

BRT

Regional BRT Feasibility Study



DRCOG Board Meeting

July 18, 2018





Project Vision

A Bus Rapid Transit network that enhances regional connectivity, supports future travel demand, and improves attractiveness of transit



Goal & Desired Outcomes

Study Goal

- Identify and prioritize corridor-based and/or fixed-guideway BRT projects in RTD's service area

Desired Outcomes

- A planned BRT network
- A prioritized list of short-term BRT investments
- Identification of one or more projects ready for project development



Project Team

Felsburg Holt & Ullevig (FHU)

- Apex Design (Apex)
- Connetics Transportation Group (CTG)
- Economic and Planning Systems (EPS)
- Headwaters Economics (HE)
- Peter Koonce (PK)
- Parsons Transportation Group (PTG)

Project Team Task Leads

RTD Project Manager

Brian Welch, AICP

Project Manager

Holly Buck, PE, PTP | FHU

Principal-in-Charge

Elliot Sulsky, PE, AICP | FHU



Data Collection & Analysis

Emma Belmont, AICP | FHU



Identification of Potential Physical/Operation Enhancements

Jim Baker | CTG

Molly Veldkamp, AICP | Apex



Evaluation & Prioritization

Holly Buck, PE, PTP | FHU

Phil Hoffmann | PTG

Patty Gude | HE

Brian Duffany | EPS



Public Information/Engagement

Cady Dawson | FHU



Agency Coordination

Holly Buck, PE, PTP | FHU

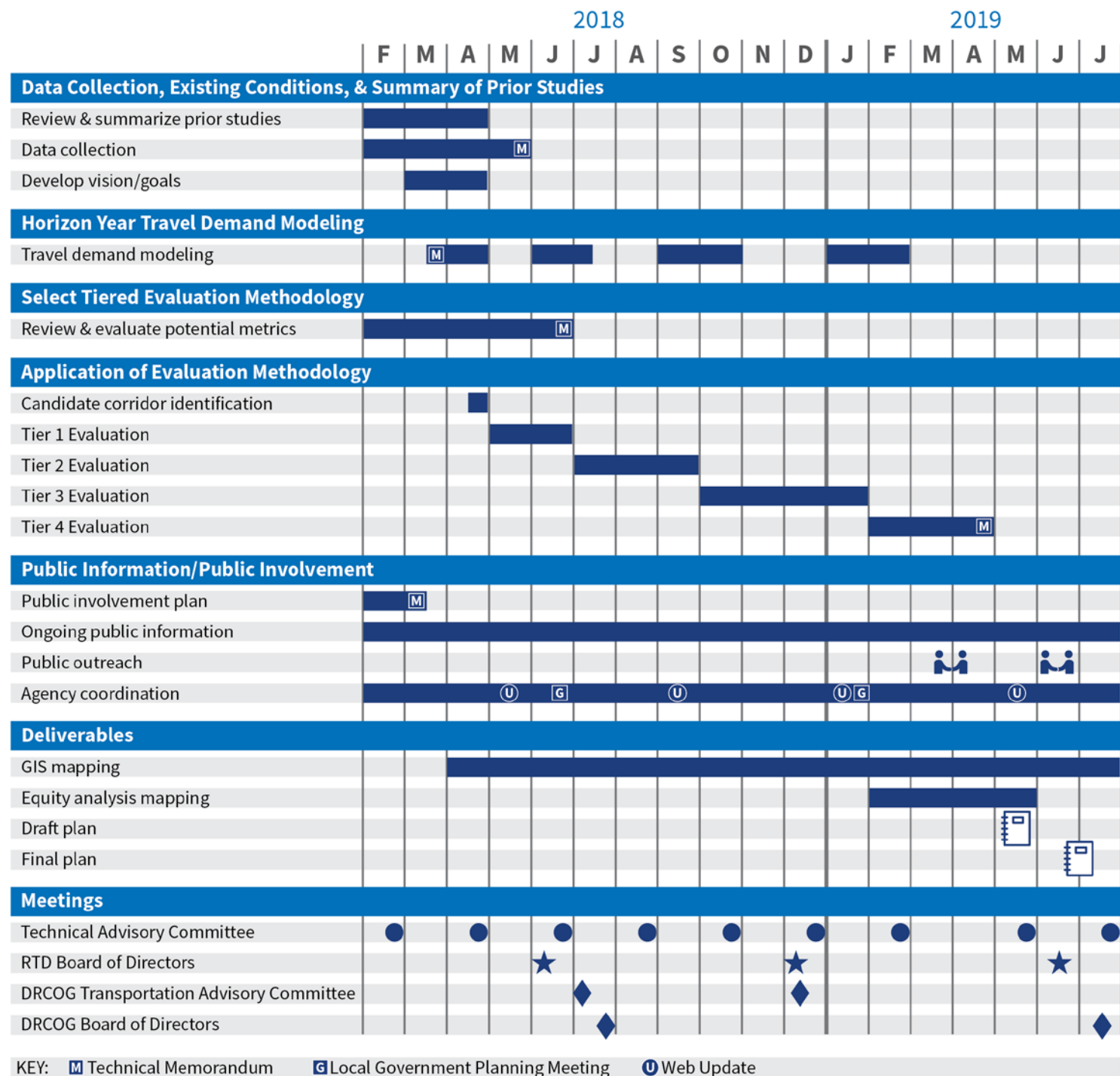
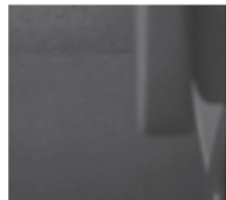


Final Deliverables

Documentation Oversight

Cady Dawson | FHU

Project Schedule





Stakeholder Engagement

Project Technical Advisory Committee

- RTD, CDOT, DRCOG

Partner Coordination Meetings

- RTD Board of Directors
- DRCOG Board of Directors/TAC
- Local Government Planning Meetings

