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# Fuel for Thought: Gas Station Research

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# Agenda

- Overview
- Current Status
- Research
- Proposals
- Questions & Discussion

# Overview

Gas stations in the City and County of Denver have few limitations and regulations, especially regarding health and safety of the surrounding neighbors.

Multiple constituents have contacted council offices concerned with the amount of new gas stations being constructed near already existing gas stations and nearby neighborhoods.

**How can we look at future placement of gas stations that align with adopted city plans, address resident concerns, while balancing future needs of the City and County of Denver?**

# Current Status

DZC limitations: 11.4.18-19 (automobile services, light)

- Covers gas stations
- Prohibition of loudspeakers
- Enclosure of uses
- Cut off fixtures for lighting
- Lighting timetables
- Setback requirement for fuels

Related but could be affected

11.4.19 (car washes)

- 8-foot set back from residential zone districts
- Hours of operation 7 am – 10 pm
- Parking requirements.

## Automobile Service Examples By Category in the DZC

Light (11.4.19)	Heavy (11.4.20)
Gas Station	Body Shop
Car Wash	Upholstery or Top Shop
Detail or Polishing Shop	Paint Shop

# Research

Concerns: Focus on Retail Gas Stations, non-retail will not be included in proposal.

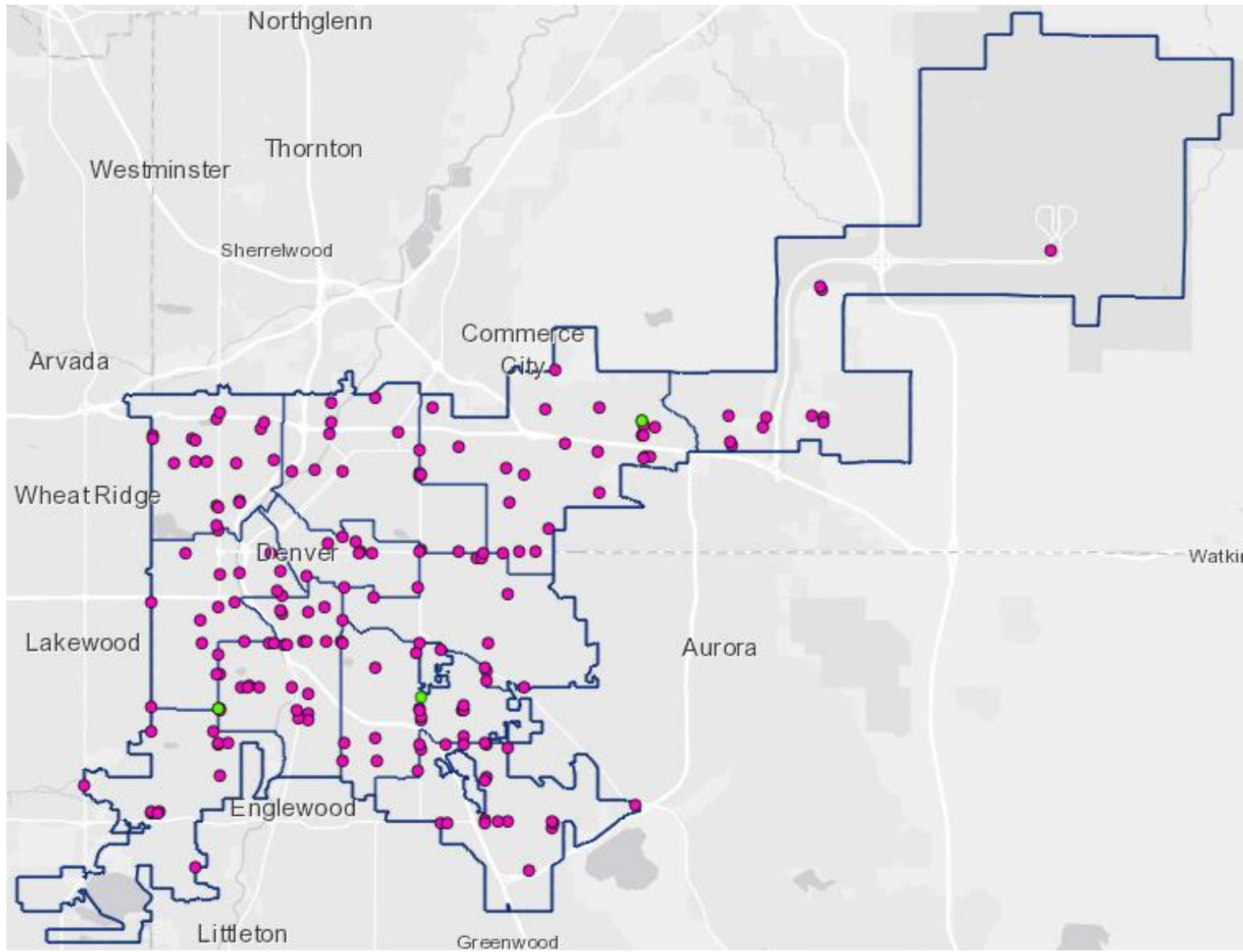
Above Ground- Benzene Vapor

Below Ground- Tank Material, soil and ground water exposure, remediation

Number of Retail Gas Stations: 180 (7 temporarily closed, 3 pending installation) ((Multiple tanks per location, anywhere from 1-11 tanks at each location)).

Number of Retail Gas Stations Permanently Closed: 318

Number of Individual Petroleum Tanks Overall: Approx. 6,000 (includes retail, non-retail, permanently closed, and still in-use, temporarily closed, and pending installation).



