First Avenue Transit Alternatives Analysis

Transportation and Land Use Scenarios

May 21, 2020 (Revised June 4, 2020)

FIRST AVE council bluffs

TOOLE DESIGN

CAMBRIDGE SYSTEMATICS

Outline

- Transit Alternatives & Station Locations
- Block Types and Place Types
- Land Use Scenarios
- Residential Density Impacts
- Key Findings and TOD Success Factors

Project Overview

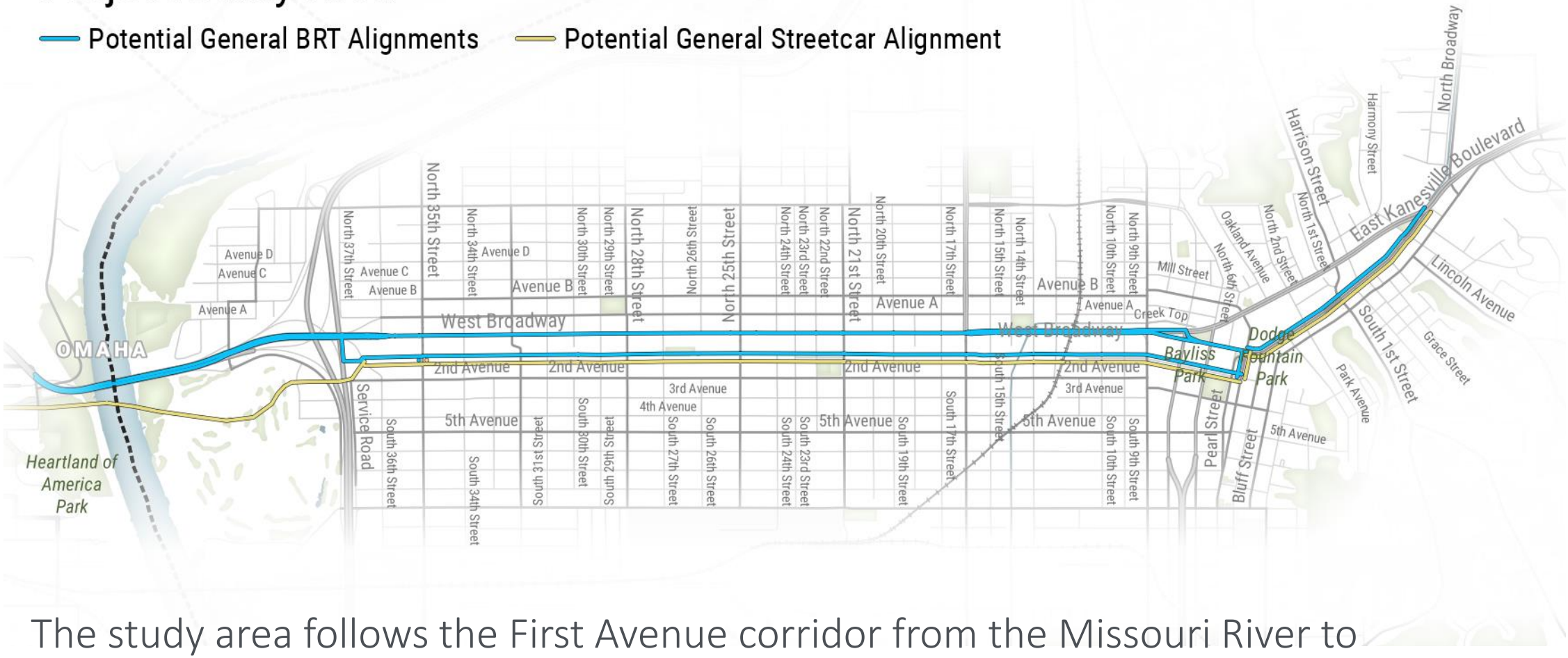
The purpose of this project is to examine the feasibility of providing transit in the First Avenue Corridor and forecasting potential ridership and the economic development and land redevelopment impact of each transit alternative. The transit alternatives being considered are:

- Streetcar on First Avenue (no BRT)
- BRT on Broadway (no streetcar)
- BRT on Broadway and Streetcar on First Avenue
- BRT on First Avenue (no streetcar)
- Do nothing/No build (multi-use trail in First Avenue corridor)

The scope emphasis for this study is on the following elements:

- **Multimodal Corridor Access Study** – Biking and walking connectivity to the corridor and assessment of existing bike/pedestrian infrastructure along key routes
- **Transportation and Land Use Scenarios** – Proposed locations of transit stations and how land use might change to complement transit
- **Alternatives Analysis** – Economic impacts associated with various levels of growth and development

Project Study Area



The study area follows the First Avenue corridor from the Missouri River to downtown Council Bluffs, then follows W Broadway and E Broadway to the medical center area. It extends a few blocks north and south of this central alignment.

This Component: Transportation and Land Use Scenarios

Transit can generate economic development and redevelopment, providing an opportunity to increase the potential of underdeveloped and vacant land along the First Avenue corridor as well as at either end of the study area.

The approach focuses on transportation and land use relationship through scenario planning. More specifically, we explore how changes to density, intensity, and urban form can influence demand for high capacity transit and how changes in transit service can influence access to housing and employment and promote economic development.

Elements

- Transit Alternatives & Station Locations
- Block Types and Place Types
  (Scenario Planning Development Palette)
- Land Use Scenarios

1. Transit Alternatives & Station Locations

Transit Alternatives

- Broadway BRT
  (in mixed-traffic, similar to Omaha's ORBT)
- First Avenue BRT
  (in dedicated ROW)
- First Avenue Streetcar
- Broadway BRT + First Avenue Streetcar
- Baseline
  (no transit changes; only multi-use trail along First Avenue)

Mixed-Traffic BRT

Prioritizes quick travel over longer distances

Dedicated-ROW BRT

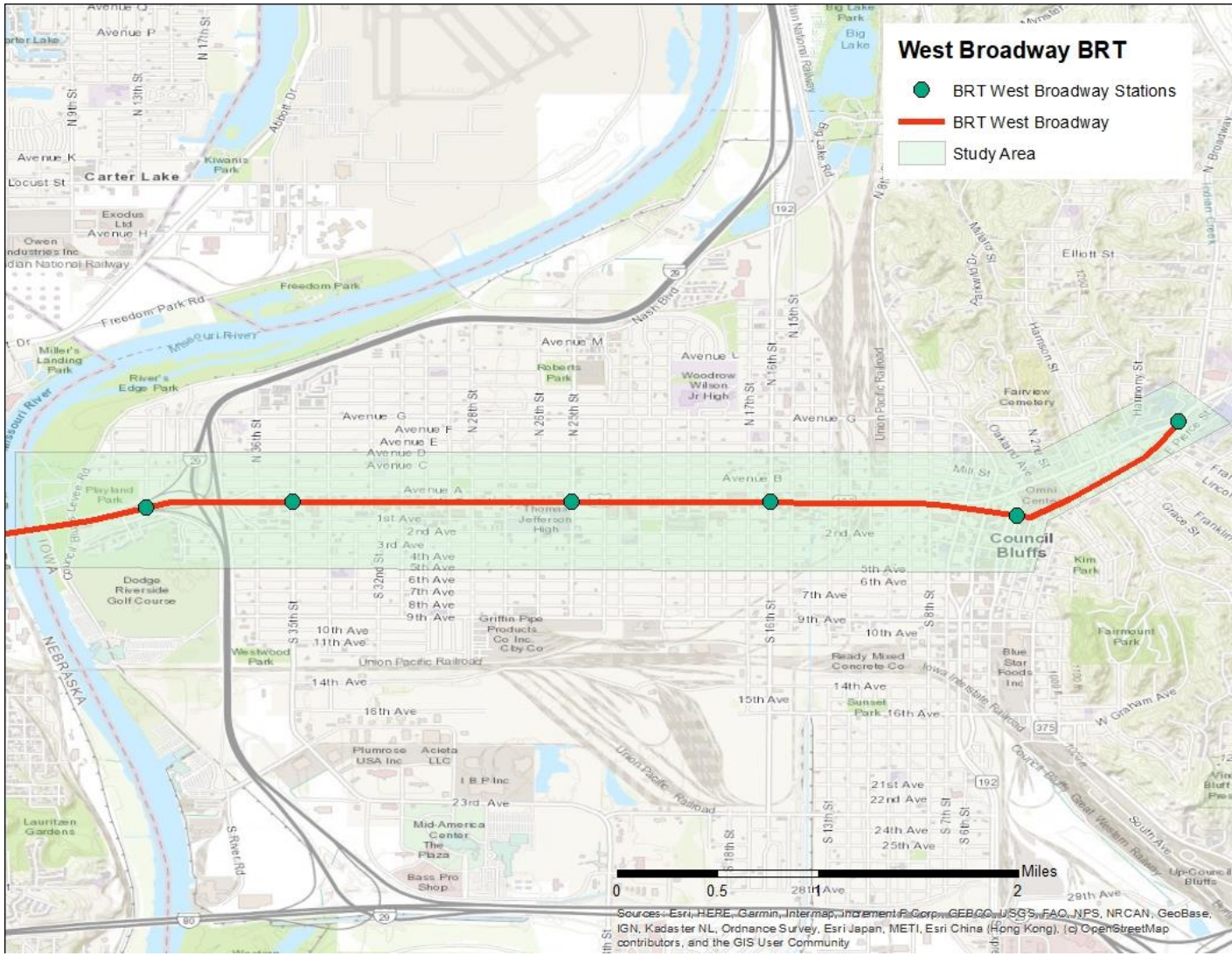
Prioritizes quick travel over longer distances with more reliable service

