

OKLAHOMA CITY MAPS 3 MODERN STREETCAR PROJECT *HEALTH IMPACT ASSESSMENT*

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Prepared for:



CENTRAL OKLAHOMA TRANSPORTATION AND PARKING AUTHORITY

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Under Contract to:

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EXECUTIVE SUMMARY

Planning for our future in Oklahoma City includes envisioning a future with vibrant land uses, strong education in our schools, transportation choices, and a healthy place to live. When we consider the opportunities to plan for our future with new projects, it is equally important to consider the impacts – positive and negative – to our community, our environment and our health. A Health Impact Assessment (HIA) provides an opportunity to document the possible health-related impacts that might be associated with a planning activity like the proposed MAPS 3 Streetcar.

This report explored the qualitative health impacts associated with implementing the MAPS 3 Streetcar within Downtown Oklahoma City and compared the route options with factors related to Wellness Now's 2011 *Community Health Assessment* and 2011-2012 *Community Health Improvement Plan*. Providing additional transit modes, such as a streetcar circulator, enables people to become more active by walking to the transit stop and to their final destinations as part of their daily life. The four proposed route options each serve the lower income areas, minority areas, and zero car households in the core of Oklahoma City. Some of the route options provide greater access to more health care providers than other routes, but walking or taking another bus may be required to get to some clinics and other providers. All of the route options link with the highly walkable environments created by the Project 180 streets and create a network for transit users and pedestrians to access a variety of destinations in the downtown core seamlessly.

Recommendations that may increase the health impact of the MAPS 3 Streetcar include continuing to promote land use destinations near streetcar stops for greater accessibility (e.g. zoning regulations, comprehensive plan recommendations, special area or district planning), coordinating bus service with streetcar stops to increase distances people can use transit for their transportation daily needs, and working to include connections to the Oklahoma City Health Center with transit.

SECTION 1: PURPOSE OF A HEALTH IMPACT ASSESSMENT

1.1 WHAT IS AN HIA?

A Health Impact Assessment (HIA) is a tool to help planners and other decision-makers better recognize the health consequences of the decisions they make (Dannenberg et al, 2008). HIA is defined as “a combination of procedures, methods, and tools by which a policy, program, or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population” (European Centre for Health Policy, 1999). Through an HIA we have the opportunity to discuss, explore, and identify options where a planning project or program could positively influence health outcomes, or at the very least not increase negative impacts on our community.

1.2 HIA PROCESS

The overall process for an HIA involves screening, scoping, assessment, and reporting and dissemination. For HIAs, there are three main types: rapid HIA, intermediate HIA, and comprehensive HIA. For the MAPS 3 Streetcar, we are pursuing a rapid HIA which includes:

- A brief investigation of health impacts;
- Involves exchange of existing knowledge, expertise, and research from previous HIAs;
- Is usually carried out quickly and with minimal resources (National Association of County & Health Officials, 2008)

For this project specifically, the evaluation of MAPS 3 Streetcar route options that may provide the greatest benefit for economic, transportation and health will be the target of discussion. A rapid HIA is appropriate to facilitate the discussion of health impacts and insure this planning project furthers Oklahoma City’s goals to make HIAs part of the planning process.

Screening

This step in the HIA process is to determine whether or not an HIA is worthwhile (Wendel, 2012). For the MAPS 3 Streetcar, including the HIA as part of the planning process is a decision to help our community think about health impacts as they relate to planning projects in general as well as to transportation investments specifically. As part of the Wellness Now 2011 *Community Health Assessment*, the recommendation was made to: Establish the use of health impact assessments in all land development plans. COPTA is supporting this objective by integrating the HIA as part of the planning process for the streetcar. The MAPS 3 Streetcar may or may not have large health impacts, positive or negative, but building in the HIA as part of the planning process is important to the OKC community to insure the discussion about health continues and is integrated into the City’s planning work.

Scoping

This step in the HIA outlines what health concerns the proposed project, program, or change might impact and thus should be reviewed (Wendel, 2012). The MAPS 3 Streetcar touches the following areas related to the Wellness Now *Community Health Assessment* and *Community Health Improvement Plan*: location, economic development, housing, and transportation.

The prime area where the MAPS 3 Streetcar can address health related concerns is related to transportation. Increased transportation options can assist in creating job opportunities through economic development, access to employment and education, and greater access to housing choices.

Potential Impacts

The primary areas where the MAPS 3 Streetcar connects with health outcomes includes increasing physical activity opportunities and increasing accessibility to important destinations such as employment, recreational facilities, and health care facilities.

Boundaries of Analysis

This HIA primarily focuses on the impact of the MAPS 3 Streetcar on the following zip codes: 73102, 73103, and 73104. These zip codes have also been identified within the *Community Health Assessment* and *Community Health Improvement Plan* as having health-related concerns connected to transportation, community design, and walkability and also overlap with the MAPS 3 Streetcar route options.

Assessment

This step in the HIA characterizes the beneficial and adverse health effects of the proposal and alternatives (Wendel, 2012). For the MAPS 3 Streetcar, the assessment includes highlighting research that supports transit options as a means of addressing health outcomes. In the assessment section of this report, we will outline health impacts that we should be cognizant of and work to mitigate should they emerge in relation to the MAPS 3 Streetcar.

Reporting and Dissemination

This step in the HIA process insures that we document the process and gather the findings in a report and other methods to communicate the information to the community and decision-makers.

SECTION 2: BACKGROUND ON OKLAHOMA CITY

Oklahoma City (OKC) is the most populated city in the state and includes a geographic area over 620 square miles (City of OKC, OK, 2013). The median income of \$40,751 is lower the national average of \$50,502 (City of OKC, 2013; Noss, 2012).

In 1993, the City Council adopted a visionary capital improvement plan, MAPS, to address important community issues from education to urban planning. “MAPS for Kids” addresses school construction and renovations to work to make OKC schools more competitive with suburban and exurban schools. The initial MAPS program addressed significant economic development opportunities with recreation, entertainment and sports arenas. These projects included Bricktown, the Cox Center Convention Center, Dr. G.E. Finley Bridge, and the SkyDance Bridge.



The MAPS 3 program was approved by the voters on December 8, 2009, and funded by a seven-year, nine-month one-cent sales tax. MAPS 3 contains a diverse list of projects including a new rail-based streetcar system of approximately five to six miles, plus potential funding for other rail transit initiatives such as commuter lines and an intermodal transit hub in downtown. Through public and private investment, MAPS has been successful and is revealing a strong city.

OKC Project 180 is a supportive capital improvement effort to make downtown streets more livable and create more walkable spaces throughout the core with street trees, enhanced pedestrian paths and sidewalks, bicycle lanes, rest areas, and other supportive features for all users within the downtown.

SECTION 3: OVERVIEW OF HEALTH STATUS IN OKLAHOMA CITY

Oklahoma City has been improving their overall health outcomes through strong support of Oklahoma City-County Health Department and initiatives by Mayor Cornett in 2011 for OKC to “lose 1,000,000 pounds” – which was achieved in 2011 by the 47,000 residents who signed up for the challenge (City of OKC, 2013). While efforts are being made in OKC and in the state as a whole to address health outcomes, our state still ranks 43rd in overall health statistics which includes obesity, smoking rates, and chronic illnesses (United Health Foundation, 2013).

When focusing on transit investments, looking at obesity rates and lack of physical activity is relevant. Oklahoma as a state ranks 49th worst in the nation for lack of physical activity, with 30% of Oklahoma adults reporting not being physically active (OK State Health Department, 2011).



