.

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15. To start PC*MILER once the installation is complete, click the PC*MILER icon on the desktop, or click the Windows **Start** menu > **Programs** (or **All Programs**) > **PCMILER 28** > **PCMILER 28**.

MANUAL ACTIVATION

16. (You only need to follow these steps if the automatic license activation process failed.) If the automatic activation (Steps 11-12 above) fails for any reason, try manually activating. In the Product Activation window, enter your **Email Address** (and RouteSync password if applicable) then check “**Manual Activation**”.
17. Next, click the provided URL for the ALK activation site.
18. You will be taken to the ALK Technical Support “Activate Product” web page, and your PC*MILER product key will automatically populate the **Product Key** fields. Click **Next** to continue.
19. In the next screen, enter your **Email** address (and RouteSync password if applicable) and click **Finish**.
20. An email titled “PC*MILER 28 Activation Code for Product XXXXX...” from alkservices@alk.com will immediately be sent to the email you entered.
21. Copy the activation code directly from the Activation web page or from the email sent to you, and paste it into the **Activation Code** field in the Product Activation window.
22. Click **Activate** in the Product Activation window to complete the activation.
23. You will see the message “License Activation Complete!”. Close the Product Activation window. PC*MILER is now activated.
24. Start PC*MILER once the installation is complete: click the PC*MILER icon on the desktop, or click the Windows **Start** menu > **Programs** (or **All Programs**) > **PCMILER 28** > **PCMILER 28**.

2.5.2 Activation Using a Proxy Server

To activate PC*MILER using a Proxy Server, follow these steps:

1. When the installation is complete (Steps 1-9 in section 2.5.1 above), uncheck the **Activate** check box and then click **Finish**.

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2. Next, start PC*MILER: either click the PC*MILER icon on the desktop, or click the Windows **Start** menu and then select **Programs** (or **All Programs**) > **PCMILER 28** > **PCMILER 28**.
 3. Select the Help tab > Windows group > *Proxy Setup*.
 4. In the Proxy Setup dialog, check **Use Proxy Server** then enter a **Host** and **Port**.
 5. If needed, check **Proxy Authentication** then enter a **Username** and **Password**.
 6. Click **OK** to save your settings and close the dialog. PC*MILER is now set up to use the indicated proxy server when connecting to the Internet.
 7. Close PC*MILER.
 8. In the Windows **Start** menu, select **Programs** (or **All Programs**) > **PCMILER 28** > **License Status** to open the PC*MILER License Tool window, then click **Activate**.
 9. Follow the steps in section 2.5.1 for automatic activation, beginning at Step 11.

2.5.3 Adding PC*MILER|Traffic to the Installation

If a PC*MILER|Traffic subscription was purchased, a separate upgrade product key was sent in an email along with the base PC*MILER product key. Follow the steps below to install the PC*MILER|Traffic upgrade after PC*MILER has been installed and activated.

1. If the PC*MILER License Tool window is not already open, click the Windows **Start** menu and select **Programs** > **PCMILER 28** > **License Status** to open this window.
2. Click **Add License**.
3. In the PC*MILER Product Activation window, enter the PC*MILER|Traffic Upgrade **product key** that was emailed to you and click **Add License**.
4. When prompted, enter your **Email Address** then click **Activate**.
5. When the activation process is complete, you will see the message “License Activated Successfully.” The upgrade is now complete.
6. You will immediately receive an email from ALK Technologies that contains the new activation code for this upgrade. Keep this email for your records.
7. To start PC*MILER, double-click the PC*MILER icon on the desktop, or click the Windows **Start** menu and then select **Programs** > **PCMILER 28** > **PCMILER 28**.

2.5.4 Adding PC*MILER Worldwide, Energy or DTOD Data

To install additional PC*MILER|Worldwide*, PC*MILER|Energy or DTOD Data to the base installation of PC*MILER, follow the steps below. The steps assume that, after purchasing the data add-on(s), you either 1) received an email from ALK Technologies that provides one or more URL link(s) to the setup.exe required for the data install; or 2) received an installation DVD which includes the data you are adding (or two DVDs if you purchased Worldwide data).

* Including PC*MILER|Worldwide Streets data sets.

IMPORTANT NOTE: Please check that you have the latest updates before installing additional components. Open PC*MILER and select the Help tab > *Check for Updates*.

1. **If you are using a DVD**, insert the DVD and **skip to Step 7** below.

If you are using the email sent to you by ALK, click the download link at the bottom of the email. The email's subject line will say "PC*MILER 28 Software Oder #...". You may see more than one link, depending on what was purchased – begin by clicking the topmost link.

2. A web page will open and you will be prompted to open or save the PC*MILER zip file. Click **Save** and select a folder where you want to save the zip file.
3. The download will begin. A very small progress bar in the upper right corner of the web page will track the progress of the download. The progress bar will disappear when the download is finished.
4. Navigate to the folder where you saved the zip file, and double-click the file to open it.
5. Click **Extract** at the top of the window that opens to extract the contents of the zip file to a separate folder in the same location. The progress of the extraction will be tracked at the bottom of the window.
6. When the extraction is complete, open the extracted folder and run the **setup.exe** as follows: **For Windows 7** users, right click the setup.exe and select "Run as administrator". **For other operating systems**, just double-click the setup.exe.
7. The PC*MILER Data Installer – InstallShield Wizard will open. Click **Next** to continue.

NOTE: If an update to PC*MILER is available, you will be prompted to install it before continuing with the upgrade. Click **OK** at the prompt.

8. Select "**I accept the terms of the license agreement**" then click **Next**.
9. A prompt will tell you to select "Add License" in the next screen – click **OK**.

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10. After a few seconds the PC*MILER License Tool window will open – click **Add License**.
 11. In the PC*MILER Product Activation window, enter the **Product Key** for the purchased data add-on, then click **Add License**. The product key can be copied and pasted from the email that was sent to you at the time of purchase.
 12. Enter your **Email Address** in the next screen, then click **Activate**.
 13. When the activation is finished you will see a “**License Activation Complete!**” message. Close the Product Activation and License Tool windows by clicking on the “X” in the upper right corner of each window.
 14. (*AUP Customers Only*) At this point, you may see a prompt asking if you want to delete the data from the previous quarter. Select **Yes** or **No**.
 15. Back in the InstallShield Wizard, you will see a list of all the PC*MILER **Licensed Features** that will now be installed. Click **Next**.
 16. Now you will see the **Destination Location** where the new data will be installed. To install to the default directory (recommended), do not make any changes and click **Next**; or click **Change** to change the destination folder. The default destination folder is C:\ALK Technologies\PCMILER28.
 17. In the next screen, click **Next** to **Start Copying Files**.
 18. At the end of the copying process, a prompt will appear that says “Setup will now create a backup copy of your user.cfg file...”. Click **OK**.
 19. Click **Finish** in the next screen. Your data add-on is now ready to use.

The title bar of the PC*MILER application window will include the installed data add-ons, and you will see the new data set in the Map tab > Utilities group > *Change Data Set* menu. All installed data sets are listed in this menu, and the data set you just installed will be activated by default. See section 3.6.6 on changing the map data set.

2.5.5 Multi-User Network Installation

NOTE: Have your **Product Key Code** on hand before beginning the installation process. It will have been emailed from alkservices@alk.com in an email titled “PC*MILER Software Order...” (*Enterprise License customers excluded*) You should see “X-User” in the Product Key email, indicating that you have purchased a multi-user license. If not, please contact an Enterprise Solutions account executive to purchase the correct license.

UNINSTALLING AN OLDER VERSION: If you need to uninstall a previous version of PC*MILER on the computer that you are now installing to, you must do it **before** installing PC*MILER 28. If you do not need to uninstall, you can have both versions of the desktop program installed on the same system. Please note that PC*MILER|Connect, PC*MILER|Mapping and PC*MILER|Spreadsheets will be updated to the new version.

CONVERTING SAVED FILES: To import saved custom settings and files from your previous version of PC*MILER, see section 2.8.

BEFORE INSTALLING, please double-check that the emailed Product Key Code(s) lists all purchased components. For example, the code shown below unlocks the following components: PC*MILER|Connect, PC*MILER|Tolls, RouteSync, PC*MILER| Streets (U.S. and Canada) and Worldwide highway data.

Order #: SO-000000001

Product Order #: PC*MILER 28

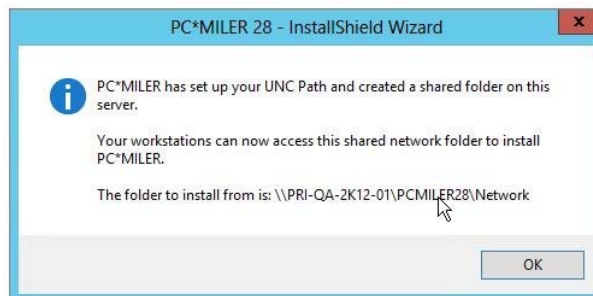
Date: 7/1/2014 10:33 AM

Product Key Code: 3QYKJ-V2KJ7-KJ2F5-82KJ2-KJ2F2

== PC*MILER 28 (XX-User), Canadian Streets, Connect, Tolls, RouteSync, US Streets, Worldwide Data V8

To install PC*MILER 28 on a network, follow these steps:

1. Begin by installing PC*MILER to the server: follow steps 1-9 for a *Single User Local Installation* (section 2.5.1 above).
2. When the installation is done, you will see the screen shown below. Click **OK**.



3. You will be prompted to **view the ReadMe.txt** and to **activate your license**. If you need to use a **Proxy Server** to access the Internet, skip to section 2.5.2, *Activation Using a Proxy Server*. Otherwise, leave these boxes checked and click **Finish** to continue. Review the ReadMe and then close the window.

IMPORTANT NOTE: ALK provides a 15-day temporary license prior to completing the activation process. If you make a second attempt to install you will lose this license. If you experience an activation error and need access to

PC*MILER before Technical Support is available, please do not attempt a second installation without assistance – you’ll be able to use PC*MILER for 15 days without completing the activation.

4. After you click **Finish**, the PC*MILER Product Activation window will open.

If you are an Enterprise License Customer: You can bypass the following license activation steps of the install because you are already activated and registered with ALK. To continue, close the Product Activation window. PC*MILER is installed on the server and can be opened by double-clicking the PC*MILER icon on the desktop, or clicking the Windows Start menu and selecting Programs > PCMILER 28 > PCMILER 28.

If you are not an Enterprise License Customer: If the computer you are installing to has an Internet connection and you have a valid email address, the license activation can be processed automatically. Enter your **Email Address** then click **Activate**. “Manual Activation” should be left unchecked.

If **RouteSync** is one of the components you are installing, before clicking “Activate” you will also need to enter an alphanumeric or alphabet-only password of your choosing and then enter it again to confirm. (Record this password and keep it handy, as you will be asked to enter it again when you use RouteSync for the first time in PC*MILER.)

NOTE: Internet license activation is available 24 hours a day. If you don’t have an active Internet connection or email address, please contact Technical Support during business hours for assistance – see section 15.1.

5. If the activation is successful, you will see a “**License Activation Complete**” message that directs you to open an email from ALK Technologies for further instructions. If the activation was NOT successful, try activating manually (Steps 16-23 in section 2.5.1) before calling Technical Support. To contact Technical Support, see section 15.1 in this *User’s Guide*.
6. After activation, open the email you received, then follow the instructions for copying the “**net.lic**” file included with the email to the “App” folder in your PC*MILER installation. Net.lic holds the license or user count for your installation. Until you save this file to the designated folder, you will only have a single-user installation. The PC*MILER application is now accessible on the server (see Step 2 below for access options).

INSTALLING ON A WORKSTATION

To install PC*MILER on each workstation, follow these steps:

1. Click the Windows **Start** menu and enter the network path, then press **Enter** on the keyboard. To find this path, navigate to the server’s “PCMILER28” folder, right-click the folder, and go to *Properties* > *Sharing*. The network path can be copied and pasted from there.

-
2. Next, you will be asked to choose your workstation setup options. Two screens will prompt you to select the type of settings you would like to use.

The setup options in the first screen (Settings Location) are:

- **Use local setting** – Allows the user at each workstation to customize default options and manage settings, including custom roads and places.
- **Share network settings** – Provides each workstation the same default options and settings within the application.

The setup options in the second screen (Settings Data) are:

- **Use local data** – Installs data to the local workstation. This option can decrease the time it takes PC*MILER to open and begin processing, and reduces network traffic. In general, the performance is better. However, there must be enough hard disk space to accommodate the data.
- **Share data on your network, default** – This is the default choice. PC*MILER uses the shared data that was installed on the server.

NOTE for RouteSync Users: Currently only one RouteSync account is allowed per installation. To access RouteSync functionality from multiple workstations, one master RouteSync account must be shared.

3. To start PC*MILER on a workstation once the installation is complete, double-click the PC*MILER icon on the desktop, or click the Windows **Start** menu and select **Programs** (or **All Programs**) > **PCMILER 28** > **PCMILER 28**.

2.5.6 Citrix and Terminal Services Installations

NOTE: Have your **Product Key Code(s)** on hand before beginning the installation process. They will be emailed to you from alkservices@alk.com in an email with the subject line “PC*MILER Software Order...” (*Enterprise License customers excluded*). “(Citrix/Terminal Services)” will be included in the Product Key email signifying that you have purchased a Citrix or Terminal Services license. If this is not listed, please contact an Enterprise Solutions account executive to purchase the correct license and request one Product Key Code for each individual server you are installing to.

UNINSTALLING AN OLDER VERSION: If you need to uninstall a previous version of PC*MILER on the computer that you are now installing to, you must do it **before** installing PC*MILER 28. If you do not need to uninstall, you can have both versions of the desktop program installed on the same system. Please note that PC*MILER|Connect, PC*MILER|Mapping and PC*MILER|Spreadsheets will be updated to the new version.

Custom places, custom road preferences, and geofence files that were saved in an older version of PC*MILER can be transferred and converted to Version 28. For

custom place conversion, see section 3.13.5. For custom road conversion, see section 11.1.7. For geofence conversion, see section 11.6.7.

BEFORE USING PC*MILER: Citrix supports 16 bit and 24 bit color, while PC*MILER supports 16 bit and 32 bit color. A Citrix end user must set the color resolution on their workstation to 16 bit before they log into a Citrix server to run PC*MILER. If an end user has their color resolution set to 32 bit and logs in to Citrix, the Citrix software will adjust it downward to 24 bit prior to loading PC*MILER, and PC*MILER will fail to load.

BEFORE INSTALLING, please double-check that the emailed Product Key Code lists all purchased components. For example, the code shown below unlocks the following components: PC*MILER|BatchPro, PC*MILER|Tolls, RouteSync, PC*MILER|Streets (U.S. and Canada), and Worldwide highway data.

Order #: SO-000000001

Product Order #: PC*MILER 28

Date: 7/1/2014 10:33 AM

Product Key Code: 3QYKJ-V2KJ7-KJ2F5-82KJ2-KJ2F2

== PC*MILER 28 (Citrix/Term Serv), BatchPro, Canadian Streets, Tolls, RouteSync, US Streets, Worldwide Data V8

If you were using an existing version of PC*MILER with PC*MILER|Connect and/or PC*MILER|Mapping in your Citrix environment, there may be existing files that require deletion. Citrix and Terminal Servers can have multiple copies underneath C:\Users\\Windows, C:\Documents and Settings\\Windows or in %homedir%\windows like H:\Windows. Copies of the following files should be deleted from any location outside of C:\WINDOWS:

- **Pcmserve.ini**
- **Pcmserve.ctx**
- **Pmwssrv.ini**
- **Pmwssrv.ctx**

Only a qualified Citrix administrator should be installing PC*MILER on a Citrix system. With Citrix in Install Mode, follow the steps in section 2.5.1, *Single User Local (Non-Network) Installation*.

2.5.7 AS/400 and CICS Installations

Installation instructions can be downloaded from ALK's website Support Center at: <http://www.alk.com/support>.

2.6 Starting and Closing PC*MILER

To start the PC*MILER application, double-click the PC*MILER icon on the desktop, or click the Windows **Start** menu > **Programs** (or the equivalent on your computer) > **PCMILER 28** > **PCMILER 28**.

To close PC*MILER, choose *Exit* from the red File application menu, press **Alt+F4**, or simply close the application window.

2.7 Proxy Setup For Internet Access

The following PC*MILER features require a connection to the Internet:

- License activation
- Software update and patch downloads via the Updater tool
- Real-time traffic data
- Satellite imagery on the RouteMap
- RouteSync

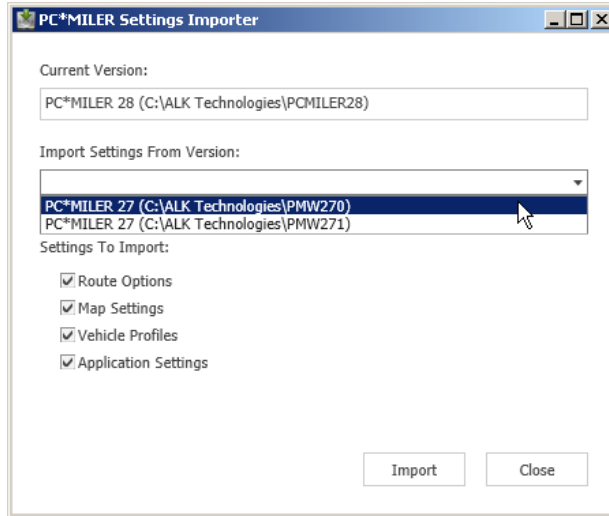
For those who need to bypass current security settings to access the Internet while using PC*MILER, the steps to complete the proxy setup are below. The setup can be implemented after PC*MILER has been activated or before activation during the temporary grace period after installation.

1. Open PC*MILER and select the Help tab > Windows group > *Proxy Setup*.
2. In the Proxy Setup dialog, check **Use Proxy Server** then enter a **Host** and **Port**.
3. If needed, check **Proxy Authentication** then enter a **Username** and **Password**.
4. Click **OK** to save your settings and close the dialog. PC*MILER is now set up to use the indicated proxy server when connecting to the Internet.

2.8 Importing Saved Files and Settings From a Previous Version

Saved route files, custom road preferences, custom places, and geofence files can all be transferred from an older version of PC*MILER (Version 27 or 27.1) to the newly-installed version. Saved route files will be automatically updated when they are opened in PC*MILER 28. For custom place conversion, see section 3.13.5. For custom road conversion, see section 11.1.7. For geofence conversion, see section 11.6.7.

Additionally, a Settings Importer utility is provided that lets you import customized route options, custom road speeds, map feature settings, custom vehicle profiles, custom routing profiles, and general application settings from the previous version.



*PC*MILER Settings Importer*

Here are a few things to note about this utility:

- It will only import from the previous year's release – i.e. from Version 27 or 27.1 to Version 28.
- Settings that change annually, such as currency conversion rate and fuel cost, are not imported.
- The current default values in PC*MILER will be overwritten. For trip options and road speeds, only those values that have been customized in the previous version will be imported.
- The import utility includes a license check and won't run on workstations using shared data. An error message will appear if an import request cannot be processed.

To use the Settings Importer, follow these steps:

1. Select the Windows **Start** menu > **All Programs** (or the equivalent for your operating system) > **PCMILER 28** > **Settings Importer**.
2. In this dialog, uncheck any settings you do NOT want to import.
3. Choose a version from the **Import Settings from Version** pick list.
4. Click **Import** to proceed with the import (click **Close** if you decide not to proceed). Close the Settings Importer window when the process is complete.

2.9 Adding New PC*MILER Products

NOTE: A multi-user license cannot be changed to a single-user installation of PC*MILER by simply adding the license – you must fully uninstall, deactivate your multi-user license, then reinstall using the new Product Key Code.

NOTE: To install a PC*MILER|Traffic subscription, see section 2.5.3. To install PC*MILER|Worldwide, PC*MILER|Energy or DTOD data, see section 2.5.4.

You may find that you want to purchase an additional PC*MILER component sometime after the initial installation of PC*MILER.

First, call **PC*MILER SALES** at **1-800-377-6453 ext. 1** (or 1.609.683.0220 ext. 1 outside of the U.S.) 9:00am-5:00pm EST, Monday-Friday to purchase the product(s) and obtain a new Product Key Code to license and install the new product(s). Once you receive the new product key code, follow the instructions below for a single user or multi-user workstation.

SINGLE USER AND MULTI-USER SERVER INSTALLATION

1. Go to the Windows **Start** menu > **Programs** (or **All Programs**) > **PCMILER 28** > **License Status**.
2. In the PC*MILER License Tool window, click **Add License**.
3. In the PC*MILER Product Activation window, enter the **product key** for the purchased component(s) and click **Add License**.
4. When prompted, enter your **Email Address**. If you are installing RouteSync, you will also need to enter a **Password** and confirm it.
5. Click **Activate**.
6. When the activation process is complete, you will see the message “License Activation Complete!”. Close the Product Activation window.
7. Back in the License Tool window, make sure all new and existing PC*MILER components are listed under **Licensed Components**.
8. Some components include data that needs to be installed after the license has been activated. These components will appear on the Licensed Components list with an asterisk (for example, “Canadian Postal Codes*”). In this case, follow Steps 9-14 below.

If there are no components that need to be installed, you can close the License Tool window and begin using the newly-added PC*MILER products.

Components that do NOT have additional data that needs to be installed include: PC*MILER|Traffic, PC*MILER|HazMat, PC*MILER|RouteMatrix, and RouteSync.

9. **To install newly added components**, go to the Windows **Start** menu > **Control Panel** > **Programs and Features** (or the equivalent on your system, for Windows XP this is Settings > Control Panel > Add/Remove Programs).
10. In the list of installed programs, right click PC*MILER 28 and choose *Change*.
11. In the InstallShield Wizard, choose **Modify** and click **Next**.
12. In the next screen, you will see the list of **Licensed Features** (all activated features will be listed – check that the component you are installing is included in the list). Click **Next** to continue.
13. In the next screen you'll see the **Destination Folder** for the installation. Click **Next** to start copying files.
14. When the installation is complete, click **Finish**.

MULTI-USER INSTALLATION, FROM A WORKSTATION

1. Go to the workstation.
2. Browse to the shared ...\\PCMILER28\\network folder on the server.
3. Run the setup.exe and choose “**Modify**”.
4. Follow through with the rest of the installation.

2.10 Deactivating and Uninstalling a License

You must fully deactivate the product's license and uninstall all PC*MILER components, including local, network, enterprise, or server installations if you are:

- Moving any PC*MILER installation to a new computer.
- Reformatting a computer that PC*MILER is currently installed to.
- Returning the product.
- Reinstalling on the same PC.

Here are the steps for deactivating and uninstalling:

1. Go to **Start** > **Programs** (or **All Programs**) > **PCMILER 28** > **License Status** and in the PC*MILER License Tool window click **Deactivate**.
2. In the PC*MILER Product Deactivation window, click **Deactivate**.

-
3. When the deactivation is complete, you will see a “Deactivation Complete” message, with the deactivated product keys listed below.
 4. Close the Product Deactivation and License Tool windows.
 5. To uninstall after deactivating, go to the **Start** menu > **Settings** > **Control Panel** > **Programs and Features** (in Windows XP, this is **Add/Remove Programs**).
 6. In the **Programs and Features** (or **Add/Remove Programs**) window, highlight **PC*MILER 28**. Right-mouse click and select **Uninstall** (Windows 7), or click the **Remove** button on the right in the highlighted text (Windows XP).
 7. Click **Yes** at the prompt to completely remove the application.
 8. Click **Finish** when the installation process is complete.

NOTE: If any messages appear during the uninstall process that say that a certain file cannot be removed, click **OK** to continue.

9. **!! IMPORTANT STEP !!** Once the uninstall process is finished, you will need to delete the **...ALK Technologies\PCMILER28** folder manually to completely remove the PC*MILER application from your system. The default location for this folder is C:\ALK Technologies\PCMILER28.

NOTE: If you deactivated/uninstalled an installation that included PC*MILER components that were licensed and added after the initial installation, you will need to add those components separately again when you reinstall.

2.11 Installation: Frequently Asked Questions

For FAQs related to problems you may have with the installation of your PC*MILER products, please go to www.alk.com/support.

2.12 Help Files, Technical Support and ReadMe

HELP FILES

PC*MILER includes a complete system of Help files that are easy to use. There are three ways to open the Help window:

1. Click a help button in any dialog box that has one.
2. Press **F1** on your keyboard.
3. Select the Help tab > Help group > *Help Index*.



In the left pane of the Help window, use the **Contents**, **Index**, or word **Search** tab to navigate to the topic you need.

The **Contents** tab lists all available topics. Click any plus sign next to a main topic to see the related topics underneath. Click on any topic in the Contents tab to open it in the right pane. Scroll the topic in the right pane if necessary to read all of it. Many topics include links to additional related topics.

In the **Index** tab, click on any index entry to see the related topics and double-click on a related topic to open it.

In the **Search** tab, type a word or phrase then click **List Topics** to find topics that contain that word or phrase. In the list of topics that displays, double-click a topic to navigate to it.

TECHNICAL SUPPORT

See Chapter 14, *Technical Support and Contact Options*.

README FILE

Consult the **ReadMe** file for last-minute product information, updates to the PC*MILER documentation, and additional feature information. To see this file after PC*MILER has been installed, click the Windows® **Start** menu > *All Programs* (or the equivalent option) > *PCMILER 28* > *ReadMe*.

2.13 PC*MILER Feature Reference Guide

Beginning with Version 27, the PC*MILER user interface was updated with a new look and feel while retaining the same functionality as in previous versions. The new interface features a ribbon style design, a more organized layout for smoother navigation, and windows that can be floated outside the PC*MILER application to better accommodate your workspace needs. Users of recent versions of Microsoft® Office 2007 and higher will already be familiar with the Ribbon format.

For users of Version 26 and previous versions of PC*MILER who are updating, a reference table in PDF format is provided so you can quickly look up the new way to access features and options that are already familiar to you.

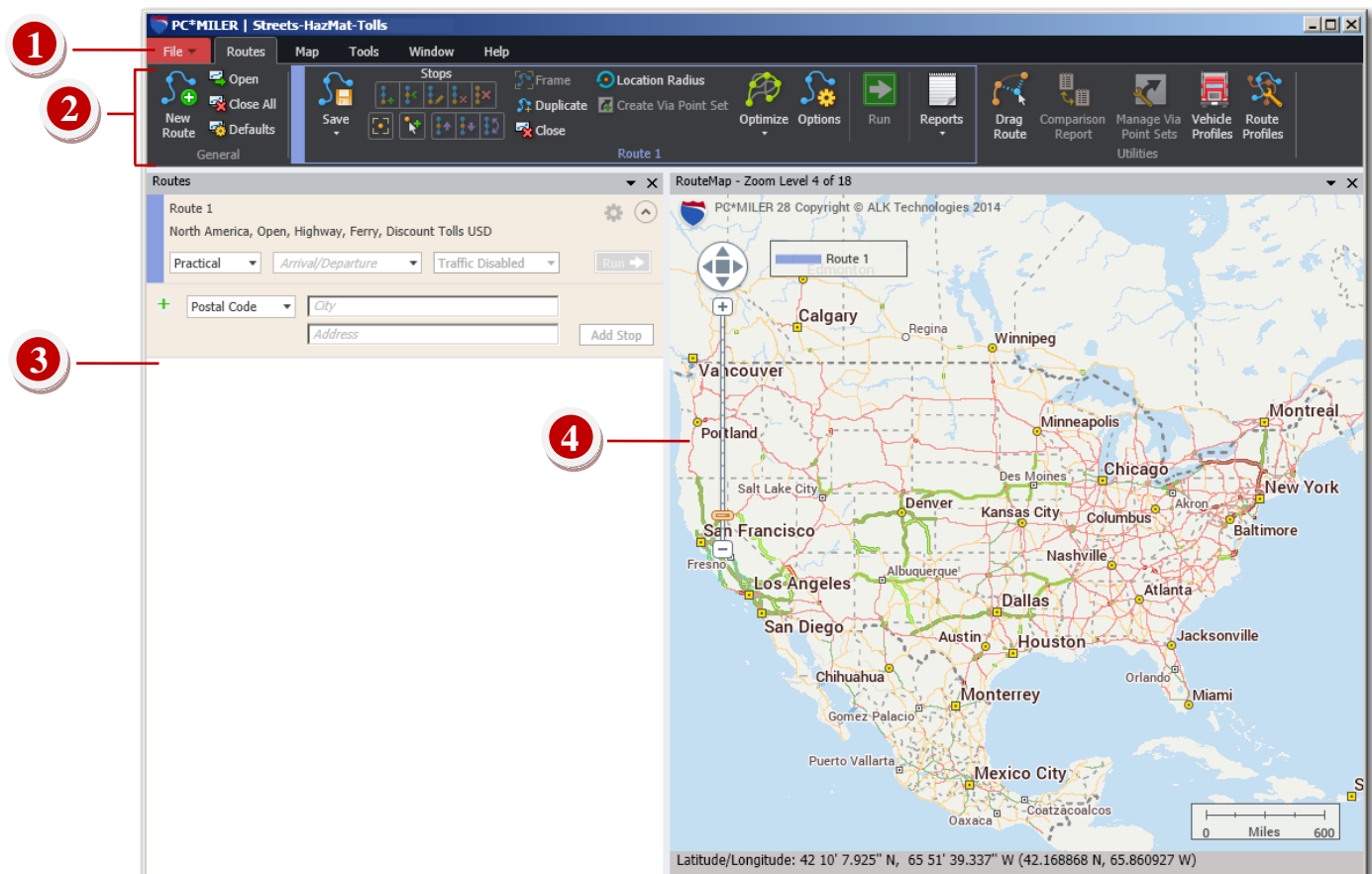
To access the reference table, click the Windows® **Start** menu and select *All Programs* (or the equivalent option for your version of Windows) > *PCMILER 28* > *User Guides* > *Feature Reference Guide*.

PDF documents can be searched for a key word – type the word into the *Find* box on the toolbar. If this box is not visible, select the View menu > *Toolbars* > *Find*. The drop-down menu off the *Find* box can be used to refine your search.

3.1 The PC*MILER Application Window

When you first open PC*MILER, you'll see an active route window on the left, the RouteMap window on the right, and a Ribbon toolbar at the top. The Ribbon contains layered toolbars organized in tabs like a set of file folders. When you click a tab, the attached toolbar becomes visible. Users of recent versions of Microsoft® Office® and Windows® will already be familiar with the Ribbon format.

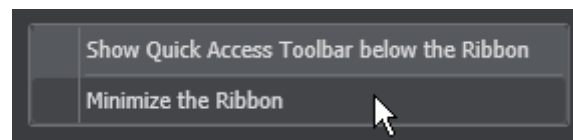
The options in each toolbar on the Ribbon pertain to tasks that are related to each other. For example, all tools in the Map tab perform tasks related to the RouteMap window. In the screenshot below that shows your initial view of PC*MILER, the Routes toolbar is visible.



*PC*MILER Application Window – Initial View*

-
- 1 - The File Application Menu.** Click the red File drop-down to open the PC*MILER application menu. This menu can be used to print and save maps and reports, change application settings, close all open routes or reports, and to exit PC*MILER.
 - 2 - The Ribbon,** with the **Routes** tab selected. As mentioned above, the Ribbon at the top of the application window contains layered toolbars organized in tabs like a set of file folders. The Routes toolbar provides tools for entering and editing stops on a route, setting route options, and generating routes and reports.

There are six tabs on the PC*MILER Ribbon: **Routes, Map, Tools, Window, RouteSync,** and **Help.** The Ribbon can be minimized if needed: right-click on it and select *Minimize the Ribbon.*



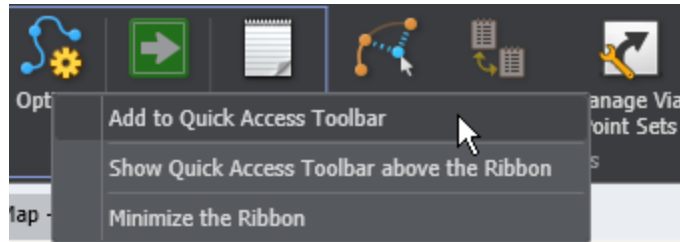
- 3 - The Routes Window.** This is a floatable pane that houses all the individual route windows that are created. Up to eight routes can be open simultaneously inside the Routes window. Click *New Route* in the Routes tab > General group to open a new route window in which you can enter stops and then generate costs, miles and time estimates. When there's not enough room to display all open routes, a scroll bar appears on the right edge of the Routes window that allows access to the hidden routes.
- 4 - The RouteMap™ Window.** The PC*MILER RouteMap window is now floatable. The RouteMap provides a graphical representation of ALK's proprietary highway and local street* network. Each route you run is automatically drawn on the map in the indicated color. This color is shown on the left edge of each route window, in the Route legend on the map, and on the Ribbon. Use this window to compare routes, zoom into stops and specific locations, pick stops directly from the map, drag a generated route onto new roads, create avoid/favor preferences, and more.
** Local streets are only available if PC*MILER/Streets is installed.*

3.2 Using the Quick Access Toolbar

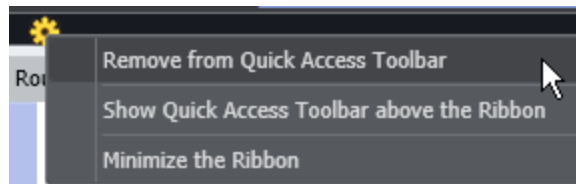
A Quick Access Toolbar is available in the PC*MILER application window. This is a customizable toolbar that allows you to quickly access some of the features on the Ribbon that you use frequently, without clicking a tab first. The toolbar is only displayed when at least one button has been added to it.

Not all buttons can be placed on the Quick Access Toolbar, only buttons that perform an action (e.g. *New Route* or *Options*). Drop-downs (e.g. *Save*) and toggle buttons (e.g. *Avoid Roads*) can't be added, but items in a drop-down that have an icon can be. See NOTE below.

To place a button on the toolbar, right-click the button and select *Add to Quick Access Toolbar*. The toolbar will appear in its default location below the Ribbon.



To remove a button, right-click it on the Quick Access Toolbar and select *Remove from Quick Access Toolbar*.



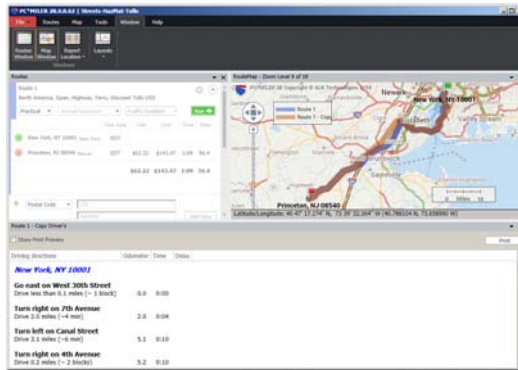
To put the toolbar above the Ribbon, right-click it and select *Show Quick Access Toolbar above the Ribbon*. The Quick Access menu also gives you the option to minimize the Ribbon to increase the workspace in the application window.

NOTE: Features on the Ribbon that *cannot* be added to the Quick Access Toolbar are listed below.

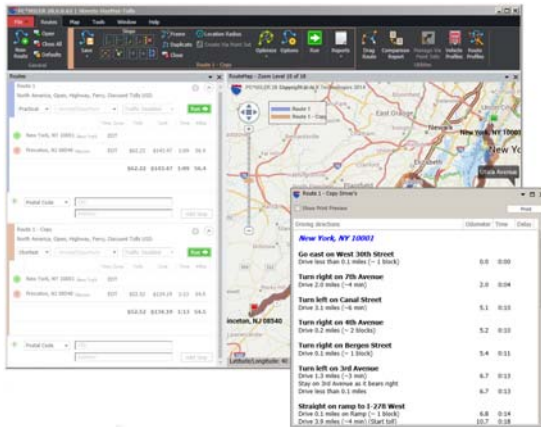
Routes Tab:	Save, Optimize, Reports (<i>but all menu items can be added</i>)
Map Tab:	Map Style, Legends, Stop Labels, Tooltips, Drag Map, Box Zoom, Frame, Change Data Set
Tools Tab:	Create Geofence, Geofence Options (<i>menu items can be added</i>), Avoid Roads, Favor Roads, Toggle Overrides, Adjust for Permits, Pick Places on Map
Window Tab:	Routes Window, Report Location, Map Window, Layouts

3.3 Window and Layout Options

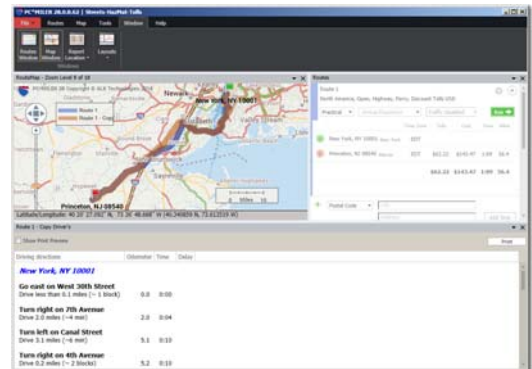
The three panes in the PC*MILER application window – Routes, RouteMap and Reports – can be arranged in several different layouts. Select the Window tab > Windows group > *Layouts* and choose your preferred layout from the options in the drop-down menu.



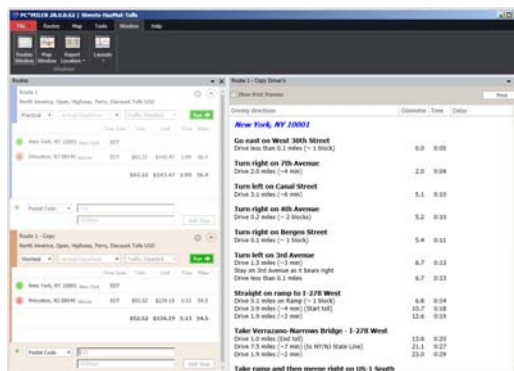
Default Layout



Routes on the Left, Floating Reports



Routes on the Right, Bottom Reports



Routes and Reports, Hidden Map

Additionally, these panes can each be manually resized, floated as a separate window, or hidden. Click the down arrow in the window controls and select an option.



Float	Detaches the pane from the main PC*MILER application window, so that it can be moved around your screen and placed in a convenient position.
Dock	Reverses the “Float” command – the pane will return to its previous position inside the PC*MILER application window.
Hide	Hides the pane. Another way to do this is to simply click the “X” next to the drop-down arrow. To reopen, use the Window tab > Windows group options.

3.4 PC*MILER Shortcut Keys

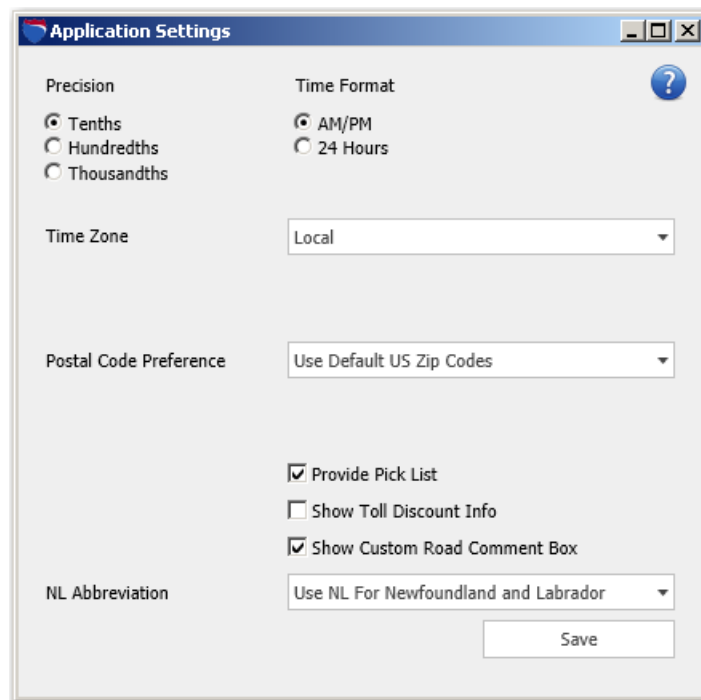
For those who prefer using a keystroke rather than making a selection with the mouse, PC*MILER provides shortcut keys for commonly-used options. These alternate keystrokes are listed below.

KEY(S)	FUNCTION
F1	Invoke Topic Look Up in Help.
F2	Invoke the Custom Place Manager.
Alt+F2	Invoke the Avoid/Favor Manager.
F3	Open a scrollable list of state abbreviations.
Alt+F3	Invoke the Route Options dialog box for the active route.
F4	Generate a Comparison Report.
Alt+F4	Exit PC*MILER.
F5	Display the Detailed Route Report for the active window.
F6	Display the State/Country Report.
F7	Insert a stop above the one highlighted on the stop list.
F8	Delete the stop that is highlighted on the stop list.
Alt+F8	Delete all stops in the route window.
F10	Generate routes and distances (“Run” in the route window).
Alt+F10	Optimize the stop order for an optimal route.
Alt+Bkspace	Undo typing in any entry field.
Ctrl+S	Save the active route with the existing filename.

Ctrl+Shift+S	Save the active route with a new filename.
Ctrl+C	Copy the open report to the clipboard for use with another program.
Ctrl+N	Open a new route.
Shift+↑	Move the highlighted stop up one line on the stop list.
Shift+↓	Move the highlighted stop down one line on the stop list.

3.5 Application Settings

There are several application settings that affect the way PC*MILER calculates routes and displays information. To open the Application Settings dialog box, click the red File menu > *Application Settings*.



Application Settings Dialog

Options in the Application Settings dialog are:

Precision: Choose how precise mileage reporting will be. This option affects all reports that include mileage as well as the calculations in route windows.

Time Format: Choose whether times of day should be displayed in AM/PM or 24-hour (“military”) format; e.g. 3:20 PM or 15:20.

Time Zone: Use the pick list to select how times/dates are reported (local, system, or a specific time zone). This option affects how dates/times are reported but not how they are calculated. See section 5.1, *Route Generation With ETA/ETD*.

Postal Code Preference: Use the pick list to select how PC*MILER handles Mexican and U.S. locations that have the same postal code. Possible options are described below, but note that if **Provide Pick List** is checked below the dropdown, a pick list of Mexican and U.S. locations will always open if both are in the database for the location that was entered.

- *Use Default US Zip Codes:* The default U.S. ZIP code will be returned. Mexican codes cannot be entered.
- *Use Default Mexican Zip Codes:* The default Mexican postal code will be returned. U.S. codes cannot be entered.
- *Use Default US and Mexican Zip Codes:* The default U.S. ZIP code will be returned. However, Mexican codes can be entered with “EM” as the state abbreviation; for example, “**50510, EM**”.

Provide Pick List: This option is checked by default. It provides a pick list of postal codes when there is more than one listing in the database for a location entered as a stop. The order in which locations are listed in the pick list is based on such factors as population and geographic centrality, putting the most densely populated cities at the top. When this option is not checked, PC*MILER will select the first match that is found in the database.

Country Abbreviation Format: (*With PC*MILER/Worldwide or DTOD only*) Select a country code format to use when entering stops in regions outside North America.

Show Toll Discount Info: (*PC*MILER/Tolls must be installed to generate toll costs*) Check to have a breakdown of toll discount programs shown in the state/country summary section of the State/Country report. See section 7.5, *Toll Information in the State/Country Report*.

Show Custom Road Comment Box: When this option is checked, the Comment dialog opens each time an avoid/favor road preference is created. The dialog prompts the user to enter an optional comment. Uncheck this option to disable it (comments can still be entered in the Avoid/Favor Manager).

NL Abbreviation: Choose whether to use the state/province abbreviation “NL” for Nuevo Leon in Mexico or Newfoundland and Labrador in Canada.

3.6 Building a Route

To create a new route, you should be in the Routes tab of the Ribbon. If a blank route window is not visible, open a new route window by selecting the Routes tab > General group > *New Route* or **Ctrl+N** on your keyboard. The elements in a new route window are shown below.



- 1 - Route Name.** By default, each new route is named “Route 1”, “Route 2”, etc. A custom route name can be assigned in the Route Options dialog box (see section 9.1). The route name appears in all reports and in the Route legend on the RouteMap.
- 2 - Current Route Options.** Current route options are displayed here, under the route name. The drop-downs below can be used to change the route type, set an arrival or departure time, and enable/disable traffic features. Additional general route options – including the region for PC*MILER|Worldwide or DTOD users – can be changed using the Route Options dialog box (see section 9.3).
- 3 - Color Bar.** Each route displays in a different color on the RouteMap. A route’s color is shown in this color bar, on the Ribbon, and in the Route legend on the map.
- 4 - Route Options Button.** Click the gear button to generate reports, access the Route Options dialog box (see Chapter 9), access RouteSync (see Chapter 13), and to float, dock or close the route window.
- 5 - More/Less Button.** Use this button to toggle between a fully expanded and a minimal view of the route window.

-
- 6 - “Run” Button.** When at least two valid stops are entered for a route, this button turns green. Click it to generate distances, costs, and time estimates.
 - 7 - Stop Entry.** Stops are entered here in the *City* field. If PC*MILER|Streets is installed, an address can also be entered in the *Address* field. Click **Add Stop** or press **Enter** on your keyboard to validate the stop and add it to the stop list for this route.
 - 8 - Postal Code/SPLC Drop-down.** To enter a SPLC, you must choose *SPLC* from this drop-down menu. City names and postal codes won’t be accepted when *SPLC* is selected. (A *SPLC add-on license is required to enter SPLCs.*)

3.6.1 Stop Entry

VERY IMPORTANT For PC*MILER|Worldwide and DTOD Users: You must have the **proper region** selected in the Route Options dialog box when you enter stops on a route. See section 3.6.4 on region selection. Also see section 3.6.6 on changing the data set if you are entering local street addresses, and section 10.2 to frame the correct region on the map.

To generate distances and driving instructions for a route, you need to specify at least two stops – an origin and destination. An unlimited number of stops may be entered. PC*MILER will always treat the stop at the top of the stop list as the origin of the route and the last stop on the list as the destination, unless you are generating hub distances (see section 9.3.3). As you add stops, each one will be placed below the previous stop on the list, creating the stop order from origin to destination.

To enter a stop, follow these steps:

1. Select the Routes tab > General group > *New Route* or the **Ctrl+N** keys.
2. In the *City* field of the new route window, type a location using any valid format (see the list of formats below); a street address can be included in the *Address* field if PC*MILER|Streets is installed.
3. Click **Add Stop** or press the **Enter** key on your keyboard.
4. If the location you entered is valid, the stop will appear above the *City* field in a stop list. For a stop to be valid, there must be a match in the PC*MILER database. If an error is returned, see section 3.6.22. To enter an arrival or departure time, see Chapter 5. To set options for a route, see Chapter 9.

You can input a city, town or location in any of the formats that are listed below and described on the following pages:

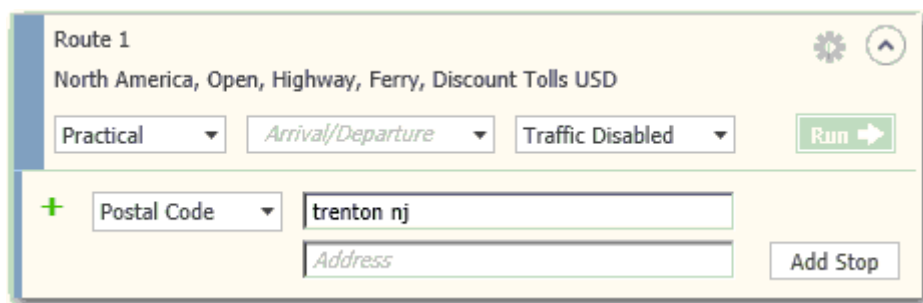
- Type a city name, followed by a comma or space and the state abbreviation (see section 3.6.2 below); a street address may be included if PC*MILER|Streets data is installed (see section 3.6.3)
- Get spelling help using a pick list of matches (section 3.6.8)
- Enter a 5-digit ZIP or postal code (section 3.6.9)
- Enter a 6-digit Canadian Postal Code (if the separate add-on data module is installed – see section 3.6.10)
- Enter a SPLC (if the separate add-on data module is installed – see section 3.6.11)
- Point and click with the mouse on a location in the map window (section 3.6.21)
- Type in or point-and-click on a latitude/longitude point (sections 3.6.14 and 3.6.21)
- Locations may also be entered as custom places, and for U.S./North American locations, as border crossings, highway junctions, highway exits, truck stops, CAT scale or state weigh stations. See sections 3.6.12-3.6.19 and 3.13.

TIP on DATA MATCHING: To confirm that your location data matches the PC*MILER database, please see section 3.13.4, *Importing Custom Places*.

3.6.2 City Name and State/Country Abbreviation

To enter a city or town using the city/state format, first type the city name and two-letter state/province/country abbreviation in the *City* field, then click **Add Stop** or press the **Enter** key on your keyboard. The city name can be any length. The city and state/country do not need to be capitalized, but do need to be separated by either a comma or a space.

Examples: **chicago, il** **chicago il** **paris,fr** (*PC*MILER/Worldwide or DTOD users only*)



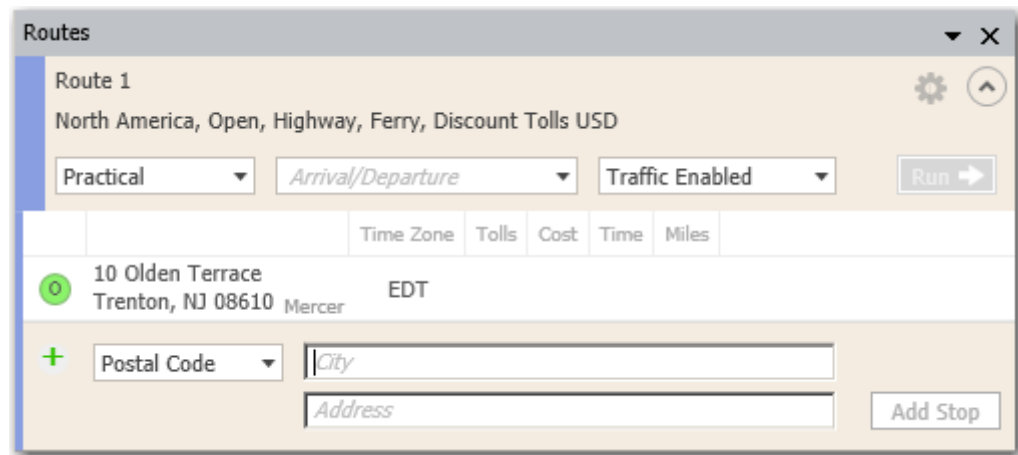
Entering Trenton, NJ as a Stop

If the city name contains two or three words, each portion of the city name must be separated by spaces. For example:

los angeles, ca
salt lake city ut
belle croix,fr (PC*MILER/Worldwide or DTOD users only)

After you click **Add Stop**, PC*MILER will search through the database for a location that matches the city name you entered. If multiple listings are found in the database for the same location, a scrollable pick list will open. Highlight your choice and click **OK**.

If your entry was valid, a stop list will open above the *City* field and the stop you entered will be displayed along with a time zone:



Stop List Populated With a Stop

If you want to have PC*MILER pick a default match rather than open a pick list of multiple postal codes, select the File application menu > *Application Settings*, then uncheck **Provide Pick List** and click **Save**. By default “Provide Pick List” is checked and if there is more than one location for a city name, the most densely populated city will appear at the top of the pick list, with an alphabetical listing of other cities below. See section 3.6.7 for a description of the default city/postal code selection process when this option is turned off.

If you are unsure of the correct spelling for a city name, spelling help is available – see section 3.6.8. To look up state/province/country abbreviations, press the **F3** key to bring up a scrollable reference list.

If PC*MILER|Worldwide or DTOD data is installed, country abbreviations outside North America may be entered using FIPS 2-character, ISO 2-character, ISO 3-character, GENC 2-character or GENC 3-character codes. FIPS codes are accepted by default. To use another format for stop entry, select the File application menu > *Application Settings*. Choose an option from the **Country Abbreviation Format** drop-down list.

3.6.2.1 Entering Mexican and Canadian Locations

Mexican place names can be entered using a postal code, or a city name plus a two-letter ISO abbreviation. (Press **F3** or see *Appendix C* in this Guide for a complete list of Mexican estado abbreviations.) Examples of Mexican locations:

**puerto vallarta, ja
99250**

Some Mexican and U.S. locations have the same postal code assigned to them. The way PC*MILER handles Mexican versus U.S. postal codes in these cases is determined by the setting in the Applications dialog box. (Select the File application menu > *Application Settings*, and use the **Postal Code Preference** drop-down.) Possible options are described below, but note that if **Provide Pick List** is checked below the drop-down, a pick list of Mexican and U.S. locations will always open if both are in the database.

- *Use Default US Zip Codes:* The default U.S. ZIP code will be returned. Mexican codes cannot be entered.
- *Use Default Mexican Zip Codes:* The default Mexican postal code will be returned. U.S. codes cannot be entered.
- *Use Default US and Mexican Zip Codes:* The default U.S. ZIP code will be returned. However, Mexican codes can be entered with “EM” as the state abbreviation; for example, “**50510, EM**”.

Canadian postal codes can be entered only if the separate PC*MILER Canadian Postal Codes add-on data module is installed. With this module installed, a pick list of Canadian postal codes will be invoked when a Canadian place name is entered that has multiple postal codes assigned to it – provided that **Provide Pick List** is checked in the Application Settings dialog (File application menu > *Application Settings...*). See section 3.6.10 on entering Canadian postal codes.

If the postal code data module is not installed, Canadian place names can only be entered using the city name and province abbreviation, for example:

montreal, qc

Press **F3** or see *Appendix C* in this Guide for a complete list of Canadian province abbreviations.

NOTE: “NL” is recognized as Newfoundland and Labrador unless this setting has been changed to mean Nuevo Leon using the Application Settings dialog (File application menu > *Application Settings*).

NOTE Also: To enter a location name that includes one or more accented letters (for example, Felipe Ángeles, CI), you can either 1) use the postal code, or 2) use the Insert > Symbol option in Microsoft® Word or Excel® to type the location name and then copy and paste into the route window in PC*MILER.

3.6.2.2 Entering Locations in Australia (PC*MILER|Worldwide only)

If the Streets Oceania address data set is installed and activated (see section 3.6.6), locations in Australia must be entered using jurisdiction abbreviations rather than a country code. These abbreviations are listed below. If the Streets data set is not activated, any of the valid country codes listed in *Appendix C* can be used for highway-only routing.

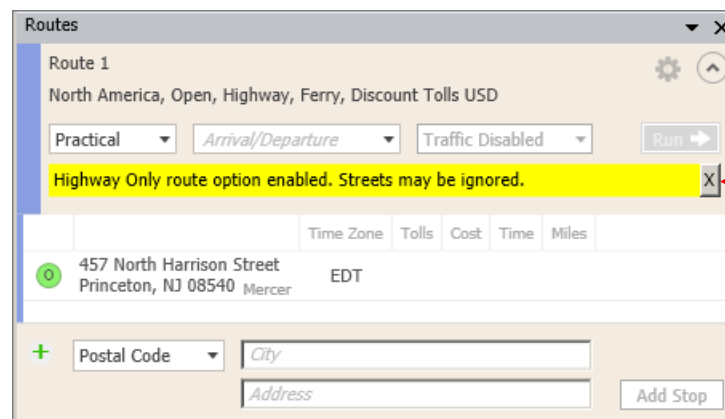
Australian Jurisdiction	PC*MILER Abbreviation
Australian Capital Territory	ACT
New South Wales	NSW
Northern Territory	NT
Queensland	QLD
South Australia	SA
Tasmania	TAS
Victoria	VIC
Western Australia	WA

3.6.3 Address Entry


(Applies only in countries for which Streets data has been purchased) If PC*MILER|Streets address data is purchased and installed with PC*MILER, you can – optionally – specify a street-level address in the *Address* field. PC*MILER will route to each address, and addresses will be labeled on the RouteMap when you run your route. Addresses can be added to a city/state or postal code entry.

An address can also be combined with a latitude/longitude point for more precise geocoding – see section 3.6.15.

If, when entering a stop, you enter an address when the “**Use Highway Only**” route option is activated, a highlighted warning that says “*Highway Only route option enabled*” will appear above the stop list in the route entry window.



“Highway Only” Warning in a Route Window

The above-mentioned warning reminds you that a route won't use local streets unless the highway-only option is turned off. This option is turned on by default in the Route Options dialog, General tab. To delete the warning, click the "X" on the far right. To use local streets in routing, select the gear button  > *Options*, uncheck **Use Highway Only**, then close the Route Options dialog. To have local street routing turned on by default for every new route, select the Routes tab > General group > *Defaults* and uncheck **Use Highway Only** in the Default Route Options dialog.

In North America, address data is available for the US and Canada. With PC*MILER|Worldwide installed, address data is also available in Europe, India, and available countries in Africa, the Middle East, Oceania and South America. The appropriate data set must be selected – see sections 3.6.4 and 3.6.6 below. For Australia, see section 3.6.2.2 above.

For PC*MILER|Worldwide Users: In addition to having the correct region and data set selected, you may need to frame a different map region – see section 10.2.

NOTE: The pick list setting in the Application Settings dialog box determines how PC*MILER handles incomplete or inaccurate street names that are entered in the route window. Select the red Application Menu > *Application Settings* to see this setting. If **Provide Pick List** is unchecked, the first approximate match that is found in the database (if there is one) will be returned. When **Provide Pick List** is checked (this is the default setting), a pick list will open and you can choose an address from it.

TIP: If you enter a ZIP/postal code and PC*MILER can't find an address that you specify within that code, try expanding your search by entering the city name. In general it is recommended that, when entering or importing addresses, you use the corresponding city/state instead of the location's postal code. (For example, enter "457 North Harrison Street, Princeton, NJ" rather than "457 North Harrison Street, 08540".) Using the city and state/province will increase the geocoding "hit rate" and provide a more accurate representation of the address when routing.

3.6.4 Changing the Region (*PC*MILER|Worldwide and DTOD only*)

If the PC*MILER|Worldwide or DTOD data add-on module is installed, the **correct world region** must be selected in the Route Options or Default Route Options dialog box when entering stops. In each route entry window, the currently selected region is displayed under the route name. To change the region for the active trip, select the Routes tab > Route group > *Options* or click the gear button in the route entry window and select *Options*, then choose a region from the **Region** pick list in the **General** tab of the Route Options dialog.

To change the **default region** for all trips, select the Routes tab > General group > *Defaults* and choose a region as described above. Now every route entry window you open will be set to the region you selected.

If the wrong region is selected (i.e. it does not match the stop you are attempting to enter), normally either an error message will appear or your input will be matched with a city by the same name in the selected region; for example, if you enter “Paris, FR” when your region is North America, “Paris, AR” will be returned as a stop. The currently selected region is always displayed above the route name in the route entry window.

However, with PC*MILER’s **trans-regional routing**, in certain cases the above rule does not apply. Because routing between Europe, Asia, Africa, and the Middle East is possible, locations may be entered that do not match the selected region when any of these regions are selected. For example, entering “Paris, FR” will return the correct stop if Asia or Africa is the selected region.

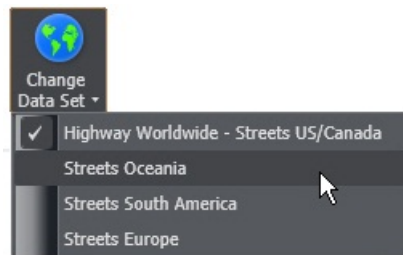
You must also change the RouteMap window to the desired region if you wish to see graphic displays of the routes you run. Select the Map tab > View group > *Frame* > *Regions* > and choose a region from the sub-menu.

NOTE: Options are set for each region separately. PC*MILER remembers the options you last used for each region. When you change regions, all options that were previously used for the new region will become active. To create your own custom default settings for each region, select the Routes tab > General group > *Defaults*.

