Volcano Heights Sector Development Plan

RAC Meeting #3

June 5, 2013

Agenda

Presentations

- 1: **Intersection Spacing Schemes**
  - CABQ Constraints
  - Spacing Scheme Comparisons
  - Justification for Access Request
  - Final Request
- **2: Additional Traffic Analysis**
  - Level of Service (LOS)
  - Travel Speed
  - Kimley Horn

Intersection Spacing Requests:

What we've heard from TCC & RAC members

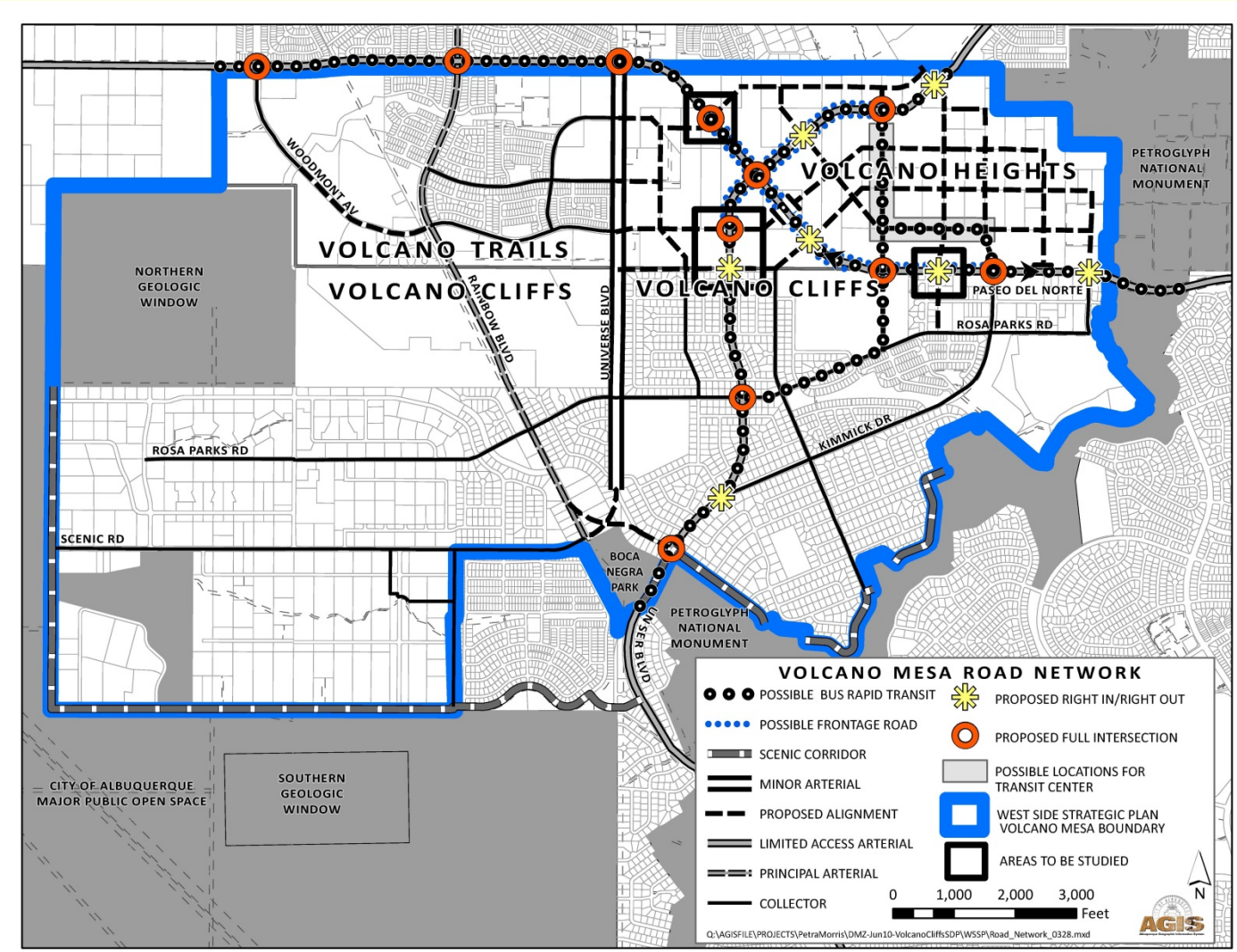
- North/South travel times matter.
- Regular spacing is important.
- NMDOT Access Management Manual policies are important for Paseo del Norte.

Changes to Access Modification Request:
Intersection Spacing – Sector Plan Constraints

- Prior planning efforts
- Checkerboard ownership
- Irregular parcels
- Limited access roads at 45 degree angles to property lines
- Aligning access with existing access easements at property edges
- City-owned Unser vs. State-owned Paseo

Constraint 1:

Volcano Mesa Transportation Network



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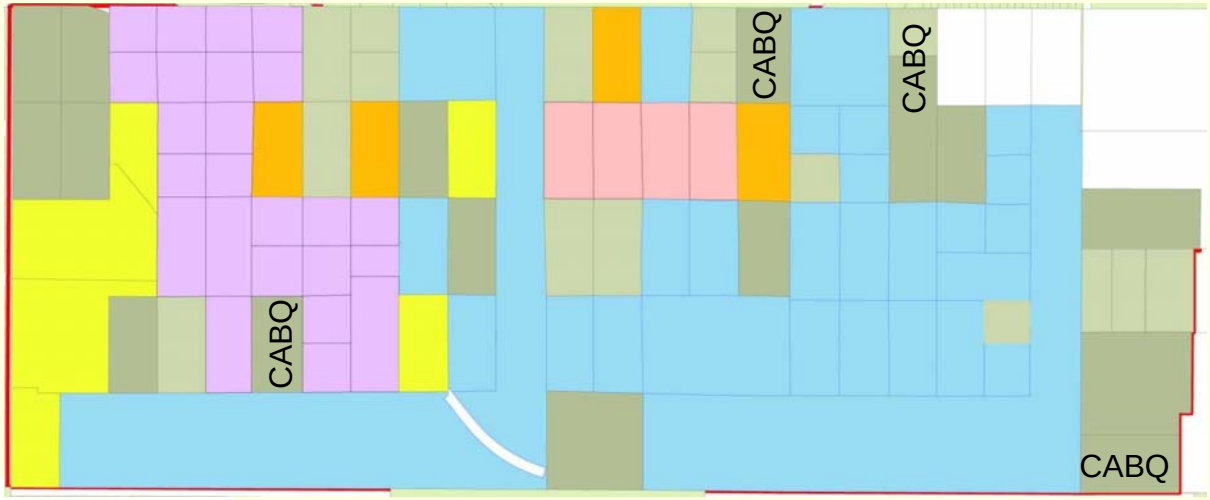
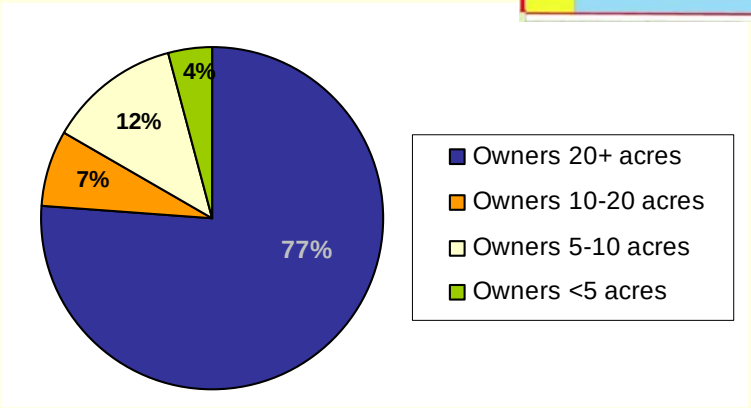
Constraint 2:
Checkerboard Ownership

- 570 acres
- ~ 5-acre lots
- 34 owners
- 99 properties
- 5 owners = 413 acres





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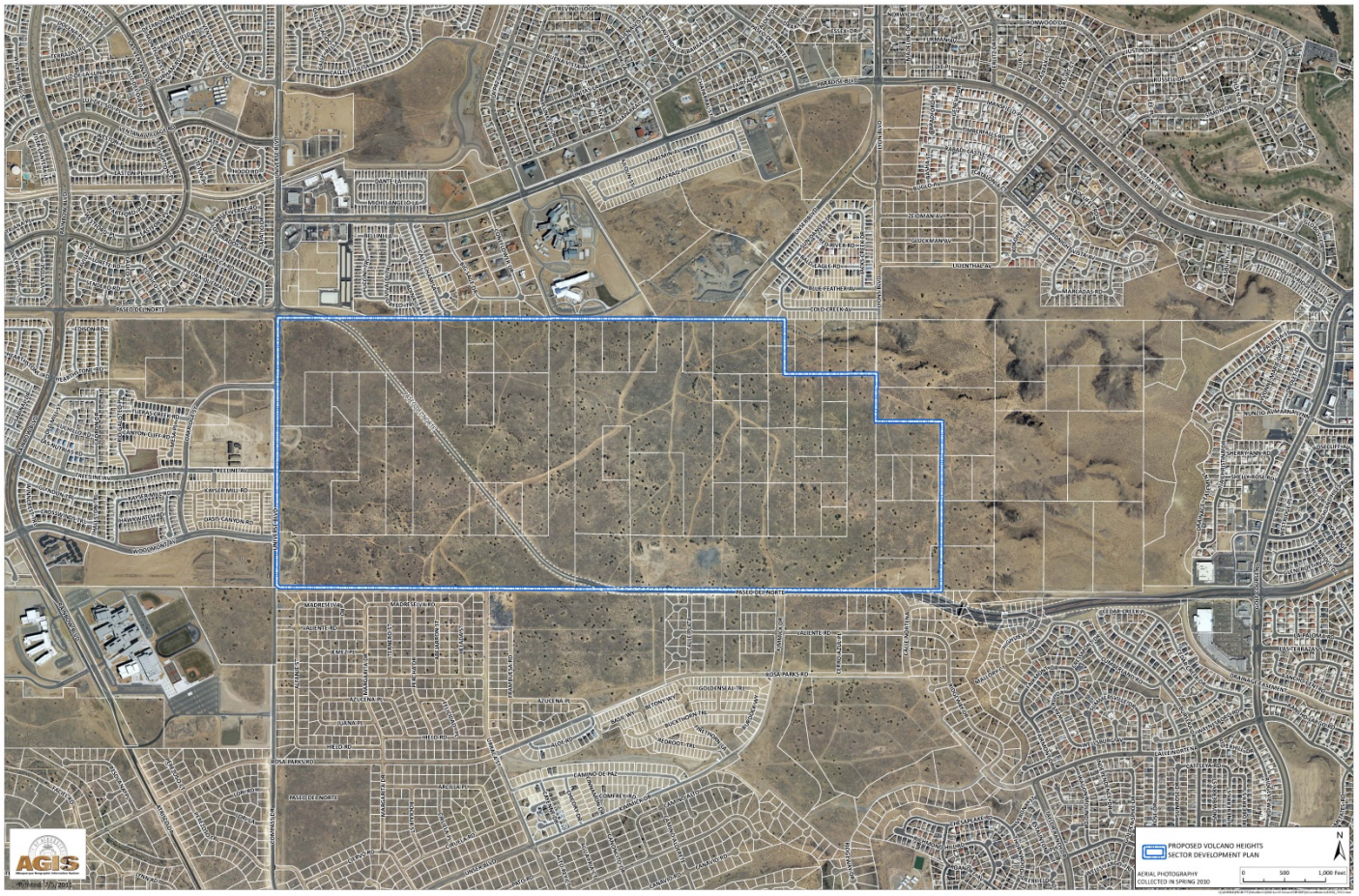
Constraint 3:
Irregular Parcels



Changes to Access Modification Request:

Intersection Spacing – Sector Plan Constraints

- Prior planning efforts
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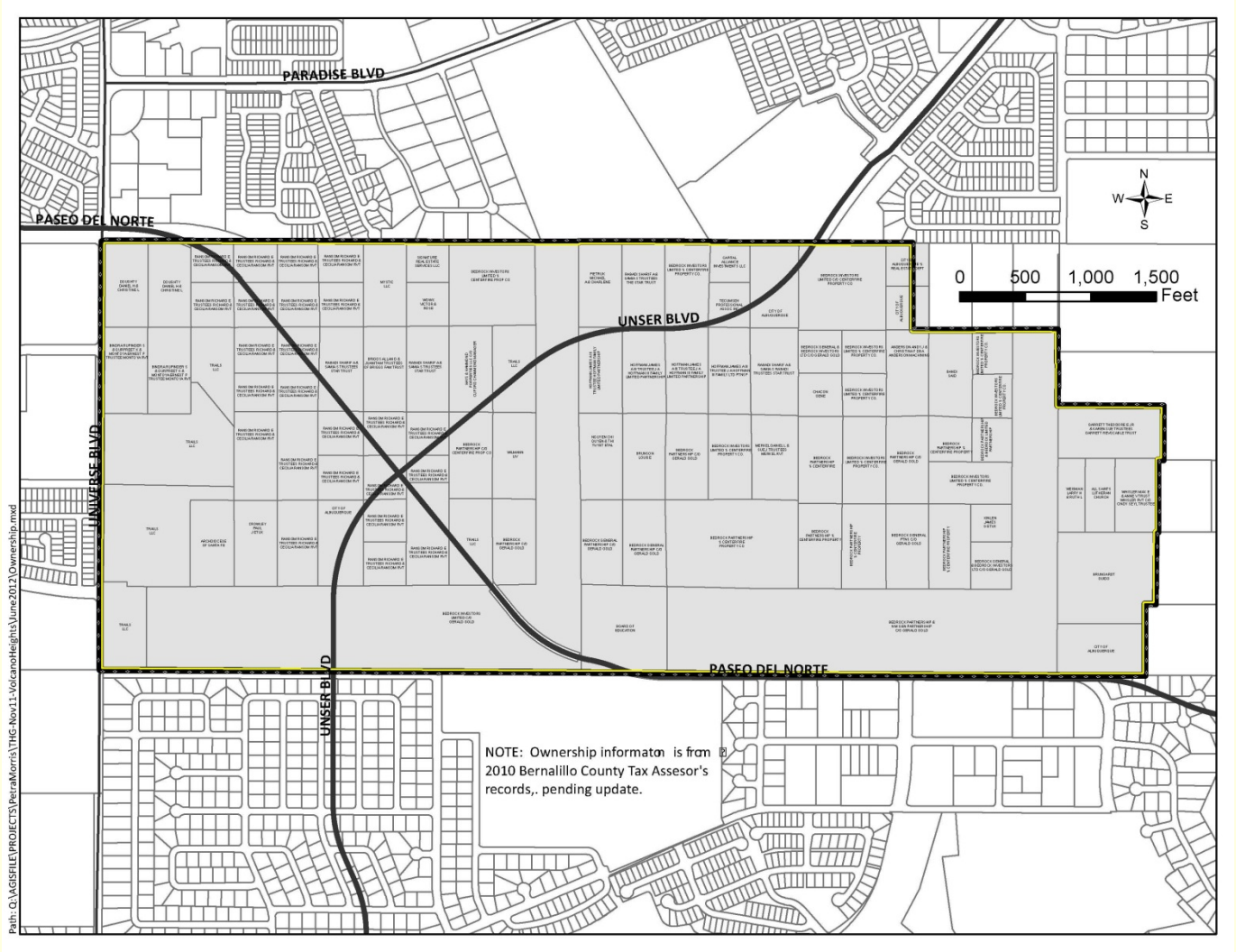
Constraint 4:

Limited access roads at 45 degree angles to property lines



Changes to Access Modification Request:

Intersection Spacing – Sector Plan Constraints

- Prior planning efforts
- Checkerboard ownership
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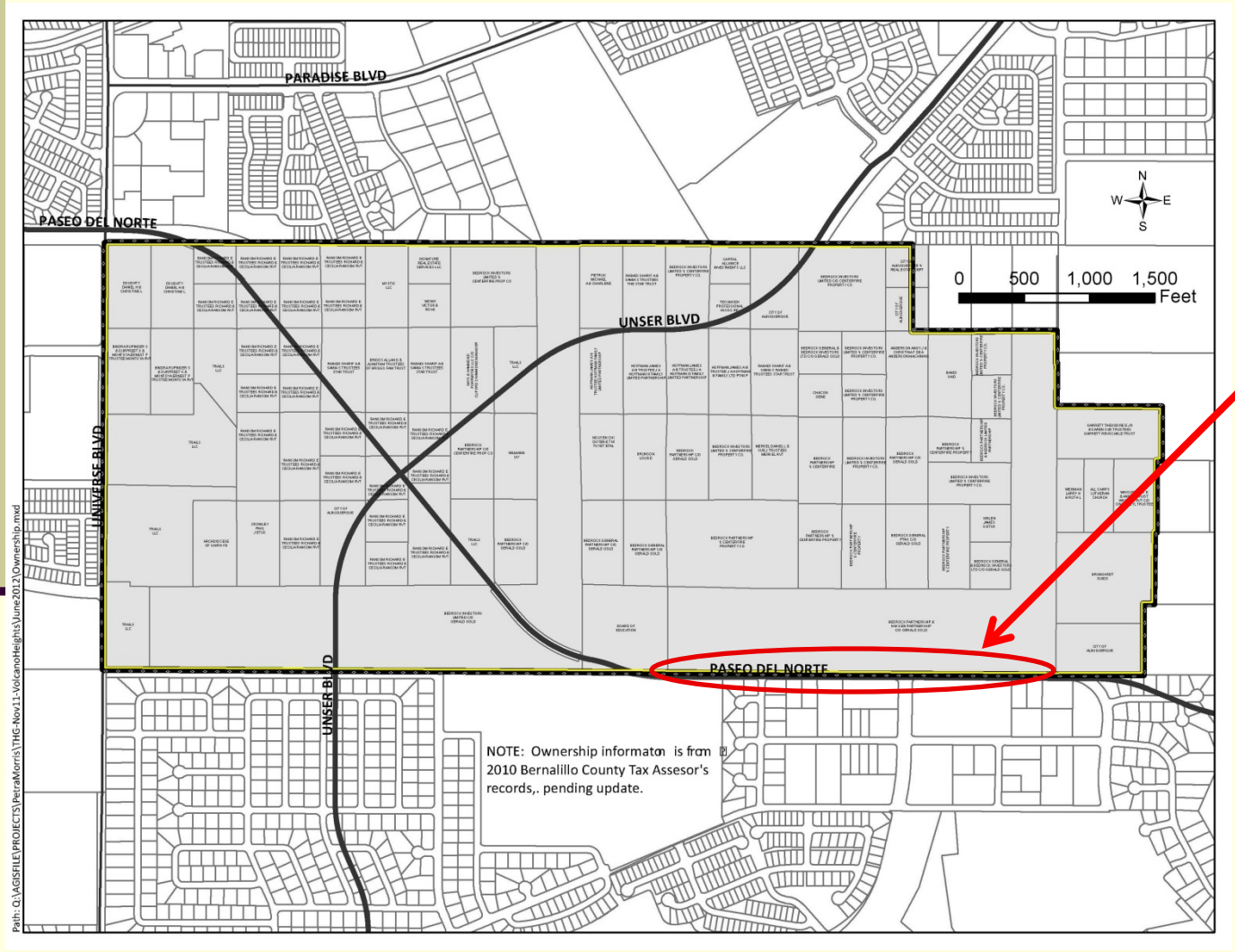
- Aligning access with existing access easements at property edges
- City-owned Unser vs. State-owned Paseo

Constraint 5:

Aligning Access with Existing Access Easements at Property Edges



Parcel without 20-foot access easement abutting Paseo del Norte (City purchase for temporary road)

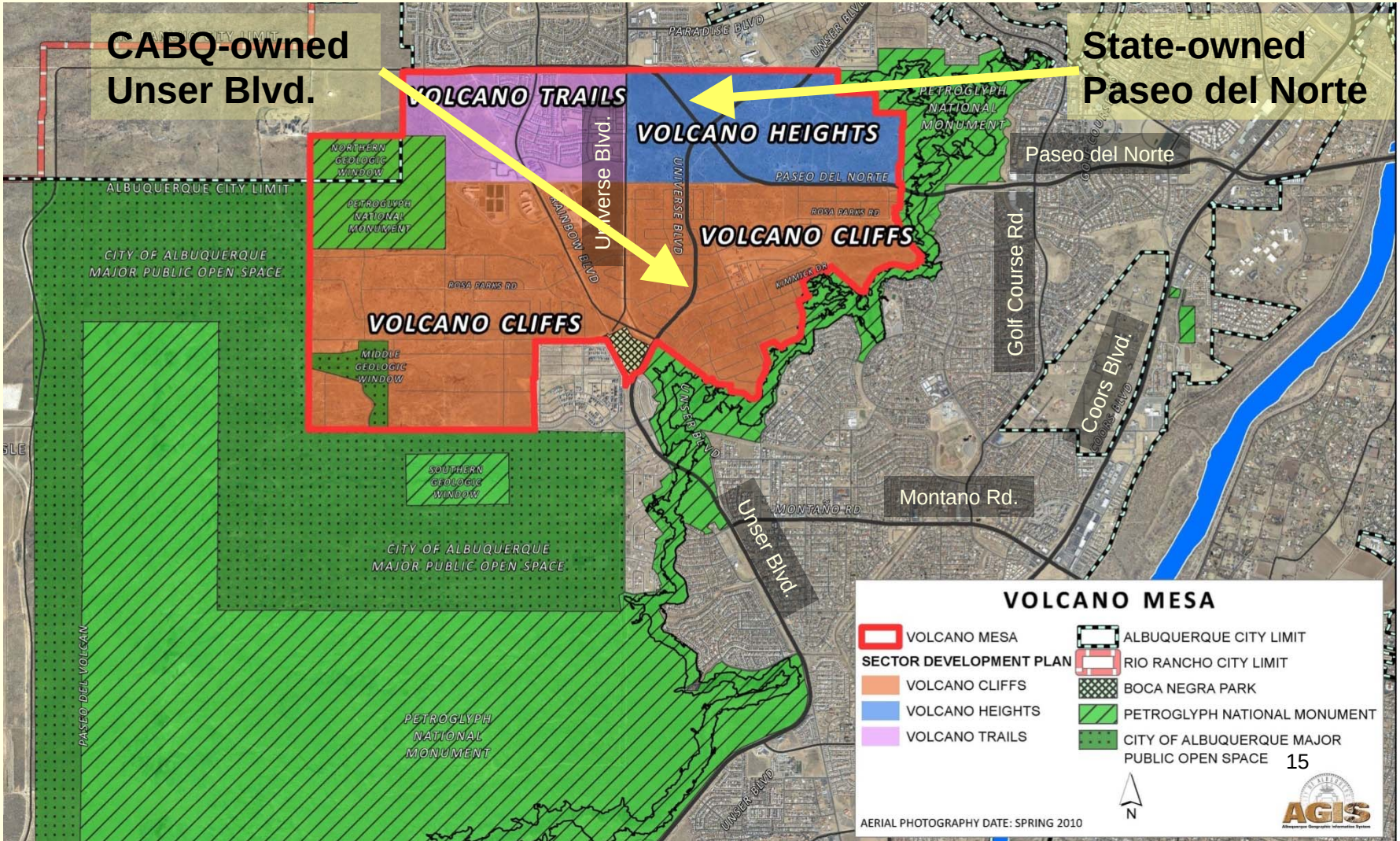
Changes to Access Modification Request:

Intersection Spacing – Sector Plan Constraints

- Prior planning efforts
- Checkerboard ownership
- Irregular parcels
- Limited access roads at 45 degree angles to property lines
- Aligning access with existing access easements at property edges
- CABQ-owned Unser vs. State-owned Paseo

Constraint 6:

CABQ-owned Unser vs. State-owned Paseo



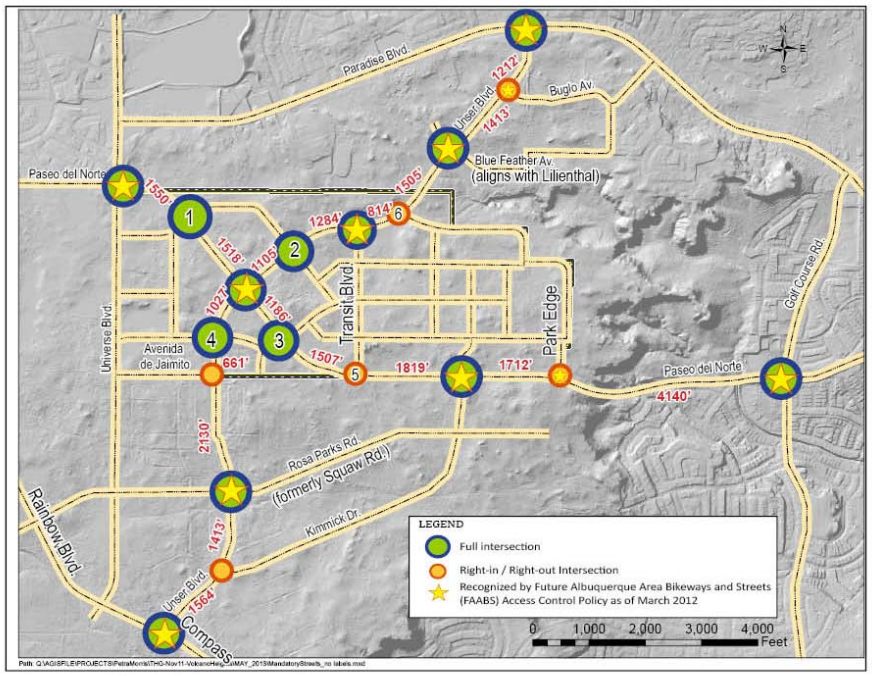
Changes to Access Modification Request:
CABQ Decision Rules