Streetcar

Prioritizes increased access (with more stations) at lower speeds

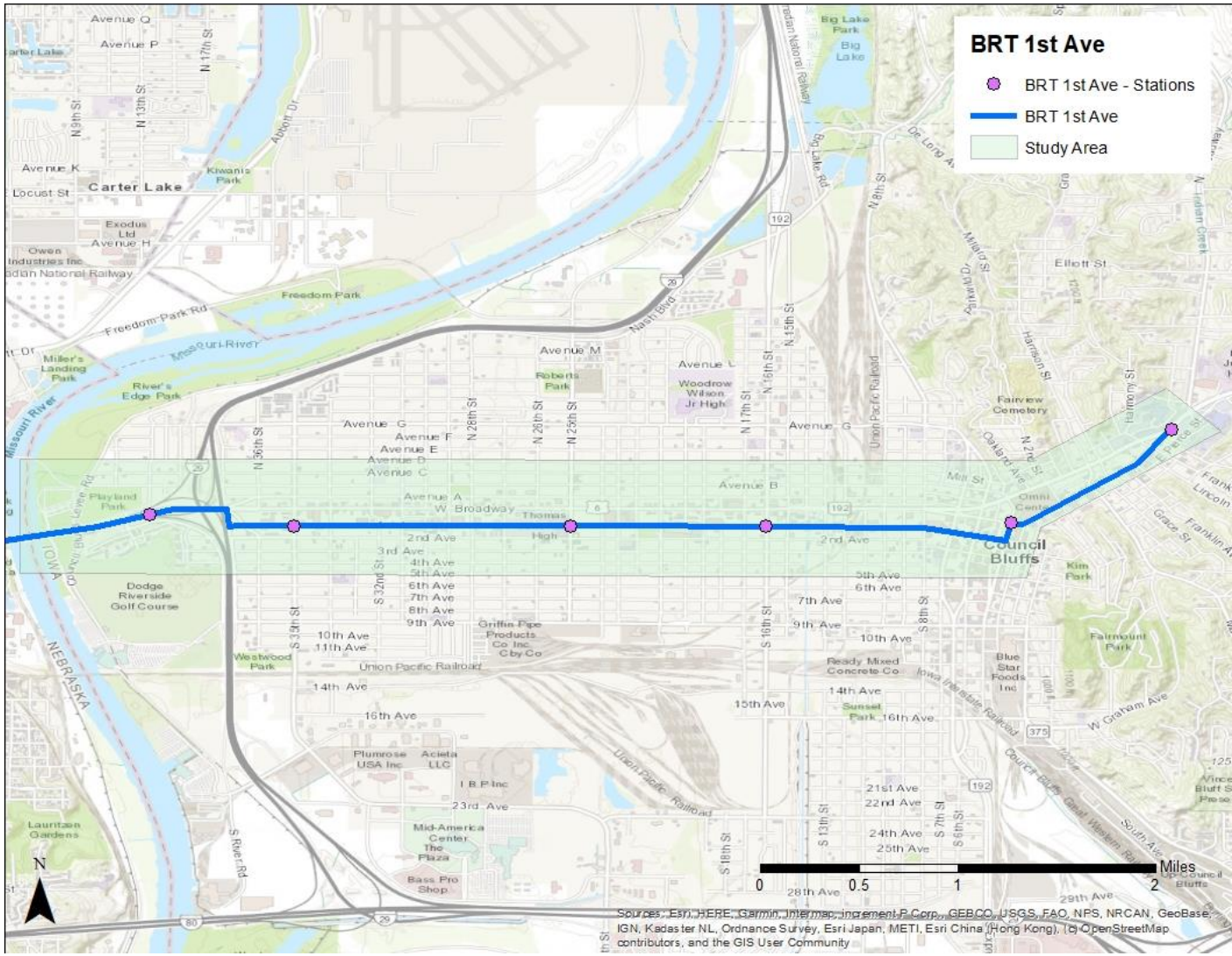
Broadway BRT Potential Stations

- Medical Centers – E Kanesville Blvd & Kimball Ave
- Downtown – W Broadway and Main St
- 16th St
- Thomas Jefferson – 25th St
- Gateway – 35th St
- 40th St



1st Ave BRT Potential Stations

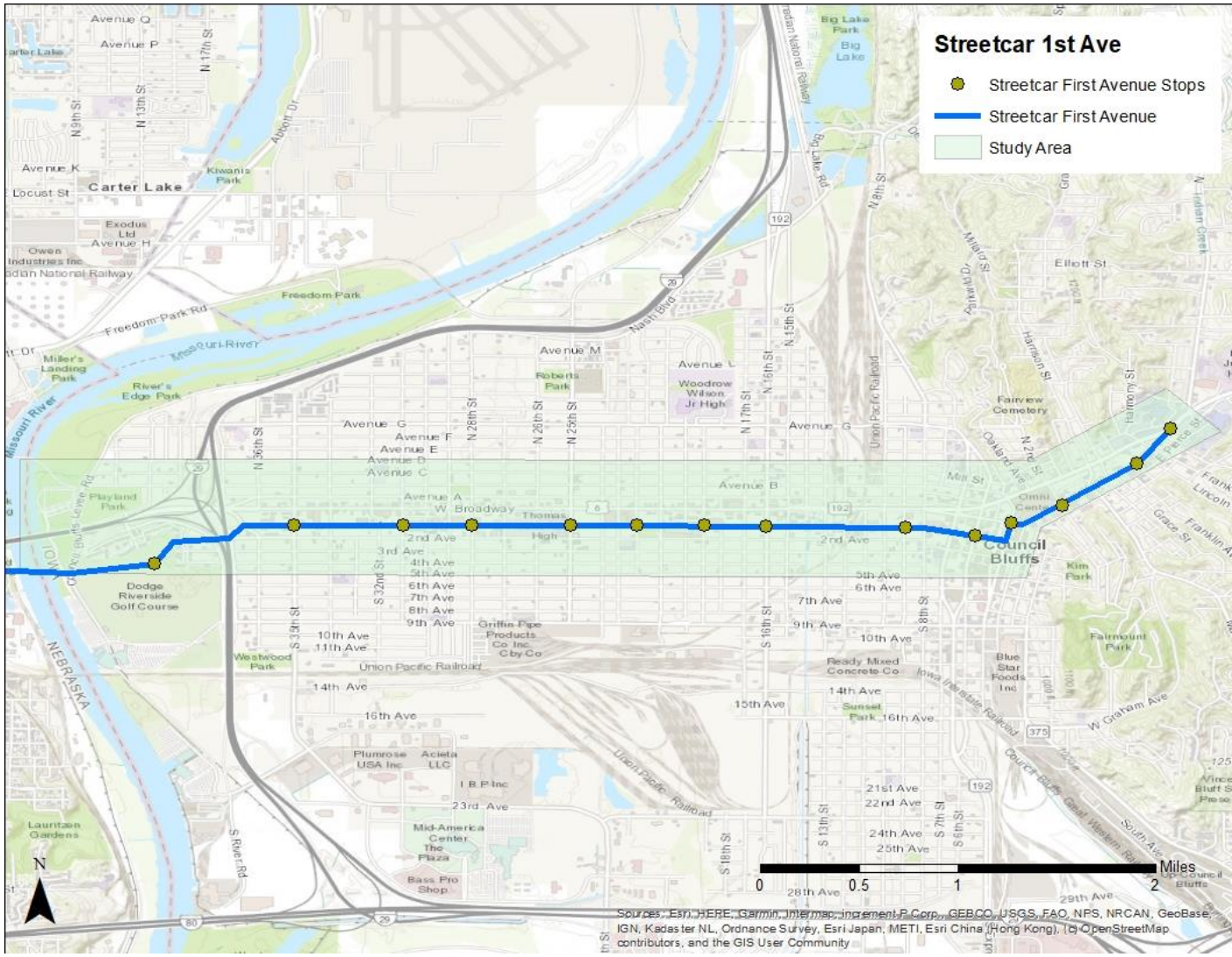
- Medical Centers – E Kanesville Blvd & Kimball Ave
- Downtown – W Broadway and Main St
- 16th St
- Thomas Jefferson – 25th St
- Gateway – 35th St
- 40th St and 2nd Ave



1st Ave Streetcar Potential Stops

- **Medical Centers – E Kanesville Blvd and Kimball Ave**
- Union St
- 100 Block – at 2nd St
- **Downtown – W Broadway and Main St**
- Bayliss Park – 6th St
- 9th St
- **16th St**
- 19th St
- 22nd St
- **Thomas Jefferson – 25th St**
- 28th St
- 31st St
- **Gateway – 35th St**
- **40th St and 4th Ave**

Bold font indicates same as or near to proposed BRT stations



Rationale for Station Locations

» BRT

- Six stations situated approximately 1 mile apart
- Fast movement of people
- Greater development concentration around stations

» Streetcar

- 15 stations situated 3 or 4 blocks apart
- Ease of access, visual commitment to placemaking on corridor
- Evenly spread development concentration through corridor

Transit Service Assumptions

» Broadway BRT

- Largely same as ORBT (Omaha Rapid Bus Transit) – simple extension of service into Council Bluffs
- No dedicated lanes or signal pre-emption – travel at same speeds as car traffic
- Least costly option, minimum of new construction necessary for station platforms

» 1st Ave BRT

- Enhanced service – "light rail on tires"
- Transit only lanes on 1st Ave
- Signal pre-emption/priority yielding for BRT at cross-streets
- New construction costs include pavement of 1st Ave and more prominent stations

» 1st Ave Streetcar

- Could be rubber-tired or rail version – rail would entail additional construction costs
- More stations = larger service area, but slower service and more construction costs
- Higher operating costs from more vehicles and drivers required
- New multimodal bridge over the Missouri River

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Comparing the Transit Alternatives

Alternative	Capital Costs	Timeframe	Land Use Impact
Broadway BRT	Lowest	Soonest	Least
1st Ave BRT			
1st Ave Streetcar			
Combo: Broadway BRT + 1st Ave Streetcar	Highest	Latest	Most

2. Block Types and Place Types

Urban Footprint Tools

- Block Types and Place Types – two tools for “painting” land use scenarios in Urban Footprint
- Block Types (BTs):
  - Appropriate for parcels
  - Includes different building components (e.g., 3 story townhome, 4 story apartment, 1 story retail)
  - Includes other components such as parking and open green space
  - Adjust components and ratios to get different densities
  - Apply to station areas and corridor parcel by parcel
- Place Types (PTs):
  - Appropriate for greenfield or large-scale redevelopment
  - Includes different building types as well as right of way for streets, drainage, etc.
  - Adjust building types and other components to get different densities
  - Apply to golf course area

Block Types

» Designed ten different block types

» Each has varying mixes of the following components:

- 4 story apartments
- 3 story townhomes with “tuck under parking” (first story is garages)
- 1 story retail/commercial
- 4 story mixed use (ground floor retail/commercial with apartments above)
- 2 story retail/office (ground floor retail/commercial with offices above)
- Surface parking
- Recreation area/green space

Examples of 4 and 3 Story Components

Rationale for Block Type Design

- Block Type (BT) menu options to create land use scenarios
- Range of densities in terms of population, dwelling units, and employment
- BT 1-5 are primarily residential with small employment
- BT 6-10 are mixed use with residential and employment
- Maximum height is four stories
- Three and two story options to provide for step down from maximum to surrounding neighborhoods
- Employment mix is 60/40 retail and office

Block Types – Summary Stats

Building Type	Floor area ratio (FAR)	Residential density (du/ac)	Population density (pop/ac)	Employment density (emp/ac)	Parking spaces/ 1000 sqft
BT 1	1.7	35	59	5.9	1.59
BT 2	1.9	46	78	4.4	1.38
BT 3	2.3	56	96	1.8	1.35
BT 4	2.3	70	119	2.9	1.14
BT 5	2.5	81	137	5.5	1.17
BT 6	2.5	47	80	16	1.11
BT 7	2.6	57	96	19	1.07
BT 8	2.9	68	115	20	1.09
BT 9	3.1	83	141	26	1.22
BT 10	3.3	99	167	31	1.24

Block Types – Component Mix

	Components						
Building Type	4-story apartment	3-story townhome with parking	1-story retail/ commercial	4-story mixed use	2-story retail/office	Parking	Recreation area
BT 1	25%	25%	20%			20%	10%
BT 2	35%	25%	15%			15%	10%
BT 3	35%	30%		5%		15%	15%
BT 4	40%	40%		8%			12%
BT 5	40%	35%		15%			10%
BT 6	40%	10%			15%	15%	20%
BT 7	50%	5%			17%	15%	13%
BT 8	45%			10%	15%	10%	20%
BT 9	35%			25%	15%	15%	10%
BT 10	25%			40%	15%	10%	10%

Rationale for Place Type Design

- Keep constant the ROW, park, and water space
- Transition to park and water space the neighborhood just east of River Park apartments
- Utilize the ten block types to create the range of densities
    - Plus a six-story residential BT for added density on PT 3
- Maximum height is **four** stories for PT1, PT2; **six** stories for PT3
    - Streetcar station location allows greater activation of area
- Employment mix is 60/40 retail and office

