

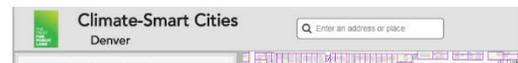
Climate-Smart Cities™ Denver

Decision Support Tool Training Exercises

Scenario 1: The Trust for Public Land has been working as part of a coalition of organizations to increase access to parks and improve livability in the Westwood neighborhood of southwest Denver. Westwood is faced with economic and environmental challenges, including one of the city’s highest poverty rates and historically limited access to parks and tree canopy cover. Westwood is also a place of strong cultural identity (both Latino and Vietnamese) and home to vibrant community organizing. The coalition of organizations and community members developed a vision for a “Cool, Connected Westwood”. In this exercise, we will examine how to use the tool to support this existing community vision.



1. Create profile reports for existing priority projects
 - a. Enter into address toolbar. Pocket park address W. Kentucky and Irving Streets
 - b. Click on parcel and click create a profile report.



2. Use profile report to summarize climate challenges that the park could address.

The report summarizes the Climate-Smart Cities™ objectives and indicators along with a few key suitability indicators.

Cool: 100% of the parcel is in an urban heat island and it has 0% canopy cover.

Potential Park Ideas: Tree planting

Connect: The parcel falls along a proposed bike route with significant Greenhouse Gas (GHG) benefits, along a route with high travel demand to School, parks, and employment centers. It is also within the Vision Zero School Proximity priority areas.

Potential Park Ideas: park amenities designed for children and installation of bike racks

Absorb and Protect: The parcel is in a MS4 basin that has been identified as having water quality

issues, is not within 750 ft. of a thalweg (natural flow path), is not within the 100-yr or 500-yr floodplain, is not on alluvium, is identified as having impervious cover by NLCD, and has <1% slope.

Potential Park Ideas: park amenities and green infrastructure designed to address first flush water quality more than flood water capture and infiltration.

Climate and Health Equity: It is a parcel within a block group with high percentage of minority populations, low income populations, linguistically isolated populations, populations with less than high school degree, high number of children under 19, households without cars, high percent of renters, and seniors living alone. It is in a census tract that the Office of Economic Development identified as “At Risk of Displacement.” It is a parcel in a census track with populations with a high prevalence of high blood pressure, COPD, stroke, diabetes, high cholesterol, kidney disease, frequent mental distress, poor physical health, and obesity.

Potential Community Engagement Ideas: Meet Me at the Park

Denver - Climate Smart Cities

Parcel Report

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ParcelID: 0517315010000	Acres: 0.3	City: DENVER	Zip: 80204
Address: 800 IRVING ST			
Owner: CITY & COUNTY OF DENVER			

Green Infrastructure Suitability Indicators			
Impervious Cover (NLCD):	1.1%	Pervious Land (Acres):	0.0
Canopy Cover (NLCD):	0.0%	In 100-yr Flood Zone:	No
Elevation (m):	1642	In 500-yr Flood Zone:	No
Slope:	0.4%	Distance to FRS facility (ft):	485.4
Zoning: Single Unit (SU)		Alluvium:	No
Majority Landcover (NLCD): Impervious Surface			
Water Quality MS4 Scorecard Basin Priority: Medium-High			

Denver Climate Smart Cities Priorities	Acres	Percent	Present
Overall Stacked Priorities	0.3	100.0%	Yes

Goal: Cool Priorities	Acres	Percent	Present
Daytime Urban Heat Islands	0.3	100.0%	Yes
Nighttime Urban Heat Islands	0.0	0.0%	No
Risk of Ash Borer	0.0	0.0%	No
Cool Priorities	0.0	0.0%	No

Goal: Connect Priorities	Acres	Percent	Present
Gaps in Parks	0.3	90.8%	Yes
Gaps in Public Transportation	0.3	92.3%	Yes
GHG Analysis for Proposed Trails	0.2	55.4%	Yes
Safe Routes to Schools	0.0	0.0%	No
Connect People to Bay Trail	0.0	0.0%	No
Connect People to Medical and Grocery	0.2	55.4%	Yes
GHG Analysis for Proposed Trails	0.0	0.0%	No
Safe Routes to Schools	0.3	100.0%	Yes
Connect People to Bay Trail	0.0	0.0%	No
Connect Priorities	0.3	92.3%	Yes

