

Kino to DeMoss-Petrie 138 Kilovolt (kV)
Transmission Line Project



Open House Meeting #3
(Virtual)

Presented:
Tuesday, October 6, 2020
6-8 p.m.



Why a Virtual Open House?

- The Project is needed by 2023 to meet TEP's long-term planning requirements.
- TEP must continue public outreach during the pandemic to keep the Project on schedule.
- Federal, state and local orders and ordinances, as well as guidance from health officials, continue to restrict and advise against large public gatherings.

Agenda

- How to Submit Questions
- Introductions
- Live Stream Event #1 Recap
 - Undergrounding discussion
- Purpose & Need
- Project Benefits
- Outreach
- Comments
- Philosophy & Criteria
- Criteria of Concern
- Analysis
- Routes Still Under Consideration
- Schedule
- Next Steps
- More Information
- Comment Deadline
- Comment Submittal
- Questions

How to submit questions during virtual presentation:

- Via text message at 520-302-5527
- Via phone at 520-918-9206



TEP Line Siting Team Introductions



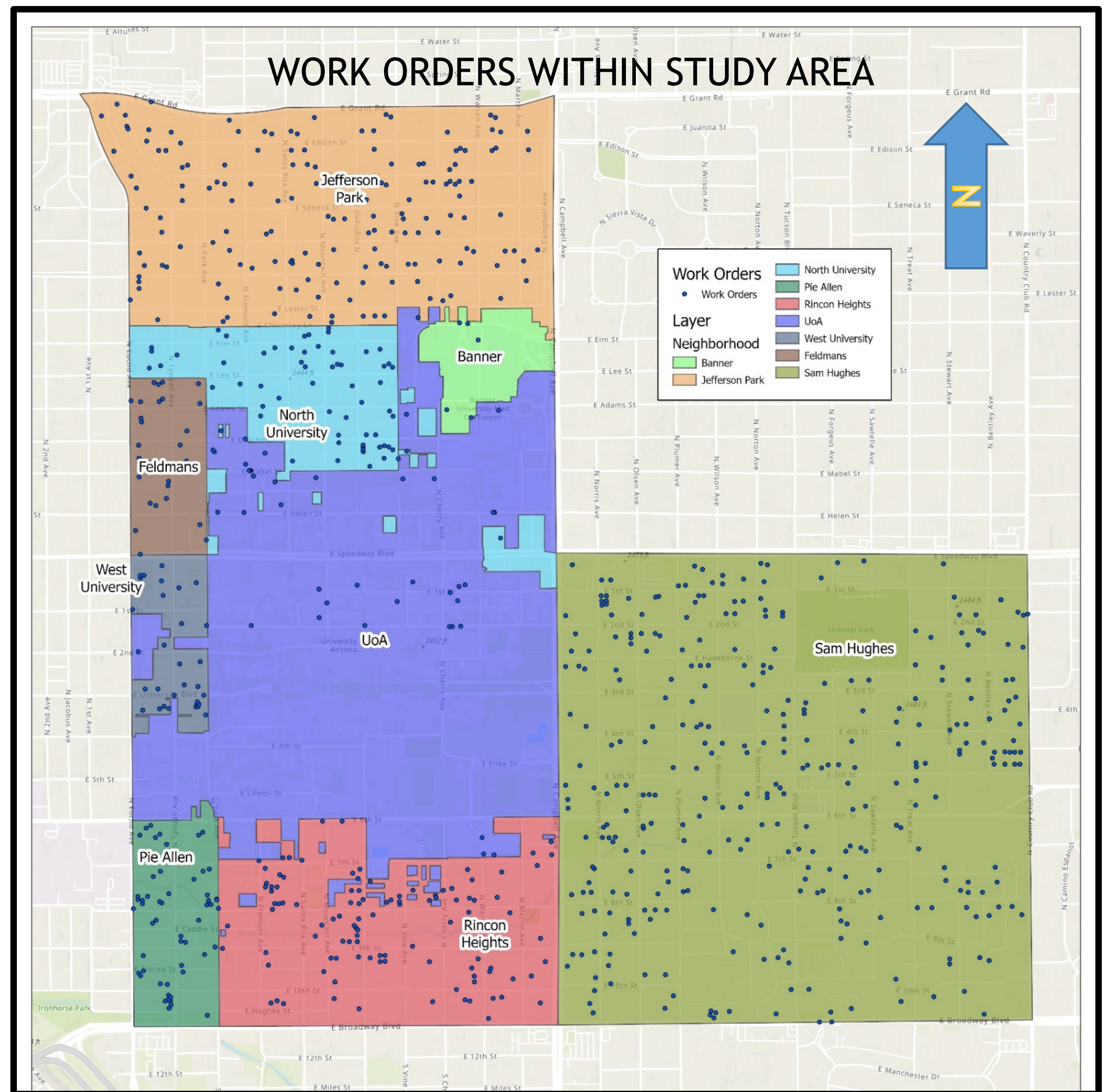
Live Stream Event # 1 Recap

Undergrounding Discussion

- TEP will be moving forward with a minimum of three overhead routes in the CEC application.
- TEP will continue to work with neighborhoods, businesses and other impacted parties to identify potential funding sources or mechanisms to pay for the additional cost of undergrounding.

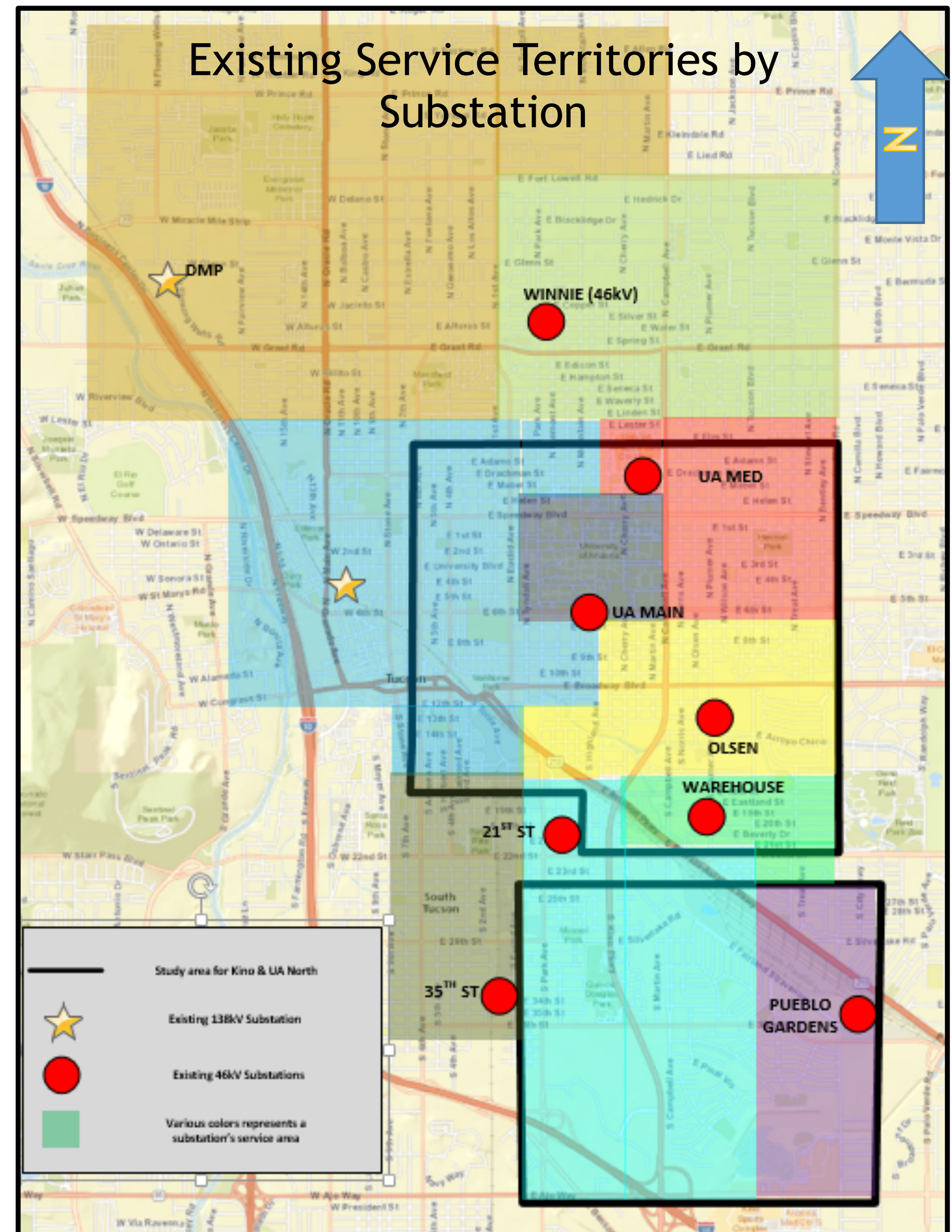
Purpose & Need

- In 2008, TEP studies determined new facilities would be needed in the Project area to meet future energy demands.
- Energy demand within the project area is approaching levels that require upgrades.
- Work orders shown involve a service upgrade.



Purpose & Need

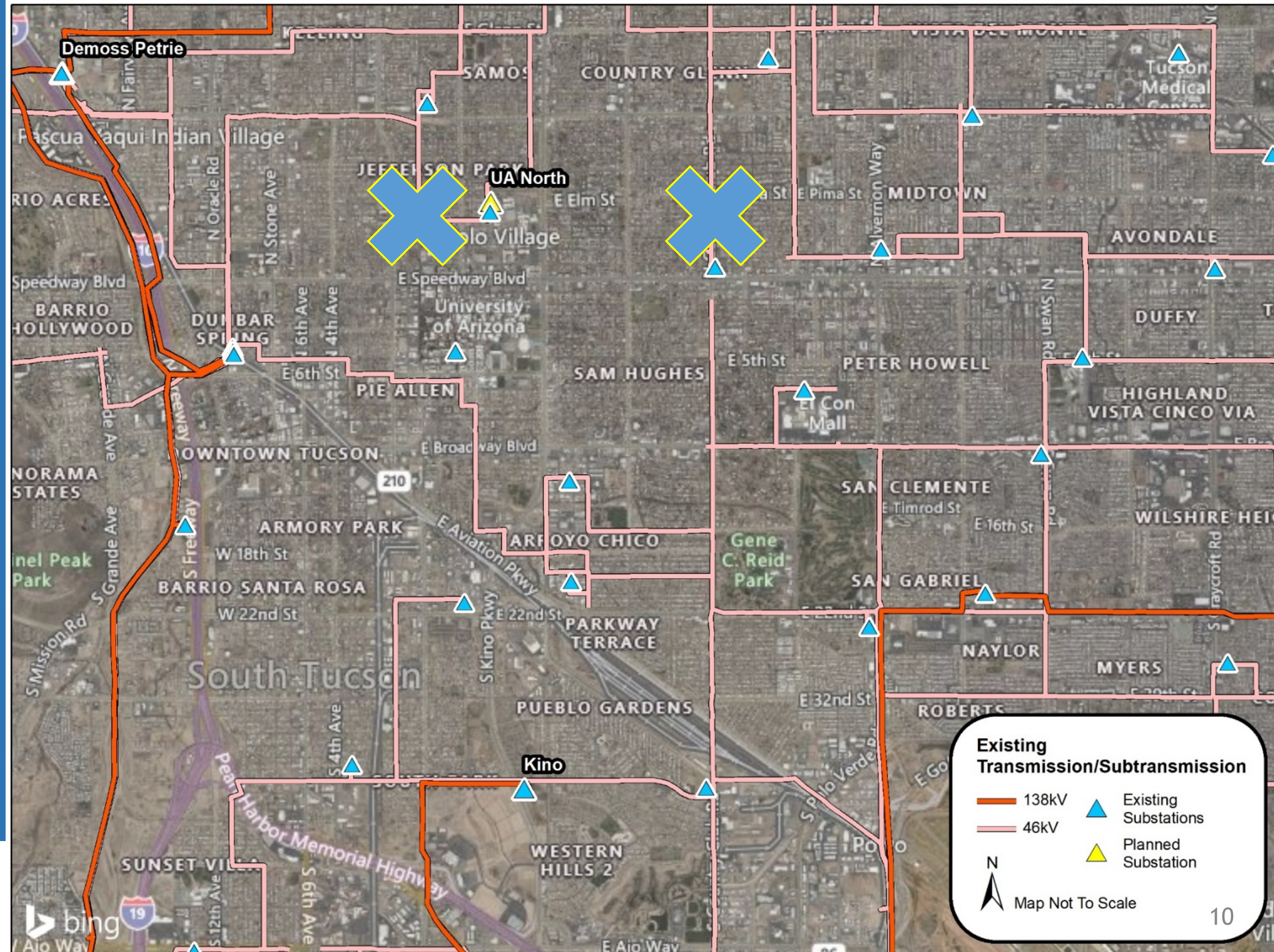
Substation	Percentage Loading for			Equipment near end of life
	Transformer	Circuit	Contingency	
	Current	Current	Current	
21st Street	89	93	100	
35th Street	71	80	151	Transformer
DeMoss-Petrie (DMP)	94	102	126	Transformer
Kino (New)	n/a	n/a	n/a	
Olsen	65	116	108	Breakers
Pueblo Gardens	72	72	81	
Tucson	112	95	108	
UA Main	81	81	66	
UA Medical	45	133	90	Transformer, Breakers, Switchgears
Warehouse	57	112	84	Transformer, Switchgears, Switches
Winnie	125	170	103	Transformer, Switchgears, Switches



Purpose & Need

- UA North Substation will alleviate demand placed on existing 46 kV circuits, providing contingency support in and around the study area, allowing TEP greater flexibility to respond to outages.