**Legend**

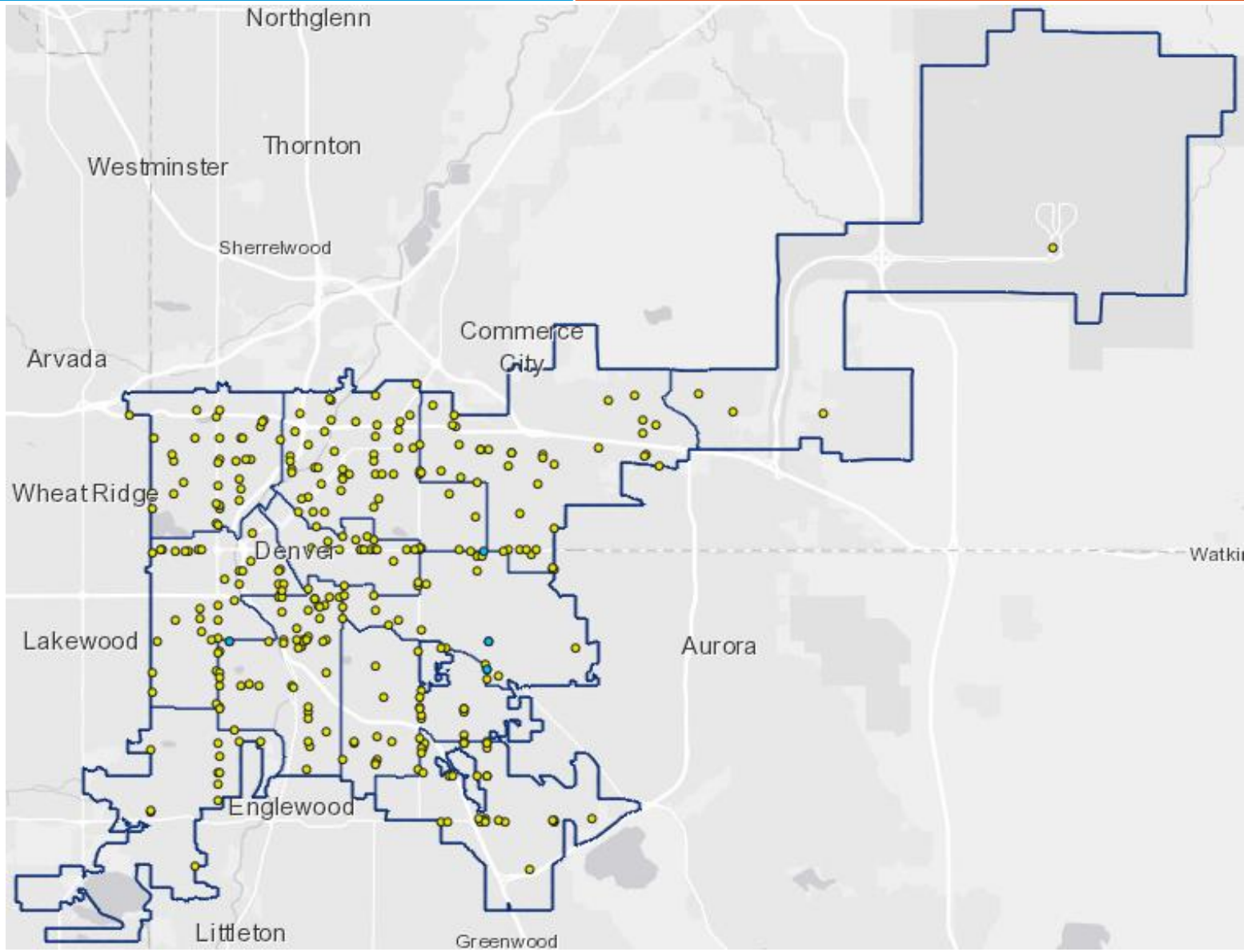
**Retail Stations Currently in Use**

- Currently In Use
- Pending Installation

**Denver City Council Districts**







## Legend

### Retail Stations Permanently Closed

- Permanently Closed
- Temporarily Out Of Use

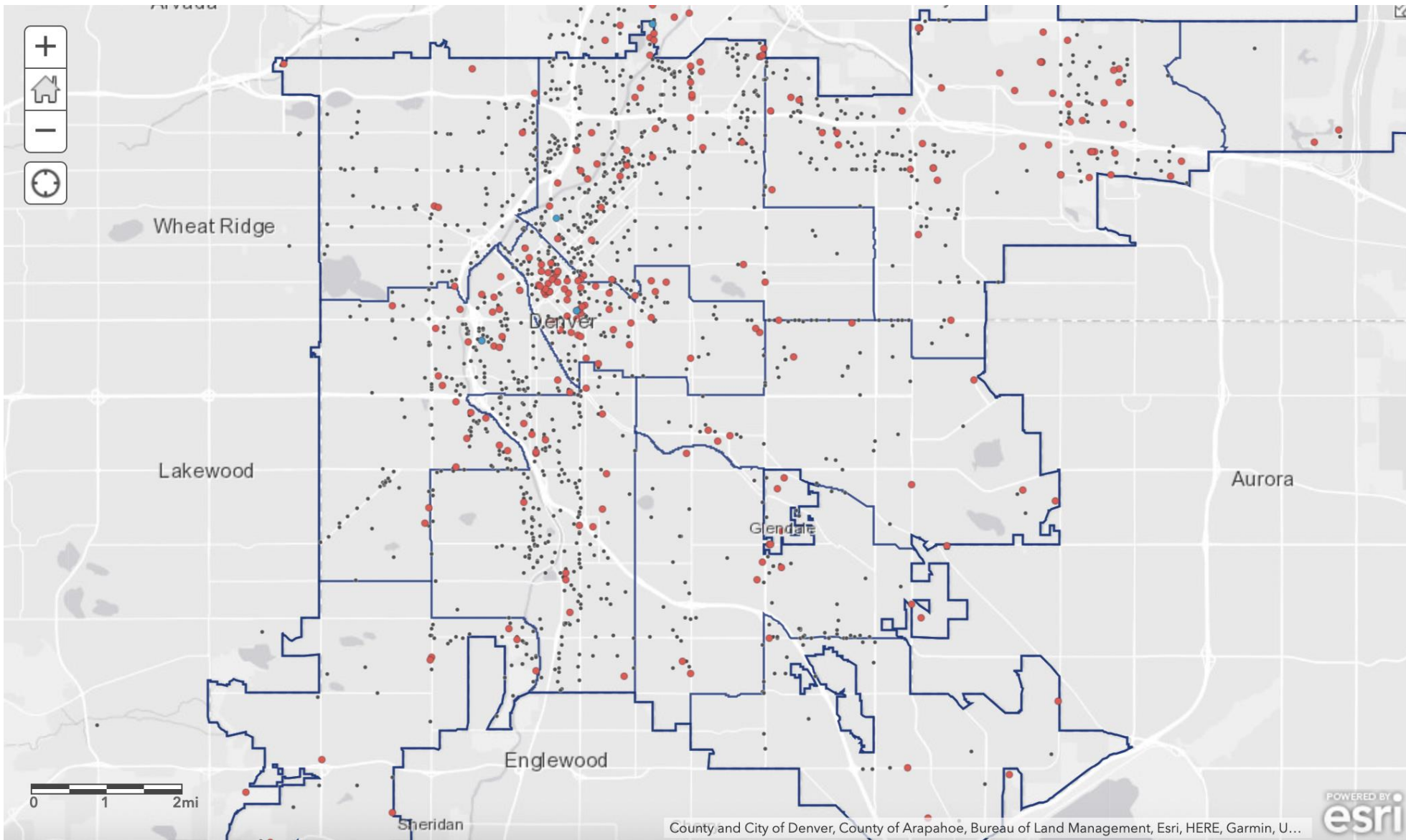
### Denver City Council Districts



● Non-retail currently in use

● Non-retail, pending installation

● Non-retail permanently closed



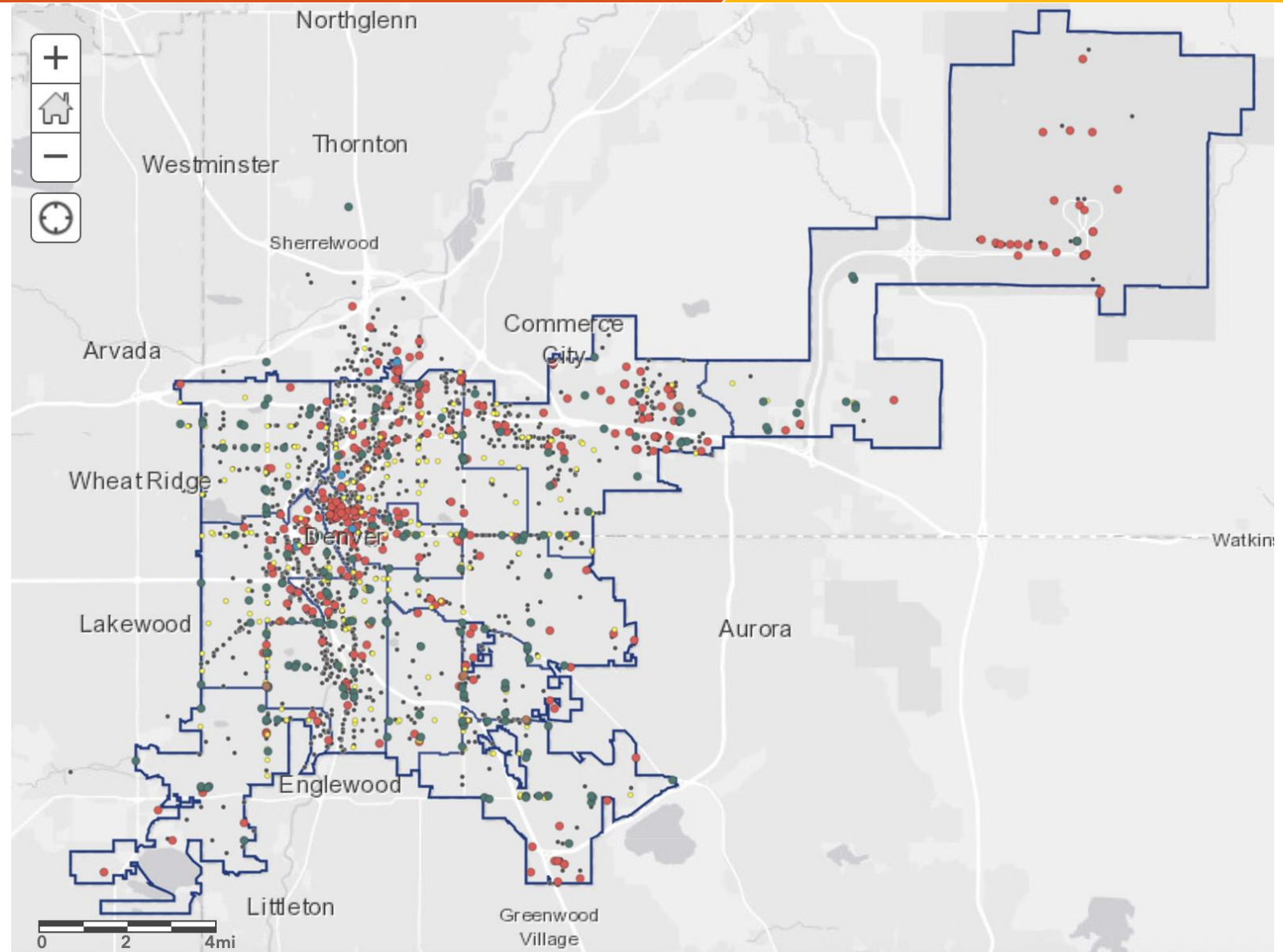


## Retail

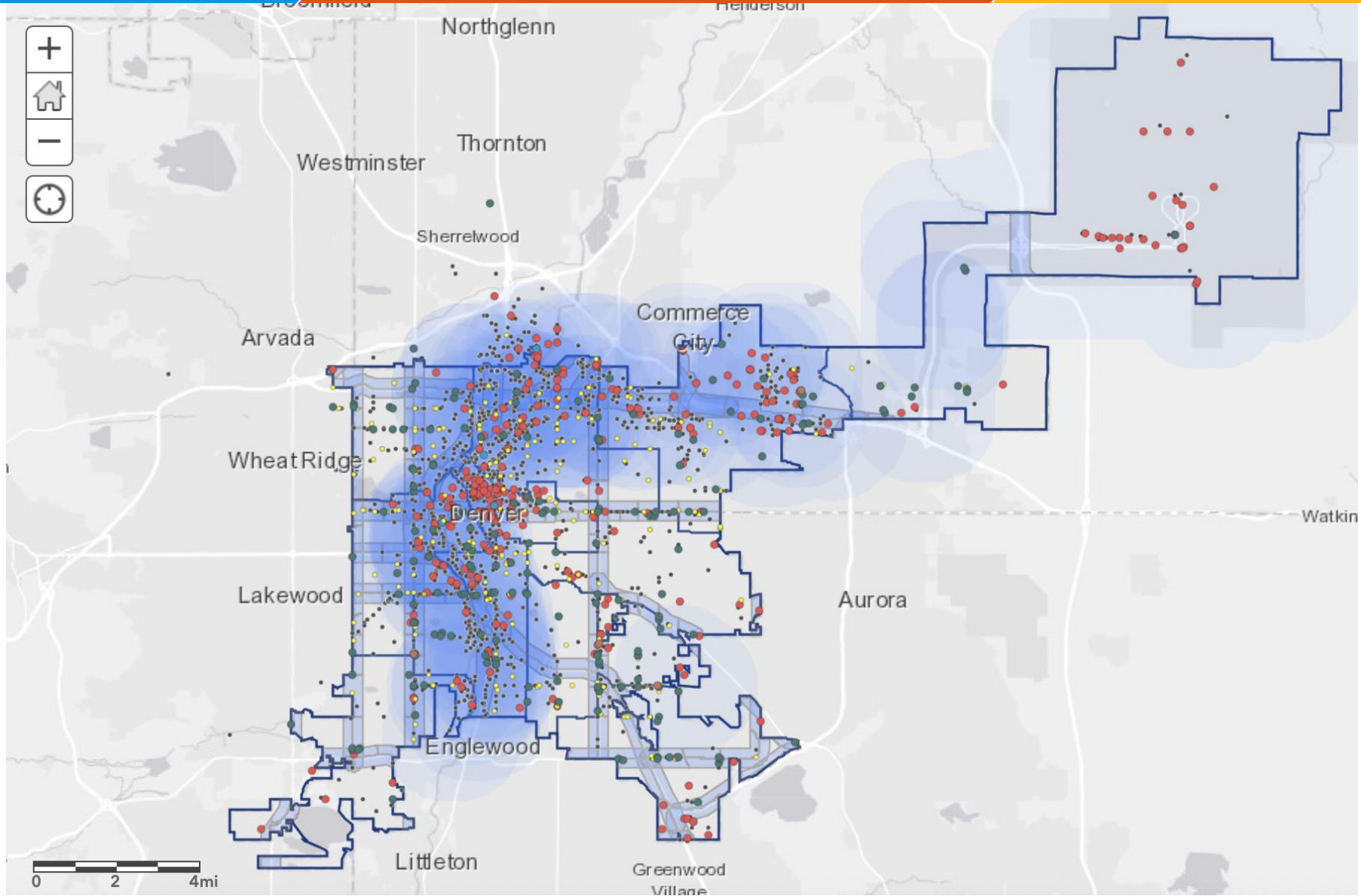