3.6.5 Changing the Country Format *(PC*MILER/Worldwide and DTOD only)*

Worldwide country abbreviations may be entered using either FIPS 2-character, ISO 2-character, ISO 3-character, GENC 2-character or GENC 3-character codes. FIPS codes are accepted by default. To use another format for stop entry, click the File application menu and select *Application Settings*, then choose an option from the **Country Abbreviation Format** drop-down list. For a complete list of worldwide country abbreviations, see *Appendix C*.

3.6.6 Changing the Data Set



*Change Data Set Menu (with PC*MILER/Worldwide installed)*

Select the Map tab > Utilities group > *Change Data Set* > to change the version of the map data that PC*MILER uses to calculate routes. The currently loaded data set will be displayed in the title bar of the RouteMap window, shown at the bottom of each page in any generated reports in Print View, and selected with a checkmark in the *Change Data Set* menu.

For ALK's Annual Update Program (AUP) Licensed Users: For PC*MILER (North America only), the options in the drop-down will include the base version data set plus any mid-year versions that have been released since the base version, including PC*MILER|Streets U.S. and Canadian street-level data if installed.

*For PC*MILER/Worldwide Users:* PC*MILER|Streets data modules are available for local street addresses in Canada, the United States, Europe, and some countries in Africa, Asia, Middle East, Oceania and South America. Each module may be purchased separately or in combination with other data sets. **The correct data set must be activated before you enter an address.** When you activate a data set, the correct region will automatically be selected in the Route Options dialog.

*For PC*MILER/Energy Users:* You will see the NA – Streets Canada Energy data set in the *Change Data Set* menu.

3.6.7 Pick List Option

By default, when you enter a stop that has multiple listings in the database, a pick list of matching locations will open. The order in which locations are listed in the pick list is based on such factors as population and geographic centrality. The most densely populated cities that match your entry will be at the top of the pick list.

If you want to have PC*MILER pick a default postal code or address rather than open a pick list, select the File application menu > *Application Settings*. In the Application Settings dialog, uncheck **Provide Pick List**, then click **Save**. When “Provide Pick List” is turned off, if a city name has multiple postal codes or other database entries, the PC*MILER default match will be the first exact match that is found in the database.

3.6.8 Spelling Help

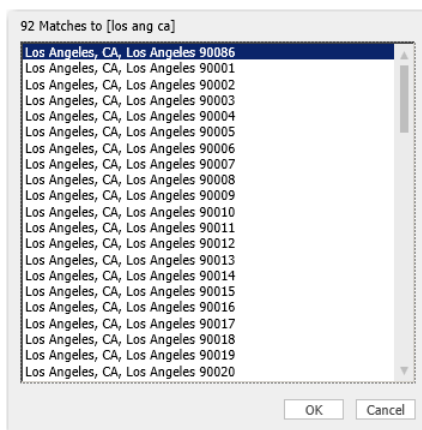
If you're not sure how to spell a city name, or if you received an error message when entering a city and state abbreviation, try getting spelling help as follows:

1. In the *City* field of a route window, type the first letter or first few letters of the city name followed by a comma or space and the two-letter state/province/estado abbreviation. Note that typing more letters of the city name (i.e. two or

three rather than just one) will decrease the processing time needed to create a list of matches.

Examples: **chi,il** **los ang, ca** **pa fr** **los a,ca**

2. Click **Add Stop** or press **Enter**.
3. A pick list of possible matches will open unless this option is turned off in the Application Settings dialog box (File application menu > *Application Settings...*). Scroll the list if necessary and highlight the city or ZIP/Postal code that you wish to select, then click **OK**.



Pick List of Matches for Spelling Help

3.6.9 Entering ZIP/Postal Codes

Entering any valid postal code creates a search for the corresponding city. The city name will be entered as a stop, along with the state abbreviation and postal code.

If you enter: **08540** (*NA region*)

PC*MILER will return: **08540 Princeton, NJ, Mercer**

NOTE: If the +4 ZIP code designation is entered, PC*MILER will ignore it.

IMPORTANT NOTES for PC*MILER|Worldwide and DTOD USERS:

When you are entering postal codes outside of North America, you need to enter a country abbreviation to avoid being routed to the wrong country in cases where the same postal code exists in more than one country.

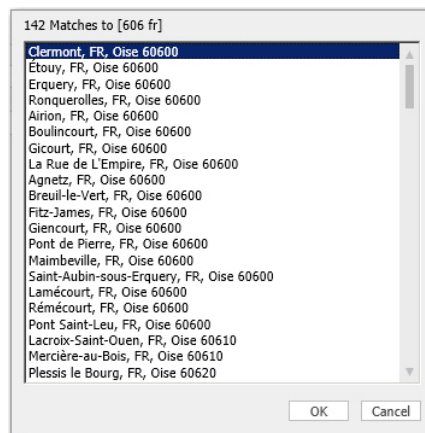
Enter the postal code, a comma, and the correct two-letter country abbreviation; e.g. “**46001, sp**” for Valencia, Spain. Remember that the **correct region** must be selected in the Route Options dialog box (see section 9.3.1). Not all countries have postal codes in the database. Users can import absent postal codes as custom places

if needed. For the format of postal codes in PC*MILER|Worldwide regions and various countries in those regions, see *Appendix H*.

3.6.9.1 ZIP/Postal Code Help

If you're unsure of a particular postal code or if you receive an error message when entering a postal code, do the following:

1. In the *City* field of a route window, type at least the first two digits of the postal code. For postal codes outside North America, enter a country code as well. Examples: **60** or **606 fr**.
2. Click **Add Stop** or press **Enter**.
3. A pick list of all matching codes will be returned unless this option is turned off in the Application Settings dialog box (File application menu > *Application Settings* > *Provide Pick List*). Scroll the list if necessary and highlight the city or ZIP/postal code that you wish to select, then click **OK**.



Pick List of Matches for “606 fr” Entry

3.6.10 Canadian Postal Codes

If the Canadian Postal Code add-on data module is installed, a list of six-digit Canadian postal codes is available for stop entry. The codes are always alphanumeric in the format “ANA NAN” where “A” represents an alphabetic character and “N” represents a numeric character. Entering any valid Canadian postal code will invoke a search for the corresponding city and province name, and these will be entered as a stop along with the postal code.

If you enter: **K7L 4E7** PC*MILER will return: **K7L 4E7 Kingston, ON**

3.6.11 SPLC Entry *(North America only)*

If the SPLC add-on data module is installed, a SPLC can be entered as a stop for any location in North America that has a SPLC assigned to it. SPLCs may be six or nine digits in length. SPLC data used in PC*MILER products is owned, maintained and copyrighted by the National Motor Freight Traffic Association, Inc. To enter a SPLC, do the following:

1. Select “*SPLC*” from the drop-down list to the left of the *City* field.
2. Type your entry and click **Add Stop** or press **Enter**.

NOTE: If you enter a SPLC when “*SPLC*” has not been selected in the drop-down list, you’ll get an error message. **When “*SPLC*” is selected, you won’t be able to enter other types of locations.**

3.6.11.1 SPLC Help

If you need help finding the correct SPLC for a particular location, a pick list of SPLC can be invoked. First **make sure that “*SPLC*” is selected in the drop-down list** to the left of the *City* field, then type at least the first two digits of the SPLC and click **Add Stop**. A pick list of matches will be generated unless this option is turned off in the Application Settings dialog box (File application menu > *Application Settings*).

3.6.12 Border Crossings *(U.S. only)*

You can enter a U.S. state border crossing as a stop on a route using the PC*MILER border crossing naming convention. To quickly locate all possible border crossings between two states, use the [*] wildcard character.

For example, to generate a pick list of all Pennsylvania/New Jersey border crossings, enter:

!njpa*, nj

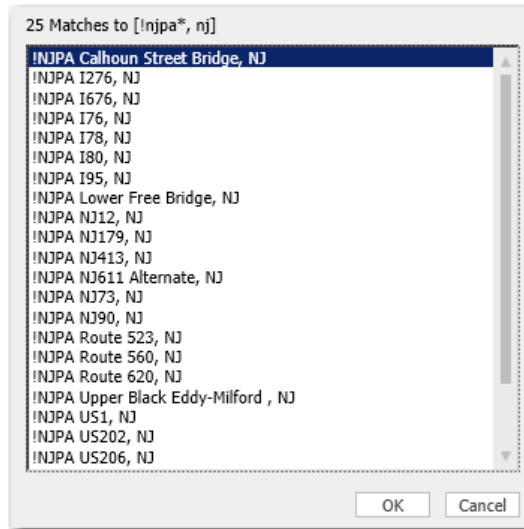
NOTE: A pick list will only be generated if **Provide Pick List** is checked in the Application Settings dialog (File application menu > *Application Settings...*). By default, this setting is turned on.

Border crossings have the following syntax:

!XXYY Name, XX

where **XX** is the two-letter abbreviation of the state that is first in alphabetical order, **YY** is the abbreviation of the state that is second in alphabetical order, and **Name** is the route name of the route that crosses the border.

In cases where the road name is different on either side of the border, the road name used is the one that lies within the state first in alphabetical order.



Pick List of NJ/PA Border Crossings

3.6.13 Highway Junctions *(North America only)*

PC*MILER allows you to access highway junctions between major road types in the United States, Canada, and Mexico. (Note, however, that there are some highway junctions which are **truck-inaccessible**. These junctions will not be recognized as stops.) The best way to enter a highway junction is to invoke a pick list of matches. Type “+” (a plus sign) followed by a comma and the state abbreviation. For example, enter

+, in

to generate an alphabetical list of all highway junctions in Indiana. Scroll the pick list, highlight your choice, and click **OK**.

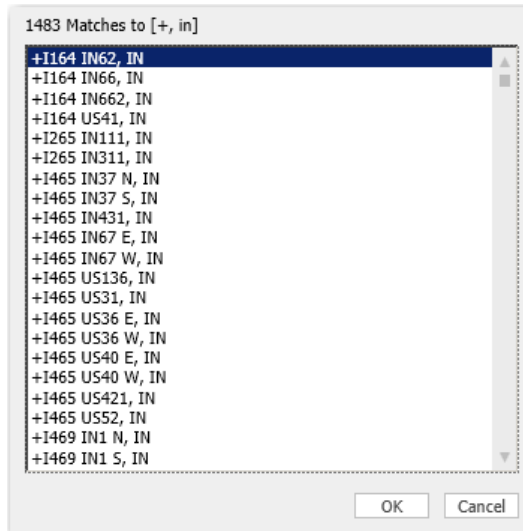
NOTE: A pick list will only be generated if **Provide Pick List** is checked in the Application Settings dialog (File application menu > *Application Settings...*). By default, this setting is turned on.

The format for junction names is as follows: the first route name is the lower numbered one, the second route name is the higher numbered one, and the route names are followed by the abbreviation of the state in which the junction is located. An example of this is:

+I 469 IN 37, IN

In cases where two junctions by the same highway pair occur within the same state, the junctions are designated by a location direction (N,S,E,W) relative to the location of the other junction. For example:

+US231 IN 66W, IN is located one mile west of +US231 IN 66E, IN



Pick List of Highway Junctions in Indiana

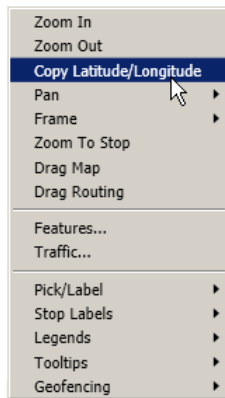
3.6.14 Latitude/Longitude Points

PC*MILER enables you to enter latitude/longitude points as stops on a route. These points can be entered in **degrees minutes seconds direction** format (e.g. **0401750N,0742131W**) or **decimal degrees** (e.g. **40.123N,100.333W**) - see the instructions below on format.

Lat/long points are labeled in the RouteMap window just like other stops.

REMINDER: When you pass your cursor over the map without pressing the mouse button, its **latitude/longitude position is automatically tracked** and appears in the status bar in the lower left corner of the RouteMap window.

In Pick Stops mode, lat/longs can be entered by clicking on the map. To turn this mode on, select the Routes tab > Route group > *Pick Stop on Map* button. Alternatively, use the right mouse menu off the map to *Copy Latitude/Longitude*, then paste the point into the route window as a stop:



*Right Mouse Menu
Off the RouteMap*



*Latitude/Longitude Point on the Map
(in North America, with PC*MILER/Streets installed)*

Degrees-minutes-seconds format:

In degrees-minutes-seconds format the latitude and longitude are each 8-character strings in the following format:

- Characters **1-3** specify the degrees (be sure to include leading zero if required)
- Characters **4-5** specify the minutes
- Characters **6-7** specify the seconds
- Character **8** **N, n, W, or w**, with N's for latitude and W's for longitude

Latitude and longitude must be separated by a comma WITHOUT A SPACE. In general the format for a point is: **dddmmssN,dddmmssW**.

Decimal degrees format:

In decimal degrees format, latitude and longitude are strings of up to 8 characters representing a decimal number with up to 3 decimal places. No leading zeros are required. The decimal point counts as one of the characters. Latitude and longitude must be separated by a comma WITHOUT A SPACE. In general the format for a point is: **ddd.dddN,ddd.dddW**.

Converting between formats:

To convert from degrees-minutes-seconds to decimal degrees use the following formula: **dddmmssN** → **ddd + mm/60 + ss/3600**.

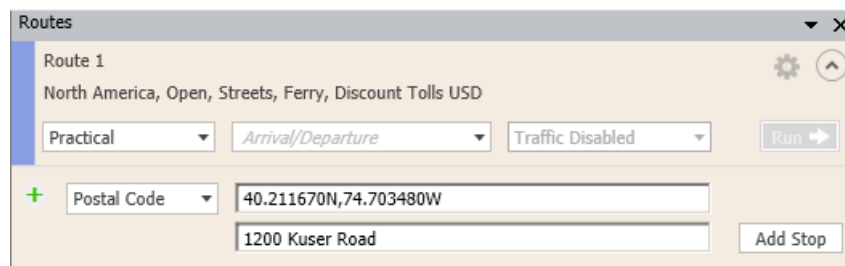
Decimal degrees format:

In decimal degrees format, latitude and longitude are strings of up to 8 characters representing a decimal number with up to 3 decimal places. No leading zeros are required. The decimal point counts as one of the characters. Latitude and longitude must be separated by a comma WITHOUT A SPACE. In general the format for a point is: **ddd.dddN,ddd.dddW**.

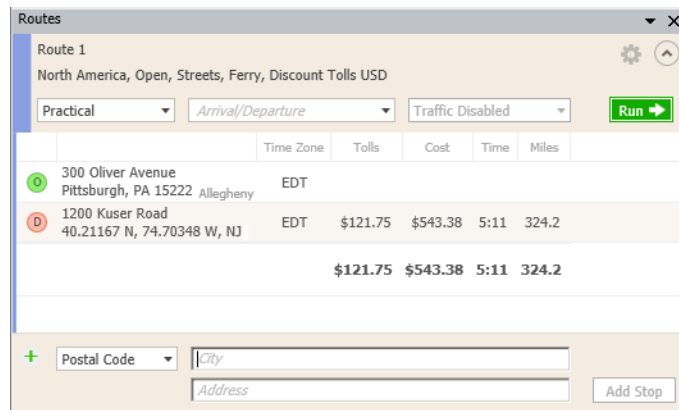
3.6.15 Latitude/Longitude With Street Address

For more precise geocoding and directions, latitude/longitude points can be combined with street addresses as in the example shown below. This functionality (new in Version 28) geocodes the lat/long to the nearest point on the particular street in the address, rather than to the nearest street in the direction of travel, as would be the case for a lat/long by itself. If the lat/long is more than .5 miles from the street in the address, an error message will be returned. The minimum input when using this combination should include the lat/long plus a street name. Including a street address will provide more precise geocoding.

NOTE: “Use Highway Only” must be turned off in the Route Options dialog in order to geocode to a street that only exists in the street-level network.



Stop Entry Using a Latitude/Longitude With an Address



Trip To 1200 Kuser Road, 40.21167N,74.70348W (Trenton, NJ)



*Using a Lat/Long and Kuser Road Address –
Routes to a Point Off Kuser Road (Route 619)*



*Using Only a Lat/Long –
Routes to a Point Off Interstate 295*

3.6.16 Highway Exits *(U.S. only)*

PC*MILER includes all Interstate-to-Interstate exit numbers. It also includes all Interstate exits leading to non-Interstate highways.

To enter a highway exit as a stop, you can enter “^” (**Shift-6**) followed by a comma and state abbreviation to bring up a pick list of all highway exits in that state. For example, to create a pick list of all exits in New Jersey, enter:

^, nj

NOTE: A pick list will only be generated if **Provide Pick List** is checked in the Application Settings dialog (File application menu > *Application Settings...*). By default, this setting is turned on.

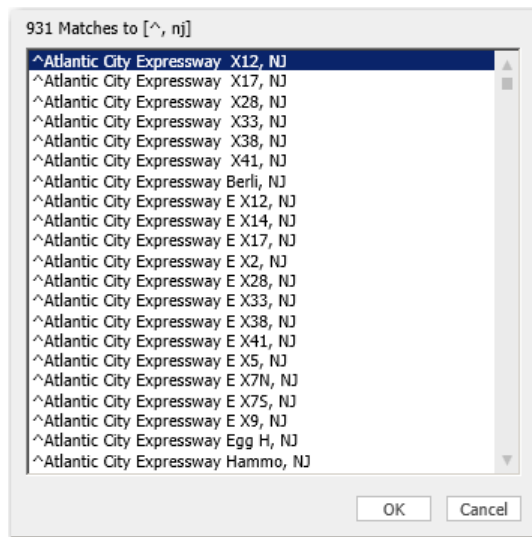
You can also enter an exit directly. For example, you could type “^I 80 E x273, pa” to enter Exit 273 off Interstate 80 East in Pennsylvania. No spaces are necessary, but the east/west designation must be included.

So, for example, valid entries would be:

^I-90 w x35, ny

^I 90w x35, ny

^I-90wx35, ny



Pick List of Highway Exits in New Jersey

3.6.17 Truck Stop Locations *(U.S. and Canada only)*



Truck stops can be entered as stops on a route like other places in the PC*MILER database.

The syntax for a truck stop starts with an "at" symbol [@], then the truck stop name, and the state or province in which the truck stop is located.

To generate a pick list of truck stops in a particular state, use the [@] symbol, a comma, and the state/province abbreviation. For example, for truck stops in Georgia you would enter:


@, ga

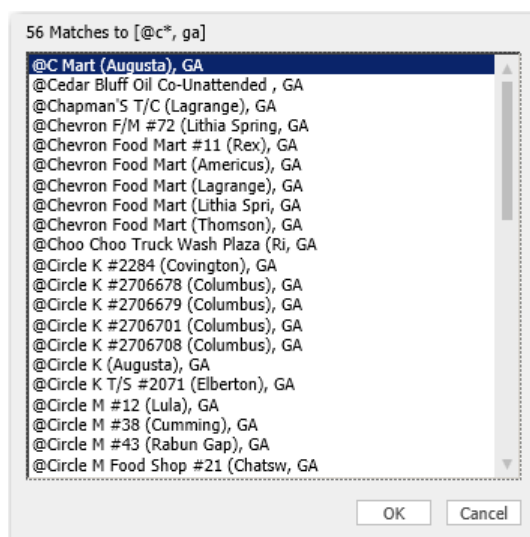
Or to speed up a search for a known truck stop, use the first letter of the truck stop's name. For example, to generate a pick list of all truck stops in Georgia beginning with the letter "C" that are in the PC*MILER database, enter:

@c*, ga

NOTE: A pick list will only be generated if **Provide Pick List** is checked in the Application Settings dialog (File application menu > *Application Settings...*). By default, this setting is turned on.

You can also pick a truck stop off the map using the mouse (section 3.6.21). To find truck stops within a specified radius of a location, use the Location Radius tool (see section 3.8).

Truck stops with fueling stations are represented on the map by gas pump icons (). These icons can be seen at zoom level 11 or higher.



Pick List of Truck Stops in Georgia

3.6.18 CAT Scale Weigh Stations *(U.S. and Canada only)*




CAT Scale weigh station locations may be entered as stops on a route. To enter a weigh station, you can type its location in the *City* field preceded by a pound sign (#). An example is:

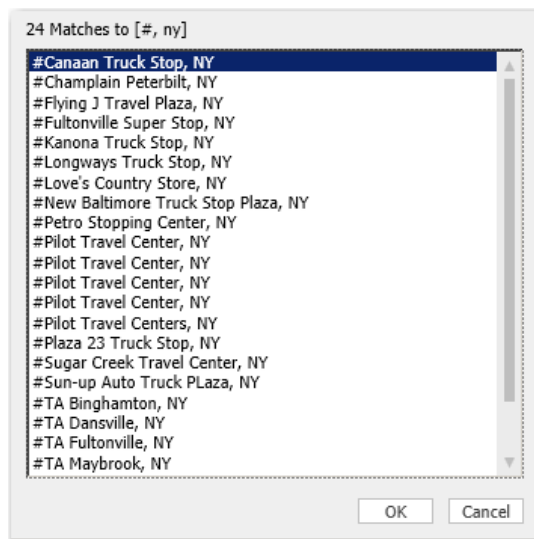
#Petro Stopping Center, NJ

To bring up a pick list of all CAT weigh stations in a particular state, enter a pound sign followed by a comma and the state abbreviation. For example:

#, nj

NOTE: Users can import newer CAT Scale locations by downloading a file from www.catscale.com. Instructions are provided on the website.

You may also pick a CAT weigh station off the map using the mouse (see section 3.6.21). CAT Scale weigh stations are represented on the map by a cat icon (). These icons can be seen at zoom level 11. To find CAT weigh stations within a specified radius of a location, use the Location Radius tool (see section 3.8).



Pick List of CAT Weigh Stations in New York

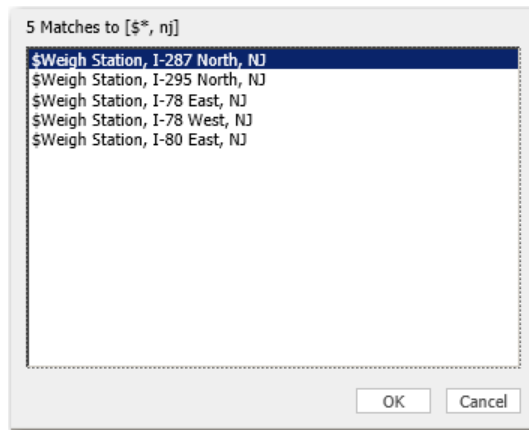
NOTE: A pick list will only be generated if **Provide Pick List** is checked in the Application Settings dialog (File application menu > *Application Settings...*). By default, this setting is turned on.

3.6.19 State Weigh Stations *(U.S. only)*

You can also search for and enter state weigh stations as stops. To search for all weight stations in a particular state, use a dollar sign (\$). For example:

\$, nj

will bring up a pick list of all state weigh stations in New Jersey.



Pick List of State Weigh Stations in New Jersey

NOTE: A pick list will only be generated if **Provide Pick List** is checked in the Application Settings dialog (File application menu > *Application Settings...*). By default, this setting is turned on.

To find state weigh stations within a specified radius of a location, use the Location Radius tool (see section 3.8).

3.6.20 Entering An Arrival or Departure Time

The ability to generate more precise estimated times of arrival/departure is a feature added in Version 25 of PC*MILER, and is described in Chapter 5, *Time-Based Routing*. See section 5.1 for detailed instructions about how to enter a departure or arrival time and date or day of the week.

3.6.21 Picking Stops From the Map



TIP: Pass your cursor over the map without pressing the mouse button. Notice that its lat/long position is automatically tracked and appears in the status bar in the lower left corner of the RouteMap window.

PC*MILER lets you enter stops directly from the RouteMap window by pointing and clicking with the mouse. To pick a stop, do the following:

1. Select the Routes tab > Route group > Stops > *Pick Stop on Map*; or select *Pick/Label* > *Pick Stops* from the right mouse menu off the map.
2. In the RouteMap window, the cursor will now be in the shape of a hand. Use the mouse to point to the location you wish to enter and click once. The location will be entered as a stop in the currently active route window.
3. Alternatively, use the right mouse menu in the RouteMap window to select *Copy Latitude/Longitude* to copy the lat/long displayed in the status bar of the window, then paste this lat/long into a route window as a stop.

You can use the mouse to select any point on the map. If the point is a node on a highway, the place name will be returned; otherwise, a latitude/longitude position will be returned.

NOTE: There are some highway junctions which are truck-inaccessible. These junctions won't be recognized if you try to enter them as stops.

3.6.22 Input Errors

One of several error messages might be returned when entering stops. If you encounter an error message, you should try the following:

- Double-check that you separated the city name and state abbreviation with a comma or space.
- Double-check for typos and spelling errors.
- Get spelling help (see section 3.6.8).
- Use the exact postal code or get ZIP/postal code help (see section 3.6.9.1).
- Press the **F3** key or see *Appendix C* for a list of valid two-letter state/province/estado abbreviations.
- If entering a SPLC, make sure that “SPLC” is selected in the drop-down list to the left of the *City* field.

In all cases, the ZIP/postal code takes precedence over the city and state/province/estado name. Certain suburbs or small towns may not have their actual names in the database, but rather the name of the larger nearby city. In

these cases, the ZIP or postal code for the smaller community will have to be entered to achieve correct results.

Also see section 3.6.7 for a description of how a default location is selected when duplicate or multiple cities exist in the database.

3.6.23 Duplicate City Names and County Designations

In the PC*MILER database, there are several thousand instances of towns in the same state, province or estado that share the same name. For example, in the U.S. state of Pennsylvania, there are two towns named Hamlin: one in Wayne County and one in Lebanon County. Another example is the towns of Londonderry in the United Kingdom: one is in Londonderry and one is in North Yorkshire.

In certain circumstances, duplicates can be separately identified by means of their differing postal codes. However, some duplicate towns do not have postal codes assigned to them. You can identify your desired stop by the county listing in the town name. In the database, the county name follows the state abbreviation (e.g. **Hamlin, PA, Wayne**). It appears in the route window after a stop has been entered, in small letters after the city name and state abbreviation.

If you are not sure which city is the stop you want, first click the File application menu > *Application Settings...* and make sure that **Provide Pick List** is checked. Then enter the city name and state/province/estado abbreviation. When you click **Add Stop**, a pick list will provide all the possible choices in the database along with county names. The order in which locations are listed in the pick list is based on such factors as population and geographic centrality. The most densely populated cities that match your entry will be at the top of the pick list. Select the correct city from the pick list and click **OK** to enter it as a stop.

If you know the county in which the duplicate city is located, you can enter that exact city in the stop entry field. Do so by entering the city and state in a normal fashion, followed by a comma and the county name. Your entry must be in one of the following formats:

hamlin, pa, wayne	hamlin,pa, wayne
hamlin, pa,wayne	hamlin,pa,wayne

TIP: Another way to see the county name: in the RouteMap window, place your cursor over a town without clicking – the full name of the town, with its county, will appear in a tooltip.

In Canada, duplicate city names are found in the same provinces. PC*MILER identifies the town by assigning a county to it in the same way that the county name follows a U.S. city name. For a list of Canadian counties in the PC*MILER database, see *Appendix B* or the PC*MILER Help files.

3.6.24 Editing the Stop List

All options related to editing the stop list are found in the Routes tab > Route group, under **Stops**. Alternatively, several editing options are available in a right mouse menu off any stop name on the list. Here are all the editing options in the Routes tab, with the right mouse menu option noted where available:

Editing Option	Button/Shortcut	Option Description
Add Stop at End		Type a location in the location entry fields and, instead of clicking Add Stop , click this button to add the stop at the end of the stop list.
Insert Stop Above	 F7	Click to insert a stop above the highlighted stop; or right mouse click on the highlighted stop and choose <i>Insert Above</i> from the menu.
Edit Stop		Click to edit the highlighted stop, or right mouse click on the highlighted stop name and choose <i>Edit</i> from the menu. When done editing, click Add Stop to add the edited stop back to the same position on the list.
Delete Stop	 F8	Click to delete the highlighted stop; or right mouse click the stop name and choose <i>Remove</i> from the menu.
Delete All Stops	 Alt+F8	Click to delete all stops from the currently active route window.
Frame Stop on Map		Click to frame the highlighted stop on the map; or right mouse click on the stop name and choose <i>Zoom to Stop</i> from the menu.
Pick Stop on Map		Click to activate this option. Then pick a stop from the map: in the map window zoom in to the target location, point the cursor to a town, address, intersection, or lat/long on the map, then click to add this place as a stop.
Move Stop Up	 Shift+↑	Move the highlighted stop up on the list, or right mouse click on the stop name and choose <i>Move Up</i> .
Move Stop Down	 Shift+↓	Move the highlighted stop down on the list, or right mouse click on the stop name and choose <i>Move Down</i> .
Reverse Stops		Click to reverse the order of stops in the currently active route window.

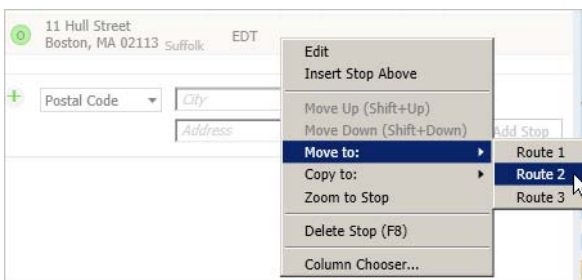
3.6.25 Dragging and Copying Stops

A geocoded stop can be copied or moved from one route window to another, or dragged to a different position in the same window.

To **copy** a stop to another route window, left click the stop name while holding down the **Ctrl** key and drag it onto the stop list in the target window, letting go when the stop is in the desired position on the list. The geocoded stop will be copied but also remains in its original window.

To **move** a stop either to another position on the list of stops or to a different route window, left click the stop name and drag to the desired position. If placed in another window, the stop will be deleted from the original window.

To move or copy a stop using the right mouse menu, right click the stop name and select either **Move to >** or **Copy to >** from the menu. Select a target window from the list of all open windows in the sub-menu. The stop will be placed at the bottom of the stop list in the target window.



Moving a Stop to the Route 2 Window

NOTE: Waypoints can be copied or moved just like stops. However, if a waypoint is moved to the Origin or Destination position on the stop list, it will become a stop rather than a waypoint.

3.6.26 Reversing the Order of Stops

To reverse the order of all stops on the stop list, select the Routes tab > Route group > *Reverse Stops*.

This option is especially useful when used with the route optimization feature (see section 3.7). For example, say you need to make multiple pickups and you want to start at the farthest one on the route and end up at some other location for delivery. Enter the delivery location first, then enter your pickup points. Next, optimize your route keeping the first and last stops the same. After optimizing, reverse the order of stops. This will put your farthest pickup point first on the list, and your delivery point last, with an efficient route in-between.

3.6.27 Frame a Location On the Map

To zoom directly to a specific location on the map, first enter the location as a stop in the route window and make sure it is highlighted on the stop list. Then you can either 1) double-click the stop name; 2) right mouse click on the stop name and select *Zoom to Stop* from the menu; 3) select the Routes tab > Route group > *Frame* button; or 4) select *Zoom to Stop* from the right mouse menu in the RouteMap window.

NOTE: If PC*MILER|Streets data is installed and you're trying to find an address, you can place your cursor, without clicking, on any road segment on the map to see a tooltip containing the street name and address range of that segment.

TIP: Pass your cursor over the map without pressing the mouse button. Notice that its **latitude/longitude position is automatically tracked** and appears in the status bar in the lower left corner of the RouteMap window.



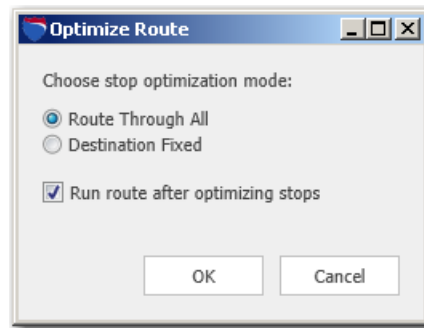
Zoomed Into a Stop in Idaho

3.7 Route Optimization

PC*MILER can optimize the order of stops in the active route window to minimize the total time (when using Practical routing), the total distance (when using Shortest routing), total toll distance (when using Toll Discouraged routing), and distance of the National Network (when using the National Network or 53-Foot Trailer routing). Optimizing a route provides the optimal order of stops, keeping the origin the same (or optionally, keeping both the origin and destination the same).

Optimization cannot be undone. The original order of stops cannot be recovered, so you may want to save the original route before optimizing (see section 3.10).

To optimize a route, select the Routes tab > Route group > *Optimize* > *Optimize Stops* from the drop-down list or press **Alt+F10** on your keyboard to bring up the Optimize Route dialog box:



Optimize Route Dialog Box

This dialog gives you the following options:

- **Route Through All:** Stops will be optimized in any order, with only the origin remaining fixed.
- **Destination Fixed:** Keeps the origin and destination the same.
- **Run route after optimizing stops:** Automatically generates the route when optimization is finished.

NOTE: You need at least three stops to optimize with **Route Through All** and four stops using **Destination Fixed**.

3.8 Location Radius

PC*MILER includes a Location Radius search tool for easier rate determination and trip planning. This tool enables you to find every city, postal code, custom place, and/or point of interest – including intermodal ramps – within a specified radius around any location.

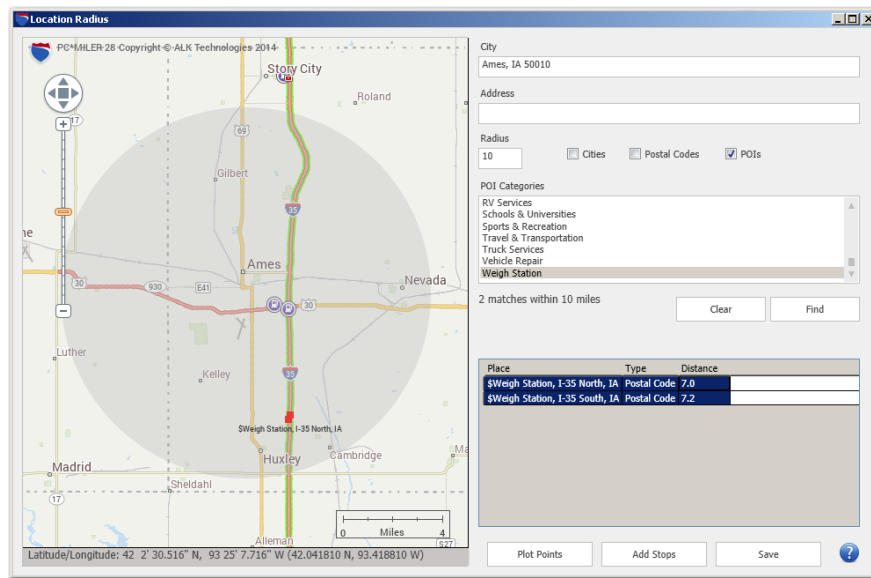
To use the Location Radius feature, select the Routes tab > Route group > *Location Radius* then follow the steps below:

1. Enter a location in the **City** field. Any format that can be used for stop entry will be accepted here (city/state, postal code, latitude/longitude, custom place, point of interest, etc.). If PC*MILER|Streets is installed, an address can also be entered.
2. Use the check boxes to select which types of places to include in your search. If **POIs** is checked, a category of POIs can be chosen from the list below to narrow the search. (If a category is not chosen, all categories will be

searched.) Choose “Custom” under “Custom Category” to list all custom places within the radius that have been saved to the PC*MILER database.

3. Enter a **Radius** (a number of miles or kilometers, depending on the unit of distance setting in the Route Options dialog, General tab).
4. Click **Find** to search. The list below will be populated with the search results.

You can select one, several, or all matching places to add as stops to the active trip, plot on the map, or save to a text file. Highlight the one(s) you wish to select – hold down the **Shift** or **Ctrl** key to pick multiple places. To select all places, highlight the first place on the list, then hold down the **Shift** key and highlight the last place, scrolling down if necessary.



Weigh Stations Within 10 Miles of Ames, IA

To add the selected places as stops in the active route window, click **Add Stops**. To save them to a text file, click **Save**. To plot the selected points on the map, click **Plot Points**. The plotted points will appear as small red squares.

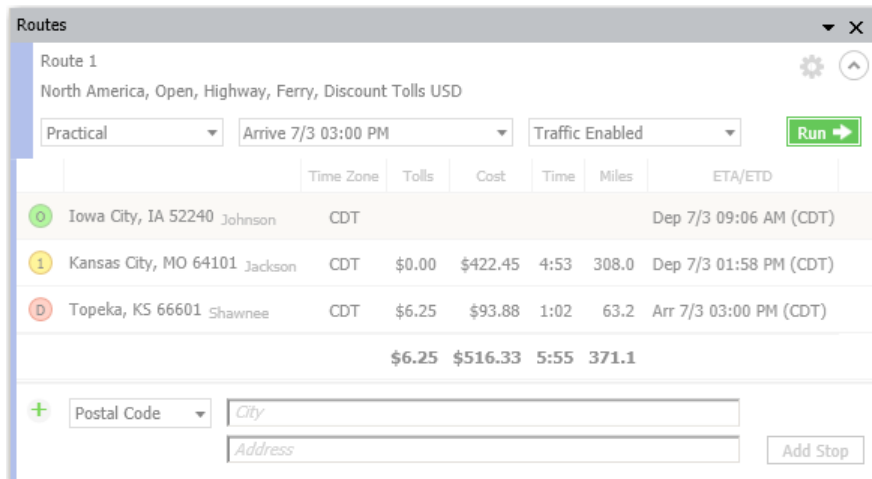
To copy the selected points to the Windows clipboard for pasting into another application, highlight your selection and press **Ctrl+C** on your keyboard.

To clear points from the picklist, click **Clear**. Plotted points will remain on the map until another set of points is plotted or the Location Radius window is closed.

NOTE: The maximum number of matching places that can be displayed after you execute the search is 15,000. In some cases you may need to specify a smaller radius to get a complete list of matches.

3.9 Running a Route

NOTE for PC*MILER|Streets Users: By default, routes in North America are calculated with the “Use Highway Only” option turned on. This option can affect distance calculation, and may be turned off using the Route Options or Default Route Options dialog.



	Time Zone	Tolls	Cost	Time	Miles	ETA/ETD
0 Iowa City, IA 52240 Johnson	CDT					Dep 7/3 09:06 AM (CDT)
i Kansas City, MO 64101 Jackson	CDT	\$0.00	\$422.45	4:53	308.0	Dep 7/3 01:58 PM (CDT)
D Topeka, KS 66601 Shawnee	CDT	\$6.25	\$93.88	1:02	63.2	Arr 7/3 03:00 PM (CDT)
\$6.25 \$516.33 5:55 371.1						

Mileage, Time and Cost Calculations For a Generated Route

For a route to be generated, there must be a valid origin and at least one valid destination entered in the active route window. To generate a route, you can:

- click **Run** in the active route window; or
- press the **F10** key; or
- select the Routes tab > Route group > *Run*.

Active routing options are listed at the top of the route window, under the route name. The routing options that are active by default are listed below. See Chapter 9 to change routing options.



- **For North America:** Practical, Borders Open, Highway Only, Use Ferry Distances, Tolls Discount - US\$* (* With PC*MILER/Tolls installed)
- **For All Other Regions:** (PC*MILER/Worldwide and DTOD only) Practical, Borders Open, Use Ferry Distances

When processing is finished, the route will be drawn and framed on the RouteMap, and mileage, cost, and time estimates by trip leg will appear to the right of each stop on the list. If an arrival or departure time was entered, the ETA at each stop will also be calculated. The route window can be resized horizontally if necessary to see all the columns. From left to right, the columns are:

- **Time Zone** – Displays the time zone for each stop. See section 5.1 on how time zones are reported and setting this option.
- **Tolls** – *(Only if PC*MILER/Tolls is installed)* At each stop, shows toll costs for the trip leg from the previous stop, with the total toll cost for the trip at the bottom.
- **Cost** – At each stop, shows the estimated cost of the trip leg from the previous stop, including tolls if PC*MILER/Tolls is installed. Trip costs are calculated by multiplying PC*MILER’s default cost per mile by the number of miles. The cost per mile settings can be customized using the Route Options or Default Route Options dialog box – see sections 9.4 and 9.8.
- **Time** – At each stop, shows the estimated driving time for the trip leg from the previous stop. Cumulative driving time is shown at the bottom.
- **Miles** – At each stop, shows the mileage for the trip leg from the previous stop. Cumulative miles for the trip are shown at the bottom.
- **ETA/ETD** – If an arrival or departure time was entered, this column shows the departure time at the origin (this time is an estimate if an arrival time was entered) and estimated arrival time(s) at each stop.

3.9.1 Warnings in Route Windows

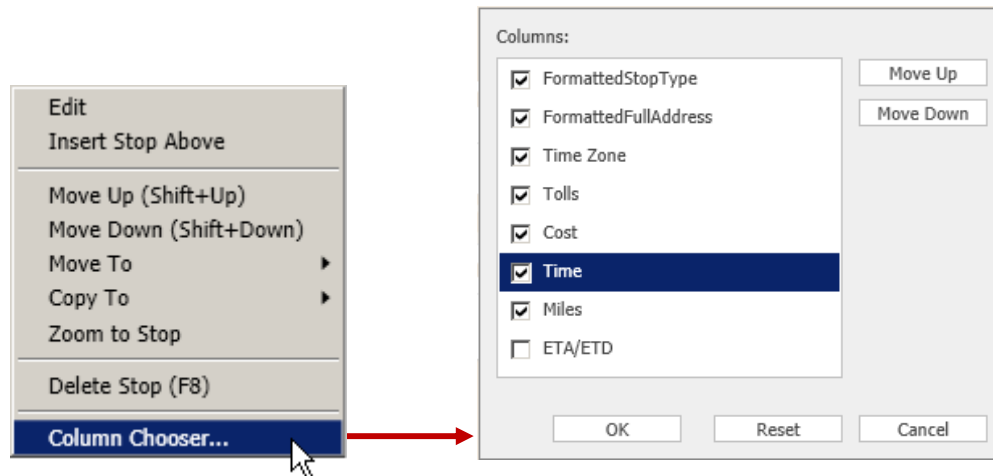
When PC*MILER generates any type of warning regarding a routing issue, the stop on the trip leg to which the warning applies will have a red bar to the left, and the stop number will turn red as well. Place the cursor over the red bar to see a tool tip that briefly describes the reason for the warning, then generate a Detailed or Driver’s Report to see more details.

		Time Zone	Tolls	Cost	Time	Miles	
	Princeton, NJ 08540	Mercer	EDT				
	Bloomington, IN 47402	Monroe	EDT	\$877.50	\$1,880.59	12:30	765.0
				\$877.50	\$1,880.59	12:30	765.0

Warning Indicator in the Route Window

3.9.2 Editing Columns in a Route Window

The columns in any route window can be hidden and the column order can be changed in any route window using the Column Chooser dialog. To access this feature, right click any stop on the stop list in a route window, then select **Column Chooser** in the right mouse menu that pops up.



Right Mouse Menu Off a Stop

Column Chooser Dialog

In the Column Chooser dialog, all possible columns are listed. Columns that are displayed are checked. (Note that the **ETA/ETD** column only displays if an arrival or departure time has been entered for a route.) Uncheck any column to hide it. To change the column order, click on a column name to highlight it and then click **Move Up** or **Move Down**. As the column name moves up the list, it will be moved to the left in the route window, and vice versa. Click the **Reset** button to reset to the default column order.

NOTE: The Column Chooser is also available in reports – right click any column header to access it.

3.9.3 Route Framing on the Map

- To automatically frame each route after it is run, select the Map tab > View group > *Frame* > *Auto Frame Routes* (this option is turned on by default).
- To frame one route, select the Routes tab > Route group > *Frame* or the Map tab > View group > *Frame One Route* > and select a route.
- To frame all generated routes, select the Map tab > View group > *Frame* > *All Routes*.

3.9.4 Copy and Paste the Mileage Report

After a route is generated, the results in the route window can be copied and pasted into a text editor such as Microsoft Word. With your cursor inside the route window, press **Ctrl + C**. Then open the text editor and press **Ctrl + V**. The example below is in a WordPad file. The widths of the data columns have been adjusted by changing the position of the tabs in those paragraphs.

```
Route 1 : 08540 Princeton, NJ to 90021 Los Angeles, CA : No Stops
Miles: 2,753.4 Time: 42:37 Cost: $3,686.59
Truck Config: Weight: 80,000lbs Height: 13ft 6in Length: 48ft 0in Width: 96in Axles: 5
North America, Practical, Borders Open, Highway Only, Ferry Distance, Discount Tolls USD
```

	Time Zone	Tolls	Cost	Time	Miles	ETA/ETD
O Princeton, NJ 08540	EDT					Dep 5/10 7:00 AM (EDT)
D Los Angeles, CA 90021	PDT	\$151.43	\$3,686.59	42:37	2,753.4	Arr 5/13 1:00 PM (PDT)
T		\$151.43	\$3,686.59	42:37	2,753.4	

Mileage, Time and Cost Data Pasted Into WordPad

3.10 Working with Multiple Routes and Windows

For comparison purposes, you may want to route through different locations while keeping the routes you already generated open. Up to eight route windows can be kept open simultaneously.

When there are hidden or partially hidden windows open, a scroll bar will appear on the right side of the Routes pane. The active route window will have a highlighted title bar at the top.

Each open route will be drawn in a different color in the RouteMap window. Routes are identified in the Route Legend (if this legend is not visible, select the Map tab > Customize group > *Legends* > *Route*) and their corresponding route color appears on the left side of each individual route window.

Reports can be run for each generated route, with each report appearing in a separate window. See section 3.3 on screen layout options.

To bring a window forward, click the Window tab and select the window you want to see from the Windows group.

3.11 Duplicating a Route for Easy Comparison

To duplicate a route either before or after it is run, select the Routes tab > Route group > *Duplicate*. A new route window will open that contains all the stops from the original route. This option makes it easy to compare different route types (for example, Shortest and Practical) for the same route.

3.12 Saving and Retrieving Trips

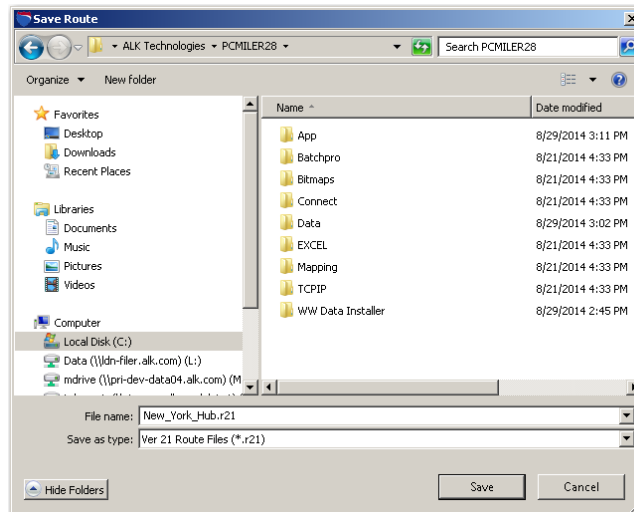
Routes generated in PC*MILER can be saved for later retrieval, either before or after they are generated. This is particularly useful for trips you run frequently. To save a route either before or after processing, select the Routes tab > Route group > *Save* > *Save Route As* to bring up the Save Route dialog box.

NOTE: When route files from previous PC*MILER versions are opened as trips, they are automatically converted to Version 28 format.

This dialog is a standard Windows® dialog box. Choose the folder where you want your route file to be placed, assign a file name and type to the file, then click **Save**. There is no limit to the number of characters a file name can contain.

Select the route type “.r21” from the **Save as Type** drop-down for trips that will be retrieved at a later time from within PC*MILER. When you save a file with the .r21 extension, route options will be saved together with the route, but **saved route files do not retain mileage, cost and time information**.

To save sets of points in text format for batch processing using PC*MILER|BatchPro or for use with PC*MILER|FuelTax, select the route type “.in”. Files saved with the extension “.in” do not include any route options.

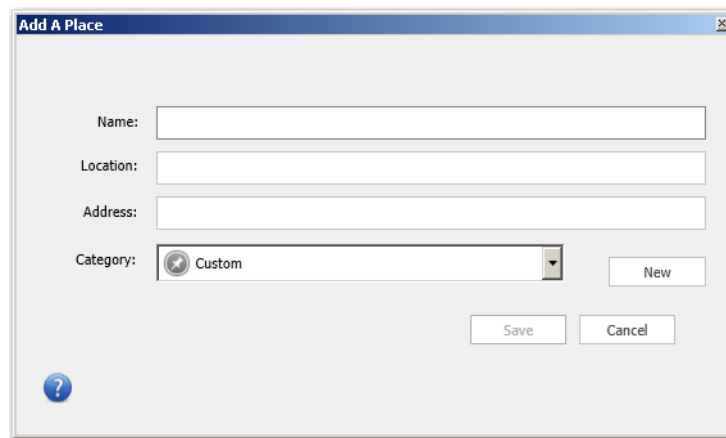


Save Route Dialog Box

To load a previously saved .r21 route file, select the Routes tab > General group > *Open*. This will bring up a standard Windows dialog similar to the one you used to save your route. Select your saved file from the **File Name** pick list and click **Open**. As mentioned above, all settings used to create the file will be restored, but you will need to rerun the route to see reports and a RouteMap display of the route.

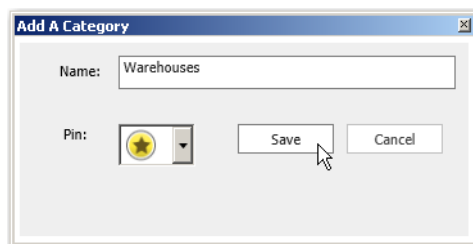
3.13 Custom Place Names and Categories

PC*MILER gives you the capability to assign your own custom names to an unlimited number of locations in the PC*MILER database. Custom place categories can also be created. To create a new custom category and a custom place within that category, follow the steps below.



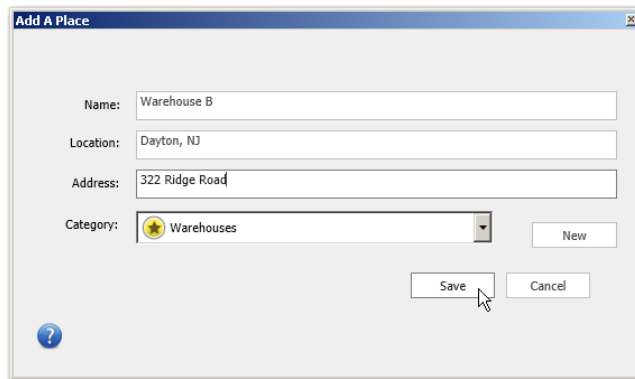
Add a Place Dialog

1. Select the Tools tab > Custom Place Manager group > *Add Places*.
2. To add a new custom place category in the Add a Place dialog, click **New**.
3. Enter a **Name** for this category (the same name cannot be used more than once).
4. From the drop-down **Pin** list, choose an icon to represent this category on the map. (If none is chosen, the generic gray pushpin will be used.)



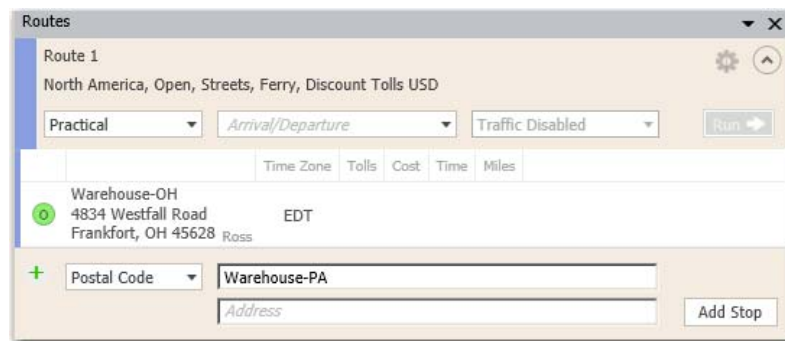
5. Click **Save** to save the new category.

6. Back in the Add a Place dialog, select the category you just created from the **Category** pick list.
7. Enter your custom name in the **Name** field (the same name cannot be used more than once).
8. Enter the PC*MILER location (real name) in the **Location** and (optionally) **Address** fields. The location can be in any format that is valid for stop entry.
9. Click **Save** to save the new custom place name to the PC*MILER database.



Once a custom place is created, you can enter it as a stop on a route: type the custom name into the *City* field in the route window.

NOTE: Custom place names are sensitive to spacing – for example, the name “01586,GM” is not the same as “01586, GM”.



Entering a Custom Place as a Stop

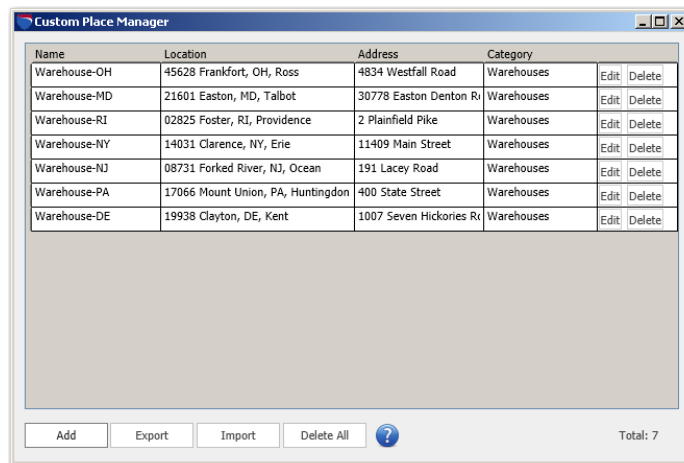
To view or edit custom places, press **F2** or select the Tools tab > Custom Place Manager group > *Manage* (see section 3.13.1 below).

To view or edit custom categories, select the Tools tab > Custom Place Manager group > *Categories*.

To **pick a location off the map** for a custom place, select the Tools tab > Custom Place Manager group > *Pick Places on Map* and click on the desired location on the RouteMap.

3.13.1 Using the Custom Place Manager

To view, edit or delete custom places, select the Tools tab > Custom Place Manager group > *Manage*. All custom places in the database are listed in the Custom Place Manager. To sort any column, click the column header.



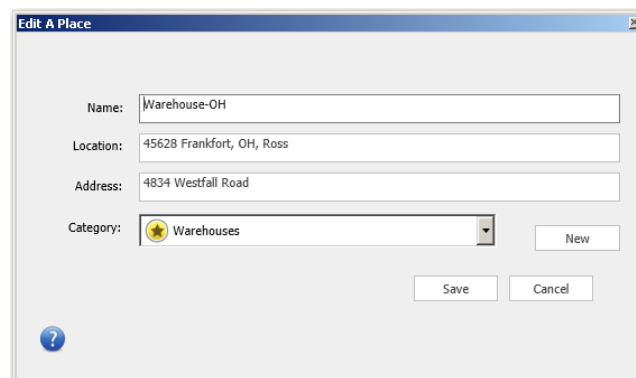
Name	Location	Address	Category	Edit	Delete
Warehouse-OH	45628 Frankfort, OH, Ross	4834 Westfall Road	Warehouses	Edit	Delete
Warehouse-MD	21601 Easton, MD, Talbot	30778 Easton Denton R	Warehouses	Edit	Delete
Warehouse-RI	02825 Foster, RI, Providence	2 Plainfield Pike	Warehouses	Edit	Delete
Warehouse-NY	14031 Clarence, NY, Erie	11409 Main Street	Warehouses	Edit	Delete
Warehouse-NJ	08731 Forked River, NJ, Ocean	191 Lacey Road	Warehouses	Edit	Delete
Warehouse-PA	17066 Mount Union, PA, Huntingdon	400 State Street	Warehouses	Edit	Delete
Warehouse-DE	19938 Clayton, DE, Kent	1007 Seven Hickories R	Warehouses	Edit	Delete

Buttons: Add, Export, Import, Delete All, ? Total: 7

Custom Place Manager

*(Address data shown above can be entered only if PC*MILER/Streets data is installed)*

To edit a custom place, click the **Edit** button for that place in the last column. Make the desired changes and click **Save** to save your edits.



Dialog box titled "Edit A Place" with the following fields:

- Name: Warehouse-OH
- Location: 45628 Frankfort, OH, Ross
- Address: 4834 Westfall Road
- Category: Warehouses (with a star icon)

Buttons: New, Save, Cancel, ?

Edit a Place Dialog

To delete a place, click the **Delete** button for that place. To delete all places on the list, click **Delete All**. A prompt will ask you to confirm if you mean to delete all

places. To **Export** the list of places, see section 3.13.3 below. Click the “X” in the upper right corner to close the Custom Place Manager and save your edits.

3.13.2 Creating Custom Latitude/Longitude Points

You can assign a name of your choosing to a latitude/longitude point in the PC*MILER database by using the Add a Place dialog (section 3.13 above). For example, you could type “**Home Office**” in the **Name** field, and “**40n,100w**” in the **Location** field. After you add this name to the list, you’ll be able to enter “**Home Office**” as a stop on your route.

Note that PC*MILER tracks the latitude and longitude position of your cursor as it passes over the RouteMap (watch the status bar in the lower left corner of the program window).

3.13.3 Exporting Custom Places

PC*MILER gives you the ability to export all custom places listed in the Custom Place Manager into a **.csv** (“Comma Separated Value”) file or a tab-delimited text file.

To export custom places from the Custom Place Manager, follow these steps:

1. Select the Tools tab > Custom Place Manager group > *Manage*.
2. In the Custom Place Manager, click **Export**.
3. In the Export window, select a file type in the **Save as type** pick list. For a comma-delimited value file choose “**.csv**”, or choose “**.txt**” to save as a comma-delimited text file.
4. Assign a file name.
5. Select a target location where the export file will be saved.
6. Click **Save** to create the export file.

	A	B	C	D	E	F
1	Name	Zip	City	State	Address	Category
2	Warehouse-OH	45628	Frankfort	OH	4834 Westfall Road	Custom
3	Warehouse-MD	21601	Easton	MD	30778 Easton Denton Road	Custom
4	Warehouse-NY	14031	Clarence	NY	11409 Main Street	Custom
5	Warehouse-NJ	8731	Forked River	NJ	191 Lacey Road	Custom
6	Warehouse-PA	17066	Mount Union	PA	400 State Street	Custom
7	Warehouse-DE	19938	Clayton	DE	1007 Seven Hickories Road	Custom
8						

Custom Places Exported to Excel (Column Formatting Adjusted)

3.13.4 Importing Custom Places

NOTE: See section 3.6.14 for the correct way to format latitude/longitude points. See section 3.6.1 for all other stop entry formats that are accepted by the Import Custom Place Wizard.

TIP: Did you know that the Import Custom Place Wizard can be used as a batch geocoding tool to clean up your data? If you have a list of customer locations that include street addresses and/or other information, you can import those locations to confirm that they match locations in the PC*MILER map database. (PC*MILER|Streets is required to process address data.) The original input file does not need to include custom place names but does have to be correctly formatted – see Step 1 below.

NOTE Also: Importing a file containing more than 4,000 places may take a very long time and is not recommended. Consider dividing a large input file into smaller files for importing.

Using the Import Custom Place Wizard, you can import sets of custom places which were created in an environment independent of PC*MILER. During the import process, PC*MILER provides the option to 1) enter the whole set of imported places as stops on a route, or 2) save the imported places as custom places in the map database for future use.