Engagement Tools

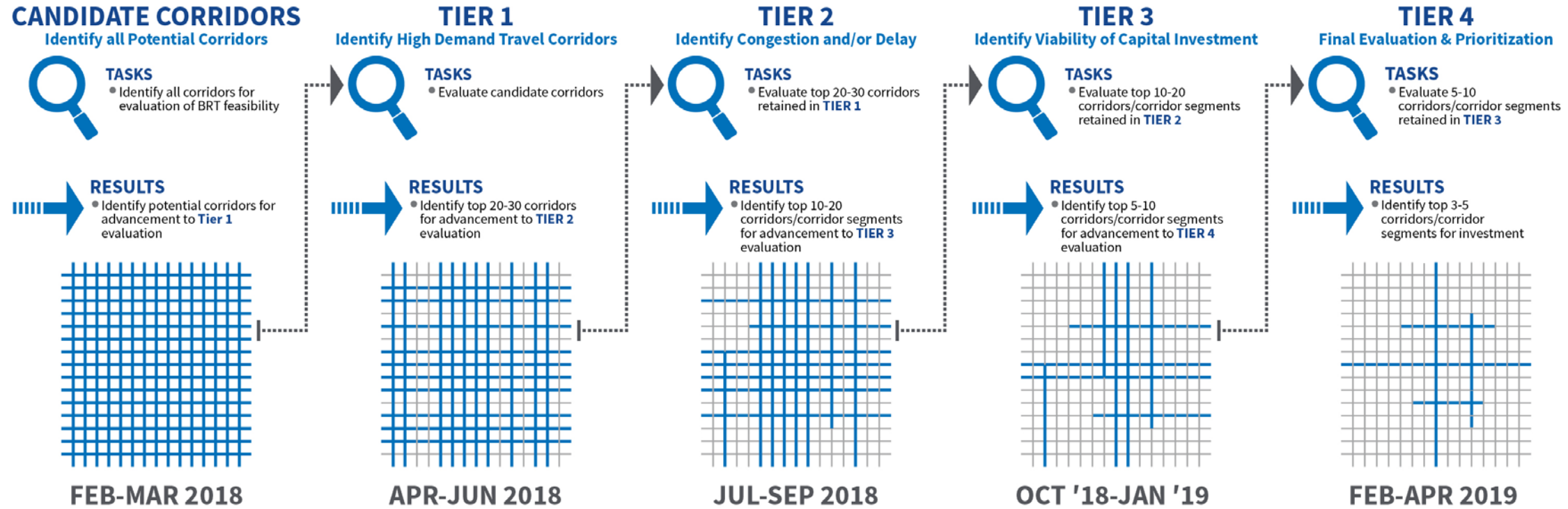
- Project website
- Online map-based evaluation review and commenting
- Project email updates
- Public meetings
- Pop-up events



Project Evaluation Principles

- Provides connectivity and access
- Increases ridership
- Enhances expandability, equity, and sustainability
- Ensures cost-effectiveness
- Aligns with state and local agency recommendations
- Considers technological innovation/Smart Cities
- Adheres to FAST Act BRT definition
- Integrates engineering/operation feasibility/safety
- Acknowledges potential environmental impacts
- Capitalizes on financial resources

Tiered Evaluation Methodology





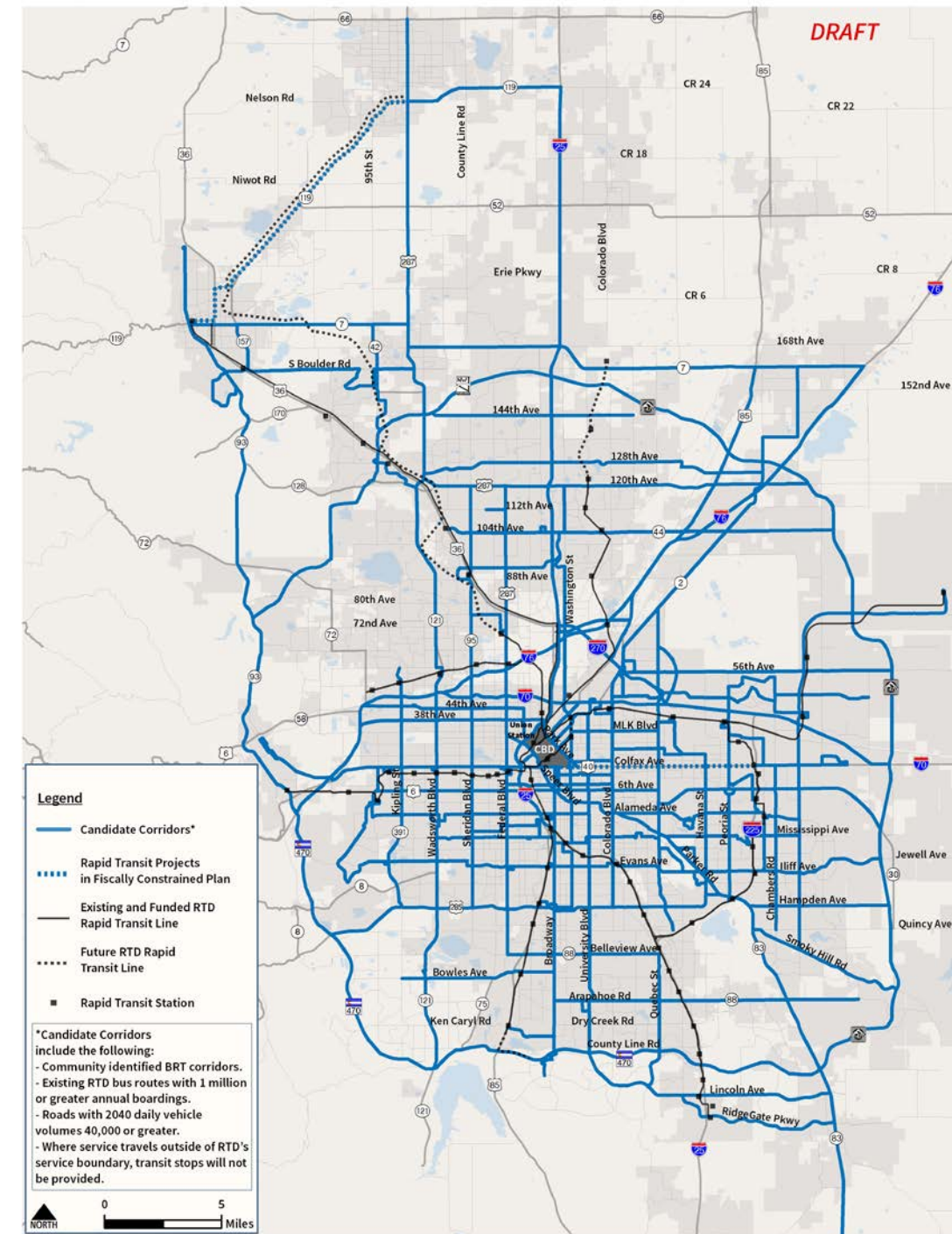
Candidate Corridors Evaluation

Metrics

- Community/TAC identified BRT corridors
- Existing RTD bus routes with >1 million annual boardings in 2016
- Roads with >40,000 vehicles/day in 2040