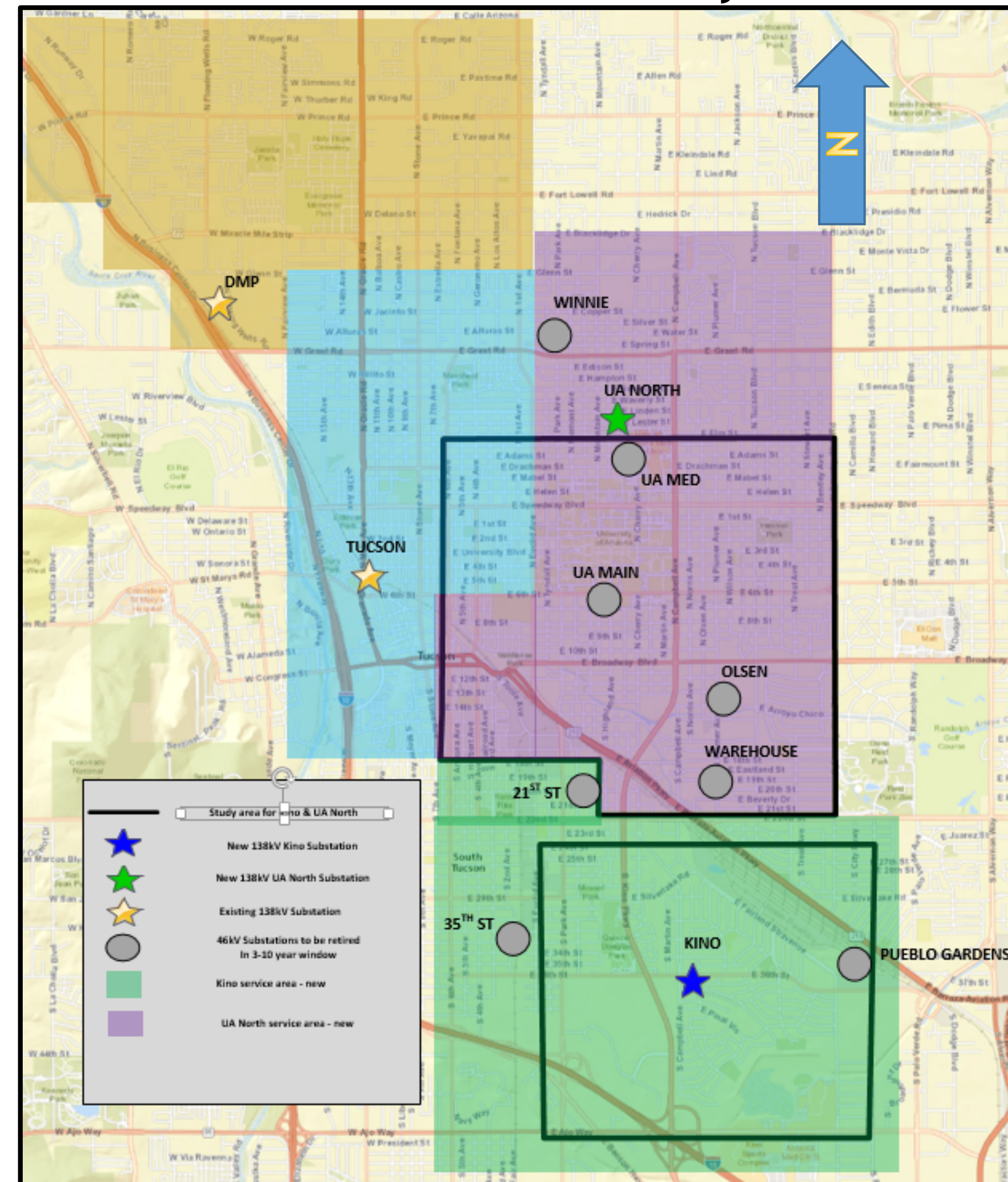
Existing 46kV System



Project Benefits

Substation	Percentage Loading for			Equipment near end of life
	Transformer	Circuit	Contingency	
	Planned	Planned	Planned	
21st Street	70	75	80	
35th Street	70	75	80	Transformer
DeMoss-Petrie (DMP)	70	75	80	Transformer
Kino (New)	70	75	80	
Olsen	65	75	80	Breakers
Pueblo Gardens	70	72	81	
Tucson	70	75	80	
UA Main	n/a	n/a	n/a	
UA Medical	45	75	80	Transformer, Breakers, Switchgears
Warehouse	57	75	75	Transformer, Switchgears, Switches
Winnie	70	75	80	Transformer, Switchgears, Switches

Future Service Territories by Substation

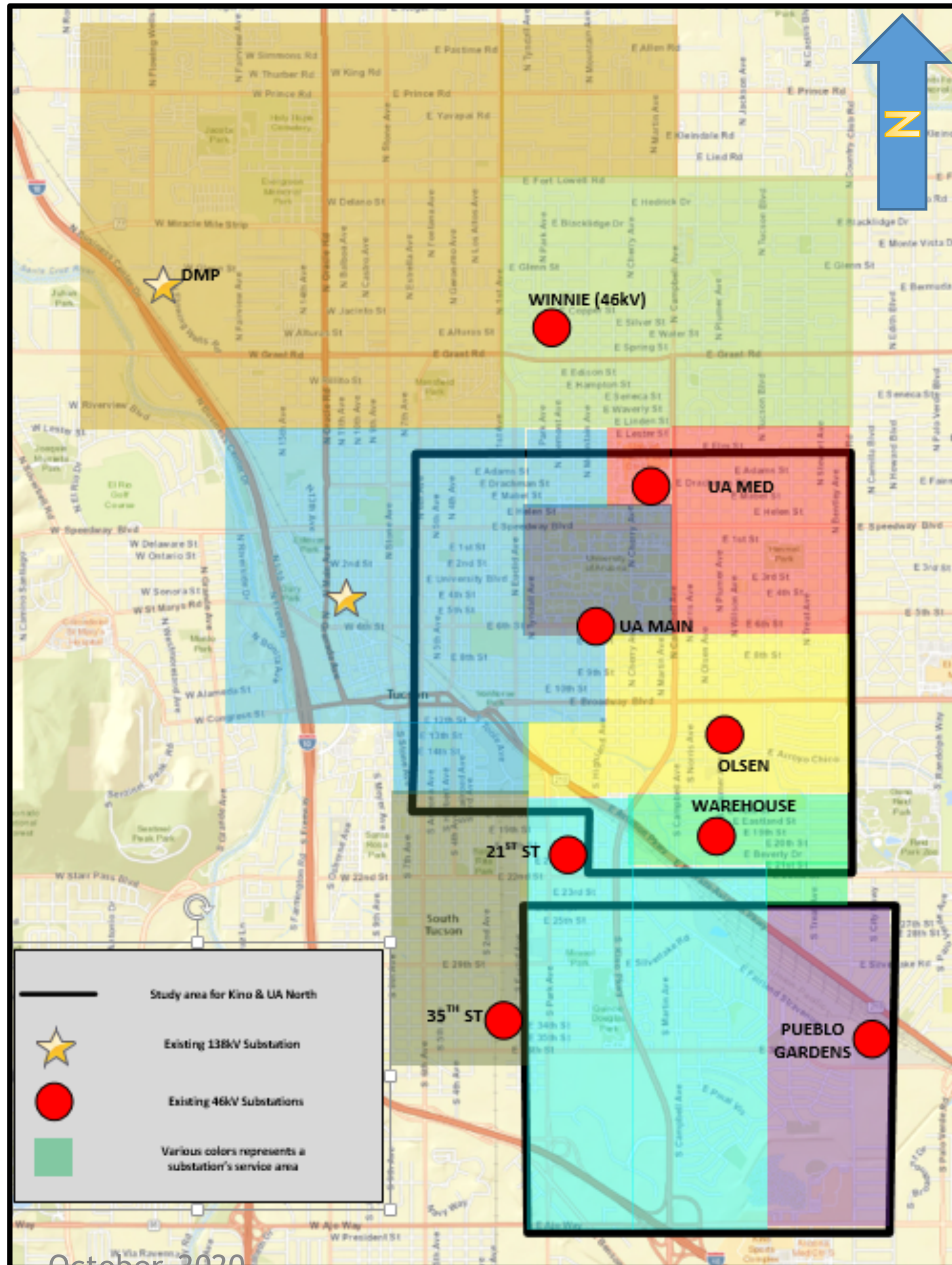


Project Benefits

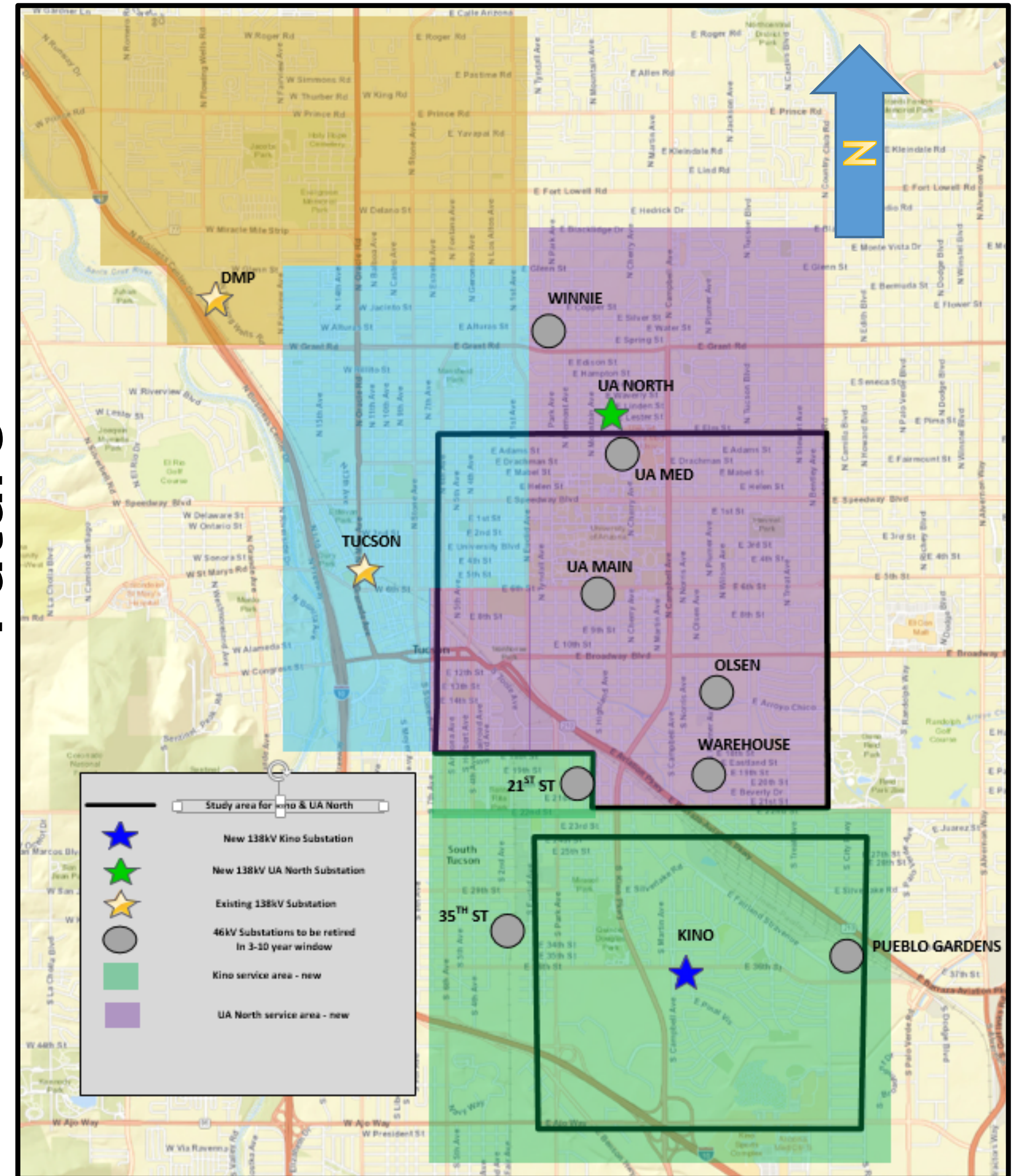
Existing Service Territories by Substation

