

Memorandum



CITY OF DALLAS

DATE September 25, 2020

TO Honorable Mayor and Members of the City Council

SUBJECT **Dallas Area Rapid Transit Bus Service Plan**

In October 2019, Dallas Area Rapid Transit (DART) began the two-year process of re-envisioning their bus network to provide services that align how people use transit today. The new bus network is being branded as "DARTzoom: A New Bus Network." From the City of Dallas' standpoint, the redesigned bus system should effectively address the transit concerns documented by the University of Texas-Arlington study report entitled, "Transportation Equity and Access to Opportunity for Transit-Dependent Populations in Dallas." Our entire public transportation network needs to be efficient, frequent, and reliable as DART's bus network is critical to Dallas residents' ability to get to employment centers, medical appointments, and other essential services. This blank-slate re-design is necessary to address our communities' concerns.

DART hired a leading transit planning and policy consulting firm, Jarrett Walker + Associates (JWA), to conduct the public and stakeholder outreach process and design the new bus network. To date, JWA has completed a Choices Report analyzing the current service and ridership, conducted workshops with DART and municipal staff, and started the first round of public involvement. The agency postponed in-person events due to COVID-19 precautions but began holding web-based meetings in late April, with over 200 participants. A project website, <https://dartzoom.org/>, contains a survey, reports, and other resources. Nearly 600 people completed the survey as of June 2020.

With input from riders, employers, municipal stakeholders and community leaders, the DART Board will need to solidify its priorities between the extremes of either pursuing high ridership routes or providing broad coverage of the bus network. JWA and DART staff intend to present a final draft bus network plan for the DART board and public consideration in Spring 2021. DART is still evaluating the impact of the COVID-19 pandemic on the financial plan, but the decrease in revenue will affect resources available for the new bus network. Upon approval of the plan by the DART Board in 2021, the transit agency could begin executing the first phase of the DARTzoom Bus Service Plan as early as January 2022. DART staff will implement as many recommendations as possible with available financial resources.

Coverage vs. Ridership

A critical step in the bus network re-envisioning process is for DART to hear from the City about our position on coverage vs. ridership. In simplistic terms, *coverage* allows a transit agency to spread out services so that every street has a bus, with longer waits for service but shorter walks to service availability. Conversely, *ridership* focuses on the busiest areas, where waits for service are short but walks to bus services are longer. The two

figures below are examples of ridership and coverage. Each figure is showing a sample bus network with the same number of busses within that network.

Maximum Ridership

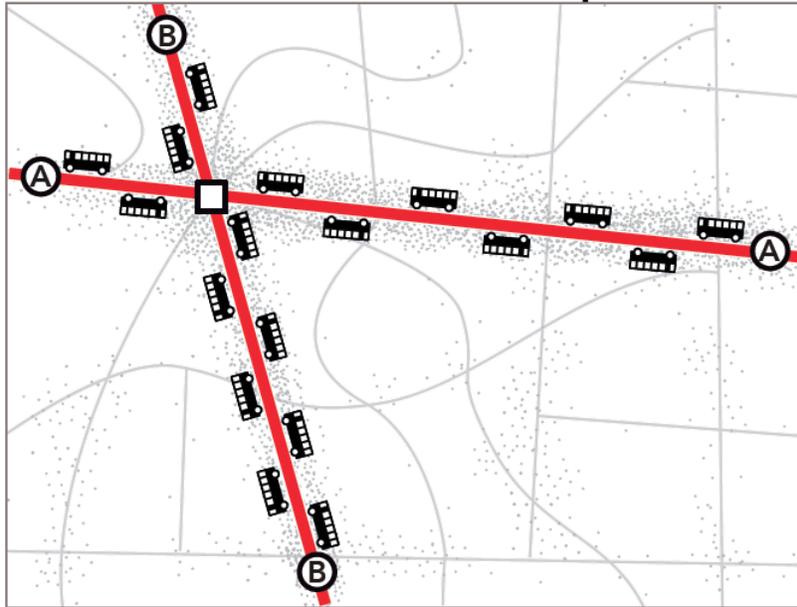


Figure 1.

Maximum Coverage

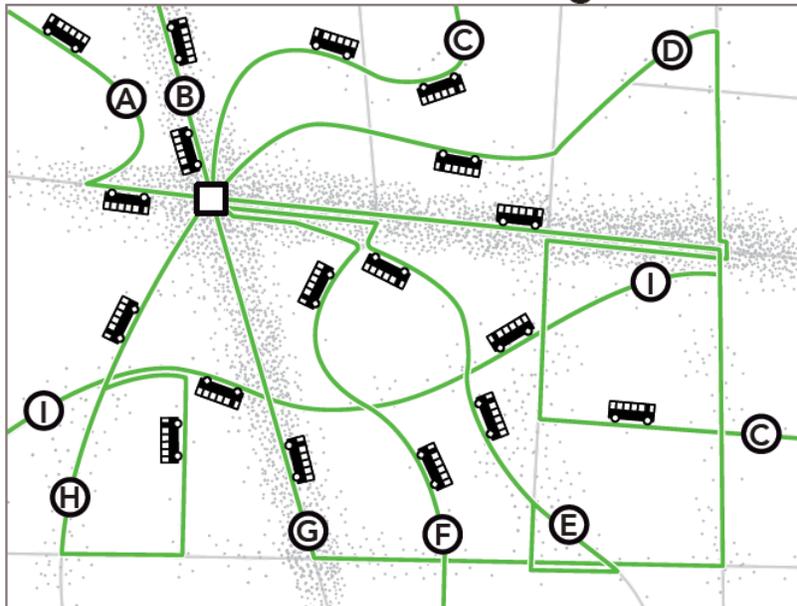


Figure 2.

DATE September 25, 2020
SUBJECT **DART Bus Service Plan**

The existing DART bus network is split at a 55% coverage and 45% ridership. DART is proposing to increase the current ridership percentage to provide greater frequency of the bus system. The tradeoff to this shift will be more citizens located furthest away from a bus stop. However, the overall trip time may decrease from an individual's home to their destination. Attached you will find a presentation that DART staff made at the September 22, 2020 DART Board meeting. The Department of Transportation would like to further discuss these concepts with City Council at the October 19, 2020 Transportation and Infrastructure Committee (TRNI) meeting. Feedback received from the TRNI Committee will be vital to informing DART of the City's priorities for Public Transportation.

If you have any questions or need additional information, please contact Michael Rogers, Director of the Department of Transportation, at michael.rogers@dallascityhall.com.