The Import Custom Place Wizard first tries to match each record in the input file to a place or address range in the database, converting the records to a format that PC*MILER can use. The input file must be a text file with columns delimited by a tab or other character such as a comma. Here are several lines from a sample text file of custom places that are suitable for importing:

Place-Name	→	PostCode	→	State/Country	→	City	→	Region¶
Place-A	→	35217	→	AL	→	Birmingham	→	NA¶
Place-B	→	35034	→	AL	→	Brent	→	NA¶
Place-C	→	23661	→	VA	→	Hampton	→	NA¶
Place-D	→	29401	→	SC	→	Charleston	→	NA¶
Place-E	→	75001	→	FR	→	Paris	→	EU¶

Sample Text File, Tab Delimited

The import process includes five basic steps, covered on the following pages:

Step 1. Setting Up a Correctly Formatted Input File

Step 2. Open the Input File

Step 3. Select and Preview Input

Step 4. Confirm Matches

Step 5: Add Places to a Route Window or the Custom Place Manager

STEP 1: Set Up a Correctly Formatted Input File

The first step is to ensure that your input file is correctly organized and formatted. Making the effort to properly organize the input file can make a big difference in how efficiently the locations in the file are processed. The input file must be a text file with columns delimited by a tab or other character such as a comma. If the original file is a text file, try opening it in Excel, formatting as necessary, and then saving it again as a tab-delimited .txt file

To successfully add places to the database, at minimum the input file must include a location column. The required location for each place must be either a latitude/longitude, postal code, or city and state/province/country abbreviation. (PC*MILER|Worldwide or DTOD data must be installed for countries outside North America.) Other location information can be included in additional columns. As you will see in Step 3, you can tell PC*MILER to ignore columns in the input file that contain data that can't be imported.

It is recommended to organize the information in each column of the input file into like groups, separating the data that PC*MILER will accept from the data that won't be accepted. For example, from left to right the file might include:

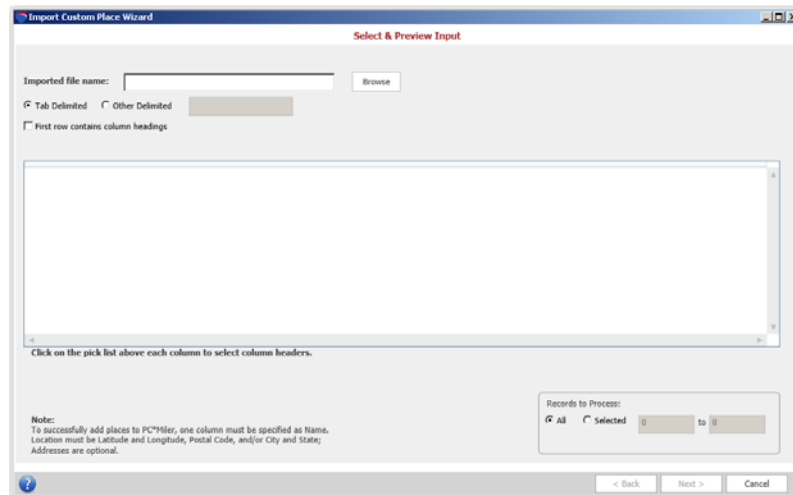
- **Place Name** – A custom place name (required). If the file does not include place names and you are importing places for the purpose of data matching, you can insert a column with any appropriate custom name.
- **Address Line 1** – A location address including a street number and street name. PO Box numbers are not accepted by PC*MILER and should be removed. (PC*MILER|Streets is required for address data to be accepted.)
- **Address Line 2** – Secondary address information such as suites, floors, apartments, units, building names, etc. Not accepted by PC*MILER.
- **City** – The city name.
- **State/Province** – A two-letter state/province/estado abbreviation, the name should not be spelled out (e.g. “ON” is correct, “Ontario” won't be accepted).
- **ZIP/Postal Code** –
 - U.S. addresses can be a ZIP or ZIP+4 Code (use a dash with ZIP+4, e.g. 12345-1155). PC*MILER will only read in the first five digits and will ignore the last four.
 - Canadian addresses should include spaces, do not use dashes (e.g. G1A 1B1, the format is ANA<space>NAN where “A” stands for “letter” and “N” stands for “number”).
- **Country** – Not usually needed, but should be in its own column.
- **Region** – (PC*MILER|Worldwide or DTOD data must be installed) A region is only needed if locations are outside North America. Region names should be spelled out as they appear in the Route Options dialog box.

Example File:

Place Name	Address Line 1	Address Line 2	City	State/Province	ZIP/Postal Code	Country
Warehouse1	4 Moore Street	First Floor	Princeton	NJ	08540	US

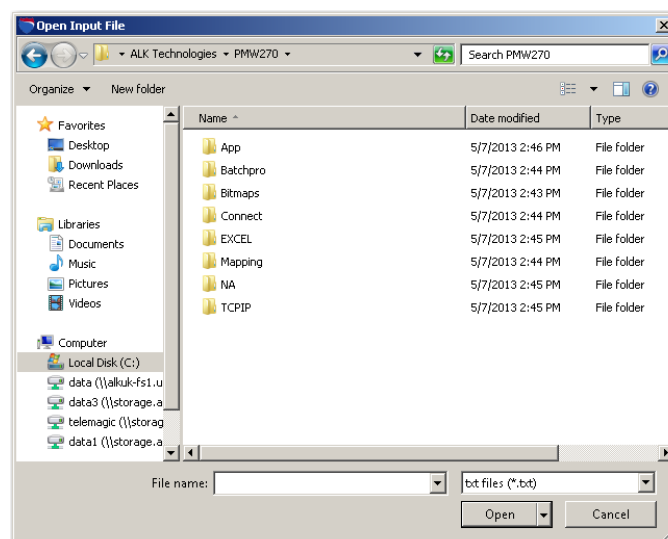
STEP 2: Open the Input File

1. To begin, open the Import Custom Place Wizard: select the Tools tab > Custom Place Manager group > *Import...* .



Import Custom Place Wizard – Initial View

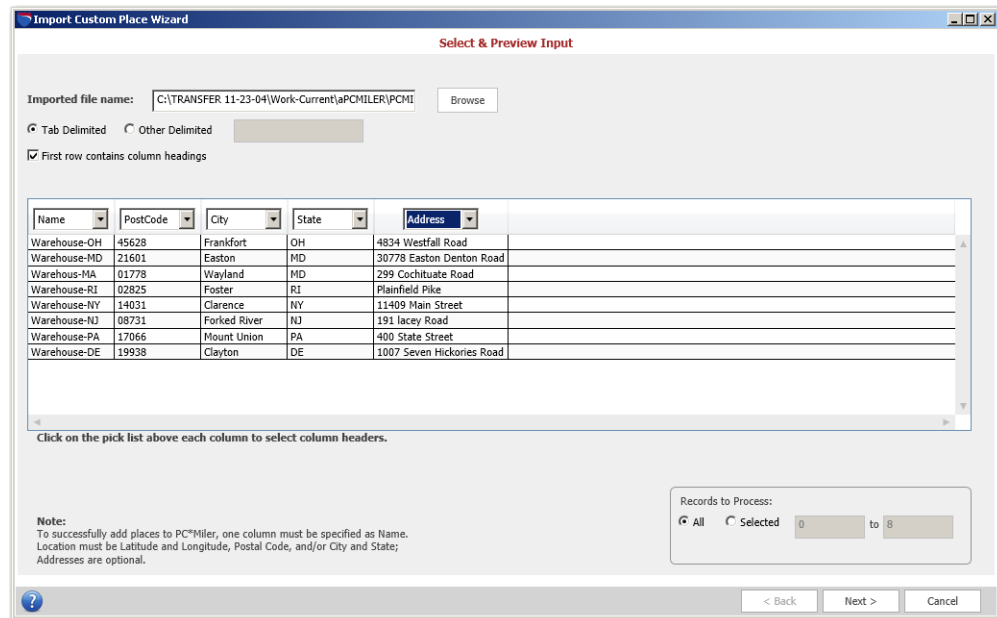
2. In the Wizard, select **Tab Delimited** if the input file is tab-delimited text. Otherwise, select **Other Delimited** and enter a delimiter in the box to the right. This setting tells the Wizard where a new column should begin in the input file. Usually the delimiter is either a tab or a comma.
3. Click **Browse** and navigate to the drive and directory where your data file is located. Be sure to select the correct file type in the drop-down, then select the file to be imported and click **Open**.



Open Input File Dialog

STEP 3: Select and Preview Input

Now you'll see the data from the input file, organized in columns. Initially, all column headers are labeled **Skip**, meaning that PC*MILER cannot interpret what type of data is in each column. Use the drop-down pick list at the top of each column to assign a new column header; or if the first row of the input file included appropriate headers, check **First row contains column headers**.



*Import Custom Place Wizard – Select and Preview Input
(Address data shown above can be imported only if PC*MILER|Streets data is installed)*

To successfully import places, there must be at least one location column. The location must be a **LatLong** (latitude/longitude), **PostCode** (postal code), and/or **City** and **State** (state/province/country abbreviation) with an optional **Address**. Other available headers are: **Region** (used only with PC*MILER|Worldwide or DTOD data), **Description** and **Category**.

TIP: The “**Category**” header can be used to assign a map icon of your choosing to a set of custom places. Simply create a custom category (see section 3.13) and make sure the category name in your input file exactly matches the custom category name.

Each of the headers can be applied to only one column, with the exception of **Skip**. Label a column **Skip** if the data in it should not be read (e.g. memos or descriptions) or if it is blank.

To adjust column widths in the table for better visibility, place your cursor between two column headers. When the cursor changes to an arrow, hold down the left mouse button, drag the margin to the desired width, then let go.

The options under **Records to Process** determine how many and which rows of data in the table will become custom places. Select **All** to have all the data processed, or **Selected** to process only some of the records. If you choose **Selected**, enter the range of records to be processed.

With the columns and input selection set, click **Next** to continue.

TIP: If you want to import a file that has different types of locations (postal code, city and state, and/or latlong) on different rows, and/or different combinations of types (such as postal code and state), first use the **=citytolatlong()** function in PC*MILER|Spreadsheets to convert those types consistently to LatLong, then import that file specifying a Name column and a LatLong column as the only location. See the PC*MILER|Spreadsheets *User's Guide* for instructions on how to use the **=citytolatlong()** function.

ADDITIONAL NOTES: The more information you include, the more certain it is that a unique match will be found. Import Custom Places will import a file that has city and state combined into a single column (label this column "City"), or zip code, city and state combined into a single column (label this column "Zipcode"). A county name may optionally be included at the end of either one. A space should separate the ZIP code from the city, a comma should separate the city from the state, and a comma should separate the state from the county. For example, any of the following are acceptable:

City
Princeton
Princeton, NJ
Princeton, NJ, Mercer

ZipCode
08540
08540, NJ
08540 Princeton, NJ
08540 Princeton, NJ, Mercer

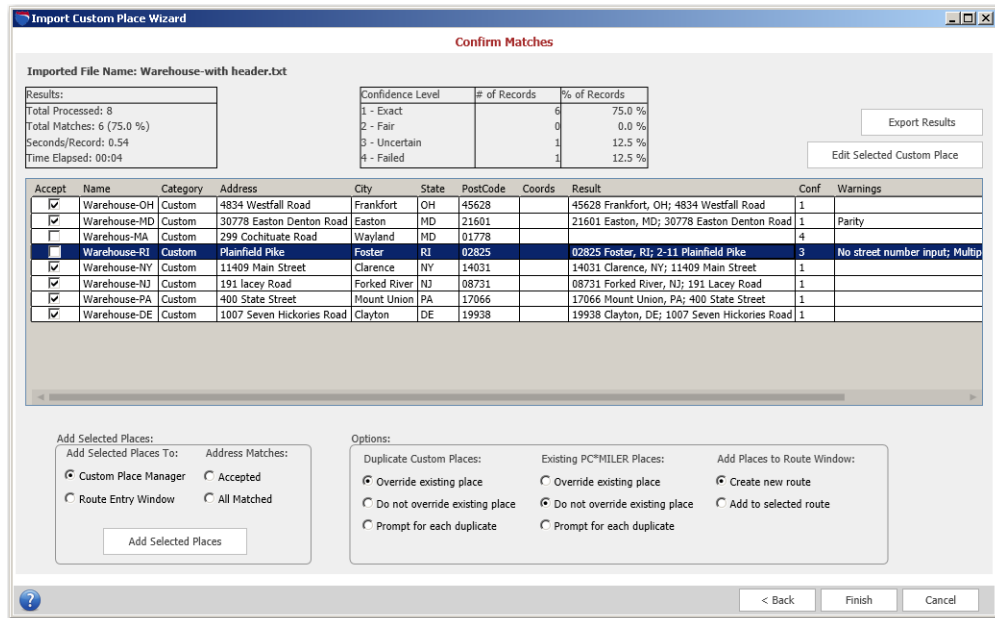
STEP 4: Confirm Matches

When all records have finished processing, the Confirm Matches screen will display the processed records along with results data and output options.

Results:

- **Total Processed:** The total number of records processed.
- **Total Matches:** The total number of records that were successfully matched with a location in the PC*MILER database.
- **Seconds/Records:** The average time spent on processing each record.

- **Time Elapsed:** The time elapsed since the start of the record matching process.



Import Custom Place Wizard – Confirm Matches

Confidence Level:

There are four possible levels of confidence in the accuracy of the data matching for each record:

- 1 Exact** An exact match was made. For street addresses, trust is 95% or greater AND if address is outside the range listed in the database, the top match is within 100 address units of input address*; OR for any other match level if there are multiple matches they are all within .1 air miles of each other.
* For example, “100 Main Street” was input and the best match in the database is “150-250 Main Street”.
- 2 Fair** Inexact match but unique result (i.e. there is only one match). For street addresses, trust is 85% or greater AND if address is outside the range listed in the database, the top match is within 500 address units of input address*; OR for any other match level if there are multiple matches they are all within .5 air miles of each other.
* For example, “100 Main Street” was input and the best match in the database is “450-550 Main Street”.
- 3 Uncertain** Inexact match and there is more than one match in the database. For street addresses, trust is 50% or greater.
- 4 Failed** Match not found. Trust is below 50% for street addresses.

of Records:

This column displays the total number of records which fall into each of the above categories.

% of Records:

This column shows the percentage of all records that fall into each category.

In the **Accept** column, accepted records will be checked to indicate that they were successfully matched with a location in the PC*MILER database with either an Exact or Fair confidence level. Locations that were not accepted will have an error message in the **Error(s)** column that briefly describes the reason for the error. Check marks can be manually entered or deleted in the Accept column.

The **Conf** (Confidence) column shows the confidence level of each record's match (described above). The **Match** column displays the record in the database that was matched to the input location.

STEP 5: Add Places to a Route Window or the Custom Place Manager

Once the validity of all the Accepted matches have been confirmed, you are ready to add the imported places to a route window or the Custom Place Manager. You only need to make a few option selections, described below.

Add Selected Places:

Choose whether output should be added to the **Custom Place Manager** (i.e. the PC*MILER database) or a **Route Entry Window**. Check **Accepted** to only add the accepted names, or **All Matched** to include all matches except those in the "Failed" category.

Options:

Here, if you selected to save the imported places to the Custom Place Manager, choose whether to automatically overwrite any duplicate custom place names or PC*MILER place names that already exist in the database. If **Prompt for each duplicate** is selected, a prompt will be displayed when a duplicate is detected and processing won't proceed until there is an interaction. If you are adding the output to a route window, under **Add Places to Route Window** choose whether to open a new route window or add them to the currently active window.

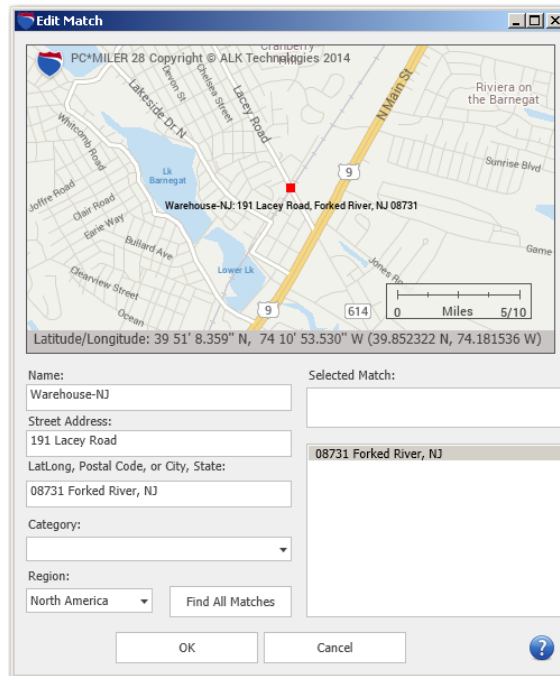
When ready, click **Add Selected Places** to send the output to the target route window and/or the Custom Place Manager.

Click **Export Results** in the upper right corner to create a text file containing the confirmed matches.

3.13.4.1 Editing Custom Place Records

To edit or verify a record, highlight it in the Results window and click **Edit Selected Custom Place** in the upper right corner of the Confirm Matches screen. In the Edit Match window, you'll see all matches that were found in the PC*MILER database for that location listed and displayed on a map.

The map in this window is set to “Box Zoom” mode. To zoom to a match on the map, hold and drag a box around it with the left mouse button.



Edit Match Window

Under the map, the fields on the left show the name and data included in the highlighted record. These fields can be edited. On the right, all matches are listed and the **Selected Match** field shows the complete record in the PC*MILER database for the match that is highlighted on the list.

To search for a wide range of possible matches, you can enter the first few characters of a faulty postal code or city/state name and then click **Find All Matches**. For example, type “085” in the **LatLong, Postal Code, or City, State** field to get a list of all postal codes that begin with “085”. (Note that if there is an address in the **Street Address** field, you should delete it before performing the search for best results.)

Click **OK** to exit the window and save your edits, or **Cancel** to cancel the edits.

3.13.5 Converting Custom Place Files from a Previous Version

Custom places that were saved in the previous version of PC*MILER can be transferred and converted to PC*MILER Version 28 using the steps below.

IMPORTANT: You should convert your old custom places to the new format following the steps below **before using the Custom Place Manager to create new places in Version 28**. If you have already created new places in Version 28, you'll need to contact Technical Support – see section 15.1.

NOTE Also: After you complete the steps below, it could take up to 5 minutes to start PC*MILER when a large number of files need to be updated.

1. Close PC*MILER if it is open.
2. In Windows Explorer, navigate to the folder where PC*MILER 27 or 27.1 is installed. The installation folder **PMW270** or **PMW271** is usually located in C:\ALK Technologies.
3. Select and copy all files **EXCEPT version.dat*** in the **NA\Q1\Save\user_places\user** (version 27) or **World\WW\Save\user_places\user** (version 27.1) folder.
4. Now navigate to the folder where PC*MILER 28 is installed. The installation folder **PCMILER28** is usually located in C:\ALK Technologies.
5. Paste the files you copied into the **PCMILER28\Data\Q1\Save\user_places\user** folder.

* It is very important to avoid copying and pasting the version.dat file, because POI's won't be recognized in Version 28 if this file is copied and pasted.

The next time you run PC*MILER Version 28, your custom places will automatically be updated for compatibility.

Least Cost Routing

Costing has always been an important use of PC*MILER. Among ALK customers there has been a growing interest in using PC*MILER to help with the trade-off of toll costs, costs per mile, and costs per hour in determining a “least cost” route.

In response to the needs of our customers, ALK began to research the relevant costing issues using several cost factors (typical miles per gallon, cost per gallon, fuel cost per mile, other cost per mile, and labor cost per hour for an 18-wheeler) and found that:

- a slower (less “practical”) route is the least-cost route 58% of the time, regardless of diesel price, provided the truck can still make its delivery window and its pickup window for its next load;
- if the least-cost route is chosen, there is the potential to save 0.6% - 0.9% in costs, on average¹;
- when diesel prices are high, the least-cost route is more likely to be a “shorter” route compared to when diesel prices are low; and
- the absolute amount of savings from choosing a least-cost route is insensitive to diesel price.

Of the 90 origin/destination pairs used in ALK’s study², the O/D with the largest difference in cost, regardless of diesel price, was Chicago, IL to Washington, DC. At a fuel price of \$2.71/gallon, the savings if the “least cost” route was chosen would be \$79, or 7.8%³:

Chicago, IL to Washington, DC							
Route	Miles	Hours	Cost				
			Total	Tolls	Fuel	Time	Maint
Prac	697.1	11.60	\$1,010	\$147	\$315	\$465	\$84
Prac Toll	776.8	12.90	\$961	\$0	\$351	\$517	\$93
Short	689.9	12.10	\$994	\$115	\$312	\$485	\$83
Short Toll	700.1	13.23	\$931	\$0	\$316	\$531	\$84
Least-cost difference	3.0	1.63	-\$79	-\$147	\$1	\$66	\$0

Would a customer in the above scenario actually save \$79 in cost if they chose the “least cost” route? That would depend on a lot of factors that are external to the route:

- where the driver is in their hours of service cycle
- the delivery time window for the truck and driver’s current load
- the pickup time window for the truck and driver’s next load
- alternative opportunities to match a different truck and driver to the next load (for a dispatcher of company drivers) or to choose a different next load (for an owner-operator)

On the basis of all the above findings, ALK has developed a new Least Cost routing feature that considers user-specified values for miles per gallon, cost per gallon, fuel cost per mile, other costs per mile, labor cost per hour, and stop costs – and includes a parameter for a greenhouse gas emission estimate.

Least Cost routing generates a series of alternative routes with distance, time and cost estimates, and lets the dispatcher or driver (or an external system, such as a truck dispatch optimization system) choose an optimal route, considering factors such as those cited above that are external to the route. If PC*MILER|Tolls is installed, toll costs are factored in as well.

Reference Notes:

- 1 - These results are for 48' equipment. It is expected that the potential savings for 53' equipment will be lower, due to fewer opportunities for legal alternative routes.
- 2 - The O/D pairs used for the study connect the centers of the 10 largest metro areas in the U.S.
- 3 - Sources of “average” data used in the study were default values for drivers paid by the hour, along with values from a recent American Transportation Research Institute (ATRI) study (*An Analysis of the Operational Costs of Trucking*), the U.S. Energy Administration, and typical miles per gallon for an 18-wheeler.

4.1 Using Least Cost Routing

To calculate Least Cost routing, follow the steps below:

1. In a new route window, enter an origin and at least one destination, then run the route – click **Run** or press **F10**. If there are any time/cost settings that need to be specified, they can be entered in the Route Options dialog box – see sections 9.4 and 9.5 – either before or after running the trip.
2. Select the Routes tab > Route group > *Optimize* > *Least Cost Routing*. A separate window will open that displays the possible routes on a map and the calculated totals for each route below the map. The most efficient calculated totals for distance, costs, hours and tolls will be highlighted in yellow below the map.

Origin: Sioux City, IA 51101 Destination: Manchester, IA 52057

Visible	Color	Options	Distance	Costs	Hours	Tolls	Fuel	Labor	Other	EstGHG
<input checked="" type="checkbox"/>		Practical, Border Open, High	534.3	734.24	9:53	0.00	325.51	312.56	96.17	1830.37
<input checked="" type="checkbox"/>		Shortest, Border Open, High	518.8	725.07	9:58	0.00	316.08	315.61	93.38	1777.37
<input checked="" type="checkbox"/>		Fastest, Border Open, High	534.5	731.09	9:46	0.00	325.64	309.24	96.21	1831.12
<input checked="" type="checkbox"/>		Practical, Toll Avoid, Border	534.3	734.24	9:53	0.00	325.51	312.56	96.17	1830.37
<input checked="" type="checkbox"/>		Shortest, Toll Avoid, Border	518.8	725.07	9:58	0.00	316.08	315.61	93.38	1777.37
<input checked="" type="checkbox"/>		Fastest, Toll Avoid, Border	534.5	731.09	9:46	0.00	325.64	309.24	96.21	1831.12

Print Save Selected Options Cancel

Least Cost Options Window

To hide a route on the map, uncheck it in the **Visible** column.

To use one of the generated routes, highlight it and click **Save Selected Options**. The calculated totals will appear in the route window, replacing the original route.

Click **Print** to print the Least Cost route calculations in a Comparison report.

Route	Type	Origin	Destination	Miles	Cost	Hours	Tolls	Fuel	Other	Labor	Est. GHG
1	Practical	Macon, GA 31201	New York, NY 10001	948.9	1429.83	15:19	72.00	623.14	180.30	554.39	3511.11
2	Shortest	Macon, GA 31201	New York, NY 10001	870.7	1490.46	16:31	155.45	571.79	165.44	597.77	3221.76
3	Fastest	Macon, GA 31201	New York, NY 10001	927.2	1482.70	14:59	155.45	608.85	176.16	542.23	3430.56
4	Practical, Toll Avoid	Macon, GA 31201	New York, NY 10001	952.5	1422.03	15:21	60.00	625.49	180.98	555.56	3524.32
5	Shortest, Toll Avoid	Macon, GA 31201	New York, NY 10001	870.8	1474.30	17:43	96.00	571.82	165.45	641.03	3221.95
6	Fastest, Toll Avoid	Macon, GA 31201	New York, NY 10001	949.2	1414.50	15:13	60.00	623.31	180.35	550.84	3512.03

Least Cost Comparison Report

NOTE: Internally, PC*MILER calculates six route types for Least Cost routing, but if the total cost is the same for two or more of these routes, not all routes will be displayed. Route types that PC*MILER calculates for every route are: Practical, Practical - Toll Discouraged, Shortest, Shortest - Toll Discouraged, Fastest, and Fastest - Toll Discouraged.

In recent years, ALK Technologies has become aware that a number of our customers are interested in considering time of day, day of the week, and time zones when calculating and reporting routes, distances, travel times, and toll costs. Up to and including Version 28, PC*MILER default routes, distances, travel times and toll costs are calculated based on:

- average road speeds by state/province, urban/rural, and class of road;
- height, length, width, and weight restrictions that apply during the majority of the commonly traveled seasons of the year, days of the week, and times of day;
- seasonal roads being open during shipping and receiving seasons, but not to through traffic;
- and peak-period toll costs for the most recently updated quarter of the release year.

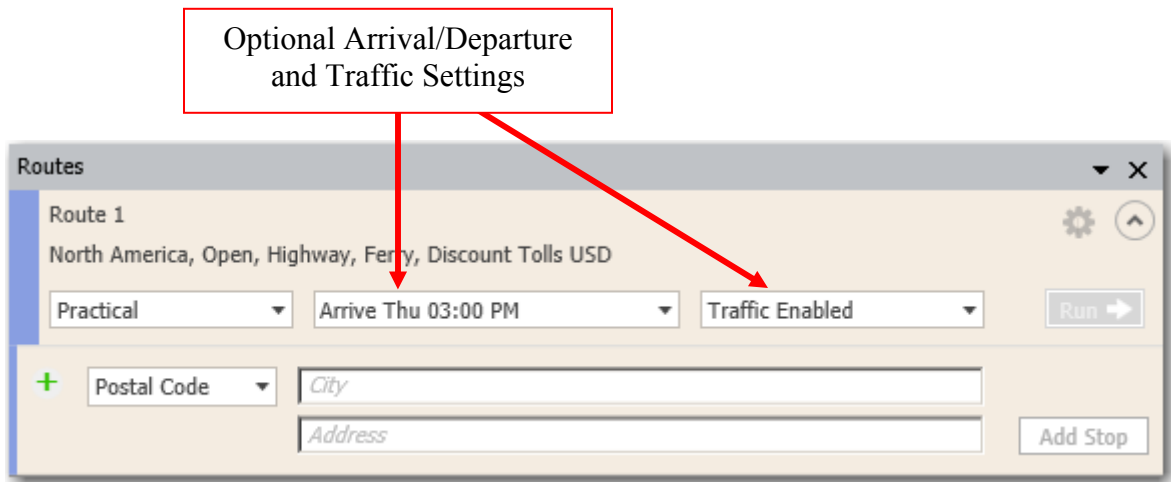
These fundamental routing criteria work well for the many purposes of our users, and will always be foundational to ALK's industry-leading PC*MILER products.

The time-based feature enhancements described in this chapter were added in PC*MILER Version 25 and now offer more precise travel time estimates to those users who are interested. PC*MILER capabilities related to time-based routing allow users to:

- specify a departure or arrival date and time for more realistic transit times;
- calculate truck-specific toll costs based on the time of day (*PC*MILER/Tolls must be installed*);
- and calculate more accurate transit times based on industry-leading historical traffic data.

Time-based routing can be run with or without the use of traffic data to increase the precision of travel time calculations. When time-based routing is used, ETA/ETD information appears in the route window, Detailed Route Report, and Driver's Report.

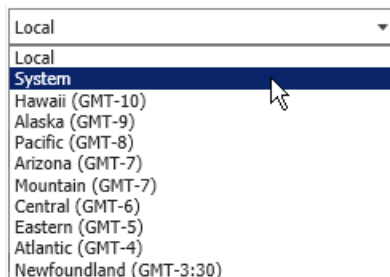
5.1 Route Generation With ETA/ETD



Time-Based Routing Options in the Route window

Optional time and date settings in the route window can be used to generate time-based routing that determines estimated times of arrival (**ETA**) and departure (**ETD**) based on a user-specified departure or arrival day and time. An ETA is calculated for every stop and toll plaza on the route (*PC*MILER/Tolls must be installed to access toll information*). Follow the steps below to generate time-based routing.

1. Select the red File application menu > *Application Settings*.
2. In the Application Settings dialog, choose the desired option in the **Time Zone** drop-down (note that this setting affects how dates/times are reported, not how they are calculated):



- **Local:** Reported ETA/ETD will conform to the time zone where each stop or toll plaza is located (applies in all world regions).
- **System:** ETA/ETD at stops and toll plazas will be reported based on the time zone setting on the host computer.
- **Specific:** Select a time zone by region (options will reflect the world region selected in the Route Options dialog). ETA/ETD at all stops and toll plazas will be reported using this time zone (*available only for NA and Europe*).

- In the route window, click the middle drop-down to open time options and specify an arrival/departure time and date or day of the week:

- Depart by/Arrive by:**

Select **Depart by** (to set the departure day/time at the trip's origin) or **Arrive By** (to set the arrival time at the trip's last stop). If this setting is changed after a route is calculated, the ETD and ETA's will automatically recalculate. The default setting here is **None** – time-based routing won't be used for the trip.

- Specific Date or Day of the Week:**

Select either **Specific Date** or **Day of the Week**. To enter a **date**, either type it in the text box or click the calendar and select a date. To specify a **day of the week**, click the drop-down list.

Day of the Week Pick List

Picking a Date from the Calendar

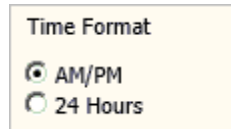
NOTE: To change the defaults for the Depart/Arrive and Specific Date/Day of Week settings to those you want to use frequently, select the Routes tab > *Defaults* > **Cost/Time** tab.

- **Local Time:**

A time of day must also be entered. Type the targeted local time at the arrival/departure location.



To change the time format from **AM/PM** to **24 Hours** (“military time”), select the File application menu > *Application Settings* and choose the desired option:



4. Now add at least two locations (an origin and destination) to the stop list and click **Run** to generate the route. Estimated arrival and departure times at all stops on a route will be shown in the mileage report in the route window after the route has been generated. If a target Arrival time was entered, the necessary ETD from the origin to meet that target is calculated.

Note that the calculated ETA/ETD shown below reflect driving times that include a scheduled break time (10 hours, after 14 hours of driving). Stop durations, break times, remaining Hours of Service and border wait times may be entered in the Route Options dialog box, Cost/Time tab.

		Time Zone	Tolls	Cost	Time	Miles	ETA/ETD
O	New York, NY 10001 <small>New York</small>	EDT					Dep Thu 02:38 PM (EDT)
1	Augusta, ME 04330 <small>Kennebec</small>	EDT	\$46.04	\$584.61	6:46	367.7	Dep Thu 09:26 PM (EDT)
D	Chicago, IL 60607 <small>Cook</small>	CDT	\$18.75	\$1,568.66	18:34	1,100.4	Arr Fri 03:00 PM (CDT)
			\$64.79	\$2,153.27	25:20	1,468.1	

Generated Route With ETA/ETD

5.2 Using Traffic Data for More Precise Time Estimates

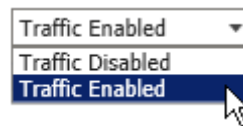
(U.S. and Canada only)

NOTE: A subscription to PC*MILER|Traffic must be purchased to access traffic data in PC*MILER, and you must have an Internet connection to use these features.

Time-based routing can be generated with or without using traffic data. Conversely, traffic data may be used whether or not an arrival or departure day/time has been entered. Using traffic data will increase the precision of time estimates.

If you choose not to use traffic data, travel times and ETA's will be calculated in the same manner as in all previous versions of PC*MILER, based on average road speeds (either PC*MILER default or user-specified) by class of road in each state/province. Road speeds can be customized in the Route Options or Default Route Options dialog box.

To calculate a route's ETA/ETD using traffic data, use the drop-down menu in the route window to change **Traffic Disabled** to **Traffic Enabled**. This option will remain active until it is changed by the user again (to set the default for all route windows, see section 5.2.1 below).



If Traffic is enabled and a departure or arrival time and date are not entered, INRIX default travel times that reflect free-flow conditions – think middle of the night – are used. (This is the “Typical” option mentioned below.)

Traffic data is collected by road segment. With the Use Traffic Data option selected and a departure or arrival time and date are entered, travel times and ETA's will be calculated based on **historical**, **typical** and/or **real-time** traffic data, depending on the arrive/depart and day/time settings. “Historical” data reflects how average traffic patterns affect road speeds on the road segments used by the generated route. (An “average” pattern is created using a historical time slice: 7 days in a week, with each day divided into 15-minute time slices.) “Typical” data uses road speeds that would occur if there were no traffic on those road segments. “Real-time” data is just that: current traffic patterns that are fed into the system in real-time.

NOTE: The three types of traffic data mentioned above can be displayed in the RouteMap window – see Chapter 6.

If **Depart by** is selected and the day/time is within 15 minutes of the current time, real-time traffic data will be used for the first 15 miles and Historical data will be used for the remainder of the route. (This is because after 15 miles of driving, conditions will have changed and they are more likely to resemble historical conditions than current conditions.) When **Arrive by** is selected, Historical data is always used.

5.2.1 Use Traffic Data By Default

To use traffic data by default in every new route window, select the Routes tab > General group > *Defaults* > **Road Speeds** tab and check **Use Traffic Data**. When **Use Traffic Data** is checked, custom road speeds cannot be entered in the Route Options dialog and, if already entered, are not available.

	Rural	Urban
Interstate Highways:	68	60
Divided Highways:	55	40
Primary Highways:	45	35
Secondary Roads:	45	35
Local Roads:	30	25
Ferries:	15	15
Ramps:	20	20

Default Route Options Dialog Box, Road Speeds Tab

5.3 Time-Based Routing in Reports

Estimated arrival and departure times at all stops on a route are shown in the mileage report in the route window after the route has been generated. These times appear in the **ETA/ETD** column to the far right. This column is inactive when an arrival or departure day/time has not been entered.

ETA/ETD information also appears in the far right column of the **Detailed Route Report** if a day/time was entered for the route (the report may need to be scrolled to the right – see section 8.2 for a detailed description of this report). This report

column will show the estimated times of arrival at every stop and toll plaza on the route. If a target arrival time was entered, the estimated departure time from the origin will be shown. If a departure time was entered, that time will be shown at the origin.

In the **Driver's Report** (see section 8.4), if a route was run using real-time traffic data, a **Delay** column will appear just to the right of the **Time** column. The "delay" time identifies delays caused by the current traffic conditions on the first 15 miles of the trip. (Note that real-time traffic data is used for the first 15 miles of a generated route if "Use Traffic Data" is turned on, unless a time is entered and Day of Week is selected rather than a date – in that case, historical traffic data is used for the whole route.)

5.4 "Special Restrictions" in Routing and Reports

Beginning in Version 28, time-based routing now integrates road restrictions that are active only during specific times. These new restrictions are enabled when you open the *Arrival/Departure* window in a route window and select an arrival or departure time. This action will cause PC*MILER to route around roads that have time-based restrictions.

These special restrictions may include roads that are closed in one or more directions; have a temporary closure in one or more directions (construction/natural disaster); have a restriction on a particular truck configuration (weight, hazardous material) in one or both directions; have a special speed limit in effect; or have a particular lane closed or allowed.

For example, the I-82 highway from Aspen, CO to Buena Vista, CO is closed in winter; so if an arrival or departure time during the winter season is entered, PC*MILER will route around I-82. (Note that the roads the alternate route takes may vary depending on whether the Highway Only option is turned on in the Route Options dialog. Using local streets in routing generally provides a route that is closer to the original one – in this case the spring, summer and fall route.)

Selecting "Override Restrictions" in the Route Options dialog will override these time-based restrictions, along with all other restrictions, but warning messages will appear in the Detailed and Driver's reports where a restriction exists.

The information provided in warnings will be formatted as follows:

Days of the Week: SMTWTFS. Any days during which the restrictions don't apply appear as a dash, e.g. S-T-TFS.

Hours: XX:XX AM – XX:XX PM, or XX:XX – XX:XX (Military Time – The format can be changed in the Application Settings dialog.)

Months: Includes the three-letter abbreviation of all valid months.

Days: Date range in every month from X-Y, e.g. 7-10.

Weeks: Week range in every month from X-Y, e.g. 1-2.

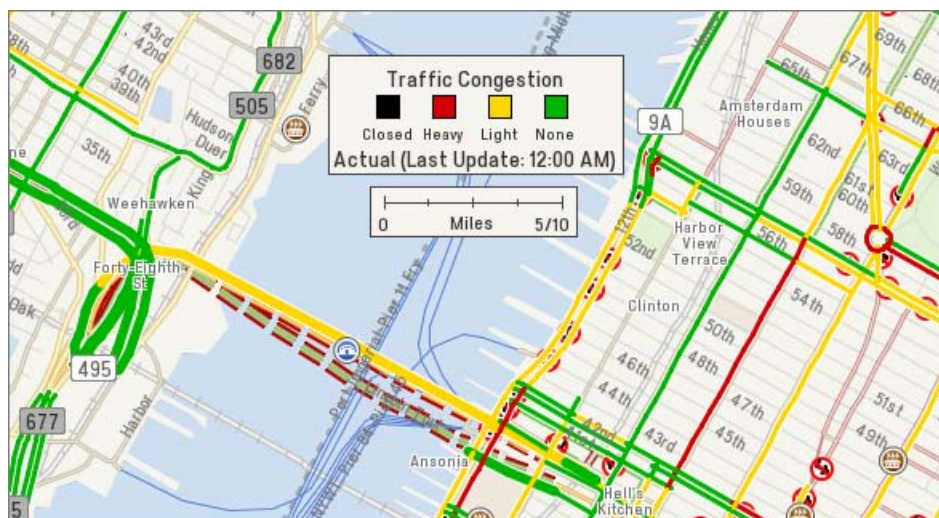
5.5 Time-Based Toll Cost Reporting

*(Installation of PC*MILER/Tolls required)* Prior to Version 25, PC*MILER calculated toll costs based exclusively on peak hour rates while factoring in vehicle dimension settings that affect those rates. Beginning in Version 25, when an arrival or departure time is entered in the route window, truck-specific toll costs can be calculated even more precisely because time-of-day variations are factored into toll rates when and where they occur, including peak and non-peak tolls.

See Chapter 7, *Getting Toll Costs*, for more on generating routes with toll costs.

NOTE: Toll costs are always calculated in the local time as the planned route crosses the toll booth. By default, the date/time of the toll collection is also reported in that local time. To change this setting, select the File application menu > *Application Settings* and use the **Time Zone** option to choose either *System* (your computer's time) or a specific time zone. The date/time of the toll collection will then be reported in the time zone you specified. Note that time zones displayed for each stop in the route windows will also be affected by this setting change.

PC*MILER gives users the option to purchase access to traffic data for roads throughout the U.S. and Canada that can be used for more precise time-based routing, as described in Chapter 5. This data can also be used to display historical, typical or real-time traffic patterns in the RouteMap window. (Note that an internet connection is needed for real-time data and for subsequent updates to the historical and typical traffic data.) For general instructions on using the RouteMap window, see Chapter 10.



Traffic Display Showing Level of Congestion – Lincoln Tunnel, New York, NY

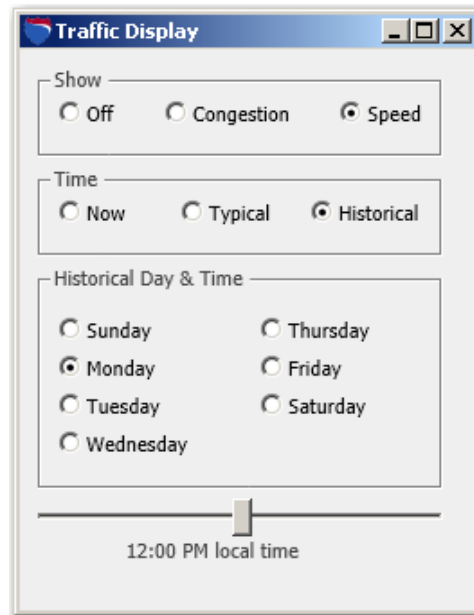
PC*MILER's new traffic display feature lets users instantly visualize traffic data on the map in any location throughout the continental United States to help with route planning, analysis, and diagnostics.

NOTE: An internet connection is required for the display of real-time traffic patterns. If you are not connected to the Internet and request traffic data to be displayed, you won't see any traffic flows on the map, and the **Traffic** legend will show the default text: "Actual: Last Update: 12:00 AM".

NOTE Also: The traffic display options described in this chapter do not affect how traffic data is used in time-based routing.

6.1 Traffic Display Options

To access the traffic display and set options for it, select *Traffic...* in the right mouse menu off the RouteMap. The Traffic Display window can be left open and moved around anywhere on the screen as you work in PC*MILER.



Traffic Display Window

When traffic display is turned on and your computer is connected to the internet, you will see traffic data displayed on the map at zoom level 5 and higher within the area you are zoomed into. (The current zoom level is shown in the title bar of the RouteMap window.)

To turn on the display, select either **Congestion** or **Speed** at the top of the Traffic Display window. When you change an option in this window, the map will immediately redraw to reflect the new data.

Options in the Traffic Display window are the following:

- **Show:**
Select **Congestion** to show the amount of congestion (relative to Typical – see the *Time* options description below), or **Speed** to show absolute traffic speeds. Select **Off** if you don't wish to see traffic displayed on the map.
- **Time:**
Select **Now** to see real-time data displayed (internet connection required).
Select **Historical** to see past traffic patterns. The Historical option displays average traffic based on patterns created using a historical time slice: 7

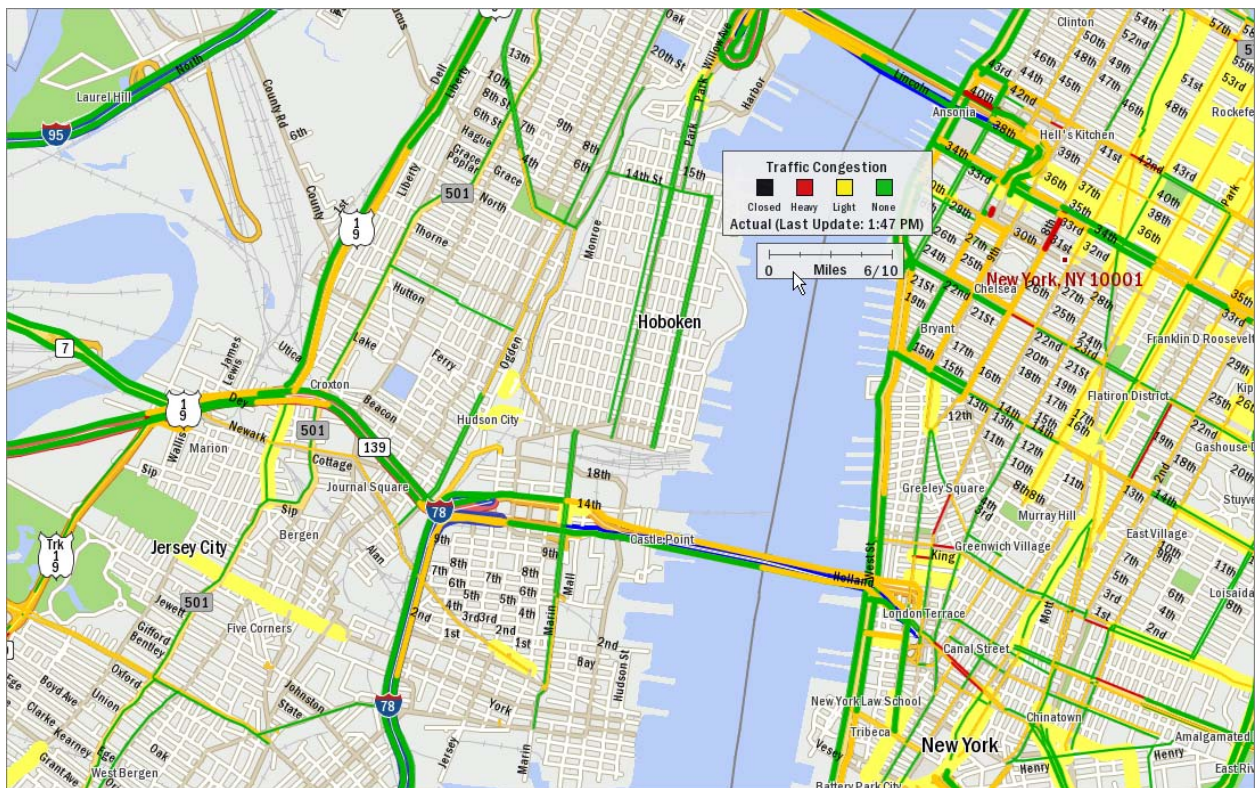
days in a week, with each day divided into 15-minute time slices. The Historical display depends on the day and time selected (see below).

The **Typical** option pertains only to road speeds (not congestion) and represents road speeds that are typical when there is no traffic congestion.

- **Historical Day and Time:**
Using the radio buttons and slider bar or arrows, indicate a day and time of day for which historical data will be displayed.

If you close the Traffic Display window, the selected options will remain in effect (unless you turn the traffic display on or off using the Map Features dialog box).

6.2 Traffic Display on the Map



Real-Time Traffic Display – Holland and Lincoln Tunnels, New York, NY

The traffic display can be seen on the map at a zoom level of 5 or higher (the zoom level is shown in the title bar of the RouteMap window).

To turn the **Traffic** legend on or off, select the Map tab > Customize group > *Legends* > *Traffic*. As with the other legends in the map window, you can click on this legend and drag it to where you want it.

The settings in the Traffic Display window determine which Traffic legend – Traffic Congestion or Road Speeds – appears on the map. In the example above, congestion is displayed and the Traffic Congestion legend shows the colors used to draw traffic patterns.

Both legends shown below include update times, indicating the display of real-time data.



Traffic Legends – Real-time Display

The legends below pertain to a Historic traffic display, and show the day of the week and time that are set in the Traffic Display window.



Traffic Legends – Historic Display

In the Road Speeds legend, distances are in miles by default. This setting can be changed in the Route Options or Default Route Options dialog box (see 8.10 and 8.11).

NOTE: If you are working with a real-time display, it may take anywhere from a few seconds to a minute or so for the display to update, depending on the speed of your Internet connection and when updated traffic information becomes available.

If ALK's PC*MILER|Tolls add-on module was purchased with PC*MILER, you can generate accurate, up-to-date toll costs for U.S. and Canadian lanes with these costs integrated directly into the routing database and reported turn-by-turn per trip. Columns for toll costs appear in the Detailed Route Report, State/Country Summary Report, and Comparison Report, and tolls can be reported in the currency of choice – either U.S. or Canadian dollars – using the current conversion rate.

Accurate toll cost calculations can optimize productivity in multiple departments of your organization by assisting in the routing, rating, and reconciliation processes. Now you can determine whether it's more cost-effective to take a toll route, or a non-toll route with a few additional miles, before routing a vehicle.

PC*MILER|Tolls generates up-to-date, truck-specific toll costs for toll roads, bridges, tunnels, and border crossings for U.S. and Canadian toll authorities. The data that PC*MILER|Tolls provides includes:

- Both cash and discount toll program transactions.
- Range (ticket) and barrier (coin drop) data in addition to two-way tolls, one-way tolls, and tolls that vary by direction.
- Quarterly toll data updates to ensure accuracy when calculating toll costs throughout the year. (PC*MILER|Tolls users receive notification by email when quarterly updates are available, or may use *Check for Updates* in the Help tab to ensure they have the most current data.)
- Time-of-day variations factored into truck-specific toll rates when and where they occur, including peak and non-peak tolls, if time-based routing is active in the route window. (See Chapter 5 for a detailed description of how to use time-based routing.)
- Toll rates for smaller 2-axle vehicles when automobile routing is generated.
- Future expected changes to toll rates included as available.
- Thirty-eight (38) toll discount programs throughout the U.S. and Canada (states in which each program apply are listed below).

GENERAL NOTES on TOLL RATES: Unless vehicle dimension settings are customized in the Route Options dialog (see section 9.6), PC*MILER|Tolls calculates toll costs for an 80,000 pound, 5-axle vehicle. Reported toll amounts are accurate and up-to-date, but not always exact due to several factors: first, several – though not many – toll roads have rates that are based on weight (for example, the Detroit-Windsor Tunnel charges a set rate per 100 lbs. gross weight in both directions); second, some toll charges (in various states) are time-of-day

driven, and in this case, tolls will be calculated using the highest (peak) rate unless PC*MILER's new time-based routing is used; and third, future and proposed toll rates are incorporated into the database where appropriate and these rate changes may occasionally be cancelled at the last minute.

Also note the following: if the user does not specify a departure/arrival date, the computer's system date is used as the date of departure to determine the effective toll rates for the trip (which include any rate changes that become effective during the trip). However, this is not true for the time of day. If the user does not specify a time of departure/arrival, the base rate for the date (i.e. highest rate) is used without reference to the system time.

States/Provinces Where Each Discount Program Applies:

SPECIAL NOTE: The "EZPass-WV" or "EZPass-NJ" options apply to those who purchased the EZPass service in West Virginia or New Jersey.

Discount Program	Valid In
407 ETR Transponder	ON Canada
A25 Transponder	QC Canada
A30 EXPRESS Transponder	QC Canada
BreezeBy	OR
C-Pass	FL
Cruise Card	GA
Downbeach Express Pass	NJ
E-Pass	TX
E-Pass Canada	NS Canada
ExpressPass	NY, ON Canada
EXpressToll	CO
EZ Tag	TX
EZPass	DE, IL, IN, ME, MD, MA, NH, NJ, NY, NC, OH, PA, RI, VA, WV
EZPass-NJ	NJ
EZPass-WV	WV
FAST LANE	MA and all E-ZPass-equipped facilities
FasTrak	CA
GeauxPass	LA
Good To Go	WA

Discount Program	Valid In
GO-PASS	CO
I-Pass	IL
K-Tag	KS
Laredo Trade Tag	TX
LeeWay	FL
MACPASS	NS Canada
NC Quick Pass	NC
NEXPRESS TOLL	MI ON Canada
Palmetto Pass (PAL PASS)	SC
Peach Pass	GA
PikePass	OK
Quickpass	BC Canada
Smart Tag	VA
StraitPASS	PEI Canada
SunPass	FL
TollTag	LA, TX
TReO	BC Canada
TxTag	TX
Wabash Pass	IN

The following discount programs have been discontinued in the database:

Discontinued Program	State	Versions Available	Version Discontinued	Reason
NEXUS	NY, ON	27	28	Discontinued
I-Zoom	IN	21-26	27	Replaced by EZPass
B-Pass	NB	17-25	26	Toll discontinued
M-Tag	MD	17-23	24	Replaced by EZPass
NH Tokens	NH	17, 18	19	Replaced by EZPass
O-Pass	FL	21-23	24	Absorbed into SunPass
Ready Toll	OH	17, 18	19	There is no discount associated with this program, it's simply a "debit card" used to pay tolls
Transpass	ME	17- 23	24	Replaced by EZPass

NOTE: Toll costs on the New York State Thruway for "5-axle 48' Trailer" and "5-axle 53' Trailer" vehicles are now accurately reported. The N.Y. Thruway lists separate toll rates for these vehicle types and now PC*MILER/Tolls has been calibrated to report the correct rate depending on the routing option selected. If the Vehicle Dimension length is set to 53' in the Route Options dialog box, the corresponding 5-axle 53' Trailer toll cost will be reported.

NOTE Also: Some toll exits in the U.S. and Canada have recently become "electronic only"; for example, starting December 1st, 2008, the 183A toll road in Texas has become cashless. The way to pay for this toll road is either by TXTag (their electronic toll payment method) or Pay By Mail. Pay By Mail is for those who don't have the electronic discount program – their license plates get photographed and a bill is mailed to the owner. Commonly referred to as "video tolling" or "video billing", the rates for this payment method are higher to cover processing costs.

See *Appendix G* for a list of all electronic-only toll roads.

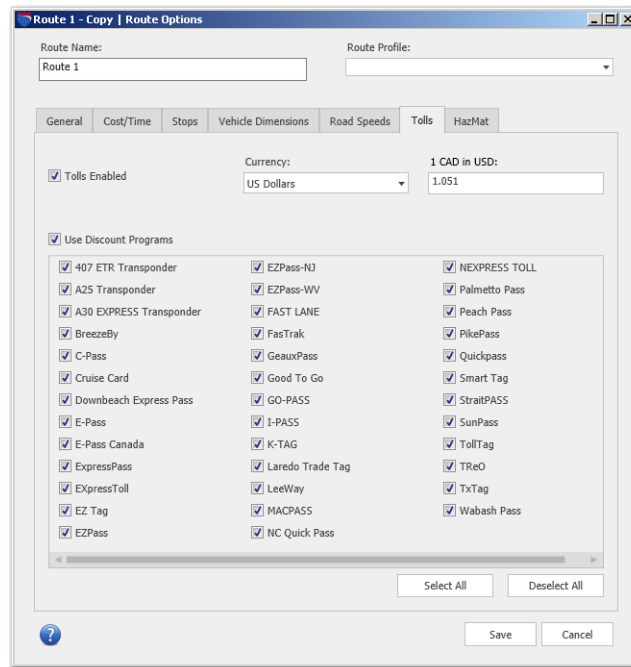
All Pay By Mail and video toll rates are considered as "Cash" in PC*MILER toll rate calculations.

7.1 Turning On Toll Cost Calculation *(U.S. and Canada only)*

*(PC*MILER/Tolls must be purchased and licensed)* Toll costs can be calculated along with mileage, cost and time estimates when you generate any PC*MILER route with at least an origin and a destination using any available route type or option, including Hub routing.

To turn on toll calculations for an individual route, select the Routes tab > Route group > Options > **Tolls** tab and make sure **Tolls Enabled** is checked. To keep tolls enabled by default for every route, select the Routes tab > General group > Defaults > **Tolls** tab).

Toll costs can be calculated with or without discount programs applied. By default, **Use Discount Programs** is checked on in the Route Options dialog and all discount programs are selected. You can customize these settings by unchecking the Use Discount Programs option or any of the listed discount programs.



Route Options Dialog, Tolls Tab

To switch to Canadian dollars as the currency for toll calculations, use the **Currency** drop-down list to choose **Canadian Dollars**. The **Conversion Rate** is displayed to the right and can be customized by simply typing in a new rate. Whenever toll calculations are turned on, the currency in use is shown in each route window along with the discount program status.

NOTE: Settings in the **Tolls** tab not only affect PC*MILER, but also determine which discount programs will be in effect whenever you use PC*MILER|Connect, PC*MILER|Spreadsheets, or PC*MILER|BatchPro to calculate tolls.

When toll calculations are turned on, you'll see a **Tolls** column in the route window on the far right. Toll fees for each leg (not cumulative) will be listed in addition to mileage and cost/time estimates. For total cumulative toll costs, run a State Summary Report or Comparison Report (see sections 8.3 and 8.6).

The screenshot shows the 'Route 1' window with the following settings: Practical, Arrival/Departure, Traffic Disabled, and a Run button. The table below shows the toll calculation by trip leg.

	Time Zone	Tolls	Cost	Time	Miles
○ Harrisburg, PA 17105 Dauphin	EDT				
● Columbus, OH 43216 Franklin	EDT	\$67.64	\$570.75	5:47	367.8
○ Bloomington, IN 47402 Monroe	EDT	\$0.00	\$312.69	3:42	224.3
		\$67.64	\$883.44	9:29	592.2

Toll Calculation by Trip Leg in the Route window

The default Tolls settings are:

- **Tolls Enabled** is checked
- **Use Discount Programs** is checked
- All discount programs are selected
- **Currency** is US\$
- **Conversion Rate** is USD/CAD = \$1.00/\$1.051

7.2 Customizing Toll Costs By Weight and Axle

Jurisdictions in the U.S. and Canada that have toll roads class their toll rates either by vehicle weight or by a vehicle's number of axles. Beginning in PC*MILER Version 22, setting the vehicle's dimensions in the **Vehicle Dimensions** tab of the Route Options dialog box enables toll cost reporting based on vehicle weight and number of axles.

The available toll rates by axle are from 2 (two axle dual rear wheel vehicles only) up to 14 axles, including multi-trailer rates and automobile routing. For toll rates categorized by weight, each toll road authority publishes its own definition of weight classes, and PC*MILER categorizes and reports these toll rates based on the published weight category and range provided.

For those who are new to the arena of toll cost reporting, the jurisdictions that charge toll costs by weight and those that charge by axle are identified below. This information is important to know if you intend to use PC*MILER to generate toll costs that are customized by weight and axle.

- **Jurisdictions Charging Tolls by Vehicle Weight:** MI, NJ, NS, ON, PA
- **Jurisdictions Charging Tolls by Axle:** AK, AL, BC, CA, CO, DE, FL, GA, IL, IN, KS, LA, MA, MD, ME, MI, MN, MO, NB, NC, NE, NH, NJ, NS, NY, OK, OR, PA, PEI, QC, RI, SC, TX, UT, VA, VT, WA, and WV

To enter the weight and/or number of axles for a vehicle either before or after stops have been entered for a route, select the Routes tab > Route group > *Options* > **Vehicle Dimensions** tab.

The screenshot shows the 'Route 1 | Route Options' dialog box with the 'Vehicle Dimensions' tab selected. The 'Route Name' is 'Route 1' and the 'Route Profile' is a dropdown menu. The 'Vehicle Profile' is a dropdown menu, and the 'Vehicle Type' is 'Truck'. The 'Units' are set to 'English'. The 'Height (feet)' is 13 and 'Height (inches)' is 6. The 'Length (feet)' is 48 and 'Length (inches)' is 0. The 'Width (inches)' is '96 or less' and the 'Weight (lbs)' is 80000. The 'Axles' are set to 5. There are checkboxes for 'Permit' (unchecked) and 'Multiple Trailer (MT)' (checked). At the bottom right are 'Save' and 'Cancel' buttons.

Route Options Dialog, Vehicle Dimensions Tab

In the Vehicle Dimensions tab, only the weight, axle number and multiple trailer settings affect toll cost reporting. Enter these parameters as follows:

Weight: Weight may be entered in pounds or kilograms (select **English** or **Metric** at the top of the dialog). Weights up to 132,000 lbs. or 59,874 kg. may be entered. Weights less than 9,000 lbs./4,082 kgs. will generate routing appropriate for automobiles and small vans. See section 9.6 for more on how PC*MILER handles vehicle weight, and section 11.2 on custom vehicle profiles. Vehicle weight is 80,000 lbs. by default.

Axles: Select a number from the drop-down pick list. The default is 5 axles. Note that 2 axle includes two axle dual rear wheel vehicles only.

Multiple Trailer (MT): Check this option if the vehicle is a long combination vehicle with multiple trailers. (See Important Note below.)

IMPORTANT NOTE: Twin trailers with 7 or more axles are not allowed on the Massachusetts Turnpike east of Exit 14. If you enter 7 or more axles and check “**Multiple Trailer (MT)**”, PC*MILER will return a \$0 toll rate for that section without a warning.

When done, click **Save** to close the Route Options dialog, then generate your route. PC*MILER will calculate the appropriate route and report the corresponding toll costs according to the vehicle dimensions you set.