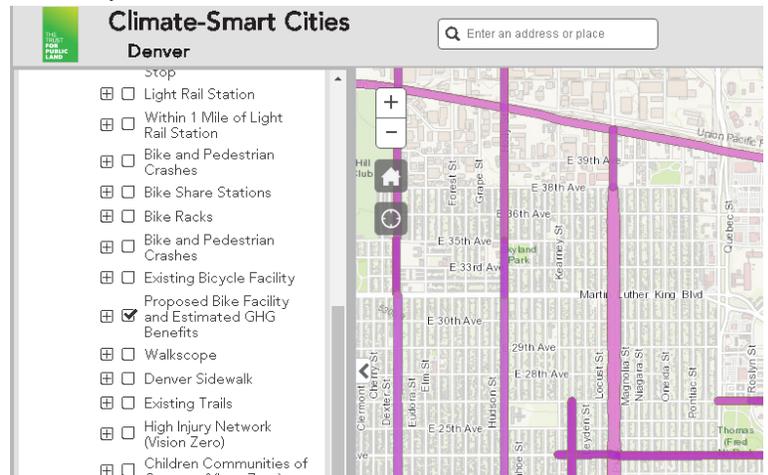
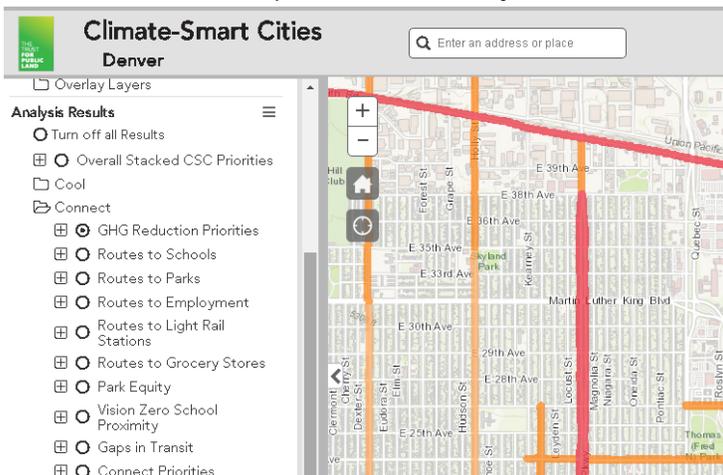
Climate-Smart Cities™ Denver

Decision Support Tool Training Exercises

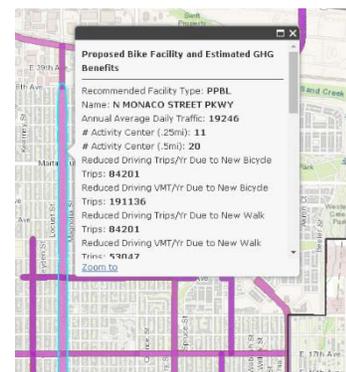
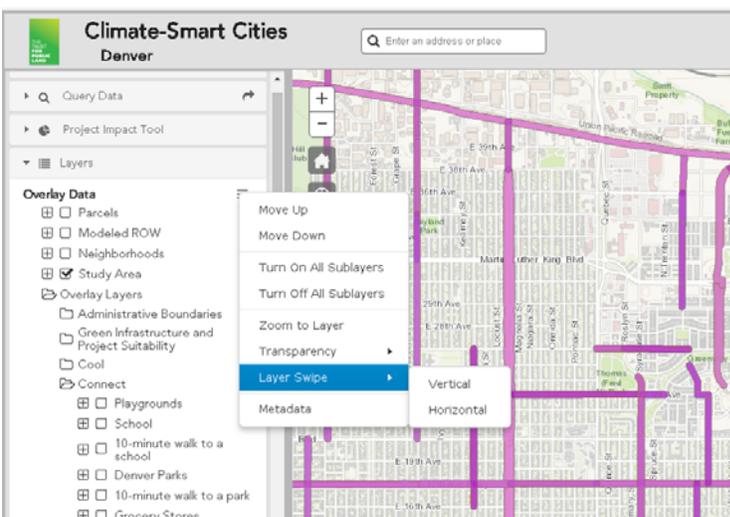
Scenario 2: The Denver Office of Sustainability has developed 2020 Sustainability Goals within 12 resource areas that provide a roadmap to ensure its resources are secure for the long-term. The resource areas include air quality, climate change, energy, food, health, housing, land use, materials, mobility, water quantity and quality, and workforce. In this exercise, we will explore how to use the tool to inform policy and by identifying areas and projects to help achieve the 2020 Sustainability Goals.