- Best spacing to coordinate land use and transportation
- Best spacing to support job creation and economic development goals
- Best spacing to support multi-modal transportation and transit-supportive land uses
- Best spacing to provide access to all properties within Volcano Heights
- Best spacing to provide best traffic outcomes for both regional and local trips

Access Schemes:

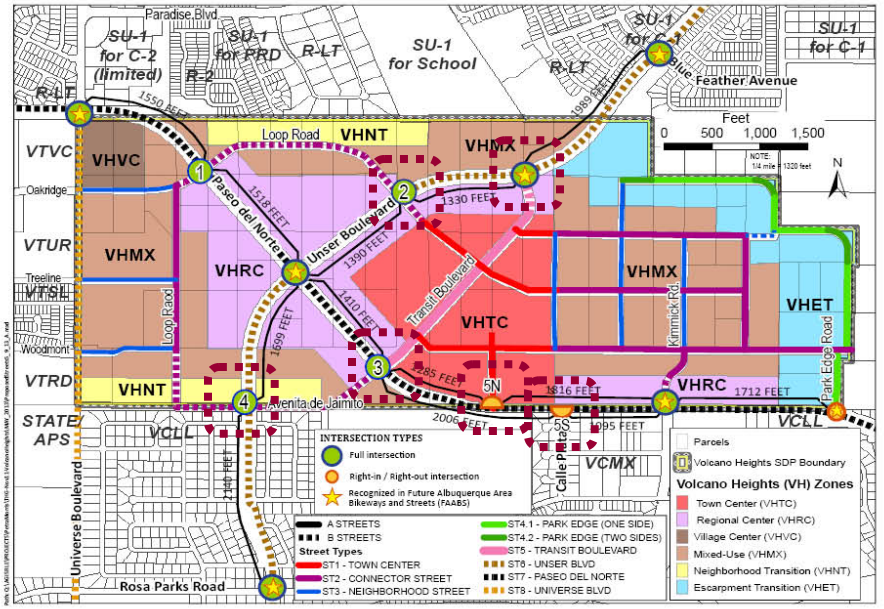
New Intersections

Scheme A: Volcano Heights Sector Development Plan & Volcano Mesa WSSP Amendment



* 1/4 mile = 1320 feet
1/3 mile = 1760 feet
1/2 mile = 2640 feet

Scheme C: Official City Request (Post-negotiations)



Note: 1/2 mile = 2640 feet
1/3 mile = 1760 feet
1/4 mile = 1720 feet

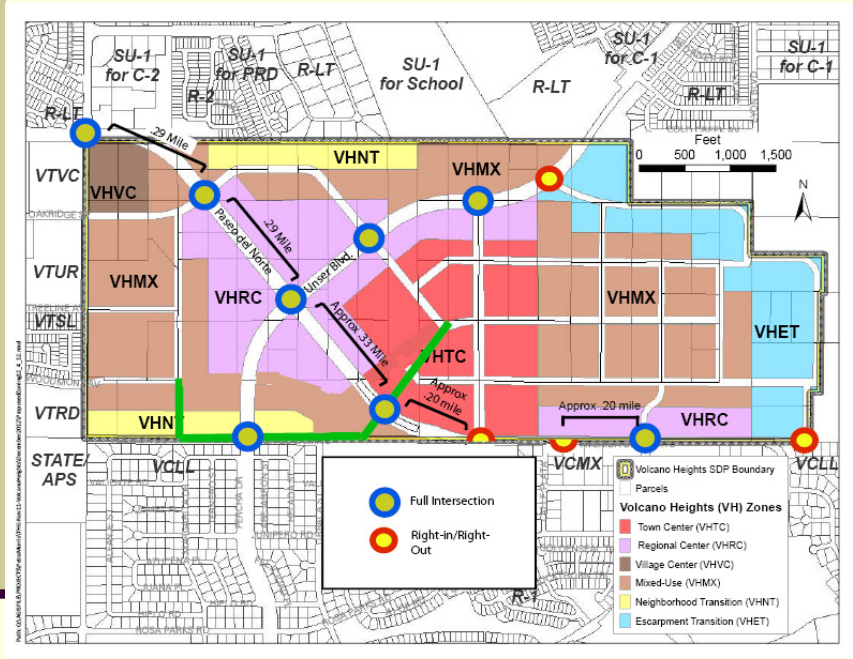
Indicates change

DRAFT

Access Schemes:

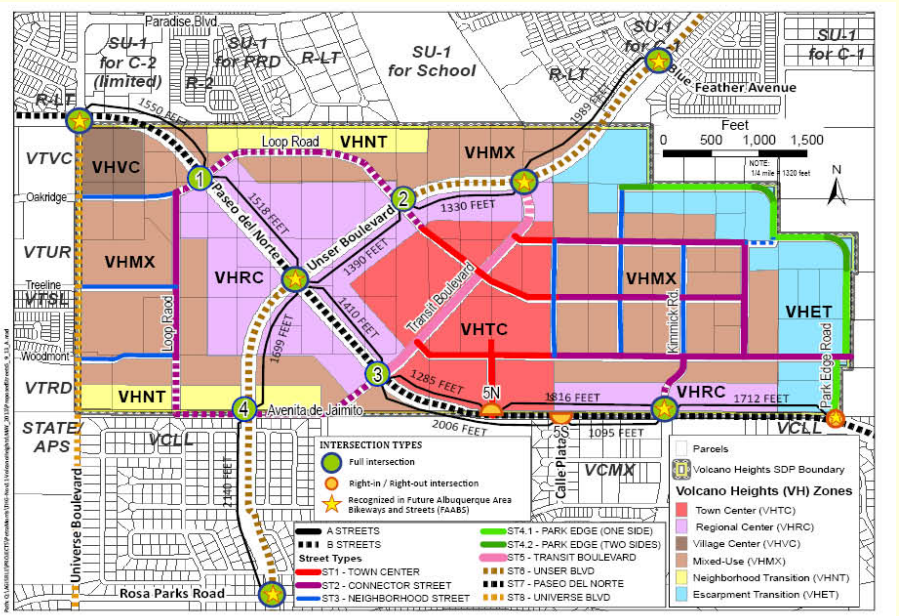
Evolution of Scheme C for Additional Traffic Analysis

Map from City Letter of Request
(Post-negotiations)



***Scheme C**:*

- *Based on Official City of Albuquerque Request*
- *Spacing distances maximized to be over ¼ mile wherever possible based on TCC/RAC comments*
- *Modified Geometry to Connect Transit Boulevard to Full Access Intersections based on TCC/RAC comments*



Note: 1/2 mile = 2640 feet
1/3 mile = 1760 feet
1/4 mile = 1720 feet

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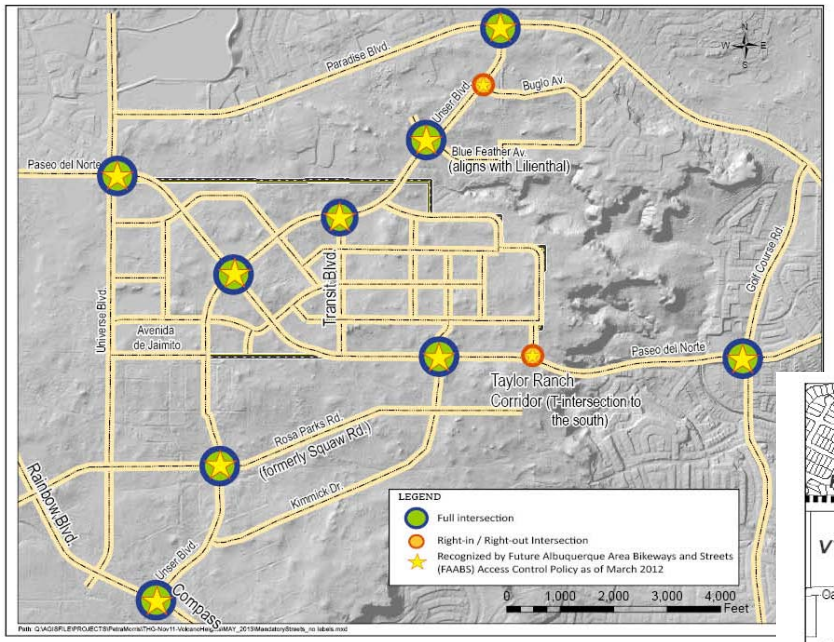
Access Schemes: *(cont'd)*

Per Limited-access Policies

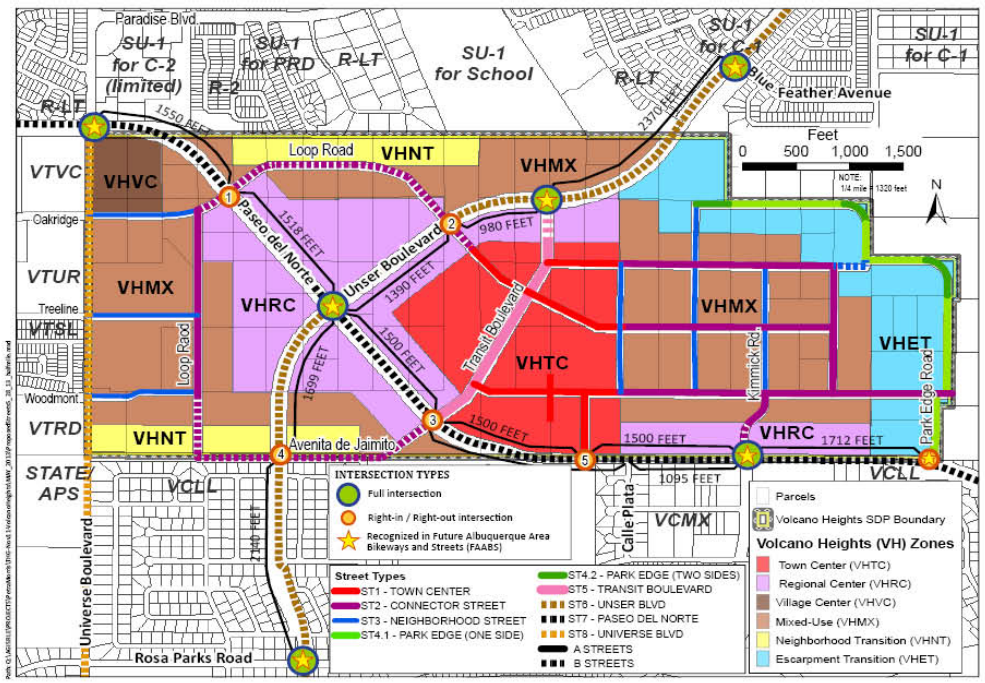
Intersections Recognized by FAABS



Scheme B: Allowed by Policy

- *Generated for additional traffic analysis only*
- *Starts with FAABS intersections*
- *Adds right-in/right-out Intersections approximately every ¼ mile, equidistant between full access intersections*

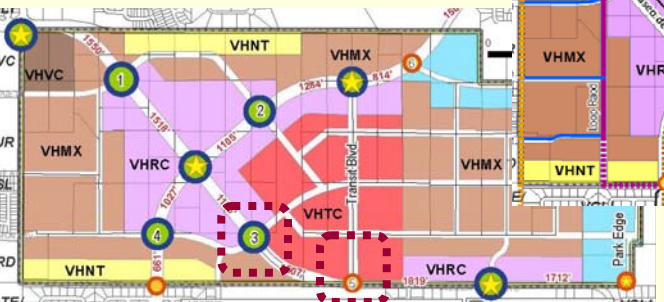
[See FAABS excerpts on next 2 slides]



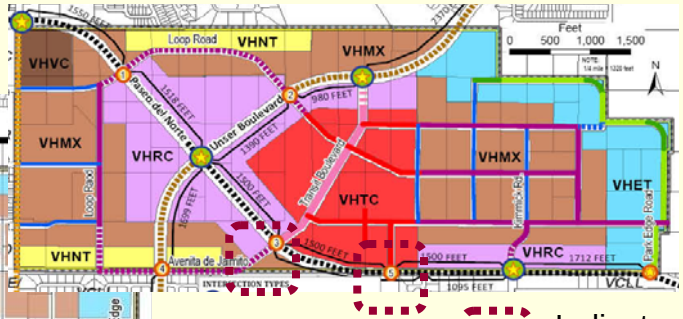
Scheme Spacing Comparisons:
Paseo del Norte Intersections