Future Service Territories by Substation

Existing



Future

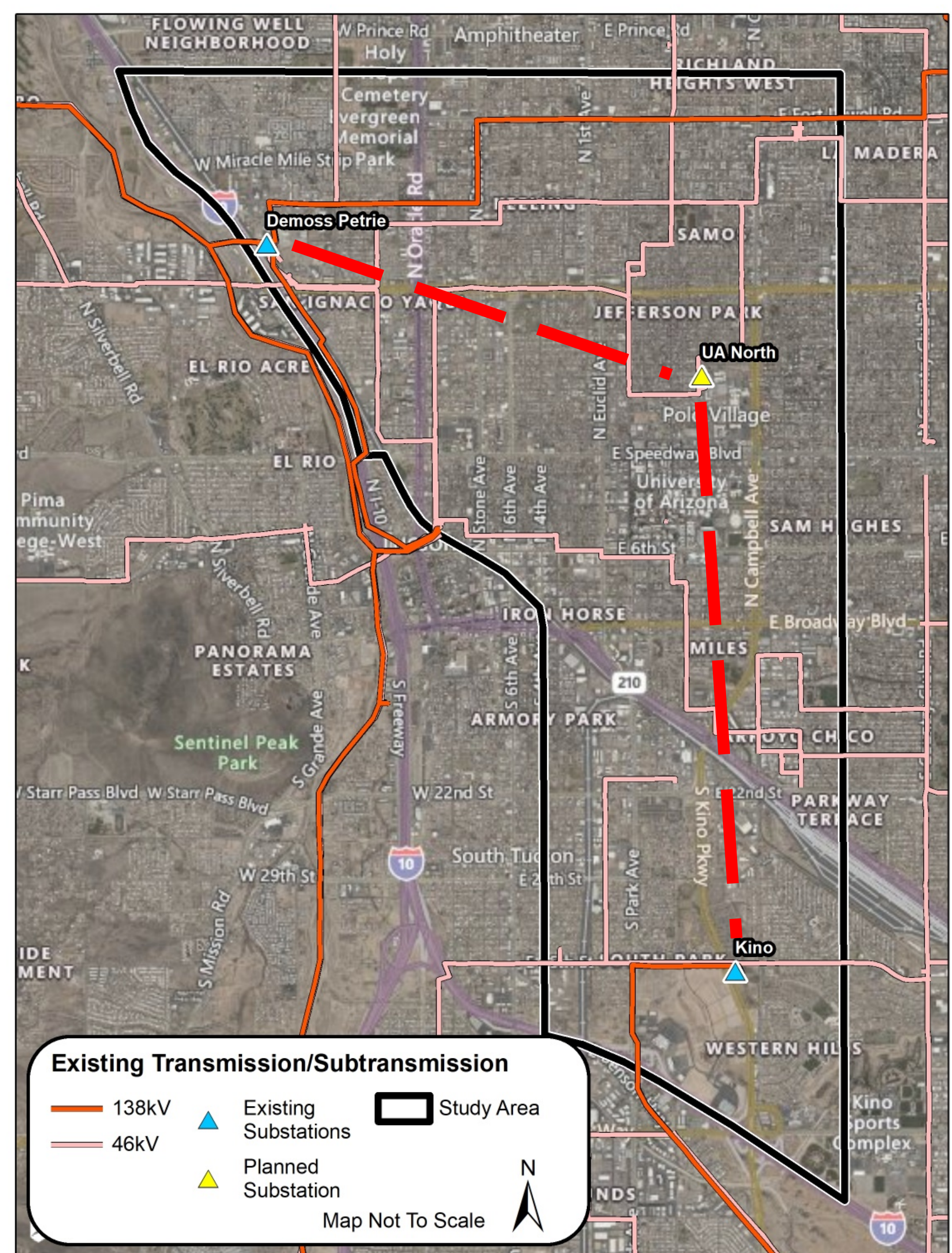


Project Benefits

- The project will create a “looped” 138 kV transmission system that will interconnect both the Kino and UA North 138 kV Substations to TEP’s existing infrastructure.
- Improved electric reliability. New energy infrastructure will strengthen reliability for homes and businesses in the study area by adding redundancy.

Existing Transmission System

Does not indicate a final route



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Outreach

- Local public official briefings:
 - Ongoing since September 2019
- Public outreach:
 - Open House Meetings held Oct. 22-23, 2019
 - Open House Meetings scheduled for March 17-18, 2020 canceled due to COVID-19 emergency
 - Project Update provided online April 2020
 - Virtual Open House Meeting held August 13, 2020
 - Virtual Open House Meeting held October 6, 2020
- Community Working Group:
 - Oct. 9, 2019 Aug 6, 2020
 - Dec. 4, 2019 Aug. 20, 2020
 - Feb. 12, 2020 Oct. 15, 2020
- Stakeholder meetings:
 - Oct. 9, 2019
 - Dec. 19, 2019
 - Ongoing email updates



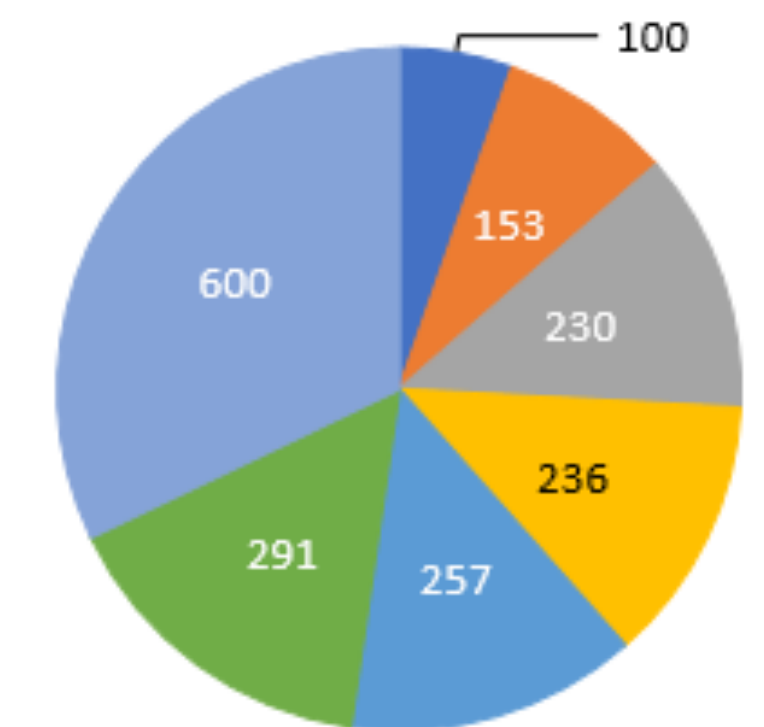
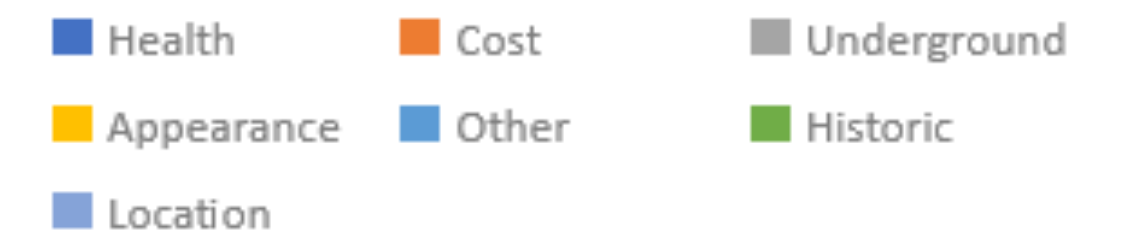
Comments

Comments:

- TEP received 717 comments as of as of September 25, 2020*
- 75% responded to
- 10% response in prep
- 9% no response required
- 6% unable to respond

Topics of Concern	Totals
Appearance	236
Cost	153
Health	100
Historic	291
Location	600
Other	257
Underground	230

Topics of Concern



* Note: A commenter may have commented on multiple topics.



Philosophy & Criteria

When developing a project TEP makes every effort to:

- Design routes that will utilize existing road rights-of-way and utility corridors in an effort to minimize disturbance to surrounding areas.
- Underground or retire existing distribution facilities where the proposed line is in the same alignment as existing infrastructure.
- Work with neighbors and other stakeholders to identify concerns and develop alternatives that are in the best interest of the community.

Philosophy & Criteria

In addition to public and other stakeholder comment, TEP analyzed the following specific criteria in selecting the alternative routes to carry forward :

- Ability to Use Existing Road Right-of-Way and TEP Facilities
- Compatibility with Existing and Future Land Use Plans
- Residential Use
- Historic Properties
- Sensitive Receptors
- Room for Separation from Conflicting Uses
- Viewshed
- Cultural Resources
- Biological Resources
- 100-Year Floodplain
- Ability to Construct and Maintain the line
- Cost

CWG Criteria of Concern

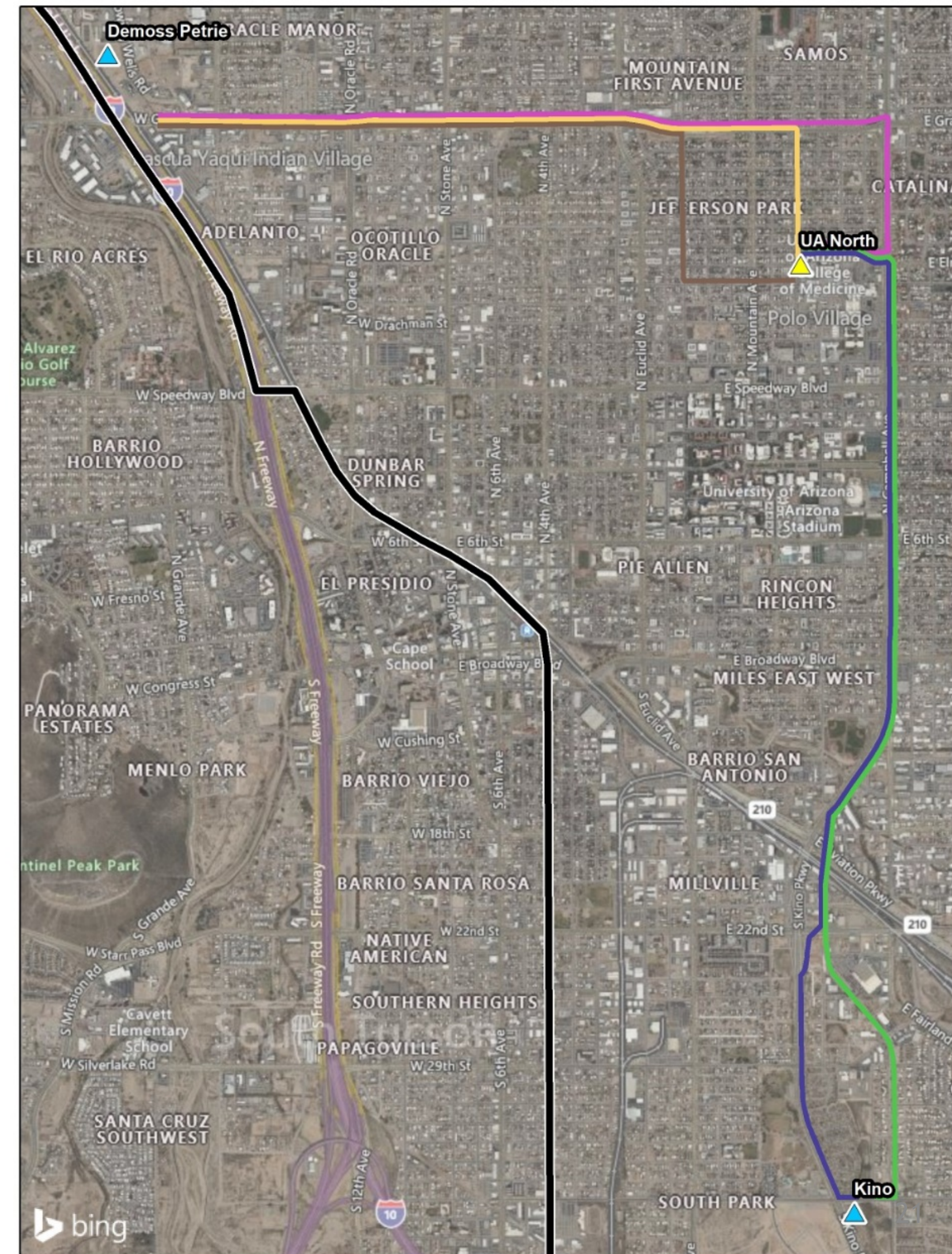
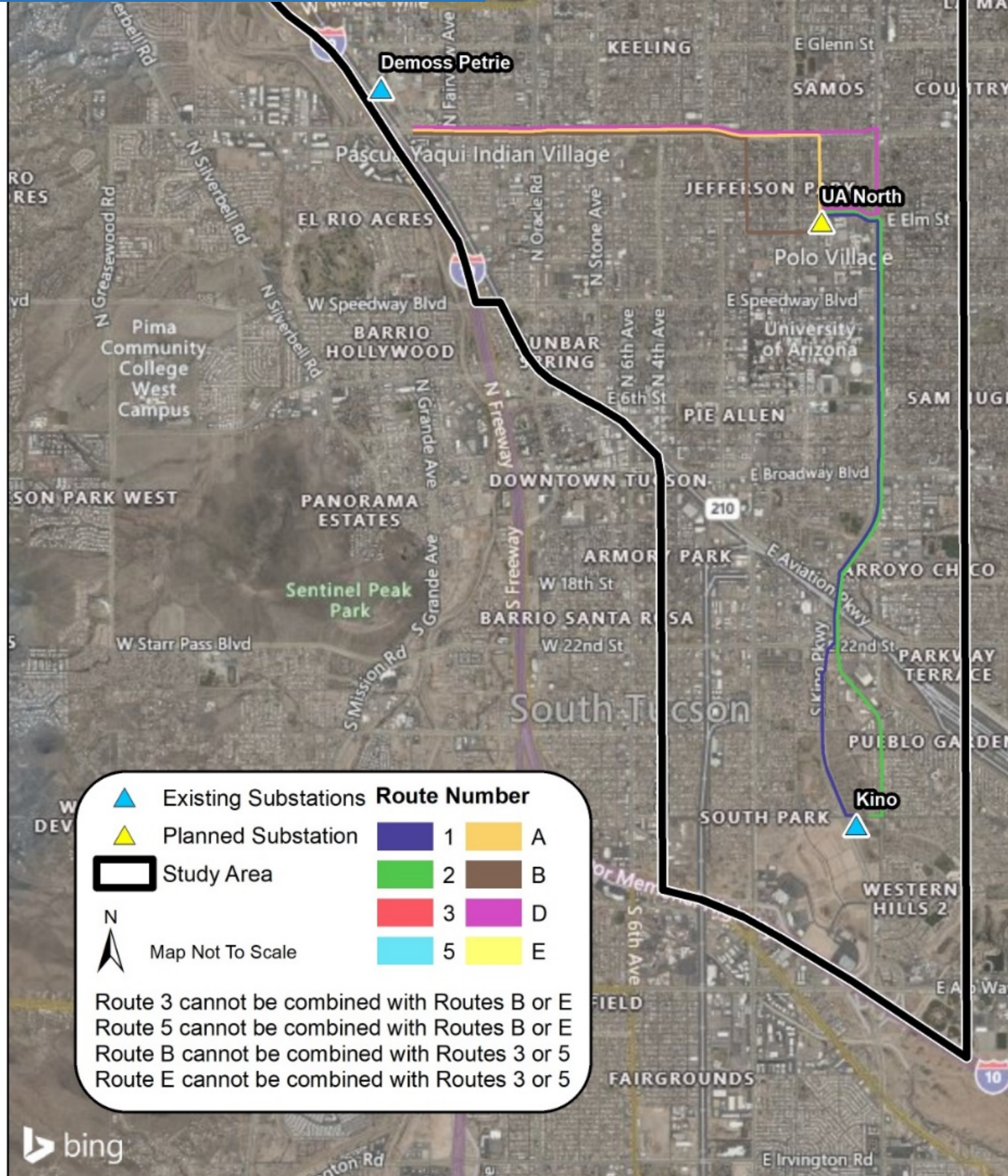
Community Working Group Criteria survey:

- 7 Neighborhood Associations responded.
- Top 4 Concerns of each neighborhood varied:
 - Residential Use = 5
 - Historic Properties/Districts = 5
 - Sensitive Receptors = 4
 - Existing Corridor = 4
 - Viewshed = 2
 - Ability to Construct = 2
 - Cost = 2
 - Land Use = 2
 - Special Status Species = 1
 - Room for Separation = 1

Agenda

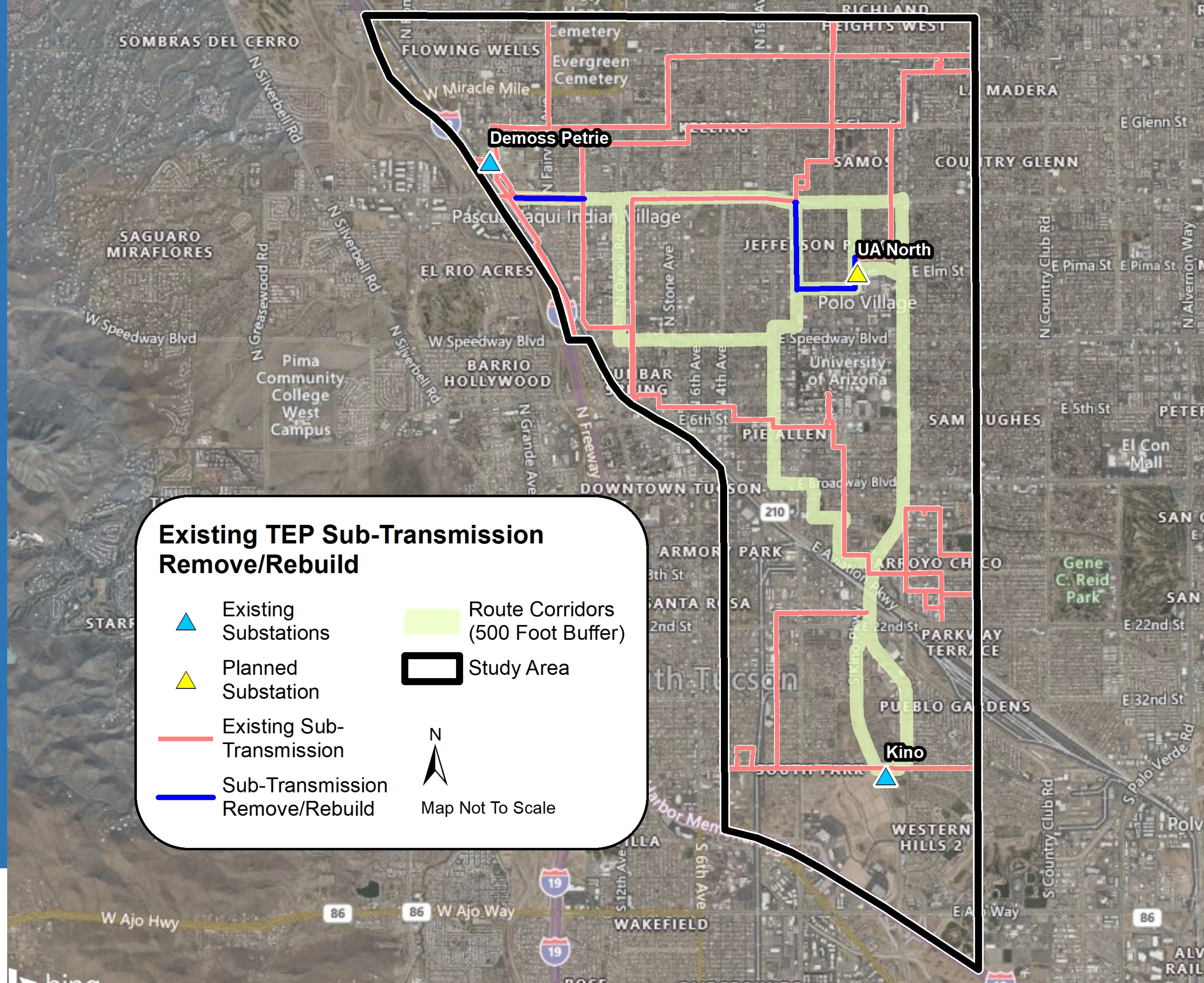
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Phase 3 Analysis: Preliminary Routes Analyzed



Phase 3 Analysis:

1. Ability to Use Existing Road Right-of-Way and TEP Corridors



Phase 3 Analysis:

1. Ability to Use Existing Road Right-of-Way and TEP Corridors

Factors considered include:

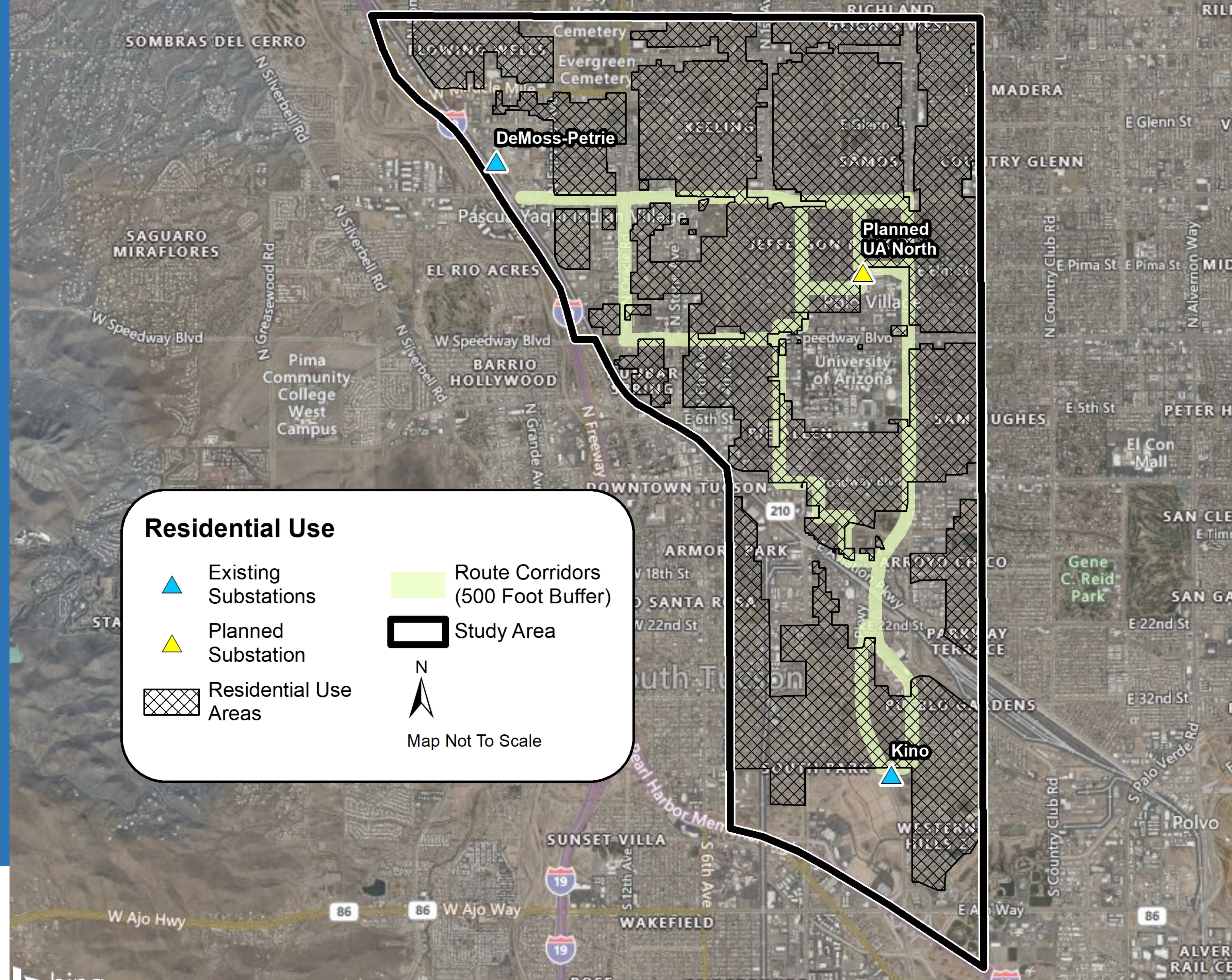
- Percent of project in existing road right-of-way (91.6-96.6%)
- Percent of existing TEP 46kV transmission that can be replaced and rebuilt to 138kV (6.8-21.4%)
- 29% CWG top criteria/ 1X weight
- Comparison Scores:
 - 116-118% = 3
 - 105-109.5% = 2
 - 101-105%-1

Routes	1a	1b	1d	1e	2a	2b	2d	2e	3a	3d	5a	5d
Comparison Score (1-3)	1	3	1	2	1	3	1	2	2	2	2	1



Phase 3 Analysis:

3. Residential Use



Phase 3 Analysis:

3. Residential Use

Factors considered include:

- Percent of existing and planned residential use in a 500 foot corridor (41.3 - 58.8%)
- 84% Public Comments (location)/ 71% CWG top criteria/ 5x weight
- Weighted Comparison Scores ranged from 0.30-0.40