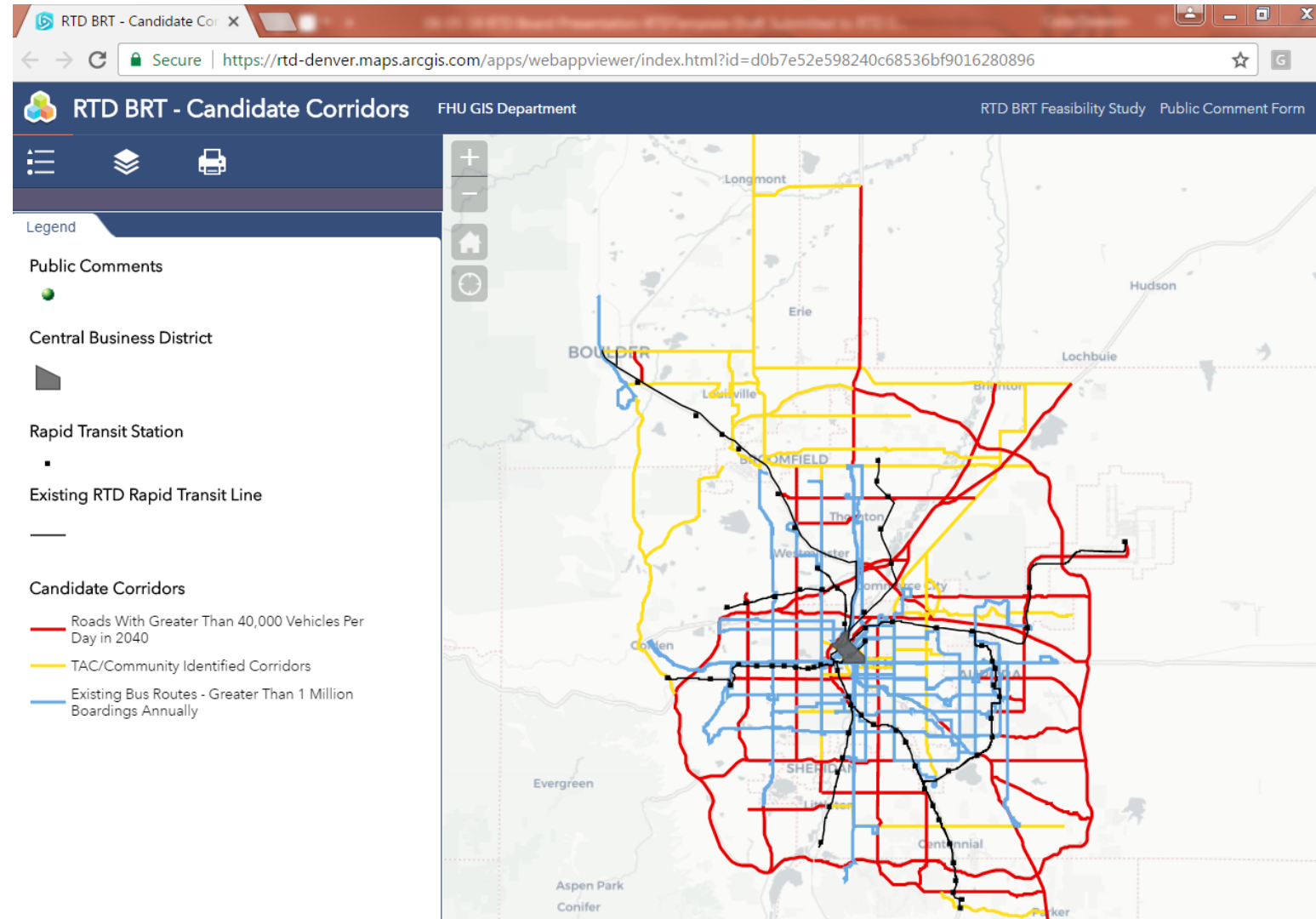
Results

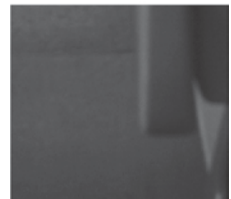
- Identify corridors for advancement to **Tier 1** evaluation