The 2020 Climate Goal is to reduce Denver’s greenhouse gas emissions to below the 1990 baseline.

- 1) Use the tool to evaluate proposed bike lanes that have high potential for GHG reduction
 - a. GoTo *Analysis Results*> Click on *Connect folder* > Click on *GHG Reduction Priorities*
 - b. GoTo *Overlay Data*> Click on *Overlay Layers folder* then *Connect folder*> Click on *Proposed Bike Facility and Estimated GHG Benefits*



- 2) Use Zoom, Swipe and Identify to explore GHG benefits of proposed bike lanes



- 3) Select multiple ROW features and create a Group ROW report to show CSC benefits of those segments. To select multiple ROW parcels:
 - a. In Overlay Data, make sure the Modeled ROW layer is turned on which is indicated by a dark circle in the radio button (Note: if attempting a parcel group select, make sure the parcel button is turned on.)
 - b. Open the *Group Parcel/ROW Select* widget
 - c. Change the *Select a Layer* dropdown from Parcel to *Modeled ROW*
 - d. *Press to Select/Unselect* button, and click on all ROW of interest. They will be highlighted in yellow.
 - e. Click the *Create Report* button



The 2020 Energy Goal is to reduce energy consumed in City owned properties by 20%.

- 1) Use the tool to query parcels that are City owned and in a daytime urban heat island
 - a. Open the *Query Data* widget
 - b. Click *Select a Field > Parcel Info> Building Footprint (sq. ft.)*
 - c. Change the Logical Operator from = to > and Query Value to 0
 - d. Click the *Add Condition* button
 - e. Add 2 more conditions
 - i. *Select a Field > Parcel Info>Ownership; Logical Operator is = and Query Value is "City"*
 - ii. *Select a Field > Cool>Daytime Urban Heat Islands; Logical Operator is = and Query Value is "Yes"*
 - f. Click *Run Query*
 - g. There will be 316 results in a table at bottom of the screen. All the parcels that meet those conditions will be highlighted in blue

- 2) Use the *Energize Denver* layer to find City owned properties in an urban heat island and with an Energy Star Score of <50 or that are out of compliance and generate a parcel report.
 - a. GoTo *Overlay Data> Click on Overlay Layers folder then Green Infrastructure and Project Suitability folder> Click on Energize Denver*
 - b. Zoom to an area of interest click on a parcel (make sure parcel layer is turned on) that has an orange or red point, and click the *Create Profile Report* button to generate a parcel report.

Ownership	Total Acres	Vacant	Building Footprint (sq.ft.)	Neighborhood	City Council Districts	Census Tract	MS4 Basin Name	Business Improvement District	Local Maintenance District	Overall Denver CSC Stacked Priorities	Cool Priorities
City	2.91335529649	No	154.67089032042773		2	80310120	Bear Creek	No	No	No	No
City	0.291876442428	No	3055.7337277306106	Montclair	5	80310043	NE Park Hill	No	No	No	Yes
City	0.0080918944357	No	281.2607484778898	Five Points	9	80310016	Five Points / Capitol Hill	No	No	No	Yes
City	2.44249333639	No	72638.96577108676	CBD	9	80310017	Central Platte Valley / CB	Yes	No	Yes	Yes

Denver recently passed a Green Roof Initiative that requires green roofs on existing buildings greater than 25,000 sq. ft. when the roof is replaced or upgraded.