If custom information is not entered in the Vehicle Dimensions tab, the default values will be used. The default values are based on a typical Class 8 vehicle with a weight of 80,000 lbs./36,287 kg. and 5 axles.

NOTE: Users have the option to set up profiles for individual vehicles or for specific vehicle types that include vehicle dimensions and time/cost settings (the same ones that are found in the Route Options dialog box). See section 11.2 for a full description of this option.

7.3 Tolls and Plaza Names in the Detailed Route Report

Toll costs are calculated by trip leg in the Detailed Route Report. To generate this report, select the Routes tab > Route group > *Reports* > *Detailed Report* or press **F5** on your keyboard. For more on this report, see section 8.2.

To assist users in toll cost reconciliation, toll plaza names have been added to the database. Some plazas listed in this report have multiple sub-plazas at the same location, but PC*MILER assigns one name to all of them. For a list of toll authorities and names where sub-plazas exist, see *Appendix F*.

Abbreviated plaza names appear in the Detailed Route Report in a new column titled “Toll Plaza”. If the Toll Plaza column is blank, either the agency does not have a transponder program or the agency has a transponder program but the toll plaza abbreviations used on that agency’s invoices could not be determined at this time.

The format of the plaza names is as follows: the agency abbreviation, the entry plaza abbreviation, and the exit abbreviation. In cases where the entry and exit plazas are the same (barrier toll), the plaza abbreviation will be shown only once.

Toll Costs by Trip Leg and Toll Plazas

State/Country	Route	Miles	Hours	Interchange	Leg Miles	Leg Hours	Total Miles	Total Hours	Leg Tolls	Toll Plaza	Local stop Time	
Stop 1: 64101 Kansas City, MO, Jackson (On-Duty) 0:00												
MO	North	Local	0.3	0:00	+ Local I-70	0.3	0:00	308.0	4:53	0.00		Dep 7/3 1:58 PM
MO	West	I-70 - Presidential Pkwy	0.4	0:00	(to MO/KS State Line)	0.7	0:01	308.7	4:54	0.00		
KS	West	I-70 - Presidential Pkwy	0.5	0:01	+ I-70 Ramp	1.2	0:02	309.2	4:55	0.00		
KS	Keep left	Ramp	0.1	0:00	+ Ramp I-70	1.3	0:02	309.3	4:55	0.00		
KS	West	I-70 - Presidential Pkwy	2.9	0:03	+ I-70	4.2	0:05	312.2	4:58	0.00		
KS	West	I-70 - Presidential Pkwy	4.6	0:04	+ I-70 US-69	8.9	0:09	316.8	5:02	0.00		
KS	West	I-70 - Presidential Pkwy	7.9	0:07	+ I-70 I-70	16.7	0:16	324.7	5:09	0.00		
KS	\$ West	I-70 - Presidential Pkwy	40.2	0:39	+ I-70 Exit 183	56.9	0:55	364.9	5:48	0.00		
KS	Keep right	Exit 183	0.7	0:01	+ Exit 183 Ramp	57.6	0:56	365.6	5:49	6.25	KTA 236 182/183	7/3 2:54 PM
KS	Keep left	Ramp	0.6	0:01	+ Ramp I-70	58.2	0:57	366.2	5:50	0.00		
KS	West	I-70 - Presidential Hwy	3.5	0:03	+ I-70 Exit 362C	61.7	1:00	369.7	5:53	0.00		
KS	Keep right	Exit 362C	0.1	0:00	+ Exit 362C SE 10th Ave	61.9	1:01	369.8	5:53	0.00		
KS	Left	SE 10th Ave	0.6	0:01	+ SE 10th Ave Topeka Blvd	62.4	1:01	370.4	5:54	0.00		
KS	Left	Topeka Blvd	0.7	0:01	Topeka, KS 66601	63.2	1:02	371.1	5:55	0.00		
Arrive Loaded												
Dest: 66601 Topeka, KS, Shawnee (On-Duty) 0:00												

Detailed Route Report

7.4 Getting Toll Totals in the Comparison Report

The PC*MILER Comparison Report calculates total toll amounts, along with mileage and estimated time and cost, for two or more trips. To generate this report, click the **Comparison** button on the toolbar or press **F4** on your keyboard. The two routes shown below in this sample report are identical except that the Toll Discouraged routing option was turned on for Route 2.

Toll Total For Each Trip

Route	Type	Origin	Destination	Miles	Cost	Hours	Tolls	Fuel	Labor	Other	Est. GHG
1		Princeton, NJ 08540	Pittsburgh, PA 15233	336.2	610.28	5:29	127.15	220.78	63.88	198.46	1244.01
2	Toll Avoid	Princeton, NJ 08540	Pittsburgh, PA 15233	360.5	532.76	6:17	0.00	236.70	68.49	227.57	1333.70

Comparison Report Showing Toll Discouraged Routing Option

7.5 Toll Information in the State/Country Report

The PC*MILER State/Country Report automatically calculates toll totals at each stop, by state, and by trip if tolls were calculated.

A breakdown of toll costs by the type of discount program applied is also available. To obtain this breakdown, select the File application menu > *Application Settings...* and check **Show Toll Discount Info** in the Application Settings dialog then click **Save**. This can be done before or after the State/Country Report is generated. Discount program information will appear in the state/country summary section at the bottom of the report, in the Tolls column (see the example below).

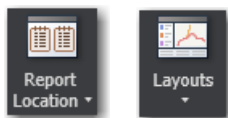
To generate this report, first run the trip in the route window, then press **F6** on your keyboard or click the **State** button on the toolbar. See section 8.3 for additional information about this report. The location of toll cost data in the report is shown below.

08540 Princeton, NJ to 68104 Omaha, NE : 1 Stop											
Miles: 1,378.6 Time: 21:46 Cost: \$2,072.82											
Truck Config: Weight: 80,000lbs Height: 13ft 6in Length: 48ft 0in Width: 96in Axles: 5											
North America, Practical, Borders Open, Highway Only, Ferry Distance, Discount Tolls USD											
Stop	Leg Miles	Total Miles	Leg Cost	Total Cost	Leg Hours	Total Hours	Leg Tolls	Total Tolls	Leg Est.GHG	Total Est.GHG	
08540 Princeton, NJ, Mercer	0.0	0.0	0.00	0.00	0:00	0:00	0.00	0.00	0.0	0.0	
47402 Bloomington, IN, Monroe	729.6	729.6	1156.81	1156.81	11:39	11:39	117.68	117.68	2699.6	2699.6	
68104 Omaha, NE, Douglas	649.0	1378.6	916.01	2072.82	10:08	21:46	0.00	117.68	2401.3	5100.9	
State/Country	Total	Toll	Free	Ferry	Loaded	Empty	Toll(\$)				
IA	304.4	0.0	304.4	0.0	304.4	0.0	0.00				
IL	217.9	0.0	217.9	0.0	217.9	0.0	0.00				
IN	249.7	0.0	249.7	0.0	249.7	0.0	0.00				
NE	2.0	0.0	2.0	0.0	2.0	0.0	0.00				
NJ	13.3	0.0	13.3	0.0	13.3	0.0	0.00				
OH					231.4	0.0	0.00				
PA					346.7	0.0	117.68				
							Cash	149.25			
							EZPass	117.68			
WV					13.3	0.0	0.00				
US	1378.6	276.4	1102.2	0.0	1378.6	0.0	117.68				
TOTAL	1378.6	276.4	1102.2	0.0	1378.6	0.0	117.68				

State/Country Report with Toll Discount Information (Print Preview)

In addition to the mileage, time and cost information that is returned when a route is run, there are six different PC*MILER reports that can be generated: Mileage, Detailed Route, State/Country, Driver's, Road Type, and Comparison.

When a report is generated, it opens in a separate pane. You can control the location of this pane within the PC*MILER application window using the *Report Location* and *Layouts* buttons in the Window tab. Any subsequent reports will open in the same pane.



To float an individual report in its own window, right-click the report title in the tab at the top of the report, then select “**F**loat”. To dock it, right-click the report title again and select “**D**ock”.

State/Country		Route	Miles	Hours	Interchange	Leg Miles	Leg Hours	Total Miles	Total Hours
Origin: 15295 Pittsburgh, PA, Allegheny 0.00									
PA	South	Grant St	0.3	0:00	+ Grant St Ramp	0.3	0:00	0.3	0:00
PA	Keep right	Ramp	0.4	0:01	+ Ramp I-376	0.7	0:02	0.7	0:02
PA	East	I-376 - Penn-Lincoln Pkwy	6.9	0:06	+ I-376 Exit 78A	7.6	0:08	7.6	0:08

Display Options for an Individual Report Window

8.1 Mileage Report

When a route is run, mileage, time and cost information is returned in the route entry window. A Mileage Report can be printed that summarizes this information and also includes cumulative miles by trip leg and greenhouse gas estimates. Select the File application menu > *Print Report...* > *Mileage*.

Note that this report does not appear on-screen, printing it is the only way to generate it.

Route 1 : 08540 Princeton, NJ to 27401 Greensboro, NC : 1 Stop
 Miles: 499.8 Time: 7:55 Cost: \$680.44
 Truck Config: Weight: 80,000lbs Height: 13ft 6in Length: 48ft 0in Width: 96in Axles: 5
 North America, Practical, Borders Open, Use Local Streets, Ferry Distance, Discount Tolls USD

Stop		Leg Miles	Total Miles	Leg Cost	Total Cost	Leg Hours	Total Hours	Leg Tolls	Total Tolls	Leg Est.GHG	Total Est.GHG
Princeton, NJ	457 North Harrison Street	0.0	0.0	0.00	0.00	0:00	0:00	0.00	0.00	0.0	0.0
Richmond, VA	200 West Leigh Street	296.9	296.9	419.34	419.34	4:46	4:46	33.00	33.00	1017.0	1017.0
Greensboro, NC	372 West Market Street	202.9	499.8	261.11	680.44	3:10	7:55	0.00	33.00	695.1	1712.1

Printed Mileage Report

8.2 Detailed Route Report

After generating a route, select the Routes tab > Route group > *Reports* > *Detailed* or press the **F5** key to display a Detailed Route Report for the active route.

State/Country	Route	Miles	Hours	Interchange	Leg Miles	Leg Hours	Total Miles	Total Hours	Leg Tolls	Toll Plaza
Origin: 19362 Nottingham, PA, Chester (On-Duty) 0.00										
0:00										
PA	North Local	0.5	0:01	+ Local US-1	0.5	0:01	0.5	0:01	0.00	
PA	South US-1 - Kennett Oxford Byp	0.3	0:00	+ US-1 Ramp	0.8	0:01	0.8	0:01	0.00	
PA	Keep right Ramp	0.3	0:01	+ Ramp PA-272	1.1	0:02	1.1	0:02	0.00	
PA	North PA-272	9.1	0:12	+ PA-272 PA-272	10.2	0:14	10.2	0:14	0.00	
PA	North PA-272	0.5	0:01	+ PA-272	10.7	0:15	10.7	0:15	0.00	
PA	North PA-272	20.6	0:23	+ PA-272 PA-272	31.2	0:38	31.2	0:38	0.00	
PA	North PA-272	0.6	0:01	+ PA-272 US-222	31.8	0:39	31.8	0:39	0.00	
PA	North US-222	0.6	0:01	+ US-222 York Rd	32.4	0:40	32.4	0:40	0.00	
PA	Left York Rd	0.1	0:00	+ York Rd Ramp	32.5	0:40	32.5	0:40	0.00	
PA	Keep left Ramp	0.2	0:01	+ Ramp US-30	32.7	0:41	32.7	0:41	0.00	
PA	West US-30	0.3	0:00	+ US-30 PA-283	33.0	0:41	33.0	0:41	0.00	
PA	West PA-283	28.8	0:27	+ PA-283 Ramp	61.8	1:08	61.8	1:08	0.00	
PA	Keep right Ramp	0.2	0:01	+ Ramp I-283	62.0	1:08	62.0	1:08	0.00	
PA	South I-283	0.3	0:00	+ I-283 Ramp	62.3	1:09	62.3	1:09	0.00	
PA	Keep right Ramp	0.3	0:01	+ Ramp I-76	62.5	1:10	62.5	1:10	0.00	
PA	\$ West I-76 - Pennsylvania Tpke	0.7	0:01	+ I-76 I-76	63.2	1:10	63.2	1:10	0.00	
PA	\$ West Pennsylvania Tpke - I-76	47.0	0:43	+ I-76 I-76	110.2	1:54	110.2	1:54	0.00	
PA	\$ West Pennsylvania Tpke - I-76	124.9	1:55	+ I-76 Exit 75	235.2	3:49	235.2	3:49	0.00	
PA	Keep right Exit 75	0.2	0:01	+ Exit 75 Ramp	235.4	3:50	235.4	3:50	0.00	
PA	Straight Ramp	0.3	0:01	+ Ramp I-70	235.7	3:51	235.7	3:51	71.70	PTC HES NST
PA	West I-70	39.5	0:37	+ I-70	275.3	4:27	275.3	4:27	0.00	
PA	West I-70	17.7	0:16	(to PA/WV State Line)	293.0	4:43	293.0	4:43	0.00	
WV	West I-70	9.3	0:08	+ I-70 Exit 5A	302.3	4:52	302.3	4:52	0.00	
WV	Keep left Exit 5A	0.0	0:00	+ Exit 5A I-470	302.3	4:52	302.3	4:52	0.00	

Detailed Route Report

This report includes direction of travel, roads, interchanges, stops, scheduled break times, empty/loaded status at each stop, on-duty stop times and costs, leg and cumulative times and distances, and toll costs (if PC*MILER|Tolls is installed and toll calculation is turned on). The report displays additional information depending on the options selected when the route was run. Values that affect reported cost and time estimates and toll costs are set in the Route Options dialog box.

TIP: Double-click a line in this report to zoom into that route segment on the map.

The columns from left to right in the Detailed Route Report give you the following information for each route segment: state, toll or free road, turn direction, route (with exit number where available), segment distance, driving time, interchange point, leg mileage and time, cumulative trip mileage and total trip time.

If PC*MILER|Tolls is installed and toll calculations are turned on in the Route Options dialog box, leg toll costs and the corresponding toll plazas will be shown in two columns on the far right.

If day/time information was entered for the route, there will be an additional **Stop Time** column to the far right. This column will show the estimated time of arrival at every stop and toll plaza on the route. If a target arrival time was entered, the estimated departure time from the origin will be shown. If a departure time was entered, that time will be shown at the origin. The column header for the Stop Time column will reflect the *Time Zone Display* setting (File application menu > *Application Settings*).

A dollar sign (\$) to the left of the directional column marks segments that are toll roads. Alerts such as height, weight, 53-Foot restrictions, and geofence warnings are noted where they exist, appearing before the pertinent road segment in the report. (See section 1.6.5 for more on 53-Foot restrictions in reports.)

NOTE: Due to the way PC*MILER identifies locations and calculates routes and distances, occasionally a toll barrier won't be reported in the Detailed Route Report. When this happens anywhere on a route, an alert will appear at the very bottom of the report stating that this has occurred. You can then check all route segments marked with a dollar sign to find the omission.

At the point where a route begins to use a road segment that travels through a geofenced area, a warning like this will appear that includes the name of the road, the name of the geofence set, and the name of the individual geofence:

Warning * US-1 * : New Jersey : NewBrunswickNJ

If time/cost settings were designated, the Detailed Route Report will also include a time and cost for each stop, the empty/loaded status for each leg, a border wait time, and the time at which a break should be taken if the number of on-duty hours allowed between breaks was specified for the route. Stop times and costs, empty/loaded mileage, a border wait time, and break time information are calculated using input you may enter or edit in the Route Options dialog box (see sections 9.4 and 9.5).

If one of the Hazardous Material route types was used (PC*MILER|HazMat installation required), the Detailed Route Report will include a **Restriction** column (shown below). Any restricted road segments on the route will be labeled with the appropriate hazmat restriction type in this column. (PC*MILER uses these route segments in its calculations only if no other alternative is possible, or the alternative is extremely impractical.) Routes designated as preferred for hazardous materials will not be indicated in the report.

State/Country	Route	Miles	Hours	Interchange	Leg Miles	Leg Hours	Total Miles	Total Hours	Leg Tolls	Toll Plaza	Restriction
Origin: 46206 Indianapolis, IN, Marion (On-Duty) 0:00											
IN	South Local	0.1	0:00	+ Local E Washington St	0.1	0:00	0.1	0:00	0.00		
IN	Turn around E Washington St	0.0	0:00	+ E Washington St E Washington St	0.1	0:00	0.1	0:00	0.00		
IN	Turn around E Washington St	0.5	0:01	+ E Washington St S West St	0.6	0:01	0.6	0:01	0.00		Restricted
IN	Left S West St	0.4	0:01	+ S West St S West St	1.0	0:02	1.0	0:02	0.00		Restricted
IN	Straight S West St	0.5	0:01	+ S West St Ramp	1.5	0:03	1.5	0:03	0.00		
IN	Keep right Ramp	0.2	0:01	+ Ramp I-70	1.7	0:04	1.7	0:04	0.00		
IN	West I-70	0.9	0:01	+ I-70 Exit 78	2.6	0:05	2.6	0:05	0.00		Restricted
IN	Keep right Exit 78	0.2	0:01	+ Exit 78 S Harding St	2.8	0:05	2.8	0:05	0.00		
IN	Right S Harding St	0.4	0:01	+ S Harding St S Harding St	3.2	0:06	3.2	0:06	0.00		
IN	Straight S Harding St	0.5	0:01	+ S Harding St S Harding St	3.8	0:07	3.8	0:07	0.00		Restricted

Detailed Route Report Showing HazMat Restriction Column
(PC*MILER/HazMat installation required)

8.3 State/Country Report

18505 Scranton, PA to 50318 Des Moines, IA : 1 Stop
Miles: 1,032.7 Time: 16:09 Cost: \$1,524.40
Truck Config: Weight: 80,000lbs Height: 13ft 6in Length: 48ft 0in Width: 96in Axles: 5
North America, Practical, Borders Open, Highway Only, Ferry Distance, Discount Tolls USD

Stop	Leg Miles	Total Miles	Leg Cost	Total Cost	Leg Hours	Total Hours	Leg Tolls	Total Tolls	Leg Est.GHG	Total Est.GHG
18505 Scranton, PA, Lackawanna	0.0	0.0	0.00	0.00	0:00	0:00	0.00	0.00	0.0	0.0
43601 Toledo, OH, Lucas	472.3	472.3	690.65	690.65	7:27	7:27	21.25	21.25	1747.4	1747.4
50318 Des Moines, IA, Polk	560.4	1032.7	833.75	1524.40	8:42	16:09	44.63	65.88	2073.6	3820.9

State/Country	Total	Toll	Free Ferry	Loaded	Empty	Toll(\$)
IA	173.2	0.0	173.2	0.0	173.2	0.0
IL	162.9	7.1	155.9	0.0	162.9	3.00
IN	151.6	135.5	16.2	0.0	151.6	32.13
OH	251.4	210.6	40.8	0.0	251.4	30.75
PA	293.5	0.0	293.5	0.0	293.5	0.00
US	1032.7	353.1	679.6	0.0	1032.7	65.88
TOTAL	1032.7	353.1	679.6	0.0	1032.7	65.88

State/Country Report (Print Preview)

After running a route, you can select the Routes tab > Route group > *Reports* > *State/Country* or press the **F6** key to display a table summarizing mileage by state, province, or country traveled.

The State/Country Report lists leg and total distances and cost and time estimates in columns from left to right. The last two columns show leg and cumulative greenhouse gas estimates in pounds or kilograms of carbon dioxide equivalent per gallon/liter of fuel. (Values that affect cost, time, toll and greenhouse gas estimates are set in the Route Options dialog box.) At the bottom of this report, distances are broken down into toll/free, empty/loaded, and ferry mileage by state/country.

If PC*MILER/Tolls is installed and toll calculation is turned on in the Route Options dialog box, a **Total Tolls** column to the left of the greenhouse gas columns will list cumulative toll costs for each leg of the trip. The summary at the bottom of the report will include a breakdown of toll costs by state/country.

A breakdown of toll costs by the type of discount program applied is also available. Select the File application menu > *Application Settings* and check *Show Toll Discount Info* in the Application Settings dialog, then click **Save**. This can be done before or after the State/Country Report is generated. You will see the discount breakdown in the **Toll(\$)** column in the State/Country summary section.

8.3.1 Order of States in the State/Country Report

In the State/Country Report, states and countries are displayed in alphabetical order by default. To display them in the order in which the route travels through them, select the Routes tab > Route group > *Options* (or to change the default setting, General group > *Defaults*) and choose **Route Order** under **State/Country Report Order**. States/countries will now appear on the report as they would in a driver log.

8.4 Driver's Report (Driving Instructions)

Select the Routes tab > Route group > *Reports* > *Driver's* to generate easy-to-read detailed driving instructions, including break times, turn direction and distance between turns. This report includes all alerts that appear in the Detailed Route Report.

If the route was run using real-time traffic data and the departure time for the trip is within 15 minutes of the current time, the **Delay** column just to the right of the **Time** column identifies delays caused by the current traffic conditions on the first 15 miles of the trip.

18505 Scranton, PA to 50318 Des Moines, IA : 1 Stop
 Miles: 1,032.7 Time: 16:09 Cost: \$1,524.40
 Truck Config: Weight: 80,000lbs Height: 13ft 6in Length: 48ft 0in Width: 96in Axles: 5
 North America, Practical, Borders Open, Highway Only, Ferry Distance, Discount Tolls USD

Driving directions	Odometer	Time
Scranton, PA 18505		
Go south on Cedar Avenue		
Drive less than 0.1 miles	0.0	0:00
Turn right on ramp to Central Scranton Expressway East		
Drive 0.4 miles on Ramp	0.4	0:01
Drive 0.6 miles	0.9	0:02
Take ramp to I-81 South		
Drive 0.4 miles on Ramp	1.4	0:03
Drive 17.9 miles (~16 min)	19.2	0:19
Stay on I-81 South as PA-309 splits off		

Driver's Report (Print Preview)

8.5 Road Type Report

Select the Routes tab > Route group > *Reports* > *Road Type* to generate a distance breakdown by PC*MILER road category for the active trip. See section 9.7.1, *Average Road Speeds*, for detailed descriptions of these road types.

18505 Scranton, PA to 50318 Des Moines, IA : 1 Stop
 Miles: 1,032.7 Time: 16:09 Cost: \$1,524.40
 Truck Config: Weight: 80,000lbs Height: 13ft 6in Length: 48ft 0in Width: 96in Axles: 5
 North America, Practical, Borders Open, Highway Only, Ferry Distance, Discount Tolls USD

Stop	Leg Miles	Interstate	Interstate - No Ramps	Divided	Primary	Ferry	Secondary	Ramp	Local	Toll Road
Scranton, PA 18505	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Toledo, OH 43601	472.3	464.8	0.0	0.0	2.2	0.0	0.0	4.1	0.0	146.1
Des Moines, IA 50318	560.4	554.4	0.0	0.4	2.5	0.0	0.0	4.4	0.0	207.0
Total	1032.7	1019.2	0.0	0.4	4.7	0.0	0.0	8.5	0.0	353.1

Road Type Report (Print Preview)

8.6 Comparison Report

If two or more routes have been generated and are open, a Comparison Report is available that lists the total mileage, cost and time estimates for all open routes. To create this report, select the Routes tab > Utilities group > *Comparison Report* or press **F4** on your keyboard.

Columns from left to right show trip totals for miles, estimated cost, estimated hours, toll costs (if PC*MILER|Tolls is installed and toll calculation is turned on),

estimated fuel cost, estimated cost of labor, estimated miscellaneous costs, and estimated greenhouse gas emission (these last four columns are not shown in the resized report window below). Values that affect cost, time, toll and greenhouse gas estimates are set in the Route Options dialog box.

Route	Type	Origin	Destination	Miles	Cost	Hours	Tolls	Fuel	Labor	Other	Est. GHG
1	Practical	Scranton, PA 18505	Des Moines, IA 50318	1032.7	1524.40	16:09	65.88	678.13	196.21	584.18	3820.92
2	Shortest	Scranton, PA 18505	Des Moines, IA 50318	1013.1	1506.98	17:19	22.75	665.27	192.49	626.47	3748.48

Comparison Report, Practical vs. Shortest Routing (Print Preview)

NOTE: The Comparison Report lists only the origin and destination of each route. If there are stop-off points in one route and no stop-offs in another, the mileage discrepancy between these routes could be large. Be sure to check intermediate stops in the route window if you see differences in mileage that are larger than expected.

8.7 Font Size and Page Layout

To see a preview of how the report will look when it is printed, check **Show Print Preview** in the upper left corner of the report. The Print Preview view will be displayed along with a toolbar for editing the page layout and font size. Place your cursor over any button on the tool bar to see a tooltip that briefly describes what that button is for.

To change the font size in the active report, use the *Font Size* drop-down on the toolbar. For adjustments to the page layout, there are six buttons that control formatting (portrait vs. landscape) and magnification.



To hide columns or change their position or width, right click on any column header in a report and click on “**Column Chooser...**”. See section 3.9.2 on how to use the Column Chooser.



Right Clicking a Column Header in a Report

8.8 Printing Reports

All PC*MILER reports can be printed. To print a report, first check **Show Print Preview** in the upper left corner.



A toolbar for editing will display and you'll be able to see what the printed copy will look like. To print, do one of the following:

1. Click the **Print** button (upper right corner);
2. Click the Print icon on the toolbar; or
3. Press **Ctrl+P**.




To directly print a report without first generating it in its own window, select the File application menu > *Print Report* > and choose a report type.

8.9 Saving and Copying Reports

PC*MILER reports can be saved to disk – choose *Save Report to File* from the File application menu. In the Save Report dialog box, select the folder where the file will be saved and enter a file name in the **File Name** field. Click **OK** to save.

In addition, PC*MILER reports can be copied to the clipboard for use with other Windows® programs such as Microsoft® Word. To copy and paste a report:

1. Select the report in the Reports window.
2. Check **Show Print Preview** in the upper left corner.
3. In the toolbar that displays, click the Copy icon. 
4. In the application you are copying to, press **Ctrl+V** to paste.

NOTE: With some reports you may get better results if you save the report as a .CSV (comma separated value) file and then import that file into your target application. This may be especially true for the Detailed Route report with its many columns. To save the active report, select the File application menu > *Save Report to File* and select “.csv” as the file type.

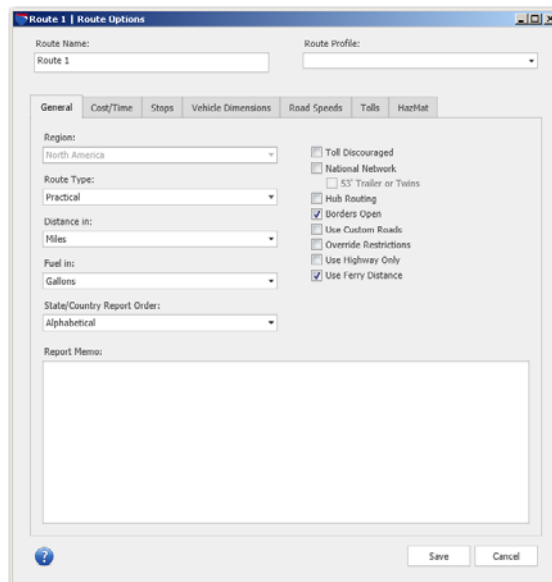
The Route Options dialog box enables you to change the options and parameters used to calculate a route. There are three ways to open the Route Options dialog:

- Select the Routes tab > Route group > *Options*;
- Press **Alt+F3**; or
- Click the gear button (⚙) in a route window and choose *Options*.

When you edit routing options in this dialog, only the currently active route window will use the new parameters. If you open a new route window, it will use the PC*MILER default options. To edit the defaults, see section 9.8. Note that if you save a route, the options that were active for that route will be saved along with it.

PC*MILER chooses routes by minimizing a cost equation that combines distance, certain factors times distance, and certain fixed factors. A PC*MILER user can choose between different versions of the equation and numerical values by choosing among different routing options. Options in the **General**, **Vehicle Dimensions**, and **Hazmat*** tabs affect which route is chosen. The **Cost/Time**, **Road Speeds**, and **Tolls*** route options affect time/cost and toll data that is returned when a route is generated, but do not affect which route is chosen.

* *The Hazmat and Tolls tabs are available only if the related data modules have been purchased.*



Route Options Dialog Box

9.1 Route Name

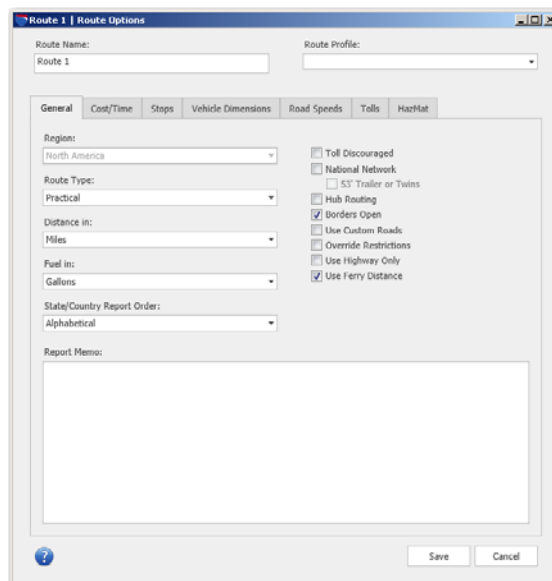
The **Route Name** field at the top of the Route Options dialog can be used to assign a name to your route that will appear at the top of the route window, in the title bar of report windows, and in the Route legend in the map window.

9.2 Route Profile

The **Route Profile** drop-down list at the top of the Route Options dialog makes it possible to set, save and edit options for a specific vehicle profile. Each time that profile is selected in a route window, the options associated with it will automatically be in effect. This field may be left blank.

Select a Vehicle Profile to use from the drop-down pick list. Each profile includes a vehicle's weight, dimensions, number of axles, and cost/time settings. See sections 9.6 and 9.8 on custom vehicle dimensions, default settings, and creating custom vehicle profiles.

9.3 General Options



Route Options Dialog Box, General Tab

9.3.1 Region

North America is the only region that is available with PC*MILER. If PC*MILER|Worldwide or DTOD data is installed, other regions can be selected: click the down arrow and select a region from the pick list. Available worldwide

regions are: **Africa, Asia, Europe, Middle East, Oceania** and **South America**. The active region is displayed at the top of each new route window.

To change the **default region** from North America to another region, see section 9.8 on creating default options.

9.3.2 Route Type

NOTE: Changing the route type may affect the time and cost estimates that are calculated for any given route. See the explanation of how route type affects routing at the beginning of Chapter 9.

In the drop-down **Route Type** list you will see the three basic route types that PC*MILER can generate: **Practical, Shortest, and Fastest**. Fastest routing is available only if PC*MILER|Traffic is installed and activated. See sections 1.6.1 – 1.6.3 for full descriptions of these route types.

In addition to selecting a basic route type, check any of the routing options to the right that you wish to apply to route calculations:

Use Ferry Distances: Includes ferry distances in mileage and cost calculations. When turned off, the ferry portion of a route will not contribute to the mileage and cost. The setting does not affect the actual route on the map and travel time is not affected. Note that the “Total” column of the State/Country report always includes ferry distances, even if this option is turned off here.

Toll Discouraged: Avoids long stretches of toll roads without taking long or impractical detours to avoid toll bridges and tunnels. See section 1.6.6 for the full description.

National Network: (*U.S. only*) Based on the National Network, a U.S. government-designated system of highways originally established by the Surface Transportation Assistance Act of 1982 (STAA). This option will calculate routes that stay on the National Network to the maximum extent possible. Given that many areas are not directly served by the National Network, the origin and stop-offs on a route may not be on the Network. See section 1.6.4.

53' Trailer or Twins: (*U.S. only*) This option is only available if National Network is checked. Its calculations are based on National Network routing, with the addition of roads that permit 53’/102” trailers or twins. See section 1.6.5 for the full description.

Hub Routing: Check this option to generate mileage from one origin to a virtually unlimited number of destinations. See section 9.3.3.

Borders Open: If Borders Open is checked, PC*MILER will ignore international boundaries in generating the best route. If this option is not checked, the number of border crossings will be minimized; for example, if all your stops are in the “lower 48” United States, the resulting route will stay in the United States even

though the most practical or shortest route would normally involve some Canadian mileage. "Open" or "Closed" will appear in the title of each route window, indicating which option is selected.

Use Custom Roads: If checked, the route you run will take into account the road, state, and override preferences found in the Avoid/Favor and States/Roads Managers. "Custom" will appear in the title of the route window when this options is active. See sections 11.1-11.3. **This box must be checked for user-designated road preferences to be active when running routes.**

Use Highway Only: *(Only available with PC*MILER/Streets in North America and is turned on by default.)* When checked, routes are calculated using an air distance from the midpoint of the truck-usable highway segment that is nearest to the destination postal code or city/state. Routes to stops that include a street-level address are calculated to the truck-usable highway-level road that is closest to the entered address. This functionality matches the base PC*MILER highway product. If this option is not checked, PC*MILER calculates the route and driving distance using local streets between the nearest truck-usable highway segment and the stop. All stops, whether they contain a street-level address or not, clean up via the shortest air distance to the nearest road (highway or street level). This distance may appear as "Local" in the Detailed Route report.

Override Restrictions: Check "Override Restrictions" to generate routes that waive truck restrictions pertaining to specific sizes and weights, but that continue to avoid truck-prohibited and truck-discouraged roads. When this option is active, all height, length, width and weight restrictions will be overridden. If a route uses roads that have any of these types of restrictions, the Detailed Route Report will list them. This allows you to determine the largest or heaviest vehicle you can assign to drive that route.

By default the Override Restrictions option is not checked, in which case PC*MILER routing will avoid truck-prohibited and truck-discouraged roads, as well as truck-restricted roads that pertain to the size and weight set in the current vehicle dimensions or profile.

Below is a table showing the North American states/provinces that have a jurisdiction-wide weight limit, with exceptions listed.

State/ Province	Weight Limit*	Exceptions	Ref.
SK	76,038 lb (34,500 kg)	- 87,058 lbs (39,500 kg) on designated primary highways year-round and other designated primary highways for 9 months/year, and a maximum distance of 15 kilometers on any secondary provincial [not including municipal] highway or provincial road - 91,466 lbs (41,500 kg) on most roads in winter, i.e. Nov16-Mar14 (except for certain restricted exceptions) - special restrictions on certain listed highways	(1) (2)
MB	76,038 lb (34,500 kg)	- 82,650 lbs (37,500 kg) on designated "A1" highways - 87,058 lbs (39,500 kg) on designated "RTAC" highways - Winter weights higher in some cases	(3) (4)

		- "If a delivery needs to be made off of a designated truck route the vehicle is allowed to stray from the truck route via the shortest distance to its destination. Once the delivery has been completed the vehicle must return to the truck route the same way "	
--	--	---	--

* For the PC*MILER default vehicle configuration: 5-axle tractor/48' long semitrailer combination. Higher limits > 80,000 lbs apply in SK & MB for 6+ axles.

Ref:

1. <http://www.highways.gov.sk.ca/trucking/>
2. Saskatchewan Vehicle Weight and Dimension Regulations, 1999, page 17, Sec 12(1)(KK)
3. <http://www.gov.mb.ca/mit/mcd/mcpd/pdf/normalloading.pdf> & <http://www.gov.mb.ca/mit/mcd/mcpd/twlm.html>
4. Email from Dwight Solon, Director, Motor Carrier Enforcement Programs, Province of Manitoba, 11/03/08

NOTE for PC*MILER|Streets Users: An error message will appear if you attempt to enter an address that is on a truck-prohibited road.

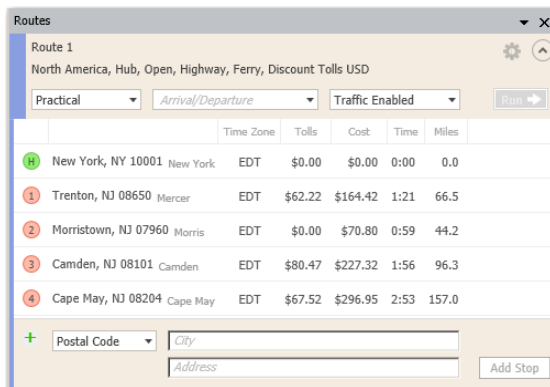
SAFETY NOTE: For winter roads in Manitoba and North West Territories, Canada, road safety information for heavy vehicles using these roads can be found at: <http://www.gov.mb.ca/>

The default route type settings are:

- **For North America:** Practical, Borders Open, Highway Only, Use Ferry Distances, Discount Tolls – USD*
* PC*MILER/Tolls must be installed
- **For All Other Regions:** Practical, Borders Open, Highway Only, Use Ferry

9.3.3 Hub Routing

PC*MILER enables you to generate mileage from one origin defined as the "Hub" to an unlimited number of destinations in the same route window. To generate a route in Hub mode, check **Hub Routing** in the Route Options dialog box and click **Save** to save this setting. All subsequent routes run in the current route window will be in Hub mode unless this setting is changed. The Detailed Route Report and State/Country Report are both available for hub routing.



Hub Routing with New York, NY 10001 as the Hub

9.3.4 Distance In and Fuel In

You can choose to have PC*MILER report distances in either miles or kilometers, and fuel quantities in either gallons or liters. Both options affect trip costs, average road speeds, and the distances shown on reports and in route windows when you generate a route.

Under **Distance in** select **Miles** or **Kilometers**. Under **Fuel in** select **Gallons** or **Liters**. The default settings for all world regions are **Miles** and **Gallons**.

9.3.5 State/Country Report Order

Choose whether State/Country reports will have states/countries listed in **Alphabetical** order by state/country, or in the **Route** order (as in a driver log). The default setting is alphabetical.

9.3.6 Report Memo (Customized Reports)

The **Report Memo** field allows you to create custom report headers. The text you type in this field will appear at the top of all printed reports (check **Show Print Preview** in the Reports window to see how the header looks). By default the **Report Memo** field is left blank.

9.4 Cost/Time Options – Trip Costs

The screenshot shows the 'Route 1 | Route Options' dialog box with the 'Cost/Time' tab selected. The 'Route Name' is 'Route 1' and the 'Route Profile' is set to a dropdown menu. The 'Cost/Time' tab contains the following settings:

Break Costs:		Time Costs:	
Border Wait (Hours):	0	Arrival/Departure:	<input checked="" type="radio"/> None
Break Every (Hours):	0		<input type="radio"/> Depart by
Break Length (Hours):	0		<input type="radio"/> Arrive by
Remaining Hours of Service (Hours):	0	<input checked="" type="radio"/> Specific Date:	3/8/2014 [TS]
		<input type="radio"/> Day of the Week:	Thursday
		Local:	11:56 AM

Other Costs:	
Fuel Cost Per Gallon:	3.99
Greenhouse Gases:	22.20

	Loaded	Empty
Miles Per Gallon:	6.48	6.48
Fuel Cost Per Mile:	0.61	0.61
Other Cost Per Mile:	0.18	0.18
Labor Cost Per Hour:	31.64	31.64

Route Options Dialog Box, Cost/Time Tab

PC*MILER calculates a total cost for each route generated. This cost estimate is determined by multiplying a dollar amount per mile by the number of miles.

Cost parameters can be edited for empty and loaded miles to better reflect your actual costs, or you may choose to use the PC*MILER default values.

In the **Cost/Time** tab of the Route Options dialog box, the trip costs that go into the dollar amount per mile have been broken out into fuel costs, labor costs, and “other” maintenance or miscellaneous costs. (Note that stop costs have their own separate “Stops” tab.) For information purposes only, a greenhouse gas emissions value is also included. You will see these values reflected in the columns of the Comparison report. The greenhouse gas estimate also appears in the State Distance Summary report.

9.4.1 Fuel Costs

The fuel cost parameters that can be edited are **Fuel Cost Per Gallon** and **Miles Per Gallon**.

NOTE: If the measure of distance is set to **Kilometers** and/or the unit of measure for fuel is set to **Liters** in the General tab, the units in the Cost/Time tab will change accordingly.

Fuel Cost Per Gallon/Liter: All world regions have the same default value for fuel cost, depending on the unit of measure (see note above), as follows:

- **Per Gallon** = \$3.95
- **Per Liter** = \$1.04

NOTE: The default Fuel Cost Per Gallon/Liter is based on an ALK study of Least Cost routing (the “average” data were default values for drivers paid by the hour), along with values from a recent American Transportation Research Institute (ATRI) study (*An Analysis of the Operational Costs of Trucking*), the U.S. Energy Administration, and typical miles per gallon for an 18-wheeler.

Miles/Kilometers Per Gallon/Liter: Default values for all world regions are:

- **Miles/Gallon** = 6.48
- **Miles/Liter** = 1.71
- **Kilometers/Gallon** = 10.43
- **Kilometers/Liter** = 2.75

Fuel Cost Per Mile/Kilometer: These fields are grayed out because they are reference fields only. Values in these fields are based on the Fuel Cost Per Gallon and MPG, and are used only to calculate the fuel cost total that appears in the Comparison Report (this report is automatically created when Least Cost routing is generated, or it may be run whenever two or more generated routes are active).

9.4.2 Labor and Other Costs

Enter your own **Other Cost Per Mile** and **Labor Cost Per Mile** values, or use the default values. Labor and Other cost totals for a route appear only in the Comparison Report (this report is automatically created when Least Cost routing is generated, or may be run whenever two or more routes have been generated).

The default values for these settings* in all world regions are:

- **Other Cost Per Mile** (loaded or empty) = \$0.18
- **Other Cost Per Kilometer** (loaded or empty) = \$.11
- **Labor Cost Per Hour** (loaded or empty) = \$31.64

* These default values are based on an ALK study of Least Cost routing (the “average” data were default values for drivers paid by the hour), along with values from a recent American Transportation Research Institute (ATRI) study (An Analysis of the Operational Costs of Trucking), the U.S. Energy Administration, and typical miles per gallon for an 18-wheeler.

9.4.3 Greenhouse Gases Emission Estimate

Enter the pounds per gallon (or liter) emissions as CO₂ equivalent in the **Greenhouse Gases** field, or use the default values. Leg and total greenhouse gas (GHG) emission estimates appear in the State/Country Report, and a total GHG estimate appears in the Comparison Report (this report is automatically created when Least Cost routing is generated, or may be run whenever two or more routes have been generated).

The default **Greenhouse Gases** settings for all world regions* are as follows:

- If Gallons are selected in the Fuel In field: 22.20 lbs.
- If Liters are selected in the Fuel In field: 5.86 lbs.

* These default settings are based on values for North America that were provided by the U.S. Environmental Protection Agency (EPA). See <http://www.epa.gov/otaq/climate> for more information.

9.4.4 Border Wait, Break and Hours of Service (HOS) Hours

Additional time that affects time estimates for a route can be added as described below. Note that times less than one hour can be entered using decimals (e.g. “.5” for 30 minutes).

Border Wait: Enter any expected delay due to border crossing. The number of hours you enter will affect time estimates for any trip that includes at least one international border crossing, and will be included in the Detailed Route Report. The default border wait time is 0 hours.

Break Every and Break Length: Enter the number of on-duty hours allowed between breaks and how many hours each break should be. The number of hours you enter will determine where breaks are indicated along the route in the Detailed Route Report. Calculations of break times take into account whether time spent at each stop is on-duty (determined in the **Stops** tab). The default for these fields is 0 hours.

Remaining Hours of Service: (*U.S. only*) Enter the remaining Hours of Service (HOS) for the driver on this trip. Based on this input, PC*MILER will calculate when the driver needs to take a break and this will be noted in the Detailed Route Report. The HOS text box will be enabled/disabled in real time as the break time and break wait time boxes are modified. The HOS entered cannot be larger than the “Break Every” number of hours.

By default, these time fields are left blank.

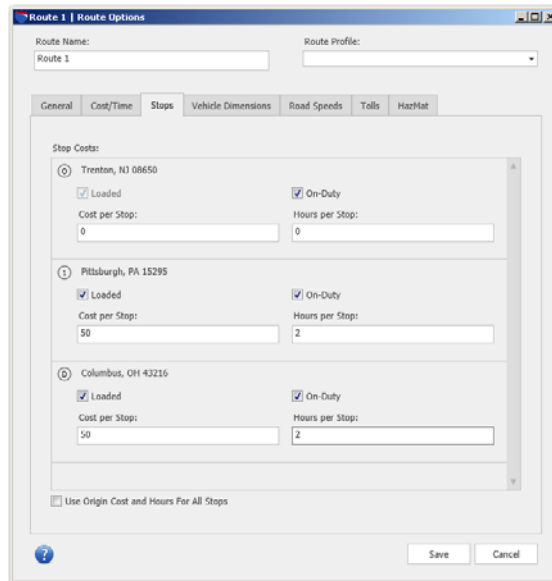
9.4.5 Arrival/Departure Time

A target arrival or departure date/day of the week and local stop time can be set here for the trip. This setting can also be created in each individual route window using the provided drop-down. If an arrival/departure time is set, PC*MILER will return the estimated time of arrival/departure (ETA/ETD) at each stop on the route along with cost and time information when the route is generated. Use the **Arrival/Departure** fields as follows:

1. Select either **Depart by** or **Arrive by**. Depending on your choice, PC*MILER will calculate time estimates at each stop based on either a departure time at the origin of the trip or an arrival time at the trip’s final destination.
2. Select either a **Specific Date** or **Day of the Week** as the target day for departure or arrival. For a specific date, you can either type in a date in the format MM/DD/YYYY (zeros are not necessary for single-digit months and days), or click the calendar icon to choose a day from the calendar. For a day of the week, select a day from the drop-down list.
3. Enter the targeted local time at the trip’s origin (if entering a departure time) or destination (if entering an arrival time).
4. Click **Save** to save your settings.

See Chapter 5, *Time-Based Routing*, for more information.

9.5 Stop Costs



Route Options Dialog Box, Stops Tab

The **Stop Costs** fields in the **Stops** tab will only be displayed after one or more stops have been entered in the currently active route window.

The **Stop Costs** fields enable you to assign a customized time and cost estimate for each individual stop on the route. In the **Stops** tab you can also indicate whether the stop time you entered is on-duty or off-duty, whether to include the time and cost estimate for the origin in the totals for the route, and whether the leg between stops is a loaded move or a backhaul.

Combined with other trip costs entered for loaded and empty miles, the Stop Costs fields determine the total time and cost estimates for the trip. (This estimate appears on reports and in the route window when you run the route.)

For example, if your route includes eight stops and you assign a 1-hour on-duty stop-off time estimate to each one, the total time estimate for the trip (driving time plus delay time at each stop) will reflect an increase of eight hours along with the associated costs.

For each listed stop, you can adjust one or more of the following parameters:

Loaded: Check this option if the leg preceding the stop should be considered as loaded.

Cost per Stop: Enter a total cost for this stop.

On-Duty: Check this option if time spent at this stop should be considered as on-duty. Note that if a break time is entered in the Cost/Time tab, the points at which breaks are indicated in the Detailed Route Report will be affected by whether the hours per stop (below) are on-duty for each stop.

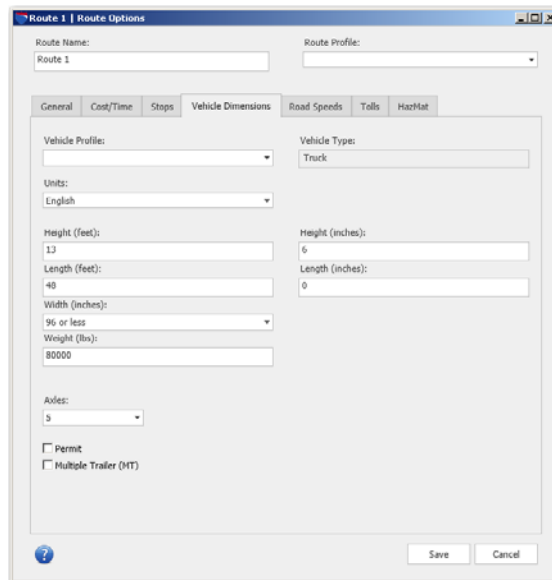
Hours per Stop: Enter the estimated time that will be spent at this stop.

Use Origin Cost and Hours For All Stops: To include the origin stop time and cost in totals for the route, check this option before closing the dialog box.

The default **Stop Costs** settings for all regions are:

- Cost/Stop: 0.0000
- Loaded: checked
- Hours/Stop: 0.00
- On Duty: checked
- Use Origin Cost and Hours: checked

9.6 Vehicle Dimensions

The image shows a screenshot of the 'Route 1 | Route Options' dialog box, specifically the 'Vehicle Dimensions' tab. The dialog box has a title bar with the text 'Route 1 | Route Options'. Below the title bar, there are two input fields: 'Route Name:' with the value 'Route 1' and 'Route Profile:' with a dropdown menu. Below these are several tabs: 'General', 'Cost/Time', 'Stops', 'Vehicle Dimensions' (which is selected), 'Road Speeds', 'Tolls', and 'HazMat'. The 'Vehicle Dimensions' tab contains several input fields and checkboxes. On the left side, there are fields for 'Vehicle Profile:' (a dropdown), 'Units:' (a dropdown set to 'English'), 'Height (feet):' (a text box with '13'), 'Length (feet):' (a text box with '48'), 'Width (inches):' (a dropdown set to '96 or less'), and 'Weight (lbs):' (a text box with '80000'). On the right side, there are fields for 'Vehicle Type:' (a dropdown set to 'Truck'), 'Height (inches):' (a text box with '6'), and 'Length (inches):' (a text box with '0'). At the bottom left, there is a field for 'Axles:' (a dropdown set to '5') and two checkboxes: 'Permit' and 'Multiple Trailer (MT)'. At the bottom right, there are 'Save' and 'Cancel' buttons.

Route Options Dialog Box, Vehicle Dimensions Tab

9.6.1 Overview

The vehicle dimension options enable you to generate routes based on custom vehicle dimensions. Building on the foundation of PC*MILER's previously existing routing database and routing options, users can generate routing that conforms to the requirements of a vehicle's height, length, width and weight.

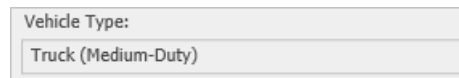
If a vehicle weight and/or height is entered, PC*MILER route calculations will take into account restrictions on roads and bridges to ensure that the vehicle's weight/height is below the restriction(s). Vehicle weight, length and width information is checked against the threshold at which a truck becomes "oversized" and appropriate routing is generated.

Additionally, PC*MILER supports calculation of routes and toll costs for smaller vehicles (vans, pickup trucks, SUVs, automobiles, etc. that are classed less than 9,000 lbs./4,082 kgs.) with a "Full-size van" profile option or your own custom vehicle profile that includes dimensions that meet the required criteria.

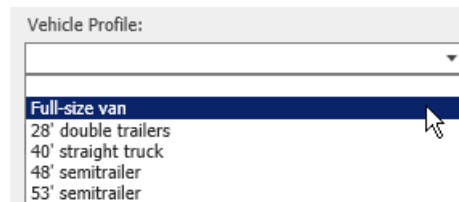
9.6.2 Vehicle Dimensions, Profiles and Types

Below is a description of how PC*MILER vehicle types, profiles and dimensions are related.

The **Vehicle Type** indicates how PC*MILER will route the vehicle. You will see the vehicle type displayed in the upper right corner of the Vehicle Dimensions tab. The vehicle type is determined by the vehicle dimensions entered, either manually or by choosing a Vehicle Profile. In other words, the vehicle type will update automatically when dimensions are changed. It is informational only and cannot be edited by the user. Possible categories are Auto, Truck (Medium-Duty), or Truck (Heavy).



A **Vehicle Profile** (full-size van, 48 ft semitrailer, etc.) is a template containing a particular combination of vehicle dimensions that can be conveniently reapplied as needed. A selection of vehicle profiles are shipped with the software and appear in the Vehicle Profile pick list out of the box. Vehicle profiles can also be defined by end users (see section 11.2). Custom vehicle profiles appear in the Vehicle Profile pick list after they are created and saved.



Vehicle Dimensions (weight, length, height, width, axles, trailers) are specific values that will affect the selection or avoidance of road segments that restrict vehicles to below those dimensions. These dimensions can trigger warning messages if a restriction is violated because an alternate road segment was either unavailable or too impractical. Additionally, the number of axles is used in calculating tolls. Vehicle dimensions determine the vehicle type (mentioned above) as shown in Table 1 below.

Table 1. PC*MILER Rules for Inferring Vehicle Type from Vehicle Dimensions

Dimension	Automobile if ALL values are <u>less than</u> or <u>equal to</u>	Medium Truck if ALL values are <u>less than or</u> <u>equal to</u>	Heavy truck			
			All other values are regular heavy truck, unless...	In USA, National Network and State Oversize if ANY values are greater than	In Canada* in SK and MB, State Oversize if greater than	In Canada* in MB, National Network if greater than
Weight	8,500 lbs.	26,000 lbs.			76,038 lbs. (34,500 kg.)	82,650 lbs. (37,500 kg.)
Length	20 ft.	26 ft.		48 ft.		
Height	7 ft.	13 ft. 6 in.				
Width	96 in.	96 in.		96 in.		
Axles	2 (4 tires)	2 (6 tires)				
Trailers	None	None				

* The rules for Canada in the table above are for truck tractors with a single 5 or 6 axle semi-trailer. Customers who run heavy straight trucks (this would be unusual) or doubles (more common) in SK or MB are advised to consult the Weights and Dimensions Compliance Guides published by those provinces, and to select the PC*MILER National Network and/or 53' Foot Trailer or Twins route type as appropriate.

NOTE: An alternative to entering vehicle dimensions manually is, where appropriate, to select the PC*MILER National Network and/or 53 Foot Trailer or Twins routing type.

NOTE ALSO: Beginning in Version 28, if the user enters a vehicle height over 13 ft. 6 in., PC*MILER will avoid jurisdictions with lower overall limits in its calculations wherever possible and practical. You will receive a warning message in the Detailed and Driver's reports if any of these jurisdictions cannot be avoided on a route.

9.6.3 Setting Vehicle Dimensions

NOTE: Oversize permits will allow for “normal” truck routing if you have purchased the appropriate permits for your oversize vehicle for routing on assumed 80,000 lb./36,287 kg. roadways. Nonetheless, if the route includes a road segment for which the truck as configured will require a permit, a red bar will appear to the left of the route segment in the route window and “Oversize Permit Required” will appear on the Detailed and Driver’s reports.

Units: Select **English** (feet, inches, and pounds) or **Metric** (meters and kilograms) as the unit of measure for the options in this tab. The default is English in all regions

Height: The maximum vehicle height is 13 feet 6 inches, or 4.11 meters, and this is the default setting for all regions except Europe. For Europe, it is 12 feet 5 inches, or 3.78 meters. The minimum height is > 0.

Length: The maximum trailer length is 53 feet or 16.15 meters, and this is the default setting for all regions except Europe. For Europe, it is 39 feet 4 inches, or 11.99 meters. The minimum length is > 0.

NOTE: If the 53' Trailer or National Network routing option is selected in the **General** tab and a custom vehicle dimension is also entered in the **Length** field, both attributes are weighed in the overall calculation but the routing option takes precedence.

Width: For English units, select **96 or less**, **102 or more**, or **98**. For Metric units select **2.44 or less**, **2.59 or more**, or **2.48**. Note that entering the larger vehicle width category will use National Network routing in the U.S. and Canada except where necessary for local deliveries. The default width setting for all regions is **96 or less**.

Weight: For all regions except Europe, weights up to 132,000 lbs. or 59,874 kg. may be entered, and minimum weight is 1000 lbs. or 454 kg. In Europe, the range is 1500 – 156,748 lbs. or 680.39 – 71099.7 kg. Weight less than 9000 lbs./4082 kg. will generate routing appropriate for automobiles and small vans (see section 9.6.5). See section 9.6.1 above for more on vehicle weight. The default weight setting for all regions is **80,000 lbs.**

Axles: *(For PC*MILER/Tolls users only)* The number of axles entered here is used only for the calculation of toll costs using the PC*MILER|Tolls add-on module. If PC*MILER|Tolls is not installed, this option will be disabled. See Chapter 7 for toll cost calculation information. The default number of axles is **5**.

9.6.4 Permit and Multiple Trailer Options

Checking **Permit** assumes that you have entered a vehicle weight greater than 80,000 lbs. or 36,387 kg. in the **Weight** field. If a weight greater than 80,000 lbs/36,387 kg is entered in the Weight field, and you have *not* checked the “Permit” checkbox, the following message box will be displayed: “Trucks with the entered configuration require a permit in the following states: Arizona, Connecticut, Illinois, Indiana, Kansas, Louisiana, Massachusetts, Michigan, Minnesota, North Carolina, New York, Oklahoma, Wisconsin.” This field does not affect routing, it only serves as a reminder that a permit may be required for the vehicle dimensions entered.

Multiple Trailer (MT): Check if the vehicle is a long combination vehicle with multiple trailers. (See section 7.2 for toll calculation considerations.)

By default, neither of the above options are checked.

9.6.5 Vehicle Dimensions for Automobile Routing

To generate a route that ignores all commercial truck restrictions (Truck Restricted, Truck Prohibited and Truck Discouraged), you can either 1) use the “**Full-size van**” vehicle profile (select it from the **Vehicle Profile** pick list in the Routes tab on the ribbon or in the **General** tab of the Route Options dialog box), or 2) enter your own vehicle dimensions that conform to the criteria for automobile routing in PC*MILER. Those criteria are as follows (**all criteria must be met**):

- 2 axles;
- less than or equal to 9,000 pounds/4,082 kilograms in weight;
- less than or equal to 7 feet/2.133 meters in height;
- less than or equal to 20 feet/6.096 meters in length;
- less than or equal to 96 inches/2.438 meters in width.

Automobile routing will relax all regulations that pertain to trucks, allowing the route to take advantage of parkways and other roads that larger and/or heavier and/or commercial vehicles are prohibited from using. PC*MILER will also use toll rates that apply to 4-tire vehicles with 2-axles, which often differ from rates that apply to 6-tire 2-axle vehicles. (*PC*MILER/Tolls must be installed to access toll costs.*)

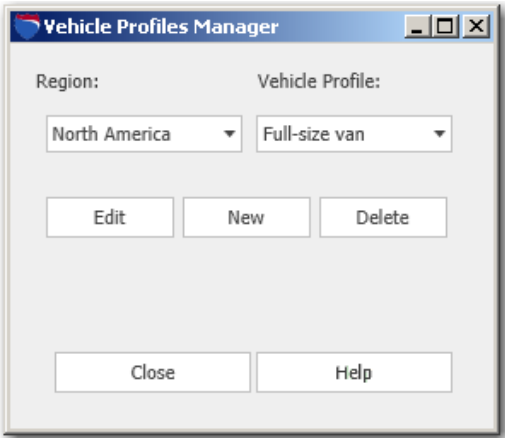
9.6.6 Custom Vehicle Profiles

In addition to setting default route options, PC*MILER also lets users create custom vehicle profiles to enable quick entry of vehicle or fleet attribute sets that you use often when routing. This time-saving feature enables you to set up and

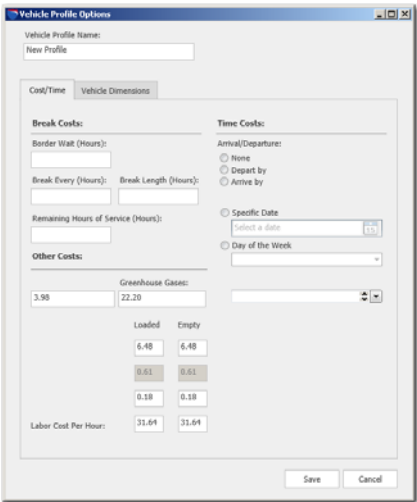
save groups of vehicle dimension and cost/time settings for easy access in the future. Using custom vehicle profiles ensures that the defined settings are consistent for the particular vehicle type selected for a route.

