

Third-quarter newsletter for the  
Denver Regional Data Consortium.

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*The data consortium consists of Denver Regional Council of Governments members and regional partners with an interest in geospatial data and collaboration. The data consortium newsletter improves communication among local geographic information systems professionals and features updates from all levels of government as they relate to data and geospatial initiatives in our region. This newsletter is published quarterly.*

## Free workshop to create your own open data site

*Article submitted by Ashley Summers, GISP, PMP, information systems manager at DRCOG. Ashley can be reached at 303-480-6746 or [asummers@drcog.org](mailto:asummers@drcog.org).*

DRCOG and Esri are partnering to provide a free workshop in August to help local governments create an open data site.

This hands-on, technical session will tell you everything you need to know about getting your GIS data online, using software that you probably already own.

The workshop will be held at DRCOG's offices at 1001 17th Street on Aug. 8 from 1 p.m. to 4 p.m. Some advance work is required to make the most of your time during the session and space is limited. To secure your spot and receive pre-workshop instructions, please [RSVP](#).

Wondering what an Esri open data site looks like? Check out these excellent examples that your colleagues created:

<https://data-auroraco.opendata.arcgis.com/>  
<https://gis-bouldercounty.opendata.arcgis.com/>  
<https://open-centennial.opendata.arcgis.com/>  
<https://data-c3.opendata.arcgis.com/>  
<https://data-erieco.opendata.arcgis.com/>  
<https://data-jeffersoncounty.opendata.arcgis.com/>  
<https://data-cityofthornton.opendata.arcgis.com/>

## Go Code winner Carbos creates carbon trading app with public data

*Article submitted by Margaret-Rose Spyker, GIS and data analyst at Xentity Corporation. Margaret can be reached at [mspyker.xentity@gmail.com](mailto:mspyker.xentity@gmail.com).*

Carbos leverages public data and blockchain technology to remove the barrier to entry into the carbon marketplace. By bringing small carbon offset projects to market, Carbos allows environmentally conscious business owners to invest in local carbon sequestration resources rather than large international projects.

According to Carbos creators Nathan Tutchton, Alex Tutchton and Scott Stoltzman, Colorado has the potential to generate \$30 billion from carbon trading for the agricultural sector alone. They developed Carbos to help establish an equitable system for carbon trading and to help Colorado become a leader in global carbon offset projects.

The team's recent win in the Go Code Colorado competition helped them flesh out the data details of their idea, and provided them with access to resources to leverage the public data essential to the function of their product. Beginning with a pilot for City of Boulder, street trees data is combined with assessor parcel data to calculate each site's carbon sequestration capacity.

The Carbos team found the DRCOG planimetric data and related high-resolution imagery invaluable. They used it to derive a method to calculate the amount of impervious surface for each site to generate a water sequestration score. They combined this with the carbon storage score, along with

land use grids from NREL, EPA and USGS, to further enhance the model and calculate other statistics for each site.



Colorado Secretary of State Wayne Williams with the Carbos team, winners of Go Code 2018

## Jefferson County Public Health uses GIS data to inform Safe Routes to School efforts

*Article submitted by Elise Waln, special projects coordinator at Jefferson County Public Health. Elise can be reached at [emwaln@jeffco.us](mailto:emwaln@jeffco.us).*

According to the Safe Routes to School National Partnership, nearly 50 percent of all children in the U.S. (and nearly 90 percent of those within a mile of school) walked or biked to school in the late 1960s. By 2009, that number dropped to fewer than 15 percent.