Proposed Intersections	Scheme A - VHSDP	Scheme B - Policy	Scheme C - Compromise
Paseo/Universe to Loop Road #1	1550	1550	1550
Loop Road #1 to Paseo/Unser	1518	1518	1518
Paseo/Unser to Loop Road #3	**1186**	**1500**	**1410**
Loop Road #3 to Paseo #5	**1507**	**1500**	**To 5N: 1285 To 5S: 2006**
Paseo #5 to Kimmick	**1819**	**1500**	**From 5N: 1816 From 5S: 1095**
Kimmick to Park Edge Road	1712	1712	1712

Scheme A

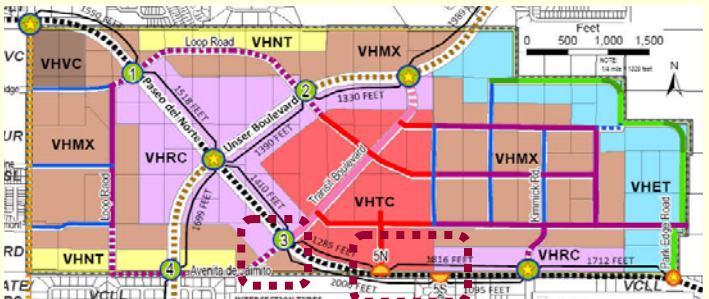


Scheme B



Indicates change

Scheme C



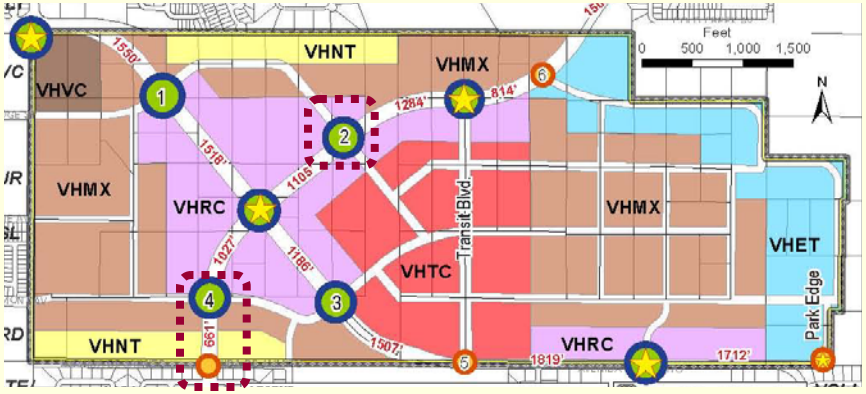
5N = RI/RO at Transit Boulevard
5S = RI/RO at Calle Plata

Scheme Spacing Comparisons:
Unser Blvd. Intersections

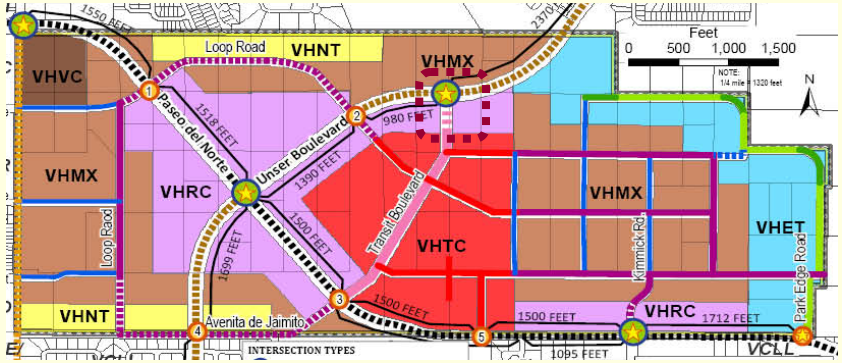
Proposed Intersections	Scheme A - VHSDP	Scheme B - Policy	Scheme C - Compromise
Compass to Kimmick	1564	1564	1564
Kimmick to Rosa Parks (formerly Squaw)	1413	1413	1413
Rosa Parks to Avenida de Jaimito	2130	2130	2130
Avenida de Jaimito to Loop #4	**661**	**0**	**0**
Loop #4 to Paseo/Unser	**1027**	**1699**	**1699**
Paseo/Unser to Loop #2	**1105**	**1390**	**1390**
Loop #2 to Transit Blvd.	**1284**	**980**	**1330**
Transit Blvd. to Park Edge #6	**814**	**N/A**	**N/A**
Park Edge #6 to Blue Feather (formerly Lilienthal)	**1505**	**N/A**	**N/A**
Transit Blvd. to Blue Feather	**N/A**	**2370**	**1989**
Blue Feather to Buglo Ave.	1413	1413	1413
Buglo Ave. to Paradise Blvd.	1212	1212	1212

Scheme Spacing Comparisons:
Analyzed Schemes

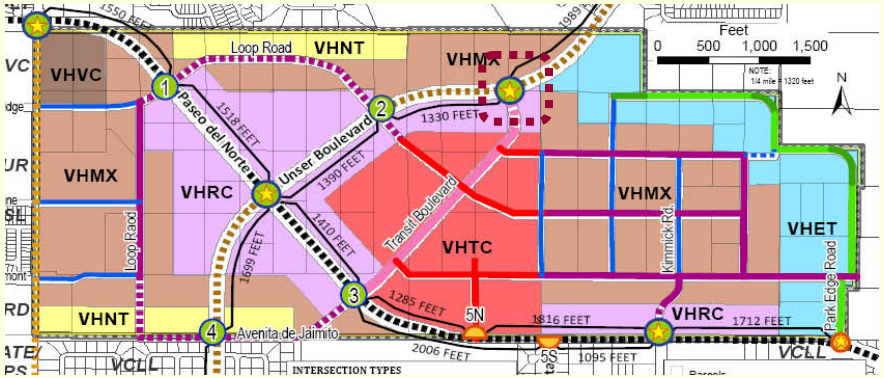
Scheme A: VHSDP



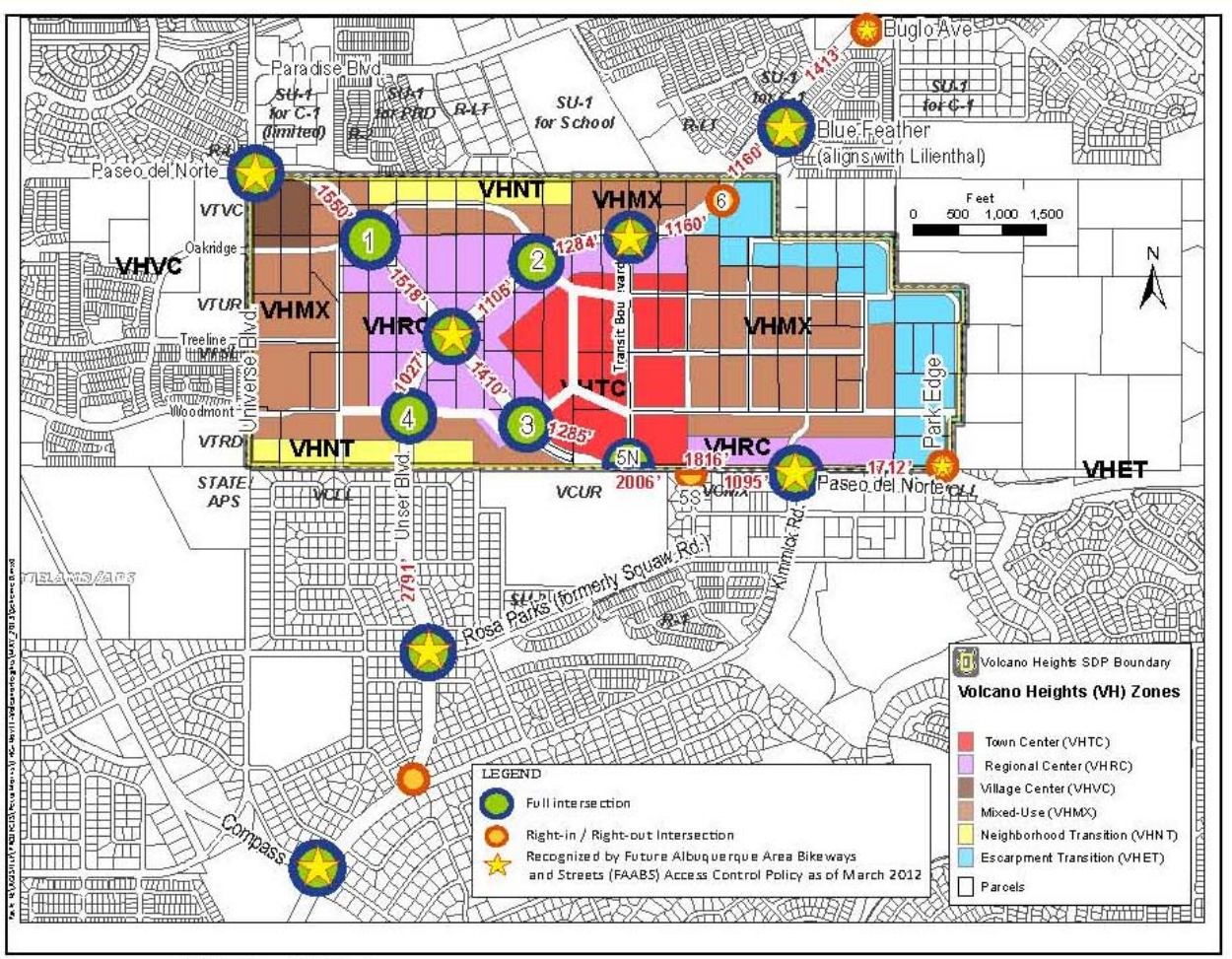
Scheme B: Policy



Scheme C: Compromise



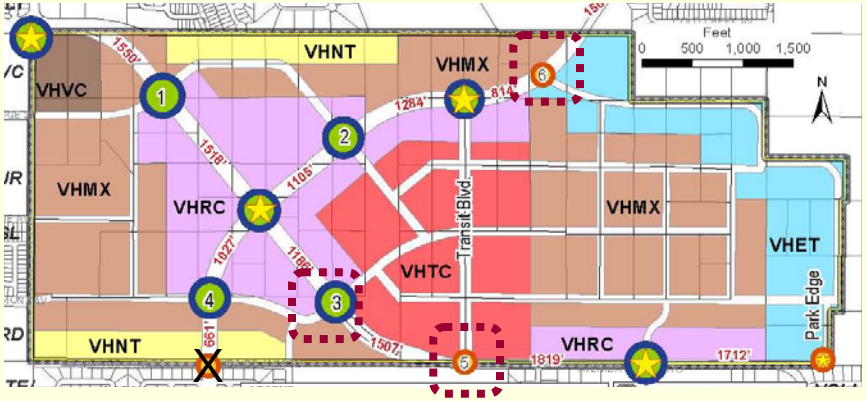
Final City Request: Scheme D



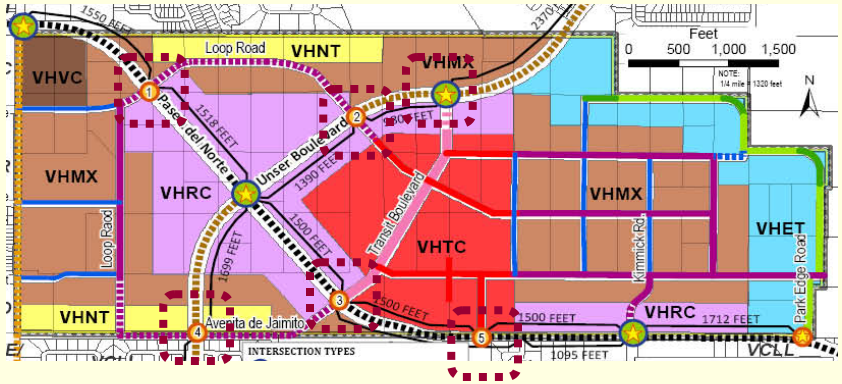
* 1/4 mile = 1320 feet
1/3 mile = 1760 feet
1/2 mile = 2640 feet