Place Types – Component Mix

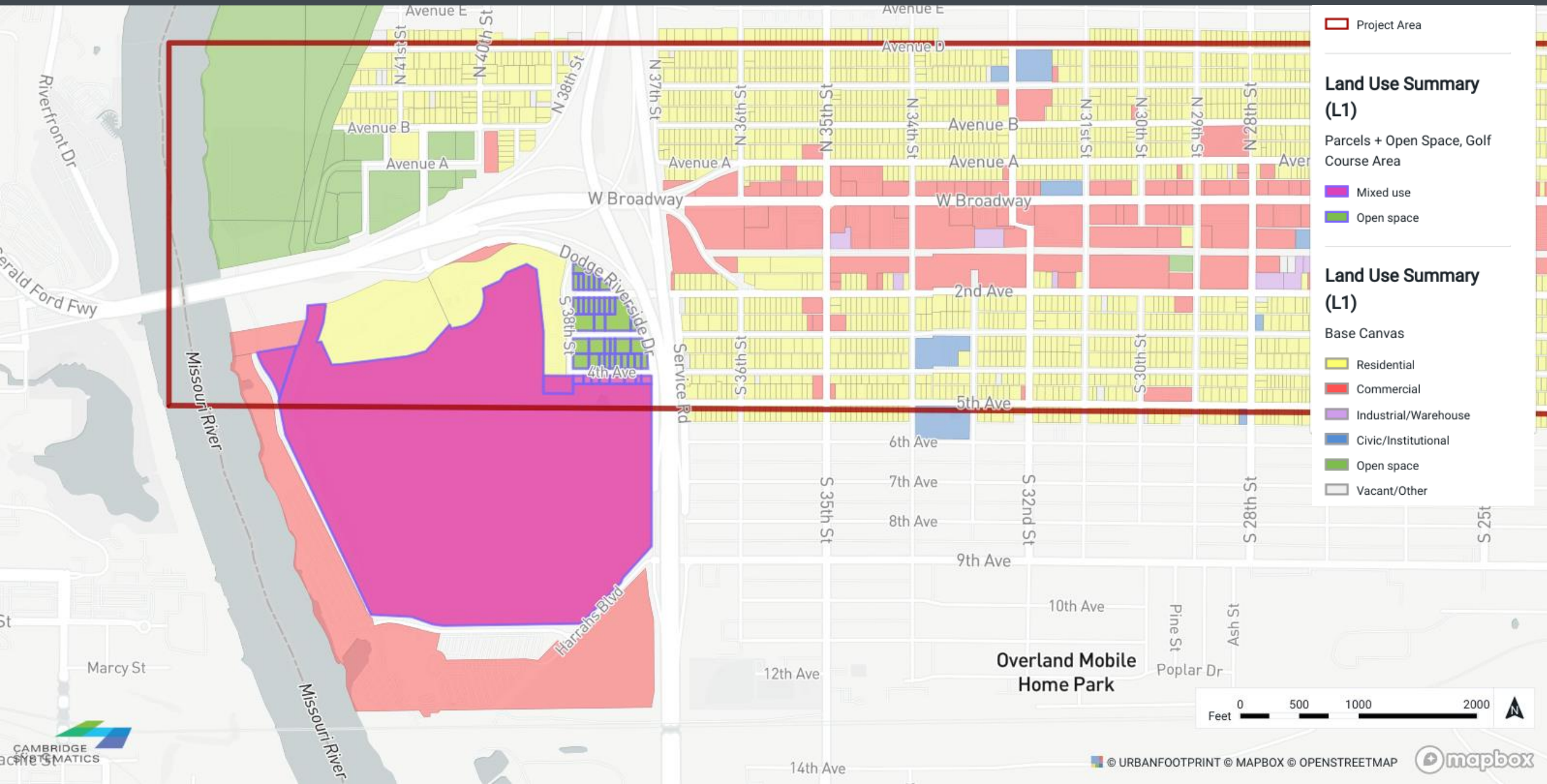
	PT 1 (low-density)	PT 2 (mid-density)	PT 3 (high-density)
BT 1 (low-density with commercial)	40.8%		
BT 2 (low- to mid-density with commercial)	3.4%		
BT 3 (mid-density with commercial)		4.8%	
BT 4 (mid- to high-density with commercial)		15.6%	
BT 5 (high-density with commercial)			6.8%
BT 6 (low-density with office)	3.4%		
BT 7 (low- to mid-density with office)		5.4%	
BT 8 (mid-density with office)		22.4%	
BT 9 (mid- to high-density with office)			2.7%
BT 10 (high-density with office)			17.0%
6-story residential			21.8%
Parking structure/Mixed Use	2.7%	2.0%	2.0%
Water	6.8%	6.8%	6.8%
Park	10.9%	10.9%	10.9%
Right-of-Way	32%	32%	32%

Place Types - Summary

- Designed low, mid, and high density place type options
- Used menu of 10 block types for designing these place types
- Applied on the golf course area
- Gross densities include ROW (32% on all PTs), while net densities do not

	Floor area ratio (FAR)	Gross residential density (du/ac)	Net residential density (du/ac)	Gross population density (pop/ac)	Net population density (pop/ac)	Gross employment density (emp/ac)	Net employment density (emp/ac)	Parking density (spcs/1000 ft^2)
PT 1 (low-density)	1.7	18	26	30	45	4.8	7.0	1.9
PT 2 (mid-density)	2.5	32	47	54	80	6.3	9.2	1.4
PT 3 (high-density)	3.6	68	101	116	170	15.7	23.1	1.3

Place Type is Applied at Golf Course



3. Land Use Scenarios

Five Land Use Scenarios

» Four scenarios of transit alternatives

- BRT on Broadway
- BRT on 1st Avenue
- Streetcar on 1st Avenue
- Combo: BRT on Broadway + Streetcar on 1st Avenue

» "No Build" – only 1st Avenue multi-use trail

» All five include the already planned developments at Rivers Edge/Playland Park

Rationale to Scenario Design

» Three block radius of impact from stations

» Alignment

- 1st Ave alignments – peak density between W Broadway and 2nd Ave, with fading density to 4th Ave and Avenue B
- W Broadway alignment – peak density between Avenue A and 1st Ave, with fading density to 3rd Ave and Avenue C

» Station area density

- 1st Ave BRT – highest density adjacent to stations, due to highest service characteristics and more fertile land market as opposed to Broadway alignment.
- Broadway BRT – middle density adjacent to stations due to lower service characteristic compared to 1st Ave BRT
- Streetcar – lower density adjacent to eastern stations due to distributed impact with more stations. Western stations have density equal to BRT due to proximity to Omaha job centers and river amenity. Three block radius of impact, but with more stations, results in more overall development, distributed through the corridor.

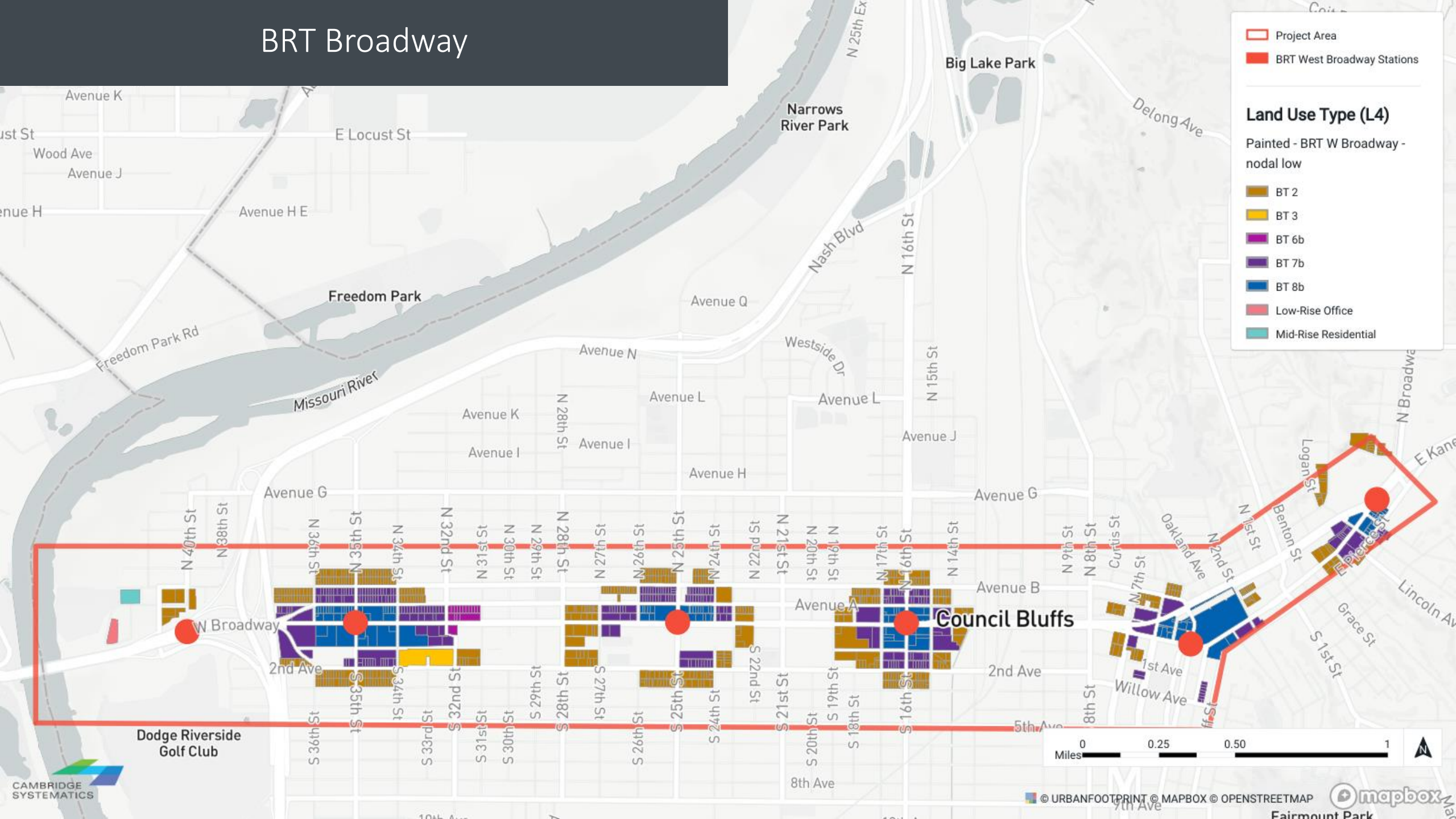
» Pedestrian access

- Parcels north of Broadway are penalized for difficulty of crossing busy street (in 1st Ave alignments, specific to Gateway and TJ stations)

