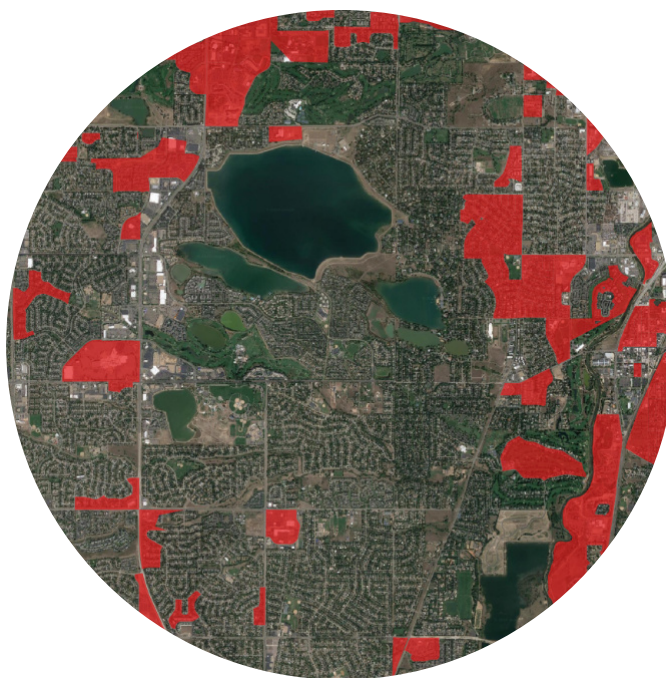


RDOF Business Analysis Toolkit

Getting Started Guide



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Introduction

This guide describes how to install and launch the RDOF Toolkit. One can be up and running at a basic level in 15 minutes.

Users are encouraged to read “Introduction / User’s Guide” and to watch tutorial videos as they are released. These are valuable resources to help you understand the Toolkit. For additional documentation, new announcements, and training see:

<https://cbrstoolkit.com/pages/rdof>

Quick Start

To getting started:

1. *Download the Toolkit.* You will receive an e-mail with a link immediately following your purchase.
2. *Unzip the File.* Unzip the contents and place the contents in a convenient location on your computer.

If you purchased a the most comprehensive version with detailed competitive data for every state, a tool that ships on a USB drive, you may receive a link via e-mail then a physical USB drive a few days later.

3. *Download and Install QGIS.* The Visual Toolkit is an application built upon an open-source world class GIS tool. You need to download and install a copy. Its free and is available to support every major operating system (Windows, macOS, Linux, BSD).

Recommendation: download the “Long Term Release” standalone installer, 64-bit version. Long Term Release means that is extremely stable. Virtually every computer today runs a 64-bit operating system. It leverages the hardware capabilities of your computer.