Scheme Spacing Comparisons:
All Schemes

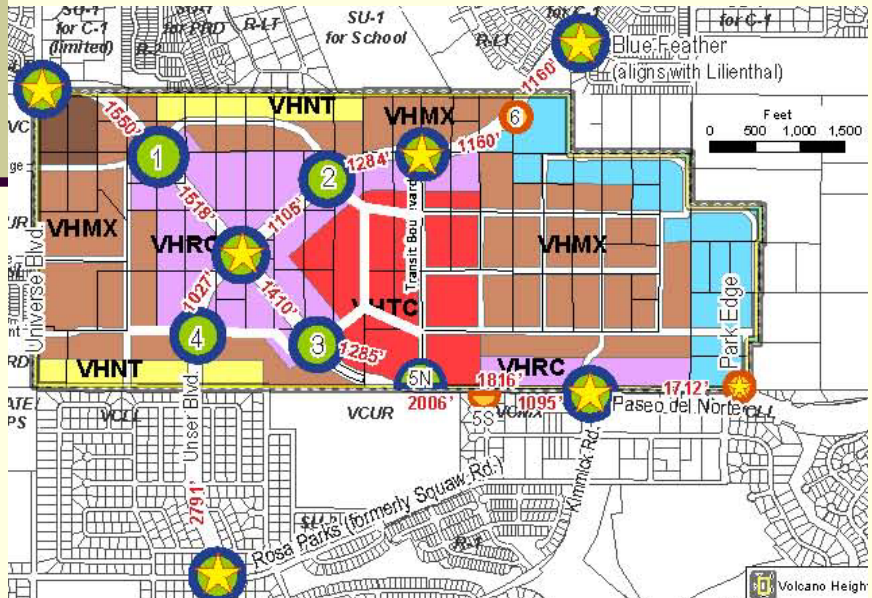
Scheme A



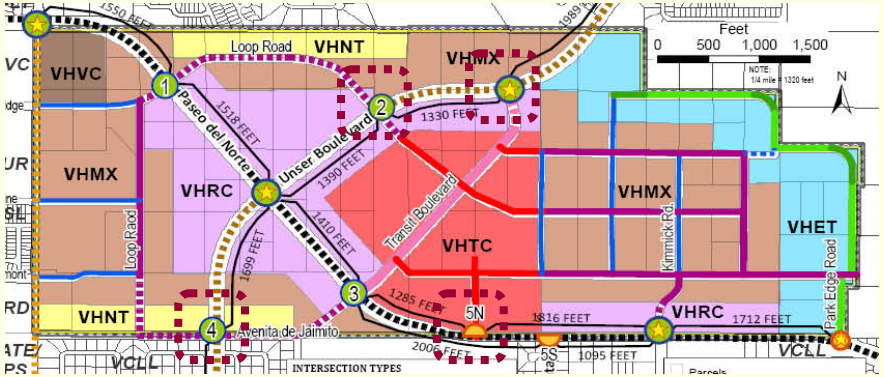
Scheme B



Scheme D



Scheme C



Indicates change

Final CABQ Request:
Paseo del Norte Intersections

Proposed Intersections	Final Request	Scheme A - VHSDP	Scheme B - Policy	Scheme C - Compromise
Paseo/Universe to Loop Road #1	**1550**	1550	1550	1550
Loop Road #1 to Paseo/Unser	**1518**	1518	1518	1518
Paseo/Unser to Loop Road #3	**1410**	1186	1500	1410
Loop Road #3 to Paseo #5	**To 5N*: 1285** **To 5S*: 2006**	1507	1500	To 5N**: 1285 To 5S**: 2006
Paseo #5 to Kimmick	**From 5N*: 1816** **From 5S*: 1095**	1819	1500	From 5N**: 1816 From 5S**: 1095
Kimmick to Park Edge Road	**1712**	1712	1712	1712

5N* = T-intersection at Transit Boulevard
5S* = RI/RO at Calle Plata

5N** = RI/RO at Transit Boulevard
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Final CABQ Request:
Unser Blvd. Intersections

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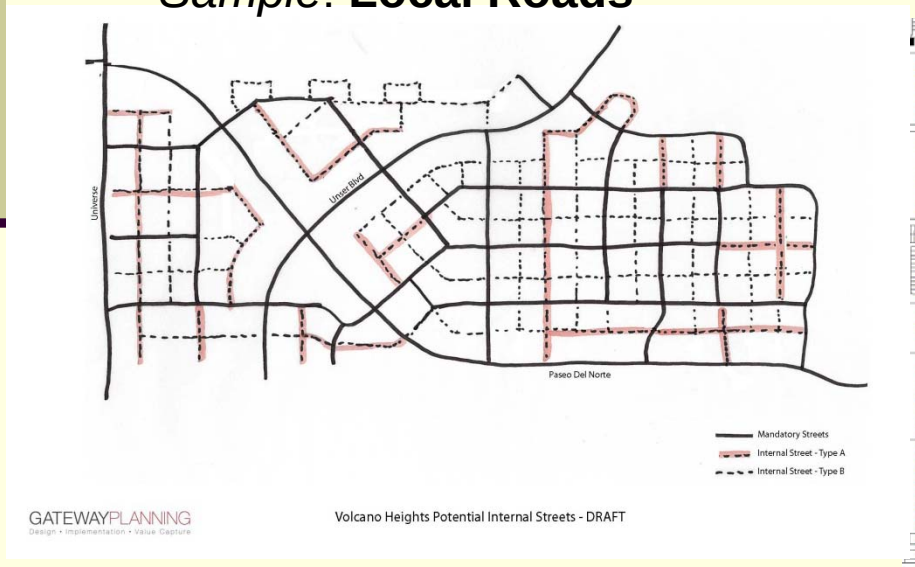
Rosa Parks to Avenida de Jaimito	**N/A**	2130	2130	2130
Avenida de Jaimito to Loop #4	**N/A**	661	0	0
Rosa Parks to Loop #4	**2791'**	N/A	N/A	N/A
Loop #4 to Paseo/Unser	**1027**	1027	1699	1699
Paseo/Unser to Loop #2	**1105**	1105	1390	1390
Loop #2 to Transit Blvd.	**1284**	1284	980	1330
Transit Blvd. to Park Edge #6	**1160**	814	N/A	N/A
Park Edge #6 to Blue Feather (formerly Lilienthal)	**1160**	1505	N/A	N/A
Transit Blvd. to Blue Feather	**N/A**	N/A	2370	1989

Justification for Access Request:

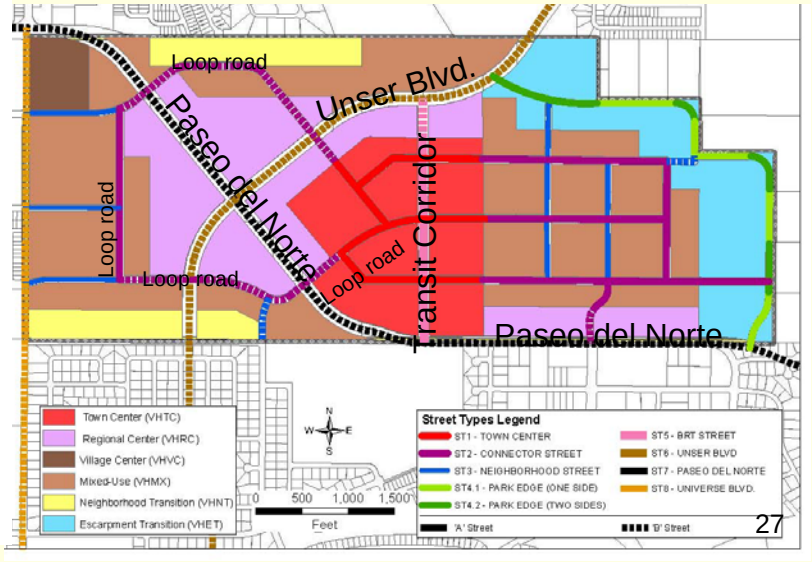
Benefits Outweigh the Costs

- Backbone Grid to disperse traffic, offer redundancy
- Loop road to alleviate pressure on Paseo/Unser intersection
- Predictable access for local development (no more curb cut requests!)
- Local roads to serve local development
- Access that supports Major Activity Center

Sample: **Local Roads**



Backbone Grid



27

Justification for Access Request:

Access Management Guidelines for Activity Centers

- **Chapter 4 E. ACCESS CATEGORY: Urban Principal Arterial (UPA)**
- **(1) Functional Description**: The urban principal arterial system serves the major centers of activity of urbanized areas, the highest traffic volume corridors, the longest trip desires, and carries a high proportion of the total urban area travel on a minimum of mileage.... The principal arterial system carries most of the trips entering and leaving an urban area, as well as most of the through movements bypassing central city areas. In addition, significant intra-area travel, such as between central business districts and outlying residential areas … and between major suburban centers, is served by this class of highway.
- **(2) General Access Characteristics**: The primary functional responsibility of urban principal arterials is through traffic movement. Many urban principal arterials are fully or partially access controlled. Direct access service to abutting properties is subordinate to providing service to through traffic movements. Access location and spacing standards are strictly enforced.
- **(3) Performance**: The operational performance of UPA facilities should meet **LOS D standards at a minimum**. See Sub-Section 15.C, Table 15.C-1.

Justification for Access Request:
NMDOT Access Management Manual

- Specifically exempts "business districts" from spacing requirements.
  - **18.31.6.7 Business District**-- A business district occurs along a highway when within 300 feet along such highway there are buildings in use for business or industrial purposes (including but not limited to hotels, banks or office buildings … and public buildings) which occupy at least fifty percent of the frontage on one side or fifty percent of the frontage collectively on both sides of the highway *(page 2).*
  - **18.31.6.18 C (3) Business Districts.** The spacing of access points within business districts on urban or rural highways may be adjusted based on site-specific conditions consistent with the requirements for the access category of the highway *(page 23).*
  - Refers to *Access Management Guidelines for Activity Centers, NCHRP 348, 1992.*
    http://www.accessmanagement.info/pdf/348NCHRP.pdf

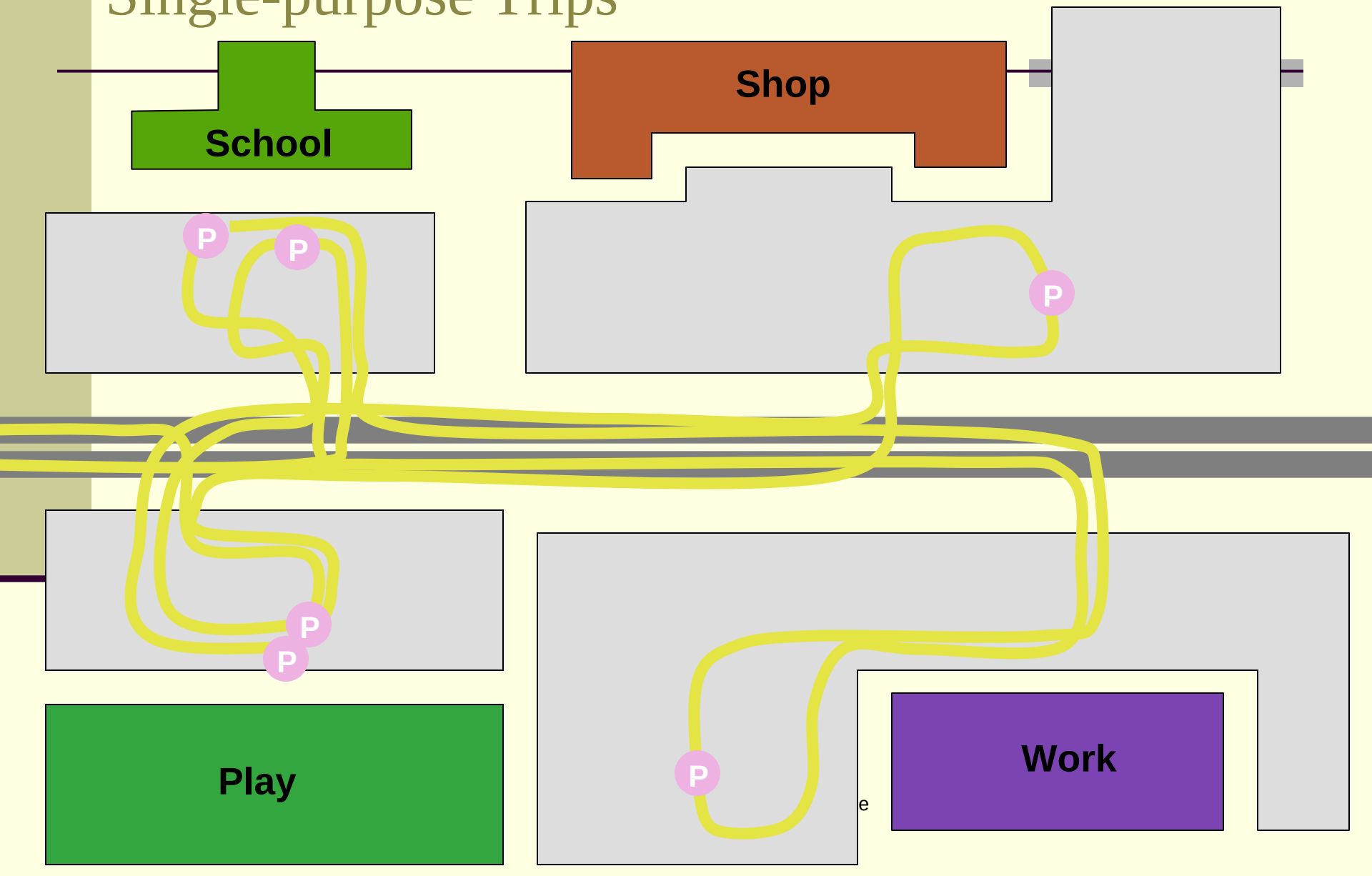
Justification for Access Request:

Access Management Guidelines for Activity Centers (1992)

- Signalized spacing (pg. 4):
  - The spacing guidelines should minimize the need for variances or exceptions, while simultaneously protecting arterial traffic flow. They should view driveways to major activity centers as intersecting arterial roads rather than as curb cuts.
  - To assure efficient traffic flow, new signals should be limited to locations where the progressive movement of traffic will not be impeded significantly. The “optimum” distance between signals - where there is no loss in the through band width-depends on the cycle length and the prevailing speed. When signals are placed at other locations, there is a loss in band width and delay increases.
- Unsignalized spacing (pg. 5):
  - *Strict application of traffic engineering criteria may push spacing requirements to 500 ft or more.* However, such spacings may be unacceptable for land use and perceived economic reasons in many suburban and urban environments where *development pressures opt for 100- to 200-ft spacing*. Spacing guidelines should achieve a reasonable balance between these conflicting requirements.

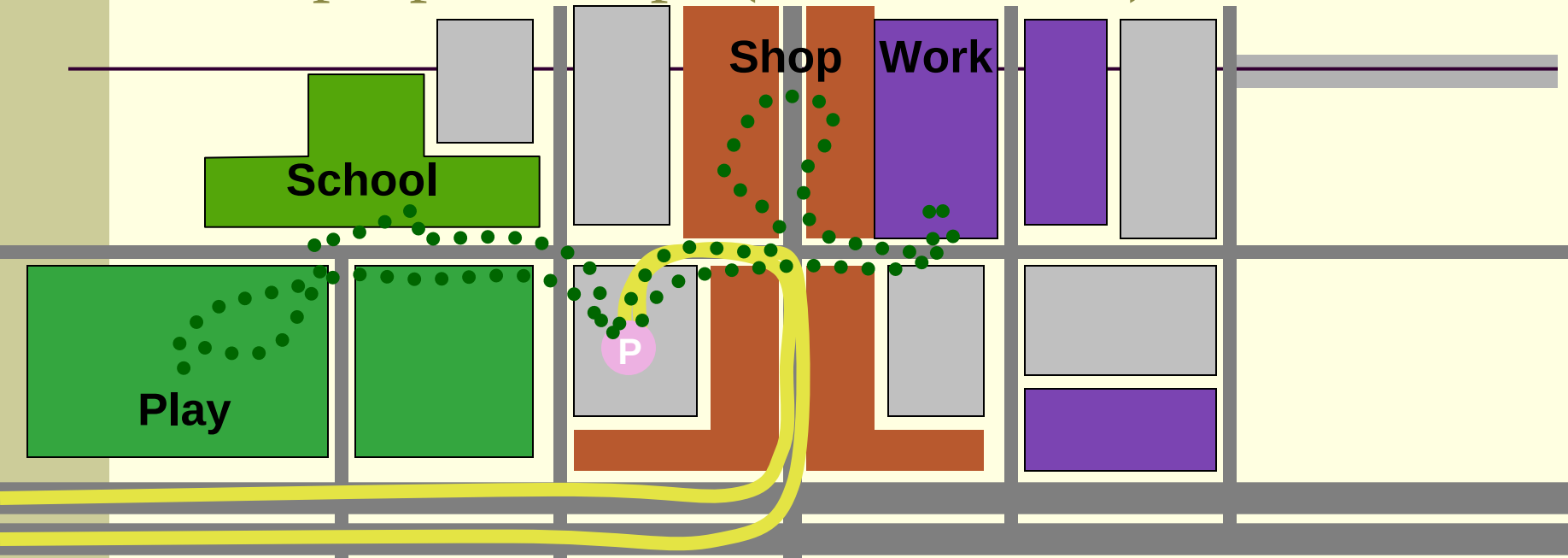
Conventional West Side Development:

Single-purpose Trips



Mixed-use Development:

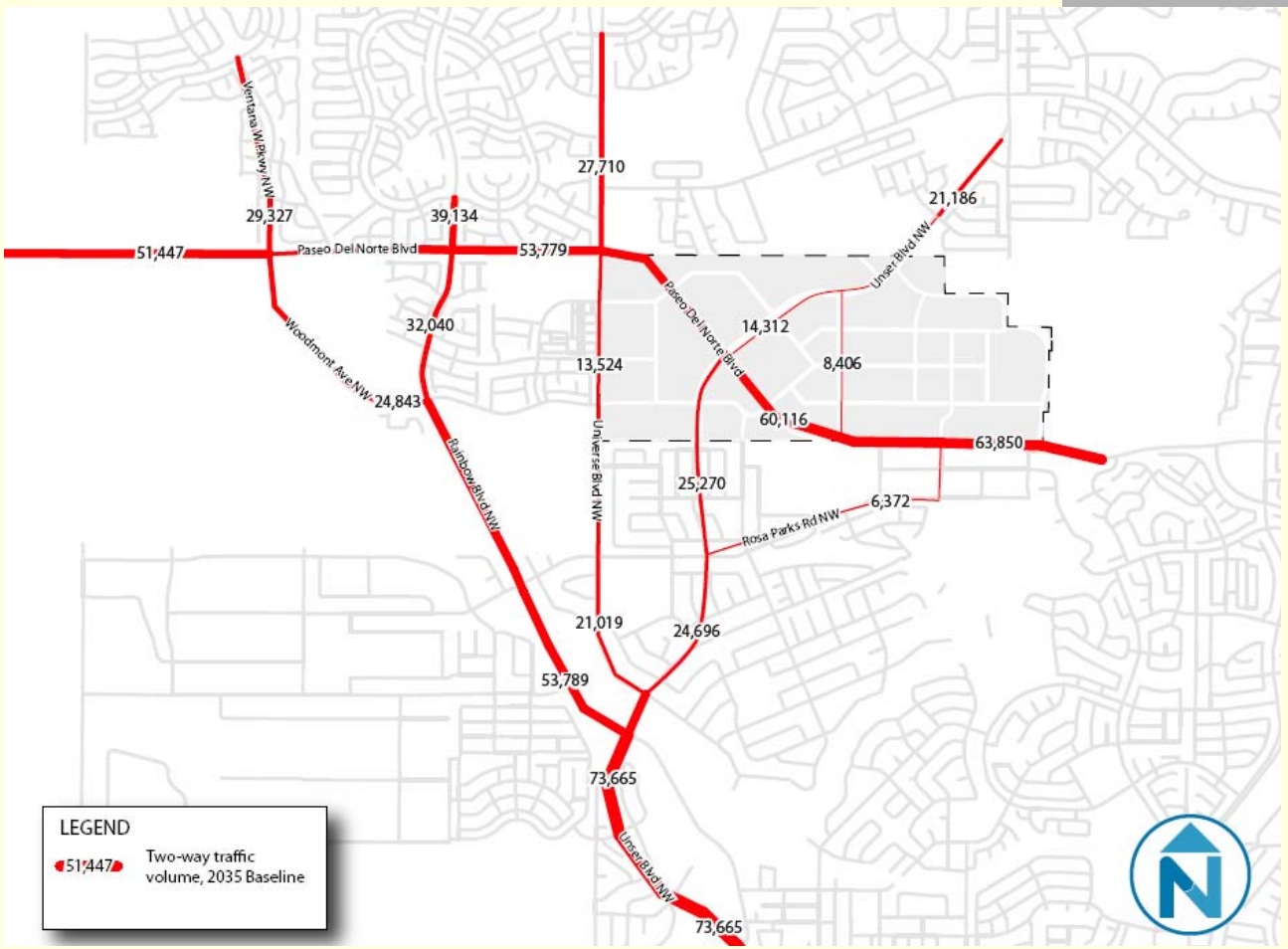
Multi-purpose Trips ("Park Once")



Typical Results:

- <½ the parking needed
- <½ the land area for same development
- ¼ the arterial trips
- 1/6th the arterial turning movements
- <¼ the vehicle miles traveled

2035 Traffic Volume



Methodology

- ITE Baseline Trip Generation for vehicles
- Adjustment to remove double-counted internal trips
- Adjustment for retail pass-by trips
  - Conservative daily pass-by rate: 15%
  - PM Peak rate: 25%
- Adjustment for bikes/peds
  - URBEMIS (California Air Resources Board for emissions)
- Conservative transit trip forecast

Land Use	No. Units	Trip Generation Rate (see note 1)				Total Trips		
		Daily	AM Peak	PM Peak	Units	Daily	AM Peak	PM Peak
Residential								
Detached	364 (units)	9.57	0.77	1.02	/unit	3,483	280	504
Attached	291 (units)	5.81	0.44	0.52	/unit	1,691	128	151
Multifamily	4,114 (units)	6.65	0.51	0.62	/unit	27,360	2,098	2,551
Hotel	53,600 (ft2)	8.92	0.64	0.74	/occupied room	797	57	66
Office	1,180,135 (ft2)	11.01	1.55	1.49	/1,000 ft2	12,993	1,829	1,758
Retail								
Regional Retail	326,700 (ft2)	42.94	1.95	7.70	/1,000 ft2	14,028	638	2,515
Specialty Retail	322,198 (ft2)	44.32	6.84	5.02	/1,000 ft2	14,280	2,204	1,617
Local Retail	170,600 (ft2)	42.94	3.72	12.92	/1,000 ft2	7,326	635	2,205
Internal Trip Adjustment (see note		*-19%*	*-15%*	*-20%*		*-15,679*	*-1,181*	*-2,218*
Retail Pass-by Trips (see note 3)		*-15%*	*-15%*	*-25%*		*-5,345*	*-522*	*-1,584*
Base Trip Subtotal (VH Sector Development Plan)						60,935	6,168	7,565
Walk & Bicycle Trips (see note 4)		*15%*	*14%*	*20%*		*9,070*	*836*	*1,550*
Transit Trips (see note 5)		*3%*	*5%*	*4%*		*2,000*	*300*	*300*
Total Vehicle Trips Generated						49,865	5,032	5,715
Internal Vehicle Trips (see note 6)		*13%*	*7%*	*11%*		*6,509*	*330*	*653*
External Vehicle Trips (see note 7)		*87%*	*93%*	*89%*		43,356	4,702	5,062

Notes:

(1) Base trip rates from ITE Trip Generation, 8th Edition. Peak hour trips rates shown for Regional Retail and Local Retail based on fitted curve logarathim applied at block level.

(2) Adjustment to account for internal trips to/from retail uses that would otherwise be double-counted, based on ITE internal trip capture data for retail uses (to/from office, residential and other retail uses) in mixed-use developments.

(3) Pass-by rate of 25 percent for PM Peak derived from ITE logarithim for Shopping Centers (while local and specialty retail uses often have higher pass-by rates). Daily pass-by rate conservatively estimated at 15 percent.

(4) Mode shift for internal trips based on proposed density, mix of uses, block layout, bicycle and pedestrian facilities

(5) Based on preliminary "back-of-the-envelope" estimate of potential transit ridership. Assumed 5% of home to work trips for both residential and non-residential land uses would occur via transit plus estimated "non-work" transit trips at 50% of

(6) Total Vehicle Trips derived by subtracting walk & bicycle trips (see note 4) and transit trips (see note 5) from Base Trip Subtotal.

(7) Derived from estimated internal trips (see note 2), subtracting internal walk & bicycle trips (see note 4) and internal transit trips (estimated at 5% of transit ridership).

(8) Net vehicle trips derived by subtracting internal vehicle trips (see note 6) from total vehicle trips generated.