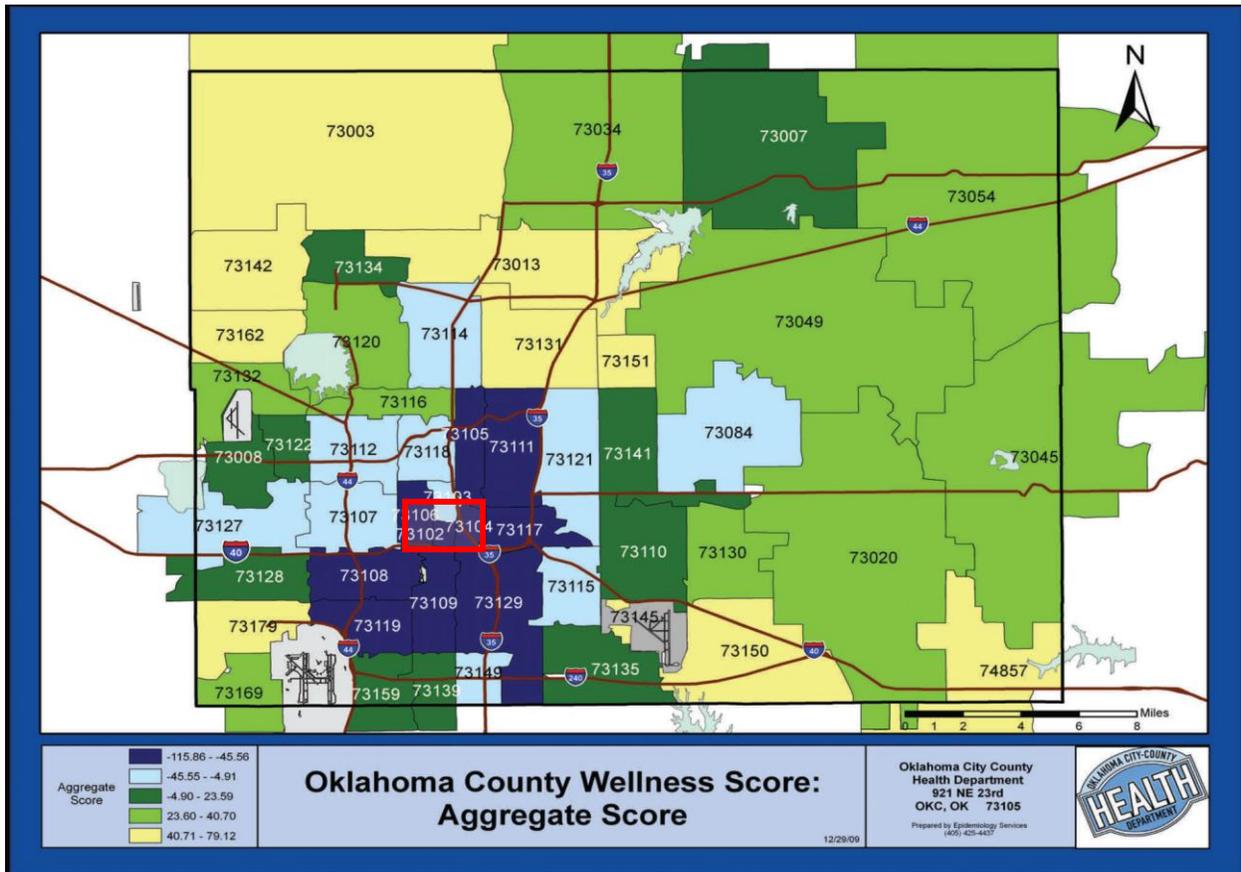
Source: United Health Foundation, 2013

Counties within Oklahoma City boundaries (Oklahoma, Canadian, Cleveland, and Pottawatomie) have a range of obesity rates between 28.4%-31.0% being graded as C to F for this indicator (OK State Health Department, 2011). Similarly, these same counties are listed with poor scores for physical activity with 26.4% - 37.0% scores of adults performing no physical activity (OK State Health Department, 2011). Increasing physical activity is one intervention to address obesity, as is education and access to healthier foods. Transit can be part of this solution too.

3.1 WELLNESS NOW’S COMMUNITY HEALTH ASSESSMENT

The 2011 *Community Health Assessment* conducted by the Wellness Now Coalition identified health related statistics within Oklahoma County and provided a “wellness score” for each zip code. The worst scores are clustered within and adjacent to the downtown area. The potential exists to affect 70% or more of the underlying causes through a combination of strategies that include individual changes in behavior and lifestyle, changes in community planning and design, and development of policies that promote individual and community health. The Wellness Score is mapped by zip code for Oklahoma County specifically in Figure 3-1.

FIGURE 3-1: WELLNESS NOW COMMUNITY HEALTH ASSESSMENT – WELLNESS SCORE (2011)



Note: = Area of overlap with MAPS 3 Streetcar route options

The Wellness Score used multiple criteria to provide the spatial assessment for Oklahoma County which include the following:

- Economic Factors
- Housing Factors
- Education Factors
- Transportation Factors
- Chronic Disease Factors
- Cancer Factors
- Infectious Disease Factors
- Emergency Department Utilization Factors
- Consumer Protection Factors
- Crime Factors

While to some degree increasing greater transit access can directly and indirectly impact many of the above criteria, the foci used for this HIA to evaluate the MAPS 3 Streetcar route options with the health-related factors from the Wellness Now Assessment are: Economic and Transportation Factors.

Additionally, the 2011 *Community Health Assessment* determined four overarching issues and potential solutions including:

1. Reduction of Poverty by Attaining a Marketable Skill
 - Develop visible links between gaining a high school diploma and employment
 - Leverage trade school training for encouraging small business development
 - Develop methods to retain trained/skilled workforce
2. Connecting Communities to Primary and Preventive Medical Services
 - Develop “health focus zone” utilizing co-located primary and preventive medical services using case management model
 - Promote adoption of faith based/community medical clinics by hospital systems to facilitate delivery of medical services at the neighborhood level
 - Pursue provision of public health services through a network of locations across Oklahoma County
 - Encourage all employers to offer paid sick leave that could be utilized for preventive visits to the doctor and dentist
3. Physical Activity through Community Design
 - Adopt the recommendations of the Complete Streets Coalition for developing land use plans that promote physical activity
 - Encourage legislative changes at the municipal and state level that will facilitate using “physically active” community development mass transportation designs
 - Establish the use of health impact assessments in all land development plans
4. Healthy Choices and Economically Sound Communities
 - Pursue tax reduction model for business that provide health promoting options
 - Focus reduced tax zones in areas with bottom Wellness Score to encourage development of businesses selling healthy foods

The overarching issue and contributing solutions the MAPS 3 Streetcar project most clearly addresses is:

Physical Activity through Community Design

- *Adopt the recommendations of the Complete Streets Coalition for developing land use plans that promote physical activity*
- *Encourage legislative changes at the municipal and state level that will facilitate using “physically active” community development mass transportation designs*

Since the MAPS 3 Streetcar project would affect community design, this HIA focuses on two interrelated solutions cited by the *Community Health Assessment*: complete streets and mass transit.

SECTION 4: INCREASING TRANSIT OPTIONS IN OKLAHOMA CITY

COTPA's most recent transit plan, the 2006 *Fixed Guideway Study*, sought to identify, evaluate, and recommend a public transit system with potential fixed guideway transit routes that would strengthen the Oklahoma City area's employment and activity centers. COTPA's Metro Transit provides fixed route service in the metropolitan area, so this current system would be supplemented and serve as a feeder system for potential fixed guideway routes. As part of the study process, a travel demand model was used to determine major travel patterns within the metropolitan area. These major travel patterns were then used to develop a range of conceptual corridors. The analysis and input resulted in eleven concept corridors for study, including a central corridor encompassing downtown, seven radial corridors, and three cross-town corridors.

Ultimately, the study resulted in the creation of the 2030 System Plan Vision for the Oklahoma City metropolitan area. The System Plan includes Commuter Rail from Edmond to Downtown Oklahoma City to Norman, and from Downtown Oklahoma City east to Midwest City/Tinker Air Force Base; Bus Rapid Transit along Reno Avenue, Northwest Expressway, 59th Street, and Meridian Avenue; and, Modern Streetcar serving as a circulator in downtown Oklahoma City. Enhanced Bus serves as the backbone of the System Plan and the number one priority for Oklahoma City. Enhanced bus will include more frequent service, extended service hours, and improved local and express bus service. METRO Link and METRO Lift service areas will also be increased with the implementation of the Enhanced Bus system.