- Currently In Use
- Pending Installation
- Permanently Closed
- Temporarily Out Of Use

## Non-retail

- Currently In Use
- Pending Installation
- Permanently Closed



# Air Quality



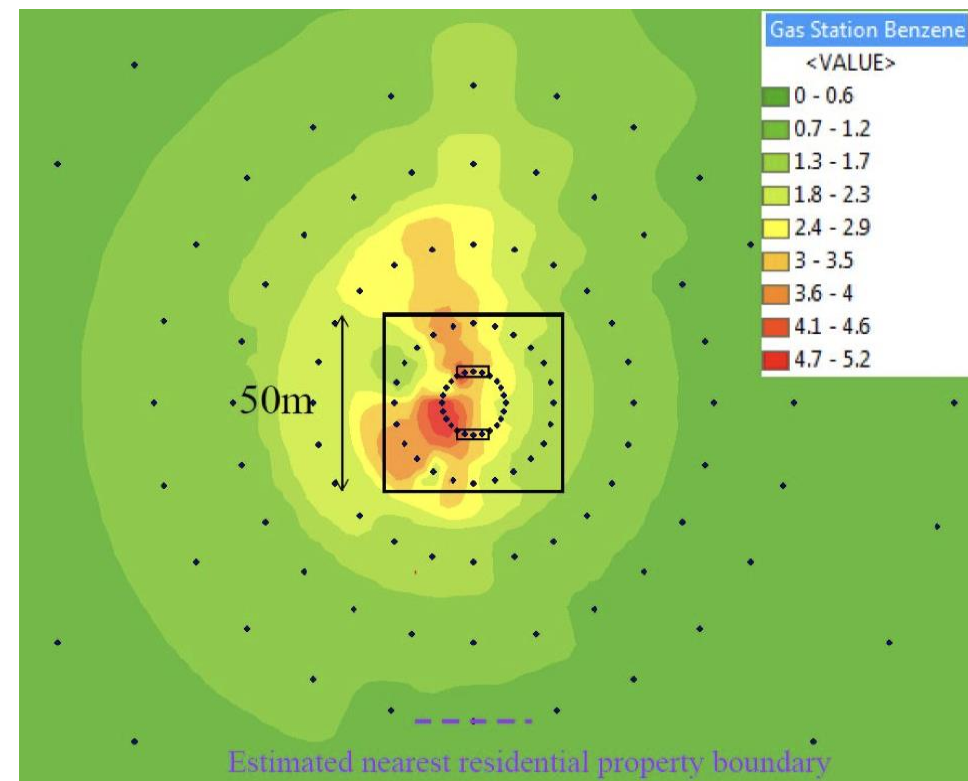
# Research – Benzene Vapors

Since [1998](#), cars are required to have onboard vapor recovery systems (VPS) that capture benzene escaping from the pump to the vehicle gas tank.

Newer gas stations also have vapor recovery systems that help reduce the amount of benzene that escapes from the pump, these both help in reducing emissions.