Additional Vehicular Traffic Study:
Operations & Intersection Level of Service (LOS)

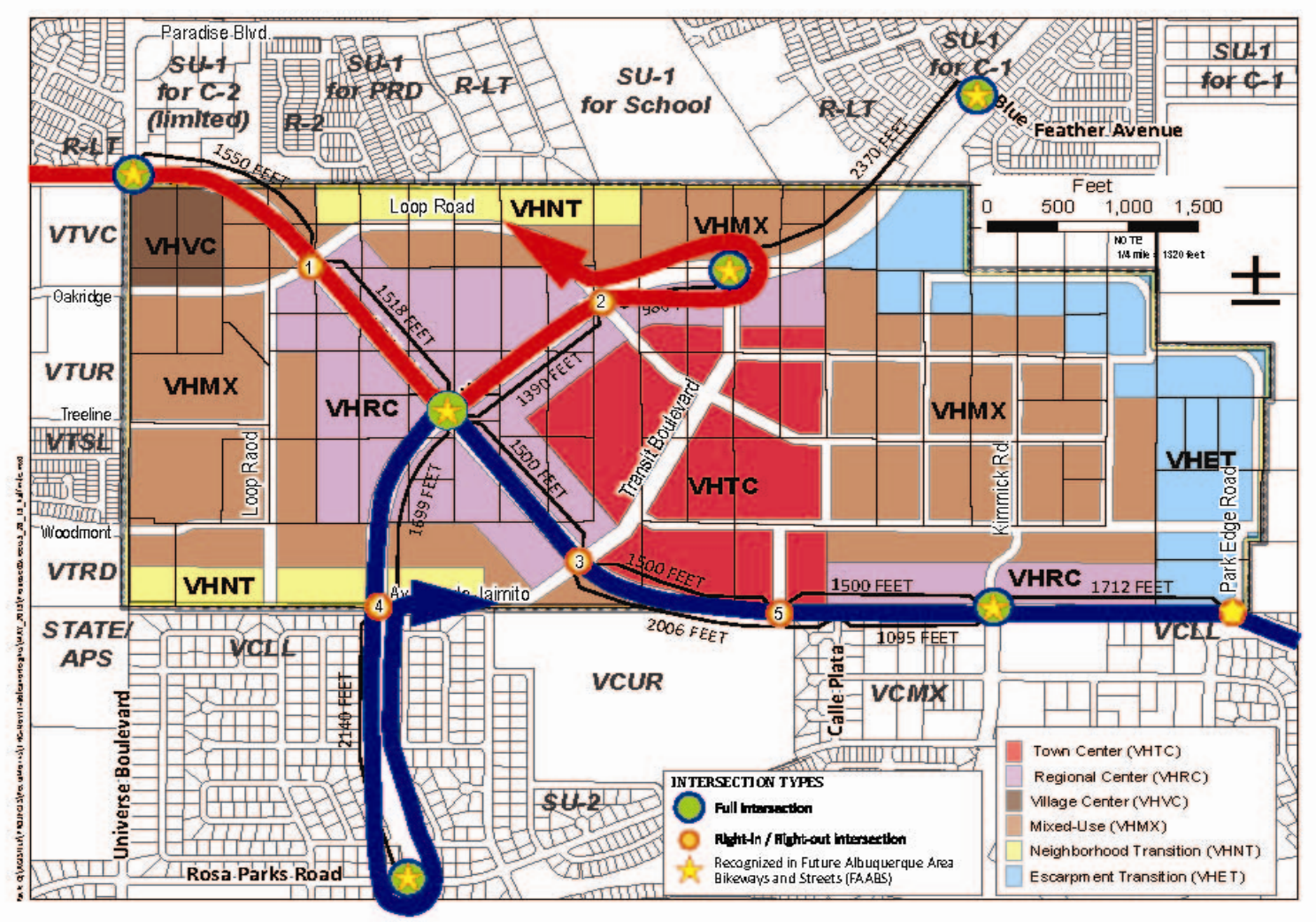
- Signal plan will need to balance the needs of through trips with access to/from jobs, services & homes in Volcano Heights
- Paseo del Norte: 5,000 peak-hour vehicles approaching Volcano Heights in Year 2035
  - 3,000 “through” trips (passing through)
  - 2,000 vehicles traveling **to** Volcano Heights (exiting Paseo del Norte)
- Unser: 2,300 peak-hour vehicles approaching Volcano Heights in Year 2035
  - 1,300 “through” trips
  - 1,000 vehicles traveling **to** Volcano Heights

Operations & Intersection Level of Service (LOS):
Paseo del Norte

- Key factors affecting delay in Year 2035 at intersections will be conflicting movements.
  - Left-turn movements are critical factor for traffic operations.
- Arriving from east (westbound on Paseo):
  - Inbound vehicles will be unable to directly access SE quadrant of VH under Scheme B (will require U-turns outside of sector).
- Arriving from west (eastbound on Paseo):
  - Access to NW & NE quadrants will require left-turn at Unser under Scheme B.

Vehicular Access:

Scheme B

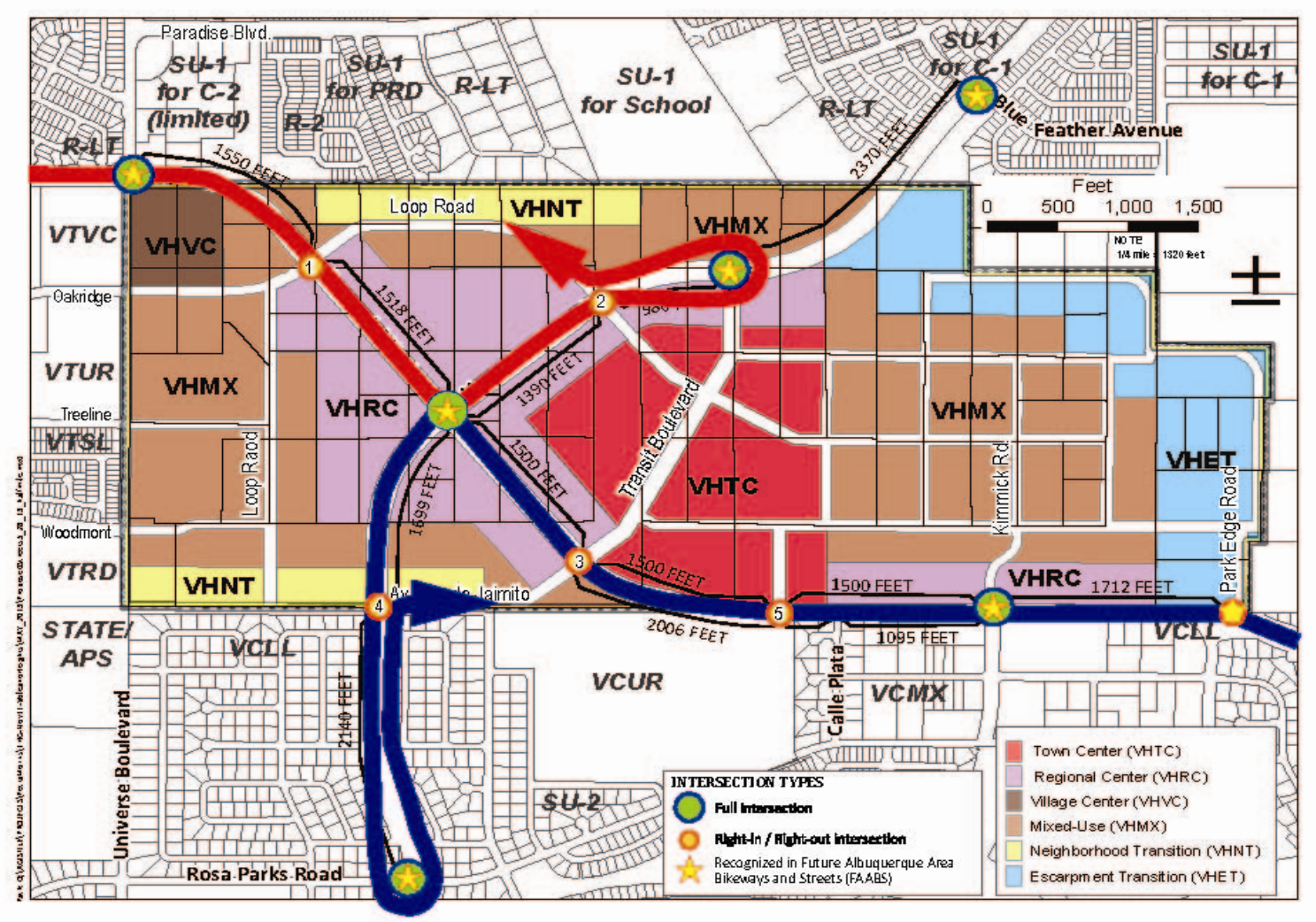


Operations & Intersection Level of Service (LOS):
Unser Boulevard

- Key factors affecting delay in Year 2035 at intersections will be conflicting movements
  - Left-turn movements are critical factor for traffic operations.
- Arriving from south (northbound on Unser):
  - U-turn required for access to SW quadrant under Scheme B.
- Arriving from north (southbound on Unser):
  - No access to SE quadrant under Scheme B (requires U-turn at Rose Parks Dr, outside the sector).

Vehicular Access:

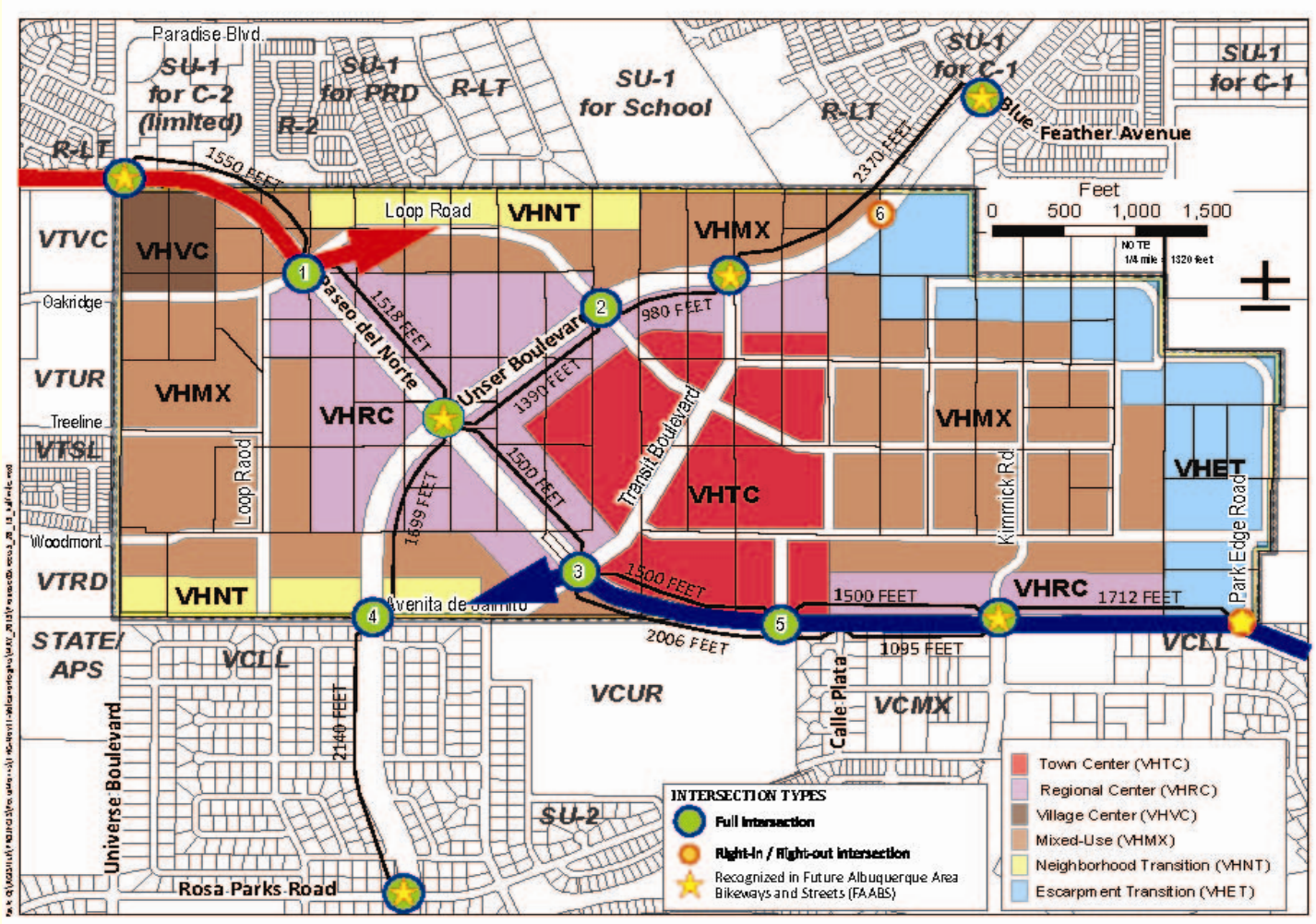
Scheme B



Vehicular Access:

Scheme D

- Direct access provided to all quadrants of Volcano Heights



Additional Vehicular Traffic Study:
Signalized Intersection Level of Service (LOS)

Year 2035 Intersection Level of Service - DRAFT PM Peak Hour	Scheme A: VHSDP		Scheme B: Policy		Scheme C: Compromise	
	Level of Service (LOS)	Avg. Delay *(seconds)*	Level of Service (LOS)	Avg. Delay *(seconds)*	Level of Service (LOS)	Avg. Delay *(seconds)*
Paseo del Norte						
Universe	C	23	C	29	C	26
#1 Loop Rd -- WEST (proposed – 1518' west of Unser)	C	31	N/A	N/A	C	33
Unser	C	33	E	78	C	31
Transit Blvd (proposed – 1410' east of Unser)	N/A	N/A	N/A	N/A	D	44
Kimmick Rd	D	37	E	74	C	33
Unser Boulevard						
#4 Loop Road – South Intersection (proposed 1699' south of Paseo del Norte)	C	31	N/A	N/A	C	29
Paseo del Norte	C	33	E	78	C	31
#2 Loop Road – North Intersection (proposed 1390' north of Unser)	C	34	N/A	N/A	D	40
Transit Blvd.	C	27	D	40	C	40

Additional Vehicular Traffic Study:
Conclusions: Scheme D

- Individual intersections will operate better with dispersal of conflicting movements.
  - Eliminates U-turns and out-of-the-way trips to access VH.
- Eliminates failing LOS E at Paseo intersections (including Paseo / Unser) under Year 2035 conditions.
- Additional intersections would primarily operate at LOS C.