The *Fixed Guideway Study* provided COTPA with a unique opportunity to identify potential transit solutions to improve connections among growth centers, enhance economic development opportunities, improve mobility, expand transportation options, and improve air quality. As a result, the MAPS 3 program included funds for a downtown streetcar and an intermodal hub, both of which are currently under consideration and further study. In addition, a commuter rail feasibility study and a fixed route bus system study are currently underway. All of these initiatives represent the next steps of the *Fixed Guideway Study* and seek to improve the overall transit system serving the Oklahoma City metropolitan area.

4.2 MAPS 3 STREETCAR PROJECT

The purpose of the MAPS 3 Streetcar project is to provide improved transit circulator services that significantly improve connectivity and circulation between major activity centers and promote economic development within Greater Downtown Oklahoma City. The MAPS 3 Streetcar will increase mobility for workers, residents and visitors by increasing access and improving walkability and enhancing pedestrian friendliness for destinations and attractions in the Greater Downtown, including the Business District, Automobile Alley, Bricktown, Midtown and St. Anthony Hospital. This initial streetcar service will serve as the "backbone" for potential future extensions to serve Deep Deuce, Oklahoma Health Center (OHC), State Capitol Complex, and the Core to Shore planning area.

Streetcar Route Options Under Review

As part of COTPA's 2011 *Alternatives Analysis for Greater Downtown Oklahoma City*, a locally preferred alternative (LPA) was defined as Modern Streetcar with two alignments: one for the Midtown-Downtown-Bricktown connections and another for the Downtown-OHC connections. The COTPA Board and City Council adopted this LPA in July 2011, with subsequent adoption by the Association of Central Oklahoma Governments in September 2011. Since the LPA did not receive approval for federal funding by the Federal

Transit Administration, the City decided to move forward with a locally funded only project under the MAPS 3 program.

As part of the MAPS 3 Streetcar, the LPA alignment within the downtown area was refined with a “fresh eyes” approach to maximize ridership and economic development potential and minimize capital costs. Seven route options were elevated for the major activity centers connected by the previously-adopted LPA. The route options utilize the following streets: Broadway, Robinson, and Hudson Avenues as north-south routes within downtown; 10th, 11th and 13th Streets as east-west routes within Midtown; and, Sheridan, Reno, and the future boulevard as east-west routes within Bricktown. Based on an evaluation of ridership, costs, and economic development, the seven route options were winnowed down to four route options. The four route options are the subject of this health impact assessment to determine qualitative connections between the MAPS 3 Streetcar and public health factors.

The connections between the MAPS 3 Streetcar project and the *Wellness Now Community Health Assessment* include the following: Physical Activity through Community Design, as mentioned, focusing on how complete streets and mass transit facilitate better health outcomes. Furthermore, the *Wellness Now Community Improvement Plan* identifies two Priority Areas that are also relevant to the MAPS 3 Streetcar, specifically Priority Area 2: Obesity with a particular emphasis on *Goal #4 to Encourage Physical activity* and Priority Area 6: Obstacles to Health with a particular emphasis on *reduction of transportation gaps or obstacles*.

Our discussion of the four route options in the subsequent section focuses on the factors that impact health, such as low income or not having transportation options, and review how each of the route options address benchmark criteria. The benchmark criteria used to evaluate the four route options include:

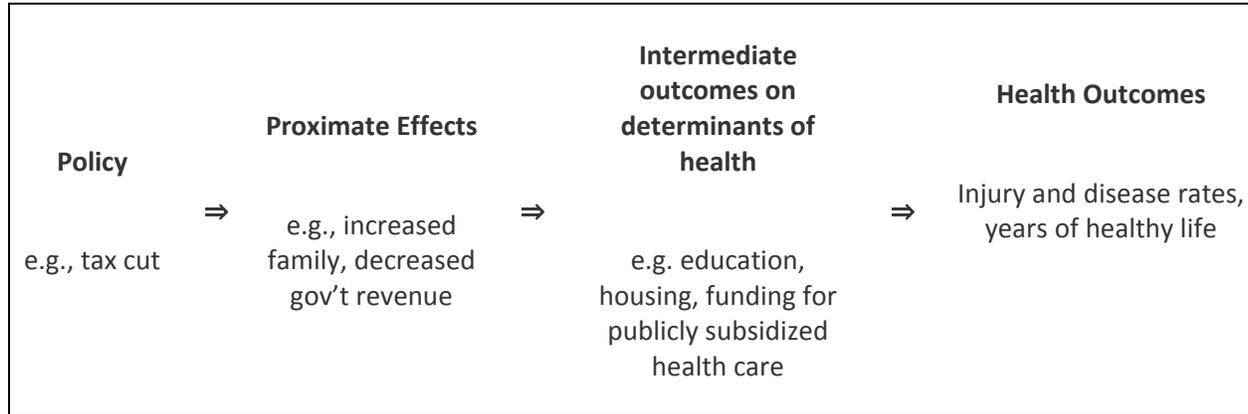
- Criteria 1. Providing greater transportation access to low-income populations and greater transportation access to low-income housing units
- Criteria 2. Providing greater transportation access to minority populations
- Criteria 3. Providing greater transportation access to those not owning a car or unable to drive a car.
- Criteria 4. Providing greater transportation access to health services such as clinics and hospitals.

The route options were also assessed on how well they connected to the Complete Streets or Project 180 streets that increase walkability and ease of use for transit.

SECTION 5: MAPS 3 STREETCAR HEALTH IMPACTS

In a health impact assessment (HIA), conceptual frameworks are used to connect how a policy or program is potentially connected to a desired outcome. Figure 5-1 shows an example of an HIA conceptual framework.

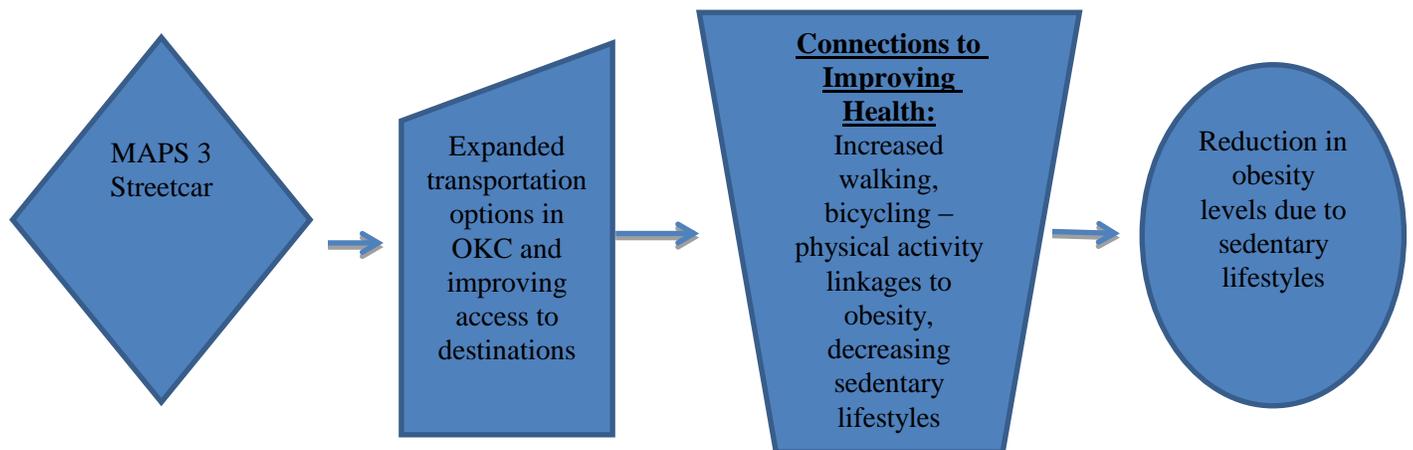
FIGURE 5-1: FRAMEWORK CONCEPT FOR HEALTH IMPACT ASSESSMENTS



Source: Framework concept for HIAs from UCLA HIA-Clearinghouse Learning & Information Center, <http://hiaguide.org/methods-resources/methods/logic-frameworks>

The MAPS 3 Streetcar has potential “proximate effects” or impacts connected to the implementation of streetcar. These can include improving transportation options in OKC and increasing access to major employment and entertainment districts of the downtown core. The “intermediate effects” or activities that may result from the implementation of the streetcar can include increased walking and physical activity as part of a lifestyle change. This helps address the lack of physical activity in daily lives of OKC residents and ultimately, along with diet and nutrition changes, can help reduce obesity levels due to sedentary lifestyles. This overall framework is summarized graphically in Figure 5-2.