There is no ambient air quality standard for Benzene. Benzene does cause cancer, but the limits are considered through life-long exposure (70 years in an adult sized human body).

The most concentrated level of benzene at gas stations is 4.7-5.2 parts per billion, which is negligible when compared to [OSHA standards](#) of benzene exposure which limit airborne concentration to one part per million parts of air within an 8-hour time-weighted average.



50 meters is roughly equal to 164 feet

# Research – Tank Types and Materials

AST- Aboveground Storage Tank- All aboveground storage tanks at a facility, all the connected piping and ancillary equipment, all loading facilities, and all containment systems, if applicable\*.

UST- Underground Storage Tank- Any one or combination of tanks, including underground pipes connected thereto, except those exempted in statute and these regulations, that is used to contain an accumulation of regulated substances and the volume of which, including the volume of underground pipes connected thereto, is ten percent or more beneath the surface of the ground and is not permanently closed\*.

•FRP- Fiberglass Reinforced Plastic-

•AST: UL142/Equiv.- Aboveground steel storage tank for flammable liquids, Underwriters Laboratories certification.

•AST: UL2085/ Equiv. (Protected)- Aboveground storage tank, double-wall steel tank, Underwriters Laboratories certification.

•COMP: Steel/ FRP Composite- Steel USTs with a factory applied non-metallic cladding/lamination bonded directly to the tank STI ACT-100

\*<https://ops.colorado.gov/Petroleum/GuidanceGlossary>

# Research – Tank Types and Materials Cont'd

- **JKT- Jacketed Steel Tank-** Steel USTs with an interstitial separation between the tank and non-metallic outer layer STI Permatank
- **ST- Cathodically Protected Steel-** Cathodic protection (CP) is a method of controlling the corrosion of a metal structure by making it the cathode of an electrochemical cell. The simplest method connects a metal structure that is to be protected to a more easily corroded "sacrificial metal," which will serve as the anode of the electrochemical cell. Once connected in an electrically continuous path, the sacrificial metal corrodes rather than the metal structure being protected.
- **AST- UL2080/ Equiv. (Fire Resistant)-** Aboveground storage tank, doubled walled steel, tested at 2000 degrees Fahrenheit.
- **Asphalt Coated or Bare Steel-** EPA deemed not healthy for the environment.
- **Epoxy Coated Steel-** provides an additional layer that protects against corrosion, moisture, and chemicals.
- **Other/ Not Listed-** No additional information provided.



# Research – Comparison Cities\*

## Colorado:

- Broomfield- 1000 ft setback between new/existing stations, maximum of 2 gas stations at an intersection
- Louisville- moratorium on new gas stations, limited total number to 6, 1000 ft setback from existing stations, new time limits on PUS and SRU permits, requires 2 EV charging stations at new stations.

## California:

- Six municipalities in Northern California have passed some type of resolution to cap the number of gas stations within their jurisdiction.

## New York:

- One municipality in New York passed a ban on new gas stations.

\*For detailed information please reference the Research Report on *Municipal Policies to Limit Services Stations* by Anne Wallace, Legislative Policy Analyst.

# Research – Stakeholders

## DDPHE

- Not concerned with benzene vapors
- Does not want to preemptively disallow future housing to be built if we created a buffer near residential (empty lot near an existing gas station)

## CASR

- Environmental Justice and Transportation Team: Supportive of some type of regulation especially to combat air quality issues in disproportionately impacted communities.

## CASR Energy Team

- Suggests we hold off on requiring solar/ EV charging stations as rebates for these are coming down the pipeline from external entities. Once there is a funding mechanism in place, being able to point business owners to this the mechanism is very helpful and creates the incentive to switch.
- In order to mandate EV charging stations, there needs to be more financial assistance from government entities to help vehicle users make the switch to an electric vehicle.

## CPD

- Supportive of a potential text amendment, recommendation to focus on one proposal and to creative objectivity within the considerations.

## Colorado Wyoming Petroleum Marketers Association

- Supportive of proposal 4 – a buffer from other service stations
- Wanted more to review other proposals

## Future Stakeholders

- AAA
- Colorado Automobile Dealers Association

# Research – Plan Support

Blueprint Denver: *"The science is clear, our planet is facing a global crisis attributed largely to human behavior that is changing climate patterns around the world. This environmental emergency threatens to alter our normal landscape limiting where we can live, where we can grow our food and how we are able to access natural resources. As we look to our future we recognize that reversing our contribution to climate change is critical. How we plan our city can help us reduce our drain on resources and reduce Denver's carbon footprint to eliminate our collective contribution to the climate change crisis. That commitment must be our over-arching guide."*

## Comprehensive Plan 2040:

Strong and Authentic Neighborhoods- GOAL 2: Enhance Denver's neighborhoods through high-quality urban design.

D. Use urban design to contribute to economic viability, public health, safety, environmental well-being, neighborhood culture, and quality of life.

Environmentally Resilient- Goal 8: Clean our soils, conserve land and grow responsibly.

D. Support the redevelopment of brownfields to foster environmental clean-up and advance healthy communities.

E. Identify, remediate and restore contaminated soils.

# Research – Plan Support

## Neighborhood Planning Initiatives:

Near Southeast Area Plan – Land Use & Built Form Recommendations: 2.4.2 Mixed-Use Design B.1.a. **Prohibit auto-oriented building forms, such as drive-thrus, car washes and gas stations.**

3.2.4 Businesses, Retail and Workforce Development: Several key commercial corridors are used by neighborhood residents and those in surrounding areas, but there is a growing demand for additional business services, especially for neighborhood-serving businesses. There have been concerns with business closings and less-desired developments (such as gas-stations at key intersections) within these corridors. Collaboration among businesses and available resources provided in these recommendations can help improve economic conditions and opportunities for Near Southeast neighborhoods. Having strong business practices and corridors provide equitable opportunities for those looking for work or new job opportunities. There is a diverse mix of occupations for those living in Near Southeast, but the area lacks diversity in jobs in the immediate area as much of the jobs available are related to big box retailers.

East Area Plan – Land Use & Built Form Recommendations: 2.3.4 Commercial Services & Uses L3.B.2. Modify regulations to reduce or prohibit auto dominant, inactive, and low-density building forms like one-story service and drive-through uses and mini-storage. Instead, promote safe, comfortable, pedestrian-friendly site design by placing any required vehicle stacking, fueling, and parking areas away from walkways, public streets, and transit stations and stops.