- 1) Re-run query to show city owned buildings in a heat island with a building footprint of greater than 25,000 sq. ft.
 - a. Open the *Query Data* widget
 - b. Click *Select a Field > Parcel Info> Building Footprint (sq. ft.)*
 - c. Change the Logical Operator from = to > and Query Value to 25000
 - d. Click the *Add Condition* button
 - e. Add 2 more conditions
 - i. *Select a Field > Parcel Info>Ownership; Logical Operator is = and Query Value is "City"*
 - ii. *Select a Field > Cool>Daytime Urban Heat Islands; Logical Operator is = and Query Value is "Yes"*
 - f. Click *Run Query*

- 2) Export list as csv file

The screenshot shows the 'Climate-Smart Cities Denver' interface. On the left, the 'Query Data' widget is configured with the following conditions:

- Building Footprint (sq.ft.) > 24,999
- Daytime Urban Heat Islands = Yes
- Ownership = City

The 'Query Data 1' table displays the following results:

Ownership	Total Acres	Vacant	Building Footprint (sq.ft.)	Neighborhood	City Council Districts	Census Tract	MS4 Basin Name	Business Improvement District	Local Maintenance District	Overall Denver CSC Stacked Priorities	Cool Priorities
City	45.8697871491	Yes	217111.2149810437	Auraria	9	80310019	Central Platte Valley / CBD	No	No	Yes	Yes
City	2.71581815476	No	87725.2173074404	CBD	9	80310017	Central Platte Valley / CBD	Yes	No	No	Yes
City	1.63484544521	No	42269.10071786972	CBD	9	80310017	Central Platte Valley / CBD	Yes	No	Yes	Yes

- 3) Evaluate Green Roof Potential and potential multiple benefits
 - a. GoTo *Overlay Data> Click on Overlay Layers* folder then *Absorb* folder> Click on *Green Roof Potential*
 - b. Zoom to areas where parcel is in and Urban Heat Island, is City Owned, has a building that is >25,000 (this is query results indicated and parcels will be highlighted in blue). Building with Potential for Green Roofs will be red and orange and indicate development is likely and are zoned for commercial land use or residential and mixed land use.

Climate-Smart Cities™ Denver

Decision Support Tool Training Exercises

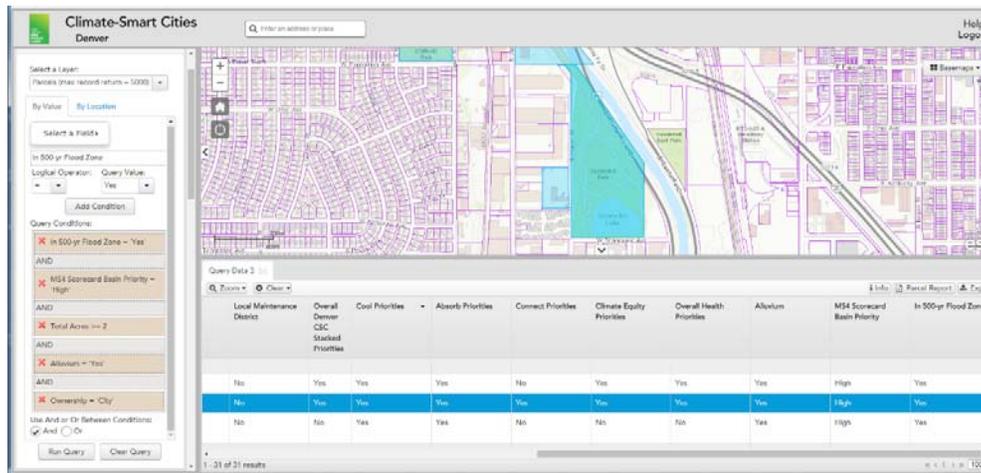
Scenario 3: The City and County of Denver is making green infrastructure a fundamental part of the City's long-term storm water management strategy by looking at ways to incorporate both large-scale and site-scale green infrastructure. Benefits of the green infrastructure, regardless of scale, include improved water quality as well as better air quality, reduced flooding risks, urban heat island effect mitigation, reduced energy demands, climate change resiliency, and enhanced community livability. The City and County of Denver completed a Scorecard analysis that prioritized those areas of Denver which have the greatest need to improve storm water quality and developed a methodology for prioritizing potential Best Management Practice projects. The City and County is particularly interested in projects with multiple benefits.