Routes	1a	1b	1d	1e	2a	2b	2d	2e	3a	3d	5a	5d
Weighted Comparison Score	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.30	0.30	0.30	0.30



Phase 3 Analysis:

4. Historic Properties/Districts

- Built Environment Study completed by consultant
- Factors considered include:
 - Bisecting vs. bordering historic districts
 - Street designation
 - Existing power poles on route
 - Historic light fixtures within 800' of route
 - Historic contributing properties in 800' route buffer
 - Access of historic contributing properties along route
 - Architectural impact
- 41% Public Comments/ 71% CWG top criteria/ 3x weight

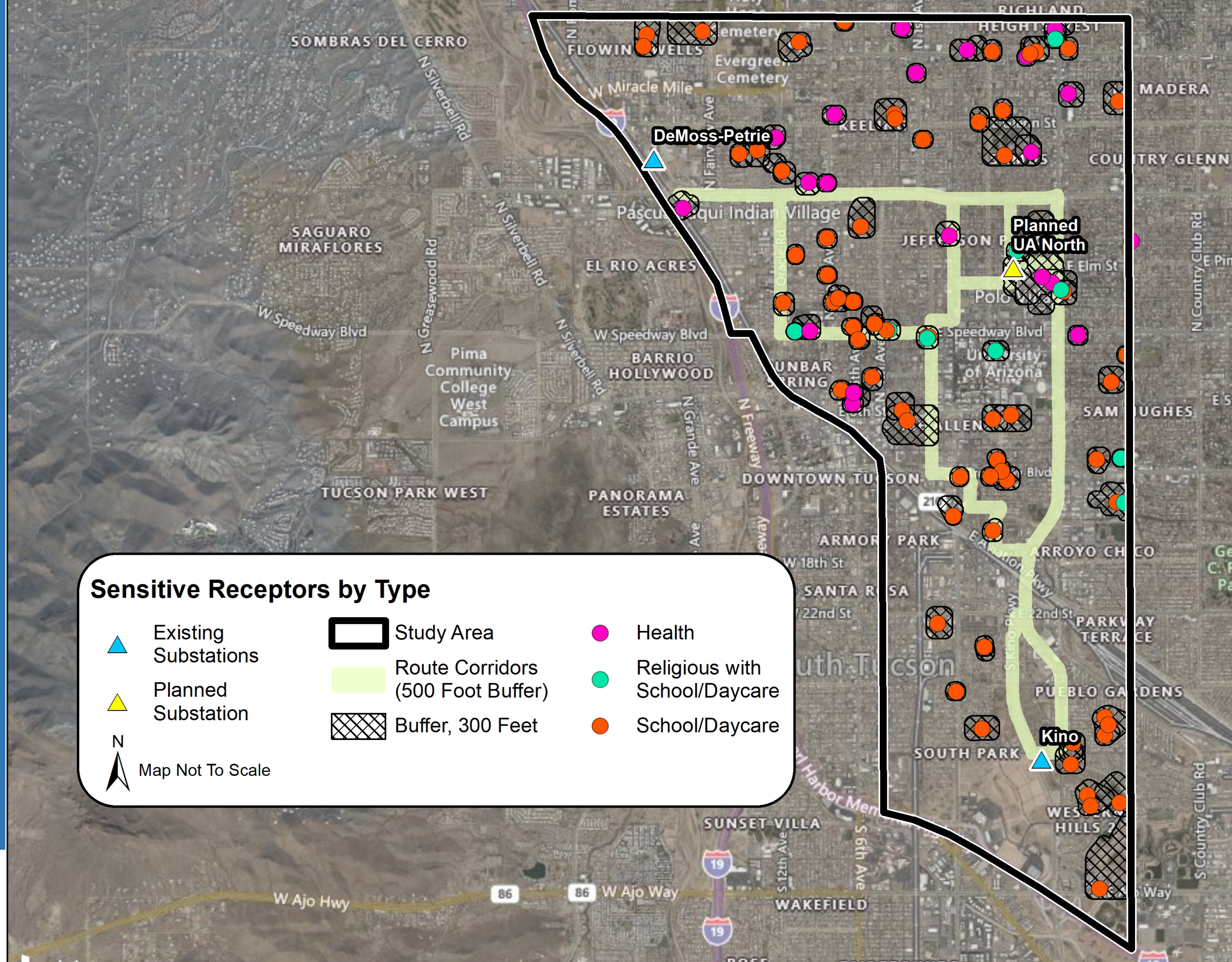
Phase 3 Analysis:

4. Historic Properties/Districts

- Weighted Comparison Scores ranged from 0.33-0.83

Routes	1a	1b	1d	1e	2a	2b	2d	2e	3a	3d	5a	5d
Weighted Comparison Score	0.67	0.75	0.83	0.33	0.67	0.75	0.83	0.33	0.33	0.33	0.33	0.33

Phase 3 Analysis: 5. Sensitive Receptors



Phase 3 Analysis:

5. Sensitive Receptors

Factors considered include:

- Number of sensitive receptors within 500 foot corridor buffer
- 14% Public Comments/ 57% CWG top criteria/ 2x weight
- Weighted Comparison Scores ranged from 0.5-1.0

Routes	1a	1b	1d	1e	2a	2b	2d	2e	3a	3d	5a	5d
Weighted Comparison Score	1	1	1	0.5	0.75	0.75	0.75	0.5	0.75	0.75	0.75	0.5

Phase 3 Analysis:

6. Room for Separation from Conflicting Utility and Infrastructure Uses

Factors considered include:

- Room for separation from conflicting uses (constructability score)
- Significant Constraints Adjustment
- 14% CWG top criteria/ 1x weight
- Comparison Scores:
 - 29-32 = 3
 - 26-28 = 2
 - 19-25 = 1

Routes	1a	1b	1d	1e	2a	2b	2d	2e	3a	3d	5a	5d
Comparison Score (1-3)	3	3	3	1	3	2	2	1	1	1	1	1



Phase 3 Analysis:

7. Viewshed

- Visual Impact Assessment by consultant
- Factors considered include:
 - Existing vs. future landscape
 - Gateway streets
 - Types of viewers
 - Degree of impact
- 33% Public Comments/ 29% CWG top criteria/ 2x weight
- Weighted Comparison Scores ranged from 1.1-1.26

Routes	1a	1b	1d	1e	2a	2b	2d	2e	3a	3d	5a	5d
Weighted Comparison Score	1.13	1.24	1.13	1.10	1.16	1.27	1.15	1.13	1.25	1.25	1.26	1.25

Phase 3 Analysis:

8. Cultural Resources

- Cultural Resources Class I Survey conducted by consultant
- Factors considered include:
 - Presence/absence of a sensitivity zone
 - Level of cultural monitoring
 - Presence of cultural resource sites
- 1x weight
- Comparison Scores ranged from 2-3

Routes	1a	1b	1d	1e	2a	2b	2d	2e	3a	3d	5a	5d
Comparison Score (1-3)	3	3	3	2	3	3	3	2	2	2	2	2



Phase 3 Analysis:

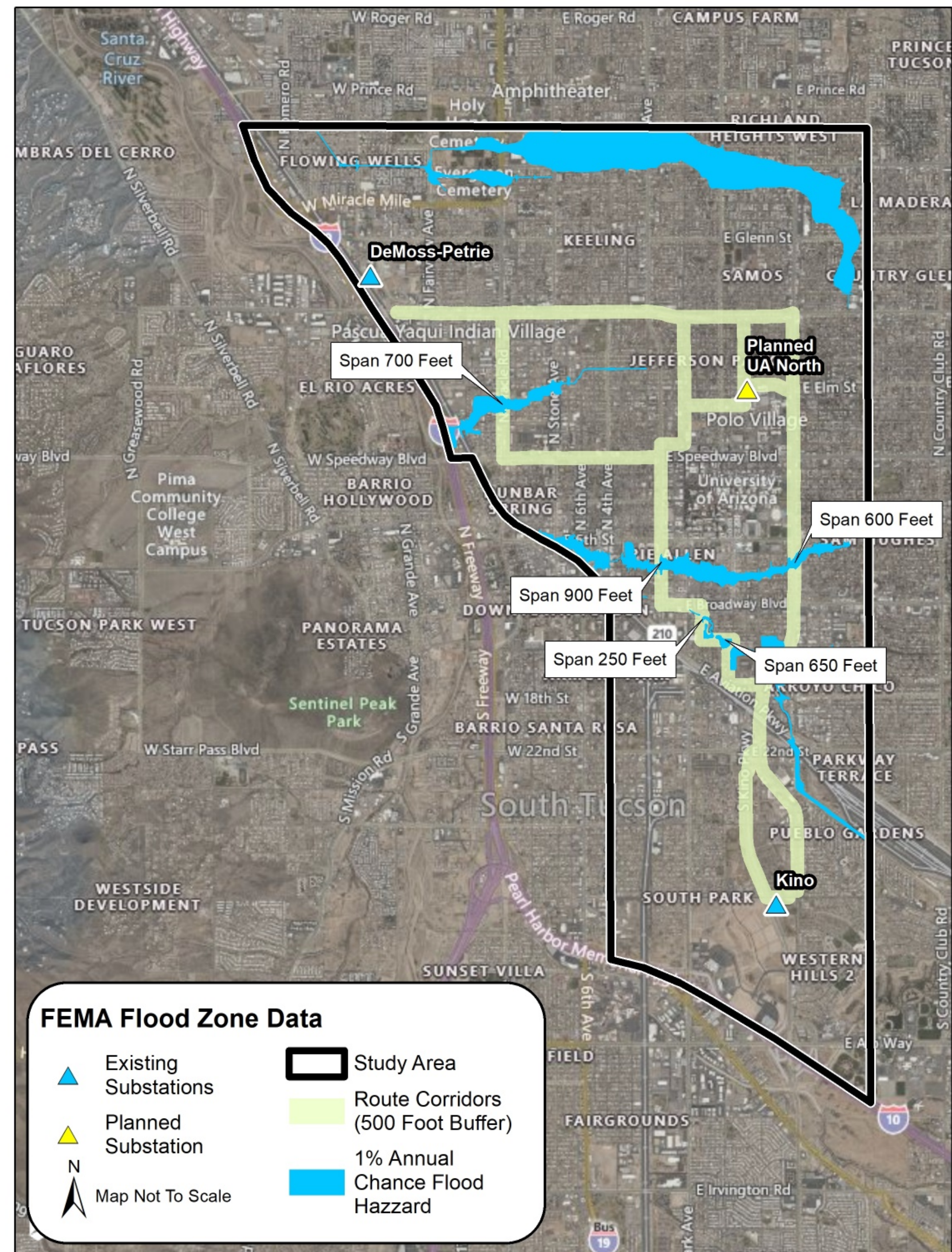
9. Biological Resources

- Biological Evaluation conducted by consultant
- Factors considered include:
 - Biotic community
 - General wildlife/vegetation
 - Wildlife linkages
 - Water resources
 - Special Status Species
 - Riparian habitat
- 14% CWG top criteria/ 1x weight
- All routes scored a 3 as there is little variation between the routes and minimal impacts identified

Routes	1a	1b	1d	1e	2a	2b	2d	2e	3a	3d	5a	5d
Comparison Score (1-3)	3	3	3	3	3	3	3	3	3	3	3	3

Phase 3 Analysis:

10. 100-Year Floodplain



Phase 3 Analysis:

10. 100-Year Floodplain

- Factor considered was whether facilities would be placed in a floodplain.
 - All floodplains can be spanned
- 1x weight
- All routes scored a 3 as there are no impacts to floodplains anticipated.

Routes	1a	1b	1d	1e	2a	2b	2d	2e	3a	3d	5a	5d
Comparison Score (1-3)	3	3	3	3	3	3	3	3	3	3	3	3

Phase 3 Analysis:

11. Ability (degree of difficulty) to Construct and Maintain the Transmission Line

- Factor considered whether any new access would have to be created to construct or maintain the facilities.
- No new access is anticipated.
- 29% CWG top criteria/ 1x weight
- All routes scored a 3 as no new access needs are anticipated.