# Proposals

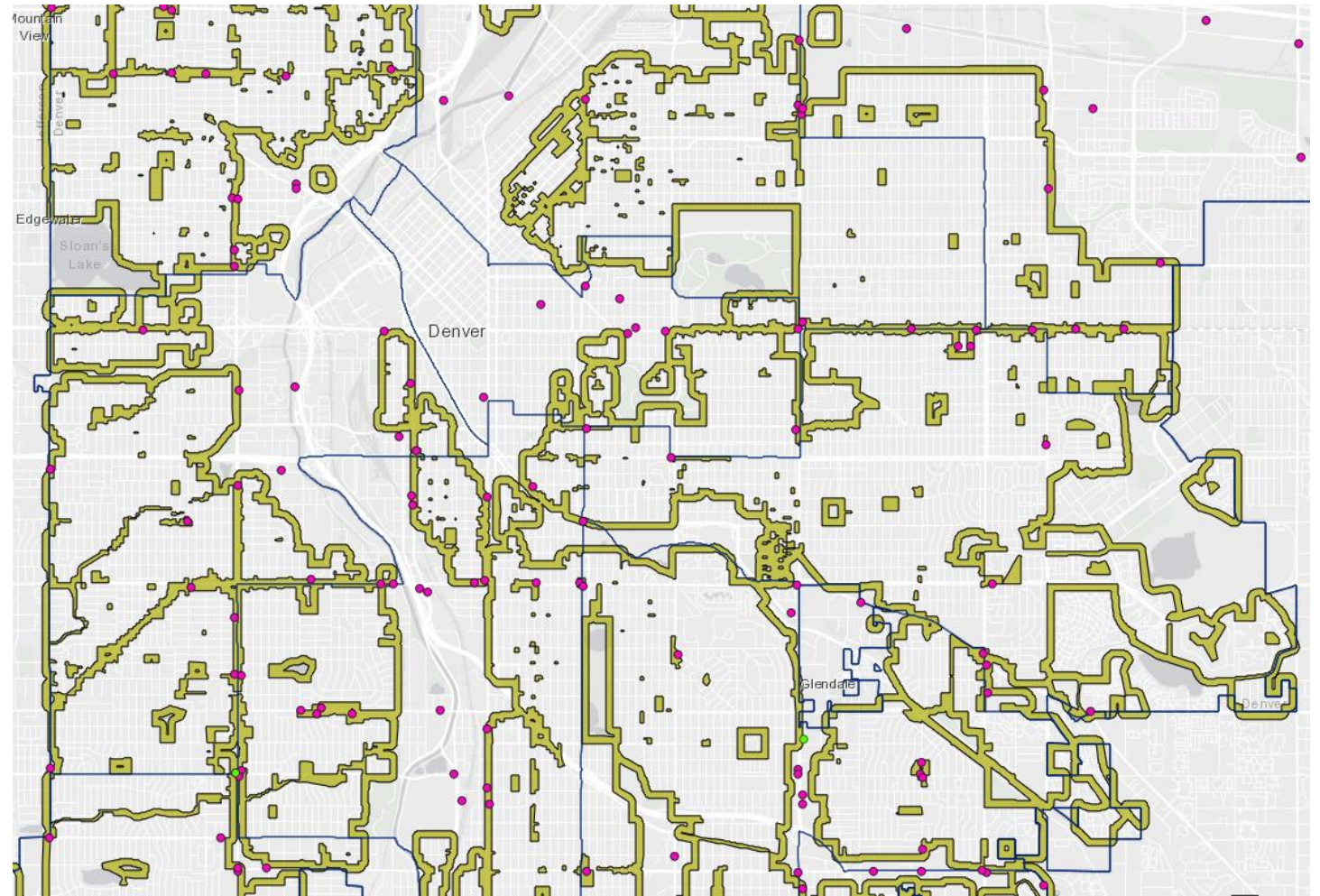


# Proposal 1 – Total Cap

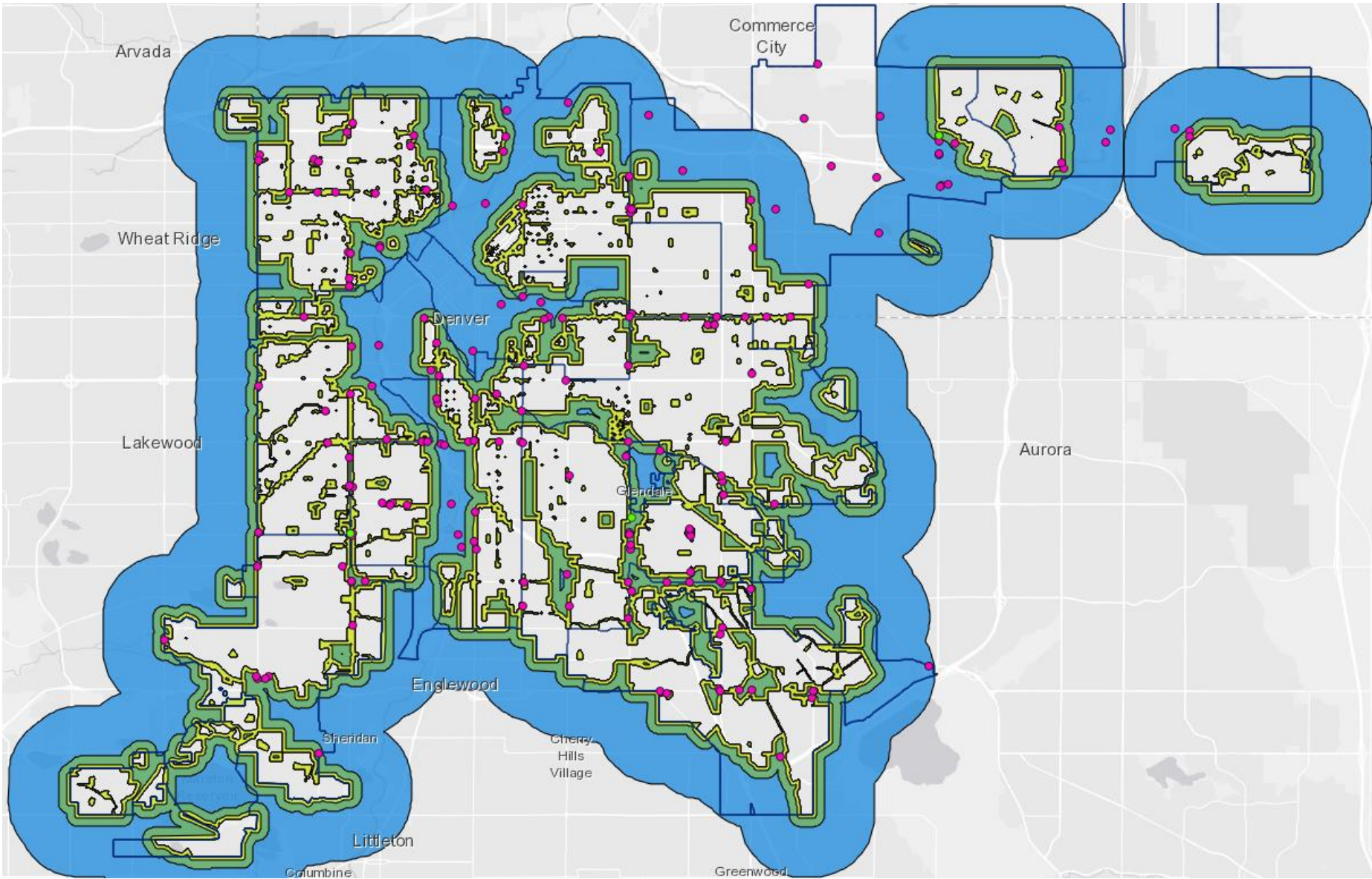
- There are at least eight (8) municipalities in the country that have placed an overall cap on new construction of gas stations within their jurisdictions
  - Largest city in the U.S. that did this is Santa Rosa, CA (population 170,000)
- Louisville, CO (population 20,975) went this route and placed the overall cap at six (6)
  - This action started because of a citizen-led ballot initiative limiting all new construction of fuel stations
  - In response to that successful ballot measure, Louisville City Council implemented a moratorium of fuel station submittals until city staff were able to create an ordinance that matches the spirit of the successful ballot measure
  - Landed on 6 because they already had 5 stations within their jurisdiction with 1 more approved
  - An exception to allow any existing or future retail center of 80,000 sq ft or more in recognition of the economic opportunities
  - Requires installation of 2 EV charging stations
- There are 180 existing retail gas stations in Denver. In doing a ratio to compare Louisville's population to the number of gas stations, the overall cap number in Denver would be 215.

# Proposal 2 – Buffer From Residential

- Mandate a buffer near protected districts
  - 300ft
- Concerns
  - DDPHE does not find the levels of benzene vapor overly harmful
  - This restricts housing development near existing gas stations
  - How to determine the appropriate distance, there would still be existing gas stations near residential housing making the public health concern questionable.
  - No other city has instituted a buffer from residential district.