1. Use the query tool to identify storm drain water quality BMP opportunities.

In the example below, you will use the following criteria to select potential projects: *within a high priority basin, city owned, >2 acres, in alluvium, and in 500-yr flood zone.*

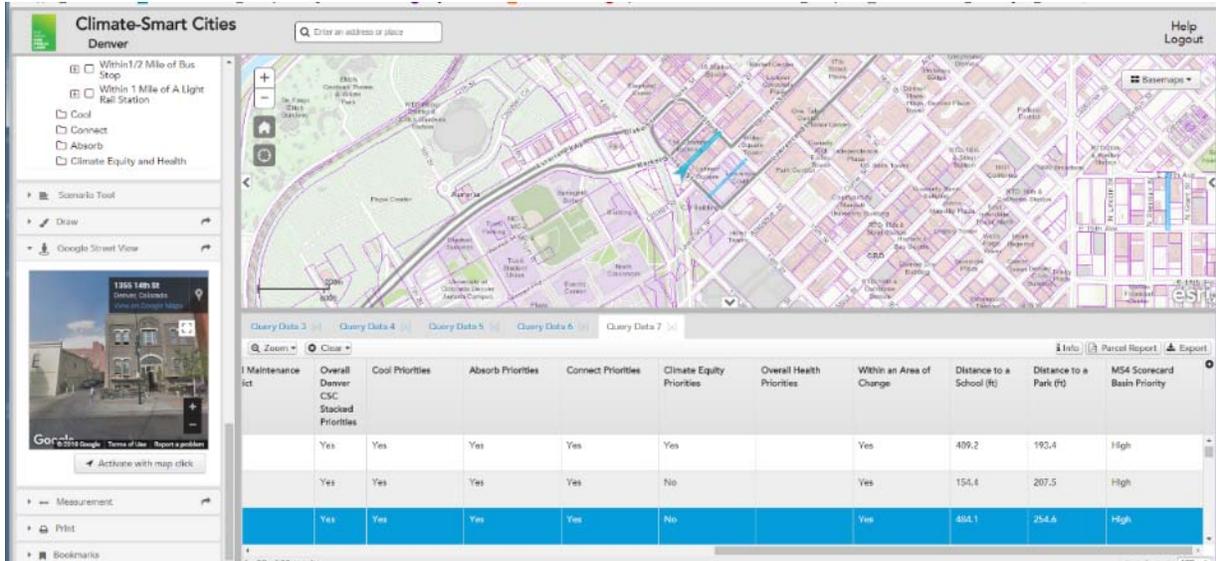
- a. Open the *Query Data* widget
- b. Click *Select a Field > Green Infrastructure Suitability> MS4 Scorecard Basin Priority*
- c. Logical Operator is = to > and Query Value is "High"
- d. Click the *Add Condition* button
- e. Add 4 more conditions
 - i. *Select a Field > Parcel Info>Ownership; Logical Operator is = and Query Value is "City"*
 - ii. *Select a Field > Parcel Info>Total Acres; Logical Operator is >and Query Value is 2*
 - iii. *Select a Field > Green Infrastructure Suitability> Alluvium; Logical Operator is = and Query Value is "Yes"*
 - iv. *Select a Field > Green Infrastructure Suitability> In 500-yr Flood Zone; Logical Operator is = and Query Value is "Yes"*
- f. Click *Run Query* (You should get 31 parcels from your query.)