Majed Al-Ghafry, P.E.
Assistant City Manager

[Attachment]

c: T.C. Broadnax, City Manager
Chris Caso, City Attorney
Mark Swann, City Auditor
Billerae Johnson, City Secretary
Preston Robinson, Administrative Judge
Kimberly Bizzor Tolbert, Chief of Staff to the City Manager
Jon Fortune, Assistant City Manager

Joey Zapata, Assistant City Manager
Nadia Chandler Hardy, Assistant City Manager
Dr. Eric A. Johnson, Chief of Economic Development and Neighborhood Services
M. Elizabeth Reich, Chief Financial Officer
Laila Aleqresh, Chief Innovation Officer
M. Elizabeth (Liz) Cedillo-Pereira, Chief of Equity and Inclusion
Directors and Assistant Directors

DARTzoom Bus Network Redesign: Ridership/Coverage Balance

Committee-of-the-Whole
September 22, 2020

Rob Smith, AVP Service Planning & Scheduling



Today's Briefing

- The Board continues to consider a policy decision driving the next phase of the bus network redesign work: the appropriate balance between ridership and coverage
- The Planning Committee discussed this issue at the September 8, 2020 meeting
- Committee members indicated a preference for the middle four of the potential ridership/coverage ratios: 80/20, 75/25, 70/30, or 65/35



Network Coverage Splits

High Ridership Concept



85% towards ridership, 15% towards coverage

High Coverage Concept



60% towards ridership, 40% towards coverage

Existing DART Network: 55% – 45%



80/20

- ≈35% of routes operate 20 minutes or better
- ≈54% of residents within ½-mile of service
- Basic GoLink

75/25

- ≈29% of routes operate 20 minutes or better
- ≈59% of residents within ½-mile of service
- More GoLink

70/30

- ≈24% of routes operate 20 minutes or better
- ≈63% of residents within ½-mile of service
- More GoLink

65/35

- ≈18% of routes operate 20 minutes or better
- ≈68% of residents within ½-mile of service
- Expanded GoLink



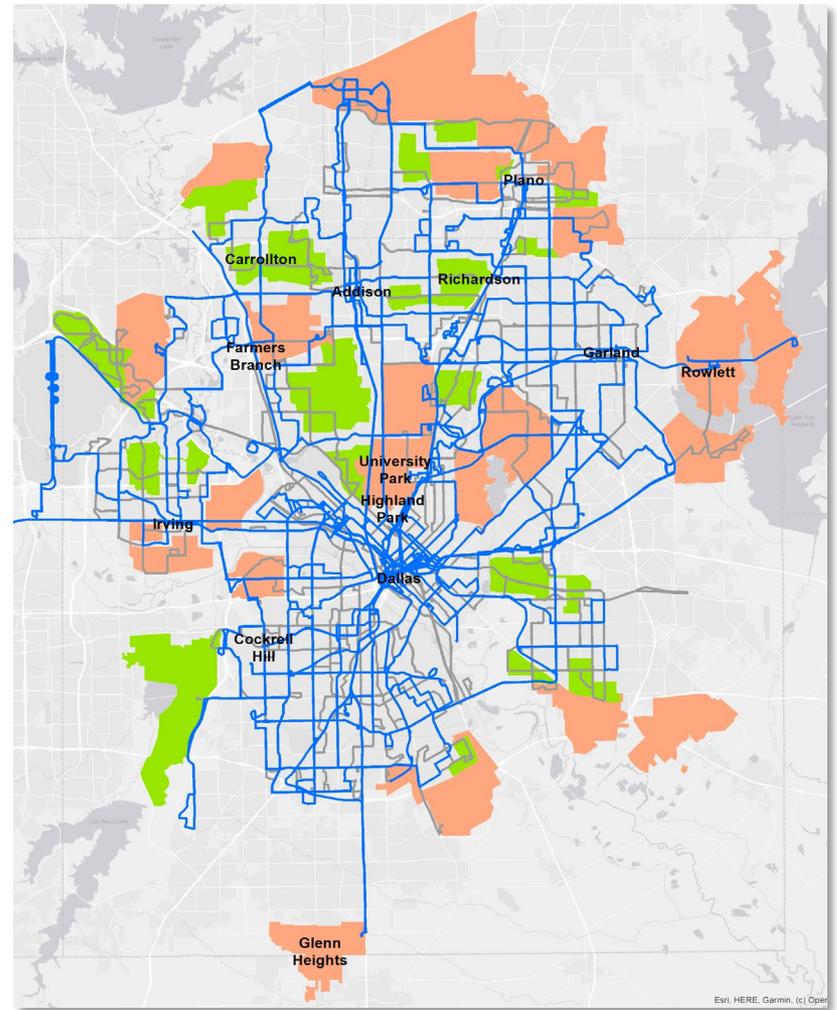
Questions About Impacts of Different Levels

- During the Planning Committee discussion, we were asked to develop an analysis showing the impact by DART City for the different ridership/coverage ratios
- We did not have either the time or resources available to fully perform this level of analysis by DART City
- We have prepared some maps by quadrant to describe what this may look like, particularly using strategies to fill in coverage while preserving as many frequency improvements as possible



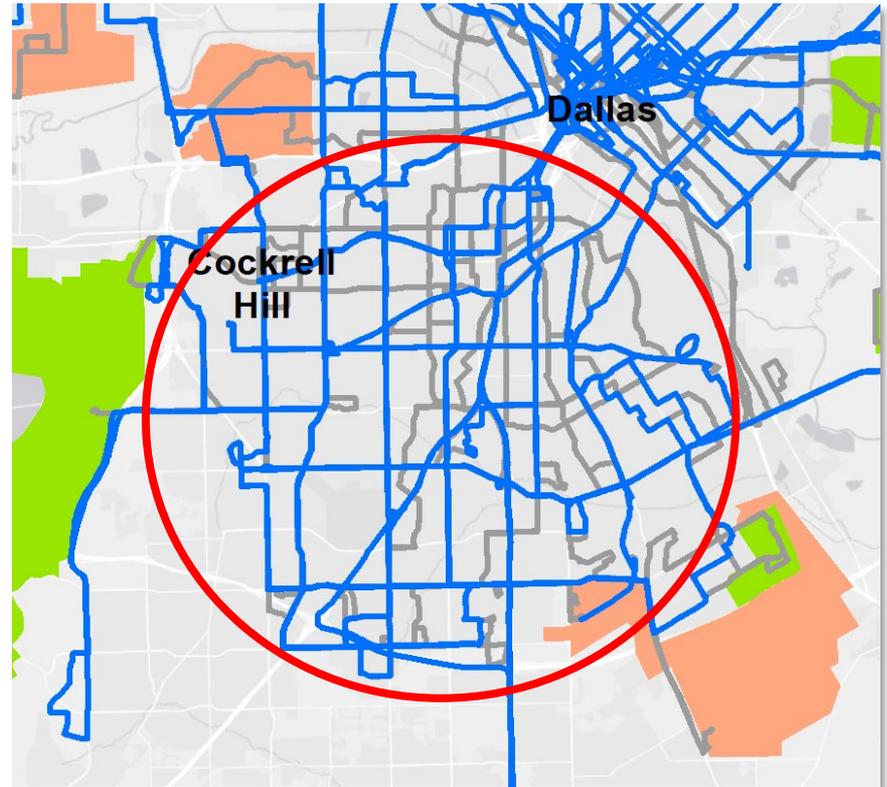
Ridership with Expanded GoLink

- At the last meeting, we presented a scenario that combines the ridership concept and greatly expanded GoLink service to fill in ridership network gaps
- The expanded GoLink services depicted here represent just under 5% of system operating cost
- This scenario could be seen as close to 80/20 if accompanied by somewhat fewer frequency adjustments than in the ridership concept – perhaps $\approx 35\%$ of routes operating every 20 minutes or better midday