FIGURE 5-2: FRAMEWORK FOR MAPS 3 STREETCAR CONNECTIONS TO HEALTH IMPACTS



Source: Framework concept for HIAs from UCLA HIA-Clearinghouse Learning & Information Center, <http://hiaguide.org/methods-resources/methods/logic-frameworks>

There are many factors that impact health, health status, and specifically health related outcomes from sedentary lifestyles. As noted earlier, Oklahoma needs to continue to work to reduce its rates of obesity and lack of physical activity because these conditions can lead to other chronic illness such as cardiovascular problems, Type II diabetes, depression and other related conditions. Overall health is influenced by personal factors such as our age, genetics, physical abilities, gender, and similar characteristics. However, personal health is also influenced by other factors such as family, work, and the built environment (McLeroy et al. 1988).

Studies have found that lifestyle changes, like walking most days of the week, have more pronounced and longer term benefits to individuals (Dunn, Anderson, and Jakicic 1998; Dunn 1999; Blair, Kohl, and Gordon 1992). Integrating physical activity as part of daily routines often becomes a habit and seamlessly becomes part of everyday life. Transit usage can be part of that equation given everyone that takes transit also needs to walk to complete a portion of their trip. Additionally transit users are more apt to walk to accomplish short trips (a few blocks or even greater distances) near their workplace where previously they might have unnecessarily driven this short distance.

When addressing how the MAPS 3 Streetcar impacts health, studies have been completed related to increased walking and physical activity with improvements in transit infrastructure in general. Differences in health outcomes between streetcar versus light rail has not been specifically studied but we can expect similar benefits given both retain similar transportation properties: fixed service, regular frequency, similar railcar, similar predictability of route, and so forth. Light rail transit has been connected to reductions in obesity due to increase physical activity (B. B. W. Brown 2009; B. B. Brown and Werner 2007; MacDonald et al. 2010; Hoehner et al. 2005; Besser and Dannenberg 2005). Body Mass Index (BMI) rates, increased walking, and lower obesity rates seem to be consistently associated with those who are transit users versus those who are not. These benefits translate to new transit users as well and can serve as an intervention to increase daily walking activity as part of regular daily lifestyles.

As previously mentioned, this HIA evaluates the proposed four route options of the MAPS 3 Streetcar using criteria based on analysis within the MAPS 3 Streetcar Livability Report and the Wellness Now *Community Health Assessment*:

- Criteria 1. Providing greater transportation access to low-income populations and greater transportation access to low-income housing units
- Criteria 2. Providing greater transportation access to minority populations
- Criteria 3. Providing greater transportation access to those not owning a car or unable to drive a car.
- Criteria 4. Providing greater transportation access to health services such as clinics and hospitals.

Additional assessment completed for Connections to Complete Streets / Project 180

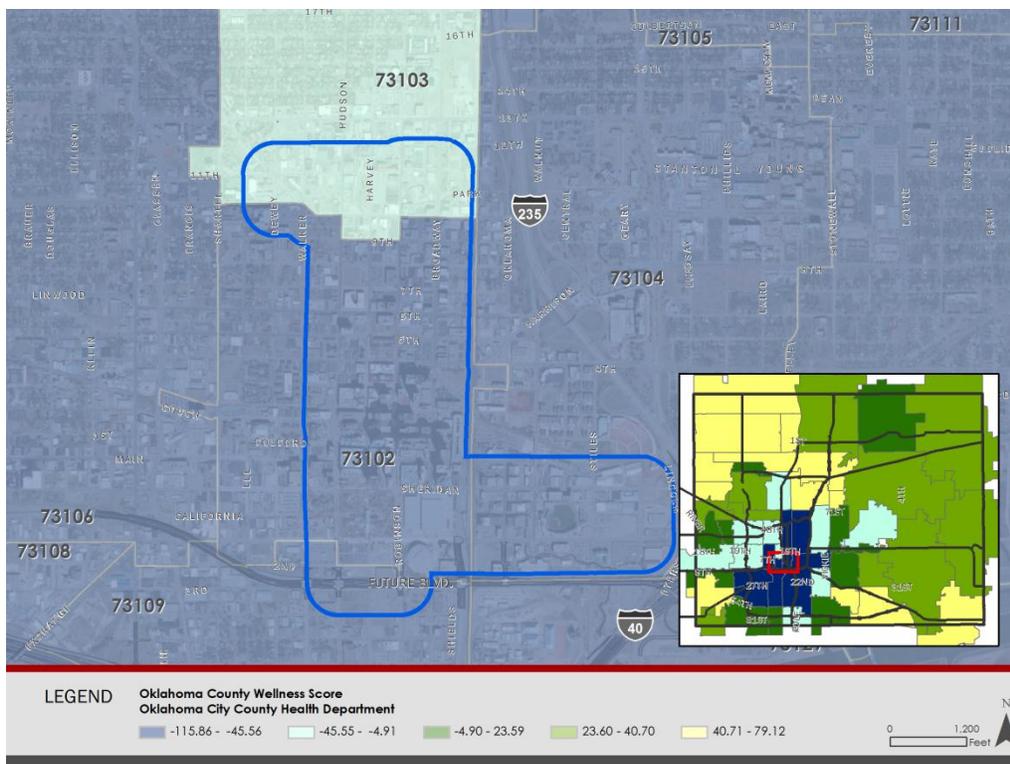
The route options were rated based on a qualitative ranking using: Excellent (+++), Good (++), Fair (+), and Poor (0). A higher rating for a particular criteria means that the route provided strong or direct access and fully addresses the criteria. For example, an “Excellent” rating for Criteria #1 would mean low-income populations had direct access to the full alignment with minimal walking distance or obstacles.

5.1 PROVIDING GREATER TRANSPORTATION ACCESS TO LOW-INCOME POPULATIONS

A fundamental part of providing equity in terms of access to health, employment, education, recreation, and other opportunities is looking at how planning activities positively or negatively impact our lower income populations. Studies have indicated that lower income groups pay a higher percentage of their income on transportation which means fewer funds for health, food, and education (Bell and Cohen, 2012). Therefore, providing better transportation options to lower income groups is important for addressing employment and health options for these families.

This was a concern raised in the Wellness Now *Community Health Assessment* when looking at data at the zip code level. Looking at the proposed MAPS 3 Streetcar route options within the buffered area in Map 5-3, all four route options fall within zip codes that are targeted with lower Wellness Scores. The Wellness Score encompasses more criteria than just economic factors.