To use custom vehicle profiles, select the Routes tab > Utilities group > *Vehicle Profile*. In the Vehicle Profiles Manager dialog box that opens, you can select a profile to view, edit, or delete, or you can create a new custom profile. For North America, sample profiles are provided in the pick list for full-size van, 26' straight truck, 28' double trailers, 40' straight truck, 48' semi-trailer, and 53' semi-trailer vehicles. The sample profiles can be edited, but not deleted.

To create a new custom profile, click **New**. A dialog box will open that has two tabs – **Cost/Time** and **Vehicle Dimensions**. The editable fields in these tabs are the same ones found in the Route Options dialog box. Enter a profile name and the desired edits in each tab and click **Save** to save your changes.



Vehicle Profiles Manager



Options for Vehicle Profile – Cost/Time Tab



Options for Vehicle Profile – Vehicle Dimensions Tab

NOTE: The “**Full-size van**” profile is intended for use with **vans, pickup trucks, SUVs, automobiles, etc. that are classed less than 9,000 lbs./4,082 kgs.** The automobile routing that is generated from this profile ignores all commercial truck restrictions, and if toll rates are calculated, will use toll rates that apply to small vehicles with 2-axles, which often differ from rates that apply to larger 2-axle vehicles.

NOTE For PC*MILER|Worldwide or DTOD Users: When creating, accessing, or editing a custom vehicle profile, you must perform the additional step of specifying a region. Each vehicle profile is applicable to only one region.

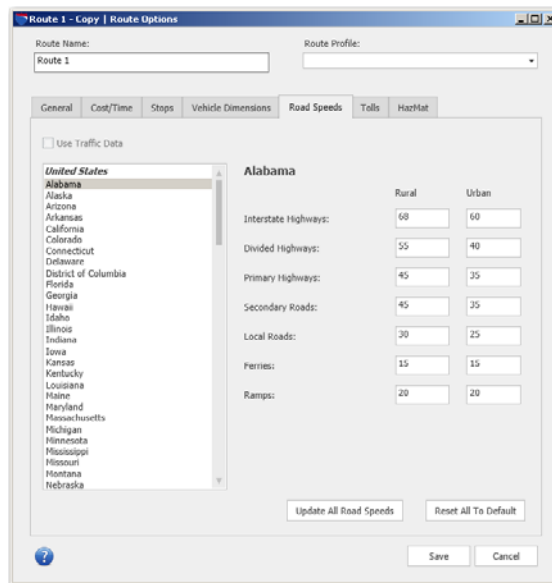
An unlimited number of custom profiles can be defined. The profiles you create will appear in the pick list of available profiles in the Route Options and Default Route Options dialog boxes, **General** tab.

Once a profile is set up, it can be used globally (all new routes will use the selected profile in route calculations) or applied to each new route as appropriate:

- To apply a profile to all new routes, choose the Routes tab > General group > *Defaults*. At the top of the Default Route Options dialog box, select the desired profile from the drop-down **Vehicle Profile** pick list. Click **Save** to save this profile as the default.
- To apply a profile to a single route, choose the Routes tab > Route group > *Options*. At the top of the Route Options dialog box, select the desired profile from the drop-down **Vehicle Profile** pick list. Click **Save** when you are finished editing options for this route. Repeat for each new route.

By default, custom profiles are not used. Sample vehicle profiles are provided in the **Vehicle Profile** pick list (Route Options and Default Route Options dialog boxes).

9.7 Road Speeds



Route Options Dialog Box, Road Speeds Tab

9.7.1 Average Road Speeds (Estimated Travel Time)

PC*MILER calculates time estimates for each generated route. These estimates are computed by summing up the estimated time traveled on each road segment on the route, plus an added stop-off time for each stop along the route if this was set in the **Stops** tab of the Route Options dialog box.

There are fourteen road speed classes: seven road types, with “urban” and “rural” classifications for each. Each class has an average road speed parameter assigned to it. Spreading the estimated average speed over the various road classes gets a more accurate estimate of the total time traveled based on the quality of the road used. See descriptions of road classes below.

For PC*MILER default road speeds for jurisdictions in all world regions, see *Appendix E*.

To customize road speeds, first select a jurisdiction from the **State** pick list, then enter your new road speed(s) by road class. Click **Save** to save your changes, or **Cancel** to exit the Route Options dialog without saving changes.

To apply your changes globally to all jurisdictions, click **Update All Road Speeds**. These changes will affect time and cost estimates in route calculations.

To restore all road speeds to the PC*MILER default settings, click **Reset All to Default**. For a table of PC*MILER default road speeds, see *Appendix E*.

To use traffic data in time estimate calculations, click the **Use Traffic Data** button, then click **Save** to close the dialog box. This same option is displayed as a pick list in each route window. See section 5.2 on using traffic data.

NOTE: Custom road speeds cannot be entered and are not available when **Use Traffic Data** is active.

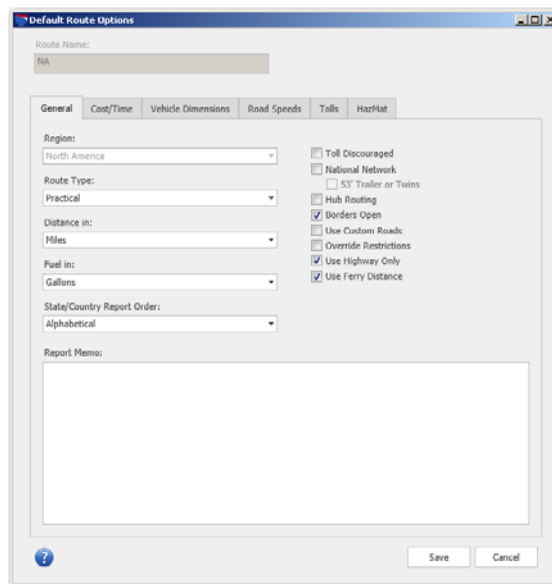
PC*MILER ROAD CLASSIFICATIONS

Interstate Highways	<ul style="list-style-type: none"> • The primary function of these roads is to move high volumes of vehicular traffic over medium to long distances at high speeds • Can be accessed only via access ramps • Always have a barrier or median between opposing lanes of traffic • Multi-lane
Divided Highways	<ul style="list-style-type: none"> • Major arteries that move heavy volumes of traffic at moderate speeds • Can be limited access in some areas but may also offer access from local roads • Usually have a barrier or median that prevents movement between lanes of opposing traffic • Medians may have crossovers that are part of the normal traffic pattern • Left turns are often restricted, both off of the highway and onto the highway • Usually multi-lane • Many but not all U.S. highways are in this class
Primary Highways	<ul style="list-style-type: none"> • Move significant volumes of traffic at moderate speeds • Most state roads fall into this class
Secondary Roads	<ul style="list-style-type: none"> • These roads move moderate volumes of traffic over short to moderate distances • Carry vehicles from local roads to higher class roads
Ramp	<ul style="list-style-type: none"> • A connecting road leading on or off of a main road or highway
Local Roads	<ul style="list-style-type: none"> • Function is to provide access to homes and properties
Ferry	<ul style="list-style-type: none"> • Ferry routes (boarding/exit time not included)

9.8 Creating Your Own Default Options

To change the default values for the settings in the Route Options dialog box, select the Routes tab > General group > *Defaults*. The Default Route Options dialog is identical to the Route Options dialog, but lets you set and save defaults rather than changing the settings only for the currently active route window.

Enter your edits as you would in the Route Options dialog box (covered in sections 9.1 - 9.7). Click **Save** to save your settings. Every time you open a new route, the defaults that you set will be in effect. Note that default options will not be applied to saved routes when you open them.



Default Route Options Dialog Box

The PC*MILER RouteMap window is like an electronic road atlas. All routes generated by PC*MILER are automatically displayed on a map in the RouteMap window. This enables you to examine routes in detail, visually evaluate routing alternatives, and perform a variety of "what-if" analyses.



The RouteMap Window

10.1 Routes on the Map

To see a route on the map, first enter an origin, a destination, and any intermediate stop-off points in a route window and then click the **Run** button in the route window or press the **F10** key on your keyboard. PC*MILER will automatically create a graphic display of the route you just ran.

Up to eight routes can be displayed simultaneously, with each route drawn in a different color to differentiate them. The Route Legend on the map and a color bar in the route window show the color used for each route (see section 10.6 on legends).

To maximize the size of the RouteMap so that it fills the whole PC*MILER application window, close the Routes and Reports panes. To toggle the map window between hide and display, select the Window tab > Windows group > *Map Window*. To restore the default layout, in the same tab select *Layouts* > *Default Layout*.

10.2 Frame Options

To frame a **region** on the map, select the Map tab > View group > *Frame* > *Regions* and choose a region from the drop-down menu.

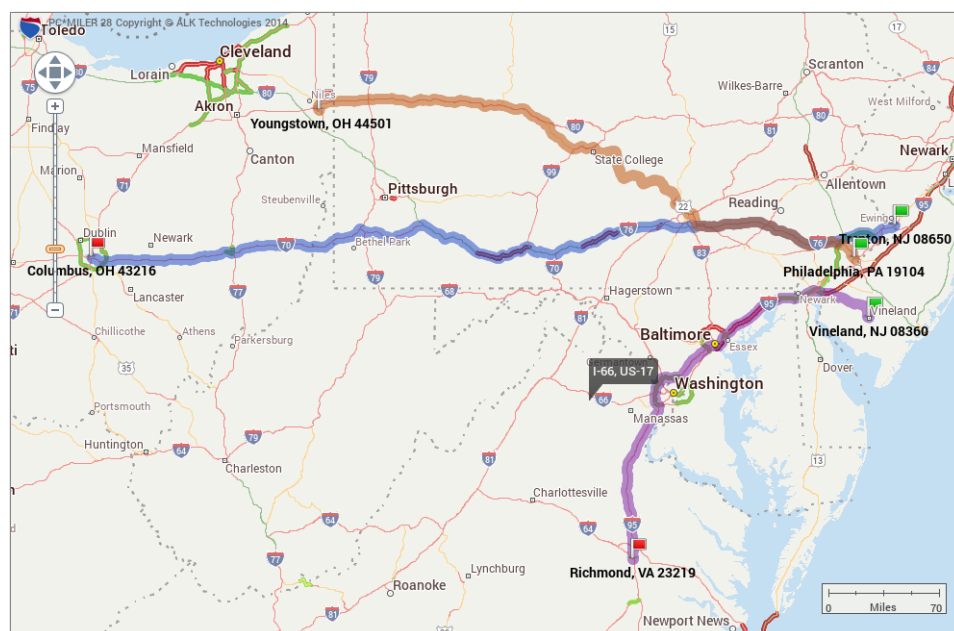
PC*MILER|Worldwide and DTOD users can frame an **area** within one of the worldwide regions: select the Map tab > View group > *Frame* > *Frame Areas* > and choose an area from the drop-down menu. Available areas to frame will depend on the region selected in the Route Options dialog.

To frame **the active route** on the map, do one of the following:

- select the Routes tab > Route group > *Frame*; or
- select the Map tab > View group > *Frame* > *Frame One Route* >; or
> *Auto Frame Routes* to automatically frame each route that is generated.

To frame all currently open routes, select the Map tab > View group > *Frame* > *All Routes*.

There are several ways to frame a stop, see section 10.3, *Zoom Options*, below.



Framed Routes on the RouteMap

10.3 Zoom Options

The RouteMap window features 18 possible zoom levels. You will see the current zoom level in the window's title bar (e.g. "Zoom Level 14 of 18"). There are several ways to zoom your view of the RouteMap in and out, described below.

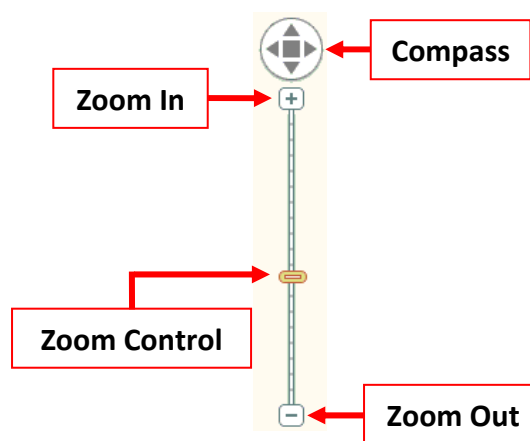
To zoom into a specific area, select the Map tab > View group > *Box Zoom* (this option is turned on by default). Then just place your cursor on the map, press and hold the left mouse button, and drag a box around the area. Repeat as necessary.

To zoom directly to a stop you have entered in the route window, highlight it on the stop list, then do one of the following:

- double-click the highlighted stop;
- right-click the stop name and select *Zoom to Stop* from the menu;
- select the Routes tab > Route group > *Frame Stop on Map*;
- or choose *Zoom to Stop* from the right mouse menu off the RouteMap.

Other ways to zoom your view of the map are:

- simply double-click a point on the map;
- use your mouse's scroll wheel: rotate the mouse wheel up to zoom in and down to zoom out;
- choose *Zoom In* or *Zoom Out* from the right mouse menu off the RouteMap;
- or use the slider bar and compass in the upper left corner of the map as follows: either 1) click, hold and drag the zoom control to move up (zoom in) or down (zoom out); or 2) click the plus sign or minus sign to move up or down one zoom level. To pan north, south, east or west as needed, click the directional arrows on the compass. The current zoom level is displayed in the title bar of the RouteMap window.



10.4 Drag Map or Pan To Shift the View

There are several ways to pan your view of the map in any direction.

Drag the Map:

Select *Drag Map* in the right mouse menu off the RouteMap or click the Map tab > View group > *Drag Map*. With your cursor (now in the shape of a hand) in the RouteMap window, press the left mouse button down and hold, then drag in the desired direction. The map will redraw the new view.

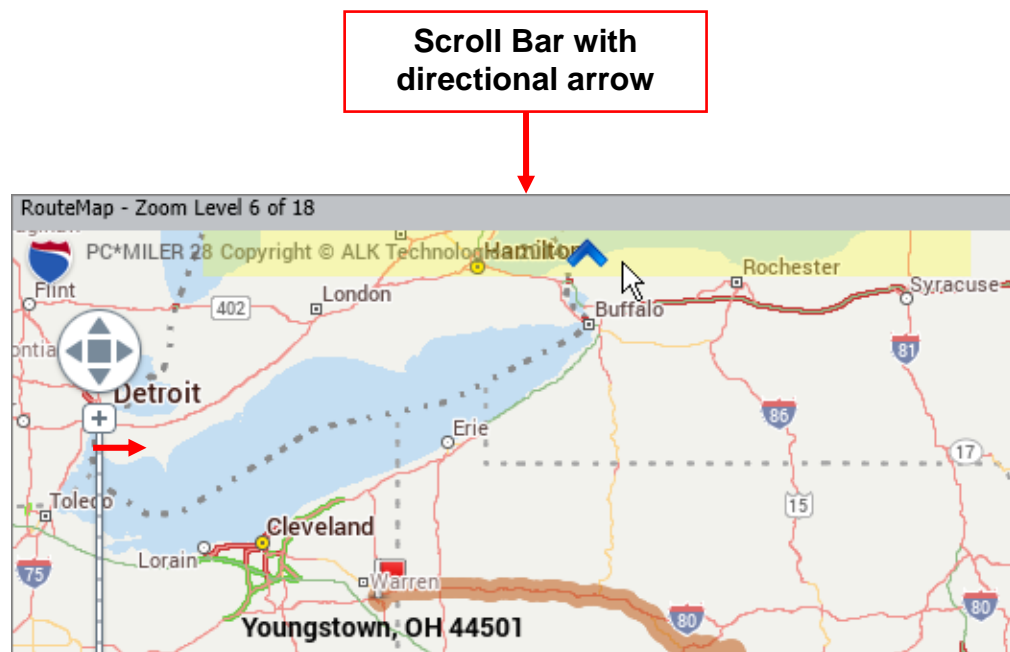
To turn this feature off, click *Drag Map* again.

Pan:

One way to pan the map is: select *Pan* in the right mouse menu off the RouteMap, then select any direction from the sub-menu. You will see the map view shift in the chosen direction. Other ways to pan are using the scroll bar (see section 10.5 below) or the compass (see section 10.3).

10.5 Scroll Bars in the Map Window

The PC*MILER RouteMap window includes scroll bars that are hidden from view until activated. To activate, touch any edge of the map window with your cursor and a translucent scroll bar will appear. Click on this scroll bar to move the map incrementally in the direction indicated by the arrow, or click and hold to pan your view.



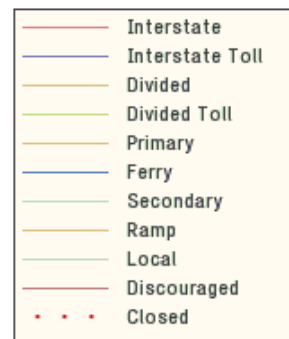
Scroll Bar for Map Panning

10.6 Legends

Legends on the map can be hidden or shown – select the Map tab > Customize group > *Legends*. Legends that are checked in the menu will be displayed.

Any legend can be moved to a different position – simply click on it, hold down the left mouse button, and drag it to the desired location. Available legends are:

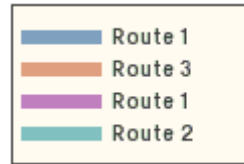
- **Road Legend:** Shows how PC*MILER road classes appear on the map; appears whenever roads are displayed. This legend is normally displayed, unless it is turned off in the Map Features dialog box. Road colors will depend on which map style is chosen.



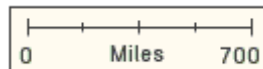
Road types that are included in each classification in the Road Legend are:

Interstate	Multi-lane toll free and urban highways
Divided	Divided highways, urban access roads
Primary	Non-divided highways
Ferry	Ferries
Secondary	Non-divided highways, urban access roads, ferries
Ramp	Ramps
Local	Truck-discouraged roads (as defined by PC*MILER)
Toll	Toll roads and urban highways
Discouraged*	Not compatible for trucks, as determined by PC*MILER
Restricted*	Most kinds of truck prohibited, as determined by the controlling governmental authority – appears in the Road Legend only if “Truck Restrictions” is checked in the Map Features dialog box. * For more on truck-discouraged vs. truck-restricted roads, see sections 1.6.7 and 11.1.2.
Designated	Designated 53' road network (these roads have either “State Oversized”, “Oversized Access”, or “National Network” designations on them) – appears in the Road Legend only if “Designated Truck Routes” is checked in Map Features.

- **Route Legend:** Appears if at least one route window is open; provides a key to the color(s) used to draw each generated route on the map. Routes are listed in the order they were generated.



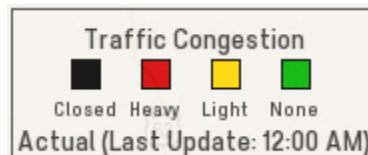
- **Scale Bar:** A standard component of most maps, providing the scale of miles/kilometers. To change from miles to kilometers, use the Default Route Options dialog box – see section 9.8.



- **HazMat Legend:** If the PC*MILER|HazMat add-on data module was installed, a legend showing hazmat restrictions will be available.

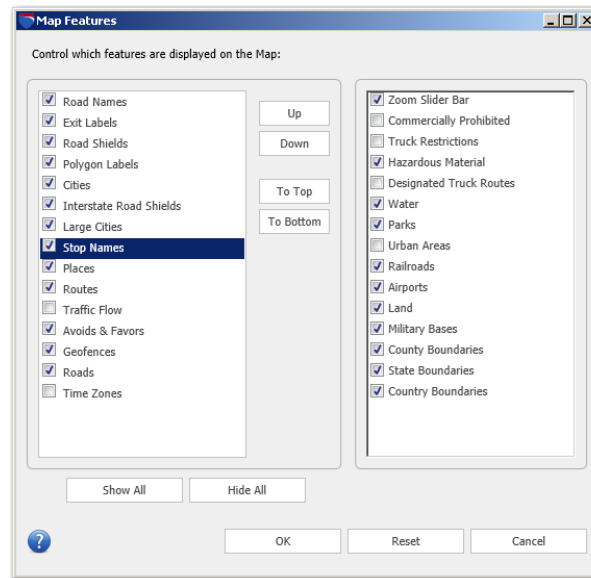


- **Traffic Legend:** For PC*MILER|Traffic subscribers only, this legend appears if the traffic option in the route window is turned on and shows the significance of the colors used for traffic flows on the map, along with update times (for real-time data) or day/time information (for historic data).



10.7 Hiding, Displaying and Layering Map Features

You can control what features are displayed and in what order features are drawn using the Map Features dialog box. Select the Map tab > Customize group > *Map Features*, or choose *Features...* from the right mouse menu off the RouteMap to bring up this dialog.



Map Features Dialog Box

All the features listed in this dialog box can be displayed or hidden. Checked features will be displayed – click any check box to toggle between hiding and displaying an individual feature. Click **Show All** or **Hide All** to check or uncheck all listed features. Click on the **Reset** button to return to the default settings.

Additionally, the **Up**, **Down**, **To Top**, and **To Bottom** buttons can be used to manipulate the order in which the features on the left are drawn. Placing “Routes” at the top of the list, for example, will draw routes on top of all other features on the map, causing them to stand out more. The order of features in the list on the right cannot be changed, but these features can be shown or hidden.

Click **OK** to close the Map Features dialog box and redraw the map.

TIPS: Truck Restrictions: Note that by default “Truck Restrictions” is turned off in the map display. If you want to see all truck-restricted roads highlighted on the map, check this feature. Then refer to the Road Legend to see the color of the highlight that is used in the active map style for these roads.

Points of Interest: If your map is too cluttered with points of interest, uncheck “POIs” to hide them.

10.8 Map Styles

PC*MILER gives users the option to choose one of eight map styles for the RouteMap window. Each style features a different color scheme and overall appearance. Available styles are **Classic**, **Contemporary**, **Default**, **Lightness**, **Black and White**, **Night**, **Road Atlas**, **Satellite**, and **Smooth**.

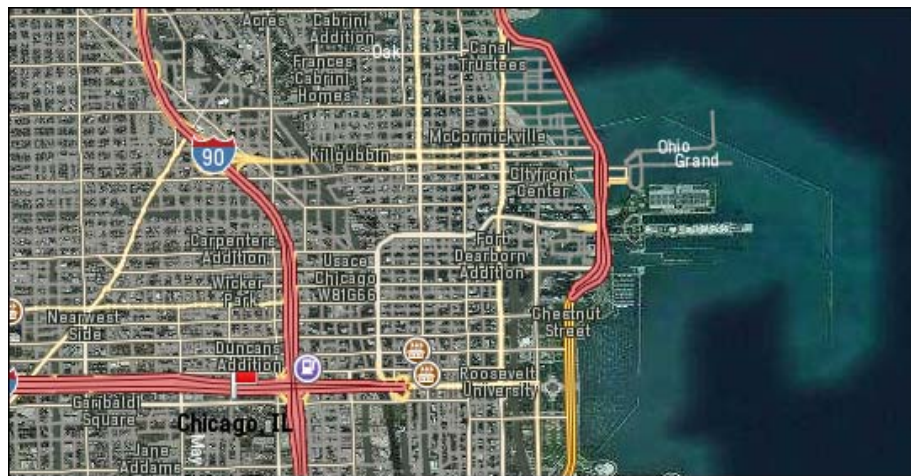
To change the map style, select the Map tab > Customize group > *Map Style* > and click on one of the listed styles.

10.9 Satellite Image Layer on the Map *(North America only)*

To have a photographic satellite image superimposed onto the PC*MILER map in the RouteMap window, select the Map tab > Customize group > *Map Style* > *Satellite*.

To see the satellite images, the map must be zoomed in to at least Zoom Level 10. (The zoom level is displayed in the title bar of the RouteMap window – use the slider bar on the map to zoom in or out.)

If the zoom level is not sufficient, a message will be displayed in the left bottom corner of the map stating that this is the case. Satellite maps require Internet connectivity, and a similar message will be displayed if there is no Internet connection detected.



Portion of Chicago, IL on the RouteMap with Satellite Image Superimposed

10.10 Route Distance Tooltips

Select the Map tab > Customize group > *Tooltips* > *Route Distance* to have a tooltip appear when you place your cursor over a generated route on the map. The tooltip will show the distance between the selected point and the route's origin, and between the selected point and the route's final destination.

10.11 Right Mouse Map Menu

A right mouse menu off the RouteMap is available to give you quicker access to frequently-used map options. To use it, place your cursor in the map window and click the right mouse button, then highlight the option you want.

10.12 Stop Labels

You can indicate how you want the names of your stops to appear on the map. Select Map tab > Customize group > *Stop Labels*. The choices in the drop-down are:

- *No Label* labels stops with their names alone.
- *Name Only* labels stops with the city or location name alone.
- *Number Only* labels stops with their order in the trip. The origin of the route is labeled “**O**”. The final stop is labeled “**D**” (destination). The intermediate stops are labeled in the format “**S#**”, for example, Stop 1 is labeled “**S1**”.
- *Name and Number* labels stops with both their name and order in the trip. For example, **O: Miami, FL 33101** or **1: Princeton, NJ 08540**.

10.13 Using the Mouse To Pick Stops



PC*MILER gives you the ability to enter stops in the route window directly from the RouteMap window without typing. You can use the mouse to select any point on a highway, labeled city, unlabeled location, intersection, truck stop, or latitude/longitude point. See section 3.6.21 for a description of this feature.

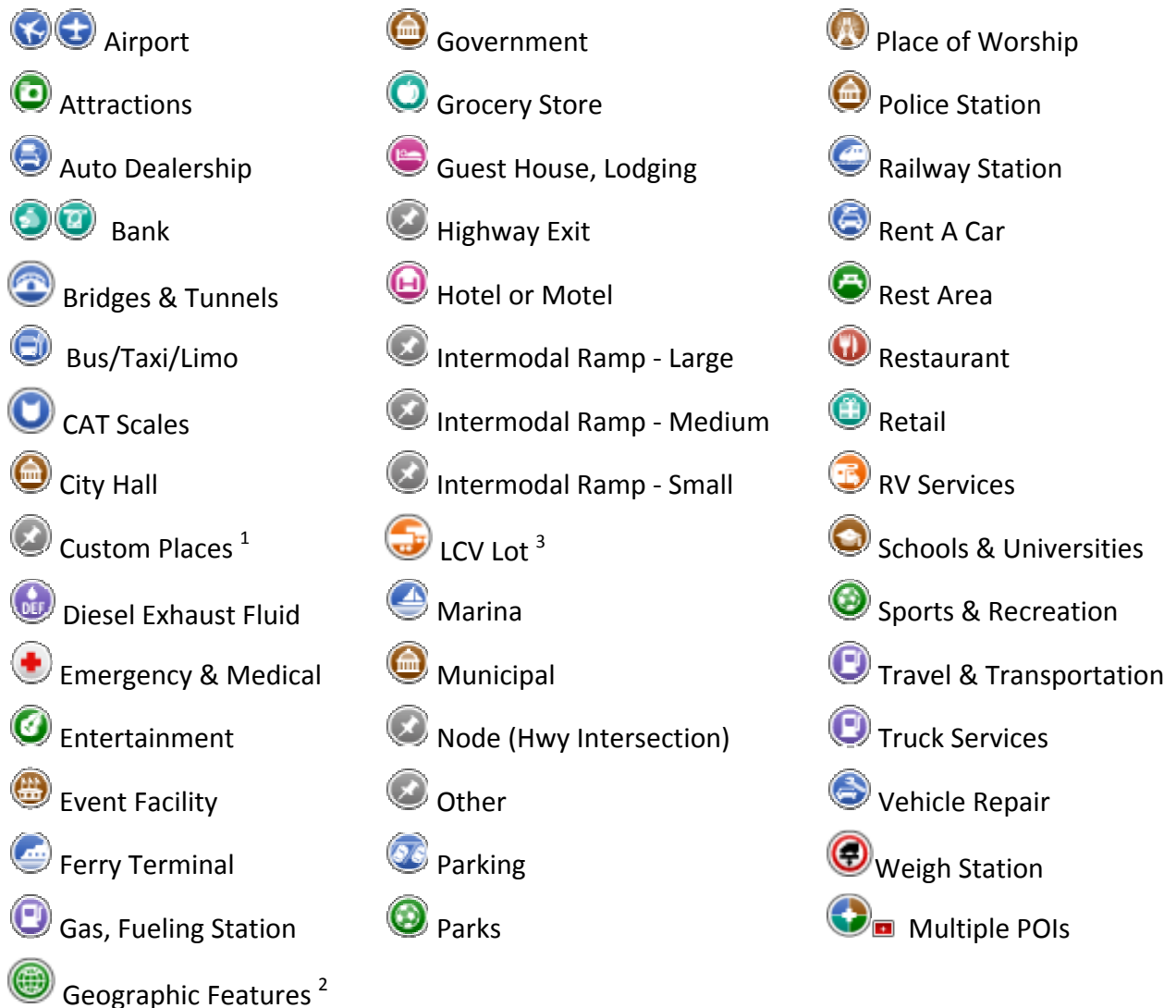
NOTE: There are some highway junctions which are truck-inaccessible. These junctions won't be recognized if you try to enter them as stops.

TIP: Notice that as you pass your cursor over the map without pressing the mouse button, its latitude/longitude position is automatically tracked and appears in the status bar in the lower left corner of the program window.

10.14 Infogroup Points of Interest on the Map *(U.S. only)*

PC*MILER now offers as a standard feature the ability to search, display and route to millions of points of interest (“POI”) from Infogroup’s U.S. business database. Truck stops, weigh stations, business locations, rest areas, intermodal ramps, and many other landmarks are included.

Each of the icons below represents a category of POI that you might see on the RouteMap. You can search for POI in these categories using the Location Radius tool (see section 3.8).



TIP: If the map is too cluttered with points of interest at a particular location, select the Map tab > Customize group > *Map Features...* and uncheck “Places” to hide them.

¹ This icon can represent custom places that have not been assigned to a custom category, as well as POI that are in the “Other” category.

² “Geographic Features” icons identify the location of naturally-occurring features on the earth’s surface, grouping those features together as follows:

Arches	Benches	Cliffs	Flats	Islands	Oilfields	Ridges	Swamps
Arroyos	Bends	Craters	Gaps	Isthmus	Pillars	Slopes	Valleys
Basins	Canals	Crossings	Glaciers	Lavas	Plains	Springs	Wells
Bays	Capes	Dams	Guts	Levees	Ranges	Streams	
Beaches	Channels	Falls	Harbors	Mines	Rapids	Summits	

³ Most LCV lots require gate permits and are reserved for authorized, certified and registered companies only. Before you plan on utilizing these areas or using them in route calculations, please make sure you’ve obtained the proper permits.

10.15 Printing or Copying a Map

The map in the RouteMap window can be printed or copied.

To print the map, either select *Print Map...* from the File application menu or select the Map tab > Utilities group > *Print Map*. A standard Windows® setup dialog for printing will open.

To copy a map to the clipboard for pasting into another Windows program, select the Map tab > Utilities group > *Copy Map*.



PC*MILER provides a number of ways to customize routing, described in this chapter, including via point creation, dragging a route on the map, avoid and favor preference designations, truck and hazardous material restriction overrides, and geofence options.

11.1 Picking Roads to Avoid or Favor

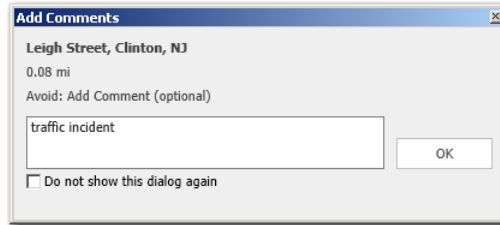
IMPORTANT: The avoid/favor preferences you designate will affect routing only when **Use Custom Roads** is checked in the Route Options or Default Route Options dialog box, General tab. Select the Routes tab > Route group > *Options* or Routes tab > General group > *Defaults*, then check “Use Custom Roads”. This option is turned off by default. It does not affect via points or routes that have been dragged onto another road on the map.

You may wish to indicate road segments that PC*MILER should avoid or favor when generating a route. An avoided road segment is effectively treated as if it were closed **unless no other road can be used** for the route. Favored road segments will be used **unless it is not practical to do so**. Preferences are saved in a file called **avoidfavor.db** in the Data\Q1\Save folder of your installation.

Road segments to avoid or favor can be picked from the RouteMap. Alternatively, you can use the map provided in the Avoid/Favor Manager dialog – see section 11.1.1. below for a description of this Manager. Here are the steps to create a road preference using the RouteMap:

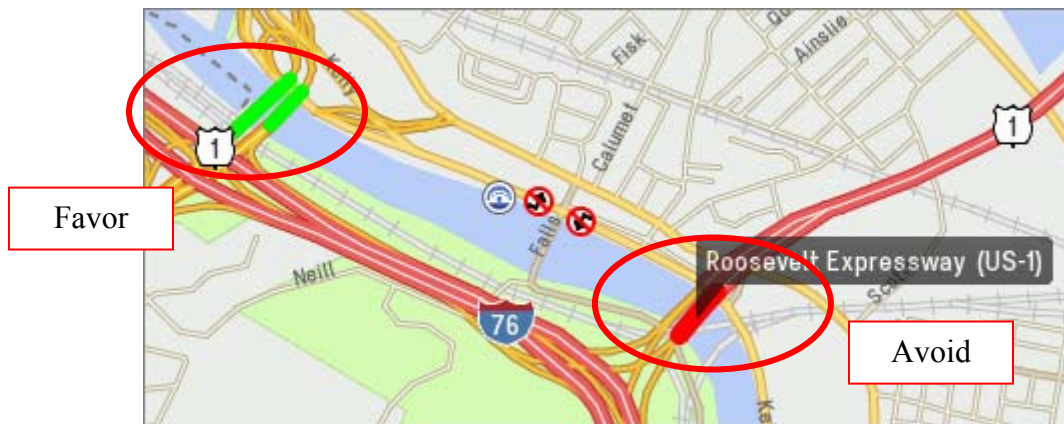
1. First select the Tools tab > Avoids/Favors group > *Avoid Roads* or *Favor Roads*.
2. On the RouteMap, click on the road segment to be avoided/favored (zoom in for a closer view if necessary). The cursor will appear with a minus or plus sign.  
3. An Add Comments box will appear on the map. To add a comment that will be saved along with the avoid/favor, type it in then click **OK**. (A comment can also be added at a later time – see section 11.1.1 below.) If you do nothing, the dialog will close on its own as soon as another action is initiated.

NOTE: If you don't want the Add Comments box to keep appearing, check “**Do not show this dialog again**” in the lower left corner. To activate it again, select the red File menu > *Application Settings* and check **Show Custom Road Comment Box**, then click **Save**.



Add Comments Dialog

4. The selected road segment will be marked with red highlighting if it is to be avoided or green highlighting if it is to be favored. You may need to click on several adjoining segments to cover the entire area you wish to designate.



Avoid and Favor Designations on the Map – Philadelphia, PA

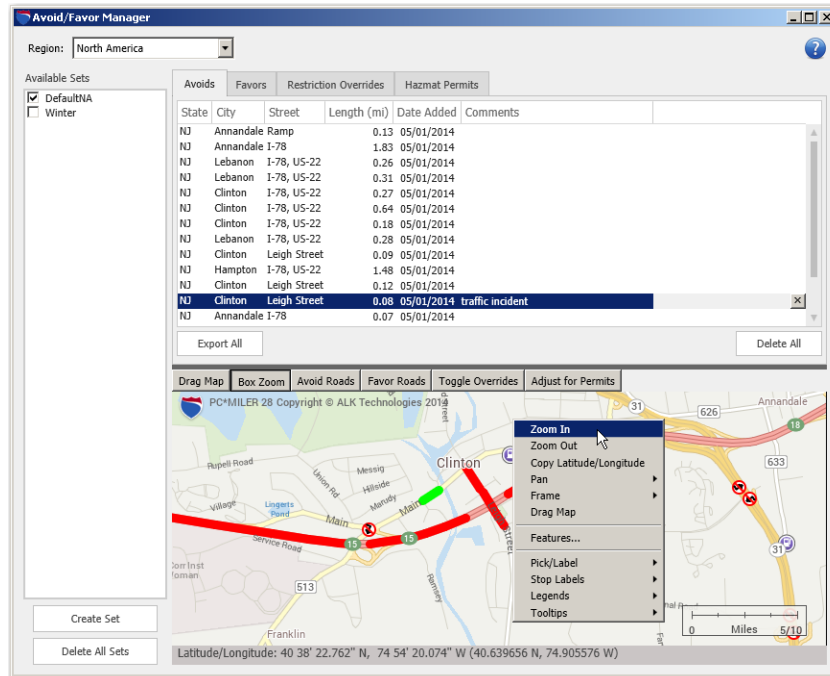
5. If you want to cancel an existing preference on the map, click on the road segment again with the *Avoid Roads* or *Favor Roads* tool selected.

NOTE on Favored Roads: The PC*MILER long-distance “backbone” contains the roads that PC*MILER uses for its default Practical and Shortest routes over long distances. If a favored road is not in the PC*MILER long-distance backbone, it will not be used for long-distance routes even if it is favored, unless an intermediate stop on that road is inserted into the route.

11.1.1 Using the Avoid/Favor Manager

All avoid/favor road preferences are saved in the Avoid/Favor Manager. To open this dialog, select the Tools tab > Avoids/Favors group > *Manager* or press **Alt+F2** on your keyboard.

From within this Manager dialog you can create, delete, edit or export existing avoid/favor preferences using the tabs, buttons and map provided.



Avoid/Favor Manager

In the Avoid/Favor Manager, you will see a map that includes most but not all of the functionality that exists in the RouteMap window. It can be used just like the RouteMap to designate road preferences – click one of the avoid/favor buttons at the top (**Avoid Roads**, **Favor Roads**, **Toggle Overrides**, or **Adjust for Permits**), then click a road segment on the map to add it to the list in the corresponding tab. Clicking again on the designated road segment deletes the preference.

See section 11.1.2 below on overriding truck restricted roads, and section 12.3 on overriding hazardous material restrictions to accommodate hazmat permits.

The map can be navigated like the RouteMap using the translucent scroll bars at the map's edges, or the **Drag Map** and **Box Zoom** functionality via the buttons at the top. A right mouse menu provides additional options. To zoom your map view to a road segment listed in any tab of the Manager, first highlight it in the applicable tab and then double-click.

To **delete** an individual route segment from any tab in the Manager, highlight it and click the “X” on the far right. Click **Delete All** to delete the entire contents of the list in any tab.

To add or edit a comment, highlight a preference, then click it again and type directly in the **Comments** column.

To save your edits and close the Manager, simply click the “X” in the upper right corner to close the window.

11.1.2 Overriding Truck-Restricted Roads

NOTE: A road that is flagged as “truck-discouraged” (versus “truck-restricted”) in the PC*MILER database cannot be overridden only by using the method described below. In addition to overriding the road, you must designate all the road segments on it as favored to make it fully truck-accessible (see section 11.1 above). To determine if a road is truck-discouraged, refer to the Road legend on the map for the color of the highlighting used to indicate a truck-discouraged road.

A truck-restricted road, as determined by the controlling governmental authority, prohibits trucks larger than a certain size and weight. To see these roads on the map, select the Map tab > Customize group > *Map Features...* and turn on **Truck Restrictions**. In accordance with these regulations, PC*MILER does not use truck-restricted roads when routing vehicles larger or heavier than the restricted size or weight. However, you can override these restrictions using the Restriction Override feature described in this section, to determine the largest and heaviest vehicle that can be assigned to a route.

A truck-discouraged road is one that is open for local deliveries, but unsuitable for through trucks, as determined either by the controlling authority or by PC*MILER. The road may be discouraged because it is narrow, winding, not well paved, or for a variety of other reasons. Refer to the Road Legend on the map for the color used to draw truck-discouraged roads. PC*MILER avoids routing over truck-discouraged roads whenever possible, with the following exceptions: if the destination is located on such a road; if avoiding the truck-discouraged road will add a very significant amount of time and distance to a route; or if you have marked the road to be favored.

If you have questions about truck restrictions, please contact each jurisdiction directly.

NOTE Also: You can set PC*MILER to override truck restrictions by default in the Default Route Options dialog box – check **Override Restrictions**.

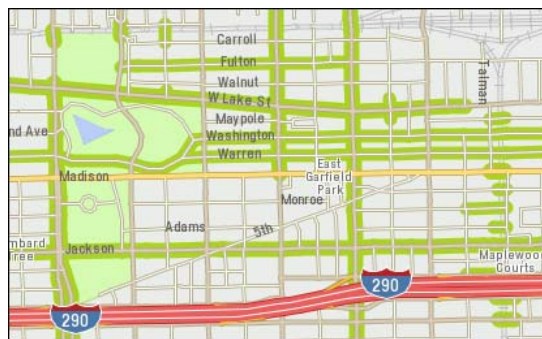
IMPORTANT: The road preferences you designate will affect routing only when **Use Custom Roads** is checked in the Route Options or Default Route Options dialog box, General tab. Select the Routes tab > Route group > *Options* or General group > *Defaults*, then check “Use Custom Roads”.

PC*MILER normally routes around all truck-restricted roads. However, some of these restrictions may be overridden, making the roads accessible. (This assumes that you have been granted permission to use these roads from the controlling authority, or that you are going to be using special equipment.)

To see truck-restricted roads highlighted on the map, turn on the **Truck Restrictions** layer in the Map Features dialog box. A “Restricted” category will appear in the Road legend, showing the color of the highlighting on these roads.

Overriding restrictions on a road is similar to designating road segments to be avoided or favored – you can pick overrides from the RouteMap or from the map in the **Restriction Overrides** tab of the Avoid/Favor Manager. Remember though, that a “truck-discouraged” road must be favored as well; and to override a road restriction you must click on each segment of the road until the whole road is redrawn. The color of the new highlighting will depend on which map style is selected. Comments can be added if needed. **Be sure to override all segments included on the route; otherwise the entire road will continue to be treated as inaccessible.**

To undo an override, click on it with the *Toggle Overrides* tool activated. The road will be restored to its original truck-restricted status. Alternatively, you can delete it from the **Restriction Overrides** tab of the Avoid/Favor Manager.



Truck Restricted Roads on the RouteMap, Chicago, IL

11.1.3 HazMat Permit Overrides

To change the status of roads that are restricted for hazardous materials, see section 12.3. To transport hazardous materials on these roads, the applicable permits must have been obtained.

11.1.4 Creating Sets of Custom Road Preferences

The Avoid/Favor Manager enables you to manage multiple sets of custom road preferences by allowing you to create and save sets of these preferences. You may find that custom sets are a useful tool for working with special equipment you operate, or for seasonal routing requirements. Sets can include road segment avoids/favors, and hazmat and truck restriction overrides.

NOTE: Many states and provinces in the north central part of the North American continent have seasonal weight limits that apply either to all commodities or to particular commodities (such as grain) at certain times of year (harvest season, winter, spring thaw, etc.).

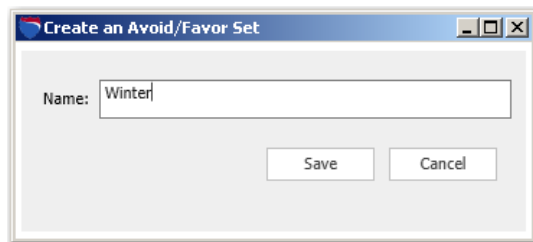
In these areas, the carrier typically works with the shipper to adjust how much material is loaded into the truck in order to max out the limit for the season in question, rather than adjust the route traveled. So (for example) more grain would be loaded into the truck during harvest season or winter than during spring thaw. That is the only way to have a legal load when an origin or destination is on a road with a seasonal limit. In addition to legal considerations there are also practical physical considerations since many loading and unloading points in that part of the country are on unpaved surfaces, and to overload a truck during spring thaw risks the truck getting stuck during pickup or delivery.

In PC*MILER, we have coded the weight limit that applies to general commodities during most seasons of the year. For situations where the low-limit road is used as a through route rather than for pickup or delivery, the Sets feature described below can be used to create avoid/favor/restriction override “sets” for each season of the year for each commodity. Custom routing must be turned on in the Route Options dialog box; then use the set that applies for a specific commodity at the appropriate season of the year.

REMEMBER: The road preferences you designate will affect routing only when **Use Custom Roads** is checked in the Route Options or Default Route Options dialog box, General tab. Select the Routes tab > Route group > *Options* or General group > *Defaults*, then check “Use Custom Roads”.

To create a set, do the following:

1. Select the Tools tab > Avoids/Favors group > *Manager* to open the Avoid/Favor Manager.
2. Click **Create Set** in the lower left corner.
3. At the prompt, enter a **Name** for the new set.



4. Click **Save**.

5. You will see the new set under **Available Sets** on the left. Uncheck the **DefaultNA** set and any other existing sets that are checked in this list.

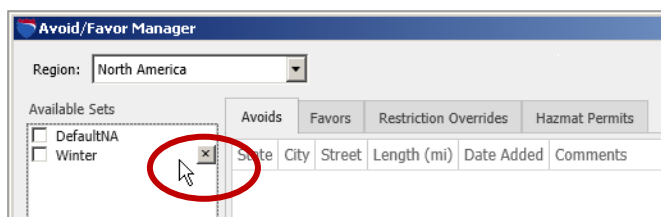
NOTE: If more than one set is enabled in the Avoid/Favor Manager, the avoid/favor buttons in the Tools tab will be disabled.

6. Now you can begin to add road segments in any tab of the Manager. These avoid/favors will be specific to this set. The set you are adding them to must be the only set selected in the **Available Sets** list.

Note the following guidelines for creating new sets:

- Set names cannot be longer than 50 characters, and must be comprised of letters and/or numbers.
- Spaces are not allowed in the set name, but underscores (“_”) are permitted.

To delete an individual set, place the cursor over the set name and click the “X” that appears on the right:



Deleting a Set

To delete all sets, click the **Delete All Sets** button in the lower left corner. The **Default NA** set cannot be deleted.

When more than one set is checked, all preferences included in the active sets will be visible on the map and listed in the corresponding tabs. However, only one set must be active when you want to add or delete preferences to a set. When multiple sets are active, the **Favor Roads**, **Avoid Roads**, **Toggle Overrides**, and **Adjust for Permit** buttons will be grayed out on the toolbar and in the right mouse map menu.

11.1.5 Exporting Custom Roads Data To a Report

To create a report in a text file (.txt) or Excel file (.csv) that contains all the preferences in the open tab of the Avoid/Favor Manager, click **Export All**. In the dialog that opens, name the file and choose a file format from the **Save as type** drop-down. Here are examples of the two types of file formats (the formatting in these files has been edited):

City, State	Street	Length (mi)	Date Added	Comment
Annandale, NJ	Ramp	0.129186501057	05/01/2014	
Annandale, NJ	I-78	1.825941753315	05/01/2014	
Lebanon, NJ	I-78, US-22	0.262930088736	05/01/2014	
Lebanon, NJ	I-78, US-22	0.309467609694	05/01/2014	
Clinton, NJ	I-78, US-22	0.27342519732	05/01/2014	
Clinton, NJ	I-78, US-22	0.641099231595	05/01/2014	
Clinton, NJ	I-78, US-22	0.184147727589	05/01/2014	
Lebanon, NJ	I-78, US-22	0.280191780486	05/01/2014	
Clinton, NJ	Leigh Street	0.09252266778	05/01/2014	
Hampton, NJ	I-78, US-22	1.481398385985	05/01/2014	
Clinton, NJ	Leigh Street	0.120210421347	05/01/2014	
Clinton, NJ	Leigh Street	0.080370436788	05/01/2014	traffic incident
Annandale, NJ	I-78	0.068839626699	05/01/2014	
Annandale, NJ	Ramp	0.125043695037	05/01/2014	
Annandale, NJ	I-78	0.182076324579	05/01/2014	

Exported File of Avoided Roads in .TXT Format

	A	B	C	D	E
1	City, State	Street	Length (mi)	Date Added	Comment
2	Annandale, NJ	Ramp	0.129186501	5/1/2014	
3	Annandale, NJ	I-78	1.825941753	5/1/2014	
4	Lebanon, NJ	I-78, US-22	0.262930089	5/1/2014	
5	Lebanon, NJ	I-78, US-22	0.30946761	5/1/2014	
6	Clinton, NJ	I-78, US-22	0.273425197	5/1/2014	
7	Clinton, NJ	I-78, US-22	0.641099232	5/1/2014	
8	Clinton, NJ	I-78, US-22	0.184147728	5/1/2014	
9	Lebanon, NJ	I-78, US-22	0.28019178	5/1/2014	
10	Clinton, NJ	Leigh Street	0.092522668	5/1/2014	
11	Hampton, NJ	I-78, US-22	1.481398386	5/1/2014	
12	Clinton, NJ	Leigh Street	0.120210421	5/1/2014	
13	Clinton, NJ	Leigh Street	0.080370437	5/1/2014	traffic incident
14	Annandale, NJ	I-78	0.068839627	5/1/2014	
15	Annandale, NJ	Ramp	0.125043695	5/1/2014	
16	Annandale, NJ	I-78	0.182076325	5/1/2014	
17					

Exported File of Avoided Roads in .CVS Format

11.1.6 Avoiding or Favoring Whole Roads or States/Countries

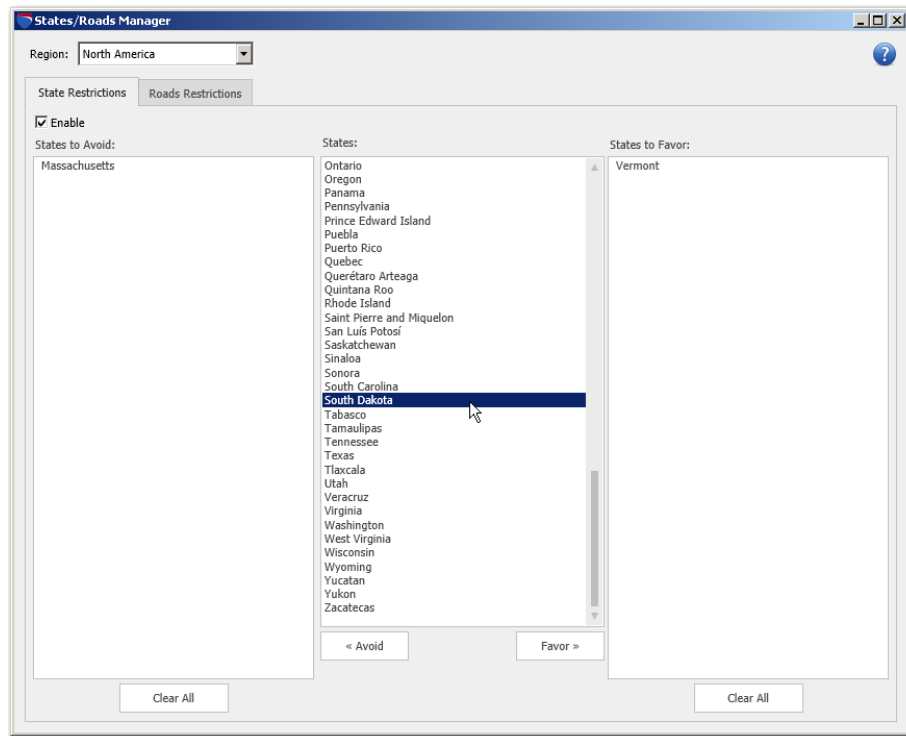
REMEMBER: The road preferences you designate will affect routing only when **Use Custom Roads** is checked in the Route Options or Default Route Options dialog box, General tab. Select the Routes tab > Route group > *Options* or General group > *Defaults*, then check “Use Custom Roads”.

In addition to the road preferences described above, whole roads and whole states can be selected to be avoided or favored for a route using the States/Roads Manager. If PC*MILER|Worldwide or DTOD data is installed and a region other than North America is selected, whole countries can be avoided/favored as well.

Avoid/Favor a State or Country:

1. Select the Tools tab > Avoids/Favors group > *States/Roads* to open the States/Roads Manager.
2. **VERY IMPORTANT:** Make sure “**Enable**” is checked in the upper left corner of the **State Restrictions** tab.
3. Select a state (or country) from the **States** list.
4. Click either **Avoid** or **Favor** to add to the desired list.

To **delete** a state (or country) from one of the lists, place the cursor over it and click the “X” that appears to the right. To clear either list, click **Clear All** at the bottom of the list.



States/Roads Manager, State Restrictions Tab

Avoid/Favor a Whole Road:

NOTE for PC*MILER|Streets Users: You cannot designate a local street by name to be avoided or favored in the **Roads** tab; a local road can only be avoided/favored by designating it as such on the map.

1. Click the **Roads Restrictions** tab.
2. Select a state (or country) from the drop-down **State** pick list.
3. Type the road name* in the **Road Name** field (e.g. **I 95**) without a state abbreviation.
4. Click **Avoid** or **Favor** under the road name.

To **delete** a road from one of the lists, place the cursor over it and click the “X” that appears to the right. To clear either list, click **Clear All**.

* To see how the name of a particular road appears in the PC*MILER database, you can zoom to that road on the map and place your cursor over the road without clicking. Some highway labels may include a common name along with the road number; for example, “**Pennsylvania Turnpike (I 276)**”. In these cases, use the road number from within the parentheses (“**I 276**” in this example).

NOTE: You won’t see any indication on the RouteMap that a whole road or whole state/country has been designated to be avoided or favored. To see the difference a designation makes on a route, first run the route with the **Enable** option unchecked, and duplicate that route; then go back and check this option and run the duplicated route. You will see the difference between the two routes on the map and in reports. Another way to do this is to check and uncheck the **Use Custom Roads** option in the Route Options or Default Route Options dialog.

11.1.7 Converting Custom Road Files from a Previous Version

Saved custom road preferences from the previous version of PC*MILER can be imported using PC*MILER’s file conversion utility as in the steps below.

1. Select the Tools tab > Avoids/Favors group > *Convert*.
2. Click **Import...** and navigate to your existing custom road file(s) that are located in the **NA\Q1\Save** or **World\WW\Save** folder in your PC*MILER 27 or 27.1 installation folder. In that folder there will be one or more of the following custom road files:
 - avoid.dat
 - permit.dat
 - afRoutes.dat

-
- flattened_af.dat
 - NAafSt.dat
 - *afSt/dat (* = *EU or another world region*)

3. After you select the file(s), click **Open** to start the import.
4. Once the import process is complete, check to make sure all the avoid/favors were imported successfully. Due to changes in the highway and street-level network database over time, some avoid/favors may not be successfully imported. Double-clicking on any listed road segment in the Conversion Utility dialog will zoom to that segment on the map where you can edit your preferences further if necessary.

IMPORTANT NOTE: Because of recent enhancements to the PC*MILER database that incorporate express, local, north/south and east/west lanes, etc., some of your avoid/favor/override designations from a previous version may need to be edited link-by-link to be sure the designated preference will operate in both directions. In the Avoid/Favor Manager, open the **Avoid**, **Favor**, **Restriction Overrides** or **Haz Permits** tab to see a list of your preferences. Then zoom in to the maximum level (18) on each listed link on the map (you can double-click each link to do this) and make sure that lanes in both directions are marked with the desired designation.

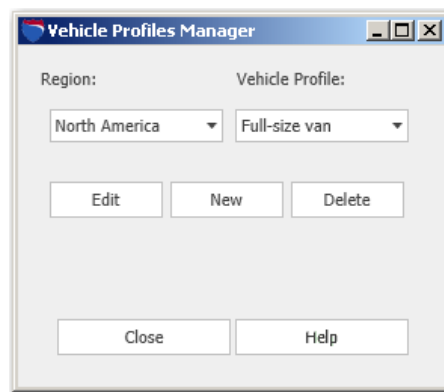
11.2 Custom Vehicle Profiles

For those who make use of custom vehicle dimensions, PC*MILER provides the ability to create custom vehicle profiles that enable quick entry of vehicle or fleet attribute sets that you use often when routing. This time-saving feature lets you set up and save groups of vehicle dimension and cost/time settings for easy access in the future. Using custom vehicle profiles ensures that the defined settings are consistent for the particular vehicle type selected for a route.

To use custom vehicle profiles, select the Routes tab > Utilities group > *Vehicle Profile*. In the Vehicle Profiles Manager dialog box that opens, you can select a profile to view, edit, or delete, or you can create a new custom profile. For North America, sample profiles are provided in the pick list for full-size van, 26' straight truck, 28' double trailer, 40' straight truck, 48' semi-trailer, and 53' semi-trailer vehicles. The sample profiles can be edited, but not deleted.

NOTE: The “**Full-size van**” profile is intended for use with **vans, pickup trucks, SUVs, automobiles, etc. that are classed less than 9,000 lbs./4,082 kgs.** The automobile routing that is generated from this profile ignores all commercial truck restrictions, and if toll rates are calculated, will use toll rates that apply to small vehicles with 2-axles, which often differ from rates that apply to larger 2-axle vehicles.

NOTE For PC*MILER|Worldwide and DTOD Users: When creating, accessing, or editing a custom vehicle profile, you must perform the additional step of specifying a region. Each vehicle profile is applicable to only one region.

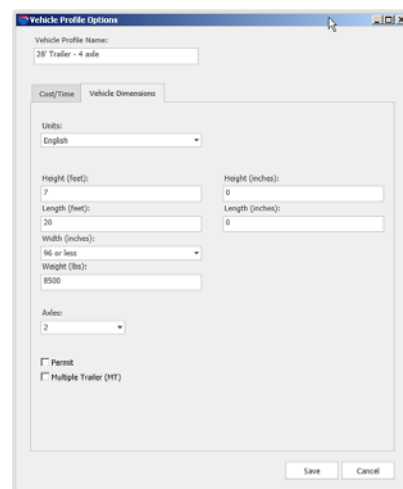


Vehicle Profiles Manager

To create a new custom profile, click **New**. A dialog box will open that has two tabs – **Cost/Time** and **Vehicle Dimensions**. The editable fields in these tabs are the same ones found in the Route Options dialog box. Enter a profile name and the desired edits in each tab and click **Save** to save your changes.



*Options for Vehicle Profile –
Cost/Time Tab*



*Options for Vehicle Profile –
Vehicle Dimensions Tab*

An unlimited number of custom profiles can be defined. The profiles you create will appear in the pick list of available profiles in the Vehicle Dimensions tab of the Route Options and Default Route Options dialog boxes.

Once a profile is set up, it can be used globally (all new routes will use the selected profile in route calculations) or applied to each new route as appropriate:

- To apply a profile to all new routes, choose the Routes tab > General group > *Defaults*. In the Vehicle Dimensions tab, select the desired profile from the drop-down **Vehicle Profile** pick list. Click **Save** to save this profile as the default.
- To apply a profile to a single route, choose the Routes tab > Route group > *Options*. In the Vehicle Dimensions tab, select the desired profile from the drop-down **Vehicle Profile** pick list. Click **Save** when you are finished editing options for this route.

By default, custom profiles are not used. Sample vehicle profiles are provided in the **Vehicle Profile** pick list as follows:

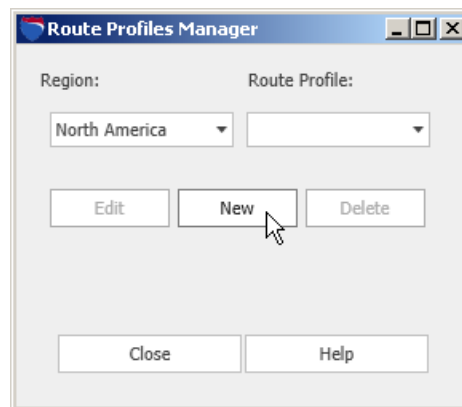
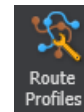
- **North America:** 48' semitrailer, 28' double trailer, 40' straight truck, 53' semitrailer, full-size van
- **Europe:** 16.5m articulated, 12m straight truck, 18.75m road train, full-size van
- **All Other Regions:** none

11.3 Custom Route Profiles


In addition to custom vehicle profiles, you can create and save route profiles that include custom settings available in the Route Options dialog. This feature is a time-saver if there are combinations of route option settings that you need to use frequently but do not want to set as defaults.