Routes	1a	1b	1d	1e	2a	2b	2d	2e	3a	3d	5a	5d
Comparison Score (1-3)	3	3	3	3	3	3	3	3	3	3	3	3

Phase 3 Analysis:

12. Cost

- Cost was estimated based on 1M/mile standard
- Additional 10-30% was added to routes with more significant constraints
 - Route D- Grant between Campbell and Park and ELM/Ring/Chauncy
 - Routes 3 & 5 - Additional turning structures
 - Route E - Removal of 46 kV line, burying existing distribution and services
- 21% Public Comments/ 29% CWG top criteria/ 1x weight
- Comparison Scores:
 - Below 7M = 3
 - 7-8M=2.5
 - 8-9M=2
 - 9-10M=1.5
 - Greater than 10M=1

Routes	1a	1b	1d	1e	2a	2b	2d	2e	3a	3d	5a	5d
Comparison Score (1-3)	3	3	2.5	1.5	3	3	2.5	1.5	1.5	1	1.5	1

Phase 3 Analysis:

Criteria Comparison Scores

ROUTES	1a	1b	1d	1e	2a	2b	2d	2e	3a	3d	5a	5d
R/W & Corridors	1	3	1	2	1	3	1	2	2	2	2	1
Compatible w/Land Use	3	3	3	3	3	3	3	3	3	3	3	3
Residential Use	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3
Historic Properties	0.67	0.75	0.83	0.33	0.67	0.75	0.83	0.33	0.33	0.33	0.33	0.33
Sensitive Receptors	1	1	1	0.5	0.75	0.75	0.75	0.5	0.75	0.75	0.75	0.5
Room for Separation	3	3	3	1	3	2	2	1	1	1	1	1
Viewshed	1.13	1.24	1.13	1.10	1.16	1.27	1.15	1.13	1.25	1.25	1.26	1.25
Cultural Resources	3	3	3	2	3	3	3	2	2	2	2	2
Biological Resources	3	3	3	3	3	3	3	3	3	3	3	3
Floodplain	3	3	3	3	3	3	3	3	3	3	3	3
Constructability & Maintenance	3	3	3	3	3	3	3	3	3	3	3	3
Cost	3	3	2.5	1.5	3	3	2.5	1.5	1.5	1	1.5	1



Phase 3 Analysis:

Total Composite Scores

Routes	1a	1b	1d	1e	2a	2b	2d	2e	3a	3d	5a	5d
Total Comparison Score (no weight) Max 36	27	30	27	22	26	28	26	22	22	21	22	20
Total Comparison Score (Weighted) Max 36	25.20	27.39	24.86	20.83	24.97	26.17	23.63	20.86	21.13	20.63	21.14	19.38
Criteria of Most Concern Max Weighted Score=12	3.20	3.39	3.36	2.33	2.97	3.17	3.13	2.36	2.63	2.63	2.64	2.38

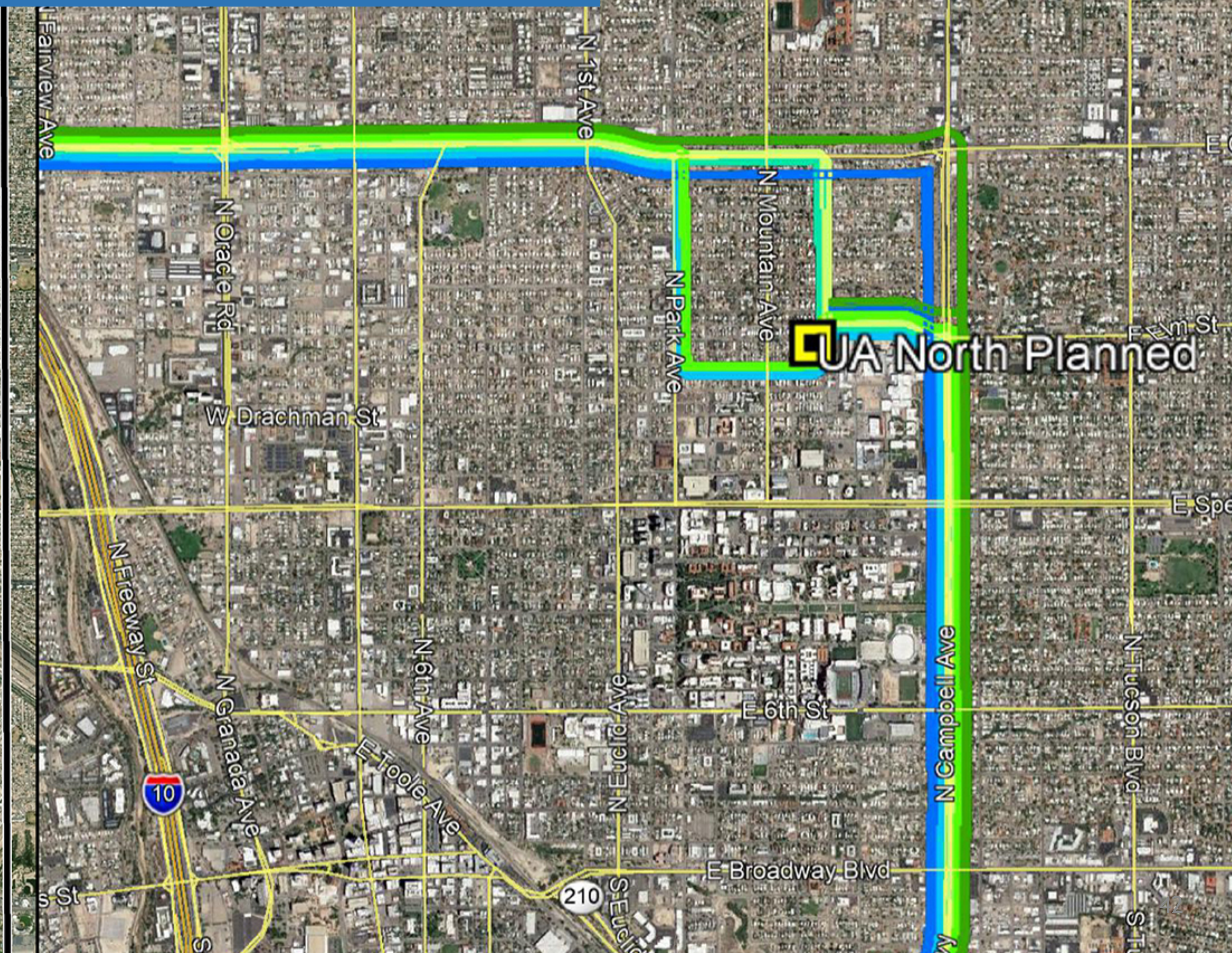
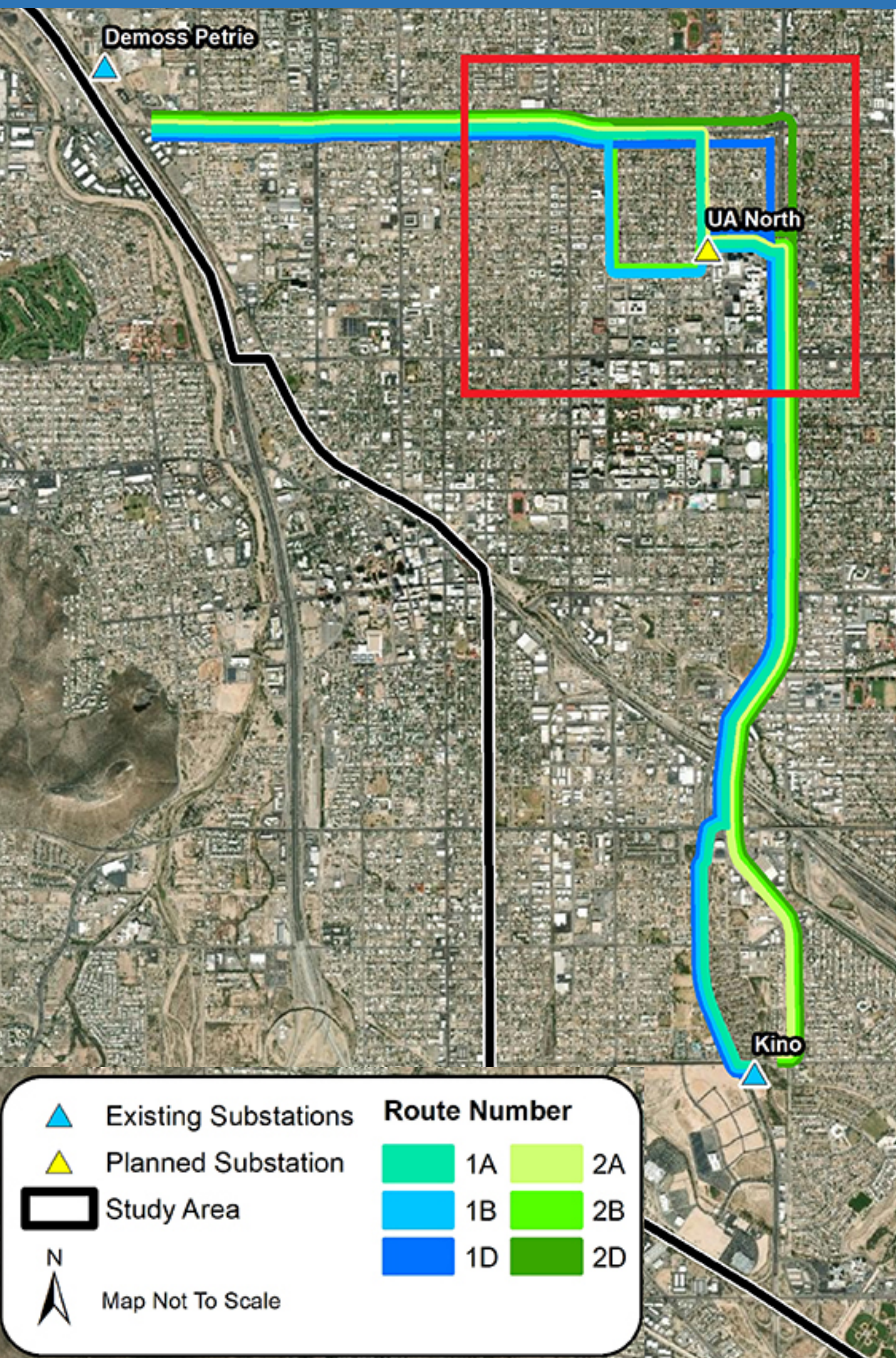


Phase 3 Analysis: Preliminary Routes Reduced

- Phase 3 analysis resulted in the reduction from 12 route combinations to six Preliminary Routes.
- Route combinations removed include:
 - 1e & 2e
 - 3a & 3b
 - 5a & 5b
- Routes still under consideration include:
 - 1 a, 1b, and 1d
 - 2a, 2b, and 2d

Phase 3 Analysis:

Preliminary Routes Still Under Consideration



Existing Substations
▲ Existing Substations
▲ Planned Substation

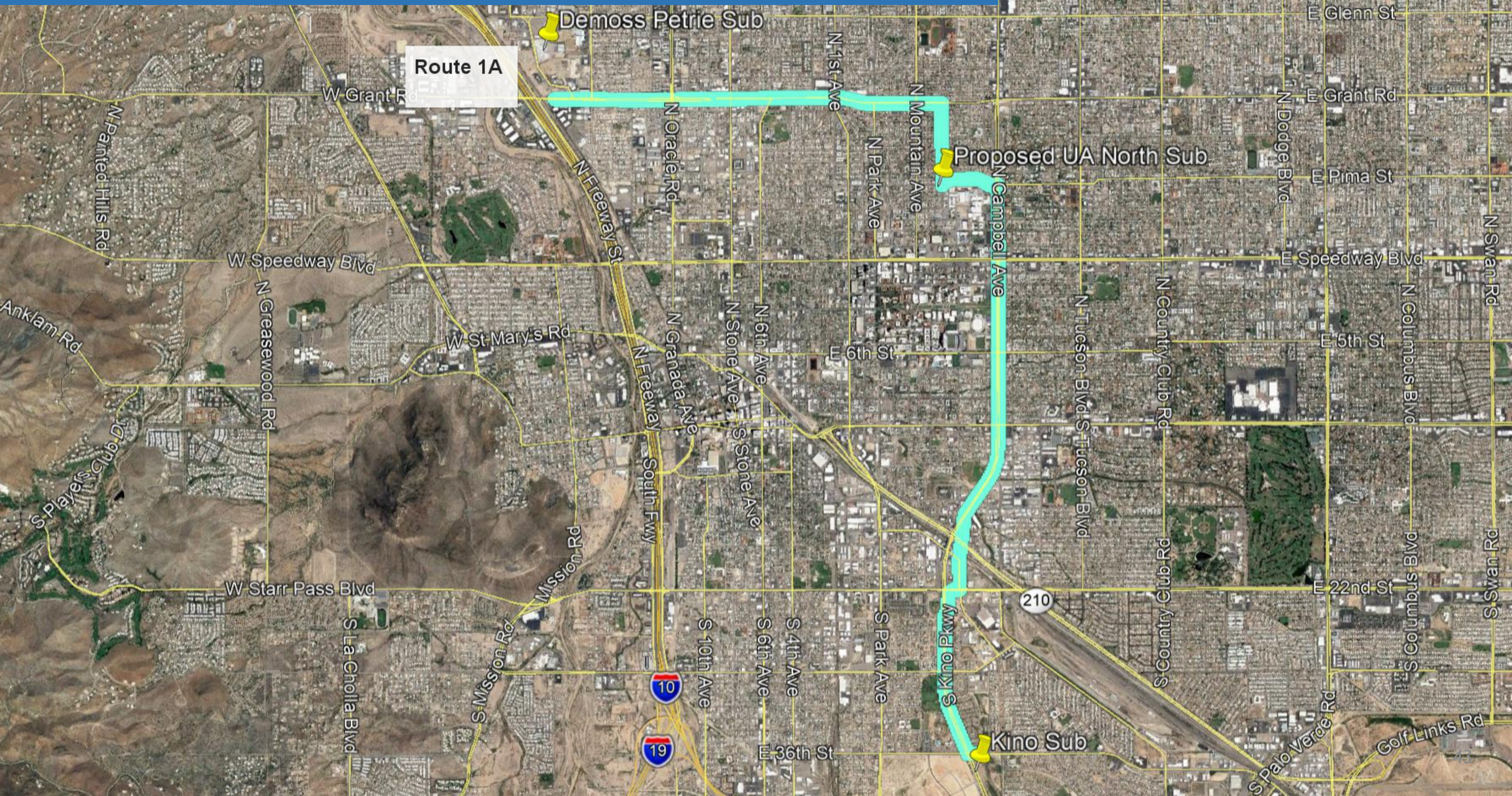
Study Area
▭ Study Area

Route Number

1A	2A
1B	2B
1D	2D

Map Not To Scale

Phase 3 Analysis: Preliminary Route 1a



Route 1A

Demoss Petrie Sub

Proposed UA North Sub

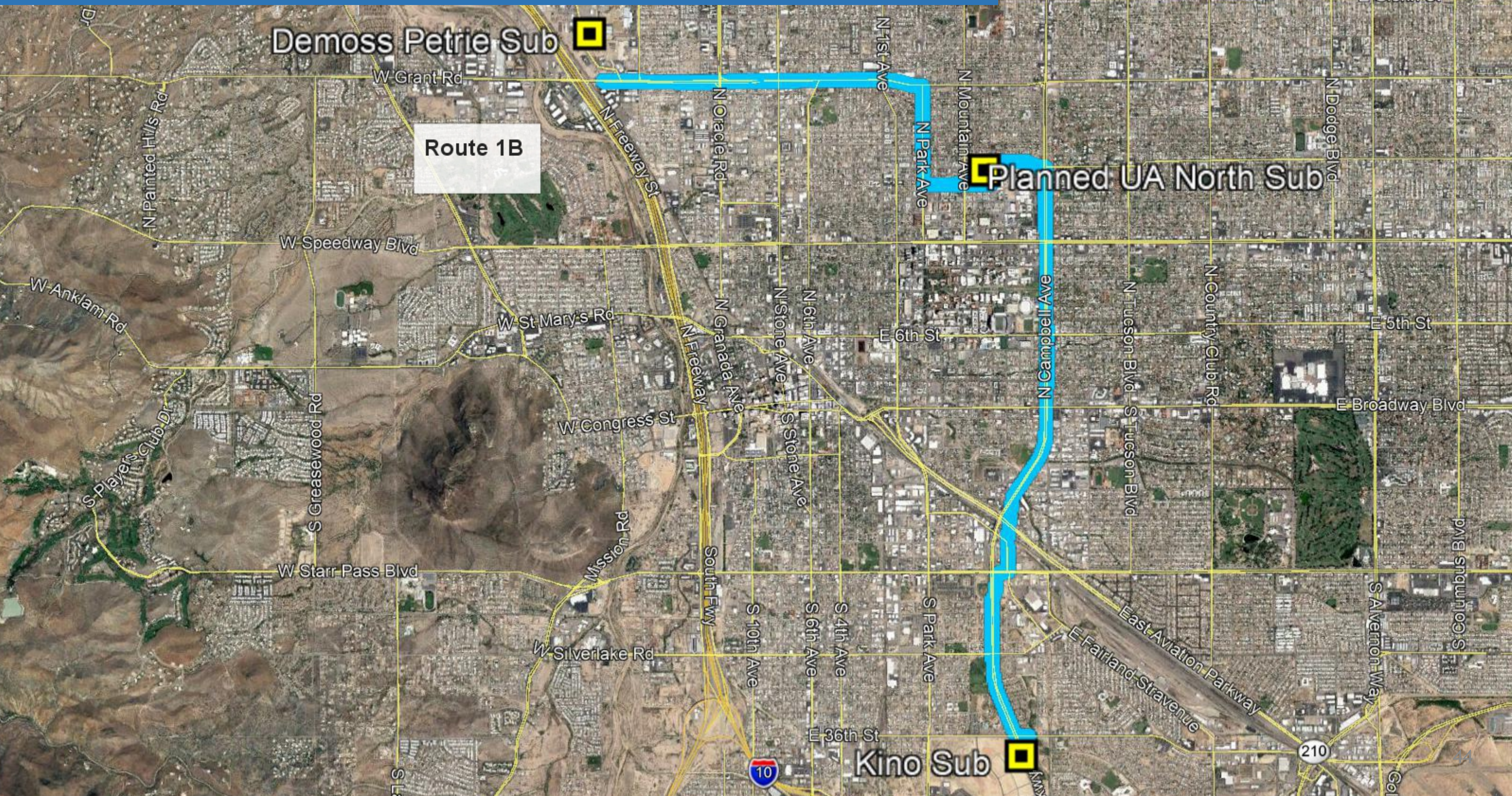
Kino Sub

10

19

210

Phase 3 Analysis: Preliminary Route 1b



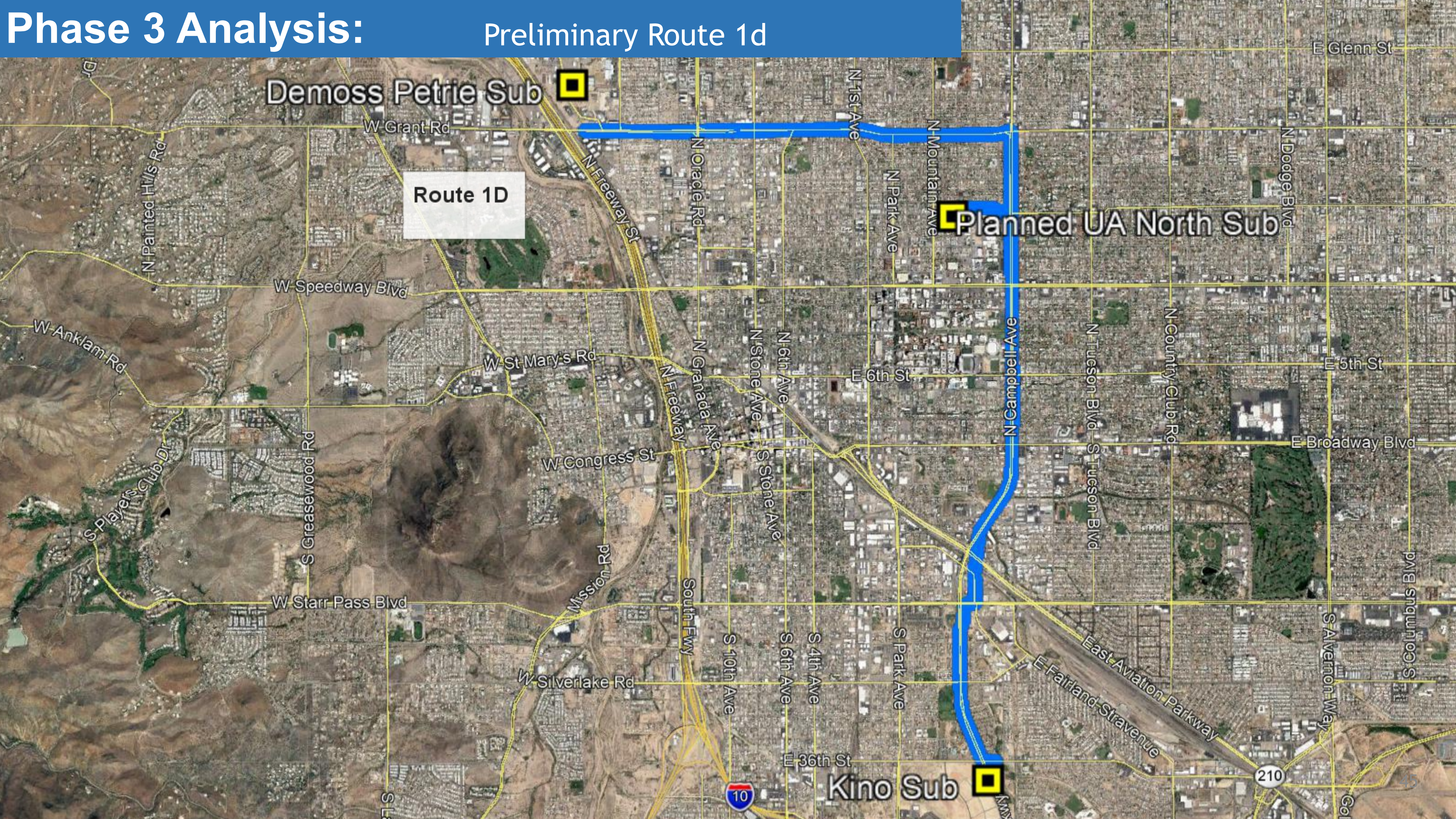
Demoss Petrie Sub

Route 1B

Planned UA North Sub

Kino Sub

Phase 3 Analysis: Preliminary Route 1d

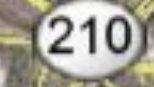


Demoss Petrie Sub

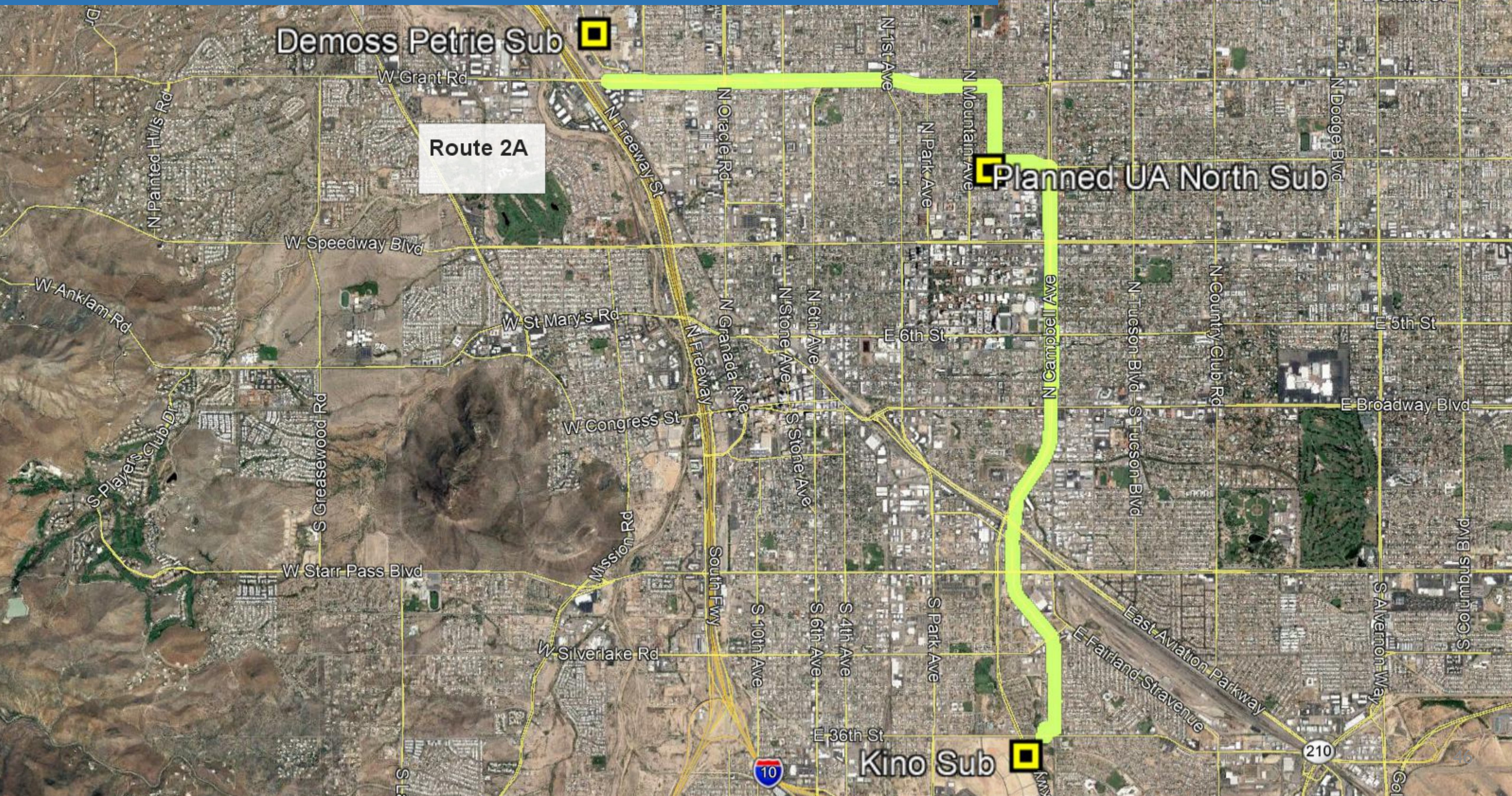
Route 1D

Planned UA North Sub

Kino Sub



Phase 3 Analysis: Preliminary Route 2a



Demoss Petrie Sub

Route 2A

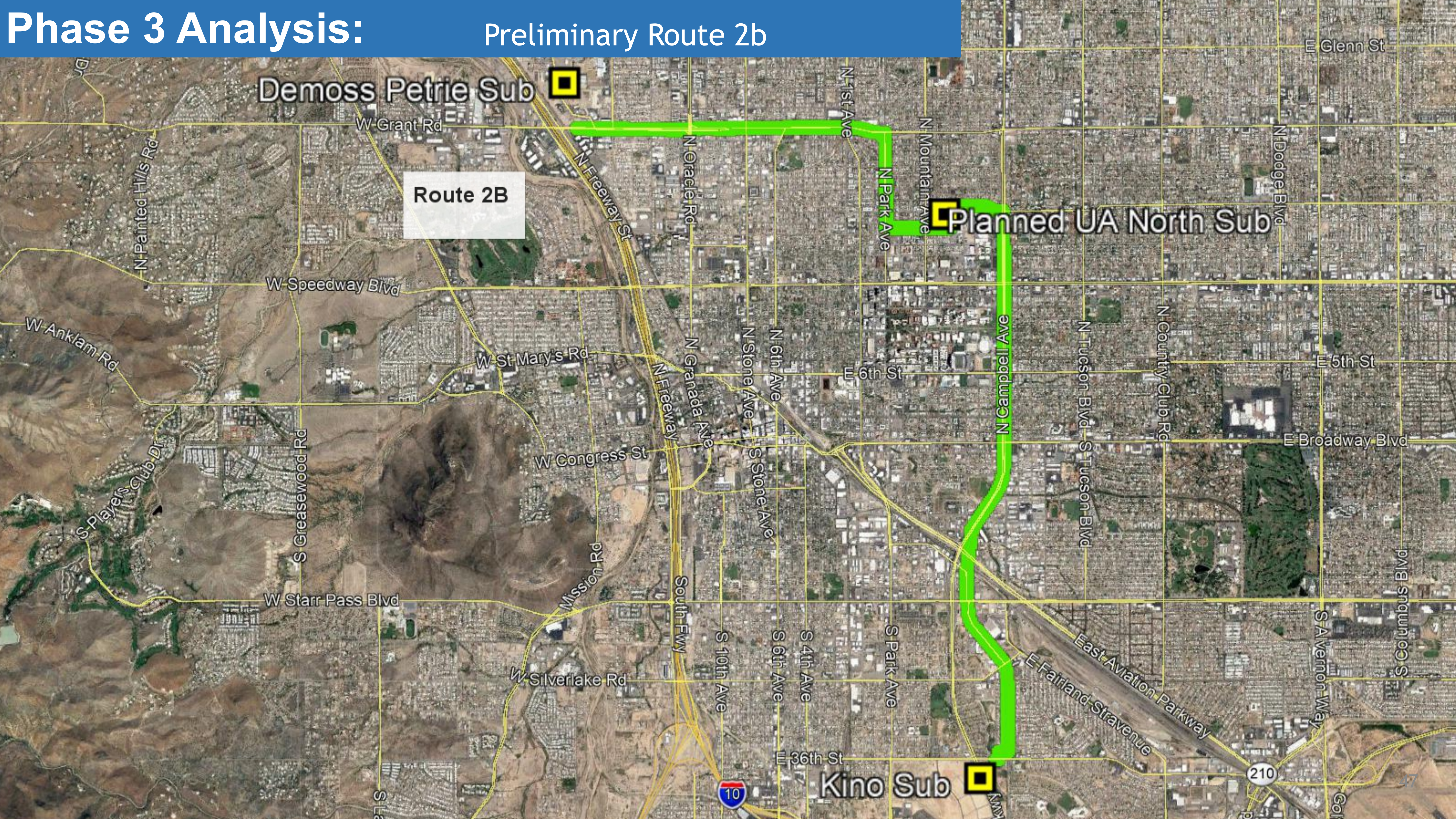
Planned UA North Sub

Kino Sub



210

Phase 3 Analysis: Preliminary Route 2b



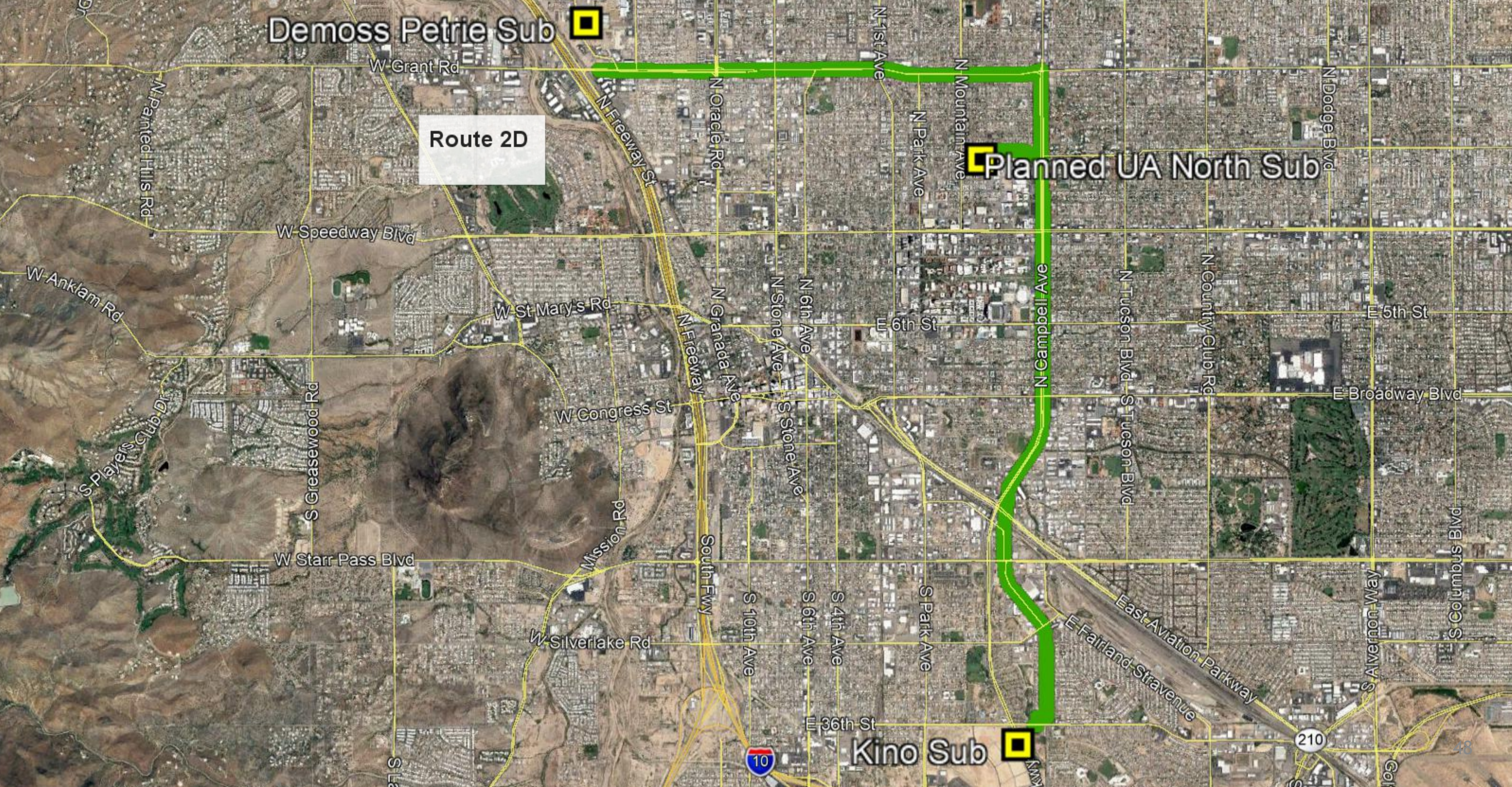
Demoss Petrie Sub

Route 2B

Planned UA North Sub

Kino Sub

Phase 3 Analysis: Preliminary Route 2d



Demoss Petrie Sub

Route 2D

Planned UA North Sub

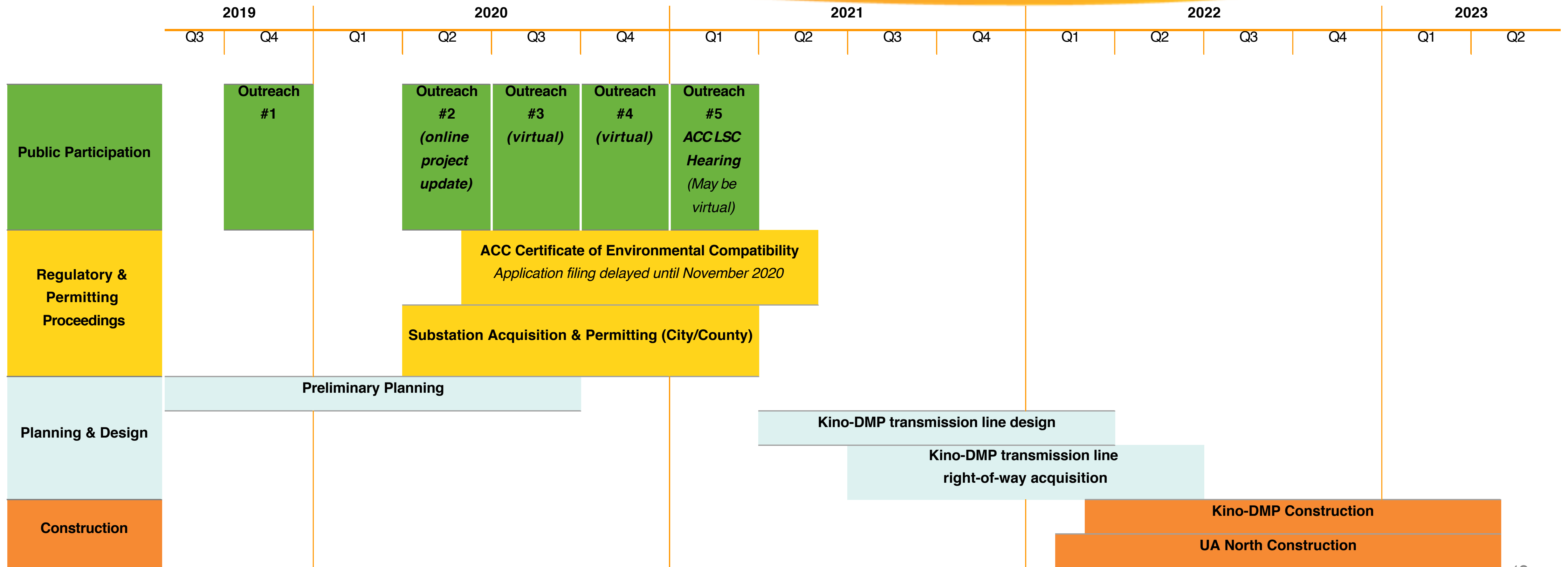
Kino Sub



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- Conduct CWG Meeting # 5 on October 15, 2020