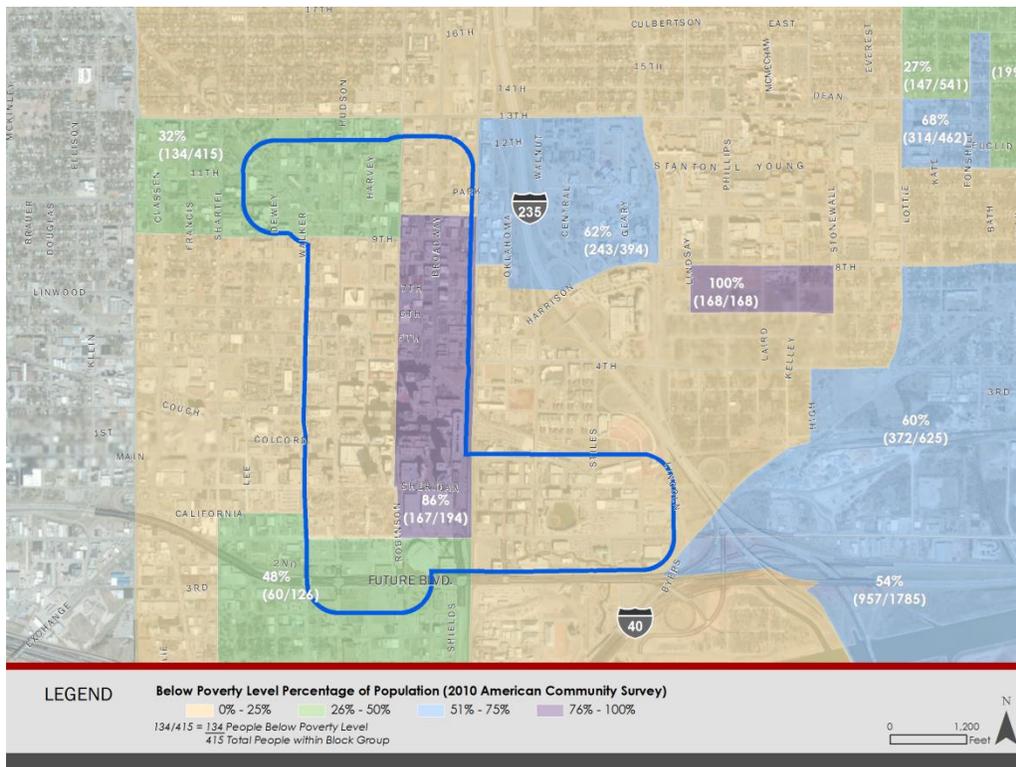
FIGURE 5-3: COMPOSITE ROUTE BUFFER AREA AND WELLNESS SCORECARD RESULTS



Note: Individual route option maps may be found in Appendix A.

To address Criteria #1 specifically, all four route options would serve a significant percentage of the population living in those zones that are below the poverty level according to the 2010 American Community Survey. All route options provide direct access to the zone that has 86% of the population below the poverty line (purple areas in Figure 5-4). Households with less income and high transportation costs results in those households have fewer funds for medical expenses, healthy food, and adequate housing. Helping to reduce transportation costs through better access and frequency can be beneficial to lower income households. The evaluation for all route options for Criteria #1 was assessed and rated “GOOD” as shown in Table 5-1.

FIGURE 5-4: STREETCAR COMPOSITE AREA AND LOW INCOME POPULATIONS



Note: Individual route option maps may be found in Appendix B.

TABLE 5-1: QUALITATIVE EVALUATION FOR CRITERIA #1

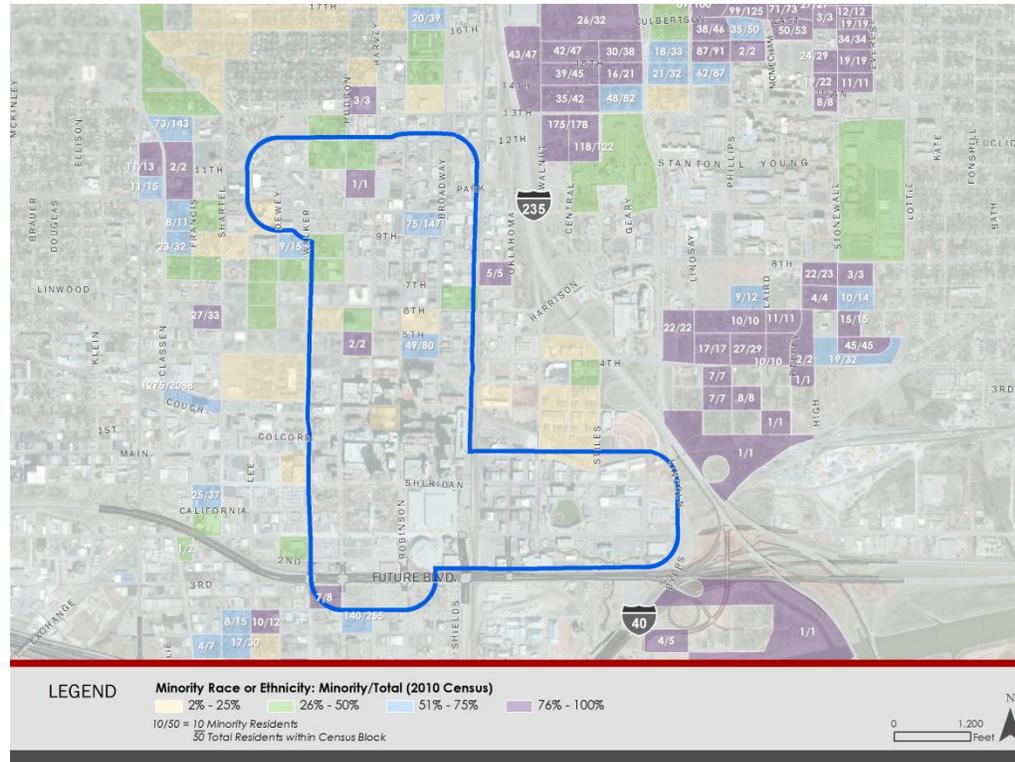
Route Option	Criteria #1 Access to low-income populations
LPA Reverse	++
Hybrid	++
Zeta	++
Zeta Plus	++

Ratings: Excellent (+++), Good (++), Fair (+), and Poor (0)

5.2 PROVIDING GREATER TRANSPORTATION ACCESS TO MINORITY POPULATIONS

Notably, the surrounding areas around the OKC Streetcar buffered route options have varied levels of diversity ranging from lower percentages of minorities in the vicinity to areas with higher percentages (purple areas show higher percentages in Figure 5-5). All four route options appear to provide similar levels of moderate access to these populations. Furthering connections with the streetcar or other transit modes linking to the Oklahoma City Health Center (OHC) and north of OHC could help increase transit coverage for minorities and different ethnicities in the OKC core. The evaluation for all route options for Criteria #2 was assessed and rated “FAIR” as shown in Table 5-2.

FIGURE 5-5: STREETCAR COMPOSITE AREA AND MINORITY POPULATIONS



Note: Individual route option maps may be found in Appendix C.

TABLE 5-2: QUALITATIVE EVALUATION FOR CRITERIA #2

Route Option	Criteria #2 Access to low-minority populations
LPA Reverse	+
Hybrid	+
Zeta	+
Zeta Plus	+

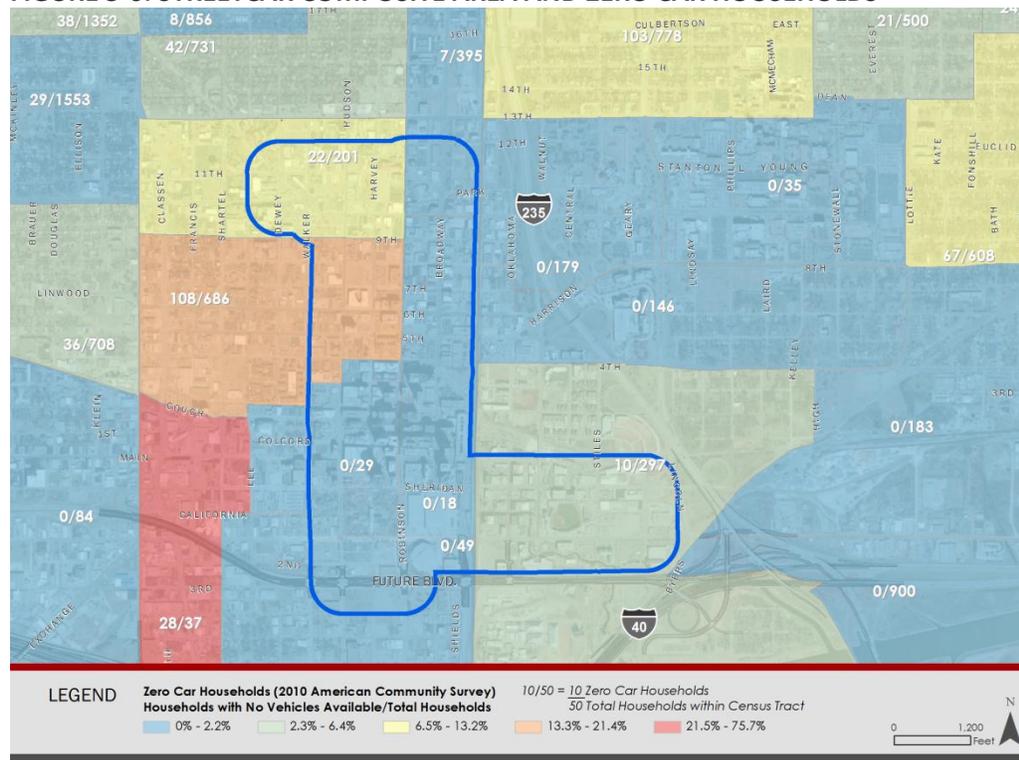
Ratings: Excellent (+++), Good (++), Fair (+), and Poor (0)