To create and use a new route profile, follow these steps:

1. Select the Routes tab > Utilities > *Route Profiles*.
2. In the Route Profiles Manager, click **New**.



Route Profiles Manager

-
3. The Route Profile Options dialog will open. You will see the same options here as in the Route Options dialog. Type a name for the new profile under **Route Profile Name** at the top of the dialog.
 4. Set the route options as you want them for this profile.
 5. Click **Save** to save the profile and close the Route Profile Options dialog.
 6. Click **Close** to close the Route Profiles Manager.
 7. Now the new profile is available for every route you run – click the gear button () in a route window and choose *Options*, then select it from the **Route Profile** pick list at the top of the Route Options dialog.
 8. To edit or delete a profile, open the Route Profiles Manager as in Step 1, select a profile from the pick list and then click **Edit** or **Delete**.

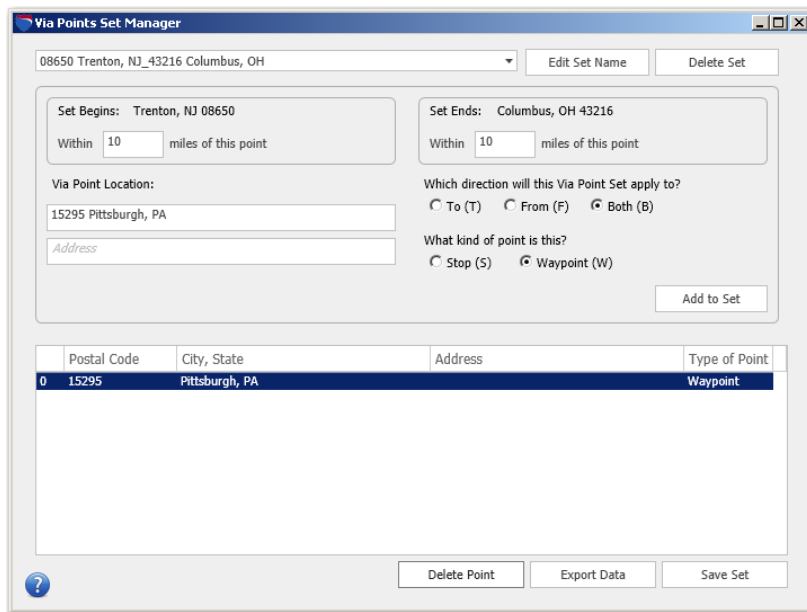
11.4 Using Via Points For Route Customization

PC*MILER gives users the ability to enter up to 12 via points between an origin and destination to guide a route along user-preferred roads. The via points you create can be designated as stops or waypoints (the “waypoint” designation means that these locations were added only to guide the route along desired roads). All via points appear on the stop list as “stops” and are listed as stops in the Detailed Route and State/Country reports; however, waypoints do not appear in driving directions. All via points are shown on the RouteMap, with a gray flag if they are waypoints or a yellow flag if they are stops.

Via points are saved in a set and can be entered, optionally, with a click of the mouse when subsequent trips between the same origin and destination are entered. Once a set is created, it can be edited, deleted, or exported to a text file as described below.

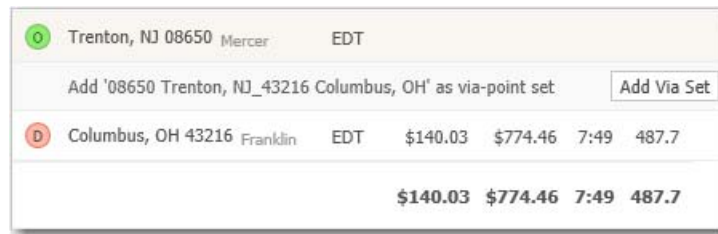
To create a via point set, follow these steps:

1. In a new route window, enter at least two stops.
2. **Highlight the stop that you wish to designate as the origin.** This need not be the origin of the route if multiple stops are entered. You will be creating via points between this highlighted stop and the next stop or destination on the stop list.
3. Select the Routes tab > Route group > *Create Via Point Set* to open the Via Points Set Manager.



Via Points Set Manager

4. In the **Set Begins** and **Set Ends** fields, enter a new radial value or keep the default value (10 miles). This defines the radius of the origin and destination locations (city center or postal code center). The set of via points you are creating will be an option for all future routes run between any points included in this radius.
5. Type a PC*MILER location (city/state, postal code, etc.) and, optionally, a street address in the **Via Point Location** fields then press **Enter** or click **Add to Set**. The city name is entered in the first cell of this field and an address can be entered in the second cell on the right.
6. Select whether this point will be a **Stop** or a **Waypoint**. Waypoints are treated like stops (routes travel through the centroid of a town or city) but are shown differently on the map: waypoints have gray flags, whereas stops have yellow flags.
7. Select whether the points in this set will apply only on a route **To** the destination, only on a route **From** the destination, or in **Both** directions.
8. Steps 5-7 can be repeated to add any number of additional via points to the set.
9. When finished adding via points to this set, click **Save Set** to save the new vias then close the dialog box (click the “X” in the upper right corner).
10. In the route window, you will see a line added where you created via points. Click the **Add Via Set** button on this line to add the points to the stop list. If you decide not to use the via points for this route, ignore this button and the via points won't be used.



“Add Via Set” Button in the Route Window

11. Click **Run** to run the route. If you activated the via points in Step 10, the route will travel on the preferred roads through the via points.

To Edit a Set:

To edit a set at any time, select the Routes tab > Utilities group > *Manage Via Point Sets* to open the Via Points Set Manager. Then select the set you want to edit from the pick list of sets, make your changes, and click **Save Set**. Editing options include:

- Edit the set name – click **Edit Set Name**, enter a new name, then click **Apply Name**.
- Delete the set – click **Delete Set** in the upper right corner of the dialog box. **This action cannot be undone.**
- Change the direction to which the set will be applied.
- Add more stops or waypoints as described above.
- Delete one or more via points – highlight a point on the list and click the **Delete Point** button below the list.
- Change the type of via point – highlight a location on the list and click the **Stop** or **Waypoint** button.

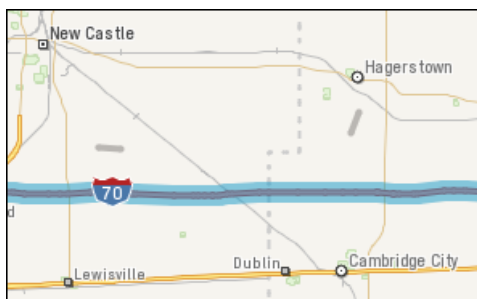
To Export Via Points to a Text File:

1. In the Via Points Set Manager, select a set from the pick list.
2. With the set you want to export selected, click **Export Data**.
3. Give the new file a name in the **File Name** field.
4. Select a location where the file will be saved.
5. Click **Save** to save the text file.

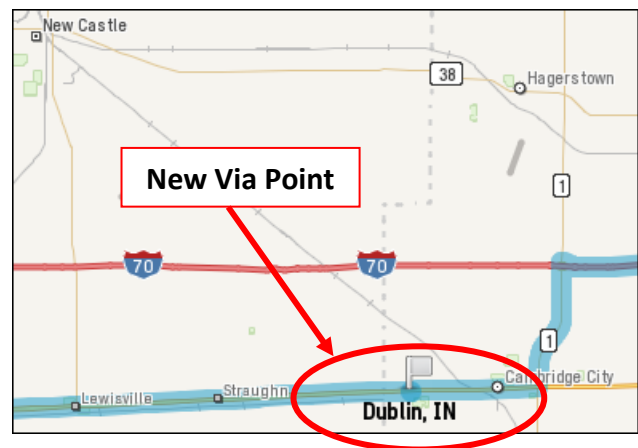
11.5 Dragging a Route on the Map

Once a trip has been generated, any point along the generated route on the map can be dragged onto another road in order to re-route the trip. To drag a route, do the following:

1. Select the Routes tab > Utilities group > *Drag Route*.
2. In the RouteMap window, click on the route and hold down the cursor, then drag to the desired location and let go.
3. This action will create a via point at the location to which the route was dragged, marked by a gray waypoint flag. The trip will be re-routed to accommodate the new via point.



Original Route



New Route Created by Dragging

11.6 Geofence Options

PC*MILER now provides tools that enable you to create, modify and manage geofences. A geofence defines a geographic area that will either generate an alert when a route enters it, or will be avoided by the route. Its use has many different applications, such as:

- Drawing zones around a warehouse to identify delivery/billing zones
- Alerting dispatchers when a vehicle enters an area that it wasn't authorized to enter – for example, leaving the country
- Avoiding or warning about steep grades, mountain passes susceptible to snow closures, tunnels requiring escorts, etc.
- Avoiding or warning if an asset has crossed into a high crime or high accident area

-
- Avoiding or warning about areas where bad weather is expected or has occurred: heavy snowfalls, floods, hurricane evacuation areas, etc.

The geofence tools in PC*MILER allow users to:




- Create and modify the characteristics of a geofence:
 - Define its size and shape as a circle, rectangle, or a user-defined polygon
 - Give the geofence a unique name (with the exact text that will appear in report warnings)
 - Delete the geofence
- Identify points and roads that fall within the boundaries of a geofence
- Group geofences into sets and assign and modify the characteristics of a set:
 - Create and uniquely name a set with the name that will appear in report warnings
 - Define the border color, border width and fill color of the geofences in the set
 - Define the set properties: off (not active), warning only, or avoid and warn
 - Delete the set

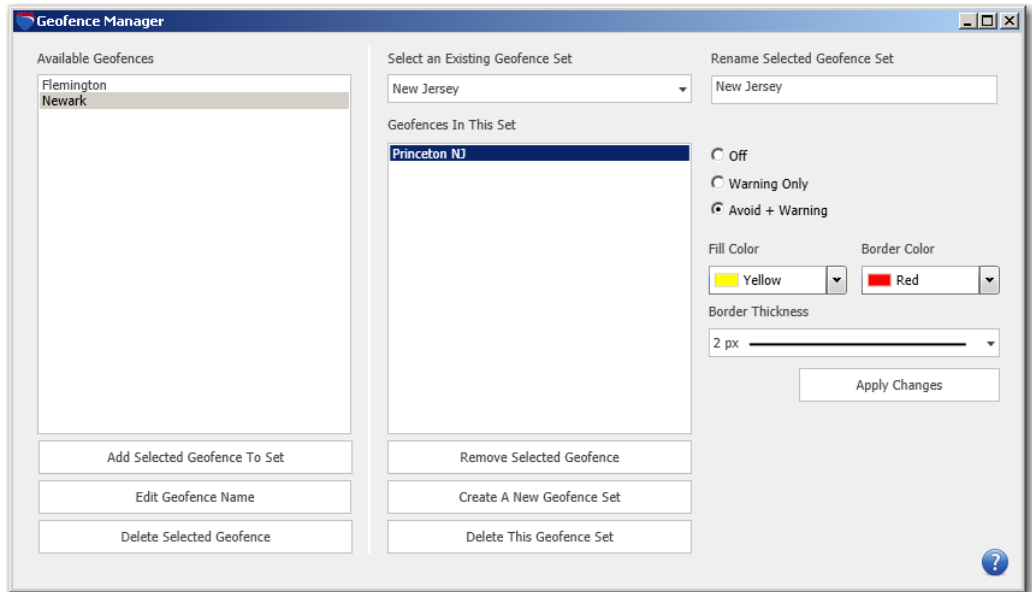
11.6.1 Creating a Geofence

NOTE: There is no limit to the number of individual geofences that can be created and added to a geofence set, or to the number of sets that can be created.

TIP: A geofence that covers a very large area (for example, a whole state) will draw very slowly on the map and will affect other map functions that involve a map redraw. Whole states and whole roads can be avoided or favored using the States/Roads Manager – see section 11.1.6.

Follow these steps to create an individual geofence:

1. Open the RouteMap window and bring the targeted area into view.
2. In the Tools tab > Geofences group > *Create Geofence* drop-down, select one of the options: *Create Rectangle*, *Create Circle*, or *Create Polygon*. These options are also available in the right mouse menu off the map.
3. In the RouteMap window, depending on which shape you chose, the cursor will change to one of the following:
 - When drawing a rectangle: 
 - When drawing a circle: 
 - When drawing a user-defined polygon: 

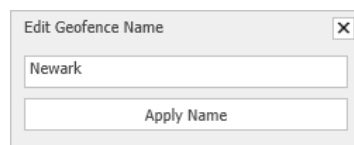


GeofenceManager

If using the circle or rectangle shape, drag the cursor over the desired area. If using the polygon tool, click all the points of the desired perimeter and finish by clicking on the first point again to close the polygon. If you are not satisfied with the area that is covered, delete the geofence using the right mouse menu off the map.

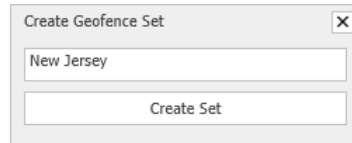
NOTE: See sections 11.6.6 and 11.6.8 on identifying points and roads that are included within the boundary of a geofence.

4. To name and assign properties to the geofence, select the Tools tab > Geofences group > *Geofence Options* > *Manage*.
5. In the **Available Geofences** list, you will see a generic name assigned (“Geofence_#”) to the geofence you just created on the map. (If more than one geofence is on the list, they will be listed alphabetically, e.g. Geofence_1, Geofence_10, Geofence_2, etc.) To assign a unique name to this geofence (for example, a geographic location):
 - a. Click on the defaulted name.
 - b. Click **Edit Geofence Name** below the list.
 - c. In the prompt that pops up, type a new name.



- d. Click **Apply Name**.

-
6. A geofence must belong to a set before a warning status and display properties can be assigned to it:
 - a. Click **Create a New Geofence Set**.
 - b. Type a name for the new set.

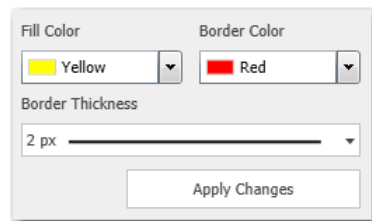


- c. Click **Create Set**. The set name will appear as the selected set in the **Geofences In This Set** pick list.
 - d. Go back to the **Available Geofences** list, highlight the geofence you want to add and click **Add Selected Geofence To Set**.

11.6.2 Customizing Geofence Sets

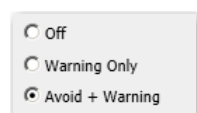
The properties of each geofence set can be customized so that all geofences in the set will have the same appearance and activity status. Individual geofences cannot be customized.

To customize the appearance of a set:



1. Select the set name from the **Geofences In This Set** pick list.
2. To change the **Fill Color** or **Border Color**, click on the block of color and select another color.
3. To change the border width, use the **Border Width** drop-down to set the thickness of the perimeter.
4. Click **Apply Changes** to see these attributes appear on the map.

To designate the behavior of geofences in the set:



1. Select one of these options:

Off: Geofences are not active. They do not affect the Detailed Route Report and are not visible on the map.

Warning Only: Geofences are visible on the map, and a warning will appear in the Detailed Route Report at the points where the route begins to travel on a road segment that is part of a geofenced area. The warning will include the road name, geofence set name, and geofence name, for example:

Warning * US 69 *: Montana Geofences: ButteMT

Avoid + Warning: Geofences are visible on the map. The route will avoid road segments within the geofenced area if “Use Custom Routing” is checked in the Route Options or Default Route Options dialog box. A warning will appear in the Detailed Route Report in cases where the route has to enter the geofence (for example, if the destination is within the geofenced area).

2. Click **Apply Changes** to save your selection.

State/Country	Route	Miles	Hours	Interchange	Leg Miles	Leg Hours	Total Miles	Total Hours	Leg Tolls
NY \$ West	Verrazano-Narrows Brdg - I-278	1.5	0:01	+ I-278 I-278	13.2	0:18	13.2	0:18	0
NY \$ West	Verrazano-Narrows Brdg - I-278	1.0	0:01	+ I-278 I-278	14.2	0:19	14.2	0:19	52
NY West	I-278 - Pow Mia Memorial Hwy	7.2	0:07	+ I-278 I-278	21.4	0:26	21.4	0:26	0
NY West	Goethals Brdg - I-278	0.2	0:00	(to NY/NJ State Line)	21.6	0:26	21.6	0:26	0
NJ West	Goethals Brdg - I-278	0.7	0:01	+ I-278 Ramp	22.3	0:27	22.3	0:27	0
NJ Keep left	Ramp	0.6	0:02	+ Ramp Ramp	22.9	0:29	22.9	0:29	0
NJ Keep right	Ramp	0.1	0:00	+ Ramp Ramp	23.1	0:29	23.1	0:29	0
Warning * Ramp *: New Jersey : Newark									
NJ Keep right	Ramp	0.3	0:01	+ Ramp I-95	23.4	0:30	23.4	0:30	0
Warning * I-95 *: New Jersey : Newark									
NJ \$ South	I-95 NJ Turnpike Car-Truck Lane	14.6	0:13	+ I-95 I-95	38.0	0:44	38.0	0:44	0
NJ \$ South	NJ Turnpike Car-Truck Lane - I-95	27.4	0:25	+ I-95 New Jersey Tpke	65.3	1:09	65.3	1:09	0

Detailed Route Report with Geofence Warning

11.6.3 Deleting or Renaming Geofences and Sets

Follow the steps below to delete an individual geofence or geofence set.


To delete an individual geofence using the Geofence Manager:

- Select the Tools tab > Geofences group > *Geofence Options* > *Manage...*
- Select a set from the **Select an Existing Geofence Set** drop-down.
- Under **Geofences In This Set**, highlight the geofence you want to remove, then click **Remove Selected Geofence**.
- Under **Available Geofence**, highlight the geofence and click **Delete Selected Geofence**. Alternatively, the geofence can be left on the list if you just want to remove it from the set without deleting it.

To delete an individual geofence directly from the map:

First open the RouteMap window and zoom to the location of the geofence you want to delete. (“Geofences” must be checked in the Map Features dialog box.) Now there are two ways to complete the deletion:

- Select the Tools tab > Geofences group > *Delete* , then click your cursor anywhere within the boundaries of the geofence.
- Right-click on the map and select *Geofencing > Delete Geofence* from the menu. Then click your cursor anywhere within the boundaries of the geofence.

NOTE: When in “Delete Geofence” mode, your cursor will change to look like this:  To exit from delete mode, select *Delete* again.

To delete a set:

1. Select the Tools tab > Geofences group > *Geofence Options > Manage...* .
2. Select a set from the **Select an Existing Geofence Set** drop-down.
3. Click **Delete This Geofence Set**. When you delete a set that has geofences assigned to it, those geofences will not be deleted – only the set name and its properties will be deleted. The individual geofences will be moved back onto the Available Geofences list to be reassigned or deleted, and they won’t be visible on the map.

To rename a set:

1. Select the Tools tab > Geofences group > *Geofence Options > Manage...* .
2. Select a set from the **Select an Existing Geofence Set** drop-down.
3. Under **Rename Selected Geofence Set** (top right corner) type a new name.
4. Click **Apply Changes**. You will see the new name of the set in the **Select an Existing Geofence Set** drop-down.

11.6.4 Editing Geofence Sets

To remove a geofence from a set and reassign it to another set, do the following:

1. Select the Tools tab > Geofences group > *Geofence Options > Manage...* .
2. Select a set from the **Select an Existing Geofence Set** drop-down.
3. Under **Geofences In This Set**, highlight the target geofence then click **Remove Selected Geofence**.
4. Select another set from the **Select an Existing Geofence Set** drop-down.

5. Under **Available Geofences**, highlight the geofence you removed from the previous set and click **Add Selected Geofence To Set**.

11.6.5 Geofence Behavior on the Map

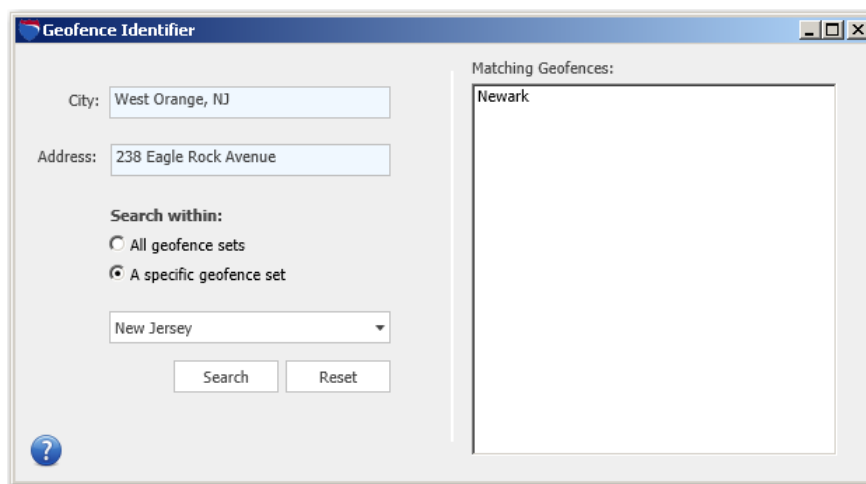
By default, geofences that are created will initially appear on the map with light gray fill and a thin red border. Fill color and border width can be edited as described in section 11.6.2.

When a geofence is either inactivated or deleted, it will no longer be visible on the map.

There are also two settings in the Map Features dialog box that affect the geofence display on the map: if **Avoids & Favors** is unchecked, the blue highlighting that designates road segments inside each geofence will be hidden; and if **Geofences** is unchecked, the geofence shapes will be hidden but the blue highlighting on road segments will still be visible. All geofences are affected by these settings.

11.6.6 Identify Points Within a Geofence Boundary

To determine if particular points lie within a geofence boundary, follow the steps below.



Geofence Identifier

1. Select the Tools tab > Geofences group > *Geofence Options* > *Identify*.
2. Enter a location in the **City** field, with or without an **Address**. Any PC*MILER location is acceptable, including lat/long points and custom place

names. If you enter a city name without an address, PC*MILER will use the city center of that town.

3. Under **Search Within**, select to search **All geofence sets** for the location, or within **A specific geofence set**. Choose a set from the drop-down pick list if you want to search within a specific set.
4. Click **Search**. All geofences that include the location will be listed under **Matching Geofences**. If the point is not within the boundary of any geofence, a “*No matches found*” message will appear.
5. Click **Reset** to clear the search before entering another location.

11.6.7 Using the Geofences Conversion Utility

If you created and saved geofences in the previous version of PC*MILER, you can easily import those files into Version 28 using the Geofences Conversion Utility. To do this, follow the steps below.

1. Select the Tools tab > Geofences group > *Convert > Import Geofences*.
2. In the window that opens, navigate to the PC*MILER 27 or 27.1 installation folder (usually C:\ALK Technologies\PMW270 or PMW271). In that folder, navigate to NA\Q1\Save\geofences, then select the geofence files (**flattened_gf.dat** and **flattened_af.dat**) and click **Open**.
3. You will see the saved geofence files being copied into Version 28.
4. When the process is complete, close the dialog box. The geofences should now be accessible in Version 28.

11.6.8 Generating a Geofence Report

To create a report that shows all road segments included within the perimeter of a geofence, do the following:

1. Select the Tools tab > Geofences group > *Convert > Export Geofences*.
2. In the Save dialog, select a file type (*.txt or *.csv), enter a file name, and select a target location where the report will be saved.

To open the report, navigate to the folder where it was saved. If the report was saved as a *.txt file, it will open in Notepad. If it was saved as a *.csv file, it will open in Excel.

This report includes the following data: the name of the geofence, the set that the geofence belongs to, the corresponding road segments included in the geofence, and the date the geofence was added. A sample *.txt report for two geofences is shown below.

```

New York, NY    NYC    03/20/2012
Circle    (40.758700N, 74.432373W)    (41.225150N, 73.814392W)
New York, NY    Springfield    03/20/2012
Circle    (41.549372N, 74.099595W)    (43.090339N, 72.015344W)

NY-17 3.08 Tuxedo Park, NY 03/20/2012 NYC
I-87 (New York State Thruway) 5.40 Sloatsburg, NY 03/20/2012
NYC
Ramp 0.22 Sloatsburg, NY 03/20/2012 NYC
Ramp 0.04 Sloatsburg, NY 03/20/2012 NYC
Ramp 0.07 Sloatsburg, NY 03/20/2012 NYC
Ramp 0.04 Sloatsburg, NY 03/20/2012 NYC
Ramp 0.10 Sloatsburg, NY 03/20/2012 NYC
Route 72 (Sterling Mine Road) 0.17 Sloatsburg, NY 03/20/2012
NYC
Ramp 0.10 Sloatsburg, NY 03/20/2012 NYC
Ramp 0.15 Sloatsburg, NY 03/20/2012 NYC
Greenwood Lake Turnpike (Route 511) 2.71 West Milford, NJ
03/20/2012 NYC
Ramp 0.09 Sloatsburg, NY 03/20/2012 NYC
Ramp 0.26 Sloatsburg, NY 03/20/2012 NYC
Route 72 (Sterling Mine Road) 1.35 Sloatsburg, NY 03/20/2012
NYC
Route 72 (Eagle Valley Road) 0.05 Sloatsburg, NY 03/20/2012
NYC
Route 72 (Sterling Mine Road) 1.62 Eagle Vall
03/20/2012 NYC
Mill Pond Road 1.03 Ringwood, NJ 03/20/2012
Sloatsburg Road 0.20 Ringwood, NJ 03/20/2012
NY-17 0.51 Sloatsburg, NY 03/20/2012 NYC
Ramp 0.17 Sloatsburg, NY 03/20/2012 NYC
I-87 (New York State Thruway) 0.27 Sloatsburg, NY 03/20/2012
NYC


```

List of road segments in both geofences begins here.

Geofence Location, Set Name, Date Created, Shape, and Defining Lat/Longs

Each road segment listing includes Segment, Length, Nearest Town, Date and Set Name

*Geofence Report in *.txt Format*

If the separate PC*MILER|HazMat data add-on module is installed, routing can be generated in North America, Europe and Oceania for various types of hazardous materials and dangerous goods using any PC*MILER route type. To use a hazardous materials routing option, click the gear button in a route window () and select *Options* or select the Routes tab > Route group > *Options*, then click the **HazMat** tab.



Route Options Dialog, HazMat Tab (North America Region)

Hazardous material routing options for North America include: **General**, **Corrosive**, **Explosives**, **Flammable**, **Inhalants**, and **Radioactive**. When Europe or Oceania is the selected region, the options are: **General**, **Explosives**, **Flammable**, and **Harmful to Water** (with additional tunnel restrictions categories in Europe – see Table 2 below). For non-hazmat routes, select **None** (this is the default).

Tables 1 and 2 below show how each PC*MILER hazmat route type handles each hazmat road category. **Table 3** shows U.S. DOT Hazmat classes and the corresponding PC*MILER route type.

NOTE: The “General” option should be used for any hazardous material that presents a danger during transportation and is not corrosive, explosive, flammable, inhalant, or radioactive. Common examples include: oxidizers (such as compressed oxygen tanks), combustible liquids (such as diesel fuel), and poisons (such as pesticides).

TABLE 1: PC*MILER Hazardous Material Route Types and Road Categories

favor = routing will prefer these segments

no change = routing will not be altered in any way

avoid = routing will go around these segments whenever possible

discourage = a lesser degree of avoidance, used when a state or road authority allows hazmat only at certain times of day, with prior notification, by permit, or in limited quantities, and for tunnels not otherwise classified

#	Hazmat Routing Category	General	Corrosive	Explosives	Flammable	Inhalants	Radioactive	Detailed Route Report	Hazmat Map Legend
1	Alternate	favor	favor	favor	favor	favor	favor		Desig/Pref/Alt
2	Preferred	favor	favor	favor	favor	favor	favor		Desig/Pref/Alt
3	Designated	favor	favor	favor	favor	favor	favor		Desig/Pref/Alt
4	Prohibited	avoid	avoid	avoid	avoid	avoid	avoid	Prohibited	Prohibited
5	Restricted	discourage	discourage	discourage	discourage	discourage	discourage	Restricted	Restricted
6	Harmful to Water Prohibited	no change	no change	no change	no change	no change	no change	Harmful to Water Prohib.	Some Cmds Prohib
7	Explosive Designated	no change	no change	favor	no change	no change	no change		Desig Expl
8	Inhalant Designated	no change	no change	no change	no change	favor	no change		Desig Inhal
9	Explosive & Inhalant Designated	no change	no change	favor	no change	favor	no change		Desig/Pref/Alt
10	Tunnel	discourage	discourage	discourage	discourage	discourage	discourage	Tunnel	Restricted
11	Tunnel & Alternate	favor	favor	favor	favor	favor	favor		Desig/Pref/Alt
12	Tunnel & Preferred	favor	favor	favor	favor	favor	favor		Desig/Pref/Alt
13	Tunnel & Designated	favor	favor	favor	favor	favor	favor		Desig/Pref/Alt
14	Tunnel & Prohibited	avoid	avoid	avoid	avoid	avoid	avoid	Prohibited Tunnel	Prohibited
15	Tunnel & Restricted	discourage	discourage	avoid	avoid	avoid	avoid	Restricted Tunnel	Restricted
16	Tunnel & Large Explosive, Inhalant, and Flammable Prohibited	no change	no change	no change	no change	no change	no change	Many Cmds Prohib.	Some Cmds Prohib
17	Tunnel & Large Explosive and Inhalant Prohibited	no change	no change	no change	no change	no change	no change	Expl. & Inhal. Prohib.	Some Cmds Prohib
18	Caustic, Explosive, Flammable & Radioactive Prohibited	no change	avoid	avoid	avoid	no change	avoid	Many Cmds Prohib.	Some Cmds Prohib
19	Explosive Restricted	no change	no change	discourage	no change	no change	no change	Explosive Restricted	Restricted
20	Tunnel & Very Large Explosive Prohibited	no change	no change	no change	no change	no change	no change	Explosive Restricted	Some Cmds Prohib
21	Explosive & Flammable Prohibited	no change	no change	avoid	avoid	no change	no change	Expl. & Flam. Prohib.	Some Cmds Prohib
22	Radioactive Preferred	no change	no change	no change	no change	no change	favor		Desig Rad

(continued on next page)

#	Hazmat Routing Category	General	Corrosive	Explosives	Flammable	Inhalants	Radioactive	Detailed Route Report	Hazmat Map Legend
23	Radioactive Designated	no change	no change	no change	no change	no change	favor		Desig Rad
24	Radioactive Prohibited, Explosive Restricted	no change	no change	discourage	no change	no change	avoid	Rad. Prohib., Expl. Restr.	Some Cmnds Prohib
25	Radioactive Prohibited	no change	no change	no change	no change	no change	avoid	Radioactive Prohibited	Some Cmnds Prohib
26	Escort Needed	no change	no change	no change	no change	no change	no change	Escort	None
27	Explosive and Flammable & Harmful to Water Prohibited	no change	no change	avoid	avoid	no change	no change	Many Cmnds Prohib.	Some Cmnds Prohib
28	Explosives, Inhalant & Radioactive Designated	no change	no change	favor	no change	favor	favor		Desig/Pref/Alt
29	Radioactive & Explosive Designated	no change	no change	favor	no change	no change	favor		Desig/Pref/Alt
30	Radioactive & Explosive Prohibited	no change	no change	avoid	no change	no change	avoid	Rad. & Expl. Prohib.	Some Cmnds Prohib
31	Radioactive & Explosive	no change	no change	discourage	no change	no change	discourage	Rad. & Expl. Restr.	Restricted

NOTE: U.S. hazardous material routing restriction/designation information taken from *The National Hazardous Materials Route Registry* provided by the Federal Motor Carrier Safety Administration (FMCSA); and various other state and federal sources. Canadian hazmat/dangerous goods routing data derived from government and municipal sources in each Province and Territory, and includes restrictions for major Canadian bridges and tunnels.

NOTE: Canadian dangerous goods routing data is derived from government and municipal sources in each Province and Territory, and includes hazmat restrictions for major Canadian bridges and tunnels.

TABLE 2: PC*MILER HazMat Route Types and Road Categories – EU Harmful to Water and EU Tunnels

(PC*MILER/Worldwide or DTOD data must be installed) For PC*MILER|Worldwide and DTOD users, the hazmat categories below are used in the Europe and Oceania regions.

#	Hazmat Routing Category	EU Harmful to Water	EU Tunnel B, C, D, E	EU Tunnel C, D, E	EU Tunnel D, E	EU Tunnel E
0	None	no change	no change	no change	no change	no change
1	Alternate	no change	no change	no change	no change	no change
2	Preferred	no change	no change	no change	no change	no change
3	Designated	no change	no change	no change	no change	no change
4	Prohibited	avoid	no change	no change	no change	no change
5	Restricted	no change	no change	no change	no change	no change
6	Harmful to Water Prohibited	avoid	no change	no change	no change	no change
7	Explosive Designated	no change	no change	no change	no change	no change
8	Inhalant Designated	no change	no change	no change	no change	no change
9	Explosive & Inhalant Designated	no change	no change	no change	no change	no change
10	Tunnel	no change	no change	no change	no change	no change
11	Tunnel & Alternate	no change	no change	no change	no change	no change
12	Tunnel & Preferred	no change	no change	no change	no change	no change
13	Tunnel & Designated	no change	no change	no change	no change	no change
14	Tunnel & Prohibited	no change	avoid	avoid	avoid	avoid
15	Tunnel & Restricted	no change	no change	no change	no change	no change
16	Tunnel & Large Explosive, Inhalant, and Flammable Prohibited	no change	avoid	avoid	avoid	no change
17	Tunnel & Large Explosive and Inhalant Prohibited	no change	avoid	avoid	no change	no change
18	Caustic, Explosive, Flammable & Radioactive Prohibited	no change	no change	no change	no change	no change
19	Explosive Restricted	no change	no change	no change	no change	no change
20	Tunnel & Very Large Explosive Prohibited	no change	avoid	no change	no change	no change
21	Explosive & Flammable Prohibited	no change	no change	no change	no change	no change
22	Radioactive Preferred	no change	no change	no change	no change	no change
23	Radioactive Designated	no change	no change	no change	no change	no change
24	Radioactive Prohibited, Explosive Restricted	no change	no change	no change	no change	no change
25	Radioactive Prohibited	no change	no change	no change	no change	no change
26	Escort Needed	no change	no change	no change	no change	no change
27	Explosive and Flammable & Harmful to Water Prohibited	avoid	no change	no change	no change	no change
28	Explosives, Inhalant & Radioactive Designated	no change	no change	no change	no change	no change
29	Radioactive & Explosive Designated	no change	no change	no change	no change	no change
30	Radioactive & Explosive Prohibited	no change	no change	no change	no change	no change
31	Radioactive & Explosive	no change	no change	no change	no change	no change

TABLE 3: U.S. DOT Hazmat Classes and Corresponding PC*MILER Hazmat Route Types

The table below shows how the wording used for PC*MILER hazmat routing options, which is derived from industry-standard placarded descriptions of hazardous materials, corresponds to the U.S. Department of Transportation Hazmat classifications. See sections 12.1 and 12.2 below on how to use this table.

U.S. DOT Hazmat Classes (corresponding PC*MILER routing options are **bolded**):

Class 1: Explosives – **Explosive**

Class 2: Compressed Gases

2.1: Flammable Gas – **Flammable**

2.2: Non-Flammable Compressed Gas – **General**

2.3: Poisonous Gas – **Inhalant**

Class 3: Flammable and Combustible Liquid – **Flammable**

Class 4: Flammable Solids

4.1: Flammable Solid – **Flammable**

4.2: Spontaneously Combustible Material – **Flammable**

4.3: Dangerous When Wet Material – **General**

Class 5: Oxidizers – **General**

Class 6: Poisons

6.1: (part) Inhalation Hazard – **Inhalant**

6.1: (balance) – **General**

6.2: Infectious Substance (Etiologic agent) [“Biohazard”] – **General**

Class 7: Radioactive Materials – **Radioactive**

Class 8: Corrosive Liquids – **Corrosive** (“**Caustic**” in PC*MILER 22 and earlier)

Class 9: Miscellaneous – **General**

12.1 Determining Which Route Type to Use

NOTE: Hazmat regulations for a particular tunnel on a route should be checked if there is any doubt about which materials are permitted, as regulations may change over time and might not be included in the version of the PC*MILER database that you are currently using.

The shipper of hazardous materials is legally responsible for determining the U.S. DOT Hazmat Class for their shipment and communicating that class to the carrier in their shipping papers.

To determine the U.S. DOT Hazmat Class, go to the online 49 CFR 172.101 at www.ecfr.gov. Once the Class is identified for a shipment, use Table 2 above to determine which route type should be used when generating a PC*MILER route for that shipment.

For example, on the government web site, hydrogen is classified as a Flammable Gas (DOT class 2.1), while oxygen, nitrogen, carbon dioxide, and argon are Non-Flammable Compressed Gases (DOT class 2.2).

Using Table 2 above, DOT class 2.1 corresponds to the PC*MILER Hazmat route type “Flammable”, while DOT class 2.2 corresponds to the PC*MILER Hazmat route type “General”.

12.2 Routing Multiple Hazmat Classes

For routing a single shipment containing multiple hazmat classes, the following procedures are suggested:

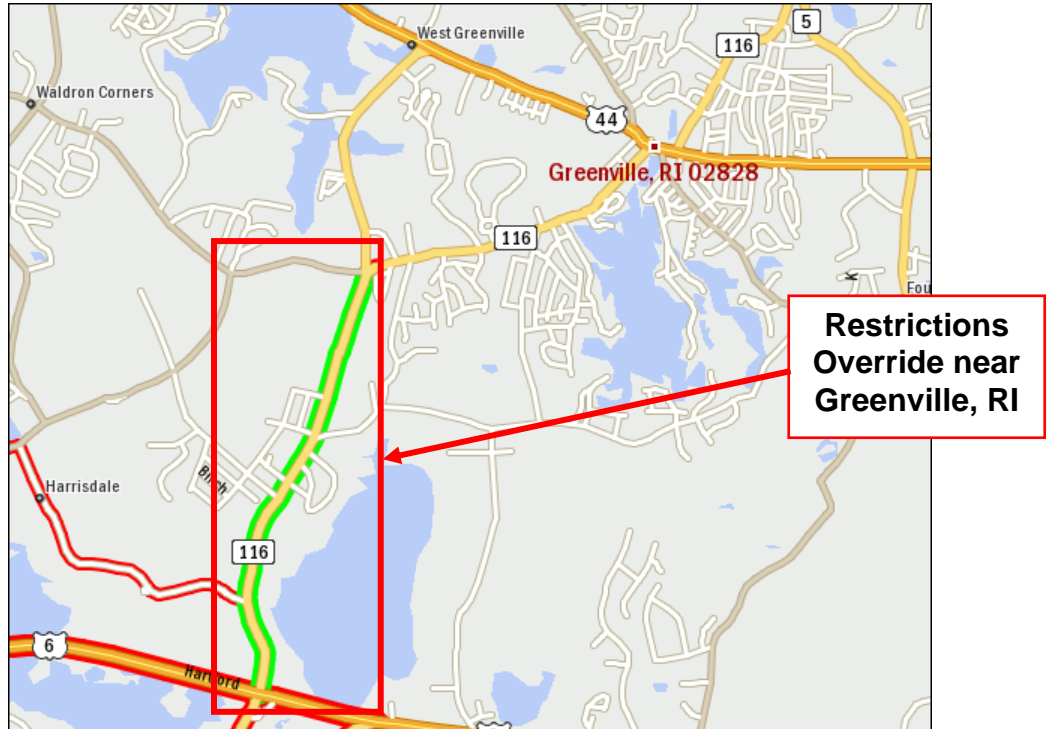
1. First, determine the weight of each commodity and check the U.S. DOT (PHMSA) rule to see if that combination is permissible and if so, which placard(s) are to be used.
2. Then, for each placard, look up the PC*MILER|Hazmat routing options in the table above.
 - a. If all the placards correspond to one routing option, use that option.
 - b. If the placards correspond to multiple routing options, then run the route for each option, and:
 - i. If all the routes are the same, that common route is the route to be used.
 - ii. If the routes are different, then there may or may not exist a legal route for that combination of commodities for the specified origin/destination (this will occur only rarely).

12.3 Changing the Status of Hazmat-Prohibited Roads

Customers who have obtained permits can change the status of hazmat-prohibited roads as follows:

1. First make sure “Hazardous Materials” is checked in the Map Features dialog (Map tab > *Map Features...*).
2. Select the Tools tab > Avoids/Favors group > *Adjust for Permits*,
3. In the RouteMap window click on the prohibited road(s) that you wish to make accessible for routing. The adjusted route segments will change color (the color will depend on which map style is currently active).

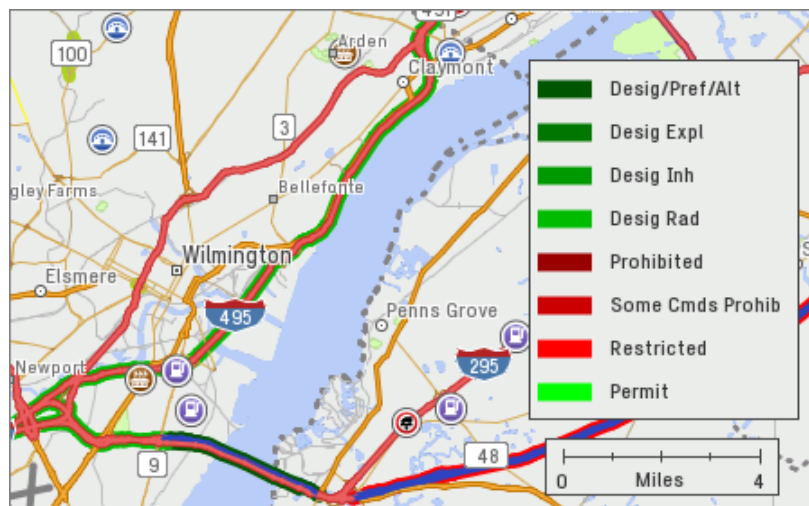
All user-created road preferences are saved and managed in the **Haz Permits** tab of the Avoid/Favor Manager (Tools tab > Avoids/Favors group > *Manage* – see section 11.1.1). A comment may be added to each record, either by typing a comment in the Add Comment dialog box that appears when a road segment is clicked or by entering it directly in the Avoid/Favor Manager.



HazMat Restriction Override Shown on the RouteMap

The custom road settings you create can be removed by clicking again on the same roads with the **Adjust for Permits** tool active, or by using the Avoid/Favor Manager.

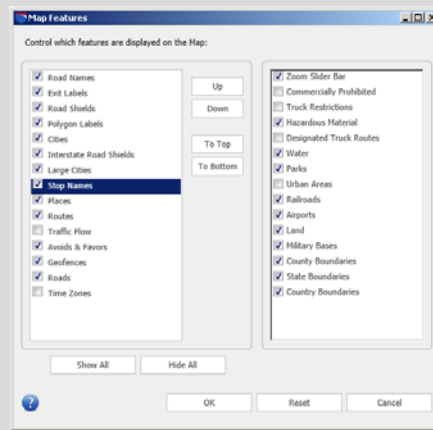
12.4 Hazardous Material Routing on the RouteMap



Map Showing Hazmat Restricted Roads & Restrictions Legend

With the PC*MILER|HazMat add-on data module installed, hazmat-prohibited and -designated roads will be highlighted in the RouteMap window provided this feature is checked in the Map Features dialog (see TIP below). The Restrictions legend shows the highlight color for various designations (to show/hide this legend, select the Map tab > Customize > *Legends*).

TIP: If you do not want hazmat routing to show up on maps, the highlighting can be hidden from view by turning off the **Hazardous Material** feature in the Map Features dialog box. Select the Map tab > Customize group > *Map Features....* and uncheck “Hazardous Material”, then click **OK** to save.



Beginning in Version 28, PC*MILER now offers users an integrated energy-focused map data set for the oil and gas industry. Through partnership with GEOTrac Systems Inc. of Calgary, ALK has created the PC*MILER|Energy data set that includes access roads and infrastructure coverage across states and provinces in North America where oil and gas wells are actively developed and known reserves are found.

PC*MILER|Energy is available as a separate add-on data module for PC*MILER. Your PC*MILER installation must also include the PC*MILER|Streets US and PC*MILER|Streets Canada data modules. With these three modules installed, PC*MILER|Energy gives users the ability to:

- plot the latitude/longitude of a wellhead and route directly to it, then view that route on the PC*MILER RouteMap;
- generate turn-by-turn directions on leased or bonded roads in and out of well sites and other facilities;
- switch between the base PC*MILER map data set, accessible to general users of PC*MILER, and the PC*MILER|Energy oil- and gas-specific data set;
- use the PC*MILER Import Custom Place Wizard to customize the PC*MILER database with specific wellhead and facility locations, and group those locations into one or more POI (points of interest) category (see section 3.13.4).



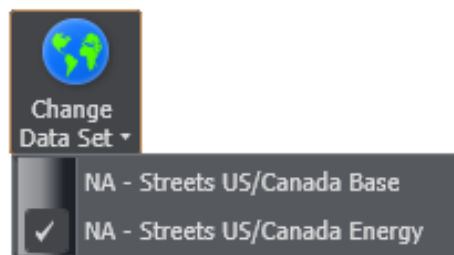
*Satellite View of PC*MILER Routing To a Wellhead Near Homer City, PA*

The PC*MILER|Energy road network in Version 28 includes approximately 288,550 miles of access roads that are not included in the base PC*MILER map data set. These roads are found in the following states and provinces: Alberta (Canada), Arkansas, Colorado, Louisiana, Mississippi, New York, North Dakota, Ohio, Oklahoma, Pennsylvania, Saskatchewan (Canada), Texas, Utah, West Virginia, and Wyoming.

13.1 Accessing the PC*MILER|Energy Data Set

With PC*MILER|Energy data purchased and installed, select the Map tab > Utilities group > *Change Data Set* and select *NA – Streets US/Canada Energy*. (If PC*MILER|Energy data has not been installed yet, see section 2.5.4.)

The currently loaded data set will be displayed in the title bar of the RouteMap window, shown at the bottom of each page in any reports that are generated, and checked in the *Change Data Set* menu. To switch to another data set, simply select it in the menu.



Change Data Set Menu

13.2 PC*MILER|Energy Routing and Mapping

With the *NA – Streets US/Canada Energy* data set selected, you are ready to generate PC*MILER routes directly to the latitude/longitude points where wellheads or other oil and gas facilities are located, using leased or bonded access roads to get there. For lat/long formats that PC*MILER accepts, see section 3.6.14.

Energy-specific access roads will be unlabeled on the RouteMap. When the cursor is placed over one of these roads, an “Energy Road” tooltip will appear.

The two maps shown below are zoomed into a wellhead location near Killdeer, North Dakota. The first map is drawn in PC*MILER’s default map style. The map style in the second image has been changed to *Satellite* to reveal the terrain surrounding the route. To change the map style, select the Map tab > Customize group > *Map Style*. An internet connection is required to display satellite images.

RouteSync by ALK Technologies is an add-on to PC*MILER that provides a direct link between two of ALK's existing industry-standard products: PC*MILER routing, mileage and mapping software in the back office and CoPilot Truck – ALK's truck-specific GPS navigation system – in the vehicle.

PC*MILER, synced with CoPilot Truck in the cab via RouteSync, now offers the transportation and logistics industry a unique tracking and route management capability. PC*MILER route compliance ensures that CoPilot Truck will follow user-defined routing (Practical, Hazmat, Toll Discouraged, etc.) that includes vehicle dimensions and custom avoid/favor routing preferences.

RouteSync is an ideal fit for motor carriers, private fleets and owner operators who need to maintain operational consistency between PC*MILER operations and accounting functions in the back office and their vehicles. It offers a flexible approach to minimizing the mileage variance between actual and planned routes.

14.1 Background

PC*MILER is ALK's routing, mileage and mapping software that's used by 98% of the top motor carriers and 96% of the top freight transportation firms in North America. The U.S. Department of Defense (DoD), the General Services Administration (GSA) and the Federal Motor Carrier Safety Administration (FMCSA) also rely on PC*MILER as their worldwide distance standard. Accuracy and reliability have positioned PC*MILER as the industry-standard software for the transportation and logistics industry.

CoPilot Truck is ALK's industry-leading GPS navigation system for truck-specific routing, offering an easy-to-use, intuitive interface with spoken turn-by-turn directions and easy to follow, non-distracting guidance displays. Unlike standard car navigation systems, its routing takes into account known truck restrictions to provide safe, reliable routes on truck-legal roads. CoPilot Truck calculates routes based on vehicle size and load type to avoid commercial truck restrictions, including vehicle dimension limits, low bridge heights and clearances, left-hand and dangerous turns, U-turns, and hazardous materials restrictions.

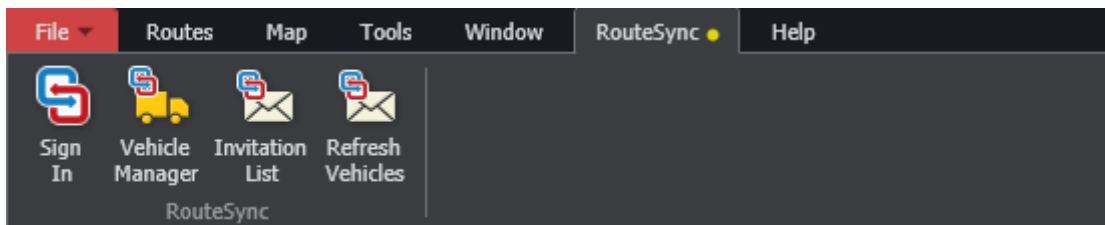
ALK's RouteSync integrates these two products, now allowing PC*MILER-optimized routes to be sent directly to CoPilot Truck running on numerous mobile devices.

From the back office, RouteSync can be used in the following ways:

- Send route information and trip options to CoPilot Truck
- Send a PC*MILER route's lat/long sequence to CoPilot Truck
- Tell CoPilot Truck how strictly its in-cab directions should follow the exact route calculated by PC*MILER for a trip
- Track a vehicle's route in real-time for up-to-the-minute actual vs. planned route comparisons
- Receive real-time Out-of-Route warnings and a trip summary of OoR events and miles on each trip
- Send avoid/favor routing preferences to all or selected vehicles.

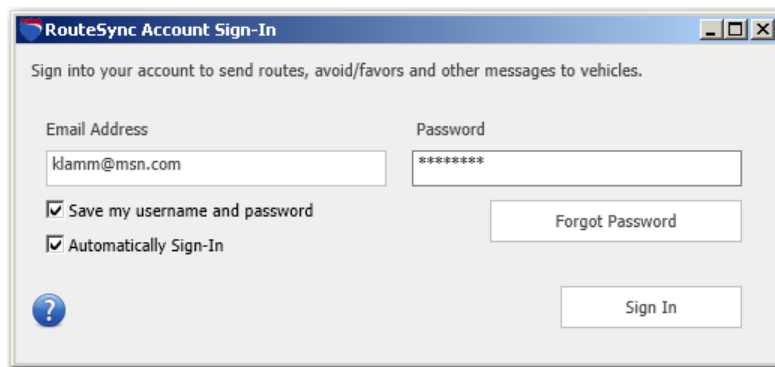
14.2 Getting Started With RouteSync

To begin using RouteSync, you must first sign in to the RouteSync account you set up when installing and activating PC*MILER. After signing in, you can start sending invitations to CoPilot Truck-equipped vehicles to begin communication. (Note that CoPilot users must be registered with CoPilot Live Messaging to be connected via RouteSync.) As soon as a vehicle's driver accepts your invitation, you'll be able to send routes and route options to that vehicle and receive alerts from CoPilot.



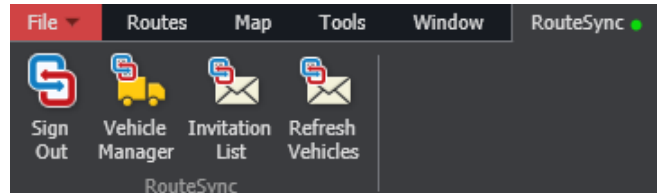
Follow these steps to get started:

1. Open PC*MILER and click the *Sign In* button in the RouteSync tab. The **Account Sign-In** prompt will pop up:

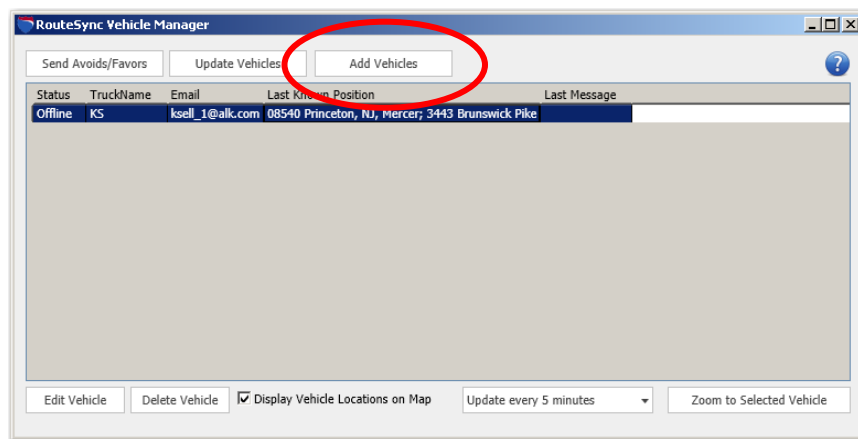


RouteSync Account Sign-In

2. Enter the email address and password that were used for activation when PC*MILER with RouteSync was installed. You have the option to have PC*MILER save your email and password to speed up future sign-ins (check “**Save my username and password**”). You can also choose to bypass this sign-in step in the future (check “**Automatically Sign-In**”).
3. If the sign-in attempt was successful, you will see the yellow icon on the RouteSync tab turn green:

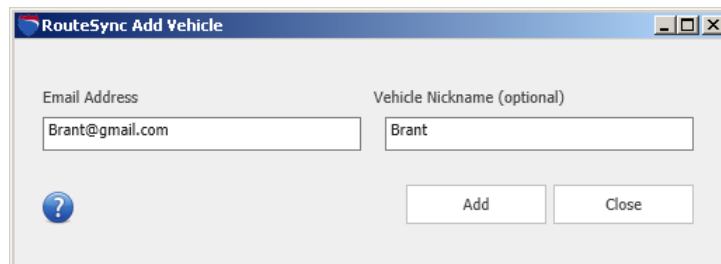


4. Now you can start inviting CoPilot-equipped vehicles to be managed through RouteSync. To send a new invitation, select the RouteSync tab > *Vehicle Manager* and click **Add Vehicles**.

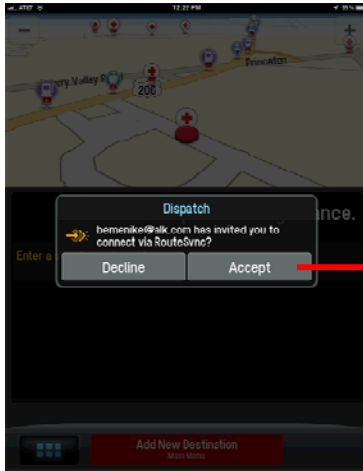


RouteSync Vehicle Manager

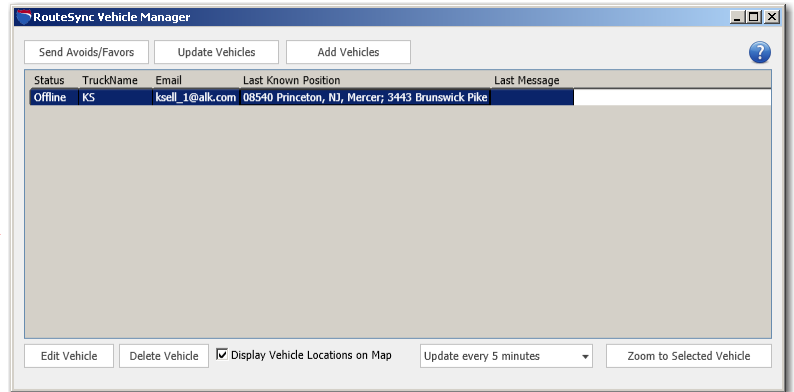
5. At the prompt, enter an **Email Address** for a CoPilot Truck user who is registered with CoPilot Live Messaging. Optionally, you can also enter a **Vehicle Nickname** for identification (this can be any name you choose, and may be edited at any time in the future). Click **Add** to send the invitation.



6. If the email address identifies an existing Live Messaging user, a Live message requesting tracking access will be sent and the CoPilot user will have the option to accept or decline the tracking request.
7. When the driver accepts, you will see the email and vehicle name (if entered) appear in the Vehicle List. Now two-way communication is established with the vehicle you added. In the Manager you can click **Update Vehicles** at any time to see the updated online/offline status and last known position of all listed vehicles.

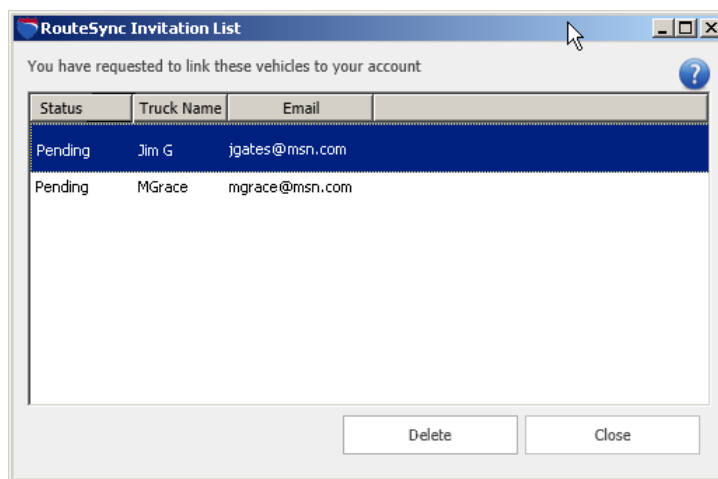


Invitation Received in CoPilot



Managed Vehicles Listed

8. You can click the *Invitation List* button in the RouteSync tab to see a list of invitations that have not yet received a response. If CoPilot is turned off on the driver's device, "**Offline**" will appear in the **Status** column. If the driver has not yet accepted an invitation but is online, the invitation will remain "**Pending**" on the list. To delete an invitation, highlight it on the list and click **Delete**.



*Invitation List in PC*MILER*

14.3 Sending Routes and Options from PC*MILER to CoPilot

The two general types of input that CoPilot Truck can receive in the cab from PC*MILER – *managed routes* and *unmanaged avoid/favor routing preferences* – are described below in sections 13.3.1 and 13.3.2.

14.3.1 Managed Routes

By sending a route to CoPilot, the sender requires the driver to adhere precisely to that route – in other words, the route is *managed*. The route and the driver's adherence to it are governed by a small number of options (described below). The location of a vehicle on a managed route can be displayed on the PC*MILER RouteMap and updated every five minutes. Whenever the CoPilot-equipped vehicle goes off route, CoPilot generates an alert for the driver that is also sent to the PC*MILER-side dispatcher (see section 14.4).