Additional Vehicular Traffic Study:
Travel Speeds

- PM Peak Hour (Year 2035) comparison
  - Estimated average travel speed based on Synchro 8 progression analysis

Travel Speed Comparison (through Volcano Heights) PM Peak Hour (Year 2035 Volumes)	Scheme A: VHSDP	Scheme B: Policy	Scheme C: Compromise
Paseo del Norte			
Eastbound	25 mph	29 mph	24 mph
Westbound	20 mph	19 mph	22 mph
Overall	**22 mph**	**23 mph**	**22 mph**
Unser			
Northbound	23 mph	23 mph	21 mph
Southbound	21 mph	28 mph	23 mph
Overall	**22 mph**	**25 mph**	**23 mph**

Additional Vehicular Traffic Study:
Travel Speeds

- PM Peak Hour (Year 2035) comparison
  - Estimated average travel speed based on Synchro 8 progression analysis

Travel Speed Comparison (through Volcano Heights) PM Peak Hour (Year 2035 Volumes)	Scheme A - Modified: VHSDP + 1T (add signal @ Paseo & Transit Blvd.)	Scheme B: Policy	Scheme A + 2T: (Signalized T-intersections on Paseo @ Transit Blvd. & Kimmick Rd.)
Paseo del Norte			
Eastbound	25 mph	29 mph	25 mph
Westbound	20 mph	19 mph	20 mph
Overall	**22 mph**	**23 mph**	**22 mph**
Unser			
Northbound	23 mph	23 mph	23 mph
Southbound	21 mph	28 mph	21 mph
Overall	**22 mph**	**25 mph**	**22 mph**

Additional Vehicular Traffic Study:
Year 2035 Peak Hour Travel Speeds

- Year 2035 travel speed on Paseo increases by 1 mph under both Scheme A and C, due to dispersal of turning movements to multiple locations.
  - Baseline travel speed on Paseo del Norte with forecasted Year 2035 volumes will be 23 mph during PM Peak Hour.
- Unser travel time potentially degrades by 3 to 5 mph (on segment through Volcano Heights sector).
  - Baseline travel speed on Unser with forecasted Year 2035 volumes will be 21 mph during PM Peak Hour.
  - Reduced travel speed primarily results from assumed signal progression favoring east/west movement on Paseo del Norte.

Volcano Heights Sector Development Plan

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http://www.cabq.gov/planning/residents/sector-development-plans/volcano-mesa-area-sector-development-plans/volcano-heights-sector/

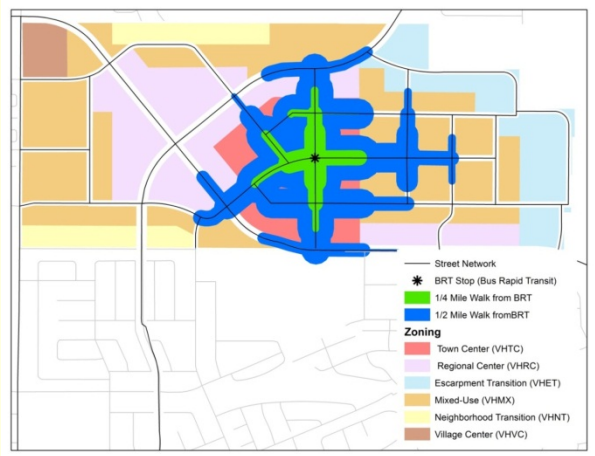
Pedestrian Analysis:

Scenario 1: Single Bus Rapid Transit Stop

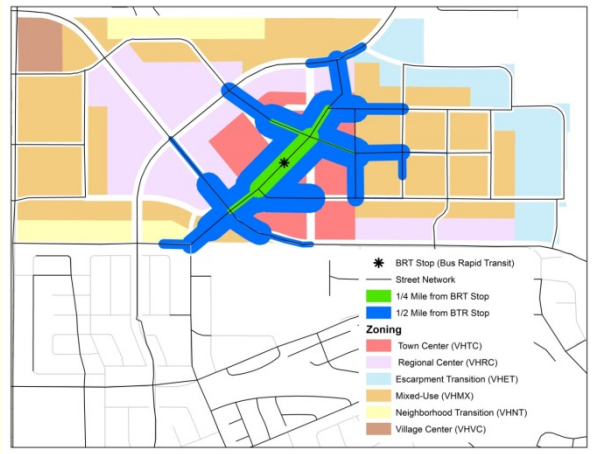
TABLE 1: Single Bus Rapid Transit Stop Scenario		
	Scheme A	**Scheme B**
Total accessible acres in a 1/2 mile walk or less	75.6	55.7
Total acres accessible in Town Center	50.8	37.1
Percent of Town Center Accessible	75%	55%

Note: Analysis assumes that pedestrians can cross any intersection, regardless of whether it is right-in/right-out or a signalized full-access intersection.

Scheme A



Scheme B



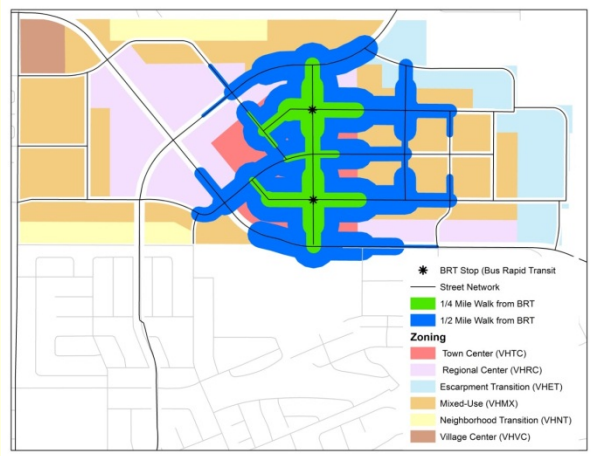
Pedestrian Analysis:

Scenario 2: Two Bus Rapid Transit Stops

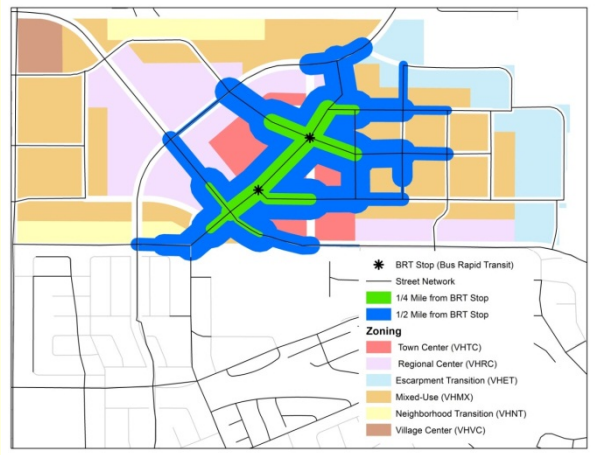
TABLE 1: Single Bus Rapid Transit Stop Scenario		
	Scheme A	**Scheme B**
Total accessible acres in a 1/2 mile walk or less	102.7	92.0
Total acres accessible in Town Center	57.4	47.0
Percent of Town Center Accessible	85%	70%

Note: Analysis assumes that pedestrians can cross any intersection, regardless of whether it is right-in/right-out or a signalized full-access intersection.

Scheme A



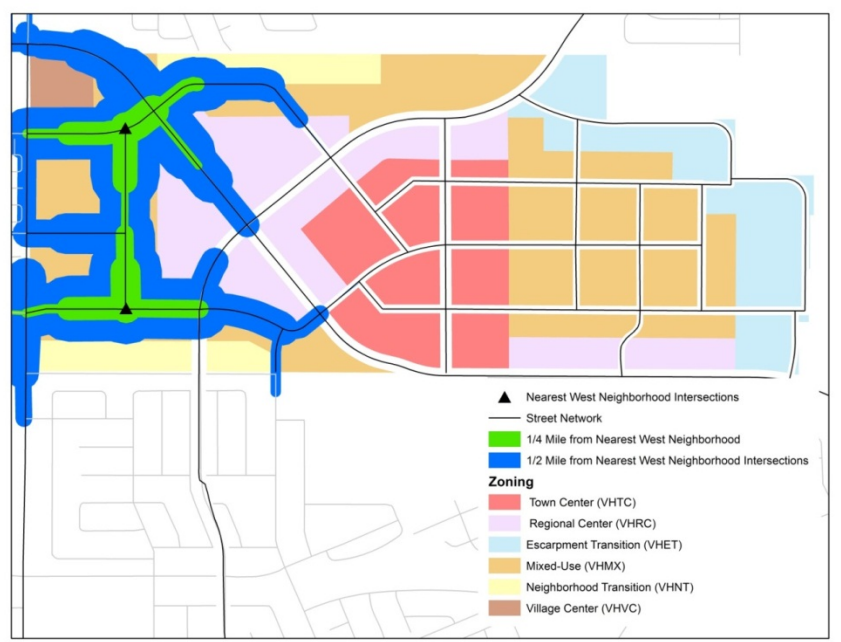
Scheme B



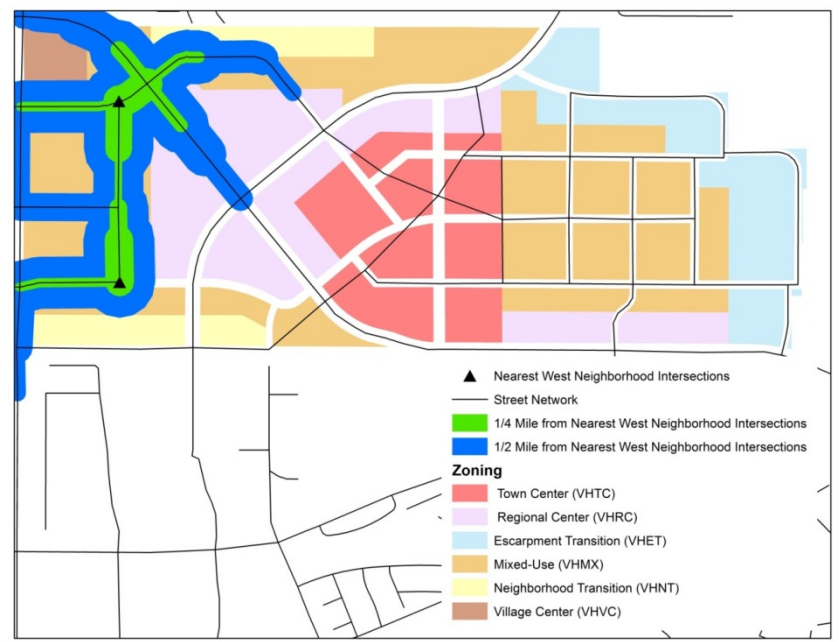
Pedestrian Analysis:

Scenario 3: Access from Neighborhoods West of Universe

Scheme A



Scheme B



Note: Analysis assumes that pedestrians can cross any intersection, regardless of whether it is right-in/right-out or a signalized full-access intersection.