Ridership with Expanded GoLink

- But as we pointed out at the Planning Committee, the ridership concept includes coverage losses in areas like Oak Cliff that may be greater than ideal
- Due to closer route spacings, these are not areas where GoLink service is likely to be successful, and potential ridership could exceed what would be cost-effective
- Other areas with similar impacts: North Central Dallas, and parts of Garland and Richardson



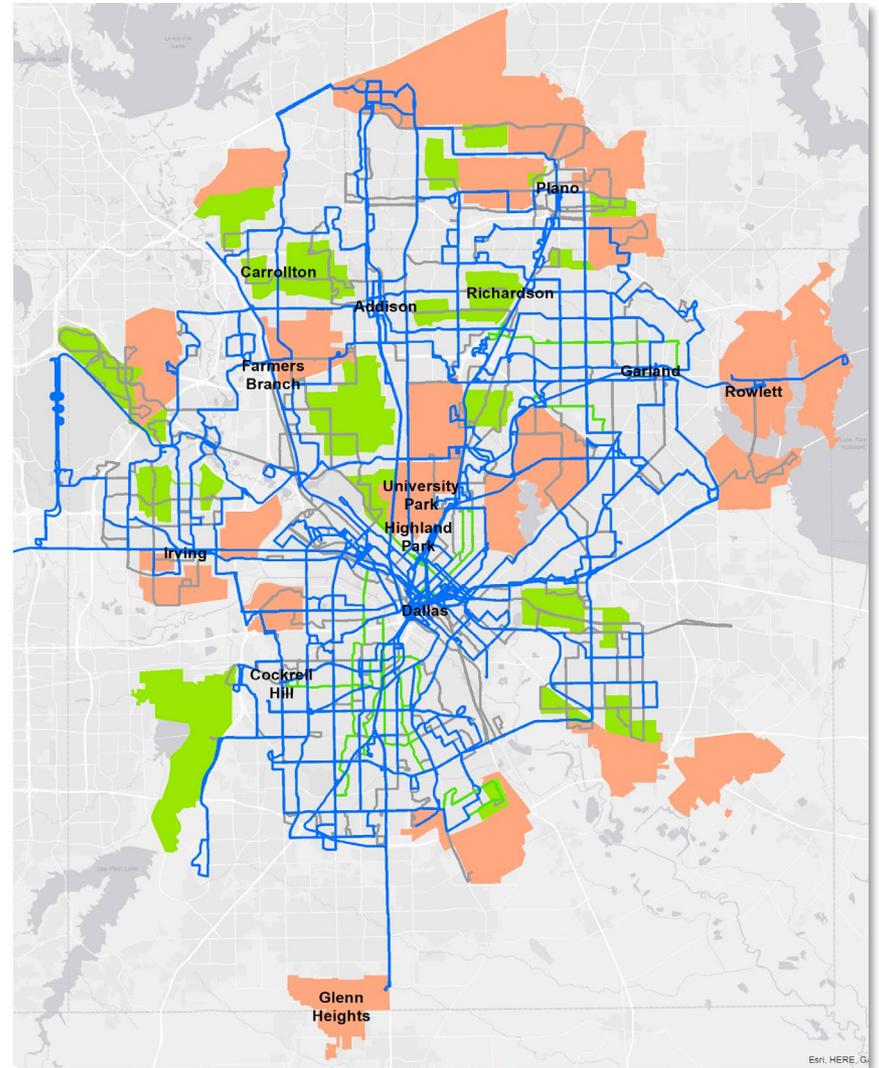
Potential Hybrid Approach: Modified Ridership with Expanded GoLink

- We have prepared a scenario that fills in some of the larger ridership network gaps with fixed-route service in areas where GoLink service will not make sense
- The goal: to create a scenario that offers nearly as much overall coverage access as the current network but preserves resources for a higher level of frequency improvements
- We would note, however, that while this hybrid scenario almost matches the current network in providing service access within ½-mile, there are fewer routes, and for a number of customers their walks to service will be longer – it is not exactly the same as the current network
- This scenario fits between 70/30 and 75/25 on the ridership/coverage scale



Hybrid Approach

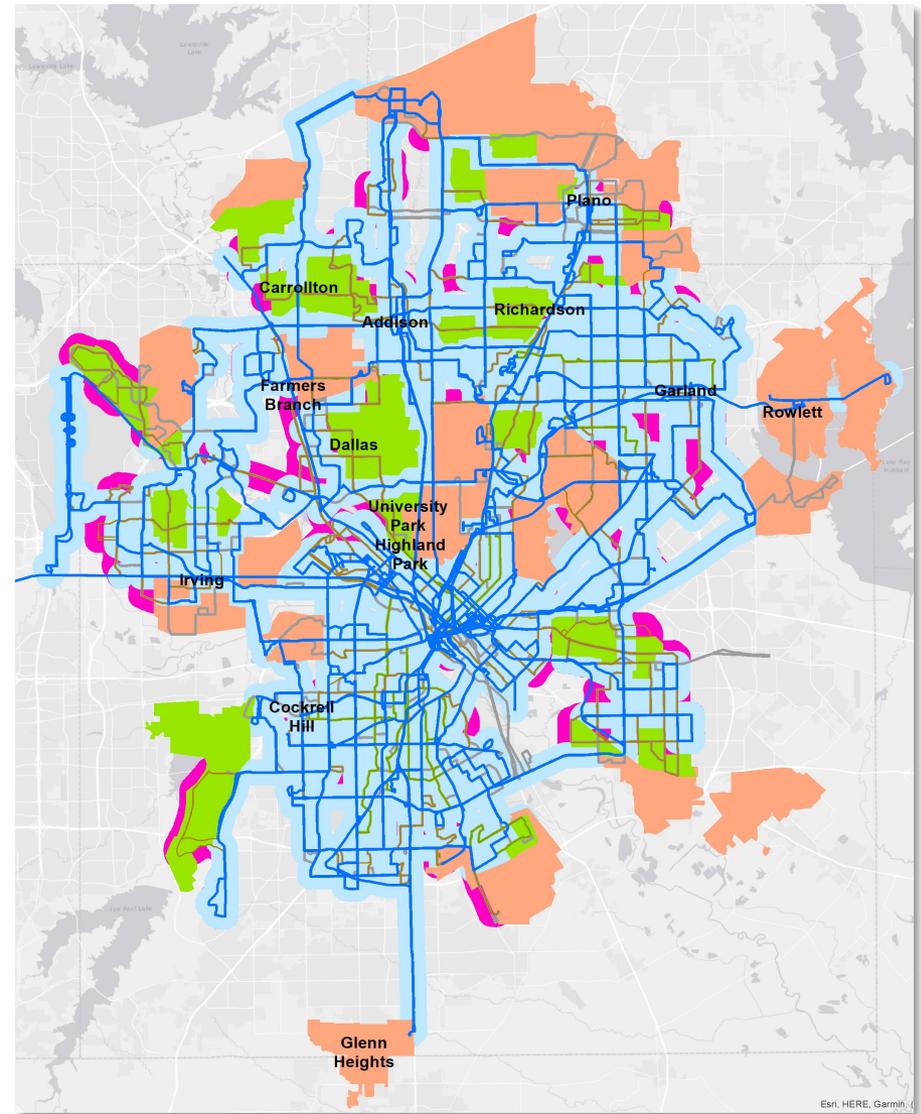
- 11 routes from the coverage concept would fill areas where GoLink would not be the preferred option, at an estimated cost of about \$12 million/year, or about 7% of system operating cost
- To fit within funding availability, there would be fewer frequency adjustments than in the ridership concept
- About 25-30% of routes would operate every 20 minutes or better midday, compared to 41% for the 85/15 ridership concept