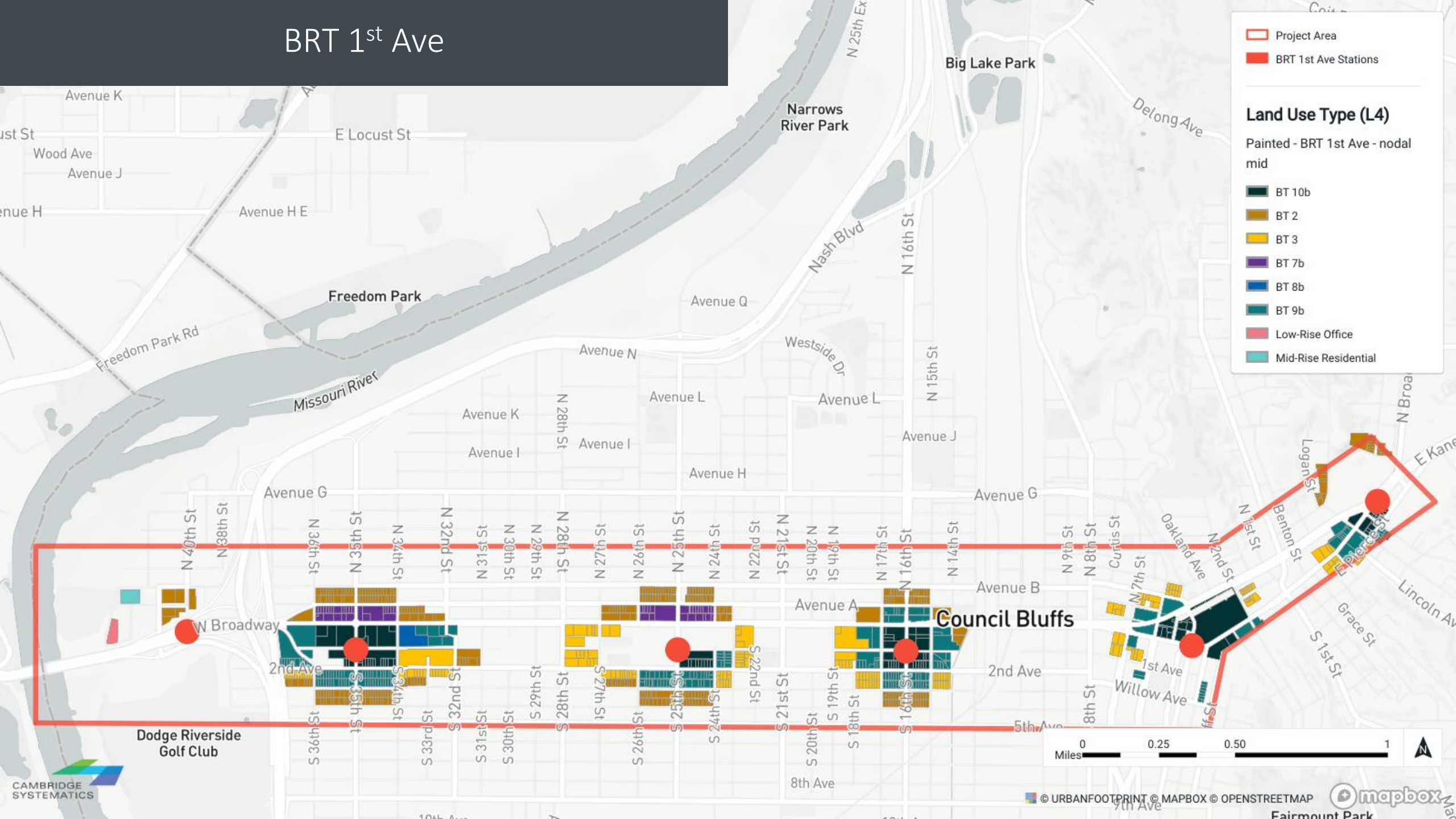
Rationale to Scenario Design (cont.)

Retain in Base Scenario	Redevelop in Scenarios
100 Block and surrounding structures of that style	Open parcels
Thriving downtown businesses such as banks	Parking lots unconnected to businesses
Grocery stores	Drive thru retail (fast food, etc.)
Multi-story offices	Motels
River's Edge (constructed thus far)	Industrial/maintenance/repair shops
Multi-family residential complexes	Single-family homes
Historical structures (e.g., YMCA building)	Single-story retail
Public assets (libraries, fire stations, schools, greenway/bikepaths, city admin, museums)	Already planned developments (River's Edge/Playland Park, KC Knudsen) - develop as proposed
Medical centers and major clinics, YMCA, etc.	
Strategic Consideration	**Avoided**
Omni Building	Environmentally contaminated areas near rail corridor
Underutilized downtown structures (e.g., carpet warehouse)	Existing industrial sites with likely contaminated soil
Parking lots in front of medical centers	Historical Structures

BRT Broadway



BRT 1st Ave


Project Area
BRT 1st Ave Stations
Land Use Type (L4)
Painted - BRT 1st Ave - nodal mid
BT 10b
BT 2
BT 3
BT 7b
BT 8b
BT 9b
Low-Rise Office
Mid-Rise Residential
Council Bluffs
W Broadway
Dodge Riverside Golf Club
Freedom Park
Narrows River Park
Big Lake Park
Missouri River
Freedom Park Rd
Nash Blvd
Delong Ave
Westside Dr
Oakland Ave
Benton St
Logan St
Lincoln Ave
Grace St
Willow Ave
Avenue K
E Locust St
Wood Ave
Avenue J
Avenue H E
Avenue Q
Avenue N
Avenue L
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Avenue B
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Miles
CAMBRIDGE SYSTEMATICS
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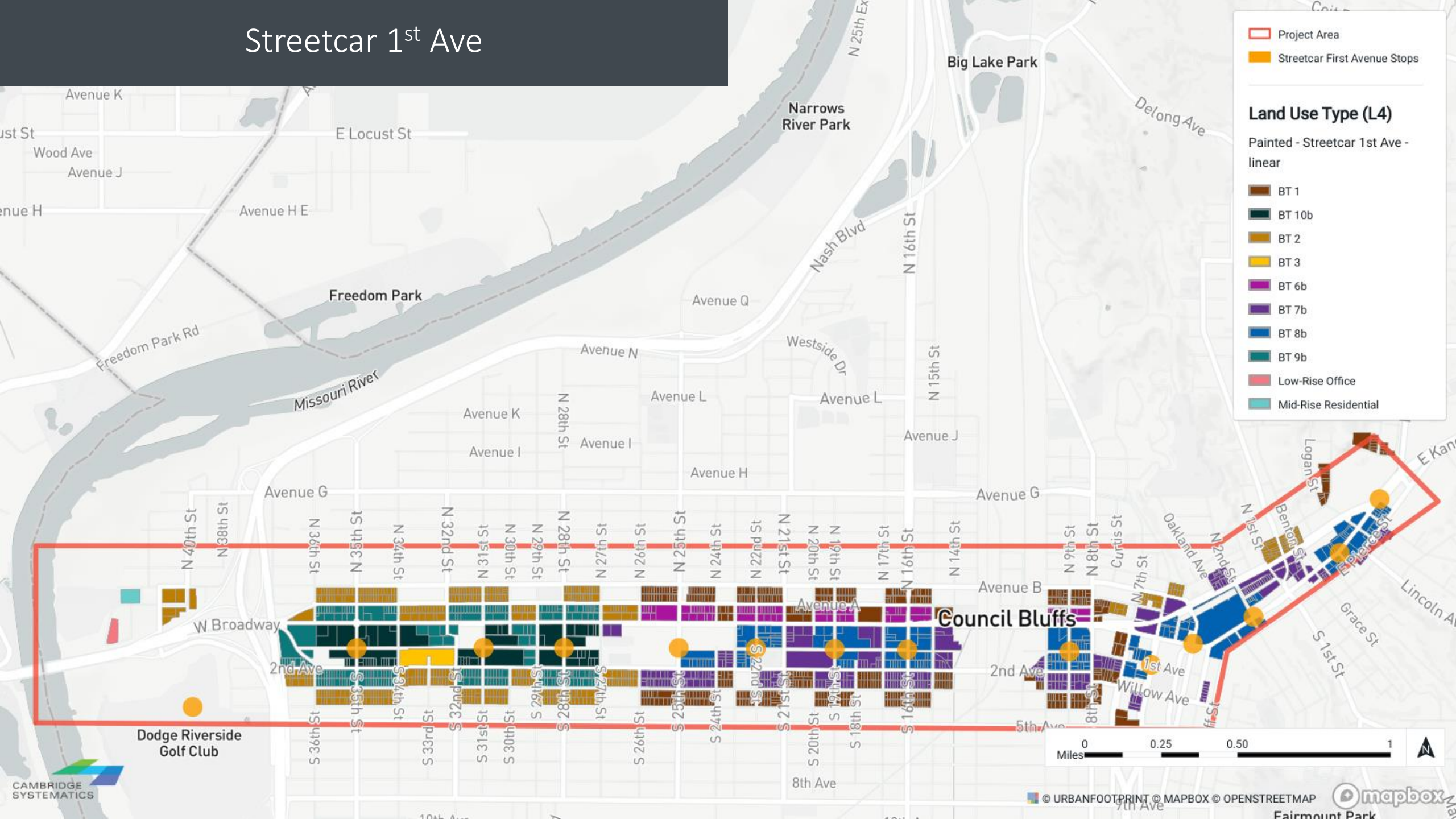
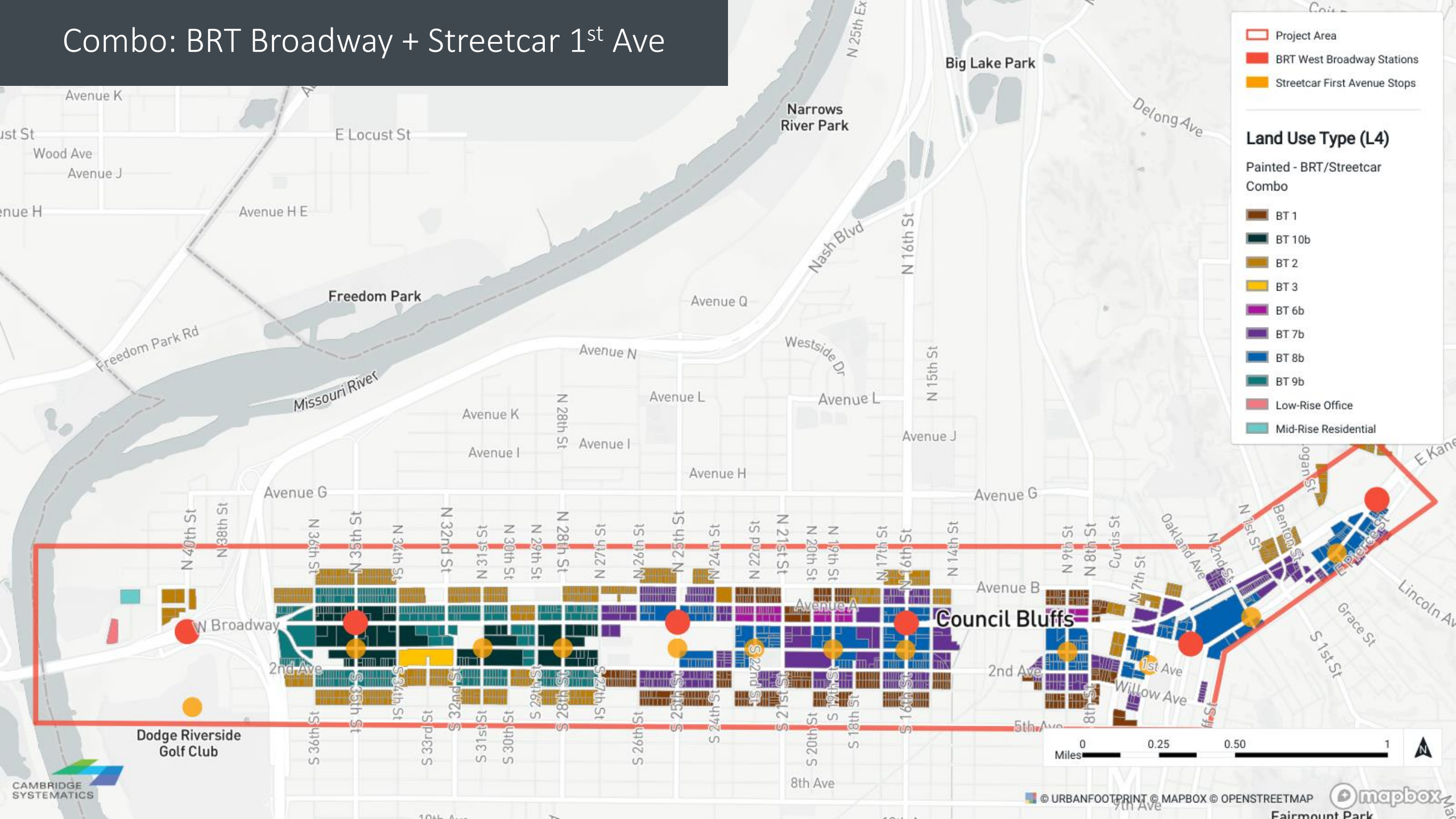
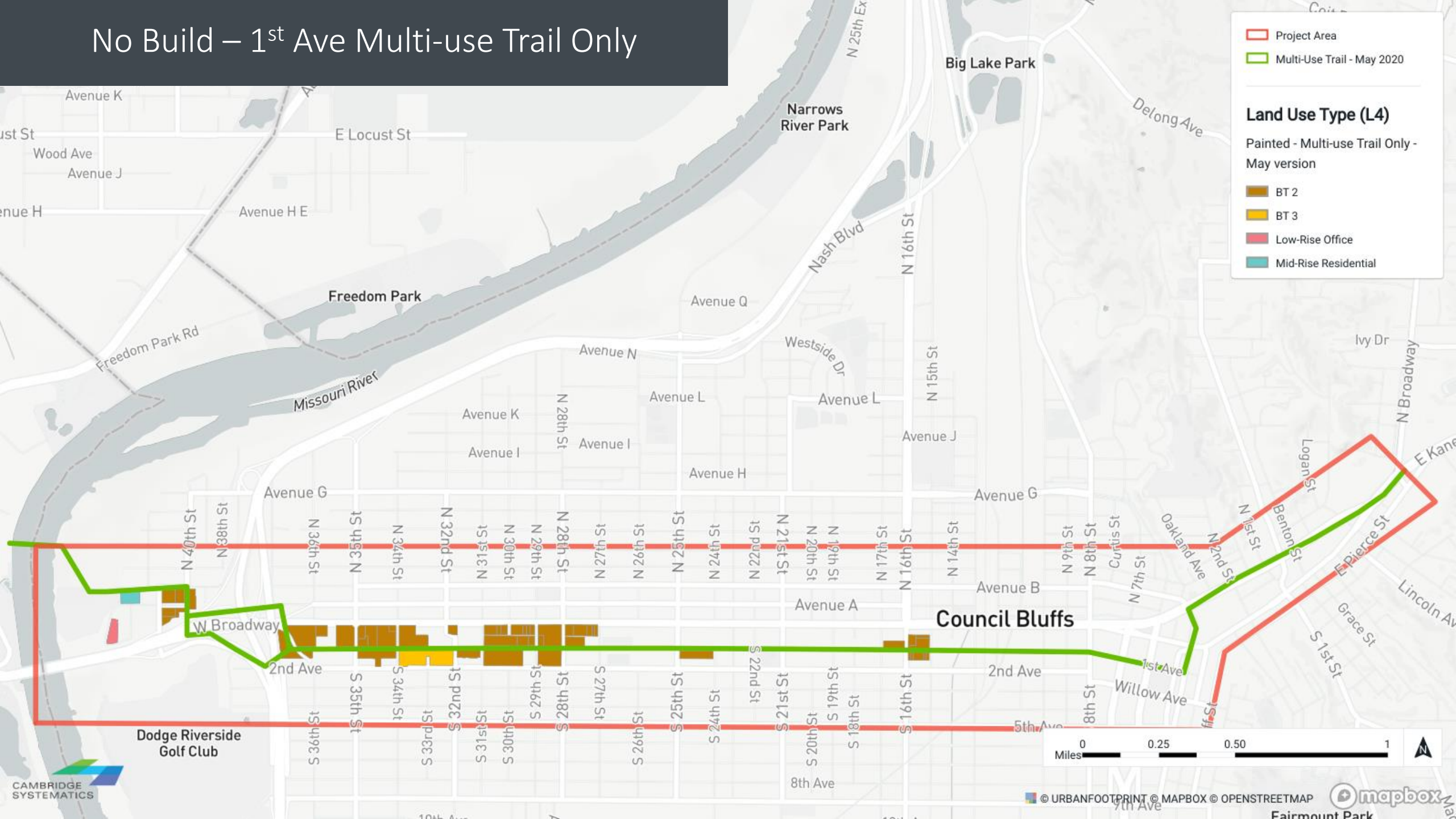
Streetcar 1st Ave