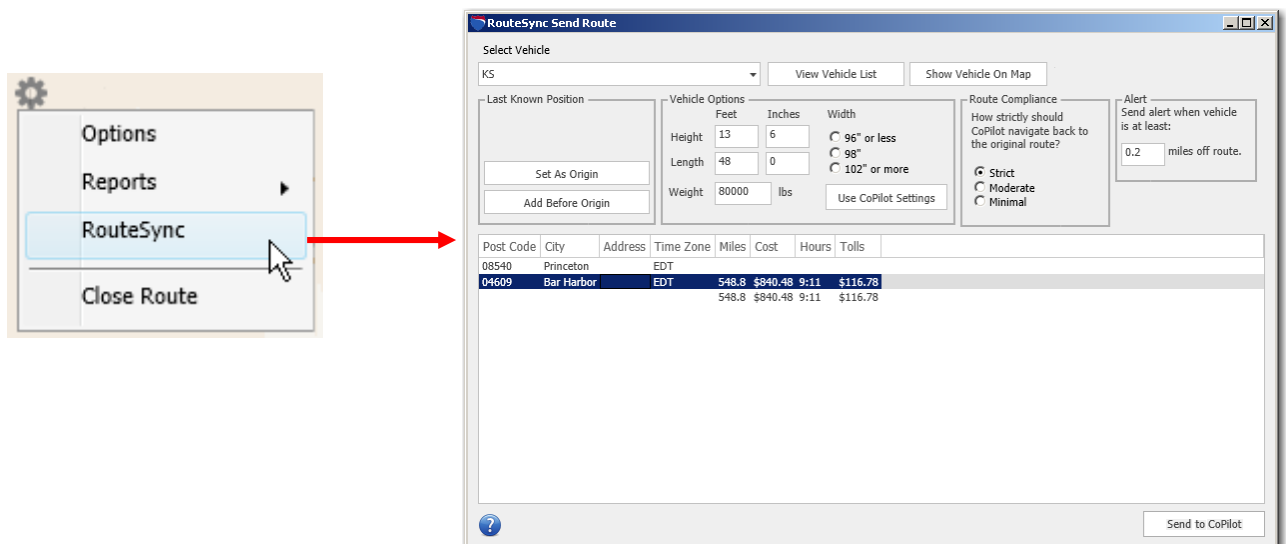
To send and track a managed route from PC*MILER to a vehicle equipped with CoPilot Truck with Live Messaging, follow the steps below.

1. Run a PC*MILER Route

In PC*MILER, open a route window, then enter and run the route you wish to send.

2. Open the Send Route Dialog

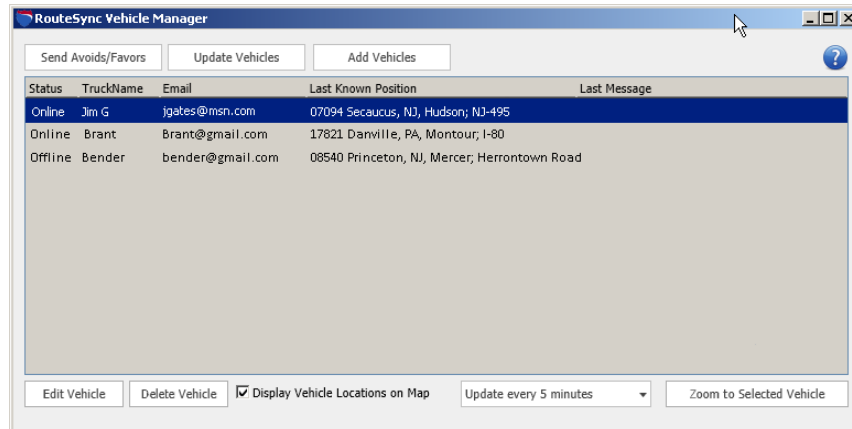
In the route window, click the gear button and select *RouteSync* from the menu to open the Send Route dialog.



RouteSync Send Route Dialog in PC*MILER

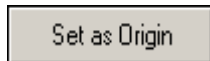
3. Select a Vehicle

In the *RouteSync* tab on the Ribbon, click the *Vehicle Manager* button then highlight a vehicle on the list in the Vehicle Manager. When you select a vehicle, its **Last Known Position** will be displayed if it is available. If a vehicle is offline, the route that you send will be received when CoPilot Truck comes back online in the vehicle.



Checking the Last Known Position of a Vehicle

4. Add the Vehicle Location to the Planned Trip

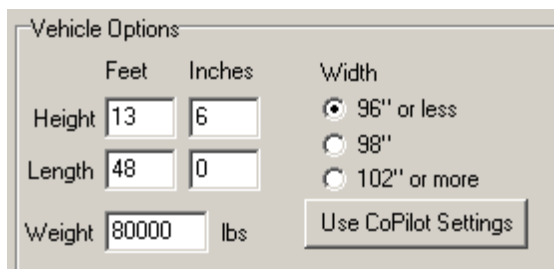


Click the **Set As Origin** button to set the vehicle's last known position as the planned route's origin, replacing the original origin. In this case, the entire trip becomes managed and the Out-of-Route miles get reported on a per trip basis.



Alternatively, you can click the **Add Before Origin** button to insert the last known position of the vehicle before the planned trip's origin. In this case, the leg from the truck's last known position to the trip's origin will be unmanaged.

5. Enter Vehicle Dimensions and Weight

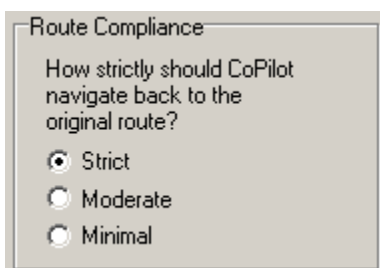


The 'Vehicle Options' dialog box contains the following fields and controls:

- Height: Input field with '13', followed by 'Feet' and 'Inches' labels.
- Length: Input field with '48', followed by 'Feet' and 'Inches' labels.
- Weight: Input field with '80000', followed by 'lbs' label.
- Width: Radio button options: '96" or less' (selected), '98"', and '102" or more'.
- A 'Use CoPilot Settings' button.

The vehicle dimensions and weight that will be used for the route are displayed under **Vehicle Options**. Click **Use CoPilot Settings** to query CoPilot for its vehicle options. When the query is returned, the vehicle options in CoPilot will replace the current PC*MILER options. If necessary, you can then choose to modify the new options before sending the route to CoPilot.

6. Select Route Compliance Level



The dialog box titled "Route Compliance" contains the text "How strictly should CoPilot navigate back to the original route?". Below this text are three radio button options: "Strict" (which is selected), "Moderate", and "Minimal".

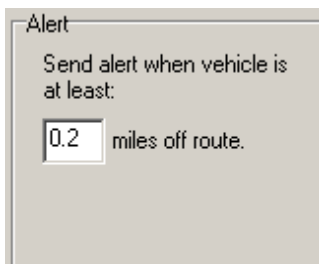
Under **Route Compliance**, you can select how strictly CoPilot should try to return to the original route once the driver is out-of-route:

Strict: This is the default compliance level. CoPilot will try to navigate back to the original route at all costs, even if it means the driver needs to turn around and drive back to rejoin the prescribed route.

Moderate: CoPilot will try to navigate back to the original route but will take into account the driver's current position in relation to the destination; i.e. CoPilot will try to rejoin the prescribed route as it navigates towards the destination, but along a route that is more reasonable than what the Strict compliance level would follow.

Minimal: At this level, the original prescribed route is not taken into consideration. The route taken may still rejoin the original route, but its first objective is to navigate to the destination from the driver's current position.

7. Set Distance for OoR Alert



The dialog box titled "Alert" contains the text "Send alert when vehicle is at least:". Below this text is a text input field containing the value "0.2" followed by the text "miles off route."

By default, an out-of-route alert is generated when the CoPilot-equipped vehicle reaches a point .2 miles away from the planned route. To adjust this distance, type in a new distance under **Alert**.

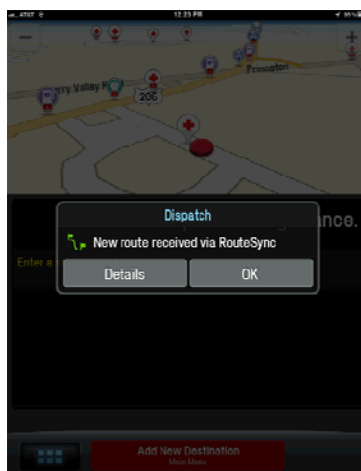
8. Send the Route



Click the active **Send to Copilot** button in the lower right corner of the Send Route dialog.

The CoPilot user will receive an onscreen alert that a managed route has been sent and may choose to click **OK** to accept the route, or **Details** to see driving instructions.

As soon as the driver interacts with the alert, the route will be accepted. If the driver does not interact with the alert, after 20 seconds the trip will automatically be accepted. At this point CoPilot Truck will begin navigation along the PC*MILER route that was sent.



New Managed Route Alert in CoPilot

14.3.2 Sending Avoids/Favors As Unmanaged Options

Avoid/favor routing preferences may be sent via RouteSync to an individual vehicle to modify an existing trip, or they can be sent to multiple vehicles. These preferences are considered to be *unmanaged* options because once they are received and accepted in CoPilot they are retained until the next time they are edited. Once received, these preferences will affect any routes that are run subsequently, regardless of whether the route is a PC*MILER-managed route or one that the driver initiated independently.

Avoid/favor preferences that are sent via RouteSync can include only road segments that are part of a set in the Avoid/Favor Manager in PC*MILER. Whole road and whole state preferences cannot be included.

Follow these steps to send avoids/favors:

1. To send avoid/favor preferences, first you must create them in PC*MILER (see section 11.1 on how to do this).
2. When the preferences are set the way you want them, click *Vehicle Manager* in the RouteSync tab on the Ribbon.
3. Highlight one or more vehicles by clicking them on the list. The list has a multiple selection property (you can hold down the **Ctrl** or **Shift** key to simultaneously select multiple vehicles).
4. Click **Send Avoids/Favors** to send.
5. When a vehicle receives the avoids/favors, a status message will appear in CoPilot and the favored and avoided roads will be highlighted on the CoPilot map.

14.3.3 Editing, Updating and Tracking Vehicles

RouteSync allows the PC*MILER user to view, edit and update vehicle information, and control the display of vehicles on the PC*MILER RouteMap.

14.3.3.1 Viewing, Editing and Updating Vehicles

Post Code	City	Address	Time Zone	Miles	Cost	Hours	Tolls
08540	Princeton		EDT				
04609	Bar Harbor		EDT	548.8	\$840.48	9:11	\$116.78
				548.8	\$840.48	9:11	\$116.78

RouteSync Send Route Dialog

View Vehicles:

Click **View Vehicle List** in the Send Route dialog to see a scrollable list of all vehicles that have been accepted to be managed. Vehicles are listed by their associated CoPilot ID under **Truck Name**. For each vehicle, PC*MILER displays an online/offline **Status** in the first column and the last known position. For trucks that are offline, the date/time when the truck went offline is shown. The last column in the Vehicle List records the last message that the dispatcher received from a truck, including a timestamp and message description. From the Vehicle Manager you can zoom to a vehicle on the map if needed.

Delete Vehicle:

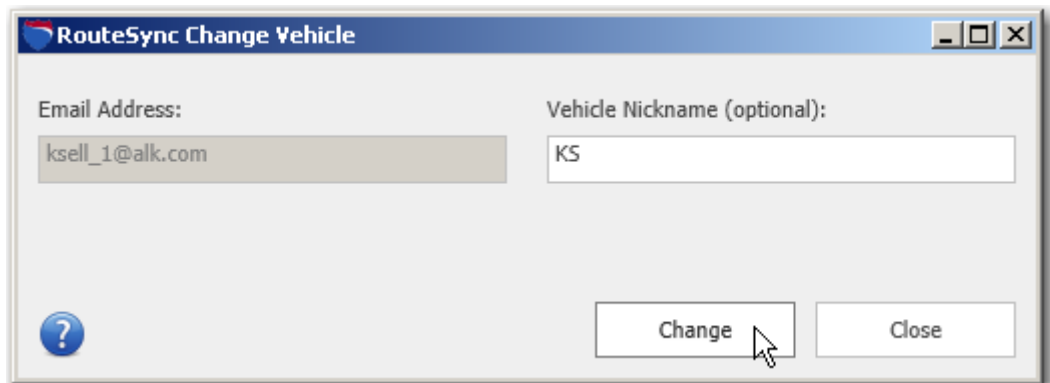
You can delete a CoPilot ID and not track that CoPilot user any longer by highlighting it on the list in the Vehicle Manager and clicking **Delete Vehicle**. The list has a multiple selection property (hold down the **Ctrl** or **Shift** key when selecting multiple vehicles) that enables you to delete more than one vehicle at a time. The driver does not receive an alert from this action.

Update Vehicles:

To refresh the information in the Vehicle Manager, click **Update Vehicles**.

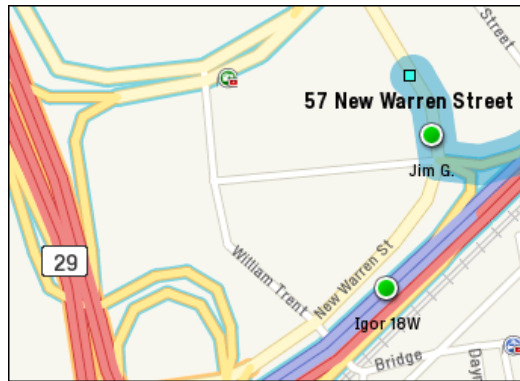
Edit Vehicle:

Click **Edit Vehicle** in the Vehicle Manager to edit the vehicle name that is highlighted. The email address that identifies the CoPilot device cannot be edited.



Editing a Vehicle Name

14.3.3.2 Vehicle Display on the RouteMap



Two Online Vehicles on the RouteMap

Zoom to Selected Vehicle:

In the Vehicle Manager, click **Zoom to Selected Vehicle** to zoom to the vehicle's last known position on the PC*MILER map (**Display Vehicle Locations on Map** must be checked at the bottom of the window). The vehicle is represented on the map by a round green or red icon – green for online or red for offline.



Update Frequency:

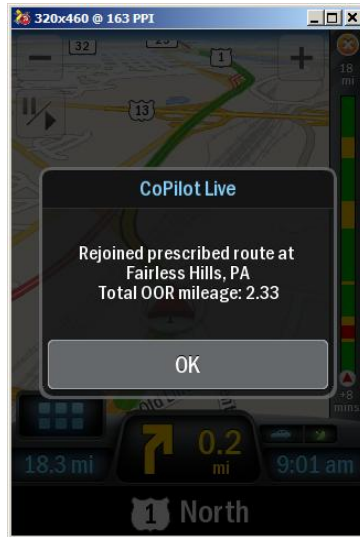
To set how often the information in the list will be automatically updated, click the down arrow in the “**Update every...**” pick list at the bottom of the Vehicle Manager and choose an interval from the choices provided. By default the list automatically updates every 5 minutes.

14.4 CoPilot Truck OoR Output to PC*MILER

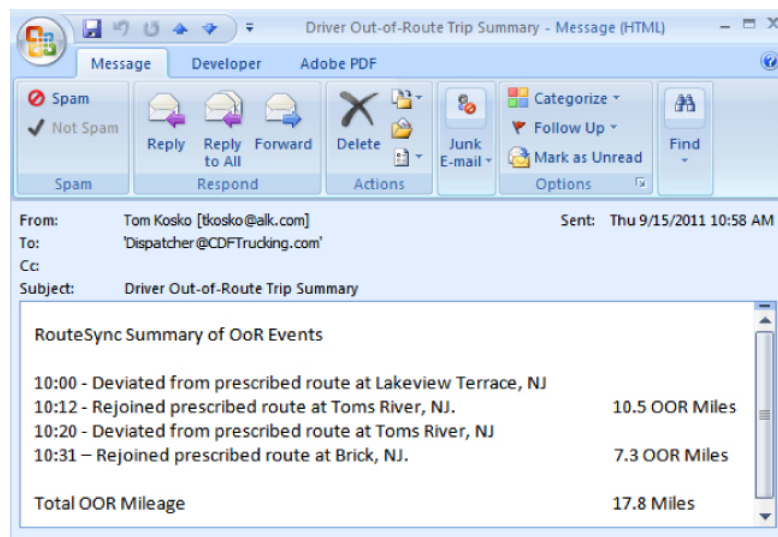
An out-of-route alert is automatically triggered whenever a vehicle's position departs .2 miles from the managed route it received via RouteSync. (The distance that triggers an alert can be changed – see section 14.3.1.)

Another alert is generated when the vehicle rejoins the planned route. These alerts appear on the CoPilot user's screen, and are also sent via CoPilot Live messaging to the PC*MILER user at the email address that is registered with RouteSync.

Additionally, when a vehicle reaches its destination, a RouteSync Summary of OoR Events is triggered and sent to the PC*MILER user. This summary lists all OoR events that occurred on the trip and shows the total OoR mileage for the trip.



Rejoined Route Alert in CoPilot



Summary of OoR Events in Email Message

15.1 Technical Support Options

ALK Technologies offers one year of free unlimited technical support to all registered users of PC*MILER. If you have unresolved questions about PC*MILER or problems with the software, visit us at www.alk.com/support for answers to frequently asked questions (FAQ) or contact us in the following ways:

Phone: 1.800.377.6453, ext 2 or 609.683.0220, ext. 2. When calling, ask for PC*MILER Technical Support. Please be sure to have your PC*MILER Product Key Code, version number, Windows® version number, and hardware configuration information (manufacturer, speed, and monitor type) available before your call. Please include this information in your message if you are contacting us by email.

Email: pcmsupport@alk.com, or from within PC*MILER select the Help tab > Technical Support group > *Email Technical Support* and follow the instructions provided. If you have any supporting material, click **Attach File** and browse for the file(s) to attach. Attachments of supporting documentation can be **up to 10 MB**. When ready, click **Send**. ALK's technical support team will send a confirmation email to the email entered in the "Enter your email here" field when it is received.

Web Site: www.pcmiler.com

Hours: 9:00am – 5:00pm EST, Mon-Fri

To print additional copies of this *User's Guide*, click the Windows **Start** button, then go to **All Programs > PCMILER 28 > User Guides** and select the .pdf file from the sub-menu.

15.2 PC*MILER Sales Contact Information

Phone: 800.377.6453, ext 1
609.683.0220 (outside the U.S.)

Fax: 609.683.0290

Email: sales@alk.com

Web Site: www.alk.com/support

Address: ALK Technologies, Inc.
457 North Harrison Street
Princeton, NJ 08540 USA

15.3 PC*MILER Updates

A new, updated release of PC*MILER is offered on an annual basis. Updated releases of PC*MILER|Worldwide and DTOD data are provided annually several months following the PC*MILER for North America release. Updates may include revisions to the software, updates to the North American and Worldwide highway and road network databases, and updates to the SPLC and ZIP/Postal code databases. To order your annual update contact ALK Technologies, Inc. or your PC*MILER dealer.

Between version releases, updates and patches are periodically made available as the need arises. These may include corrections to any reported errors in the software or data, or access to new data releases (for applicable products and license types*). Note that these patches and updates are now cumulative, meaning they include items from previously released patches/updates of the same type. **ALK strongly recommends checking for the most current updates regularly. This is recommended for all users, but particularly important for PC*MILER|Tolls users.**

*** NOTE:** If a PC*MILER product was purchased along with signing up for ALK's Annual Update Program (AUP license purchase), customers are entitled to use PC*MILER during the term of their agreement as well as to receive data updates when and if available. AUP licensed users will have access to the base version data set as well as to any more recently released data sets as they are available, if they are downloaded and installed. For those who do not sign up for the AUP, PC*MILER is purchased as a Perpetual license which entitles the licensed user to any available software patches released for the purchased version, and any available toll data updates if PC*MILER|Tolls was purchased.

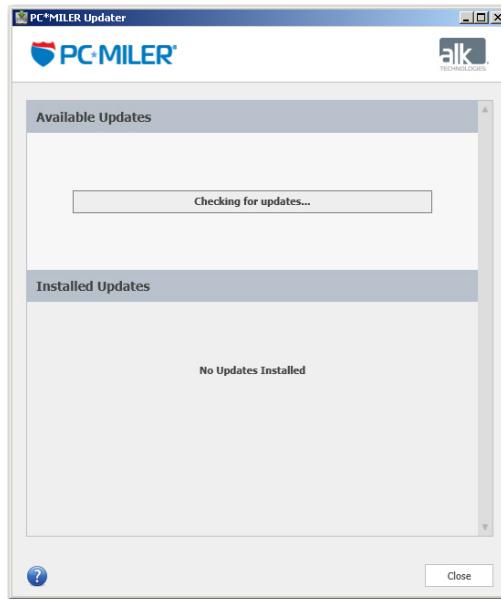
For more information on upgrading a Perpetual license to an AUP license, please contact an Enterprise Solutions account executive at 800-377-6453 ext. 1 or email sales@alk.com.

15.3.1 Using the Updater Tool

Provided you have an internet connection, follow the steps below to install the available updates:

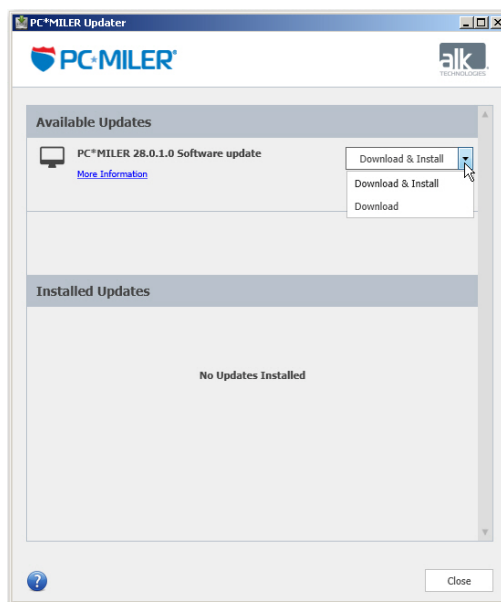
1. Close all open instances of PC*MILER and its connectivity products. If a third-party program that accesses any PC*MILER component is running, (for example, PC*MILER|Connect or PC*MILER|Mapping) it must be closed before updating.
2. Open PC*MILER and select the Help tab > Windows group > *Check for Updates*. The PC*MILER Updater dialog will open. The Updater first

checks for valid license information and then begins checking for available updates.



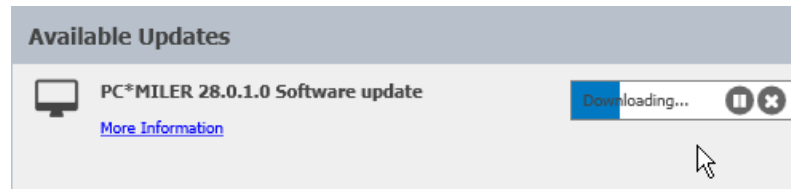
*PC*MILER Updater*

3. When the search for updates is complete you will see all available updates listed. In the **Download & Install** drop-down menu next to each available update, select either *Download & Install* to download and install right away or *Download* to download now and install at a later time.



Download and Install Options

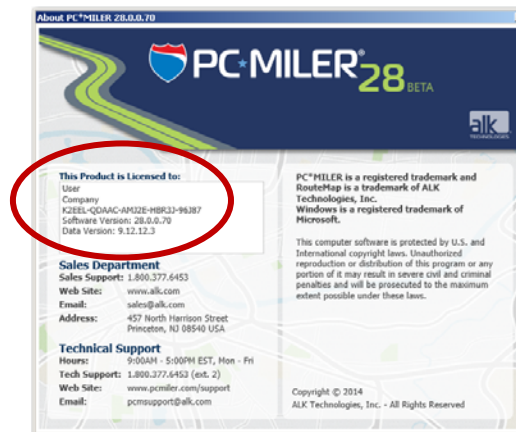
- Note the version number of the updates you will be downloading so you can check if the update installed properly (see Step 7 below).
- Selecting either option will begin the download process. You will see the progress of the download reflected in a progress bar. If any PC*MILER-related application is open, you will be prompted to close it. After closing the application(s), click **OK** to continue with the download.



- If you chose *Download and Install*, the InstallShield Wizard will open when the download is finished. Follow the instructions to complete the installation. After installing, you will see the update listed under “Installed Updates” in the Updater window.

If you chose *Download*, when the download is finished the button to the right will now say “Install”. You can complete the installation as described above at any time in the future by opening the Updater window and clicking **Install**.

- As a last step, check to make sure the update installed properly. Select the Help tab > About group > *About...* and look for the Software Version number under “This Product is Licensed To”. It should match what you downloaded.



*PC*MILER “About” Window*

15.4 Reporting Data Errors

ALK Technologies' North American and Worldwide highway and road networks – the primary databases used by PC*MILER products – undergo constant revision. Revisions include the addition of new roads, upgrades of improved sections of highway, and addition of new Key Cities.

ALK Technologies is dedicated to maintaining a highway and street-level network of the highest quality and welcomes user input and comments. If you encounter any problems related to mileage, routing or highway names, from within PC*MILER please go to the Help tab > Technical Support group > *Email Data Correction* and follow the on-screen guidelines to submit the issue. Supporting documentation can be attached to this email form, just click the **Attach File** button and browse for the file. Attachments can be up to 10 MB.

When you are finished filling out the form, click **Send** to send it. Our digital cartography team will make every effort to correctly analyze and incorporate your data suggestions.

You can also print a copy of the route, highlighting the problem (such as incorrect road name, mileage, city name, postal code) and send it to:

PC*MILER Products Division
ALK TECHNOLOGIES, INC.
457 North Harrison Street • Princeton, NJ 08540 • USA
Email: pcmsupport@alk.com

ALK® Technologies, Inc., a Trimble® company headquartered in Princeton, NJ, was founded in 1979 as a transportation industry pioneer. ALK harnesses the power of information technology to enhance transportation and mobility, supporting competitive advantage and improved quality of life.

Today, ALK is a global leader in GeoLogistics® Solutions and navigation software. GeoLogistics is our portfolio of specialized enterprise solutions for worldwide routing, mileage and mapping, used by customers in transportation, logistics, manufacturing, mobile workforce management and government. Our commercial trucking applications are relied upon by companies worldwide and our in-vehicle GPS navigation and route guidance solutions are among the most award-winning solutions in the world.

We pride ourselves on being a market leader in transportation and travel technology. ALK's leadership in applying that technology to solve important problems continues as strongly today as when we began over 30 years ago. Now part of Trimble's international Transportation and Logistics division, we remain committed to providing our customers with solutions that work for them to lower costs, improve service and safety and minimize harm to the environment.

See section 16.1 below for an overview of ALK's Enterprise Solutions. For detailed product information, visit us at www.alk.com or www.pcmiler.com.



16.1 Enterprise Solutions from ALK Technologies

Contact an Enterprise Solutions account executive to find out how the following value-add on solutions can boost productivity, reduce out-of-route mileage and improve return on investment.

- **PC*MILER** — PC*MILER is truck-specific, point to point routing, mileage and mapping software that the transportation and logistics industry depends on to succeed. Accuracy and reliability have positioned PC*MILER as the software used by 98 of the top 100 motor carrier, 46 of the top 50 freight transportation firms and 47 of the top 50 logistics companies in North America. The U.S. Department of Defense (DoD), the General Services Administration (GSA) and the Federal Motor Carrier Safety Administration (FMCSA) also rely on PC*MILER as their worldwide distance standard.
- **PC*MILER|Streets** — PC*MILER|Streets is street-level routing, mileage and mapping software designed to provide dock-to-dock driving directions over truck-specific routes. It includes all the features and functionality of PC*MILER plus an enhanced street-level routing network, map database, and street address database. Ensure that your vehicles and loads get to the right place using the most precise truck-specific route possible, taking into consideration truck-preferred and truck-restricted roads. PC*MILER|Streets data is available for the U.S. and Canada and, with PC*MILER|Worldwide, for many countries outside North America.
- **PC*MILER|Traffic** — PC*MILER|Traffic calculates more accurate transit times and ETAs with real time, historical and predictive traffic speed data. It allows visualization of traffic trends directly on the PC*MILER map. PC*MILER|Traffic includes a “Fastest” routing type that optimizes overall transit time, taking into account real time traffic congestion and predictive traffic speeds, by the hour and by the day.
- **PC*MILER|Tolls** — PC*MILER|Tolls calculates truck-specific toll costs based on a vehicle’s weight, axle count, trailer count, transaction type (cash or discount program), and time of day travel in the U.S. and Canada. It is driven by the same technology and map data set as ALK’s industry-standard PC*MILER routing, mileage and mapping software. When generating routes, truck-specific toll costs are added into a route’s overall calculation. Determine whether it’s more cost-effective to take a toll route, or a non-toll route with a few additional miles, before routing a vehicle.
- **PC*MILER|HazMat** — PC*MILER|HazMat generates point to point and street-level routes, mileage and driving directions for hauling hazardous materials and dangerous goods in the U.S. and Canada. Federal government mandates state that shippers and carriers are to implement security plans regarding the transport of hazardous materials. A major step in that process is providing drivers with routes and mileage that ensure compliance with these

federal, state/province and local restrictions and route designations. To ensure fleet and driver safety, PC*MILER|HazMat identifies where drivers should legally be traveling for the particular type of hazardous commodity they are hauling.

- **PC*MILER|Worldwide** — PC*MILER|Worldwide is point-to-point routing, mileage and mapping software that generates routes, distances, maps and driving directions over the entire international highway network. Employ the functionality of PC*MILER across worldwide data coverage, including Africa, Asia, Europe, the Middle East, North America, Oceania, and South America. Additionally, street-level address data modules are available for the U.S. and Canada, Europe, and many countries in worldwide regions.
- **PC*MILER|Rail** — PC*MILER|Rail is the rail and logistics industry's leading routing, mileage and mapping software. Widely used in fuel surcharge calculation, equipment management, rail car mileage auditing, carrier selection, rate determination and negotiation, and ad valorem tax reporting, PC*MILER|Rail determines actual operating or fuel surcharge routes and mileage using station/state abbreviations or railroad industry codes. Through ALK's close working relationship with all major railroads, PC*MILER|Rail features the most accurate digital representation of the North American rail network.
- **CoPilot[®] Truck** — CoPilot Truck offers an easy to use, intuitive interface with spoken turn-by-turn directions and easy to follow, non-distracting guidance displays. Unlike standard car navigation systems, it calculates efficient routes based on your vehicle profile information, routing parameters and load type, including hazardous materials. Running conveniently on a wide range of smartphones, tablets and laptops, CoPilot Truck uses street-level ALK Digital Maps™ enhanced with industry standard PC*MILER truck-specific attributes featuring 3.52 million commercial truck restrictions and allowances. With powerful multi-stop routing it effortlessly provides the optimal route for any itinerary, while automatically avoiding commercial truck restrictions to increase efficiency, reduce mileage and help avoid costly fines and vehicle damage.

CONNECTIVITY and INTERFACE PRODUCTS

- **PC*MILER|Connect** — PC*MILER|Connect seamlessly interfaces PC*MILER routes, mileage and reports with third-party and custom systems, such as transportation and logistics management software systems. Client applications are able to retrieve PC*MILER distances, detailed driving directions, drive times, state-by-state mileage summaries, stop optimization functionalities and more.

-
- **Multi-Version Switch (MVS)** — Multi-Version Switch is a high-end function of PC*MILER|Connect that serves as an integration tool designed to simultaneously support multiple versions of PC*MILER that are installed on one server or on several different servers. Instead of manually querying data from each individual version, the Multi-Version Switch functions as the main connection point to programmatically gain access to the version of choice.
 - **PC*MILER Web Services** — PC*MILER Web Services is an integration tool designed to efficiently fulfill all PC*MILER routing, mileage and mapping transactions in a simple hardware and software-agnostic system interface to any computing platform. It offers a standardized way of integrating PC*MILER with Web Services, .NET, or Web-based applications using XML (Extensible Markup Language) and SOAP (Simple Object Access Protocol) over an Internet Protocol Backbone – all developed in Microsoft® .NET.
 - **PC*MILER|Mapping** — PC*MILER|Mapping seamlessly interfaces PC*MILER routes and geographic data on maps for integration with real-time dispatch and operations analysis programs. PC*MILER|Mapping allows you to include commands in spreadsheets, databases and custom systems to obtain a visual overview of your data.
 - **PC*MILER|Spreadsheets** — PC*MILER|Spreadsheets gives you the ability to access PC*MILER features and functionality from within your own spreadsheet software. Generate point-to-point or street-level mileage and drive times within a spreadsheet program, and then use built-in functions to summarize and analyze your data. PC*MILER|Spreadsheets provides a seamless interface with PC*MILER and Microsoft® Excel®, allowing you to perform customized data analyses.
 - **PC*MILER|BatchPro** — PC*MILER|BatchPro is a batch-processing tool that permits the simultaneous processing of large volumes of lanes (set as origin/destination pairs) entered as city/state combinations, ZIP or Postal Codes, or latitude/longitude coordinates rather than entering routes individually. It gives you the ability to generate routes, mileage, as well as cost and time information per route.
 - **PC*MILER|TCP/IP** — PC*MILER|TCP/IP is an integration tool that provides an interface to PC*MILER|Connect running in a Windows® environment to an application residing on another platform. Through a TCP/IP network, client applications can access a text-based interface to call PC*MILER|Connect's features and functionality. The interface opens cross platform communications in a thread-safe manner, giving you the flexibility to transmit the output of PC*MILER|Connect to multiple networks within your organization.

ADDITIONAL DATA MODULES

- **Canadian Postal Codes** — Enhance the PC*MILER database with six-digit Canadian Postal Codes. Enables search and display of corresponding city/province names to enter them as stops along a route.
- **Standard Point Location Codes (SPLC)** — Add SPLC to the PC*MILER database to generate routes for rating and freight bill auditing. A SPLC provides each point originating freight and each point receiving freight in North America with a unique code number that identifies the point by its geographic location.
- **PC*MILER|Energy** — Provides oil- and gas-specific data and facilities including bonded or leased access roads. Users can now generate driving directions that take them directly to facilities including off-road wells, compressor stations, and plants.

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APPENDICES

on the following pages

- A: Access Policies for the National Network**
- B: Canadian Counties**
- C: State/Province/Country Abbreviations**
- D: Valid Entries for Street Addresses**
- E: Default Road Speeds by Jurisdiction**
- F: Toll Plaza Names in Reports**
- G: Toll Roads Requiring Electronic Payment**
- H: Postal Code Formats in Worldwide Regions**

Reasonable Access Defined

Reasonable access is the deviation allowed between the specified truck network and any allowable stops. A stop is typically defined as a place of loading or unloading or facilities for food, fuel, repairs and rest. In all cases, local signs and warnings prohibiting truck access or providing an applicable restriction take precedence over reasonable access rules. In some states the deviation allowed from the National Network or 53 Foot Designated Truck Network may vary depending on the roads used to get to the stop. If this is the case, we have differentiated between reasonable access from the truck route and on a state highway versus local roads.

For detailed information about pre-approved routes, contact the individual states.

State	National Network	53 Foot Designated Truck Network	Notes
Alabama	1 mile on state highways; 1 mile on local roads	1 mile on state highways; 1 mile on local roads	One mile of reasonable access is allowed as long as the pavement is 12' wide.
Alaska	Unlimited on state highways; Unlimited on local roads	Unlimited on state highways; Unlimited on local roads	
Arizona	1 mile on state highways; 1 mile on local roads	1 mile on state highways; 1 mile on local roads	
Arkansas	Unlimited on state highways; 1 mile on local roads	Unlimited on state highways; 1 mile on local roads	
California	1 mile on state highways; 1 mile on local roads	No access on state highways; No access on local roads	Reasonable access of one mile off of the National Network is only allowed where the "S" sign indicates.
Colorado	Unlimited on state highways; 1 mile on local roads	Unlimited on state highways; 1 mile on local roads	
Connecticut	1 mile on state highways; 1 mile on local roads	1 mile on state highways; 1 mile on local roads	Reasonable access of one mile is permitted for access to a place of loading or unloading, terminals, food, fuel, repair and rest. Commercial vehicles are not allowed on parkways.

Delaware	1 mile on state highways; 1 mile on local roads	1 mile on state highways; 1 mile on local roads	
District of Columbia	No access on state highways; No access on local roads	No access on state highways; No access on local roads	All 53' trailers require a permit for reasonable access.
Florida	Unlimited on state highways; 1 mile on local roads	Unlimited on state highways; 1 mile on local roads	
Georgia	1 mile on state highways; 1 mile on local roads	1 mile on state highways; 1 mile on local roads	
Hawaii	Unlimited on state highways; Unlimited on local roads	Unlimited on state highways; Unlimited on local roads	
Idaho	Unlimited on state highways; 1 mile on local roads	Unlimited on state highways; 1 mile on local roads	A 53' trailer is legally allowed to travel on all state roads without other restrictions, such as height or weight, to their delivery point.
Illinois	5 miles on state highways; 1 mile on local roads	1 mile on state highways; 1 mile on local roads	Reasonable access of five miles on state roads from Class I-III roads is permitted unless prohibited by other restrictions, such as height or weight, to a place of loading or unloading, terminals, food, fuel, repair and rest. Reasonable access of one mile on roads from Class I roads is permitted unless prohibited by other restrictions, such as height or weight, to a place of loading or unloading, terminals, food, fuel, repair and rest.
Indiana	Unlimited on state highways; 1 mile on local roads	Unlimited on state highways; 1 mile on local roads	Non-permitted loads are legally allowed to travel on all state roads without other restrictions, such as height or weight, to their delivery point.
Iowa	1 mile on state highways; 1 mile on local roads	1 mile on state highways; 1 mile on local roads	
Kansas	Unlimited on state highways; 1 mile on local roads	Unlimited on state highways; 1 mile on local roads	A 53' trailer is legally allowed to travel on all state roads without other restrictions, such as height or weight, to their delivery point.

Kentucky	5 miles on state highways; 1 mile on local roads	1 mile on state highways; 1 mile on local roads	Please see Section 5 of 603 KAR 5:250, "Selection of National Truck Network highways and reasonable access to these highways", for exceptions.
Louisiana	10 mile on state highways; 10 mile on local roads	10 mile on state highways; 10 mile on local roads	
Maine	Unlimited on state highways; 1 mile on local roads	Unlimited on state highways; 1 mile on local roads	
Maryland	1mile allowed off for food, fuel, rest or shortest practical route to destination.	1mile allowed off for food, fuel, rest or shortest practical route to destination.	The shortest practical access route between a highway designated [as national network or state oversize] and a truck terminal, point of origin or destination cargo must be used.
Massachusetts	Unlimited on state highways; 1 mile on local roads	Unlimited on state highways; 1 mile on local roads	
Michigan	5 miles on state highways; 1 mile on local roads	5 miles on state highways; No access on local roads	Reasonable access of five miles is permitted on state roads for access to terminals, food, fuel, repair and rest. Reasonable access of one mile on local roads is only permitted off of interstate freeways.
Minnesota	1 mile on state highways; 1 mile on local roads	1 mile on state highways; 1 mile on local roads	
Mississippi	Unlimited on state highways; 1 mile on local roads	Unlimited on state highways; 1 mile on local roads	A 53' trailer does not require a permit, so it is legally allowed to travel on all state roads without other restrictions, such as height or weight, to their delivery point.
Missouri	10 miles on state highways; 10 miles on local roads	10 miles on state highways; 10 miles on local roads	
Montana	Unlimited on state highways; 1 mile on local roads	Unlimited on state highways; 1 mile on local roads	A 53' trailer does not require a permit, so it is legally allowed to travel on all state roads without other restrictions, such as height or weight, to their delivery point.
Nebraska	Unlimited on state highways; 1 mile on local roads	Unlimited on state highways; 1 mile on local roads	Non-permitted loads are legally allowed to travel on all state roads without other restrictions, such as height or weight, to their delivery point.

Nevada	Unlimited on state highways; 1 mile on local roads	Unlimited on state highways; 1 mile on local roads	A 53' trailer does not require a permit, so it is legally allowed to travel on all state roads without other restrictions, such as height or weight, to their delivery point.
New Hampshire	1 mile on state highways; 1 mile on local roads	1 mile on state highways; 1 mile on local roads	Reasonable access of one mile is permitted on roads without other restrictions, such as height or weight, to a place of loading or unloading, terminals, food, fuel, repair and rest.
New Jersey	Unlimited on state highways; Unlimited on local roads	Unlimited on state highways; Unlimited on local roads	
New Mexico	Unlimited on state highways; 1 mile on local roads	Unlimited on state highways; 1 mile on local roads	A 53' trailer does not require a permit, so it is legally allowed to travel on all state roads without other restrictions, such as height or weight, to their delivery point.
New York	1 mile on state highways; 1 mile on local roads	No access on state highways; No access on local roads	
North Carolina	3 miles on state highways; 3 miles on local roads	3 miles on state highways; 3 miles on local roads	Reasonable access of three miles is permitted on roads without other restrictions, such as height or weight, to terminals, food, fuel, repair and rest.
North Dakota	Unlimited on state highways; 1 mile on local roads	Unlimited on state highways; 1 mile on local roads	A 53' trailer does not require a permit, so it is legally allowed to travel on all state roads without other restrictions, such as height or weight, to their delivery point.
Ohio	Unlimited on state highways; 1 mile on local roads	Unlimited on state highways; 1 mile on local roads	
Oklahoma	Unlimited on state highways; 1 mile on local roads	Unlimited on state highways; 1 mile on local roads	Non-permitted loads are legally allowed to travel on all state roads without other restrictions, such as height or weight, to their delivery point.
Oregon	1 mile on state highways; 1 mile on local roads	1 mile on state highways; 1 mile on local roads	
Pennsylvania	1 mile on state highways; 1 mile on local roads	1 mile on state highways; 1 mile on local roads	One mile of reasonable access is allowed as long as the pavement is 10' wide.
Rhode Island	1 mile on state highways; 1 mile on local roads	1 mile on state highways; 1 mile on local roads	

South Carolina	Unlimited on state highways; 1 mile on local roads	Unlimited on state highways; 1 mile on local roads	
South Dakota	Unlimited on state highways; 1 mile on local roads	Unlimited on state highways; 1 mile on local roads	A 53' trailer is legally allowed to travel on all state roads without other restrictions, such as height or weight, to their delivery point.
Tennessee	15 miles on state highways; 15 miles on local roads	15 miles on state highways; 15 miles on local roads	
Texas	Unlimited on state highways; 1 mile on local roads	Unlimited on state highways; 1 mile on local roads	
Utah	Unlimited on state highways; 1 mile on local roads	Unlimited on state highways; 1 mile on local roads	A 53' trailer does not require a permit, so it is legally allowed to travel on all state roads without other restrictions, such as height or weight, to their delivery point.
Vermont	1 mile on state highways; 1 mile on local roads	1 mile on state highways; 1 mile on local roads	
Virginia	1 mile on state highways; 1 mile on local roads	1 mile on state highways; 1 mile on local roads	Reasonable access of one mile is permitted on roads without other restrictions, such as height or weight, to terminals, food, fuel, repair and rest, except in incorporated towns and cities as well as Henrico and Arlington Counties.
Washington	Unlimited on state highways; 1 mile on local roads	Unlimited on state highways; 1 mile on local roads	A 53' trailer does not require a permit, so it is legally allowed to travel on all state roads without other restrictions, such as height or weight, to their delivery point.
West Virginia	2 miles on state highways; 2 miles on local roads	2 miles on state highways; 2 miles on local roads	Reasonable access of two miles is permitted on roads without other restrictions, such as height or weight, to terminals, food, fuel, repair and rest.
Wisconsin	5 miles on state highways; 5 miles on local roads	5 miles on state highways; 5 miles on local roads	
Wyoming	Unlimited on state highways; 1 mile on local roads	Unlimited on state highways; 1 mile on local roads	Non-permitted loads are legally allowed to travel on all state roads without other restrictions, such as height or weight, to their delivery point.

Appendix B: Canadian Counties

Canadian Counties that are included in the PC*MILER database are listed below. Regional districts and other types of sub-divisions that exist within Canadian provinces and territories are not included in the database and therefore not listed.

<u>Province</u>	<u>Counties</u>
<i>Alberta</i>	<i>(No Counties)</i>
<i>British Columbia</i>	<i>(Contains a County)</i> CARIBOO
<i>Manitoba</i>	<i>(No Counties)</i>
<i>New Brunswick</i>	<i>(Contains Counties)</i> ALBERT CARLETON CHARLOTTE GLOUCESTER KENT KINGS MADAWASKA NORTHUMBERLAND QUEENS RESTIGOUCHE ST. JOHN SUNBURY VICTORIA WESTMORLAND YORK
<i>Newfoundland and Labrador</i>	<i>(No Counties)</i>
<i>Northwest Territories</i>	<i>(No Counties)</i>

Nova Scotia

(Contains Counties)

ANNAPOLIS
ANTIGONISH
CAPE BRETON
COLCHESTER
CUMBERLAND
DIGBY
GUYSBOROUGH
HALIFAX
HANTS
INVERNESS
KINGS
LUNENBURG
PICTOU
QUEENS
RICHMOND
SHELBURNE
VICTORIA
YARMOUTH

Nunavut

(No Counties)

Ontario

(Contains Counties)

ALGOMA
BRANT
BRUCE
COCHRANE
DUFFERIN
DURHAM
ELGIN
ESSEX
FRONTENAC
GREY
HALDIMAND
HALIBURTON
HASTINGS
HURON
KENORA
KENT
LAMBTON
LANARK
MANITOULIN
MIDDLESEX
NIPISSING
NORFOLK
NORTHUMBERLAND

OTTAWA - CARLETON
OXFORD
PARRY SOUND
PERTH
PETERBOROUGH
PRINCE EDWARD
RAINY RIVER
RENFREW
SIMCOE
SUDBURY RM
THUNDER BAY
TIMISKAMING
TORONTO
VICTORIA
WELLINGTON

**Prince Edward
Island**

(Contains Counties)

KINGS
PRINCE
QUEENS

Quebec

(Contains Counties)

ABITIBI-TEMISCAMINGUE
BAS-SAINT-LAURENT
CENTRE-DU-QUEBEC
CHAUDIERE-APPALACHES
COMMUNAUTE-URBAINE-DE-MONTREAL
COTE-NORD
ESTRIE
GASPESIE - ILES-DE-LA-MADELEINE
LA CÔTE-DE-BEAUPRÉ
LANAUDIERE
LAURENTIDES
LES JARDINS-DE-NAPIERVILLE
MAURICIE
MONTEREGIE
MONTREAL
OUTAOUAIS
QUEBEC
ROUVILLE
SAGUENAY - LAC-SAINT-JEAN

Saskatchewan

(No Counties)

Yukon

(No Counties)

States/Provinces in the U.S., Canada, Mexico & Australia

(For country abbreviations in North America, see “North America” in the Country Codes section of this appendix)

States/Provinces in the United States & Canada

AL	Alabama
AK	Alaska
AB	Alberta
AZ	Arizona
AR	Arkansas
BC	British Columbia
CA	California
CO	Colorado
CT	Connecticut
DE	Delaware
DC	Dist. of Columbia
FL	Florida
GA	Georgia
ID	Idaho
IL	Illinois
IN	Indiana
IA	Iowa
KS	Kansas
KY	Kentucky
LA	Louisiana
ME	Maine
MB	Manitoba
MD	Maryland
MA	Massachusetts
MI	Michigan
MN	Minnesota
MS	Mississippi
MO	Missouri
MT	Montana

NE	Nebraska
NV	Nevada
NB	New Brunswick
NH	New Hampshire
NJ	New Jersey
NM	New Mexico
NY	New York
NL	Newfoundland & Labrador
NC	North Carolina
ND	North Dakota
NT	Northwest Territory
NS	Nova Scotia
NU*	Nunavut
OH	Ohio
OK	Oklahoma
ON	Ontario
OR	Oregon
PA	Pennsylvania
PE	Prince Edward Island
QC	Quebec
RI	Rhode Island
SK	Saskatchewan
SC	South Carolina
SD	South Dakota
TN	Tennessee
TX	Texas
UT	Utah
VT	Vermont
VA	Virginia
WA	Washington
WV	West Virginia
WI	Wisconsin
WY	Wyoming
YT	Yukon Territory

* The same FIPS code, NU, is used for Nicaragua and the province of Nunavut, Canada in the PC*MILER database.

Mexican Estados

AG	Aguascalientes
BJ	Baja California
BS	Baja California Sur
CP	Campeche
CH	Chiapas
CI	Chihuahua
CU	Coahuila de Zaragoza
CL	Colima
DF	Distrito Federal
DG	Durango
GJ	Guanajuato
GR	Guerrero
HG	Hidalgo
JA	Jalisco
EM	Mexico (Estado)
MH	Michoacan de Ocampo
MR	Morelos
NA	Nayarit
NX *	Nuevo Leon
OA	Oaxaca
PU	Puebla
QA	Queretaro Arteaga
QR	Quintana Roo
SL	San Luis Potosi
SI	Sinaloa
SO	Sonora
TA	Tabasco
TM	Tamaulipas
TL	Tlaxcala
VZ	Veracruz
YC	Yucatan
ZT	Zacatecas

* Please note that by default, “NX” is used for Nuevo Leon because the province of Newfoundland and Labrador in Canada already utilizes “NL” in the database. However, there is an option that sets “NL” as the abbreviation for Nuevo Leon: in the File application menu, select *Application Settings...* . In the *NL Abbreviation* drop-down, select *Use for Nuevo Leon* and click **Save**.

Australian Jurisdictions

When using the Streets Oceania data set, use the jurisdiction abbreviations below instead of a country code to enter stops in Australia.

ACT	Australian Capital Territory
NSW	New South Wales
NT	Northern Territory
QLD	Queensland
SA	South Australia
TAS	Tasmania
VIC	Victoria
WA	Western Australia

Country Codes For All Worldwide Regions

Africa

COUNTRY NAME	FIPS	ISO2	ISO3	GENC2	GENC3
Algeria	AG	DZ	DZA	DZ	DZA
Angola	AO	AO	AGO	AO	AGO
Benin	BN	BJ	BEN	BJ	BEN
Botswana	BC	BW	BWA	BW	BWA
Burkina Faso	UV	BF	BFA	BF	BFA
Burundi	BY	BI	BDI	BI	BDI
Cameroon	CM	CM	CMR	CM	CMR
Cape Verde	CV	CV	CPV	CV	CPV
Central African Republic	CT	CF	CAF	CF	CAF
Chad	CD	TD	TCD	TD	TCD
Comoros	CN	KM	COM	KM	COM
Congo Democratic Republic (Kinshasa)	CG	CG	COD	CD	COD
Congo, Republic of the (Brazzaville)	CF	CD	COG	CG	COG
Djibouti	DJ	DJ	DJI	DJ	DJI
Egypt	EG	EG	EGY	EG	EGY
Equatorial Guinea	EK	GQ	GNQ	GQ	GNQ
Eritrea	ER	ER	ERI	ER	ERI
Ethiopia	ET	ET	ETH	ET	ETH
Gabon	GB	GA	GAB	GA	GAB
Gambia	GA	GM	GMB	GM	GMB
Ghana	GH	GH	GHA	GH	GHA
Guinea	GV	GN	GIN	GN	GIN
Guinea-Bissau	PU	GW	GNB	GW	GNB
Ivory Coast (Côte d'Ivoire)	IV	CI	CIV	CI	CIV
Kenya	KE	KE	KEN	KE	KEN

COUNTRY NAME	FIPS	ISO2	ISO3	GENC2	GENC3
Lesotho	LT	LS	LSO	LS	LSO
Liberia	LI	LR	LBR	LR	LBR
Libya	LY	LY	LBY	LY	LBY
Madagascar	MA	MG	MDG	MG	MDG
Malawi	MI	MW	MWI	MW	MWI
Mali	ML	ML	MLI	ML	MLI
Mauritania	MR	MR	MRT	MR	MRT
Mauritius	MP	MU	MUS	MU	MUS
Mayotte	MF	YT	MYT	YT	MYT
Morocco	MO	MA	MAR	MA	MAR
Mozambique	MZ	MZ	MOZ	MZ	MOZ
Namibia	WA	NA	NAM	NA	NAM
Niger	NG	NE	NER	NE	NER
Nigeria	NI	NG	NGA	NG	NGA
Reunion	RE	RE	REU	RE	REU
Rwanda	RW	RW	RWA	RW	RWA
Saint Helena	SH	SH	SHN	SH	SHN
Sao Tome and Principe	TP	ST	STP	ST	STP
Senegal	SG	SN	SEN	SN	SEN
Seychelles	SE	SC	SYC	SC	SYC
Sierra Leone	SL	SL	SLE	SL	SLE
Somalia	SO	SO	SOM	SO	SOM
South Africa	SF	ZA	ZAF	ZA	ZAF
South Sudan	OD	SD	SDW	SS	SSD
Sudan	SU	SD	SDN	SD	SDN
Swaziland	WZ	SZ	SWZ	SZ	SWZ
Tanzania	TZ	TZ	TZA	TZ	TZA
Togo	TO	TG	TGO	TG	TGO
Tunisia	TS	TN	TUN	TN	TUN
Uganda	UG	UG	UGA	UG	UGA
Western Sahara	WI	EH	ESH	EH	ESH
Zambia	ZA	ZM	ZMB	ZM	ZMB
Zimbabwe	ZI	ZW	ZWE	ZW	ZWE

Asia

Afghanistan	AF	AF	AFG	AF	AFG
Armenia	AM	AM	ARM	AM	ARM
Azerbaijan	AJ	AZ	AZE	AZ	AZE
Bangladesh	BG	BD	BGD	BD	BGD
Bhutan	BT	BT	BTN	BT	BTN
Brunei	BX	BN	BRN	BN	BRN
Burma (Myanmar)	BM	MM	MMR	MM	MMR

COUNTRY NAME	FIPS	ISO2	ISO3	GENC2	GENC3
Cambodia	CB	KH	KHM	KH	KHM
China	CH	CN	CHN	CN	CHN
Georgia	GG	GE	GEO	GE	GEO
Hong Kong	HK	HK	HKG	HK	HKG
India	IN	IN	IND	IN	IND
Indonesia	ID	ID	IDN	ID	IDN
Japan	JA	JP	JPN	JP	JPN
Kazakhstan	KZ	KZ	KAZ	KZ	KAZ
Korea, North	KN	KP	PRK	KP	PRK
Korea, South	KS	KR	KOR	KR	KOR
Kyrgyzstan	KG	KGZ	KGZ	KG	KGZ
Laos	LA	LA	LAO	LA	LAO
Macao	MC	MO	MAC	MO	MAC
Malaysia	MY	MY	MYS	MY	MYS
Maldives	MV	MV	MDV	MV	MDV
Mongolia	MG	MN	MNG	MN	MNG
Nepal	NP	NP	NPL	NP	NPL
Pakistan	PK	PK	PAK	PK	PAK
Papua New Guinea	PP	PG	PNG	PG	PNG
Philippines	RP	PH	PHL	PH	PHL
Singapore	SN	SG	SGP	SG	SGP
Sri Lanka	CE	LK	LKA	LK	LKA
Taiwan	TW	TW	TWN	TW	TWN
Tajikistan	TI	TJ	TJK	TJ	TJK
Thailand	TH	TH	THA	TH	THA
Timor-Leste	TT	--	TMP	TL	TMP
Turkmenistan	TX	TM	TKM	TM	TKM
Uzbekistan	UZ	UZ	UZB	UZ	UZB
Vietnam	VM	VN	VNM	VN	VNM

Europe

Akrotiri	AX	--	--	QZ	XQZ
Albania	AL	AL	ALB	AL	ALB
Andorra	AN	AND	AND	AD	AND
Austria	AU	A	AUT	AT	AUT
Belarus	BO	BY	BLR	BY	BLR
Belgium	BE	B	BEL	BE	BEL
Bosnia and Herzegovina	BK	BIH	BIH	BA	BIH
Bulgaria	BU	BG	BGR	BG	BGR
Croatia	HR	HR	HRV	HR	HRV
Cyprus	CY	CY	CYP	CY	CYP
Czech Republic	EZ	CZ	CZE	CZ	CZE

COUNTRY NAME	FIPS	ISO2	ISO3	GENC2	GENC3
Denmark	DA	DK	DNK	DK	DNK
Dhekelia	DX	--	--	XD	XXD
Estonia	EN	EST	EST	EE	EST
Faroe Islands	FO	FO	FRO	FO	FRO
Finland	FI	FIN	FIN	FI	FIN
France	FR	FR	FRA	FR	FRA
Germany	GM	D	DEU	DE	DEU
Gibraltar	GI	GI	GIB	GI	GIB
Greece	GR	GR	GRC	GR	GRC
Guernsey	GK	--	--	GG	GGY
Hungary	HU	H	HUN	HU	HUN
Iceland	IC	IS	ISL	IS	ISL
Ireland	EI	IE	IRL	IE	IRL
Isle of Man	IM	--	IMN	IM	IMN
Italy	IT	I	ITA	IT	ITA
Jersey	JE	--	--	JE	JEY
Kosovo	KV	--	XKS	XK	XKS
Latvia	LG	LV	LVA	LV	LVA
Liechtenstein	LS	FL	LIE	LI	LIE
Lithuania	LH	LT	LTU	LT	LTU
Luxembourg	LU	L	LUX	LU	LUX
Macedonia	MK	MK	MKD	MK	MKD
Malta	MT	M	MLT	MT	MLT
Moldova	MD	MD	MDA	MD	MDA
Monaco	MN	MC	MCO	MC	MCO
Montenegro	MJ	MNE	MNE	ME	MNE
Netherlands	NL	NL	NLD	NL	NLD
Norway	NO	N	NOR	NO	NOR
Poland	PL	PL	POL	PL	POL
Portugal	PO	P	PRT	PT	PRT
Romania	RO	RO	ROU	RO	ROU
Russia	RS	RUS	RUS	RU	RUS
San Marino	SM	RSM	SMR	SM	SMR
Serbia	RI	SRB	SRB	RS	SRB
Slovakia	LO	SK	SVK	SK	SVK
Slovenia	SI	SLO	SVN	SI	SVN
Spain	SP	E	ESP	ES	ESP
Svalbard and Jan Mayen Islands	SV	SJ	SJM	XR	XSV
Sweden	SW	S	SWE	SE	SWE
Switzerland	SZ	CH	CHE	CH	CHE
Turkey	TU	TR	TUR	TR	TUR
Ukraine	UP	UA	UKR	UA	UKR
United Kingdom	UK	GB	GBR	GB	GBR

COUNTRY NAME	FIPS	ISO2	ISO3	GENC2	GENC3
Vatican City	VT	V	VAT	VA	VAT

Middle East

Bahrain	BA	BH	BHR	BH	BHR
Gaza Strip	GZ	--	XGZ	XG	XGZ
Iran	IR	IR	IRN	IR	IRN
Iraq	IZ	IQ	IRQ	IQ	IRQ
Israel	IS	IL	ISR	IL	ISR
Jordan	JO	JO	JOR	JO	JOR
Kuwait	KU	KW	KWT	KW	KWT
Lebanon	LE	LB	LBN	LB	LBN
Oman	MU	OM	OMN	OM	OMN
Palestinian Territory	--	PS	PSE	PS	PSE
Qatar	QA	QA	QAT	QA	QAT
Saudi Arabia	SA	SA	SAU	SA	SAU
Syria	SY	SY	SYR	SY	SYR
United Arab Emirates	AE	AE	ARE	AE	ARE
West Bank	WE	--	XWB	XW	XWB
Yemen	YM	YE	YEM	YE	YEM

North America

Bermuda	BD	BM	BMU	BM	BMU
Canada	CA	CA	CAN	CA	CAN
Greenland	GL	GL	GRL	GL	GRL
Guantanamo Bay	--	--	--	A2	AX2
Mexico	MX	MX	MEX	MX	MEX
Puerto Rico*	PR*	PR	PRI	PR	PRI
Saint Pierre and Miquelon	SB	PM	SPM	PM	SPM
United States	US	US	USA	US	USA
Virgin Islands, U.S.	VQ	VI	VIR	VI	VIR

* Note: "PR" for Puerto Rico is a USPS code, not a FIPS code.