Expanded fixed-route coverage in **GREEN**

Hybrid Approach

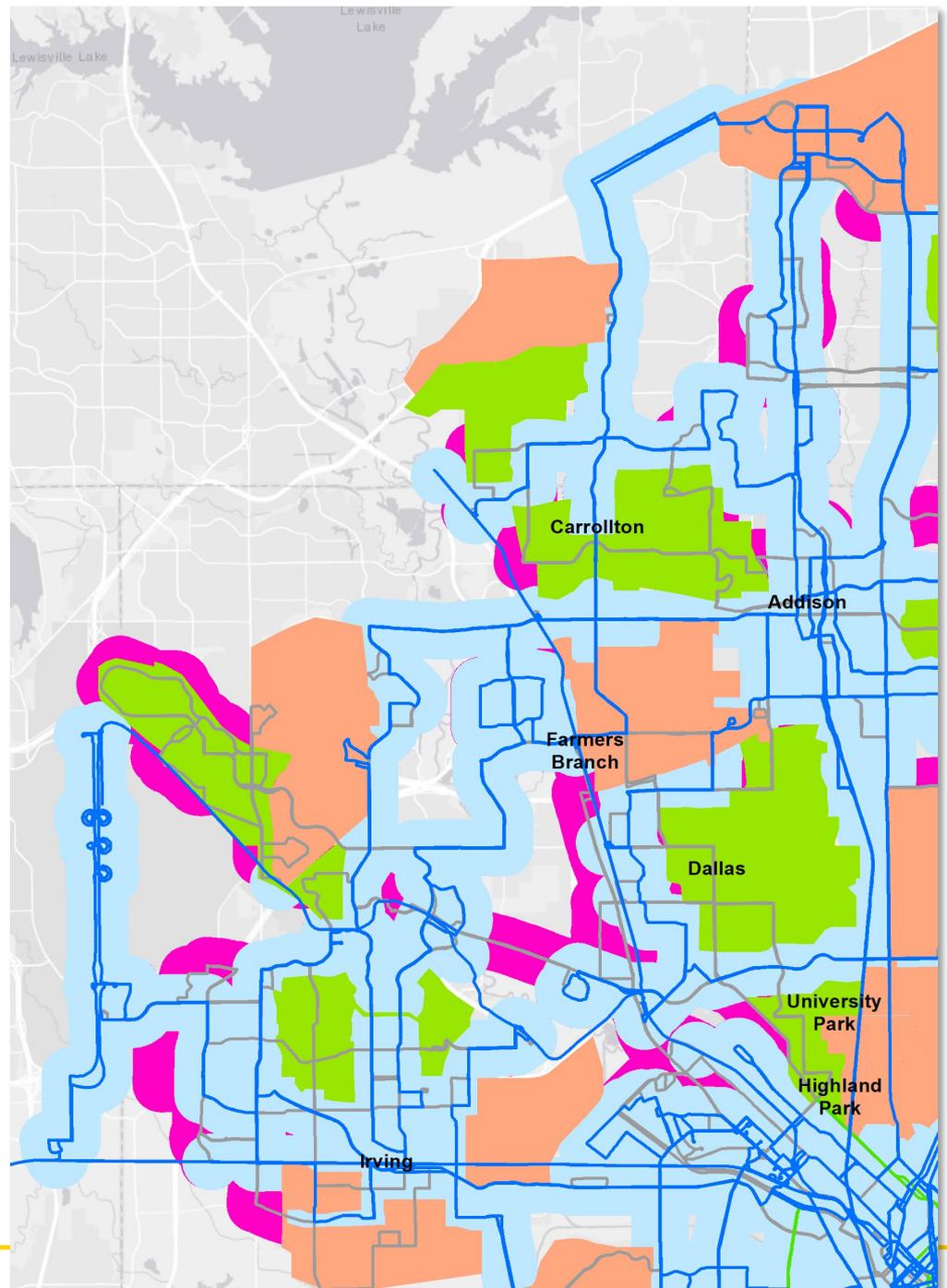
- This scenario offers nearly as much coverage as the coverage concept
- The map at the right highlights areas that would not have coverage in this scenario relative to the coverage concept
- Most of these areas are relatively undeveloped, or generate few riders in the current system
- We believe this is a viable 70/30 or 75/25 option with little negative overall coverage impact
- The following slides break this map into sectors