Candidate Corridors

Web Map Review & Commenting Tool





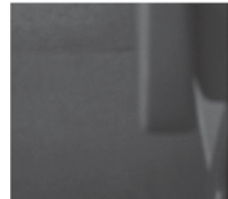
Tier 1 Evaluation

Goal

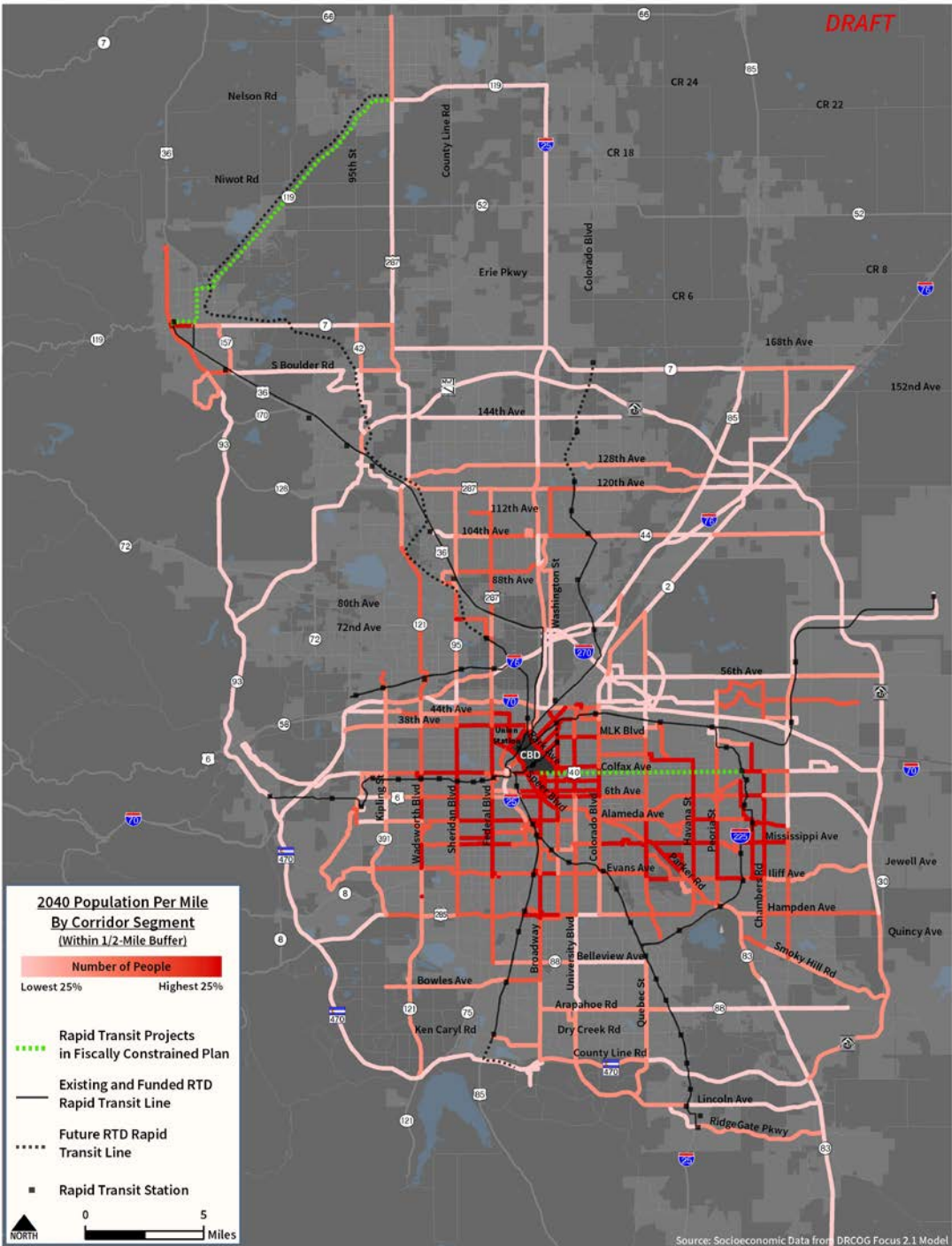
- Identify high demand travel corridors

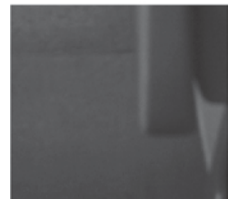
Metrics

- Highest 25% population per corridor mile in 2040 (1/2 mile buffer)
- Highest 25% employment per corridor mile in 2040 (1/2 mile buffer)
- Population + job densities greater than 17 per acre in 2040 (1/2 mile buffer)
- Potential to serve key activity centers or transit connections



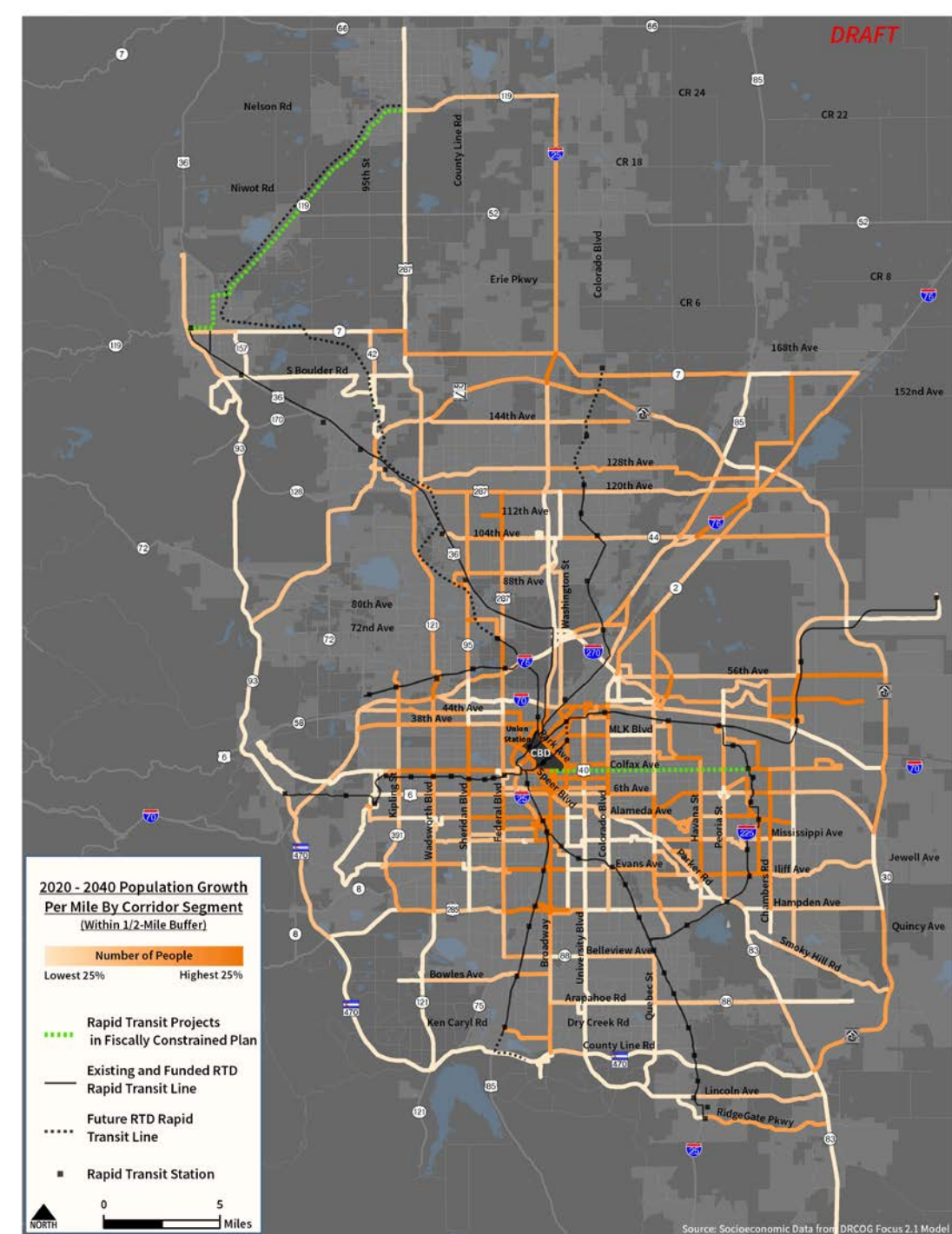
Tier 1 Preliminary Analysis 2040 Population