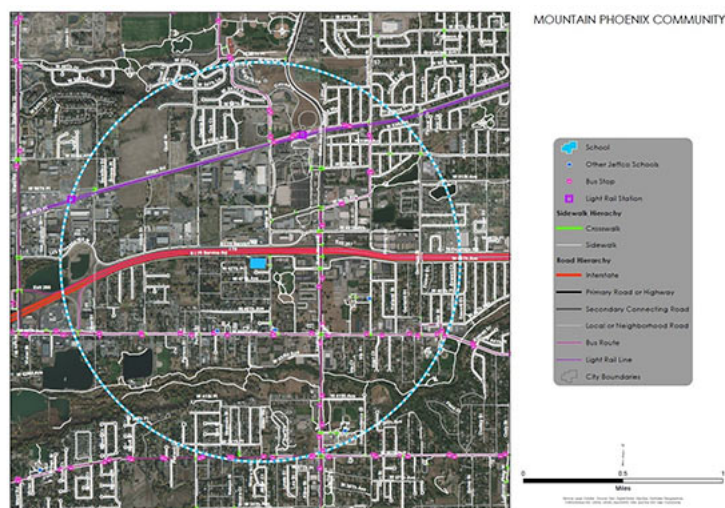
To support increased opportunities for physical activity and safety for bicyclists and pedestrians in school zones, Jefferson County Public Health was awarded a Safe Routes to Schools education grant from the Colorado Department of Transportation. Safe Routes to School programs are a way communities can work together to increase the number of students who choose active transportation — like walking and wheeling — by making it safer and more accessible for children and their families.

Over the 2017-18 school year, Jefferson County Public Health collected a variety of data to inform its Jefferson County Safe Routes to School work with partnering schools. It conducted walk audits to assess the built environment, implemented student travel tallies and parent surveys, hosted several community meetings and examined geographic information systems (GIS) mapping data.

Stakeholders provided guidance on what GIS data to examine for this project, which included:

- road hierarchy (as a proxy for traffic volume and speed)
- sidewalks
- bike lanes
- crosswalks
- signaled intersections
- public transit lines

Jefferson County Public Health staff continue to research and assess next steps for the GIS data they have collected to make it most useful for their partnering school communities. This data has sparked invaluable conversations with stakeholders on potential areas for improvements, next steps and potential safe routes for students. GIS data gathered for this project has been key to informing Jefferson County Safe Routes to School activities for its partnering schools moving forward.

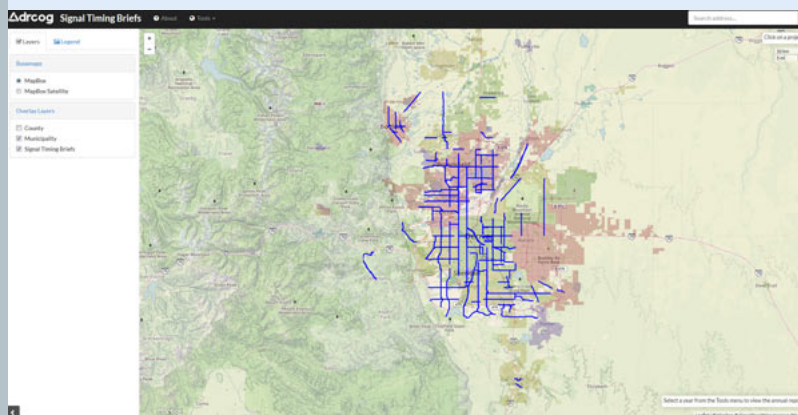


## DRCOG updates the Traffic Signal Timing Briefs map

Article submitted by Jenny Wallace, senior GIS specialist at DRCOG. Jenny can be reached at 303-480-6754 or [jwallace@drcog.org](mailto:jwallace@drcog.org).

Through the Regional Transportation Operations program, DRCOG staff works with member governments to develop and implement capital and signal timing coordination improvements. Capital improvements increase the ability of jurisdiction staff to maintain reliable operations while the cross-jurisdictional signal timing coordination improvements decrease delays at signalized intersections. Regional and local benefits of the program include reduced traffic congestion, improved air quality, decreased fuel consumption and improved roadway operations efficiency.

DRCOG developed the Signal Timing Briefs map to showcase the completed projects under the Regional Transportation Operations program. The web map includes annualized benefit summary statistics for each project and provides a link to the project's official brief. If a corridor has had multiple projects, links are provided for each brief. Under the "tools" dropdown, projects can be filtered by year, which then displays a link to the annual summary in the lower right-hand corner.