*Areas with less coverage compared to coverage concept in **ROSE***

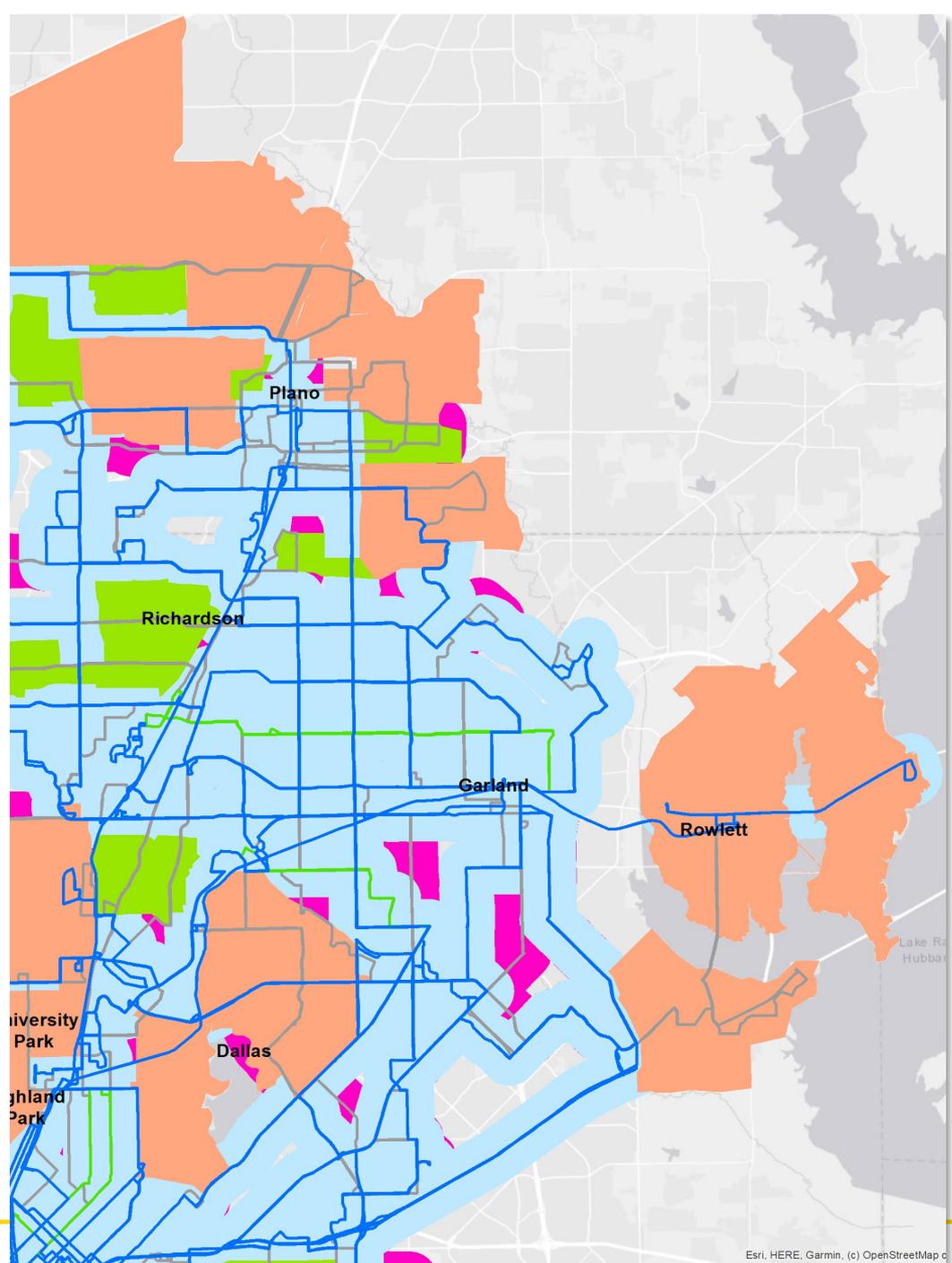
NW Sector Impacts

- This sector includes most of Irving, Carrollton, Farmers Branch, Addison, and parts of Plano, Dallas, University Park, and Highland Park
- Areas with less coverage compared to coverage concept in **ROSE**



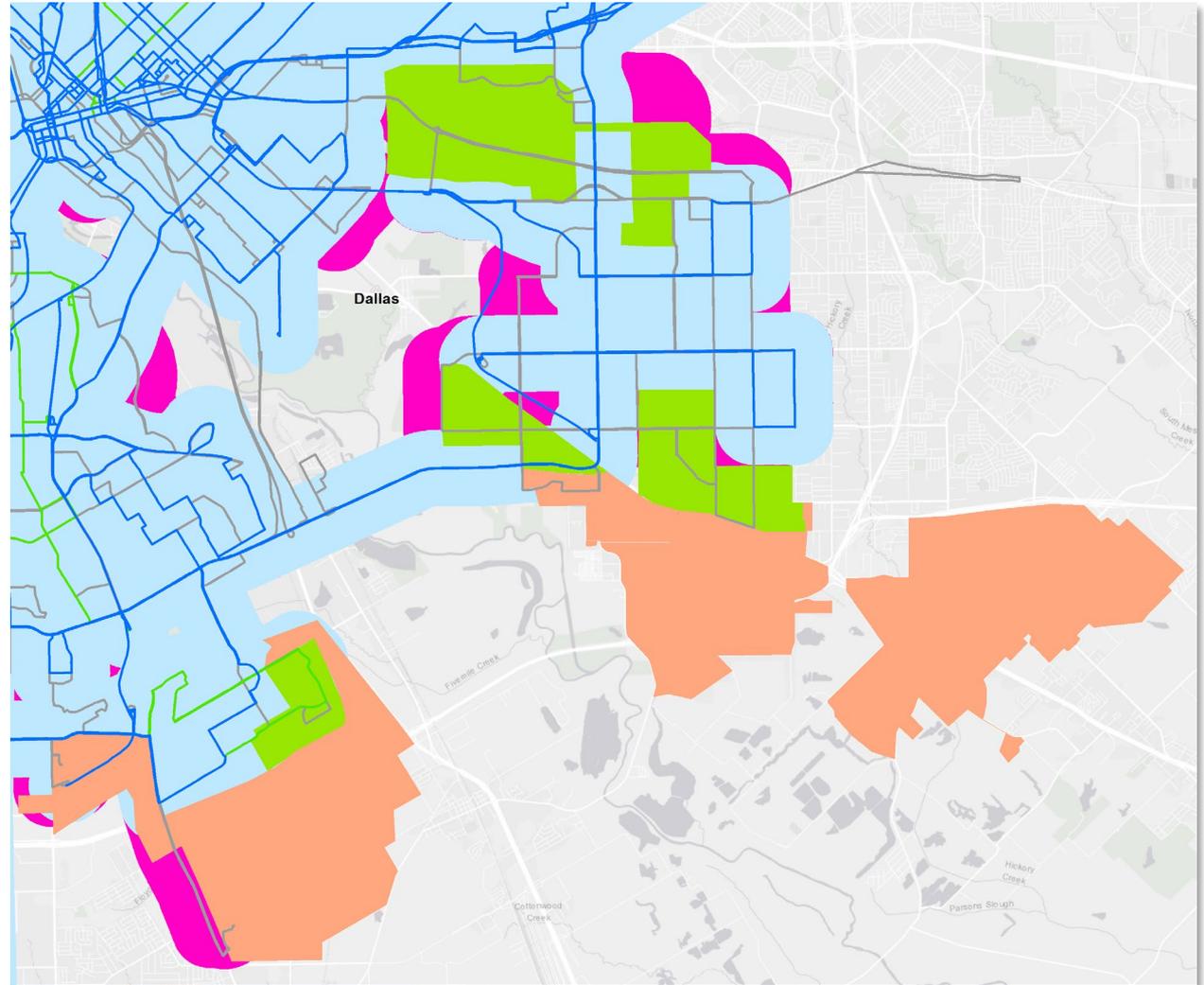
NE Sector Impacts

- This sector includes most of Plano, Richardson, Garland, and Rowlett, plus parts of Dallas, Highland Park, and University Park
- Areas with less coverage compared to coverage concept in **ROSE**