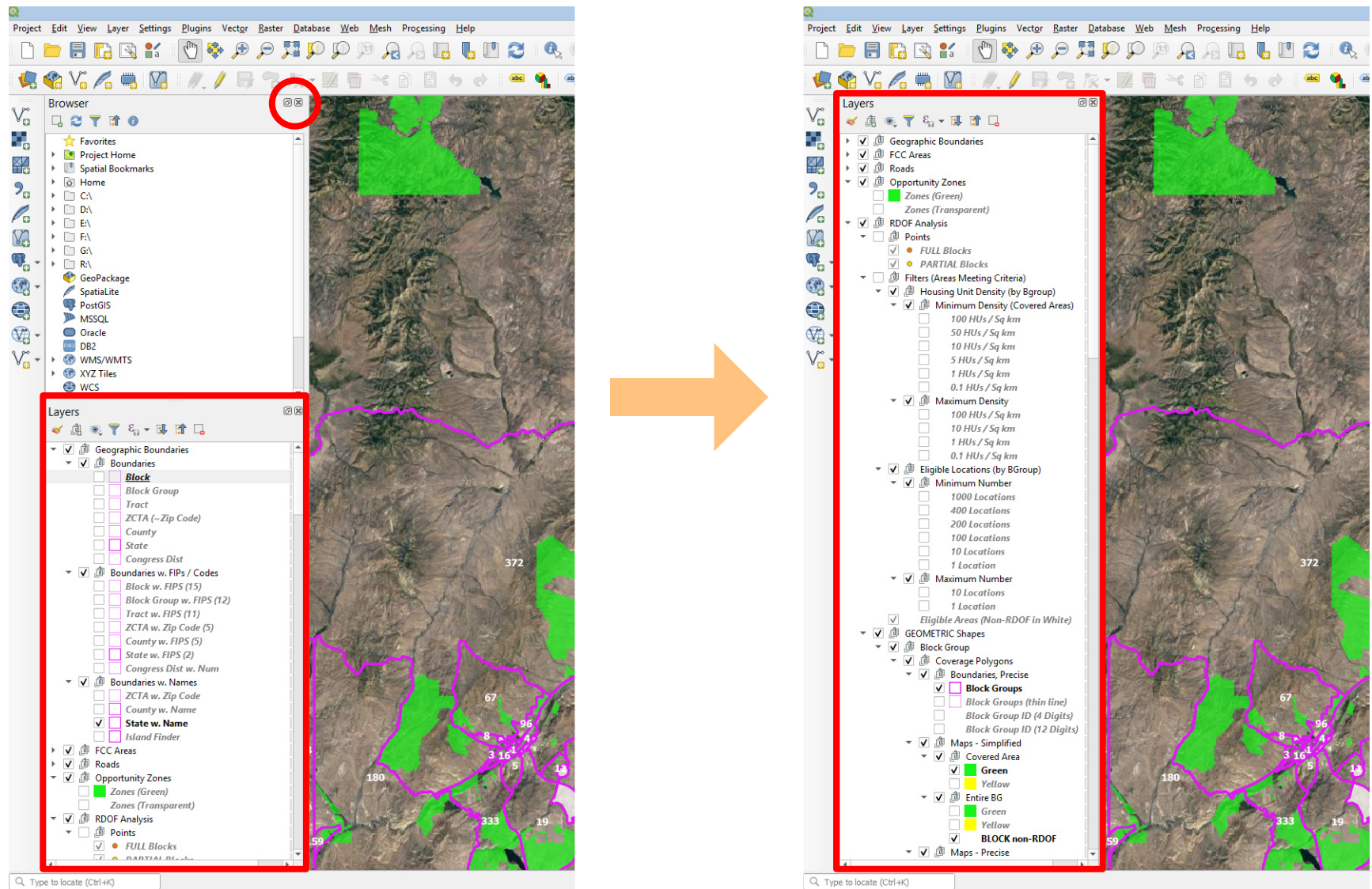
<https://www.qgis.org/en/site/forusers/download>

4. *Close Panels.* When you install QGIS it opens two panels by default, “Browser” and “Layers”. It is recommended that you close the “Browser” panel (see Figure 1). It is not needed and it consumes valuable screen real estate. If you want to see it again you can easily enable it from the “View” pull-down menu.
5. *Launch the Application.* Go the the Visual Toolkit folder within your unzipped Toolkit and double-click on any of the “qgz” icons to launch the Visual Toolkit.

Many versions of the Toolkit include two or more icons. One is labeled “All of the data”. The other(s) are labeled “Limited”.

The “All of the data” version includes a lot of high resolution data. It may take a while to load (5 - 10 minutes in the most populous states). In contrast, the “Limited” version loads quickly - sometimes 5 times faster, but excludes the data sets that show the details of existing fixed and mobile broadband networks. In less populous states both versions are likely to load quickly.

Figure 1: Reducing Clutter by Closing Unnecessary Panels in QGIS



There's More

- *Spreadsheets.* The “Excel Spreadsheets” folder includes all of the detailed data displayed in the Visual Toolkit in spreadsheet format. Anyone developing a business case will eventually want to see this data.
- *Web Site Links.* The folder Web Site Links includes links to important updates. It is likely that the Toolkit documentation will be updated and that the Toolkit functionality will be enhanced over time.
- *Still Need Help?* The Toolkit team is happy to answer quick questions by e-mail (support@CBRSToolkit.com) or more complicated questions via a Zoom meeting.



Frequently Asked Questions

How do versions of the Toolkit differ?

The RDOF Toolkit is laser-focused on the Rural Digital Opportunity Fund.

The state-level RDOF Toolkit has detailed competitive fixed broadband coverage and performance data for one particular state.

In addition, every RDOF Toolkit has national RDOF data (coverages areas, demographics and detailed spatial analyses).

The RDOF Toolkit is available for each the of 48 states in the contiguous United States plus Hawaii plus the District of Columbia. Each Toolkit includes limited data for the Northern Mariana Islands (Saipan, Rota, and Tinian). There is no RDOF Toolkit for Alaska or for the other island territories of the United States (e.g. Puerto Rico, the US Virgin Islands, Guam, and American Samoa) because none of these have RDOF-eligible geographic areas.