- Finalize analysis and select at least three routes (including one preferred route) for incorporation into the CEC application
 - Continue to collect comments, firm up cost estimates, prepare EMF study, visual simulations, and make a decision on Preferred Route and what other alternatives to include in application
- Prepare CEC Application
- Notice Public & CWG of routes selected
- File CEC application - December 2020
- ACC LSC Hearing - January 2021
- ACC Open Meeting - est. March 2021

For more project information please visit the project webpage:

www.tep.com/kino-to-demoss-petrie/

Here, you can:

- Find a recording of all previous Open House presentations and Studies
- Find a PDF of this Virtual Open House presentation
- Find past newsletters, public meeting communications and Community Working Group (CWG) materials
- Read commonly asked questions & answers
- Read comments from the public and the CWG, and TEP's responses

Comment Deadline

There is no comment deadline - comments can be submitted up to and through the last day of the Line Siting hearing.

Submitting Comments

How to submit comments after the meeting:

- Via voicemail at 1-833-523-0887
- Via email at KINO2DMP@tep.com
- Via comment form at:
 - <https://uns.wufoo.com/forms/z1eb494318gyjry/>
- By U.S. Mail to: P.O. Box 711, ATTN: Kino-DMP, Mail Stop RC131,
Tucson, AZ 85701-0711



Questions?