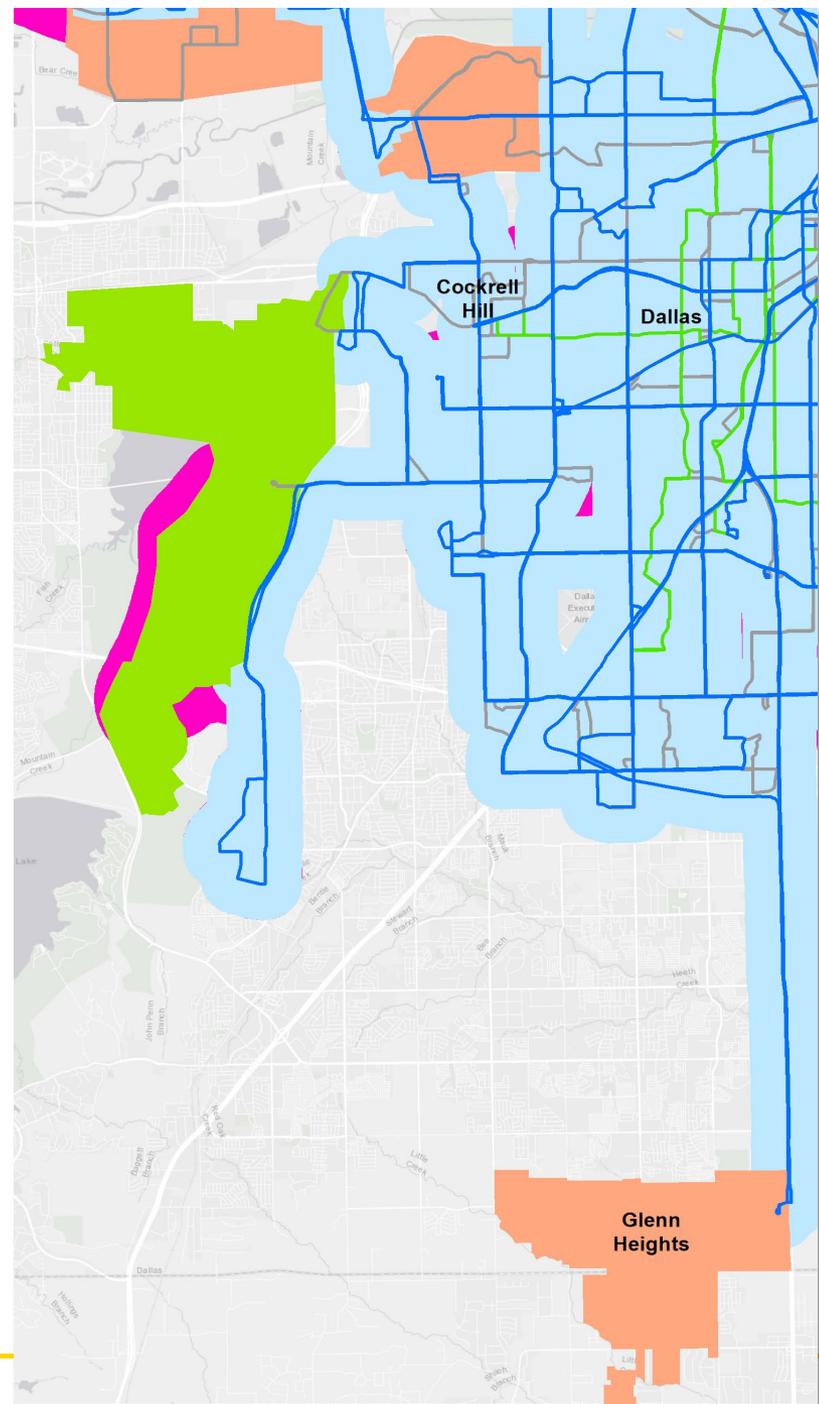
SE Sector Impacts

- This sector includes the SE part of Dallas
- Areas with less coverage compared to coverage concept in **ROSE**



SW Sector Impacts

- This sector includes parts of Irving, plus Cockrell Hill, Glenn Heights, and the SW sector of Dallas
- Areas with less coverage compared to coverage concept in **ROSE**



Impacts of Frequency Improvements

- At the Planning Committee meeting, Mr. Kennedy described and shared an analysis of the potential numbers of people impacted by frequency improvements (or reductions) in the ridership and coverage concepts
- Staff expanded his analysis to break out the numbers into estimates for each 5% gradation in ridership/coverage ratios
- In the process of the work, we found and corrected a typo in the Choices Report, which incorrectly indicated the number of low-income residents in the Service Area as 2.7 million (actual number is 724,000)
- We have provided the full version of the analysis in the form of a Board memo, with the Weekday midday tables included here
- This analysis does not reflect the hybrid network presented earlier



Impacts of Frequency Improvements

Residents

| Residents | 85/15 | 80/20 | 75/25 | 70/30 | 65/35 | 60/40 |
|----------------|----------|----------|----------|----------|---------|---------|
| Weekday Midday | | | | | | |
| 15 or better | 189,000 | 156,600 | 124,200 | 91,800 | 59,400 | 27,000 |
| 20 or better | 270,000 | 216,000 | 162,000 | 108,000 | 54,000 | 0 |
| 30 or better | 432,000 | 351,000 | 270,000 | 189,000 | 108,000 | 27,000 |
| Any | -513,000 | -383,400 | -253,800 | -124,200 | 5,400 | 135,000 |

Increase or Decrease in Persons Impacted Compared to Existing Network

Hybrid and expanded GoLink networks presented earlier today are not included in these calculations



Impacts of Frequency Improvements

Jobs, Travel Demands

| Jobs Weekday Midday | 85/15 | 80/20 | 75/25 | 70/30 | 65/35 | 60/40 |
|------------------------|----------|----------|----------|---------|---------|--------|
| 15 or better | 160,000 | 128,000 | 96,000 | 64,000 | 32,000 | 0 |
| 20 or better | 200,000 | 164,000 | 128,000 | 92,000 | 56,000 | 20,000 |
| 30 or better | 380,000 | 312,000 | 244,000 | 176,000 | 108,000 | 40,000 |
| Any | -240,000 | -176,000 | -112,000 | -48,000 | 16,000 | 80,000 |

| Travel Demands Weekday Peak | 85/15 | 80/20 | 75/25 | 70/30 | 65/35 | 60/40 |
|--------------------------------|----------|----------|----------|----------|----------|----------|
| 15 or better | 439,300 | 401,100 | 362,900 | 324,700 | 286,500 | 248,300 |
| 20 or better | 210,100 | 171,900 | 133,700 | 95,500 | 57,300 | 19,100 |
| 30 or better | -133,700 | -145,160 | -156,620 | -168,080 | -179,540 | -191,000 |
| Any | -401,100 | -305,600 | -210,100 | -114,600 | -19,100 | 76,400 |

Travel origins and destinations for all trips, all modes

Hybrid and expanded GoLink networks presented earlier today are not included in these calculations



Impacts of Frequency Improvements

Low Income Residents, Persons of Color

| Low Income Weekday Midday | 85/15 | 80/20 | 75/25 | 70/30 | 65/35 | 60/40 |
|------------------------------|----------|---------|---------|---------|--------|--------|
| 15 or better | 57,920 | 47,784 | 37,648 | 27,512 | 17,376 | 7,240 |
| 20 or better | 101,360 | 81,088 | 60,816 | 40,544 | 20,272 | 0 |
| 30 or better | 108,600 | 89,776 | 70,952 | 52,128 | 33,304 | 14,480 |
| Any | -108,600 | -82,536 | -56,472 | -30,408 | -4,344 | 21,720 |

| Persons of Color Weekday Midday | 85/15 | 80/20 | 75/25 | 70/30 | 65/35 | 60/40 |
|------------------------------------|----------|----------|----------|---------|--------|--------|
| 15 or better | 103,200 | 82,560 | 61,920 | 41,280 | 20,640 | 0 |
| 20 or better | 206,400 | 165,120 | 123,840 | 82,560 | 41,280 | 0 |
| 30 or better | 292,400 | 240,800 | 189,200 | 137,600 | 86,000 | 34,400 |
| Any | -292,400 | -220,160 | -147,920 | -75,680 | -3,440 | 68,800 |

Hybrid and expanded GoLink networks presented earlier today are not included in these calculations