2. Using the table explore the query results by **Sorting** (click on column header) and **Zooming** to parcels (click on one record in table)



3. In this example, we used the *Query Data* tool and the following criteria to select potential storm water alley BMP projects: *is an alley, in a high quality basin, within 500 ft. of a school and a park, and within an area of change.*
 - a. Open the *Query Data* widget
 - b. Click the dropdown *Select a Layer* and choose *Modeled ROW*
 - c. Click *Select a Field > Modeled ROW>Road Type*
 - d. Logical Operator is = and Query Value is "Alley"
 - e. Click the *Add Condition* button
 - f. Add 4 more conditions
 - i. *Select a Field > Green Infrastructure Suitability> MS4 Scorecard Basin Priority;* Logical Operator is = and Query Value is "High"
 - ii. *Select a Field > Green Infrastructure Suitability>Distance to a School(ft.);* Logical Operator is < and Query Value is 500
 - iii. *Select a Field > Green Infrastructure Suitability>Distance to a Park(ft.);* Logical Operator is < and Query Value is 500
 - iv. *Select a Field > Green Infrastructure Suitability>Within an Area of Change;* Logical Operator is = and Query Value is "Yes"
 - g. Click *Run Query* (You should get 28 alleys from your query.)

4. Explore Results by zooming to different areas and use google street view to evaluate potential.
 - a. Zoom to alley of interest
 - b. Open *Google Street View* widget
 - c. Click on the *Activate with map click* button
 - d. Click on road or intersection in map. You will see a blue arrow on the map.



5. Evaluate potential additional benefits using a parcel or an alley of interest a Modeled ROW profile report. For example, the report for the alley connecting 14th and 15th between Larimer and Market shows:

Cool: Alley is in a daytime and nighttime urban heat island

Connect: Alley is connector for proposed bike lane with GHG reduction benefits and is along route with high travel demand for schools and employment centers

Absorb and Protect: alley is in a high priority Water Quality Basin and is within 750 ft. of a thalweg (natural flow path)

Green Infrastructure Suitability: The alley is 51 ft. from a facility registered with the EPA FRS database (which catalogs entities of environmental concern).

Use overlays to explore FRS facilities and link to their website by clicking on a facilities point in the map.

Denver - Climate Smart Cities
ROW Report
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Name: 14th St/15th St/LarimerMarket Block: INT1 Acres: 0.4
Intersection: n/a

Green Infrastructure Suitability Indicators			
Impervious Cover (NLCD):	96.0%	In 100-yr Flood Zone:	No
Canopy Cover (NLCD):	1.5%	In 500-yr Flood Zone:	No
Elevation (m):	1586	Distance to FRS facility (ft):	51.2
Slope:	1.3%	Alluvium:	Yes
Water Quality MS4 Scorecard Basin Priority:		High	

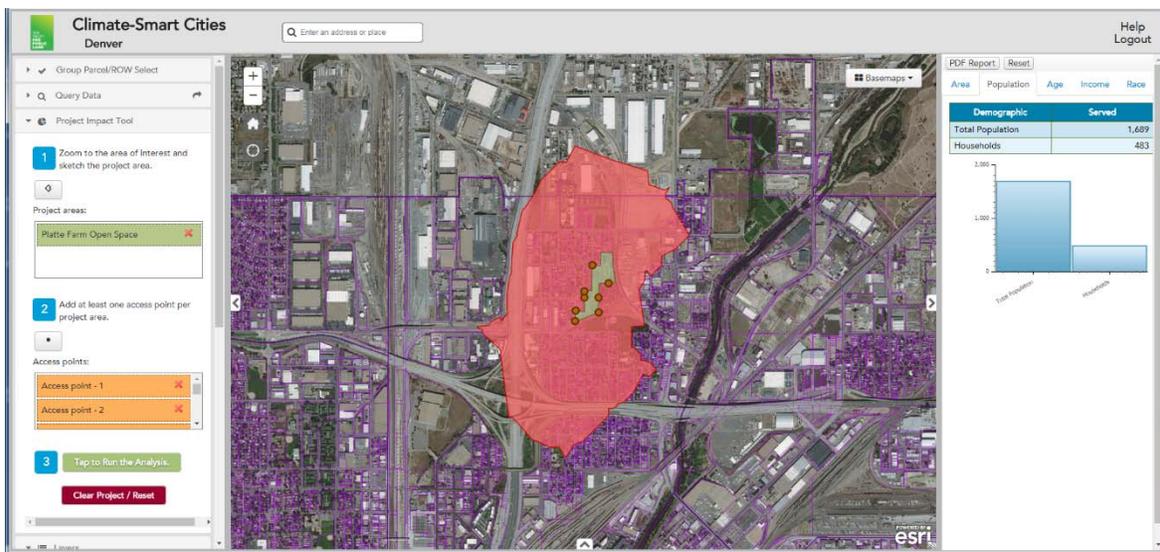
Denver Climate Smart Cities Priorities	Acres	Percent	Present
Overall Stacked Priorities	0.2	48.6%	Yes
Goal: Cool Priorities			
Daytime Urban Heat Islands	0.4	100.0%	Yes
Nighttime Urban Heat Islands	0.4	100.0%	Yes
Risk of Ash Borer	0.0	0.0%	No
Cool Priorities	0.4	100.0%	Yes
Goal: Connect Priorities			
GHG Reduction Priorities	0.2	43.9%	Yes
Routes to Schools	0.2	45.5%	Yes
Routes to Parks	0.0	0.0%	No
Routes to Employment	0.1	23.8%	Yes
Routes to Light Rail Stations	0.0	0.0%	No
Routes to Grocery Stores	0.0	0.0%	No
Park Equity	0.0	0.0%	No
Vision Zero School Proximity	0.0	0.0%	No
Gaps in Transit	0.0	0.0%	No
Connect Priorities	0.2	44.4%	Yes