### Legend

#### Retail Stations Currently in Use

- Currently In Use
- Pending Installation

#### Denver City Council Districts



#### Protected Dist Buffer 300ft



#### Protected Dist Buffer 1kft



#### Protected Dist Buffer 1mi



# Proposal 3 – Buffer From Transit Stations

shift



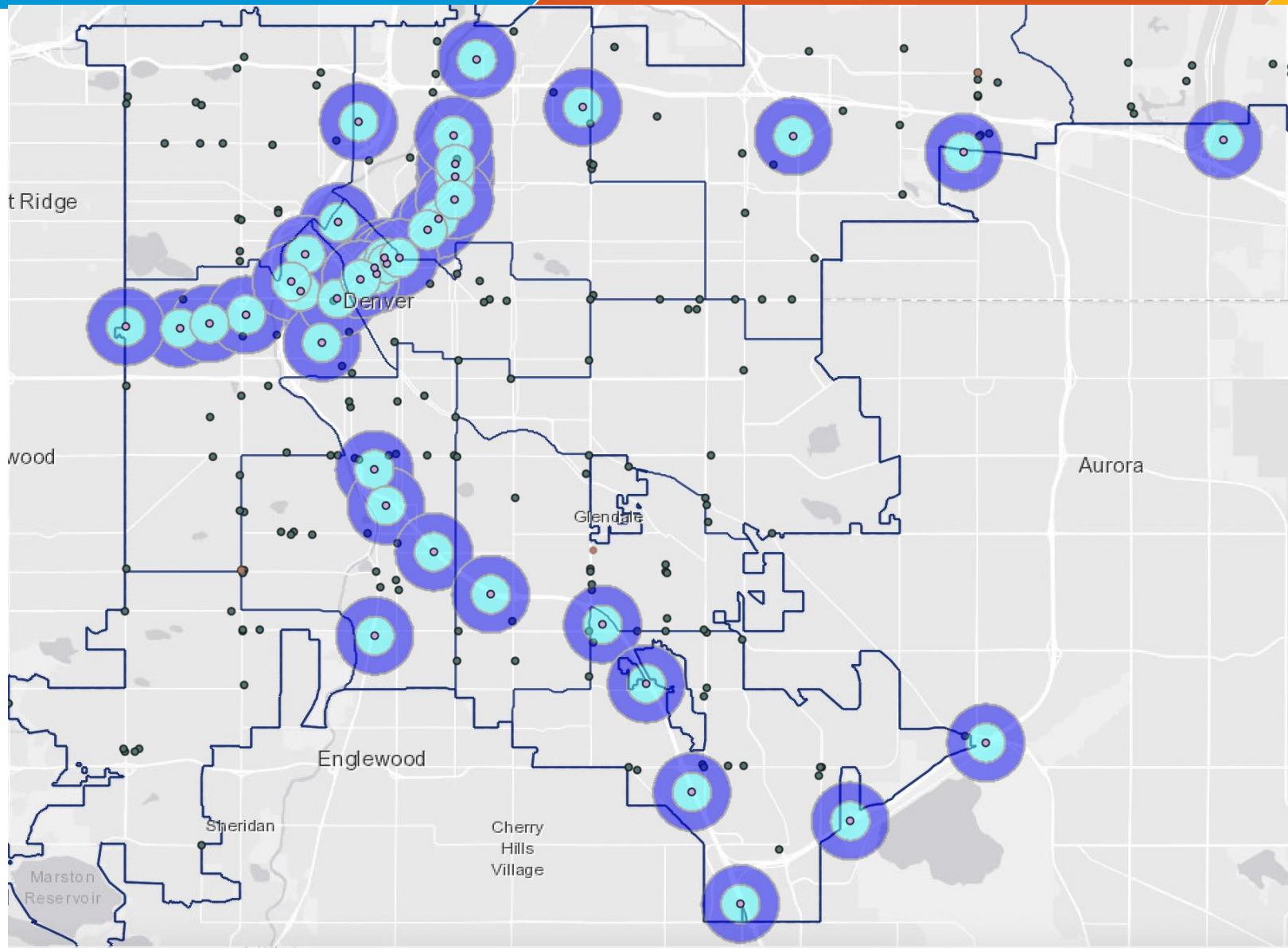
- Establish a 1/4 mile buffer from the existing transit corridor
  - Sacramento, CA (population 528,000)
    - 23 light rail stations
    - Conditional use permits can be applied in some cases
      - Drive-thrus, auto shops, storage, warehouses, distribution centers
- Aligns with Denver's strategic goals for Transit Oriented Development
- HB-1313: TOD must be within 1/2 mile of a light rail station or commuter rail station
  - 31 light rail stations in Denver County (population 750,000)
  - Prohibiting gas stations within 1/4 or 1/2 mile of rail stations could encourage future transit-oriented-development around the current rail stations & would align with HB-1313
- Concerns: There is not much precedent with this option, as most cities have gone for a buffer zone from other service stations or total cap

Lead the region's effort to shift into a new way of thinking about personal mobility. The shift from being a car-dependent city to a multi-modal city is taking place all over the world. A true multi-modal city goes beyond needed transit improvements. A complete network needs high-ease-of-use bike and pedestrian facilities, car sharing, bike sharing, and other new ways to make getting around without the use of a car a reality.

- **Car Free/Car Lite** – becoming non-/less car dependent for most trips
- **Public Space** – more room for pedestrians and bikes, less for cars
- **Reduce and Energize** – carbon emissions go down, healthy living goes up