Oceania

American Samoa	AQ	AS	ASM	AS	ASM
Australia*	AS	AU	AUS	AU	AUS
Cook Islands	CW	CK	COK	CK	COK
Fiji	FJ	FJ	FJI	FJ	FJI
French Polynesia	FP	PF	PYF	PJ	PYF
French Southern and Antarctic Islands	FS	TF	ATF	TF	ATF
Guam	GQ	GU	GUM	GU	GUM

COUNTRY NAME	FIPS	ISO2	ISO3	GENC2	GENC3
Kiribati	KR	KI	KIR	KI	KIR
Marshall Islands	RM	MH	MHL	MH	MHL
Micronesia, Federated States of	FM	FM	FSM	FM	FSM
Midway Island	MQ	UM	--	QM	XMW
Nauru	NR	NR	NRU	NR	NRU
New Caledonia	NC	NC	NCL	NC	NCL
New Zealand	NZ	NZ	NZL	NZ	NZL
Niue	NE	NU	NIU	NU	NIU
Norfolk Island	NF	NF	NFK	NF	NFK
Northern Mariana Islands	CQ	MP	MNP	MP	MNP
Palau	PS	PW	PLW	PW	PLW
Pitcairn Islands	PC	PN	PCN	PN	PCN
Samoa (Western Samoa)	WS	WS	WSM	WS	WSM
Solomon Islands	BP	SB	SLB	SB	SLB
Tokelau	TL	TK	TKL	TK	TKL
Tonga	TN	TO	TON	TO	TON
Tuvalu	TV	TV	TUV	TV	TUV
Vanuatu	NH	VU	VUT	VU	VUT
Wake Island	WQ	WQ	XWK	QW	XWK
Wallis and Futuna	WF	WF	WLF	WF	WLF

* When using the Streets Oceania data set, use state or territory abbreviations instead of the country abbreviation for locations in Australia – see the Jurisdictions section at the beginning of this appendix.

South America

Anguilla	AV	AI	AIA	AI	AIA
Antigua and Barbuda	AC	AG	ATG	AG	ATG
Argentina	AR	AR	ARG	AR	ARG
Aruba	AA	AW	ABW	AW	ABW
Bahamas	BF	BS	BHS	BS	BHS
Barbados	BB	BB	BRB	BB	BRB
Belize	BH	BZ	BLZ	BZ	BLZ
Bolivia	BL	BO	BOL	BO	BOL
Bonaire, Sint Eustatius, Saba	--	--	--	BQ	BES
Brazil	BR	BR	BRA	BR	BRA
Caribbean Netherlands	NT	AN	BES	BQ	BES
Cayman Islands	CJ	KY	CYM	KY	CYM
Chile	CI	CL	CHL	CL	CHL
Colombia	CO	CO	COL	CO	COL
Costa Rica	CS	CR	CRI	CR	CRI
Cuba	CU	CU	CUB	CU	CUB
Curacao	UC	--	--	CUW	CUW

COUNTRY NAME	FIPS	ISO2	ISO3	GENC2	GENC3
Dominica	DO	DM	DMA	DM	DMA
Dominican Republic	DR	DO	DOM	DO	DOM
Ecuador	EC	EC	ECU	EC	ECU
El Salvador	ES	SV	SLV	SV	SLV
Falkland Islands (Islas Malvinas)	FK	FK	FLK	FK	FLK
French Guiana	FG	GF	GUF	GF	GUF
Grenada	GJ	GD	GRD	GD	GRD
Guadeloupe	GP	GP	GLP	GP	GLP
Guatemala	GT	GT	GTM	GT	GTM
Guyana	GY	GY	GUY	GY	GUY
Haiti	HA	HT	HTI	HT	HTI
Honduras	HO	HN	HND	HN	HND
Jamaica	JM	JM	JAM	JM	JAM
Martinique	MB	MQ	MTQ	MQ	MTQ
Montserrat	MH	MS	MSR	MS	MSR
Nicaragua*	NU*	NI	NIC	NI	NIC
Panama	PM	PA	PAN	PA	PAN
Paraguay	PA	PY	PRY	PY	PRY
Peru	PE	PE	PER	PE	PER
Saint Barthelemy	TB	--	BLM	BL	BLM
Saint Kitts and Nevis Islands	SC	KN	KNA	KN	KNA
Saint Lucia	ST	LC	LCA	LC	LCA
Saint Martin	RN	--	MAF	MF	MAF
Saint Vincent and the Grenadines	VC	VC	VCT	VC	VCT
Sint Maarten	NN	--	SXM	SX	SXM
Suriname	NS	SR	SUR	SR	SUR
Trinidad and Tobago	TD	TT	TTO	TT	TTO
Turks and Caicos Islands	TK	TC	TCA	TC	TCA
Uruguay	UY	UY	URY	UY	URY
Venezuela	VE	VE	VEN	VE	VEN
Virgin Islands, British	VI	VG	VGB	VG	VGB

* The same FIPS code, NU, is used for Nicaragua and the province of Nunavut, Canada in the PC*MILER database.

Official Sources

FIPS Country Codes:

<http://geonames.nga.mil/ggmagaz/geonames4.asp> and

<http://www.state.gov/s/inr/rls/4250.htm>

ISO2 Country Codes:

http://www.iso.org/iso/country_codes/iso_3166_code_lists/english_country_names_and_code_elements.htm and

http://www.iso.org/iso/english_country_names_and_code_elements#s

ISO 3 Country Codes:

<http://unstats.un.org/unsd/methods/m49/m49alpha.htm>

GENC2 and GENC3 Country Codes (Geopolitical Entities, Names and Codes):

Issued by the National Geospatial-Intelligence Agency

<https://www1.nga.mil/Pages/default.aspx>

Appendix D: Valid Entries for Street Addresses

For PC*MILER|Streets users, valid directional and street type abbreviations for street address entry in North America are listed below. Spelling out the whole word is also acceptable. Capitalization is not necessary.

Directional Synonyms for Address Entry – Prefix or Suffix

Full Spelling	Valid in PC*MILER
EAST	E
EAST	E.
NORTH	N
NORTH	N.
NORTH	NO
NORTH	NO.
NORTHEAST	N-E
NORTHEAST	N.E
NORTHEAST	N.E.
NORTHEAST	NE
NORTHEAST	NE.
NORTHEAST	NORTH-EAST
NORTHWEST	N-W
NORTHWEST	N.W
NORTHWEST.	N.W.
NORTHWEST	NORTH-WEST
NORTHWEST	NW
NORTHWEST	NW.
SOUTH	S
SOUTH	S.
SOUTH	SO
SOUTH	SO.
SOUTHEAST	S-E
SOUTHEAST	S.E
SOUTHEAST	S.E.
SOUTHEAST	SE
SOUTHEAST	SE.
SOUTHEAST	SOUTH-EAST
SOUTHWEST	S-W
SOUTHWEST	S.W
SOUTHWEST	S.W.
SOUTHWEST	SOUTH-WEST
SOUTHWEST	SW
SOUTHWEST	SW.
WEST	W
WEST	W.

Synonyms for Street Types

Full Spelling	Valid in PC*MILER
Alley	Al
Alley	Al.
Alley	All
Alley	All.
Alley	Aly
Alley	Aly.
Arcade	Arc
Arcade	Arc.
Avenue	Av
Avenue	Av.
Avenue	Avda
Avenue	Avda.
Avenue	Ave
Avenue	Ave.
Avenue	Aven
Avenue	Aven.
Avenue	Avenida
Boulevard	Bldv
Boulevard	Bldv.
Boulevard	Boul
Bridge	Brdg
Bridge	Brdg.
Bridge	Brg
Bridge	Brg.
Bypass	Byp
Bypass	Byp.
Causeway	Cause
Causeway	Cause.
Causeway	Cswy
Causeway	Cswy.
Center	Cntr
Center	Cntr.
Center	Ctr
Center	Ctr.
Circle	Cir
Circle	Cir.
Circle	Circ
Circle	Circ.
Court	Crt
Court	Crt.
Court	Ct
Court	Ct.
Cove	Cv
Cove	Cv.
Crescent	Cres

Full Spelling	Valid in PC*MILER
Crescent	Cres.
Crescent	Cresc
Crescent	Cresc.
Crescent	Cresnt
Crossing	Crsg
Crossing	Crsg.
Crossing	Xing
Crossing	Xing.
Drive	Dr
Drive	Dr.
Drive	Drv
Drive	Drv.
Expressway	Expr
Expressway	Expr.
Expressway	Expy
Expressway	Expy.
Expressway	Exwy
Expressway	Exwy.
Farm-To-Market	F-M
Farm-To-Market	FM
Freeway	Frwy
Freeway	Frwy.
Harbor	Hbr
Heights	Hts
Highway	Hwy
Highway	Hwy.
Highway	Hy
Highway	Hy.
Lane	La
Lane	La.
Lane	Ln
Lane	Ln.
Loop	Lp
Loop	Lp.
Mall	MI
Mall	MI.
Motorway	Mrwy
Motorway	Mrwy.
Motorway	Mtrwy
Motorway	Mtrwy.
Motorway	Mtwy
Motorway	Mtwy.
Overpass	Over
Overpass	Over.
Overpass	Ovps
Overpass	Ovps.

Full Spelling	Valid in PC*MILER
Overpass	Ovrps
Overpass	Ovrps.
Park	Pk
Park	Pk.
Park	Prk
Park	Prk.
Parkway	Pkwy
Parkway	Pkwy.
Parkway	Prkwy
Parkway	Prkwy.
Pass	Ps
Pass	Ps.
Path	Pth
Path	Pth.
Pike	Pke
Pike	Pke.
Place	Pl
Place	Pl.
Place	Pla
Place	Pla.
Place	Plac
Place	Plac.
Place	Plc
Place	Plc.
Plaza	Plz
Plaza	Plz.
Point	Pnt
Point	Pnt.
Point	Pt
Point	Pt.
Ramp	Rmp
Ramp	Rmp.
Road	Rd
Road	Rd.
Skyway	Skwy
Skyway	Skwy.
Square	Sq
Square	Sq.
Square	Sqr
Square	Sqr.
Street	St
Street	St.
Street	Str
Street	Str.
Terrace	Ter
Terrace	Ter.
Terrace	Terr

Full Spelling	Valid in PC*MILER
Terrace	Terr.
Terrace	Trc
Terrace	Trc.
Throughway	Thruway
Throughway	Thwy
Throughway	Thwy.
Trafficway	Tfcwy
Trafficway	Tfcwy.
Trafficway	Tfwy
Trafficway	Tfwy.
Trafficway	Trwy
Trail	Trl
Trail	Trl.
Tunnel	Tun
Tunnel	Tun.
Tunnel	Tunl
Tunnel	Tunl.
Tunnel	Tunn
Tunnel	Tunn.
Turnpike	Tpk
Turnpike	Tpk.
Turnpike	Tpke
Turnpike	Tpke.
Underpass	Unp
Underpass	Unp.
Underpass	Unps
Underpass	Unps.
Underpass	Unrps
Underpass	Unrps.
Way	Wy
Way	Wy.

Appendix E: Default Road Speeds by Jurisdiction

The table below lists PC*MILER default road speeds worldwide by jurisdiction and PC*MILER road category. Speeds are in miles per hour. To see default speeds for any world region, you can also open the Route Options dialog box, select a world region, then click the **Road Speeds** tab and select a country from the pick list.

Region	State	FIPS	Interstate Highway		Divided Highway		Primary Highway		Secondary Highway		Local		Ferries	
			Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
Africa	Algeria	AG	62	56	56	43	50	31	37	25	25	18	26	26
Africa	Angola	AO	50	45	40	35	35	30	30	25	20	15	18	18
Africa	Botswana	BC	50	45	40	35	35	30	30	25	20	15	21	21
Africa	Benin	BN	50	45	40	35	35	30	30	25	20	15	18	18
Africa	Burundi	BY	50	45	40	35	35	30	30	25	20	15	18	18
Africa	Chad	CD	50	45	40	35	35	30	30	25	20	15	21	21
Africa	Congo	CF	50	45	40	35	35	30	30	25	20	15	18	18
Africa	Republic of Congo	CG	50	45	40	35	35	30	30	25	20	15	23	23
Africa	Cameroon	CM	50	45	40	35	35	30	30	25	20	15	21	21
Africa	Comoros	CN	50	45	40	35	35	30	30	25	20	15	15	15
Africa	Central African Republic	CT	50	45	40	35	35	30	30	25	20	15	18	18
Africa	Cape Verde	CV	50	45	40	35	35	30	30	25	20	15	23	23
Africa	Djibouti	DJ	50	45	40	35	35	30	30	25	20	15	21	21
Africa	Egypt	EG	62	56	56	43	37	31	25	25	18	12	27	27
Africa	Equatorial Guinea	EK	50	45	40	35	35	30	30	25	20	15	21	21
Africa	Eritrea	ER	50	45	40	35	35	30	30	25	20	15	21	21
Africa	Ethiopia	ET	62	56	56	43	50	31	37	25	25	18	18	18

Region	State	FIPS	Interstate Highway		Divided Highway		Primary Highway		Secondary Highway		Local		Ferries	
			Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
Africa	Gambia	GA	50	45	40	35	35	30	30	25	20	15	21	21
Africa	Gabon	GB	50	45	40	35	35	30	30	25	20	15	18	18
Africa	Ghana	GH	62	56	56	43	50	31	37	25	25	18	21	21
Africa	Guinea	GV	50	45	40	35	35	30	30	25	20	15	18	18
Africa	Ivory Coast	IV	50	45	40	35	35	30	30	25	20	15	18	18
Africa	Kenya	KE	62	56	56	43	50	31	37	25	25	18	21	21
Africa	Liberia	LI	50	45	40	35	35	30	30	25	20	15	18	18
Africa	Lesotho	LT	50	45	40	35	35	30	30	25	20	15	23	23
Africa	Libya	LY	50	45	40	35	35	30	30	25	20	15	26	26
Africa	Madagascar	MA	50	45	40	35	35	30	30	25	20	15	15	15
Africa	Mayotte	MF	50	45	40	35	35	30	30	25	20	15	18	18
Africa	Malawi	MI	62	56	56	43	50	31	37	25	25	18	21	21
Africa	Mali	ML	50	45	40	35	35	30	30	25	20	15	18	18
Africa	Morocco	MO	62	56	56	43	50	31	37	25	25	18	26	26
Africa	Mauritius	MP	50	45	40	35	35	30	30	25	20	15	18	18
Africa	Mauritania	MR	50	45	40	35	35	30	30	25	20	15	18	18
Africa	Mozambique	MZ	50	45	40	35	35	30	30	25	20	15	21	21
Africa	Niger	NG	50	45	40	35	35	30	30	25	20	15	21	21
Africa	Nigeria	NI	62	56	56	43	50	31	37	25	25	18	21	21
Africa	South Sudan	OD	50	45	40	35	35	30	30	25	20	15	18	18
Africa	Guinea-Bissau	PU	50	45	40	35	35	30	30	25	20	15	18	18
Africa	Reunion	RE	50	45	40	35	35	30	30	25	20	15	18	18
Africa	Rwanda	RW	50	45	40	35	35	30	30	25	20	15	18	18
Africa	Seychelles	SE	50	45	40	35	35	30	30	25	20	15	18	18
Africa	South Africa	SF	68	62	56	43	50	31	37	25	25	18	24	24
Africa	Senegal	SG	50	45	40	35	35	30	30	25	20	15	21	21
Africa	Saint Helena	SH	50	45	40	35	35	30	30	25	20	15	18	18
Africa	Sierra Leone	SL	50	45	40	35	35	30	30	25	20	15	18	18

Region	State	FIPS	Interstate Highway		Divided Highway		Primary Highway		Secondary Highway		Local		Ferries	
			Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
Africa	Somalia	SO	50	45	40	35	35	30	30	25	20	15	21	21
Africa	Sudan	SU	50	45	40	35	35	30	30	25	20	15	18	18
Africa	Togo	TO	50	45	40	35	35	30	30	25	20	15	18	18
Africa	Sao Tome and Principe	TP	50	45	40	35	35	30	30	25	20	15	21	21
Africa	Tunisia	TS	62	56	56	43	50	31	37	25	25	18	26	26
Africa	Tanzania	TZ	62	56	56	43	50	31	37	25	25	18	23	23
Africa	Uganda	UG	62	56	56	43	50	31	37	25	25	18	23	23
Africa	Burkina Faso	UV	50	45	40	35	35	30	30	25	20	15	18	18
Africa	Namibia	WA	50	45	40	35	35	30	30	25	20	15	21	21
Africa	Western Sahara	WI	50	45	40	35	35	30	30	25	20	15	18	18
Africa	Swaziland	WZ	50	45	40	35	35	30	30	25	20	15	18	18
Africa	Zambia	ZA	50	45	40	35	35	30	30	25	20	15	21	21
Africa	Zimbabwe	ZI	62	56	50	43	43	31	37	25	25	18	23	23
Asia	Afghanistan	AF	56	56	56	50	43	31	31	25	25	18	16	16
Asia	Azerbaijan	AJ	56	56	56	50	43	31	31	25	25	18	20	20
Asia	Armenia	AM	56	56	56	50	43	31	31	25	25	18	16	16
Asia	Bahrain	BA	56	56	56	50	43	31	31	25	25	18	25	25
Asia	Bangladesh	BG	50	50	50	43	43	31	31	18	25	12	21	21
Asia	Burma (Myanmar)	BM	50	50	50	43	43	31	31	18	25	12	21	21
Asia	Bhutan	BT	50	50	50	43	43	31	31	18	25	12	16	16
Asia	Brunei Darussalam	BX	50	50	50	43	43	31	31	18	25	12	18	18
Asia	Cambodia	CB	56	56	56	50	43	31	31	25	25	18	18	18
Asia	Sri Lanka	CE	50	50	50	43	43	31	31	18	25	12	22	22
Asia	China	CH	68	62	56	50	50	31	37	18	25	12	27	27
Asia	Cyprus	CY	56	56	56	50	43	31	31	25	25	18	25	25
Asia	Georgia	GG	56	56	56	50	43	31	31	25	25	18	20	20
Asia	Gaza Strip	GZ	56	56	56	50	43	31	31	25	25	18	25	25
Asia	Hong Kong	HK	31	31	31	31	25	25	18	18	12	12	27	27

Region	State	FIPS	Interstate Highway		Divided Highway		Primary Highway		Secondary Highway		Local		Ferries	
			Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
Asia	Indonesia	ID	50	50	50	43	43	31	31	18	25	12	27	27
Asia	India	IN	62	49	49	37	43	31	31	18	25	12	22	22
Asia	Iran (Islamic Republic of)	IR	56	56	56	50	43	31	31	25	25	18	25	25
Asia	Israel	IS	56	56	56	50	43	31	31	25	25	18	25	25
Asia	Iraq	IZ	56	56	56	50	43	31	31	25	25	18	21	21
Asia	Japan	JA	62	56	50	43	37	31	31	18	25	12	26	26
Asia	Jordan	JO	56	56	56	50	43	31	31	25	25	18	16	16
Asia	Kyrgyzstan	KG	56	56	56	50	43	31	31	25	25	18	16	16
Asia	Korea, North	KN	56	56	56	50	43	31	31	25	25	18	21	21
Asia	Korea, South	KS	56	56	56	50	43	31	31	25	25	18	21	21
Asia	Kuwait	KU	56	56	56	50	43	31	31	25	25	18	20	20
Asia	Lao People's Democratic Republic	LA	56	56	56	50	43	31	31	25	25	18	16	16
Asia	Lebanon	LE	56	56	56	50	43	31	31	25	25	18	25	25
Asia	Macao	MC	50	50	50	43	43	31	31	18	25	12	27	27
Asia	Mongolia	MG	56	56	56	50	43	31	31	25	25	18	16	16
Asia	Oman	MU	56	56	56	50	43	31	31	25	25	18	21	21
Asia	Maldives	MV	56	56	56	50	43	31	31	25	25	18	22	22
Asia	Malaysia	MY	50	50	50	43	43	31	31	18	25	12	27	27
Asia	Nepal	NP	50	50	50	43	43	31	31	18	25	12	16	16
Asia	Pakistan	PK	56	56	56	50	43	31	31	25	25	18	21	21
Asia	Papua New Guinea	PP	50	50	50	43	43	31	31	18	25	12	18	18
Asia	Qatar	QA	56	56	56	50	43	31	31	25	25	18	25	25
Asia	Philippines	RP	50	50	50	43	43	31	31	18	25	12	25	25
Asia	Saudi Arabia	SA	62	56	56	43	37	31	31	18	25	12	25	25
Asia	Singapore	SN	56	56	56	50	43	31	31	25	25	18	27	27
Asia	Syrian Arab Republic	SY	56	56	56	50	43	31	31	25	25	18	16	16
Asia	United Arab Emirates	AE	68	62	62	56	50	37	37	25	25	18	27	27

Region	State	FIPS	Interstate Highway		Divided Highway		Primary Highway		Secondary Highway		Local		Ferries	
			Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
Asia	Thailand	TH	50	50	50	43	43	31	31	18	25	12	21	21
Asia	Tajikistan	TI	50	43	40	31	31	25	25	16	18	12	16	16
Asia	East Timor	TT	50	50	50	43	43	31	31	18	25	12	18	18
Asia	Taiwan	TW	50	50	50	43	43	31	31	18	25	12	25	25
Asia	Turkmenistan	TX	56	56	56	50	43	31	31	25	25	18	20	20
Asia	Vietnam	VM	50	50	50	43	43	31	31	18	25	12	21	21
Asia	West Bank	WE	56	56	56	50	43	31	31	25	25	18	25	25
Asia	Yemen	YM	56	56	56	50	43	31	31	25	25	18	21	21
Europe	Albania	AL	50	43	40	31	31	25	25	16	18	12	16	16
Europe	Andorra	AN	50	43	40	31	31	25	25	16	18	12	16	16
Europe	Austria	AU	50	50	34	31	34	25	25	16	18	12	16	16
Europe	Belgium	BE	56	56	45	31	30	25	25	16	18	12	16	16
Europe	Bosnia and Herzegovina	BK	62	43	50	31	39	25	25	16	18	12	16	16
Europe	Belarus	BO	62	56	40	31	39	25	25	16	18	12	16	16
Europe	Bulgaria	BU	62	62	34	31	34	25	25	16	18	12	16	16
Europe	Denmark	DA	50	50	34	31	34	25	25	16	18	12	16	16
Europe	Ireland	EI	50	50	40	31	39	25	25	16	18	12	16	16
Europe	Estonia	EN	56	43	45	31	45	25	25	16	18	12	16	16
Europe	Czech Republic	EZ	50	50	40	31	39	25	25	16	18	12	16	16
Europe	Finland	FI	50	50	40	31	39	25	25	16	18	12	16	16
Europe	Faroe Islands	FO	50	43	40	31	31	25	25	16	18	12	16	16
Europe	France	FR	56	43	40	31	31	25	25	16	18	12	16	16
Europe	Gibraltar	GI	50	43	40	31	31	25	25	16	18	12	16	16
Europe	Germany	GM	50	43	35	31	30	25	25	16	18	12	16	16
Europe	Greece	GR	43	43	34	31	34	25	25	16	18	12	16	16
Europe	Croatia	HR	50	50	34	31	34	25	25	16	18	12	16	16
Europe	Hungary	HU	50	43	40	31	31	25	25	16	18	12	16	16

Region	State	FIPS	Interstate Highway		Divided Highway		Primary Highway		Secondary Highway		Local		Ferries	
			Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
Europe	Iceland	IC	50	43	40	31	31	25	25	16	18	12	16	16
Europe	Isle of Man	IM	50	43	40	31	31	25	25	16	18	12	16	16
Europe	Italy	IT	50	43	35	31	34	25	25	16	18	12	16	16
Europe	Kosovo	KV	50	50	34	31	34	30	25	16	18	12	16	16
Europe	Kazakhstan	KZ	50	43	40	31	31	25	25	16	18	12	16	16
Europe	Latvia	LG	50	50	40	31	39	25	25	16	18	12	16	16
Europe	Lithuania	LH	50	43	40	31	31	25	25	16	18	12	16	16
Europe	Slovakia	LO	50	50	40	37	39	30	25	16	18	12	16	16
Europe	Liechtenstein	LS	50	43	40	31	31	25	25	16	18	12	16	16
Europe	Luxembourg	LU	56	56	38	31	38	25	25	16	18	12	16	16
Europe	Moldavia	MD	50	43	40	31	31	25	25	16	18	12	16	16
Europe	Montenegro	MJ	50	43	40	31	31	25	25	16	18	12	16	16
Europe	Macedonia	MK	43	43	34	31	34	25	25	16	18	12	16	16
Europe	Monaco	MN	50	43	40	31	31	25	25	16	18	12	16	16
Europe	Malta	MT	50	43	40	31	31	25	25	16	18	12	16	16
Europe	Netherlands	NL	50	50	40	31	39	25	25	16	18	12	16	16
Europe	Norway	NO	50	50	40	31	39	25	25	16	18	12	16	16
Europe	Poland	PL	50	50	40	31	34	25	25	16	18	12	16	16
Europe	Portugal	PO	50	50	34	25	34	20	25	16	18	12	16	16
Europe	Serbia	RI	50	50	34	31	34	30	25	16	18	12	16	16
Europe	Romania	RO	56	56	40	31	34	25	25	16	18	12	16	16
Europe	Russian Federation	RS	62	56	40	31	39	25	25	16	18	12	16	16
Europe	Slovenia	SI	50	50	34	31	34	25	25	16	18	12	16	16
Europe	San Marino	SM	50	43	40	31	31	25	25	16	18	12	16	16
Europe	Spain	SP	56	43	40	31	34	25	25	16	18	12	16	16
Europe	Svalbard and Jan													
Europe	Mayen Islands	SV	50	43	40	31	31	25	25	16	18	12	16	16
Europe	Sweden	SW	50	50	40	31	39	25	25	16	18	12	16	16

Region	State	FIPS	Interstate Highway		Divided Highway		Primary Highway		Secondary Highway		Local		Ferries	
			Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
Europe	Switzerland	SZ	50	50	40	31	39	25	25	16	18	12	16	16
Europe	Turkey	TU	62	56	40	31	39	25	25	16	18	12	16	16
Europe	United Kingdom	UK	60	40	46	30	32	24	25	16	18	12	16	16
Europe	Ukraine	UP	62	56	40	31	39	25	25	16	18	12	16	16
Europe	Uzbekistan	UZ	50	43	40	31	31	25	25	16	18	12	16	16
Europe	Vatican City	VT	50	43	40	31	31	25	25	16	18	12	16	16
N. America	Alberta	AB	62	62	62	43	56	37	43	37	31	25	21	21
N. America	Aguascalientes	AG	68	62	56	43	49	37	43	31	31	25	23	23
N. America	Alaska	AK	65	55	55	40	45	35	45	35	30	25	17	17
N. America	Alabama	AL	68	60	55	40	45	35	45	35	30	25	15	15
N. America	Arkansas	AR	65	55	55	40	45	35	45	35	35	25	15	15
N. America	Arizona	AZ	68	60	60	40	50	35	45	35	35	25	15	15
N. America	British Columbia	BC	68	62	62	37	56	37	43	37	31	25	21	21
N. America	Bermuda	BD	56	49	49	43	43	37	31	31	25	25	21	21
N. America	Belize	BH	62	56	56	43	49	37	37	31	31	25	21	21
N. America	Baja California	BJ	68	62	56	43	49	37	43	31	31	25	23	23
N. America	Baja California Sur	BS	68	62	56	43	49	37	43	31	31	25	23	23
N. America	California	CA	55	55	55	40	45	30	40	30	30	25	16	16
N. America	Chiapas	CH	68	62	56	43	49	37	43	31	31	25	23	23
N. America	Chihuahua	CI	68	62	56	43	49	37	43	31	31	25	23	23
N. America	Colima	CL	68	62	56	43	49	37	43	31	31	25	23	23
N. America	Colorado	CO	68	60	60	40	50	35	45	35	35	25	15	15
N. America	Campeche	CP	68	62	56	43	49	37	43	31	31	25	23	23
N. America	Costa Rica	CS	56	49	49	43	43	37	31	31	25	25	21	21
N. America	Connecticut	CT	65	55	55	40	45	30	35	30	25	25	13	13
N. America	Coahuila de Zaragoza	CU	68	62	56	43	49	37	43	31	31	25	23	23
N. America	Dist. of Columbia	DC	55	50	45	40	40	35	35	30	25	25	13	13
N. America	Delaware	DE	65	55	55	40	45	30	35	30	25	25	13	13

Region	State	FIPS	Interstate Highway		Divided Highway		Primary Highway		Secondary Highway		Local		Ferries	
			Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
N. America	Distrito Federal	DF	62	62	43	43	37	37	31	31	25	25	23	23
N. America	Durango	DG	68	62	56	43	49	37	43	31	31	25	23	23
N. America	Mexico (Estado)	EM	68	62	56	43	49	37	43	31	31	25	23	23
N. America	El Salvador	ES	62	56	56	43	49	37	37	31	31	25	21	21
N. America	Florida	FL	68	60	55	40	45	35	45	35	30	25	13	13
N. America	Georgia	GA	68	60	55	40	45	35	40	30	30	25	13	13
N. America	Guanajuato	GJ	68	62	56	43	49	37	43	31	31	25	23	23
N. America	Greenland	GL	45	45	45	35	35	35	35	25	25	20	13	13
N. America	Guerrero	GR	68	62	56	43	49	37	43	31	31	25	23	23
N. America	Guatemala	GT	62	56	56	43	49	37	37	31	31	25	21	21
N. America	Hidalgo	HG	68	62	56	43	49	37	43	31	31	25	23	23
N. America	Hawaii	HI	60	50	45	35	35	35	25	25	25	25	13	13
N. America	Honduras	HO	62	56	56	43	49	37	37	31	31	25	21	21
N. America	Iowa	IA	68	55	60	40	45	35	45	35	35	25	15	15
N. America	Idaho	ID	65	60	60	40	50	35	45	35	35	25	15	15
N. America	Illinois	IL	65	55	55	40	45	35	45	35	35	25	15	15
N. America	Indiana	IN	65	55	55	40	45	35	40	30	30	25	15	15
N. America	Jalisco	JA	68	62	56	43	49	37	43	31	31	25	23	23
N. America	Kansas	KS	68	60	60	40	50	35	45	35	35	25	15	15
N. America	Kentucky	KY	65	60	55	40	45	35	40	30	30	25	15	15
N. America	Louisiana	LA	68	60	55	40	45	35	45	35	35	25	15	15
N. America	Massachusetts	MA	65	60	55	40	45	30	35	30	25	25	13	13
N. America	Manitoba	MB	68	62	62	43	56	37	43	37	31	25	21	21
N. America	Maryland	MD	65	60	55	40	45	30	35	30	25	25	13	13
N. America	Maine	ME	65	60	60	40	45	35	45	35	30	25	13	13
N. America	Michoacan de Ocampo	MH	68	62	56	43	49	37	43	31	31	25	23	23
N. America	Michigan	MI	60	55	55	40	45	35	40	30	30	25	18	18
N. America	Minnesota	MN	68	60	60	40	45	35	45	35	35	25	15	15

Region	State	FIPS	Interstate Highway		Divided Highway		Primary Highway		Secondary Highway		Local		Ferries	
			Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
N. America	Missouri	MO	68	60	60	40	45	35	45	35	35	25	15	15
N. America	Morelos	MR	68	62	56	43	49	37	43	31	31	25	23	23
N. America	Mississippi	MS	68	60	55	40	45	35	45	35	30	25	15	15
N. America	Montana	MT	65	60	60	40	50	35	45	35	35	25	15	15
N. America	Nayarit	NA	68	62	56	43	49	37	43	31	31	25	23	23
N. America	New Brunswick	NB	62	62	56	43	56	37	43	31	31	25	21	21
N. America	North Carolina	NC	68	60	55	40	45	35	40	30	30	25	13	13
N. America	North Dakota	ND	68	60	60	40	50	35	45	35	35	25	15	15
N. America	Nebraska	NE	68	60	60	40	50	35	45	35	35	25	15	15
N. America	New Hampshire	NH	65	60	55	40	45	35	45	35	30	25	13	13
N. America	Nicaragua	NU	59	50	41	27	27	18	23	14	16	9	5	5
N. America	New Jersey	NJ	65	55	55	40	45	30	35	30	25	25	13	13
N. America	Newfoundland and Labrador	NL	62	62	62	43	56	37	43	31	31	25	21	21
N. America	New Mexico	NM	68	60	60	40	50	35	45	35	35	25	15	15
N. America	Nova Scotia	NS	62	62	62	43	56	37	43	31	31	25	21	21
N. America	Northwest Territory	NT	56	56	56	43	56	37	43	31	31	25	21	21
N. America	Nunavut	NU	59	50	41	27	27	18	23	14	16	9	5	5
N. America	Nevada	NV	68	60	60	40	50	35	45	35	35	25	21	21
N. America	Nuevo Leon	NX	68	62	56	43	49	37	43	31	31	25	23	23
N. America	New York	NY	65	60	55	40	45	30	35	30	25	25	13	13
N. America	Oaxaca	OA	68	62	56	43	49	37	43	31	31	25	23	23
N. America	Ohio	OH	65	60	55	40	45	35	40	30	30	25	15	15
N. America	Oklahoma	OK	68	60	60	40	50	35	45	35	35	25	15	15
N. America	Ontario	ON	62	62	62	43	49	37	43	31	31	25	21	21
N. America	Oregon	OR	55	55	50	40	45	35	40	30	30	25	16	16
N. America	Pennsylvania	PA	65	55	55	40	45	30	35	30	25	25	13	13
N. America	Prince Edward Island	PE	62	62	56	43	56	37	49	37	31	25	21	21

Region	State	FIPS	Interstate Highway		Divided Highway		Primary Highway		Secondary Highway		Local		Ferries	
			Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
N. America	Panama	PM	62	56	56	43	49	37	37	31	31	25	21	21
N. America	Puerto Rico	PR	65	55	45	40	45	30	30	30	30	25	15	15
N. America	Puebla	PU	68	62	56	43	49	37	43	31	31	25	23	23
N. America	Queretaro Arteaga	QA	68	62	56	43	49	37	43	31	31	25	23	23
N. America	Quebec	QC	62	62	56	37	56	37	49	37	31	25	21	21
N. America	Quintana Roo	QR	68	62	56	43	49	37	43	31	31	25	23	23
N. America	Rhode Island	RI	65	55	55	40	45	30	35	30	25	25	13	13
N. America	South Carolina	SC	68	60	55	40	45	35	40	30	30	25	13	13
N. America	South Dakota	SD	68	60	60	40	50	35	45	35	35	25	15	15
N. America	Sinaloa	SI	68	62	56	43	49	37	43	31	31	25	23	23
N. America	Saskatchewan	SK	62	62	62	43	56	37	43	37	31	25	21	21
N. America	San Luis Potosi	SL	68	62	56	43	49	37	43	31	31	25	23	23
N. America	Sonora	SO	68	62	56	43	49	37	43	31	31	25	23	23
N. America	Tabasco	TA	68	62	56	43	49	37	43	31	31	25	23	23
N. America	Tlaxcala	TL	68	62	56	43	49	37	43	31	31	25	23	23
N. America	Tamaulipas	TM	68	62	56	43	49	37	43	31	31	25	23	23
N. America	Tennessee	TN	68	60	55	40	45	35	40	30	30	25	15	15
N. America	Texas	TX	68	60	60	40	50	35	45	35	35	25	15	15
N. America	Utah	UT	68	60	60	40	50	35	45	35	35	25	15	15
N. America	Virginia	VA	65	60	55	40	45	30	40	30	30	25	13	13
N. America	Vermont	VT	65	55	55	40	45	35	45	35	30	25	15	15
N. America	Veracruz	VZ	68	62	56	43	49	37	43	31	31	25	23	23
N. America	Washington	WA	60	60	55	40	45	30	35	30	30	25	16	16
N. America	Wisconsin	WI	65	60	60	40	45	35	45	35	35	25	18	18
N. America	West Virginia	WV	68	55	55	40	45	35	35	30	30	25	15	15
N. America	Wyoming	WY	68	60	60	40	50	35	45	35	35	25	15	15
N. America	Yucatan	YC	68	62	56	43	49	37	43	31	31	25	23	23
N. America	Yukon Territory	YT	56	56	56	43	56	37	49	37	31	25	21	21

Region	State	FIPS	Interstate Highway		Divided Highway		Primary Highway		Secondary Highway		Local		Ferries	
			Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
N. America	Zacatecas	ZT	68	62	56	43	49	37	43	31	31	25	23	23
Oceania	American Samoa	AQ	50	43	43	37	37	31	31	25	25	18	18	18
Oceania	Australia	AS	68	56	56	43	50	37	37	25	25	18	22	22
Oceania	Solomon Islands	BP	50	43	43	37	37	31	31	25	25	18	18	18
Oceania	Northern Mariana Islands	CQ	50	43	43	37	37	31	31	25	25	18	15	15
Oceania	Cook Islands	CW	50	43	43	37	37	31	31	25	25	18	18	18
Oceania	Fiji	FJ	50	43	43	37	37	31	31	25	25	18	18	18
Oceania	Micronesia, Federated States of	FM	50	43	43	37	37	31	31	25	25	18	18	18
Oceania	French Polynesia	FP	50	43	43	37	37	31	31	25	25	18	20	20
Oceania	French Southern and Antarctic Islands	FS	50	43	43	37	37	31	31	25	25	18	15	15
Oceania	Guam	GQ	45	45	45	35	35	35	35	25	25	18	18	18
Oceania	Kiribati	KR	50	43	43	37	37	31	31	25	25	18	15	15
Oceania	Midway Island	MQ	50	43	43	37	37	31	31	25	25	18	18	18
Oceania	New Caledonia	NC	50	43	43	37	37	31	31	25	25	18	22	22
Oceania	Niue	NE	50	43	43	37	37	31	31	25	25	18	15	15
Oceania	Norfolk Island	NF	50	43	43	37	37	31	31	25	25	18	18	18
Oceania	Vanuatu	NH	50	43	43	37	37	31	31	25	25	18	15	15
Oceania	Nauru	NR	50	43	43	37	37	31	31	25	25	18	15	15
Oceania	New Zealand	NZ	62	56	56	43	43	31	37	25	25	18	23	23
Oceania	Pitcairn	PC	50	43	43	37	37	31	31	25	25	18	15	15
Oceania	Palau	PS	50	43	43	37	37	31	31	25	25	18	15	15
Oceania	Marshall Islands	RM	50	43	43	37	37	31	31	25	25	18	18	18
Oceania	Tokelau	TL	50	43	43	37	37	31	31	25	25	18	15	15
Oceania	Tonga	TN	50	43	43	37	37	31	31	25	25	18	15	15
Oceania	Tuvalu	TV	50	43	43	37	37	31	31	25	25	18	15	15
Oceania	Wallis & Futuna Islands	WF	50	43	43	37	37	31	31	25	25	18	15	15

Region	State	FIPS	Interstate Highway		Divided Highway		Primary Highway		Secondary Highway		Local		Ferries	
			Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
Oceania	Wake Island	WQ	50	43	43	37	37	31	31	25	25	18	18	18
Oceania	Western Samoa	WS	50	43	43	37	37	31	31	25	25	18	18	18
S. America	Aruba	AA	56	43	43	37	37	31	31	25	18	18	24	24
S. America	Antigua and Barbuda	AC	56	43	43	37	37	31	31	25	18	18	16	16
S. America	Argentina	AR	68	50	50	37	37	31	31	25	18	12	21	21
S. America	Anguilla	AV	56	43	43	37	37	31	31	25	18	18	20	20
S. America	Barbados	BB	56	43	43	37	37	31	31	25	18	18	16	16
S. America	Bahamas	BF	56	43	43	37	37	31	31	25	18	18	26	26
S. America	Bolivia	BL	62	50	50	37	37	31	31	25	18	12	21	21
S. America	Brazil	BR	68	43	50	37	37	25	31	18	18	12	21	21
S. America	Chile	CI	62	50	43	37	31	31	25	25	18	12	21	21
S. America	Cayman Islands	CJ	56	43	43	37	37	31	31	25	18	18	20	20
S. America	Colombia	CO	62	50	43	37	31	31	25	25	18	12	21	21
S. America	Cuba	CU	56	43	43	37	37	31	31	25	18	18	23	23
S. America	Dominica	DO	56	43	43	37	37	31	31	25	18	18	20	20
S. America	Dominican Republic	DR	56	43	43	37	37	31	31	25	18	18	16	16
S. America	Ecuador	EC	62	50	43	37	31	31	25	25	18	12	21	21
S. America	French Guiana	FG	62	50	50	37	37	31	31	25	18	12	21	21
S. America	Falkland Islands (Malvinas)	FK	56	43	43	37	37	31	31	25	18	18	12	12
S. America	Grenada	GJ	56	43	43	37	37	31	31	25	18	18	20	20
S. America	Guadeloupe	GP	56	43	43	37	37	31	31	25	18	18	20	20
S. America	Guyana	GY	62	50	50	37	37	31	31	25	18	12	21	21
S. America	Haiti	HA	56	43	43	37	37	31	31	25	18	18	20	20
S. America	Jamaica	JM	56	43	43	37	37	31	31	25	18	18	23	23
S. America	Martinique	MB	56	43	43	37	37	31	31	25	18	18	20	20
S. America	Montserrat	MH	56	43	43	37	37	31	31	25	18	18	16	16
S. America	Sint Maarten	NN	56	43	43	37	37	31	31	25	18	18	16	16

Region	State	FIPS	Interstate Highway		Divided Highway		Primary Highway		Secondary Highway		Local		Ferries	
			Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
S. America	Suriname	NS	62	50	50	37	37	31	31	25	18	12	21	21
S. America	Netherlands Antilles	NT	56	43	43	37	37	31	31	25	18	18	16	16
S. America	Paraguay	PA	62	50	50	37	37	31	31	25	18	12	21	21
S. America	Peru	PE	62	50	43	37	31	31	25	25	18	12	21	21
S. America	Saint Martin	RN	56	43	43	37	37	31	31	25	18	18	16	16
S. America	Saint Kitts and Nevis Islands	SC	56	43	43	37	37	31	31	25	18	18	16	16
S. America	Saint Lucia	ST	56	43	43	37	37	31	31	25	18	18	20	20
S. America	Saint Barthelemy	TB	56	43	43	37	37	31	31	25	18	18	16	16
S. America	Trinidad and Tobago	TD	62	50	43	37	31	31	25	25	18	12	25	25
S. America	Turks and Caicos Islands	TK	56	43	43	37	37	31	31	25	18	18	16	16
S. America	Curacao	UC	56	43	43	37	37	31	31	25	18	18	16	16
S. America	Uruguay	UY	62	50	50	37	37	31	31	25	18	12	21	21
S. America	Saint Vincent and the Grenadines	VC	56	43	43	37	37	31	31	25	18	18	20	20
S. America	Venezuela	VE	62	50	43	37	31	31	25	25	18	12	21	21
S. America	British Virgin Islands	VI	56	43	43	37	37	31	31	25	18	18	24	24
S. America	United States Virgin Islands	VQ	56	43	43	37	37	31	31	25	18	18	24	24

The chart below identifies the toll authorities that have assigned multiple names to the same toll plaza location. When generating a route using PC*MILER|Tolls, only one name for each toll plaza location is provided in the Detailed Route Report. Because a vehicle can travel through any of the sub-plazas at one of these locations, this chart may help you match up agency names to the names that appear along a route in the Detailed Route Report.

Currently there is only one toll plaza location in the database that has multiple names assigned to it:

Agency	Toll Road	Toll Plaza Name in PC*MILER Connect	Toll Plaza Abbreviation in Detailed Route Report	Other Plaza Abbreviations Used By Agency at the Same Location	Other Plaza Names Used by Agency at the Same Location
VDOT	Chesapeake Expressway	Chesapeake Expressway	16, 17	18*	

* 18 is the abbreviation used for Discount Program Members.

Appendix G: Toll Roads Requiring Electronic Payment

Table 1 below lists roads that only accept toll discount programs. No cash or other payment option is offered, and driving on one of these roads without a transponder and discount program membership will cause an invoice to be sent with a surcharge added to the toll rate.

Table 2 lists all electronic toll roads (Open Road Tolling). Like the roads in Table 1, drivers without a transponder on these roads will receive an invoice with a video toll rate amount.

What differentiates these two types of roads is the amount of the surcharge on the roads in Table 1: these roads carry a relatively expensive surcharge, and the transportation authorities strongly advise against driving on these roads without a transponder.

TABLE 1. Roads Accepting Only Toll Discount Programs – Additional Surcharge on Violations

State	Toll Road/Exits	Discount Program	Video Toll/Cash	Comments
Florida	Florida Turnpike	SunPass	None	For the Florida Turnpike, the five exits listed are SunPass Only. Drivers without SunPass are required to exit before or after these exits. If used by mistake then an invoice is sent home with a surcharge.
	Becker Road	SunPass	None	
	Jog Road exit 98	SunPass	None	
	SR 710 exit 107	SunPass	None	
	Consulate Drive exit 255	SunPass	None	
	Kissimmee Park Rd exit 240	SunPass	None	

Florida	Polk Parkway	SunPass	None	This exit on the Polk Parkway is SunPass only. If used by mistake an invoice is sent to the user with a surcharge.
Pennsylvania	Pennsylvania Turnpike	E-ZPass	None	For the three exits listed here a video toll plus a surcharge is sent in an invoice to the user.
	Virginia Drive exit 340	E-ZPass	None	
	Street Road exit 352			
	SR 29 exit 320	E-ZPass	None	
Texas	Camino Colombia Toll Road	TxTag, TollTag, EZ TAG	None	You must have a TxTag account or other accepted prepaid account to pay tolls on Camino Colombia. Under Texas law, non-payment of tolls is a misdemeanor offense, and you may be subject to Administrative fees and fines of up to \$350 per violation.
Texas	Fort Bend Westpark Tollway	EZ Tag, TxTag	None	A fee is added to the toll rate and an invoice is sent to drivers without EZ Tag.
Texas	Fort Bend Parkway Toll Road (Fort Bend Section)	EZ Tag, TxTag	None	A fee is added to the toll rate and an invoice it sent to drivers without EZ Tag.
Texas	Westpark Tollway	EZ Tag	None	Driving without an EZ TAG results in a violation event. A toll violation invoice is sent to registered owner/renter for the past-due toll amount plus fess od \$33.

Texas	Sam Houston Tollway	EZ Tag, TxTag, TollTag	Video Toll	There are eleven plazas that require an EZ Tag. For the first two violations drivers can go to store or call and pay the toll; for the third violation an invoice with a surcharge of \$33 is generated.
	North Gessner	EZ Tag, TxTag, TollTag	Video Toll	
	West Road Entrance Ramp	EZ Tag, TxTag, TollTag	Video Toll	
	Hammerly Blvd Entrance Ramp	EZ Tag, TxTag, TollTag	Video Toll	
	Bellaire Blvd Entrance Ramp	EZ Tag, TxTag, TollTag	Video Toll	
	Tidwell Road	EZ Tag, TxTag, TollTag	Video Toll	
	Garrett Road	EZ Tag, TxTag, TollTag	Video Toll	
	Winfield Road	EZ Tag, TxTag, TollTag	Video Toll	
	Northeast Mainline Toll Plaza	EZ Tag, TxTag, TollTag	Video Toll	
	W Lake Houston Parkway	EZ Tag, TxTag, TollTag	Video Toll	
	John Ralston Road	EZ Tag, TxTag, TollTag	Video Toll	
	Wilson Road	EZ Tag, TxTag, TollTag	Video Toll	
Texas	Hardy Toll Road	EZ Tag, TxTag, TollTag	Video Toll	There are two plazas that require an EZ Tag. For the first two violations drivers can go to a store or call and pay the toll, for the third violation an invoice with a surcharge of \$33 is generated.
	Rankin Road South	EZ Tag, TxTag, TollTag	Video Toll	
	Central Greens Blvd	EZ Tag, TxTag, TollTag	Video Toll	

TABLE 2. Electronic Toll Roads (Open Road Tolling)

State	Toll Road/Exits	Discount Program	Video Toll/Cash	Comments
British Columbia	Golden Ears Bridge	Quickpass	Pay As You Go	If the driver is not a registered customer, the license plate information is forwarded electronically to ICBC when the bridge is crossed. TransLink uses the information received from ICBC to send a bill for the toll amount to the registered owner of the vehicle.
	Port Mann Bridge	TReO	Pay By Mail	
California	Golden Gate Bridge	FasTrak	Pay-by-Plate	
	Foothills-Eastern Toll Road	FasTrak	ExpressAccount Invoice	
	San Joaquin Hills Corridor	FasTrak	ExpressAccount Invoice	
Florida	Snapper Creek Expressway SR 878	SunPass	Toll-By-Plate	
	Don Shula Expressway SR 874	SunPass	Toll-By-Plate	
	Gratigny Parkway SR 924	SunPass	Toll-By-Plate	
	Homestead Extension Of Florida's Turnpike	SunPass	Toll-By-Plate	
	Selmon Expressway	SunPass	We Bill You	
	New interchange I-4/Selmon Expressway Interchange (Connector)	SunPass	Toll-By-Plate	
	Dolphin Expressway SR 836/137 th Avenue	SunPass	Toll-By-Plate	
	Mid-Bay Bridge Connector	SunPass	Toll-By-Plate	
	Florida's Turnpike	SunPass	Toll-By-Plate	

	Golden Glades Toll Plaza	SunPass	Toll-By-Plate	
Illinois	Tri-State Tollway	I-Pass, E-ZPass	Video Toll Rate	For the highlighted exit which is an all electronic tolling ramps, no cash accepted. Cash customers will incur an unpaid toll and are responsible for paying the cash fare indicated within 7 days of the event.
	Balmoral Northbound	I-Pass, E-ZPass	Video Toll Rate	
	Ronald Reagan Tollway	I-Pass, E-ZPass	Video Toll Rate	For the highlighted exit which is an all electronic tolling ramps, no cash accepted. Cash customers will incur an unpaid toll and are responsible for paying the cash fare indicated within 7 days of the event.
	Eola Road	I-Pass, E-ZPass	Video Toll Rate	
	Jane Addams Tollway	I-Pass, E-ZPass	Video Toll Rate	
	IL 47 EB ent WB exit	I-Pass, E-ZPass	Video Toll Rate	
	IL 47 EB ent WB exit	I-Pass, E-ZPass	Video Toll Rate	
	Maryland	Intercounty Connector MD 200	E-ZPass	Video Toll Rate
North Carolina	Triangle Expressway	NC Quick Pass	Bill By Mail	
Ontario	407 ETR	407 ETR Transponder	Video Toll Charge	
Quebec	A 25 Bridge	A25 Transponder	Video Toll	

			Charge	
Rhode Island	Sakonnet River Toll Bridge	E-ZPass	Video Toll Charge	
Texas	183A	TxTag, TollTag, EZ TAG	Pay By Toll	
	Central Texas Tollways Loop 1	TxTag, TollTag, EZ TAG	ZipCash	
	Central Texas Tollways SH 130	TxTag, TollTag, EZ TAG	ZipCash	
	Cetral Texas Tollways SH 45	TxTag, TollTag, EZ TAG	ZipCash	
	Manor Expressway	TxTag, TollTag, EZ TAG	Pay By Mail	
	Addison Airport Tunnel	TollTag, TxTag	ZipCash	
	Dallas North Tollway	TollTag, TxTag	ZipCash	
	Lewisville Lake Toll Bridge	TollTag, TxTag	ZipCash	
	Mountain Creek Lake Toll Bridge	TollTag, TxTag	ZipCash	
	Sam Rayburn Tollway	TollTag, TxTag	ZipCash	
	President George Bush Turnpike	TollTag, TxTag	ZipCash	
	PGBT Western Extension SH 161	TollTag, TxTag	ZipCash	
	Texas SH 550	TxTag, TollTag, EZ TAG	Pay By Mail Rate	
Texas State Highway 99	TxTag, TollTag, EZ TAG	Notice By Mail		
Virginia	Pocahontas Parkway	E-ZPass	E-ZPass, Visa or Mastercard	The two listed exits are no cash exits, The Mainline Plaza is also cashless overnight from 11 p.m to 5 a.m. Payment options are Visa/Mastercard Debit/Credit cards
	Laburnum Avenue	E-ZPass	E-ZPass, Visa or	

			Mastercard	
	Airport Connector	E-ZPass	E-ZPass, Visa or Mastercard	
	Midtown Tunnel	E-ZPass	Pay by Plate	
	Downtown Tunnel	E-ZPass	Pay by Plate	
Washington	SR 520 Bridge	Good To Go	Pay By Mail	

Appendix H: Postal Code Formats In Worldwide Regions

Legend: A = alphabetic (A,B,C,...Z)
N = numeric (0,1,2,...9)

NOTE: The version of PC*MILER in which postal code coverage was started is noted for each country listed below. This refers to postal code coverage only, the country may have been available for routing without postal code access in previous versions.

North America

Canada

ANA NAN or ANANAN

Mexico, starting in Version 25.1

NNNNN

Puerto Rico, starting in Version 27.1

NNNNN

United States

NNNNN

South America

Brazil, starting in Version 24.1

NNNNN

Europe

United Kingdom

AANA N or AAN N or AANN N

or, starting in PCM24, AANAN or AANN or AANNN

or, starting in Version 25.1, AANA NAA or AANANAA or AAN NAA or AANNAA or AANN NAA or AANNNAA

France, Germany, Italy, Vatican City, Spain, and Finland

NNNNN

Russian Federation, starting in Version 22.1

NNNNNN

Romania, starting in Version 23.1

NNNNNN

Estonia and Croatia, starting in Version 22.1
NNNNN

Lithuania, starting in Version 23.1
NNNNN

Andorra, starting in Version 26.1
AANNN

Monaco, starting in Version 26.1
NNNNN

Ukraine and Turkey, starting in Version 24.1
NNNNN

Netherlands, Belgium, Luxemburg, Austria, Switzerland, Liechtenstein,
Denmark, Norway and Hungary
NNNN

Latvia and Slovenia, starting in Version 22.1
NNNN

Bulgaria, starting in Version 23.1
NNNN

Iceland
NNN

Ireland (Dublin only)
NN (single digit postcodes N are not supported for input in PC*MILER)

Poland
NN-NNN
or, starting in Version 24.1: NNNNN

Portugal
NNNN
or, starting in Version 24.1: NNNN-NNN or NNNNNNN

San Marino, starting in Version 26.1
NNNNN

Sweden
NNN
or, starting in Version 22.1: NNN NN or NNNNN

Czech Republic and Slovakia
NNN NN or NNNNN

Greece, starting in Version 22.1
NNN NN or NNNNN

Africa

Lesotho, starting in Version 27.1
NNNN

South Africa, starting in Version 24.1
NNNN

Swaziland, starting in Version 27.1
ANNN

Asia

Japan, starting in Version 24.1
NNN-NNNN or NNNNNNN

India, starting in Version 24.1
NNNNNN

Indonesia, starting in Version 27.1
NNNNN

Malaysia, starting in Version 27.1
NNNNN

Taiwan, starting in Version 27.1
NNN

Thailand, starting in Version 27.1
NNNNN

Oceania

Australia, starting in Version 24.1
NNNN

New Zealand, starting in Version 27.1
NNNN

Federated States of Micronesia, Guam, Marshall Islands, Northern Mariana Islands, and Palau, starting in Version 27.1
NNNNN

Appendix I: Worldwide Data Coverage & Postal Code Access

Region abbreviations are: AF (Africa), AS (Asia), EU (Europe), ME (Middle East), NA (North America), OC (Oceania), and SA (South America). Country, city and road coverage, and postal code accessibility are shown in the table below for each region.

Highway and Street-Level Data Coverage by Region

Region	# of countries	Highway Distance (Km)	Streets Distance ¹ (Km)	# of Cities	# of Postal Codes
Africa	58	1,226,160	1,398,376	28,826	5,293
Asia	36	1,574,981	1,653,237	391,744	421,435
Europe	48	2,762,969	14,091,315	552,382	1,463,904
Middle East	15	283,144	168,385	140,631	24,868
North America	7	1,412,999	10,859,726	244,001	1,044,830 ²
Oceania	25	256,836	1,092,867	21,803	32,902
South America	47	924,245	785,342	168,185	54,155
TOTAL	236	8,441,334	30,049,248	1,547,572	3,047,387

¹ Available with purchase of the PC*MILER/Streets add-on module. Street-level coverage for each region is available only for select countries with Coverage Level: Comprehensive.

² Includes Canadian Postal Codes available with purchase of data add-on

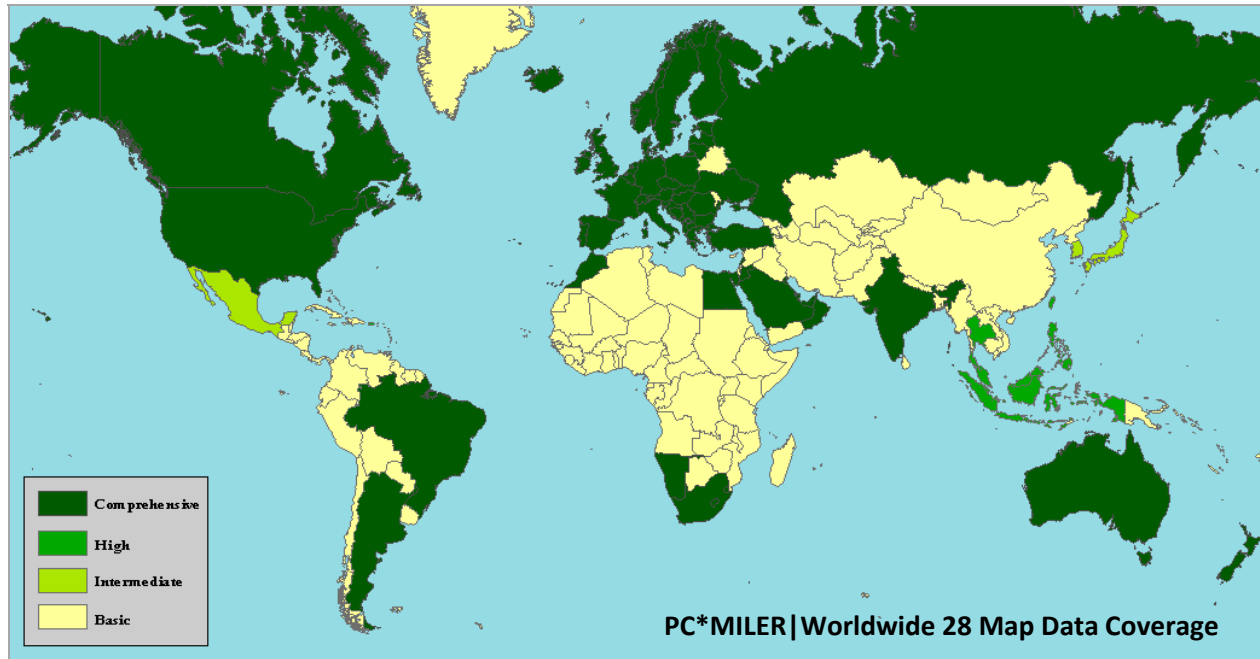
Worldwide Data Coverage

Version 28 includes extensive updates in 61 countries, with upgrades to Comprehensive coverage in Egypt, Lesotho, Morocco, Namibia, South Africa, Swaziland, India, Bahrain, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia and United Arab Emirates.

Additionally, a new Middle East region was added and the following countries were reclassified:

- Bahrain, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, United Arab Emirates, Iran, Iraq, Israel, Syria, West Bank and Yemen are now grouped in Middle East.
- Cyprus is now included in Europe instead of Asia.
- Central American countries of Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama, Curacao, Saint Barthelemy, Saint Martin, Sint Maarten are now grouped with South America.
- US Virgin Islands is included in North America.

The map and table on the next page show the current level of PC*MILER road network coverage worldwide.



Coverage Level*	Road Coverage	Locations	Truck-Specific Attributes
Comprehensive	High + Street Level Network	Cities, postal codes, addresses	Yes
High	Intermediate + Complete Highway Network	Cities, postal codes	Yes
Intermediate	Basic + Most primary & secondary roads	Cities, postal codes	No
Basic	City to city road network	Cities	No

* Coverage levels are assigned based on road coverage. Postal code and truck-specific attributes generally correspond to the level of road coverage with some exceptions.

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