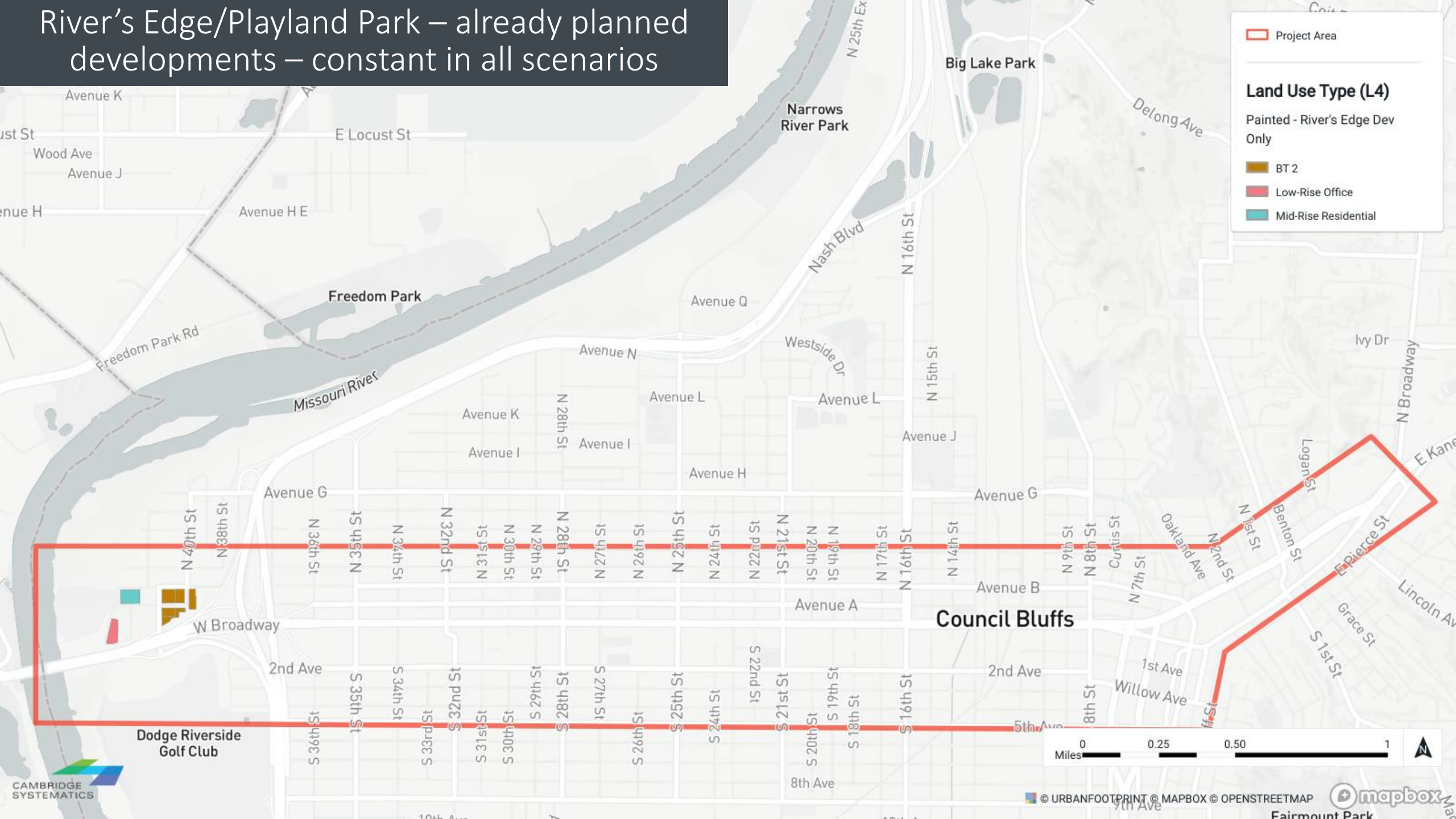
Combo: BRT Broadway + Streetcar 1st Ave



No Build – 1st Ave Multi-use Trail Only



River's Edge/Playland Park – already planned developments – constant in all scenarios



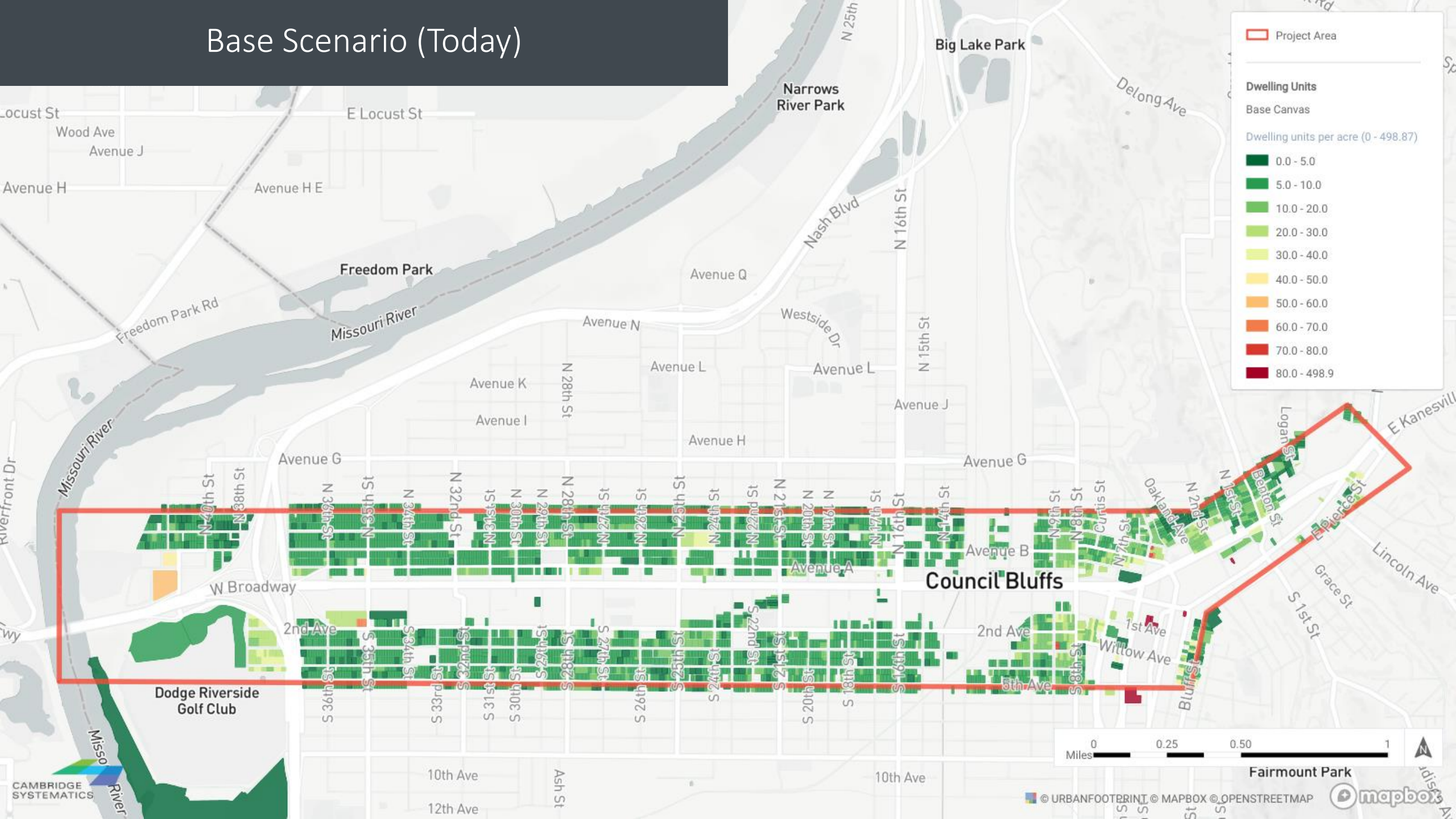
Council Bluffs 1st Ave Study Area (Iowa Only): Increment over Base + Rivers Edge Development							
	Base	Base + RE	Trail Only	BRT Broadway	BRT 1st Ave	Streetcar 1st Ave	BRT + SC Combo
Population	12,592	13,638	4,315	20,418	26,001	36,833	40,783
Dwelling Units	5,933	6,550	2,530	12,267	15,569	22,186	24,619
Households	5,280	5,859	2,378	11,616	14,708	21,019	23,316
Employment	7,904	8,330	-336	756	1,518	3,447	4,174
Housing by Type, dwelling units							
Large Lot Single-Family	1,638	1,638	-2	-202	-279	-552	-578
Small Lot Single-Family	2,388	2,388	0	-611	-439	-884	-1,121
Townhomes	450	481	380	764	745	902	891
Multifamily	1,457	2,043	2,152	12,316	15,542	22,720	25,427
Total	5,933	6,550	2,530	12,267	15,569	22,186	24,619
Jobs by Sector, jobs							
Retail	2,445	2,505	-165	543	1,060	2,301	2,740
Office	3,249	3,616	-55	664	909	1,680	1,968
Total	5,694	6,121	-220	1,207	1,969	3,981	4,708
Building Area: square feet (millions)							
Residential	7.52	8.10	2.88	12.65	14.52	21.08	23.22
Retail	2.37	2.40	-0.29	0.33	0.50	1.44	1.75
Office	1.88	1.98	-0.01	0.46	0.53	1.04	1.20