Climate-Smart Cities™ Denver

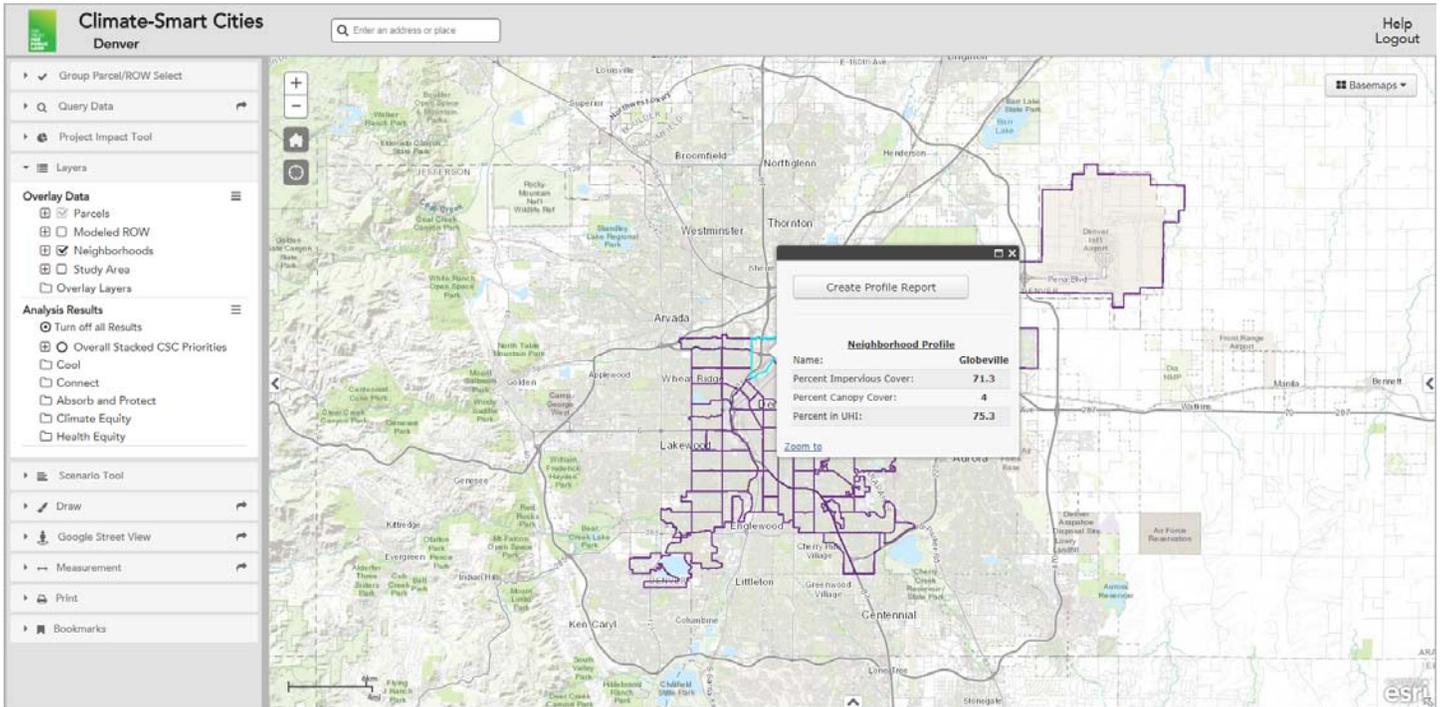
Decision Support Tool Training Exercises