SETTING THE STAGE  
TR

*Transit Oriented Development Strategic Plan 2014, pg. 11*



### Legend

#### Rail Transit Stations



#### Light Rail Stations Buffer

Distance Buffer in Miles



0.25



0.5

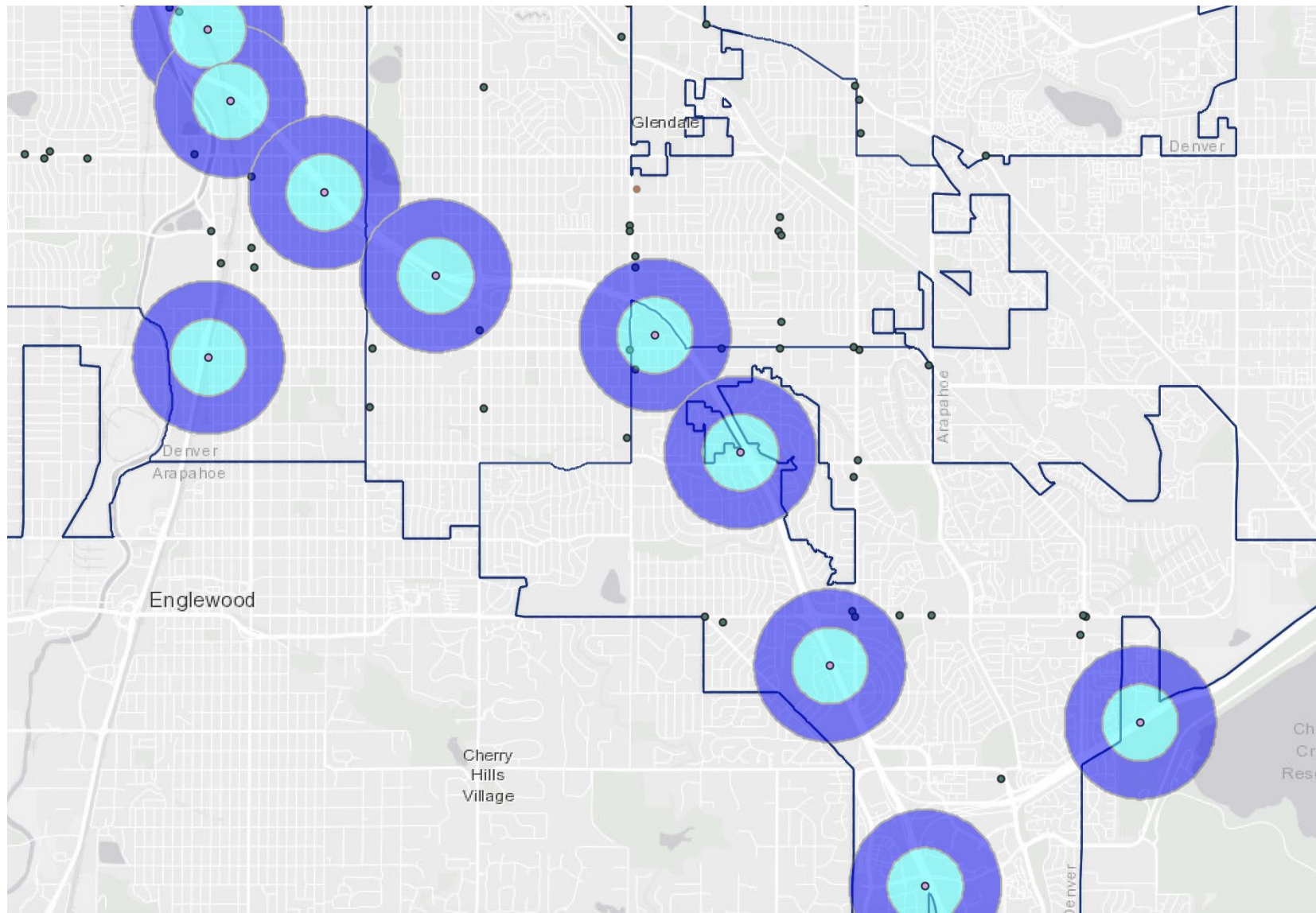
#### Retail Stations Currently in Use

- Currently In Use
- Pending Installation

#### Denver City Council Districts







## Legend

### Rail Transit Stations



### Light Rail Stations Buffer

Distance Buffer in Miles



0.25



0.5

### Rail Stations Currently In Use

● Currently In Use

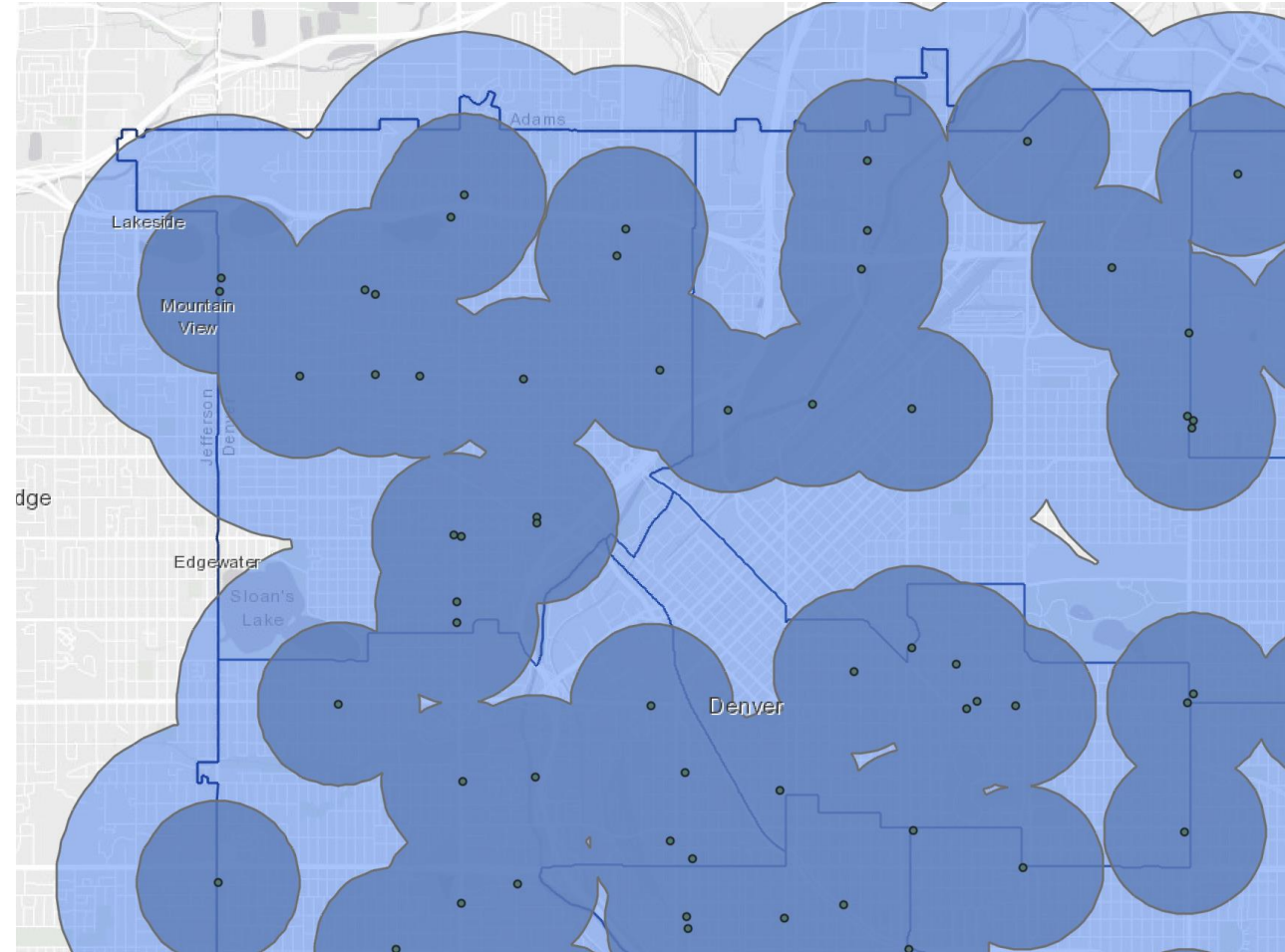
● Pending Installation

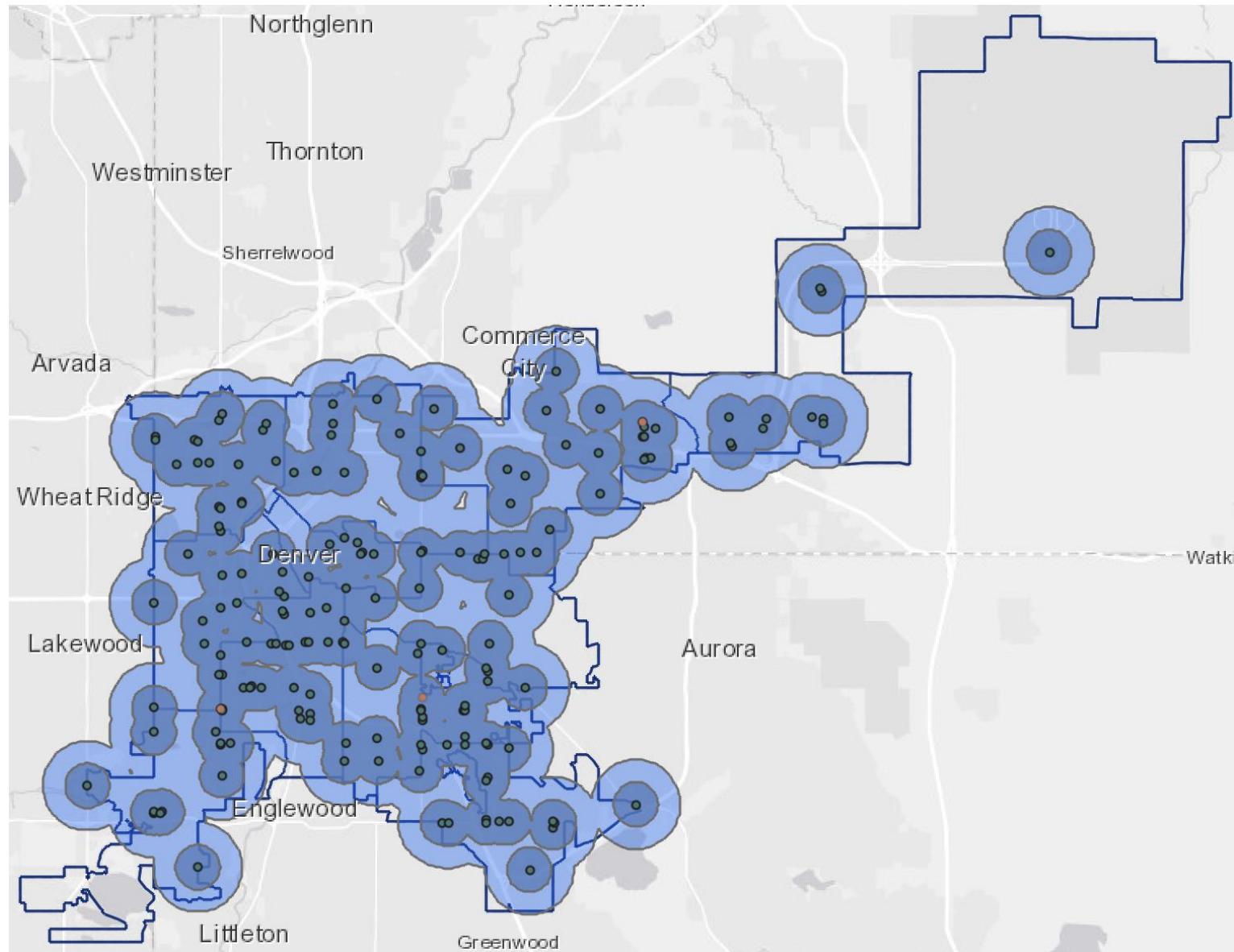
### Denver City Council Districts



# Proposal 4 – Buffer From Other Service Stations

- Louisville established a 1,000 ft buffer of new service stations from existing stations
- Broomfield established a minimum separation between gas stations
  - 1,000 feet as measured in a straight line from the nearest edge of the property line of each respective gas station or proposed gas station lot
  - An exception is written to allow for a maximum of two (2) gas stations within less than 1,000ft at any intersection of two roads as long as the gas stations are not on the same side of the traveled street
- How would we handle this with bordering municipalities?
- Supports the need to prioritize building housing instead of gas stations on transportation corridors.





## Legend

### Retail Stations Currently in Use

- Currently In Use
- Pending Installation

### Half Mile Buffer from Stations



### One Mile Buffer from Stations



### Denver City Council Districts





# Proposal 5 – Stricter Use Limitations

Section 11.4.18 of the DZC contains the current use limitations for Automobile Services (light and heavy).

There are current restrictions on RX, MX-2A, MX-2, MS-2, C-CCN, D-AS-12+, D-AS-20+, D-CPV-T, D-CPV-R, D-CPV-C, and CMP-NWC-F zone districts (sections 11.4.18.1 - 3 & 5) as well as general limitations for all zone districts in 11.4.18.4.

A new use limitations could be written either in 11.4.18.4 to cover all zone districts or as 11.4.18.6 for specific zone district(s), e.g.:

- 11.4.18.4.K: Any automobile services light or heavy use may not be located within 1000 feet of any other automobile services use.
- 11.4.18.6: In all MS zone districts, where permitted with limitations, all automobile services uses shall be prohibited.
  - \*this could also apply to other zone districts

# Proposal 6 – Stricter Use Limitations Through a Conditional Use Permitting Process

Create a mechanism that employs a list of considerations to assess new station locations under 11.4.19.A in the DZC.

- Zoning administrator weighs each criteria for a gas station to be approved through a Conditional Use Permitting process. CPD has the authority to deny an application if they feel it does not meet the criteria.
- Considerations could include:
  - How far is the proposed gas station from other gas stations
  - How far is the proposed gas stations from protected districts
  - Are there any underdeveloped or undeveloped parcel of land close to the proposal site
  - Are there any parcels nearby that were previously developed as a gas station
  - How far is proposed gas station from transit stations
  - How many gas stations are currently in this council district
  - Is the proposed gas station tied to funding of a grocery store or other resource that this neighborhood lacks
  - How many pumps are planned for the proposed gas station
  - How many different grades/ types of gasoline will be sold at the proposed gas station
  - Is the proposed gas station on a main transit corridor
  - What other businesses/ developments are located within a 200ft radius of the proposed site
  - Is proposed gas station location on a Main Street
  - Is proposed gas station location on an existing, planned or possible future BRT line



# Proposal 7 – Stricter Permitting Process

- Change all automobile services light from L-ZP (zoning permit with limitations) to ZPSE (zoning permit with special exceptions).
  - Requires a public notice
  - Must go through the Board of Adjustments
  - Opportunity for community input at BOA
- 12.4.9.3 are the review criteria for a ZPSE - \*E and F are the ones that could be used to deny potential permits based on environmental or quality-of-life concerns
  - 12.4.9.3.E: “The establishment, maintenance, and operation of the special exception will not be detrimental to or endanger the public health, safety, or general welfare of the community”
  - 12.4.9.3.F: “The use and enjoyment of other existing uses on the surrounding property will not be substantially impaired by the establishment, maintenance, and operation of the special exception”