Notes about Impact Analysis

- When reading through the full set of tables in the Agenda Report, the Weekday peak tables do not appear to make sense
- For example, the change in impact to residents for the ridership network is 675,000 for 15-minute or better service, but only 297,000 for 20-minute or better service
- This is counter-intuitive, as one would naturally expect more impact from the 20-minute or better service, which includes all of the 15-minute routes
- But this analysis looks at the difference between the ridership or coverage concept and the existing network
- And the ridership and coverage concepts have almost no routes with 20-minute peak operation, leading to this anomalous result

Notes about Impact Analysis

- In fact, the tables demonstrate one characteristic of both the ridership and coverage networks compared to the current network
- As drawn, improvements in frequency for ridership and coverage are much greater during off-peak periods
- The percentage of routes operating 30 minutes or better during Weekday peak periods actually declines for both the ridership and coverage networks (56% existing vs. 47% coverage/49% ridership)
- During Weekday midday, however, this 30 minute or better percentage improves, particularly under the ridership concept (29% existing vs. 30% coverage/45% ridership)



Network Coverage Splits with Hybrid Approach

High Ridership Concept



85% towards ridership, 15% towards coverage

Hybrid 7x/2x

- ≈25-30% of routes operate 20 minutes or better
- ≈65-70% of residents within ½-mile of service
- Expanded GoLink

High Coverage Concept



60% towards ridership, 40% towards coverage

Existing DART Network: 55% – 45%

80/20

- ≈35% of routes operate 20 minutes or better
- ≈54% of residents within ½-mile of service
- Basic GoLink

75/25

- ≈29% of routes operate 20 minutes or better
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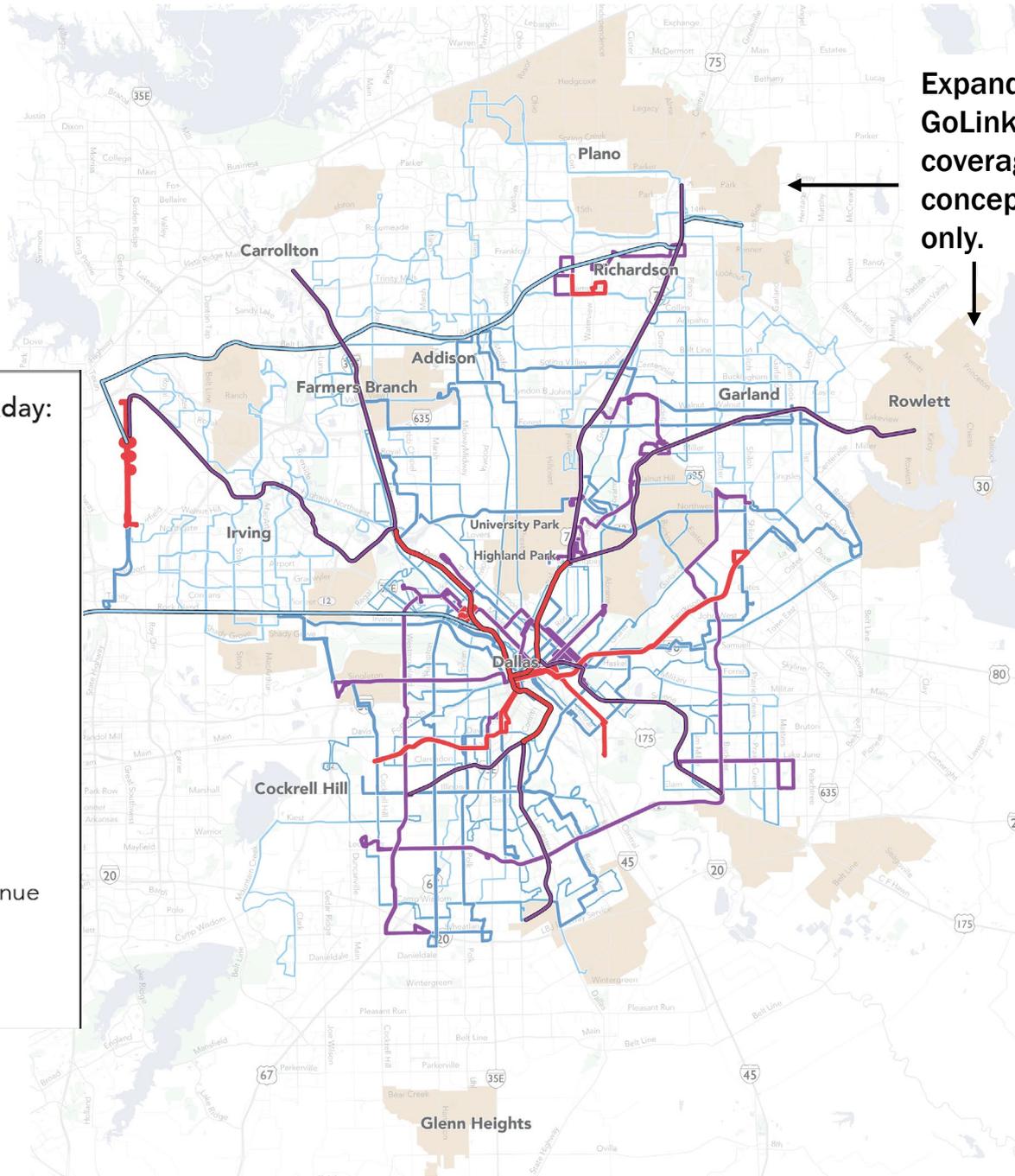
Potential Board Recommendation and Timeline

- We are looking for a Board recommendation in sufficient time to prepare for the next network design retreat, currently planned for November 2020
- To maintain that schedule, we would need final Board action no later than October 6, 2020
- The schedule is designed to allow sufficient time to prepare a draft bus network plan for Board review at the beginning of 2021



DART.org

Coverage Concept



Expanded GoLink, in coverage concept only.

Frequency at noon on a weekday:

-  705 15 min or better
-  524 16 - 20 min
-  110 21 - 30 min
-  360 31 - 45 min
-  106 46 - 60 min
-  208 Rush hour or certain times only