5.3 PROVIDING GREATER TRANSPORTATION ACCESS TO ZERO CAR HOUSEHOLDS

Many individuals, those who are too young or too old to drive, those with disabilities, those who cannot afford a car, and those choosing not to own a car, all are dependent on walking, bicycling and taking transit for their daily needs. The MAPS 3 Streetcar route options are near some areas of the city where the 2010 Census has documented zero-car households.

Figure 5-6 shows Zero Car Households zones as compared with the buffered area of route options. Each of the four route options provide some minor access to an existing area of the downtown where households reported have “Zero Cars” (orange area in Figure 5-6: 13-21% reported Zero Cars). The difference between the route options for this criterion is negligible and specific station location and connection to additional transit (e.g. frequent bus service) would benefit all four route options. Therefore, the evaluation for all route options for Criteria #3 was assessed and rated “FAIR” as shown in Table 5-3.

FIGURE 5-6: STREETCAR COMPOSITE AREA AND ZERO CAR HOUSEHOLDS



Note: Individual route option maps may be found in Appendix D.

TABLE 5-3: QUALITATIVE EVALUATION FOR CRITERIA #3

Route Option	Criteria #3 Access for Zero Car Households
LPA Reverse	+

Hybrid	+
Zeta	+
Zeta Plus	+

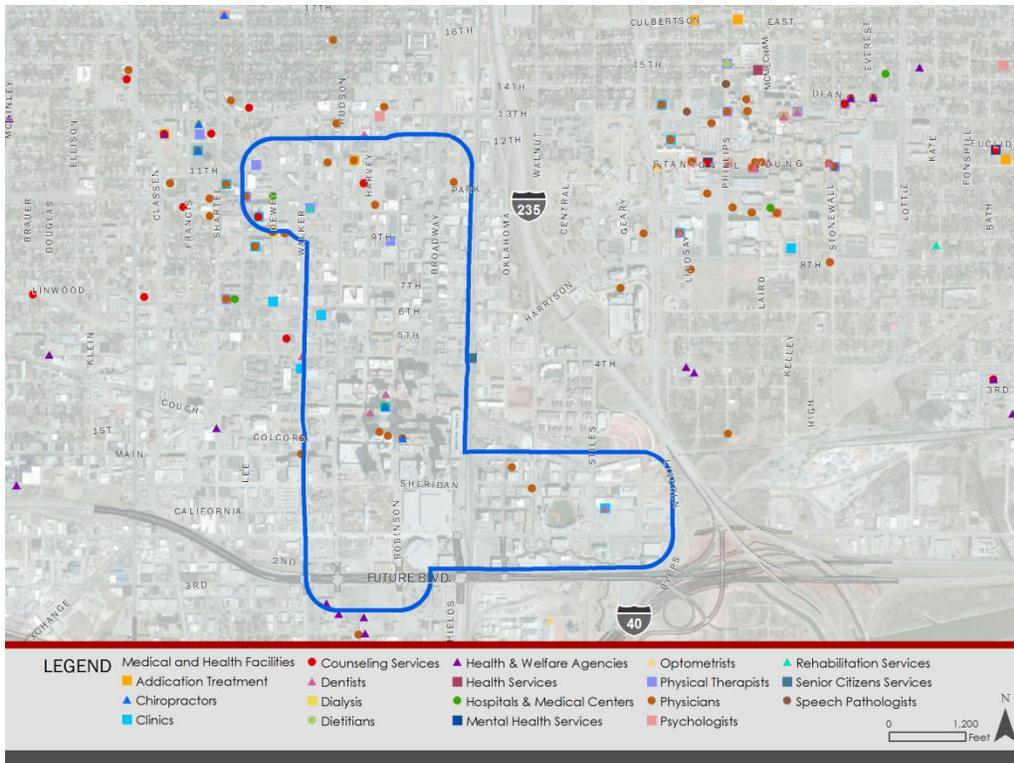
Ratings: Excellent (+++), Good (++), Fair (+), and Poor (0)

5.4 PROVIDING GREATER TRANSPORTATION TO HEALTH SERVICE PROVIDERS

The streetcar may not be the ideal means of accessing health care providers unless a stop is within limited feet from the entrance of these destinations. Presumably many accessing health care may have an illness, physical ailment or other such condition that walking is less than desirable. However, the streetcar provides some access to these destinations, but additional transit services may be needed to fully address this need within the community.

In Figure 5-7, the buffered area of route options and the health care destinations are shown to identify some of the connections that may be possible. The LPA Reverse route option provides access to approximately 15 different types of health providers and the Hybrid route option provides access to approximately 18 different types of health providers from physician or dental offices to physical therapists. The Zeta and Zeta Plus route options provide access to approximately 15-17 different health providers. All four route options provide good accessibility to health care providers, including St. Anthony Hospital. The exact location of stops would be needed to determine if using the streetcar was a viable option for those traveling to access health care providers along with the individual’s ability to walk some amount of distance to their final destination. The evaluation for all route options for Criteria #4 was assessed and rated “GOOD” as shown in Table 5-4.

FIGURE 5-7: STREETCAR COMPOSITE AREA AND HEALTH CARE PROVIDERS



Note: Individual route option maps may be found in Appendix E.

TABLE 5-4: QUALITATIVE EVALUATION FOR CRITERIA #4

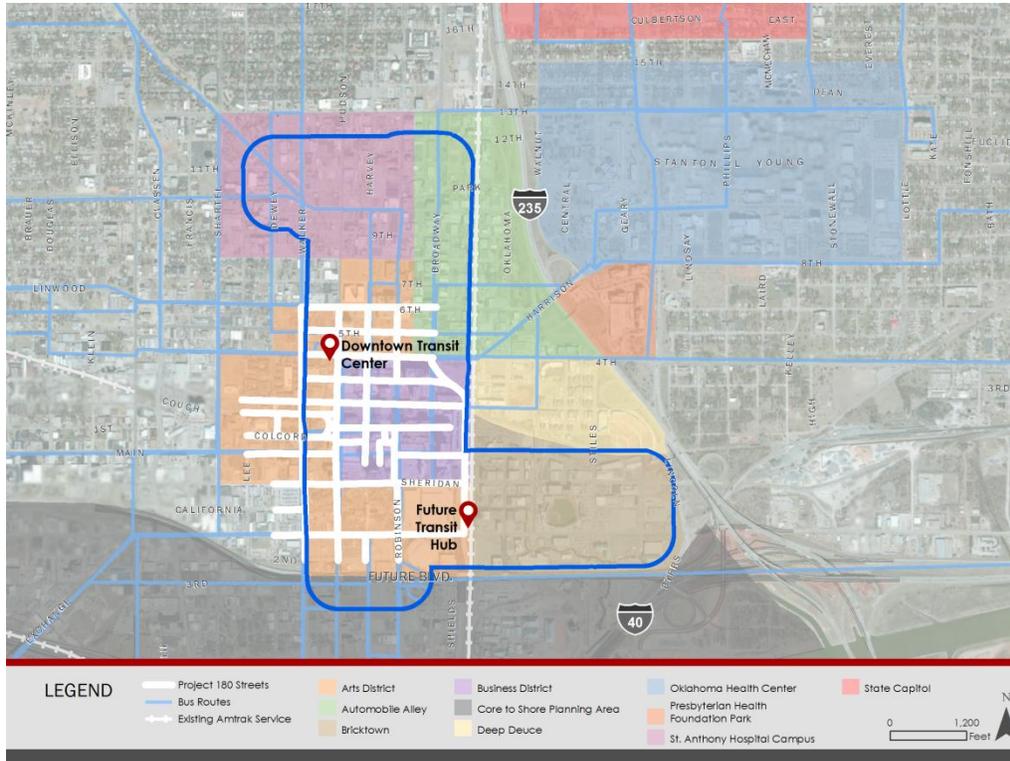
Route Option	Criteria #4 Access for Health Service Providers
LPA Reverse	++
Hybrid	++
Zeta	++
Zeta Plus	++