Council Bluffs 1st Ave Study Area (Iowa Only): Summary Statistics Report			
	Trail Only	**BRT Scenarios**	**Streetcar Scenarios**
Population	4,114	7,648	16,846
Dwelling Units	2,418	4,515	9,964
Households	2,306	4,278	9,399
Employment	697	921	2,327
Housing by Type, dwelling units			
Large Lot Single-Family	0	0	0
Small Lot Single-Family	-173	-173	-173
Townhomes	464	312	387
Multifamily	2,043	3,691	5,399
Total	2,334	3,830	5,613
Jobs by Sector, jobs			
Retail	524	574	1,962
Office	175	349	367
Total	699	923	2,329
Building Area: square feet (millions)			
Residential	2.87	4.55	7.87
Retail	0.35	0.40	1.01
Office	0.10	0.19	0.17

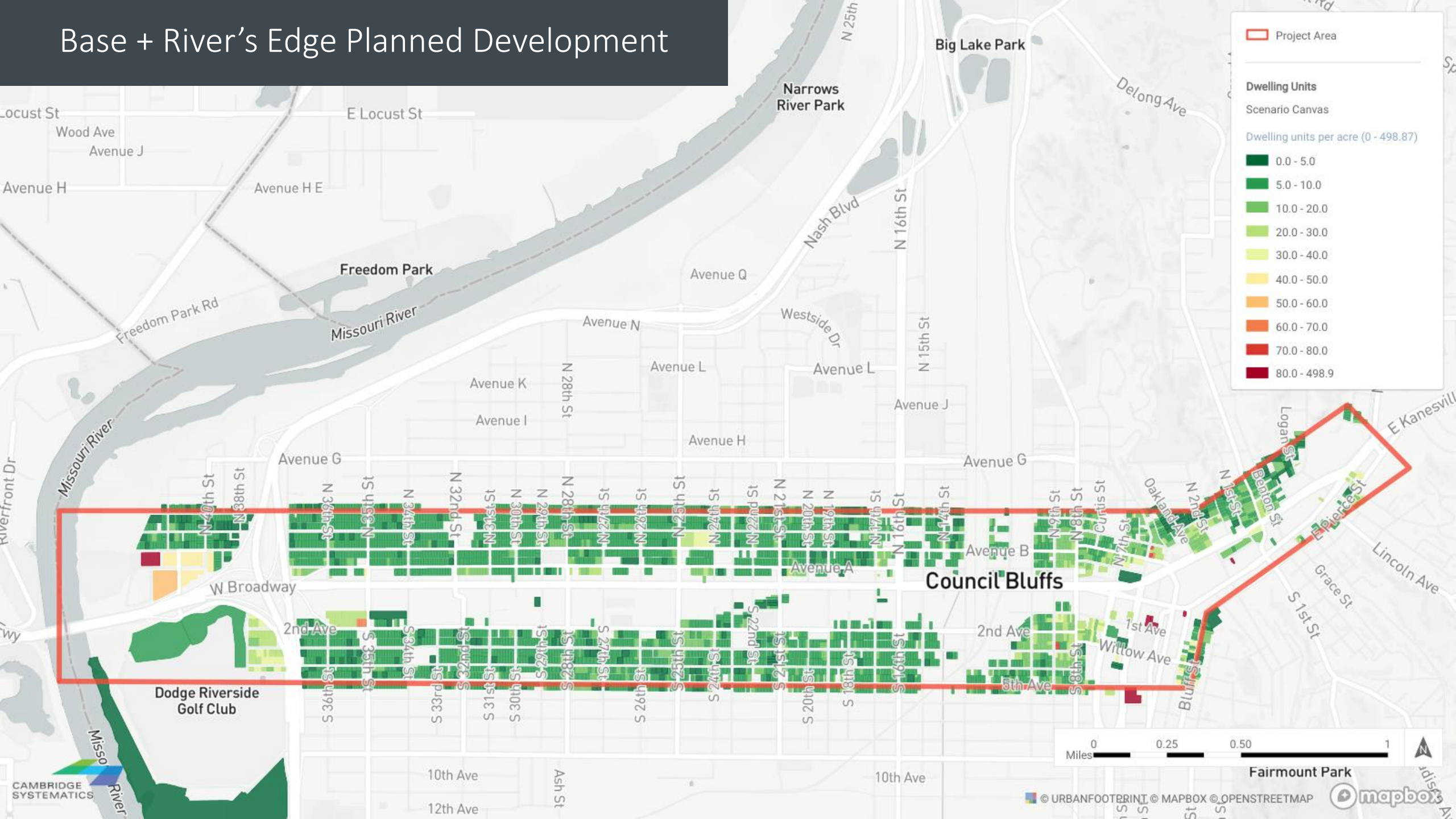
Council Bluffs 1st Ave Study Area (Iowa Only): Increment (TOD Scenarios + Golf Course) over Base + Rivers Edge Development							
	Base	Base + RE	Trail Only	BRT Broadway	BRT 1st Ave	Streetcar 1st Ave	BRT + SC Combo
Population	12,592	13,638	8,428	28,066	33,650	53,680	57,630
Dwelling Units	5,933	6,550	4,948	16,783	20,084	32,150	34,583
Households	5,280	5,859	4,684	15,894	18,985	30,418	32,715
Employment	7,904	8,330	362	1,678	2,439	5,774	6,501
Housing by Type, dwelling units							
Large Lot Single-Family	1,638	1,638	-2	-202	-279	-552	-578
Small Lot Single-Family	2,388	2,388	-173	-784	-612	-1,057	-1,294
Townhomes	450	481	843	1,076	1,056	1,289	1,278
Multifamily	1,457	2,043	4,196	16,008	19,234	28,118	30,826
Total	5,933	6,550	4,864	16,098	19,399	27,798	30,232
Jobs by Sector, jobs							
Retail	2,445	2,505	359	1,118	1,634	4,263	4,703
Office	3,249	3,616	120	1,013	1,258	2,047	2,335
Total	5,694	6,121	480	2,131	2,892	6,310	7,037
Building Area: square feet (millions)							
Residential	7.52	8.10	5.75	17.20	19.07	28.95	31.09
Retail	2.37	2.40	0.06	0.73	0.90	2.46	2.76
Office	1.88	1.98	0.09	0.64	0.72	1.22	1.37

4. Residential Density Impacts
(dwelling units/acre)

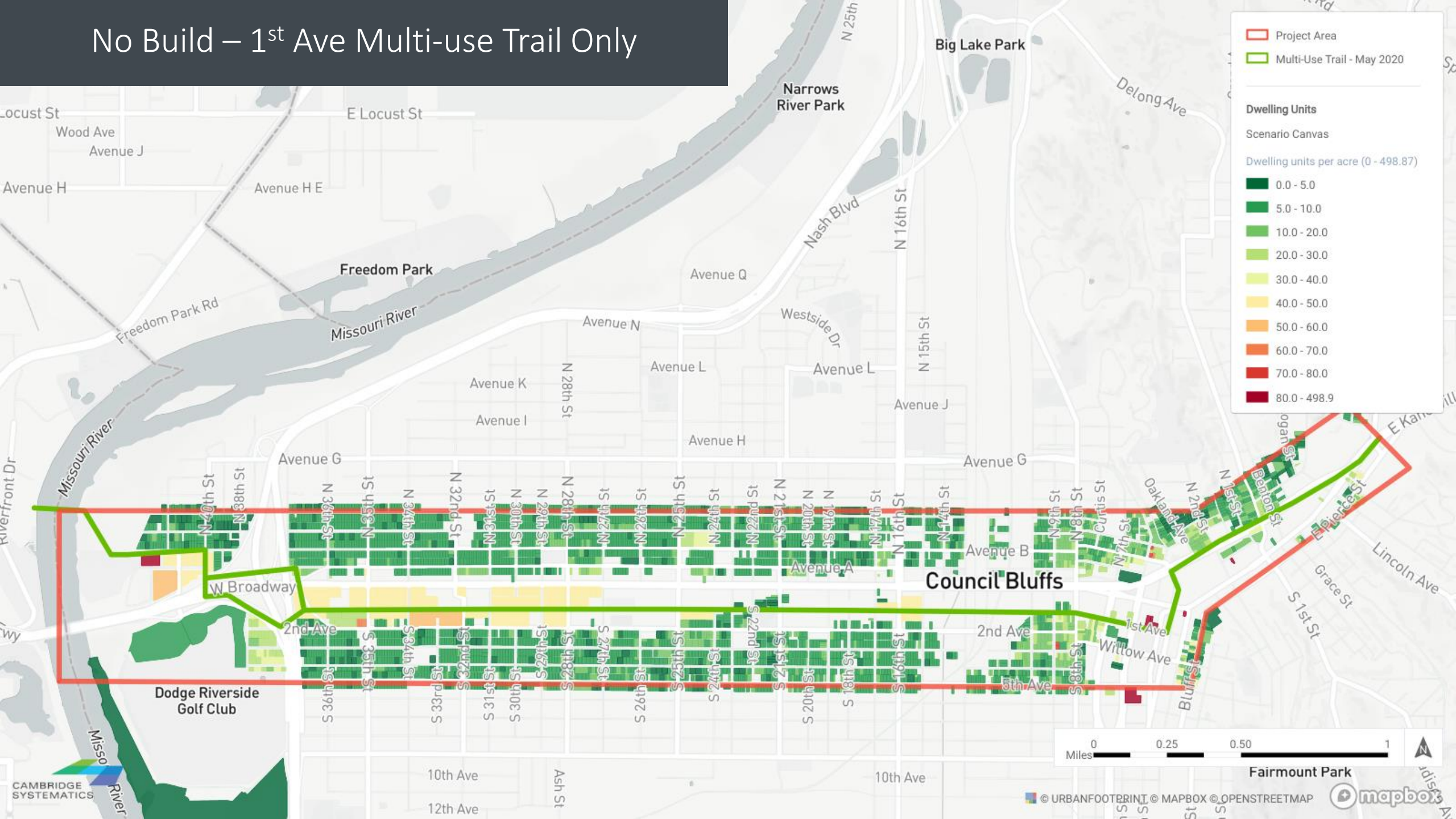
Base Scenario (Today)