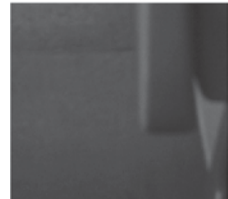




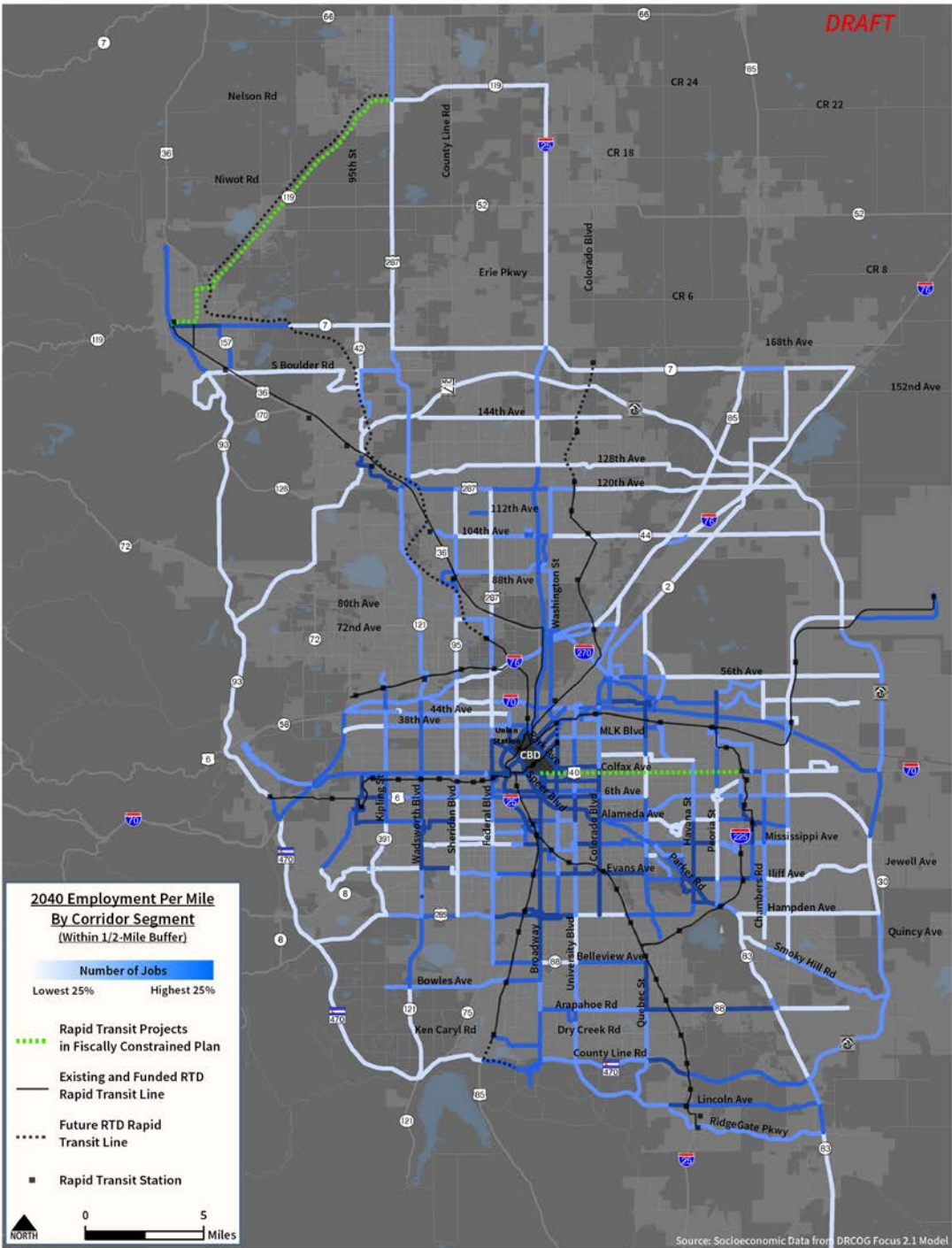
Tier 1 Preliminary Analysis

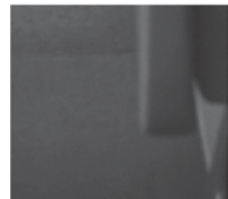
Population Growth 2020-2040





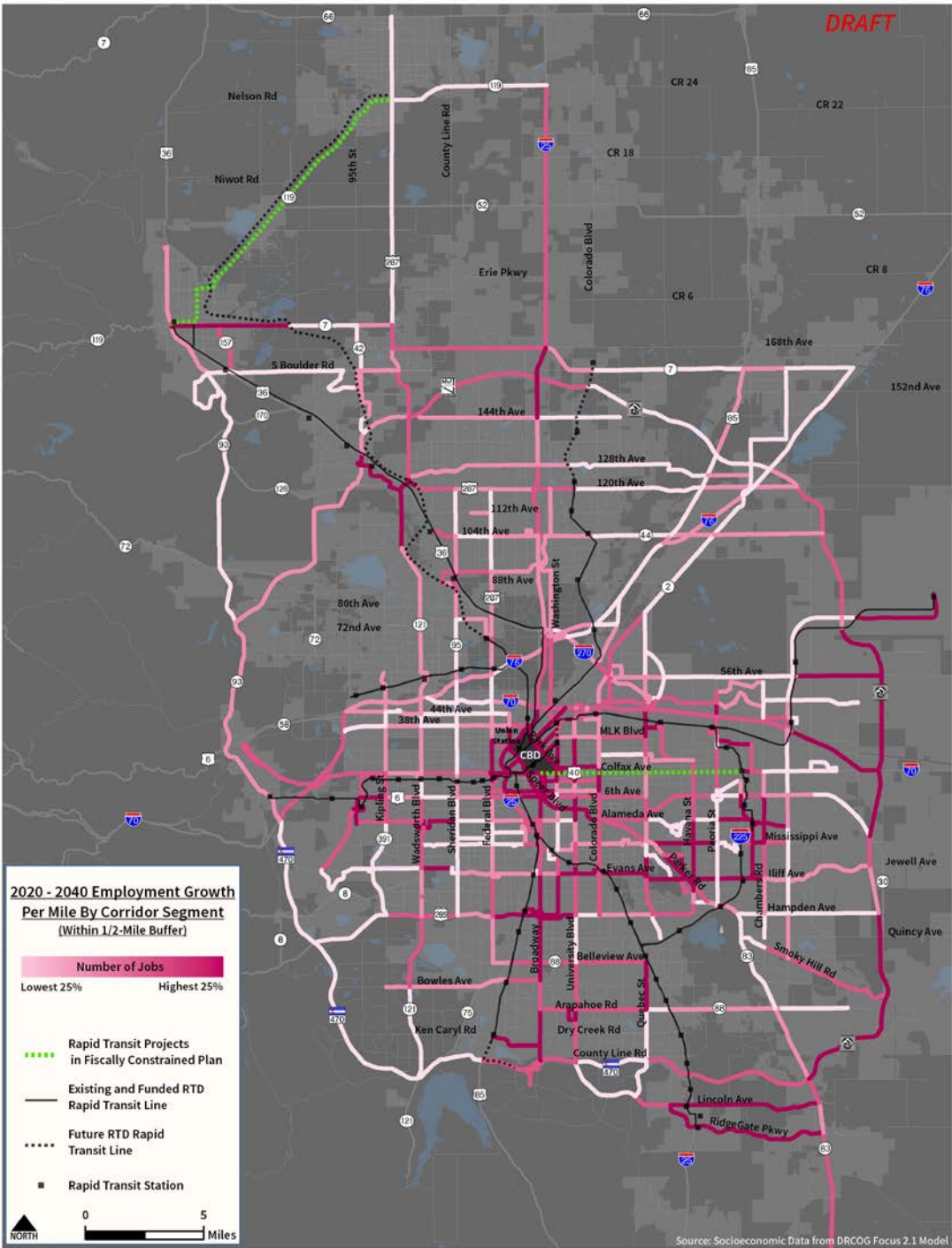
Tier 1 Preliminary Analysis 2040 Employment