Ratings: Excellent (+++), Good (++), Fair (+), and Poor (0)

5.5 CONNECTIONS WITH COMPLETE STREETS/PROJECT 180

Combine the MAPS 3 Streetcar with Project 180 streets and the overall picture of walkability and transit access begins to further open the downtown core to more livable and lifestyle changes that can increase physical activity through transit. In Figure 5-8, connections between the Project 180 streets and the MAPS3 Streetcar route options help to make the core truly livable. The Hybrid, Zeta and Zeta Plus route options have slightly higher connectivity with the Project 180 streets. Notably, basic walkability and ADA access is provided on all or most corridors throughout the downtown and Project 180 streets are providing additional amenities to basic infrastructure for all modes of transportation. The evaluation for all route options for Connections with Complete Streets/Project 180 streets was assessed to be “GOOD” as shown in Table 5-5.

FIGURE 5-8: MAPS 3 STREETCAR COMPOSITE AREA AND PROJECT 180 STREETS



Note: Individual route option maps may be found in Appendix F.

TABLE 5-5: QUALITATIVE EVALUATION OF STREETCAR/PROJECT 180

Route Option	Connections with Complete Streets/Project 180
LPA Reverse	++
Hybrid	++
Zeta	++
Zeta Plus	++

Ratings: Excellent (+++), Good (++) , Fair (+), and Poor (0)

SECTION 6: CONCLUSION

In conclusion, Table 6-1 summarizes the qualitative assessment of the MAPS 3 Streetcar route options with the key health criteria as documented in Section 5.

TABLE 6-1: QUALITATIVE ASSESSMENT OF STREETCAR ROUTES WITH HEALTH-RELATED CRITERIA

<i>Route Options</i>	<i>Criteria #1 Access to low-income populations</i>	<i>Criteria #2 Access to minority populations</i>	<i>Criteria #3 Access for Zero Car households</i>	<i>Criteria #4 Access to health services</i>	<i>Connections with Complete Streets/ Project 180</i>
LPA Reverse	++	+	+	++	++
Hybrid	++	+		++	++
Zeta	++	+	+	++	++
Zeta Plus	++	+	+	++	++

Ratings: Excellent (+++), Good (++) , Fair (+), and Poor (0)

Ratings are qualitative in nature in order to give a summary of how each of the route options address the benchmark criteria through direct or close access to particular populations or areas of the community. An “Excellent” rating required that the route option fully provided access or connections meeting that criterion. A “Poor” rating meant that the route option did not address that criterion in a strong or meaningful way. The “Good” and “Fair” categories are qualitatively in between these ratings.

All four route options provide good linkages to lower income and minority households and to health service providers. They also provide an opportunity for more zero car households in the future, as new households may forego a car due to streetcar accessibility. In general, all route options would serve these criteria more effectively in conjunction with additional frequent transit service, such as increase bus service, to other areas of the city.

Overall, the MAPS 3 Streetcar route options address the key criteria outlined at varying levels. As with any planning or public health project, one solution, project or program does not solve all health problems. Transit, along with land use planning, economic development, and improved streets for walking can facilitate a healthier option for many OKC residents.

6.1 POLICY SUGGESTIONS

Based on the HIA assessment, COTPA supports the following policy suggestions for Oklahoma City and applicable departments and agencies as the MAPS 3 Streetcar moves forward into implementation:

- 1) Coordinate the selected route with more frequent transit service, presumably bus service, to increase number of destinations that can be accessed easily.
- 2) Consider streetcar stop locations that can provide direct or minimal walking distance to health care providers and exercise locations (e.g. parks, gyms, recreations centers) when possible.
- 3) Pursue the future expansion of the streetcar or more frequent bus transit to the Oklahoma City Health Center and nearby neighborhoods (including Wellness Now targeted zip codes 7311, 73104 and 73105) in order increase transit access to lower income and minority populations.
- 4) Promote streetcar access to recruit a medium-sized grocery near selected route alignment.
- 5) Continue to connect and construct walkable, bikeable and transit-friendly streets to the Project 180 streets and the selected route for livable streets overall.
- 6) Promote streetcar usage as a way to improve downtown air quality.
- 7) Coordinate design of streetcar stops with place-making features such as lighting, accessible ramps, and public space elements to increase safety and maximize “eyes-on-the-street.”
- 8) Promote opportunities to include affordable housing options and diversity of housing types near streetcar stations.

6.2 COMMUNITY DISCUSSION AND INPUT

Comments received at a Wellness Now coalition meeting in August 2013, included suggestions that supportive efforts or policies to link with the MAPS3 Streetcar could include:

- 1) Addressing housing options (e.g. affordable housing options, increase universal design where possible to allow more accessible housing options)
- 2) Looking into planning for frequent bus service to areas like the 73111 zip code to make the streetcar more effective for lower income and minority areas of the metro area

Furthermore, community review of the HIA has revealed streetcar’s relationship to both affordable housing and disability-accessible housing, and how both forms should be part of a downtown healthy housing strategy. The strategy should be designed to help secure an above-average mix of such housing within 500 feet of the streetcar line so that more people can reside in this area.