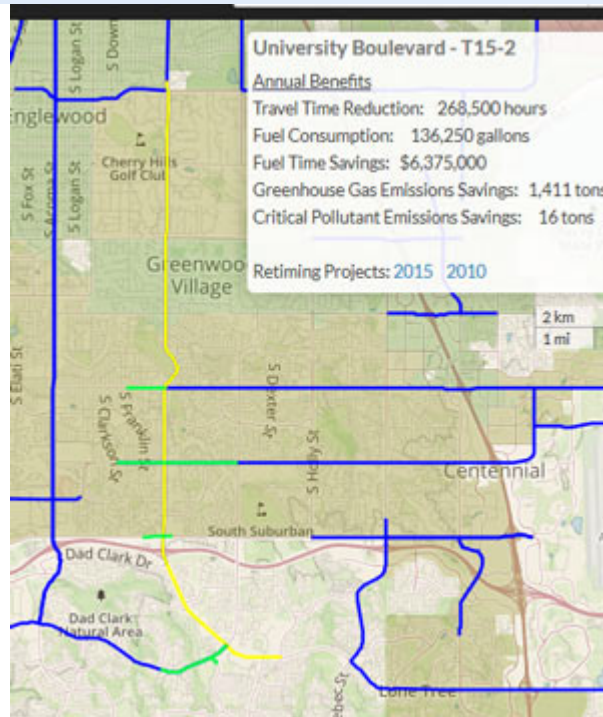


The Signal Timing Briefs map has been updated with new data. A new filter has been created for project type: signal timing or capital improvement. Additionally, the map now more accurately depicts each project area by including both main and cross corridors. When a user clicks on a feature to select a project, the main corridor is highlighted in yellow. If any cross corridors for the project exist, those corridors will appear and be highlighted in green. This improved display gives viewers a better understanding of the project scope and more closely aligns with the project brief depiction.

[Check out the Signal Timing Briefs map.](#)

To learn more about the DRCOG traffic operations program, [visit its page at drcog.org.](http://drcog.org)





**drcog**

**SIGNAL TIMING PROJECT BRIEF**

**Santa Fe Drive: Dartmouth Avenue to Highlands Ranch Parkway**

The Denver Regional Council of Governments (DRCOG) leads multi-jurisdictional partnerships to achieve optimal signal timing and coordination on area roadways. Traffic signal timing adjustments provide the operational benefits from fast cars, trucks and buses. At the same time, safety is enhanced for all users, including pedestrians and bicyclists. Signal timing optimization saves drivers time and money, reduces greenhouse gas and pollutant emissions, and enhances air quality.

May 2017 - T17-4a

## Comprehensive survey data for the Denver region's transit system

Article submitted by Kevin Priestley, assistant planner at DRCOG. Kevin can be reached at 303-480-6769 or [kpriestley@drcog.org](mailto:kpriestley@drcog.org).

In 2009 and again in 2016, DRCOG worked with National Research Center, Inc. to conduct surveys of residents, businesses and employees who lived or worked near high-frequency transit. The results, published under the title “Perspectives on Transit,” help local and regional stakeholders understand if, and how, the region’s residents and businesses are increasing their orientation toward transit as a mobility, quality of life and economic amenity.

The report, and the publicly available data sets that accompany it, investigate location preferences among residents and businesses near high-capacity transit stations and how they changed between 2009 and 2016, as the Denver region continues to make significant investments in transit, such as the Regional Transportation District’s FasTracks rapid transit system.

The surveys explore factors that affect residents’, employers’ and employees’ location decisions, and whether they use (or plan to use) nearby transit facilities. The 2016 survey was completed by more than 2,500 residents, 1,000 businesses and 650 employees living, operating or working within walkable distance of high-frequency transit corridors. Initial findings suggest an increase in employer-provided transportation benefits such as discounted or free transit passes, a large uptick in the rate of teleworking, increased concern among businesses about the availability of free or low-cost parking and an expanding number of residents who attempt to offset the increasing cost of housing in the region by improved access to transit.

This report is not yet final, but you can [download the raw data](#).