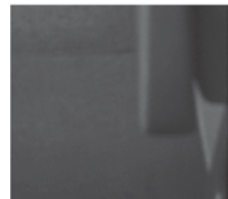




Tier 1 Preliminary Analysis

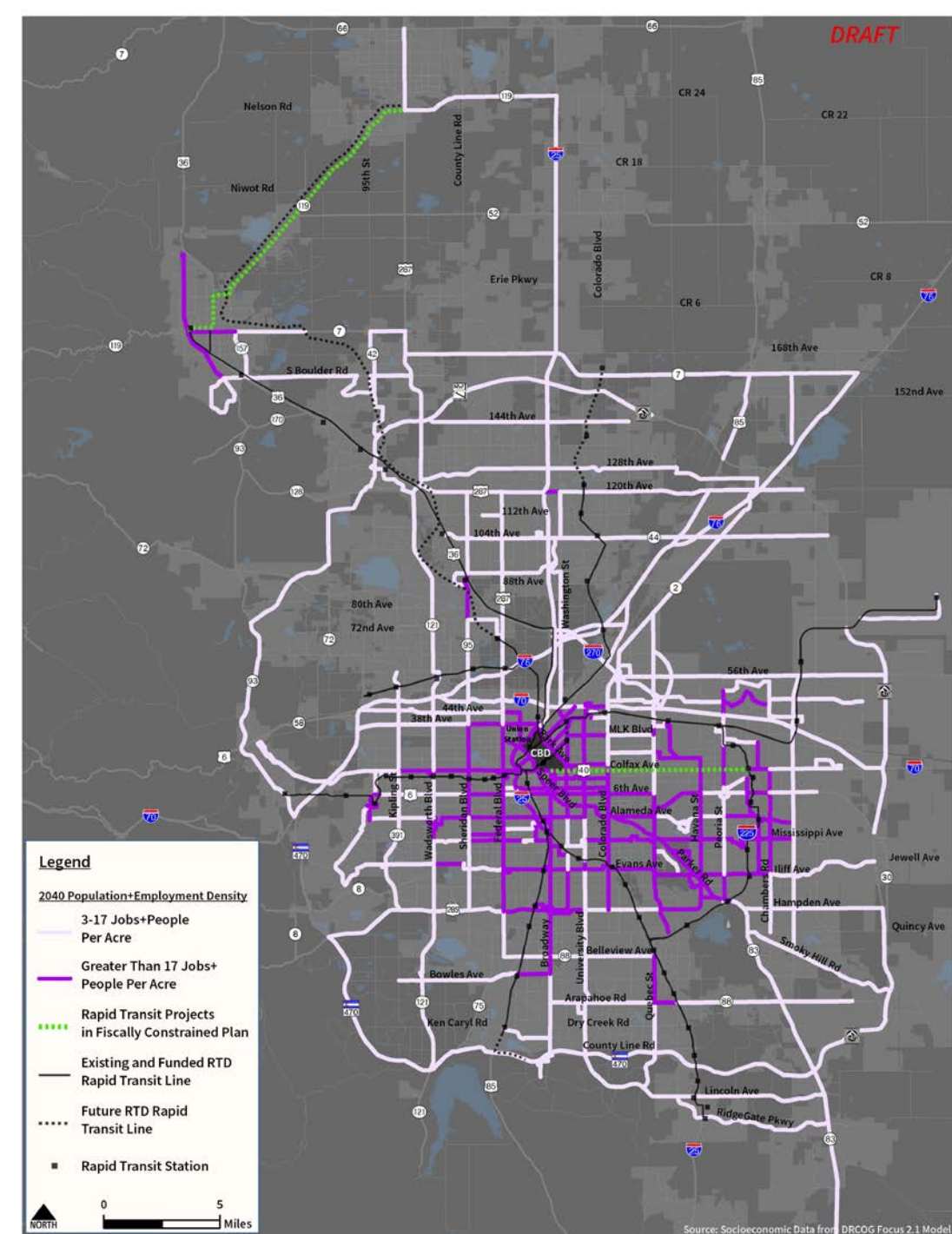
Employment Growth 2020-2040

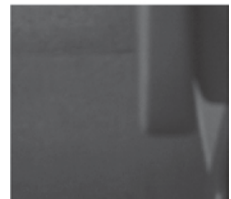




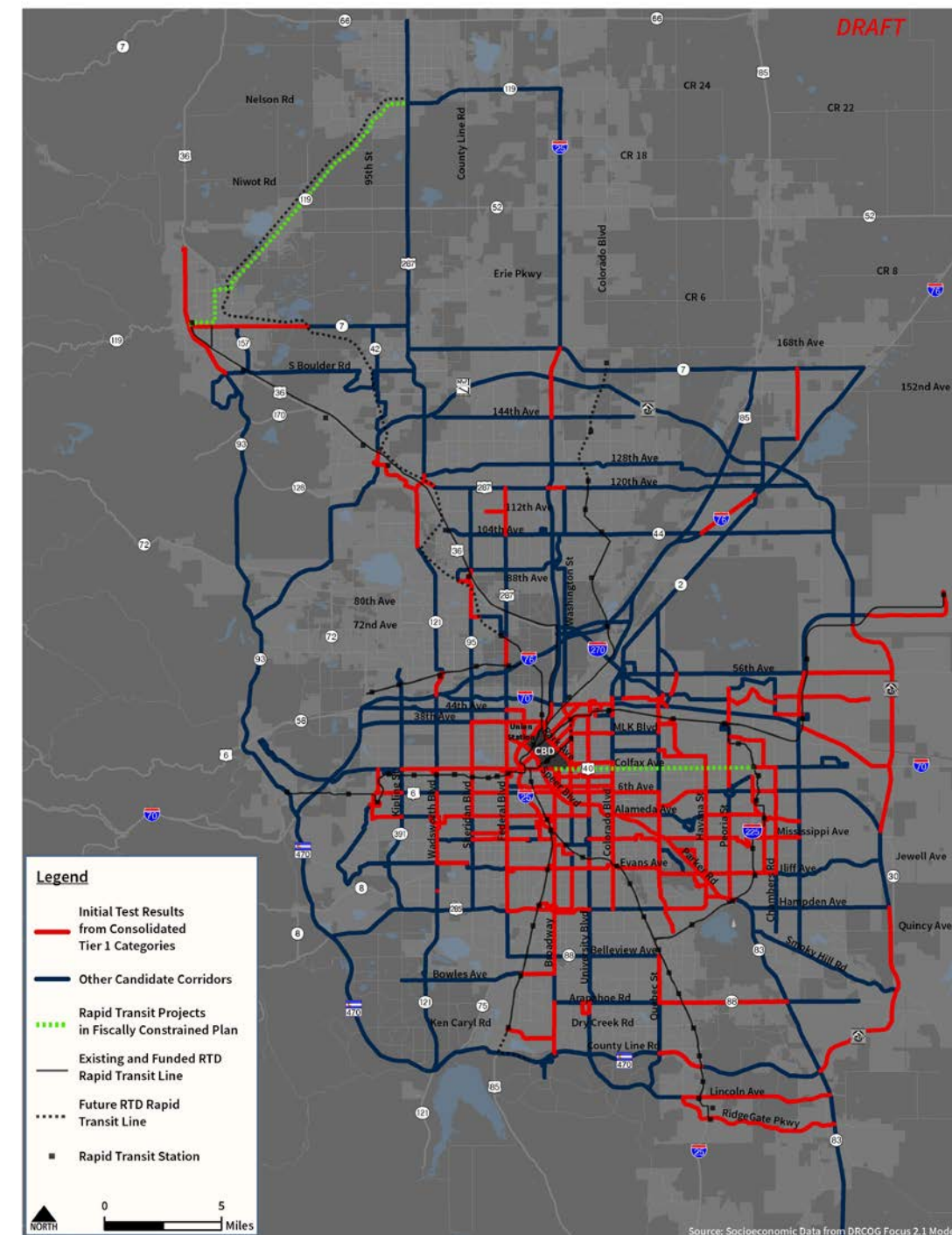