CBRSToolkit.com also publishes a suite of state and national-level toolkits. They are general telecommunications business planning tools, offering powerful demographic and economic insights and data sets relevant to anyone developing a fixed or mobile

business case, in addition to some CBRS-specific data. Many will choose to use the RDOF Toolkit in combination with the CBRS Toolkit in planning a fiber-based, radio-based, or other technology deployment. The CBRS toolkit includes an exceptionally rich collection of demographic, behavioral, and economic data relevant to any telecommunications business plan.

How does the Visual Toolkit relate to the Excel Spreadsheets?



A sophisticated user will eventually use both. The Visual Toolkit allows the user to zoom in and zoom out and navigate to different geographies and turn on an off different data layers. Every area (county, tract, block group, etc.) has a unique numerical code.

A user can look up a single code and get a complete data set for that area (including information not displayed visually).

Alternatively, the user can select an area using QGIS (that might include hundreds of tiny polygons) then save that list of areas to an Excel file then use the list to extract the corresponding data (by copying and pasting or via a lookup) from the Excel spreadsheet. Stay tuned for a video tutorial on this subject.

A business plan involving deployments in multiple cities might include selected geographies in each city and a corresponding P&L for each city.

What else is included?

The Toolkit includes estimates / forecasts of population by county through the July 1, 2020. This is important because populations tend to change over time.

The RDOF Toolkit contains block-level data from the 2010 census. It also includes data from the American Community Survey (5-Year), released in December of 2019.

Finally, and very importantly, version 1.1 of the RDOF Toolkit includes complex spatial analyses, based on the October 8th, 2020 FCC release of the *final* set of eligible areas. These analyses break larger geographic areas into small ones, associate relevant local data, and calculate geographic areas.

Troubleshooting

How do I zoom?

The easiest way - by far - is to use a physical mouse with a zoom wheel. If you have a laptop with a mousepad and don't happen to have a mouse with a zoom wheel you will find that a small investment in this important hardware accessory will make your life much easier, as you use the Toolkit and use GIS applications. Without a zoom wheel one can zoom in using the magnifying glass with a plus or minus sign (buttons along the top) but using a mouse with a physical zoom wheel is much easier.

The tool produces lots of beautiful pictures but does not display any numbers.

If you click on the triangle icon next to each set of data you will see a check box that enables the data labels. If you check it each polygon will have an associated numerical value. You should enable data layers when you are zoomed into a small area. As you zoom out labels for small geographic areas are likely to become unreadable. Ideally one would turn on labels appropriate to the zoom level.

When I turn on additional layers of data it gets cluttered.

Each data layer includes 10 different colors, each with numerical significant. In addition, most users are likely to turn on some labels. Each layer is translucent, primarily to enable the user to see hints of the map below the data layer. The Toolkit is designed

to display a single layer at a time. The simple solution is to turn off any existing data layers when you turn on a new one.

When I click the checkbox next to a data layer nothing happens.

The data layers are contained in "groups" (a.k.a. folders) to help users find everything in the Toolkit. A data layer will display only if each of its parent "groups" is enabled. If nothing is happening check to make sure that each of the parent "groups" is enabled with a check mark.

I'm lost! How do I know what geography I'm viewing?

The Toolkit includes a number of features to provide context. These include state, county, tract, block group, and other polygons. Most of these can be displayed with numbers and/or names. You can also turn on roads or roads with labels. Finally, you can change the underlying map in the "Maps" section near the bottom to a map that includes local names and places of interest. Each map blocks the maps that are below it, so if you wish to try a different map make sure you turn off the default map, which just displays terrain.

I already had QGIS installed. Its not launching the Toolkit.

The Toolkit expects the current release of QGIS (Long Term Release version 3.10) or later.



Download and install the current “Long Term Release”. The Toolkit should then launch properly.

I downloaded the Toolkit and decided to rearrange all the file folders. Now I get a bunch of error messages when I launch the application.

It is critically important that “GIS Data” is in the same folder as the application icons and that the contents of “GIS Data” are not rearranged. The Toolkit needs to find and load each of these files.

I purchased a state-level Toolkit for a very populous state. I clicked on the icon two minutes ago and it is still loading.

This is a great opportunity to refresh your cup of coffee or have an unhurried water cooler conversation with a colleague. GIS applications process huge amounts of data. The data the Toolkit is loading may be 1,000 times or 100,000 greater than the size of the Word document you opened a couple minutes ago. GIS tools take a few minutes to load but are then very responsive once loaded.

The first time you enable a layer QGIS may pause for a couple of seconds. Afterwards, as you toggle the same layer on and off and as you zoom in and out the response should be almost instantaneous.

You might, optionally, choose to load a “Limited” version of the Toolkit for a particular session if you do not plan to study block-level competitive coverage and performance data during that particular session.