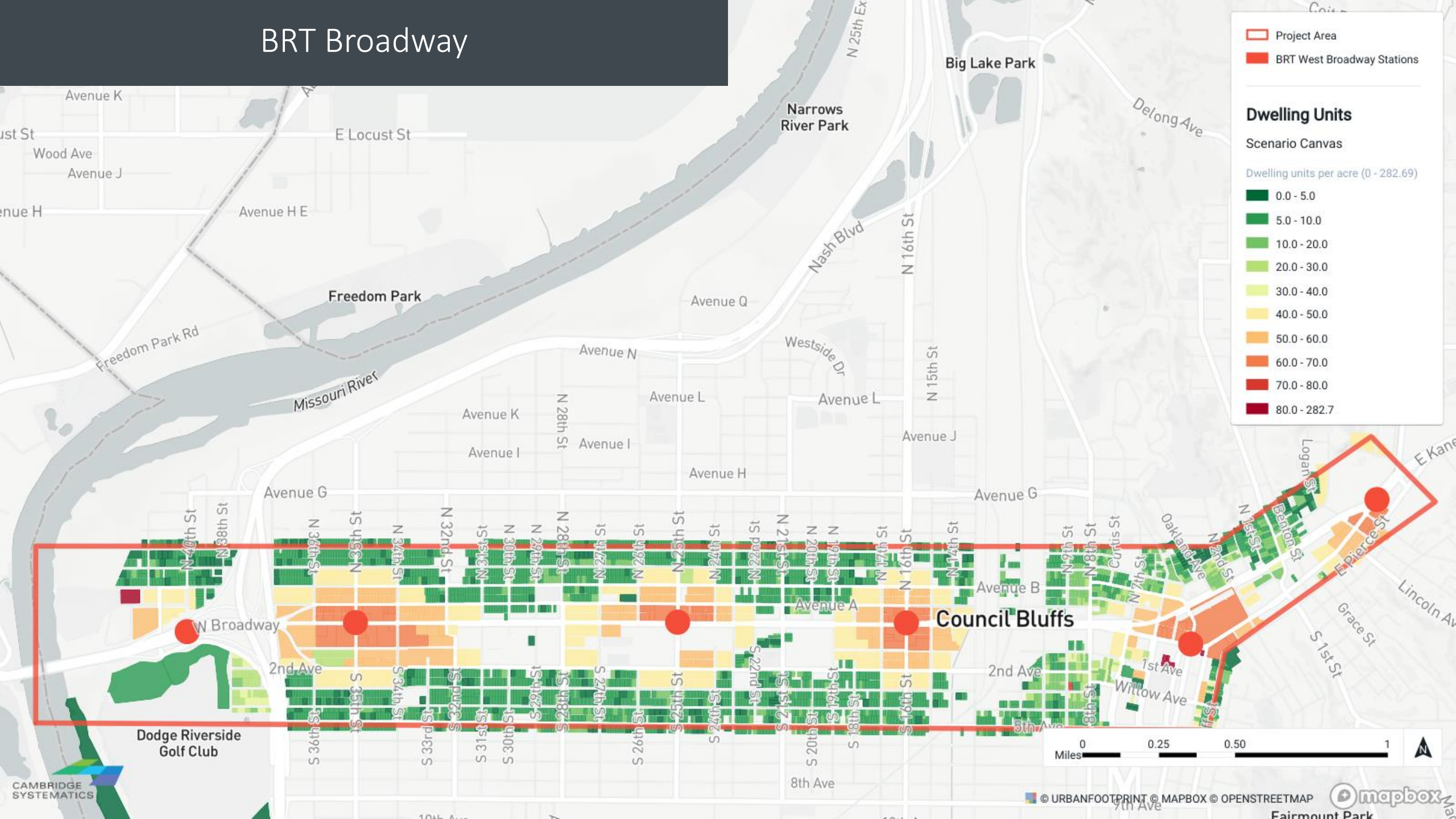
Base + River's Edge Planned Development



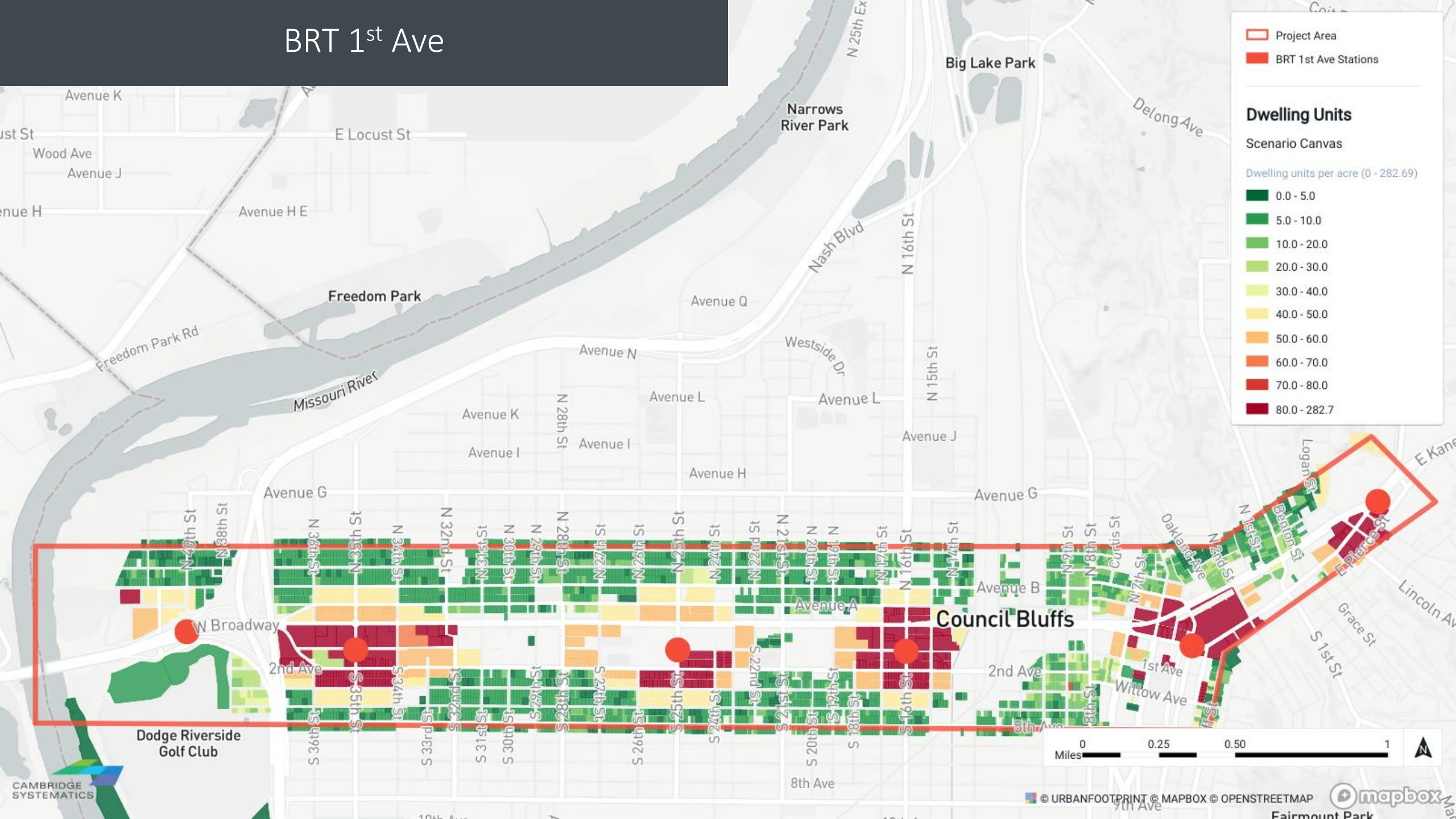
No Build – 1st Ave Multi-use Trail Only



BRT Broadway



BRT 1st Ave


Project Area
BRT 1st Ave Stations
Dwelling Units
Scenario Canvas
Dwelling units per acre (0 - 282.69)
0.0 - 5.0
5.0 - 10.0
10.0 - 20.0
20.0 - 30.0
30.0 - 40.0
40.0 - 50.0
50.0 - 60.0
60.0 - 70.0
70.0 - 80.0
80.0 - 282.7
Council Bluffs
Big Lake Park
Narrows River Park
Freedom Park
Missouri River
Dodge Riverside Golf Club
Fairmount Park
Avenue K
E Locust St
Wood Ave
Avenue J
Avenue H E
Avenue H
Avenue G
Avenue Q
Avenue N
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Avenue B
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Nash Blvd
Delong Ave
Westside Dr
Freedom Park Rd
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N 2nd St
N 1st St
Curtis St
Oakland Ave
Logan St
Benton St
E Pierce St
E Kane
Lincoln Av
Grace St
S 1st St
1st Ave
Willow Ave
2nd Ave
8th Ave
W Broadway
S 36th St
S 35th St
S 34th St
S 33rd St
S 32nd St
S 31st St
S 30th St
S 29th St
S 28th St
S 27th St
S 26th St
S 25th St
S 24th St
S 22nd St
S 21st St
S 20th St
S 19th St
S 18th St
S 16th St
0
0.25
0.50
1
Miles
CAMBRIDGE SYSTEMATICS
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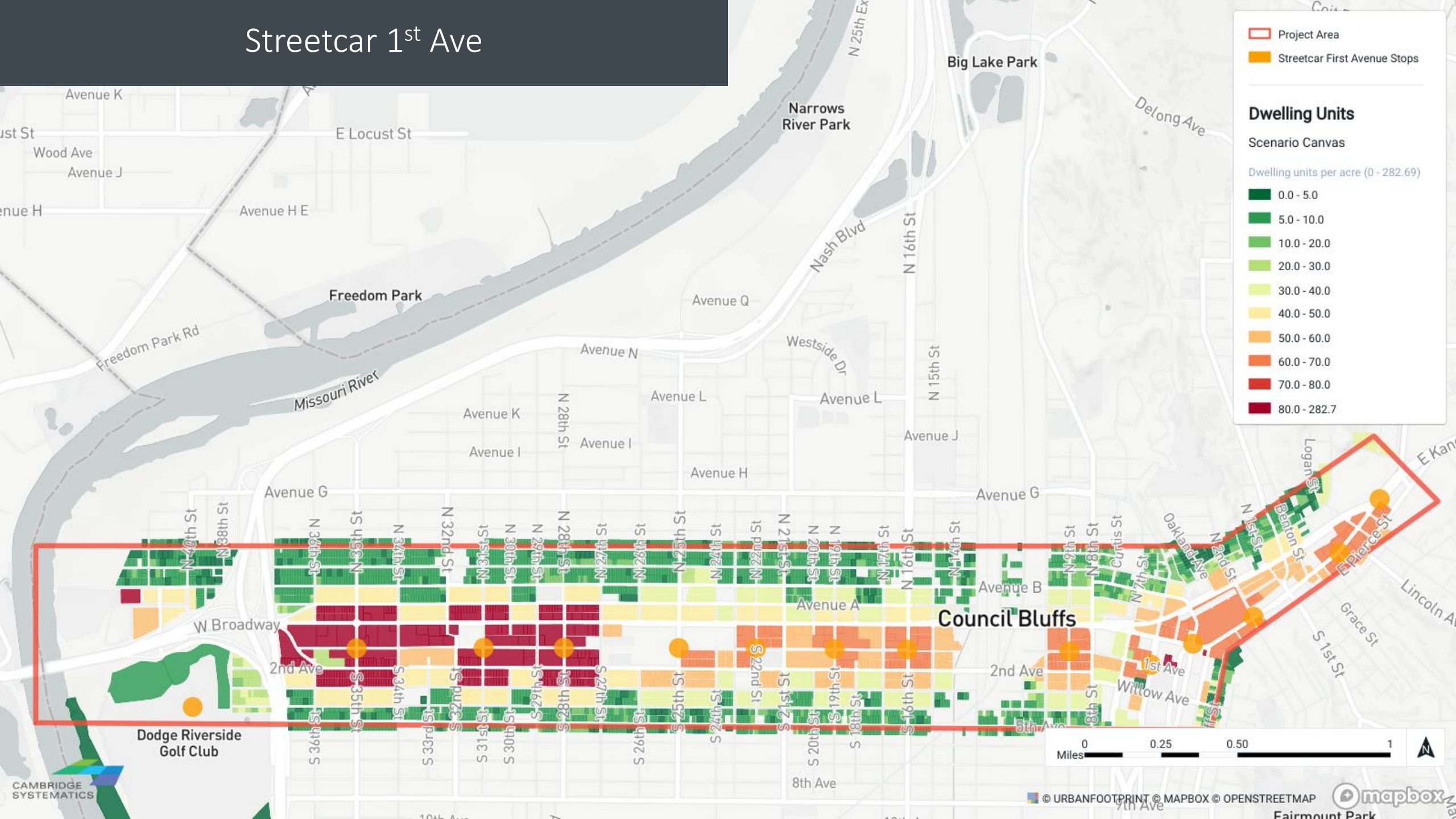
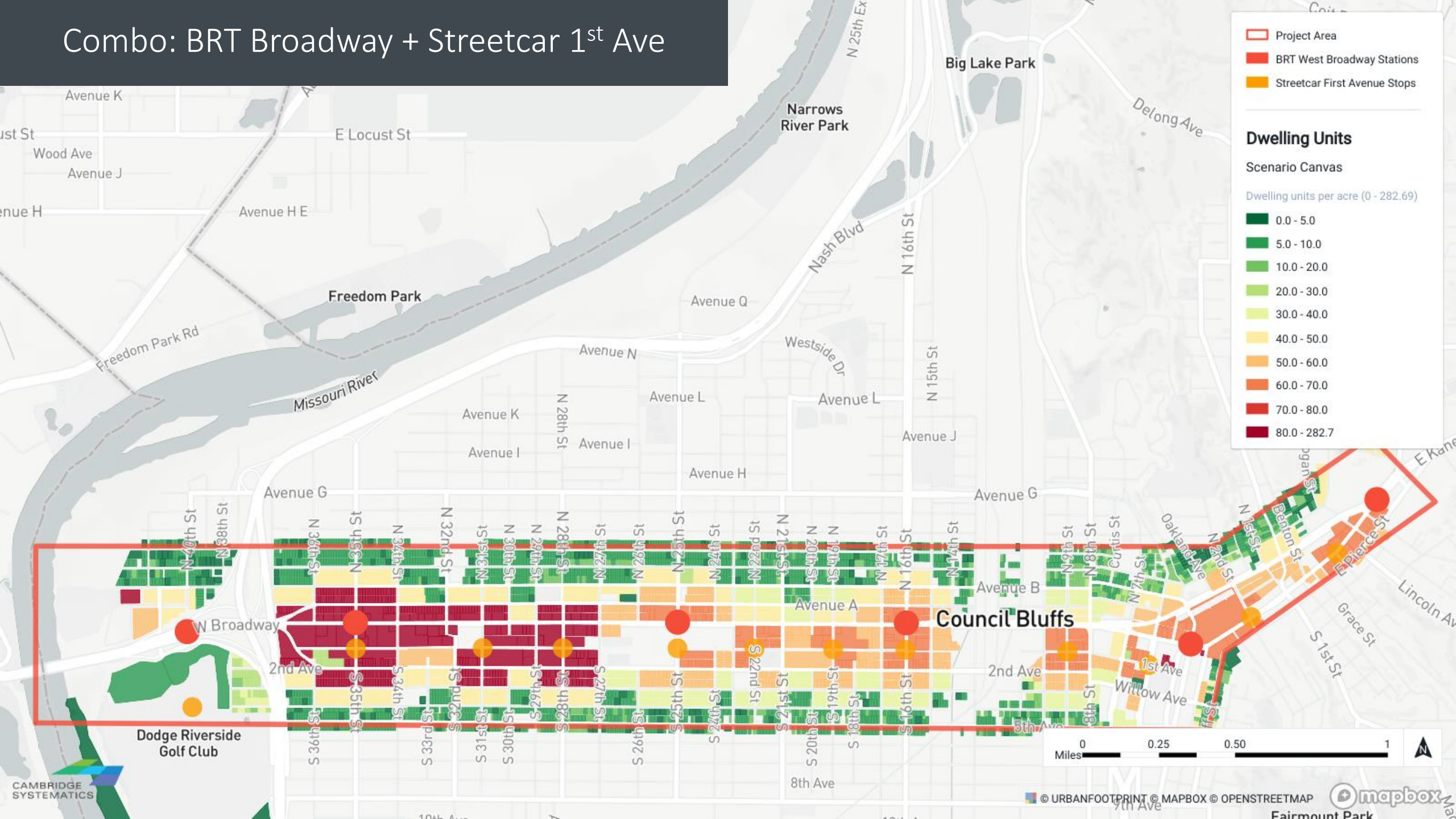
mapbox

Streetcar 1st Ave



Combo: BRT Broadway + Streetcar 1st Ave



5. Key Findings and TOD Success Factors

Scenario Development Observations

- Location (Broadway vs 1st Ave) does make a difference
- Quite a lot of new development can be achieved with 4 story maximum
- Allowing for 6 story development (PT3 on golf course area) significantly increases residential density
- Streetcar scenarios have overall highest development potential
- BRT scenarios are still a significant jump from baseline though
- Golf course area has much higher potential with streetcar and more southerly station – represents more than half of relative increase between streetcar and BRT scenarios

TOD Success Factors

Literature review shows the top three factors affecting transit oriented development (TOD) impact are (in order):

1. ***Local government support*** *(parcel assembly, zoning changes, financial partnership)*

2. ***Latent land market potential*** *(proximity to job centers and activity centers, walkability, amenities)*

3. ***Type of transit investment*** *(BRT, Streetcar, light rail)*

Local government support

Weak	Moderate	Strong
	Rezoning for some sites	Rezoning throughout corridor
		Comprehensive plan for corridor
	Investment in related infrastructure	Significant investment in related infrastructure
		Pro-active outreach to developers
	Some financial incentives	Range of financial incentives
	Environmental clean-up	Environmental clean-up
	Land assembly	Land assembly
Little/no promotion of TOD	Marketing activities	Extensive marketing of corridor

Land market potential

Limited	Emerging	Strong
Not easily developed	Land available for redevelopment	In or adjacent to downtowns with available land for development