Scenario 4: Platte Farm Open Space is a resident led brownfield to open space project. Groundwork Denver, the Platte Farm Steering Committee, Globeville residents, and Denver’s Department of Parks and Recreation have been involved in the planning and visioning for the open space project. Use the tool to quantify demographic reach of the planned project and generate a neighborhood report for Globeville to demonstrate need and climate exposure for funding proposals.

1. Zoom to Platte Farm Open Space using address bar. Enter “200 E 49th Ave” then use the minus sign to zoom out. Switch the basemap in the upper right corner to Satellite.
2. Use the Project Impact Tool to generate a report highlighting reach of planned open space.
 - a. Open the *Project Impact Tool* widget and follow the steps
 - i. Draw the project boundary by clicking the polygon button then drawing a project boundary
 - ii. Add *Access points* for the project by clicking on the point button then clicking on the map anywhere people will be accessing the project (e.g. where the project boundary and a road or trail intersect)
 - iii. Click the *Tap to Run the Analysis* button. Demographic summaries of people impacted within a 10-minute walk of your proposed project will be generate in the right hand side of the tool.
 - iv. Press the *PDF Report* button to generate a pdf of the demographic summaries



3. Clear project impact tool and turn on neighborhood overlay.
4. Click inside the Globeville neighborhood boundary and generate a neighborhood report by clicking the *Create Profile Report* button.



The neighborhood report shows that Globeville:

- a. has a much high exposure for heat impacts (75.3% of neighborhood is in a daytime heat island versus 38.6% for Denver)
- b. has only 4% canopy cover
- c. shows a larger % of neighborhood in need of water quality improvement (22.7% falls in high priority water quality basin) than the city average
- d. is a neighborhood that falls within numerous CSC health and equity priorities

Climate-Smart Cities™ Denver

Neighborhood Summary: Globeville

Green infrastructure strategies for climate equity and resilience

Denver is highly vulnerable to the impacts of a changing climate and is projected to face warmer days, changing snow pack, more intense wildfires, and more intense storms and precipitation events over the next several decades. With a growing economy and a densifying city, strategic action is needed now for Denver to develop equitable and sustainable solutions to expected climate impacts.

The Trust for Public Land's national Climate-Smart Cities™ program is providing key planning and decision-making support to help the City and County of Denver take strategic action on climate change through green infrastructure. The national CSCSI strategy is built around four climate-smart greening objectives—"connect, cool, absorb, and protect"—targeted to the most vulnerable populations in each city. We help cities pursue these objectives using cutting-edge applied science, spatial decision support tools, and on-the-ground demonstration projects.

This neighborhood report summarizes the data collected for each climate-smart objective and integrated into Decision Support Tool (https://web.tplgls.org/denver_csc/).

CONNECT

COOL

ABSORB

PROTECT



General	
Neighborhood	Globeville
City Council District	9
Neighborhood	
Denver	
Total Population	4,312 663,303
Total Households	1,258 299,338
Area (Acres)	1,318.3 96,817.0
Median Income	\$25,281 \$56,480
Med Housing Age	1935 1999
Park acres/1k	4.2 9.5