## GPS on benchmarks – a crowdsourced data project

*Article submitted by Pam Fromhertz, Rocky Mountain regional advisor at National Geodetic Survey, National Oceanic and Atmospheric Administration. Pam can be reached at [pamela.fromhertz@noaa.gov](mailto:pamela.fromhertz@noaa.gov).*

You may have heard about GPS on Bench Marks, an effort underway by the National Oceanic and Atmospheric Administration's National Geodetic Survey. The data will support the last hybrid geoid model, GEOID18, as well as the transformation between the current and future datums. The data will benefit local communities, especially in the Rocky Mountain region (Colorado, Wyoming and Montana) where there are significant gaps. GIS professionals and surveyors can assist.

There are three key phases in the effort – **recover**: finding the mark and completing a recovery note; **observe**: collecting the GPS data; and **report**: sharing the results via National Geodetic Survey's tool, Online Positioning User Service. The first phase can be conducted by anyone – no survey-grade GPS units needed. The data collection requires survey-grade equipment and a minimum of four hours of data.

Data for the hybrid geoid model must be collected and shared through Online Positioning User Service by Aug. 31. Geoid12B is the current hybrid geoid model, which is based on leveled heights, gravity measurements and GPS heights. In 2022, National Geodetic Survey will produce a geoid model based purely on gravity, called North American-Pacific Geopotential Datum of 1988 (NAPGD2022). The GPS data collected on Bench Marks will improve the transformation tools between the current vertical datum, North American Vertical Datum of 1988 (NAVD88), and the future vertical datum, NAPGD2022, and be integrated into the National Geodetic Survey Coordinate Conversion and Transformation Tool. National Geodetic Survey Coordinate Conversion and Transformation Tool is already available for conversions and transformation at <https://geodesy.noaa.gov/>. In 2022, changes will be 3-4 feet in Colorado both horizontally and vertically. We still have a couple of years to collect the GPS on Bench Marks data for the transformation tools. There was an article on the new systems coming in 2022 in the Denver Regional Data Consortium January newsletter.

There are many resources on the National Geodetic Survey website regarding the GPS on Bench Marks effort. National Geodetic Survey has a priority map for the country. A sign-up sheet and Rocky Mountain region map have been created where one can add their level of participation. In addition, three one-hour recorded webinars have been provided. Plus, Colorado has a new CO geomatics coordinator and working



group. More information can be found at <https://plsc.net/> and by email: [COCoordinator@plsc.net](mailto:COCoordinator@plsc.net). The working group is looking for a representative from the GIS community.

[Sign-up sheet](#)

[Volunteer status map](#)

[Part I – Basic information and resources](#)

[Part II – How to find a mark and provide a recovery note as well as an explanation of the National Geodetic Survey datasheets](#)

[Part III – How to collect your GPS data and share your results through Online Positioning User Service](#)

Have fun conducting GPS on Bench Marks!

## Things you might have missed

- [Urban and Regional Information Systems Association Salary Survey](#).
- Census 2020 – The Participant Statistical Area Program (PSAP) is coming up. Learn more [here](#).
- DRCOG makes historical imagery tiles downloadable via [Colorado Governor's Office for Information Technology](#).
- Jefferson County parcels are now available for free download. Check its [open data site](#).
- Department of Local Affairs launches new [Community Profile Generator](#).
- The Rocky Mountain chapter of Urban and Regional Information Systems Association is hosting an ArcGIS Pro workshop on July 20. Register [here](#).

## Engage with us

- The new version of our Regional Data Catalog launched in January. We invite you to visit the site and give us some feedback in this [brief survey](#).

- This quarterly newsletter reaches more than 300 people, has a higher-than-average open rate, and is written by professionals like you. It's the perfect place to show off your projects, highlight your great work and contribute ideas to the GIS community in the Denver region. Newsletter release dates are Jan. 15, April 15, July 15 and Oct. 15 (or the next business day afterward). Please contact Ashley Summers at 303-480-6746 or [asummers@drcog.org](mailto:asummers@drcog.org) to contribute.
- Did you miss a newsletter or a meeting? [Visit our website](#) for past newsletter issues and DRDC meeting materials.



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