Blight or no clear economic anchor	Some blight, but adjacent/near to economic anchor	Strong economic activity already in corridor
Already developed or held in reserve by institutions	Lower-intensity development ripe for redevelopment	Historical buildings and other attractive features of existing built environment
Adjacent to highway or active rail line	Repurposed ROWs	Walkable, with bike lanes; not far from other transit lines
Topographically difficult to develop		Adjacent to waterfronts or attractive natural features
Divided into small parcels with confusing title deeds	Clear title deeds and decent sized parcels	Strong real estate market
Extreme contamination	Some contamination	No contamination

Comparing TOD Examples

- 21 Transit Lines (BRT, Streetcar, and light rail) compared according to transit level, land potential, government support, cost, and ROI
- Government support and land potential are more influential than the type of transit

Source: Hook, Walter; Stephanie Lotshaw, and Annie Weinstock. "More Development for Your Transit Dollar: An Analysis of 21 North American Transit Corridors." Institute for Transportation & Development Policy, New York.

CORRIDOR	*BRT STANDARD*	LAND POTENTIAL	GOVERNMENT TOD SUPPORT	TOTAL TOD INVESTMENT (IN MILLIONS)	DEVELOPMENT PER TRANSIT DOLLAR (IN MILLIONS)
STRONG					
BRT Cleveland HealthLine		Emerging	Strong	$5,800	$114.54
BUS Kansas City Main Street Metro Area Express (MAX)	Below Basic	Strong	Strong	$5,200	$101.96
SC Seattle South Lake Union (SLU) Streetcar	Below Basic	Strong	Strong	$3,000	$53.57
SC Portland Streetcar	Below Basic	Strong	Strong	$4,500	$41.48
LRT Portland MAX Blue Line		Emerging	Strong	$6,600	$3.74
MODERATE					
BRT Las Vegas Strip & Downtown Express (SDX)		Strong	Moderate	$2,000	$42.28
BUS Boston Washington Street Silver Line	Below Basic	Emerging	Moderate	$650	$20.97
LRT Denver Central Corridor		Strong	Moderate	$2,550	$14.88
BRT Eugene Emerald Express Green Line (EmX)		Emerging	Moderate	$100	$3.96
BRT Pittsburgh Martin Luther King, Jr. East Busway		Emerging	Moderate	$903	$3.59
LRT Phoenix Metro		Emerging	Moderate	$2,820	$1.99
BRT Ottawa Transitway		Emerging	Moderate	$1,000	$1.71
LRT Charlotte Lynx		Emerging	Moderate	$810	$1.66
BUS Boston Waterfront Silver Line	Below Basic	Strong	Moderate	$1,000	$1.39
BRT Los Angeles Orange Line		Emerging	Moderate	$300	$0.83
LRT Denver Southwest Corridor		Limited	Moderate	$160	$0.71
WEAK					
LRT Ottawa O-Train		Limited	Weak	nominal	nominal
LRT Pittsburgh "The T"		Limited	Weak	nominal	nominal
BUS Las Vegas Metropolitan Area Express (MAX)	Below Basic	Limited	Weak	nominal	nominal
BRT Pittsburgh West Busway	Basic BRT	Limited	Weak	nominal	nominal
BRT Pittsburgh South Busway	Basic BRT	Limited	Weak	nominal	nominal

BRT Bus Rapid Transit BUS Bus SC Streetcar LRT Light Rail Transit BRT Standard Gold BRT Standard Silver BRT Standard Bronze

FIRST AVE council bluffs TOOLE DESIGN CAMBRIDGE SYSTEMATICS

Next Steps

- Multimodal Priority Connections (June)
- Alternatives Analysis (August)