Tier 1 Preliminary Analysis

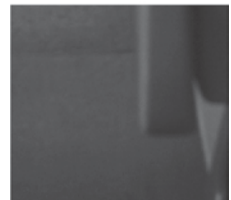
2040 Population + Employment Density





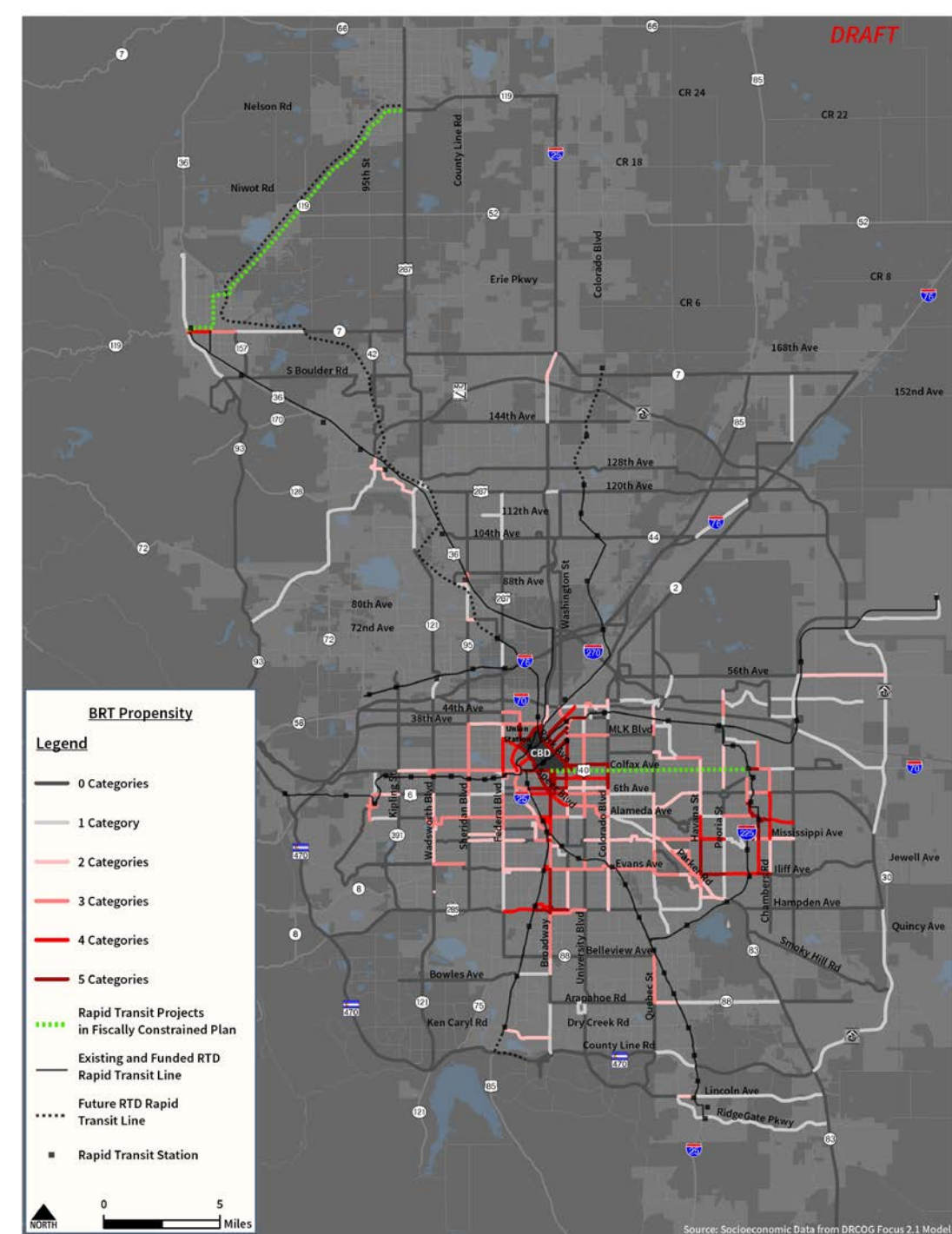
Tier 1 Initial Test Segments in Top Tier 1 Categories