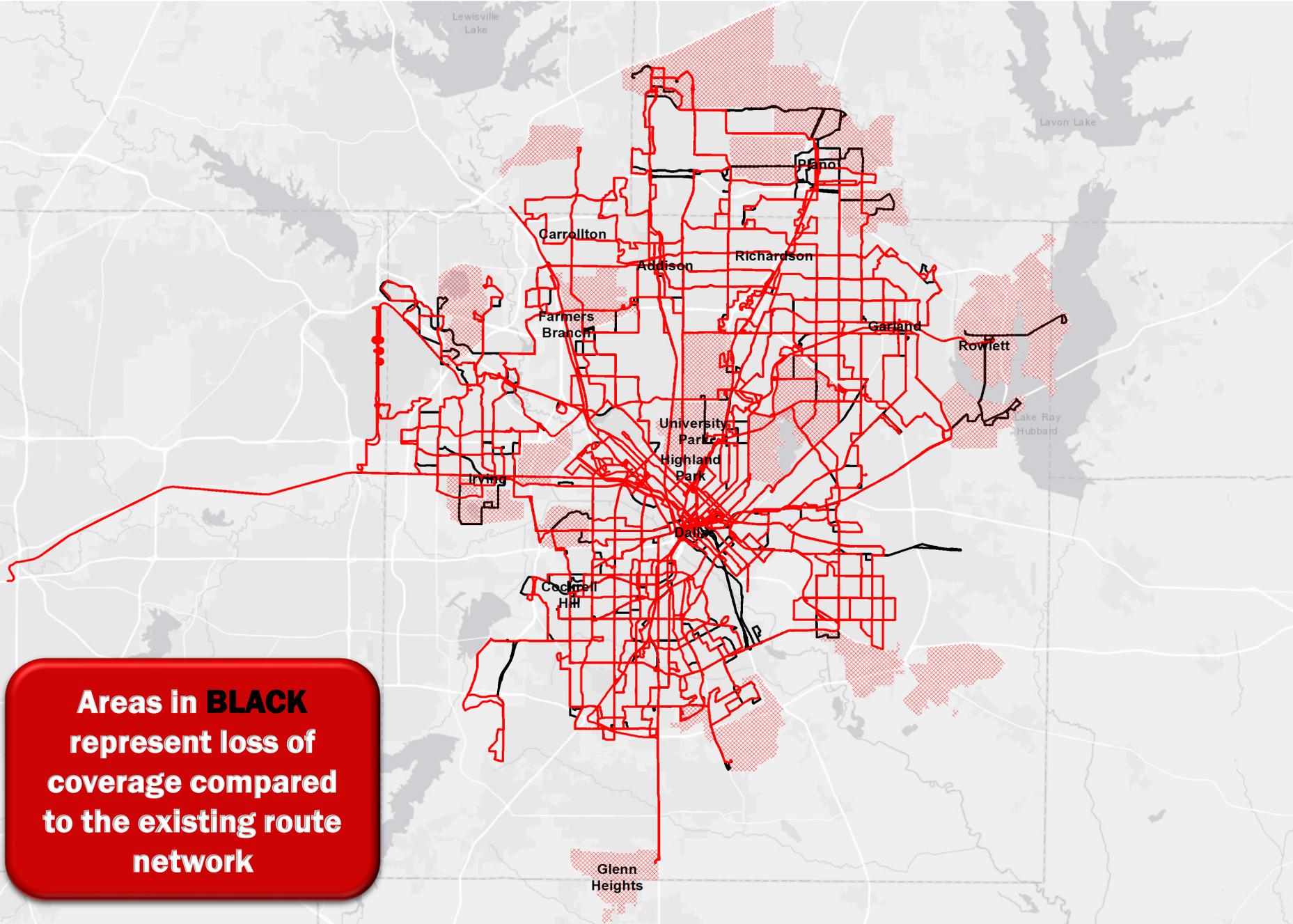
 GoLink Zone

 Light rail and commuter rail

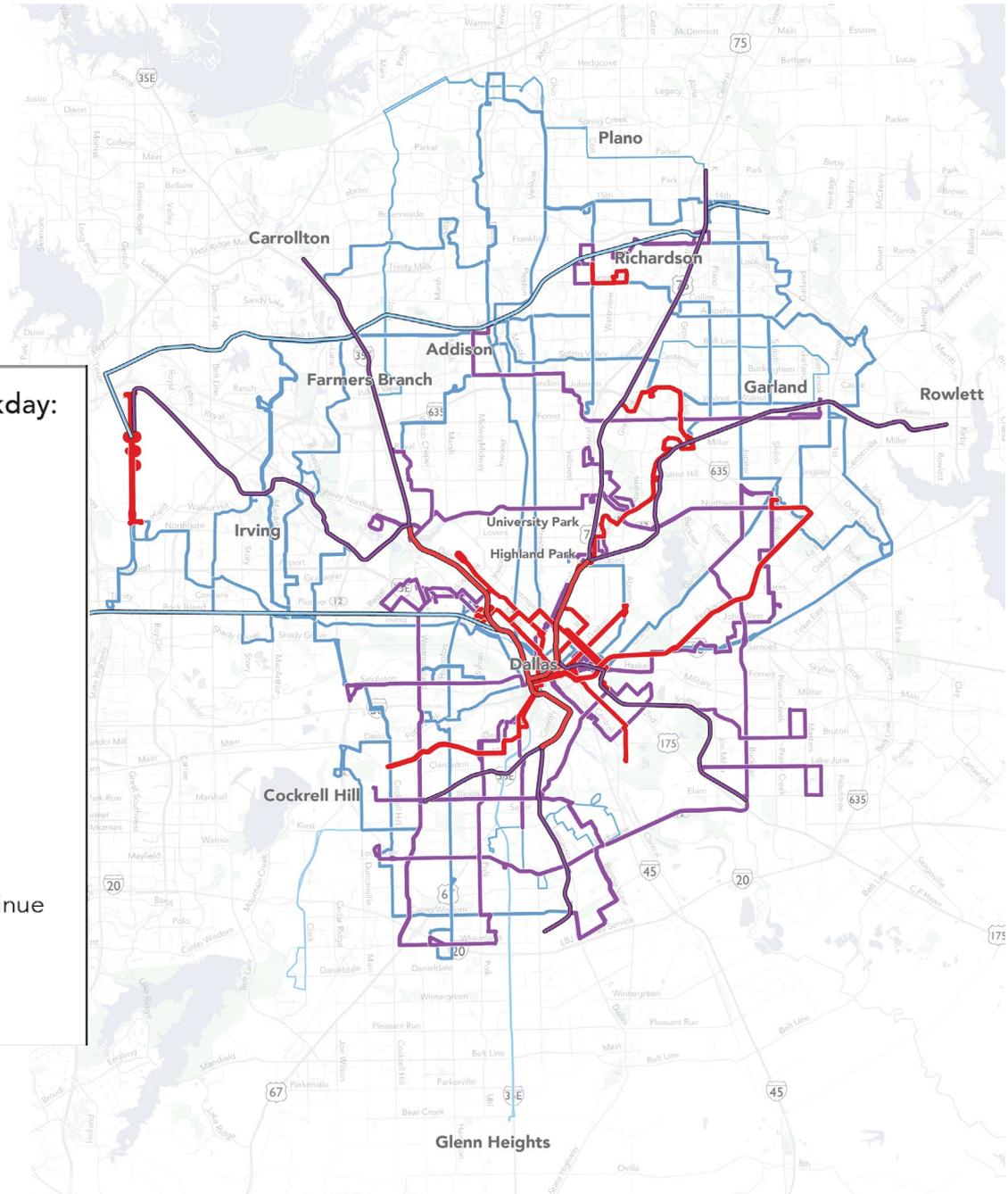
 110
111 Route branches continue at lower frequency

 T Transit Center

Coverage Concept vs. Existing Network



Ridership Concept



Frequency at noon on a weekday:

-  15 min or better
-  16 - 20 min
-  21 - 30 min
-  31 - 45 min
-  46 - 60 min
-  Rush hour or certain times only
-  GoLink Zone
-  Light rail and commuter rail
-  Route branches continue at lower frequency
-  Transit Center

Ridership Concept vs. Existing Network