- We could also use the limitations in chapter 11 to create a buffer or other geographical area or any other type of restriction that would apply to all places that are operating in the particular use

# Analysis of Proposals

Proposal 1: Total Cap	Proposal 2: Buffer from Residential	Proposal 3: Buffer from Transit Stops	Proposal 4: Buffer from Other Service Stations	Proposal 5: Stricter Use Limitations	Proposals 6: Conditional Use Permitting Process	Proposal 7: Stricter Permitting Process
<ul style="list-style-type: none"> <li>• If we follow the ratio of Louisville's population to the number of stations, gas stations are still allowed to be built in high-need areas</li> <li>• No precedent for a municipality of Denver's population size</li> </ul>	<ul style="list-style-type: none"> <li>• Aligns with community interest</li> <li>• Potentially discourage housing construction</li> <li>• Current gas stations already violate any buffer zone that would be created</li> </ul>	<ul style="list-style-type: none"> <li>• Aligns with HB1313 in making properties within ¼ mile of a transit station developable</li> <li>• Drive-thrus are already prohibited within ¼ mile of transit stations in DZC</li> <li>• Could incentivize developers to look at other development options</li> <li>• Only existing precedent is Sacramento, CA and they allow conditional use permits</li> </ul>	<ul style="list-style-type: none"> <li>• More land is available for development that aligns with the City's goals</li> <li>• Prevents multiple corners of intersections from being filled with gas stations</li> <li>• Could incentivize developers to look at other retail or development options</li> <li>• Concerned about bordering municipalities (e.g., Arapahoe CO, Glendale Greenwood Village etc..)</li> </ul>	<ul style="list-style-type: none"> <li>• Supported by adopted plans</li> <li>• CPD could help craft the language and criteria to make it more objective</li> <li>• Multiple text amendments that institute specific criteria into DZC</li> <li>• Each application needs to be reviewed on case-by-case basis to understand context of each site</li> </ul>	<ul style="list-style-type: none"> <li>• Creates a new mechanism in the zoning code that would allow CPD the ability to determine the uses</li> <li>• Each application needs to be reviewed on case-by-case basis to understand context of each site</li> </ul>	<ul style="list-style-type: none"> <li>• Supported by adopted plans</li> <li>• Community input at BOA hearing</li> <li>• BOA process may not lead to a more desired outcome</li> <li>• Might require existing gas stations to get a variance before making any improvements to their property</li> </ul>

# City Council Staff Recommendation

Stricter Use Limitations through a Conditional Use Permitting Process (Proposal 6)

Subsequent action:

- Develop a mechanism to provide objectivity within the process
- Continue to consult CPD to craft the permitting process
- Consider including other automobile services
- This is meant to be a discussion, not a formal position

# Questions & Discussion

# Appendices



# Appendix

Gas stations are currently regulated by the Division of Oil and Public Safety, which falls under the purview of the Dept. Of Labor and Employment. Engineers inspect gas stations, equipment, and certify them for operation - without this certification, they *cannot* operate in our state. They are also regulated by Community Planning & Development and the Denver Fire Department via the Denver Building code and Denver Fire code.

CCD permits gas stations through the Fire Department- Flammables Operational Permits

CCD has the Denver Brownfields Program, representative from DEDO, DDPHE, DPR, DOF, CPD, DOTI, and COA sit on the Brownfields Committee.

Temporary Closure: *"If the tank system is not going to be operated and the owner isn't sure when operations will begin, or if the tank system does not contain enough fuel to perform release detection, the owner may put the tank system into Temporary Closure. OPS may allow a temporary closure of tank systems for a period of up to 12 months. After the 12-month temporary closure period has elapsed, the owner/operator must put the tank system back into service, permanently close it or request an extension."* State of Colorado [Petroleum Program Guidance](#)

Permanent Closure: Process is detailed in the State of Colorado [Petroleum Program Guidance](#), pages 88-99. Process is dependent on type of tank, location of tank, series of soil and water samples, etc. If petroleum is found to be released from tank, remediation process will commence.