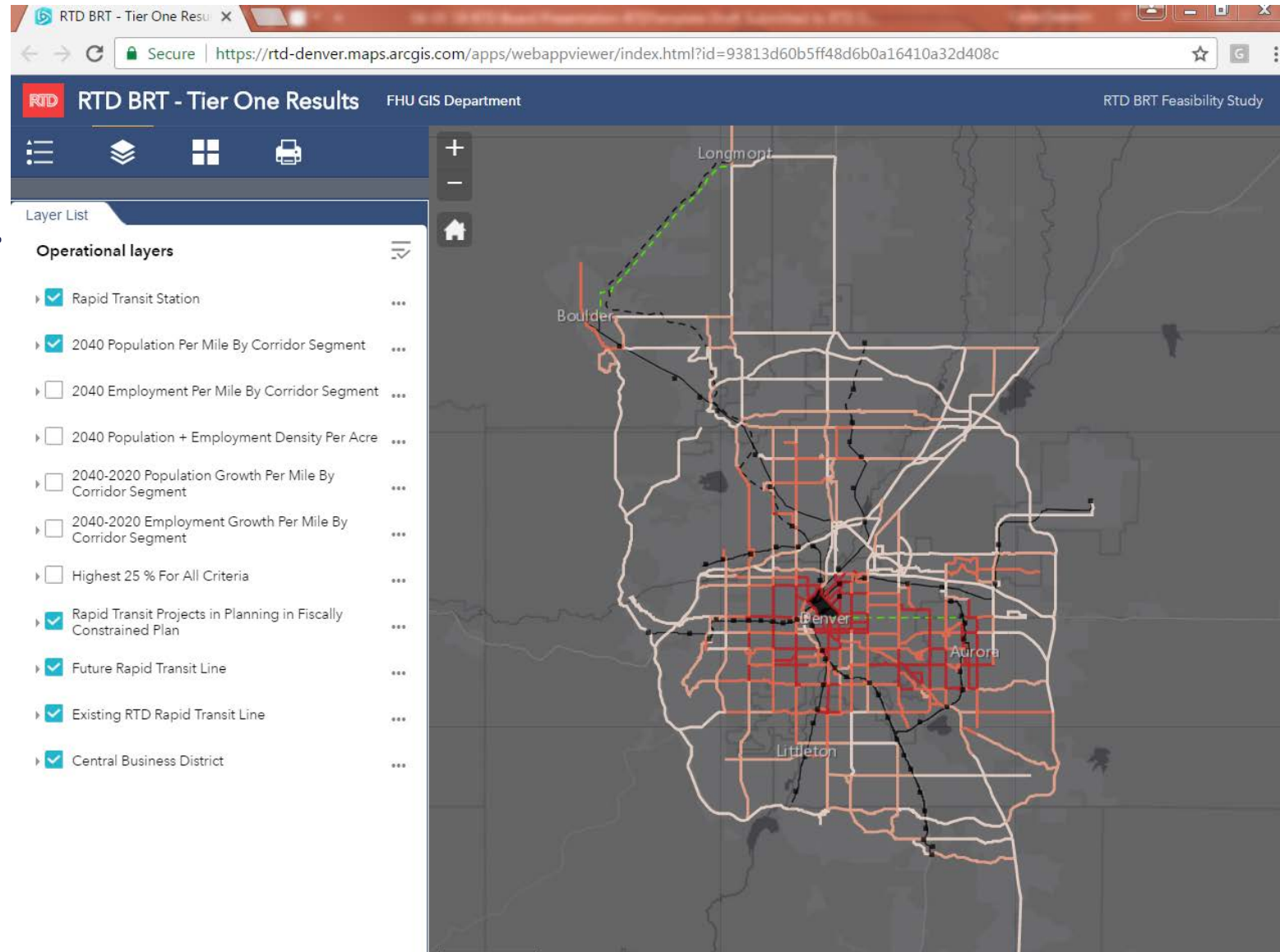
Tier 1 Initial Test

Number of Tier 1 Categories Met



Preliminary Tier 1 Analysis

Web Map Review & Commenting Tool





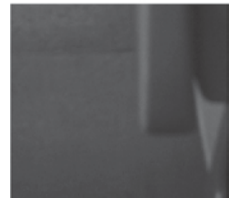
Tier 1 Analysis Next Steps

Analysis

- Assemble key activity center and transit connection data
- Aggregate data and develop routes for modeling

Result

- **20-30** corridors/routes for **Tier 2** evaluation



Tier 2 Evaluation

Goal

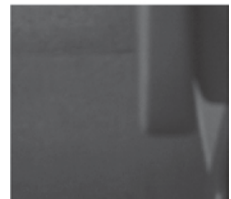
- Identify congestion and/or delay

Evaluation Criteria

- 2040 peak travel time comparisons (auto to bus)
- Highest 25% of 2040 daily ridership projections
- 2040 volume to capacity ratios greater than 0.8
- 2040 line loads on roads approaching or exceeding capacity
- Existing routes with highest delay

Result

- Identify top **10-20** corridors/corridor segments for **Tier 3** evaluation



Tier 3 Evaluation

Goal

- Identify viability of capital investment

Evaluation Criteria

- Right-of-way availability
- Viability of lane repurposing
- Viability of exclusive or semi exclusive lanes
- Meets FTA definition of BRT
- Potential to impact sensitive resources
- Alignment with agency plans/policies
- Capital cost

Result

- Identify top **5-10** corridors/corridor segments for **Tier 4** evaluation



Tier 4 Evaluation

Goal

- Final evaluation and prioritization

Evaluation Criteria

- Travel time savings by route (no action vs. proposed)
- Operating cost
- Boardings
- Boardings per service hour and mile
- Annualized cost per rider (capital and operating)
- Transit dependent populations served
- Potential to address community-identified safety concerns
- Suitability for Small Starts funding
- Connectivity to other multimodal facilities
- Availability of local agency financial support
- Neighborhood buy-in
- Support for community economic development goals

Result

Identify top **3-5** corridors/corridor segments for BRT investment



Upcoming Activities

Stakeholder Meetings

- DRCOG Board of Directors – July 2018
- RTD Board of Directors – December 2018
- DRCOG TAC/Board of Directors – December 2018
- RTD Local Government Planning Group – January 2019

Public Outreach

- Coordinated public information campaign with local agencies
- Focused corridor and stakeholder outreach

Project website: www.rtd-denver.com/BRT-study.shtml



Questions?

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