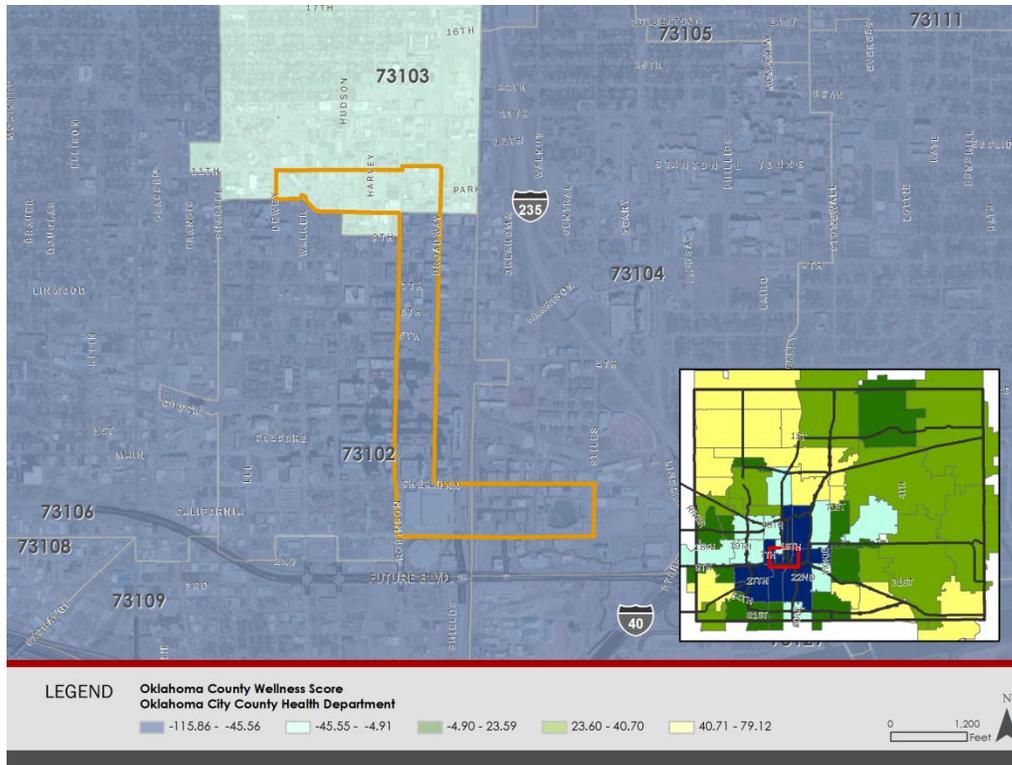
REFERENCES

- Bell, Judith, and Larry Cohen. "The Transportation Prescription: Bold New Ideas for Healthy, Equitable Transportation Reform in America". PolicyLink, 2012.
http://www.kpinstituteforhealthpolicy.info/kpihp/CMS/Files/the_transportation_prescription_071709.pdf.
- Besser, Lilah M., and Andrew L. Dannenberg. 2005. "Walking to Public Transit: Steps to Help Meet Physical Activity Recommendations." *American Journal of Preventive Medicine* 29 (4) (November): 273–280. doi:10.1016/j.amepre.2005.06.010.
- Blair, SN, HW Kohl, and NF Gordon. 1992. "Physical Activity and Health: A Lifestyle Approach." *Med Ex Nutr Health* 1: 54 –7.
- Brown, Barbara B., and Carol M. Werner. 2007. "A New Rail Stop: Tracking Moderate Physical Activity Bouts and Ridership." *American Journal of Preventive Medicine* 33 (4) (October): 306–309. doi:10.1016/j.amepre.2007.06.002.
- Brown, Barbara B. Werner. 2009. "Before and After a New Light Rail Stop: Resident Attitudes, Travel Behavior, and Obesity." *Journal of the American Planning Association* 75 (1): 5. doi:10.1080/01944360802458013.
- City of OKC, OK. State of the City. 2013.
http://www.okc.gov/council/mayor/state_of_city/2013/index.html
- City of OKC, OK. Project 180: Transforming 180 acres of Downtown. 2013.
<http://www.okc180.com/index.php?id=3>
- City of OKC, OK. About Oklahoma City. 2013. <https://www.okc.gov/about/index.html>
- City of OKC, OK. Metropolitan Area Capital Projects (MAPS). MAPS History.
<http://www.okc.gov/maps3/mapshistory.html>
- Dannenberg, Andrew L., Bhatia, Rajiv, Cole, Brian L., Heaton, Sarah K., Feldman, Jason D. Rutt, Candace D. Use of Health Impact Assessment in the U.S. 27 Case Studies, 1999–2007 *Am J Prev Med* 2008;34(3):241–256
- Dunn, Andrea L. 1999. "Comparison of Lifestyle and Structured Interventions to Increase Physical Activity and Cardiorespiratory Fitness." *Journal of American Medical Association* 281 (4): 327–334.
- Dunn, Andrea L., Ross Anderson, and J. Jakicic. 1998. "Lifestyle Physical Activity Interventions: History, Short- and Long-Term Effects, and Recommendations." *American Journal of Preventive Medicine* 15 (4). internal-pdf://Dunn Marcus lifestyle and structured interventions-3551833351/Dunn Marcus lifestyle and structured interventions.pdf.
- European Centre for Health Policy, World Health Organization Regional Office for Europe. Gothenburg Consensus Paper. Health impact assessment: main concepts and suggested approach. Brussels, 1999. Available online at: <http://www.euro.who.int/document/PAE/Gothenburgpaper.pdf>.
- Hoehner, Christine M., Laura K. Brennan Ramirez, Michael B. Elliott, Susan L. Handy, and Ross C. Brownson. 2005. "Perceived and Objective Environmental Measures and Physical Activity Among Urban Adults." *American Journal of Preventive Medicine* 28 (2, Supplement 2): 105–116.
- MacDonald, John M., Robert J. Stokes, Deborah A. Cohen, Aaron Kofner, and Greg K. Ridgeway. 2010. "The Effect of Light Rail Transit on Body Mass Index and Physical Activity." *American Journal of Preventive Medicine* 39 (2) (August): 105–112. doi:10.1016/j.amepre.2010.03.016.
- McLeroy, Kenneth, Daniel Bibeau, Allan Steckler, and Karen Glanz. 1988. "An Ecological Perspective on Health Promotion Programs." *Health Education Quarterly* 15 (4): 351–377.
- National Association of County & Health Officials. Health Impact Assessments: A Quick Guide.
http://www.activelivingresearch.org/files/NACCHO_HIAQuickGuide_0.pdf May 2008.

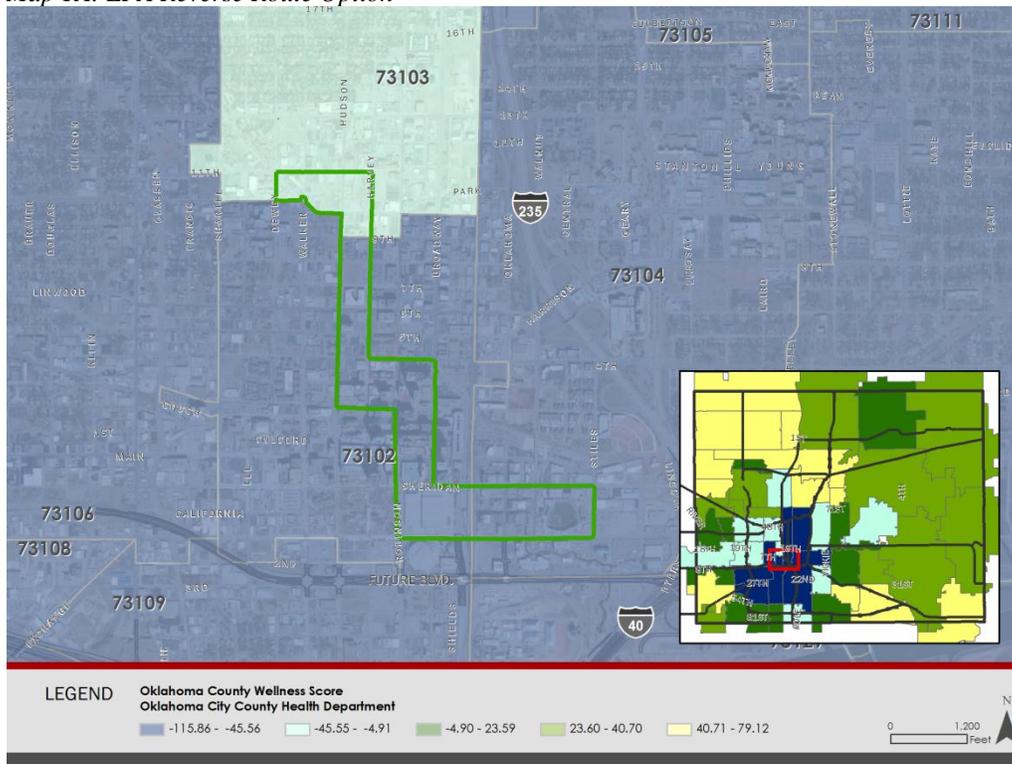
- Noss, Amanda. 2012. Household Income for States: 2010 and 2011. American Community Survey Briefs. ACSBR/11-02. <http://www.census.gov/prod/2012pubs/acsbr11-02.pdf>
- Oklahoma State Health Department. 2011 State of the State's Health Report. www.ok.gov/health/pub/boh/state/index.html
- United Health Foundation. America's Health Rankings. 2013. <http://www.americashealthrankings.org/OK>
- Wendel, Arthur M., Establishing the practice of health impact assessment in the United States . *J Environ Health* 2012;75(1):32-33.

**APPENDICES:
ROUTE BY ROUTE
COMPARATIVE ANALYSIS WITH
HIA CRITERIA**

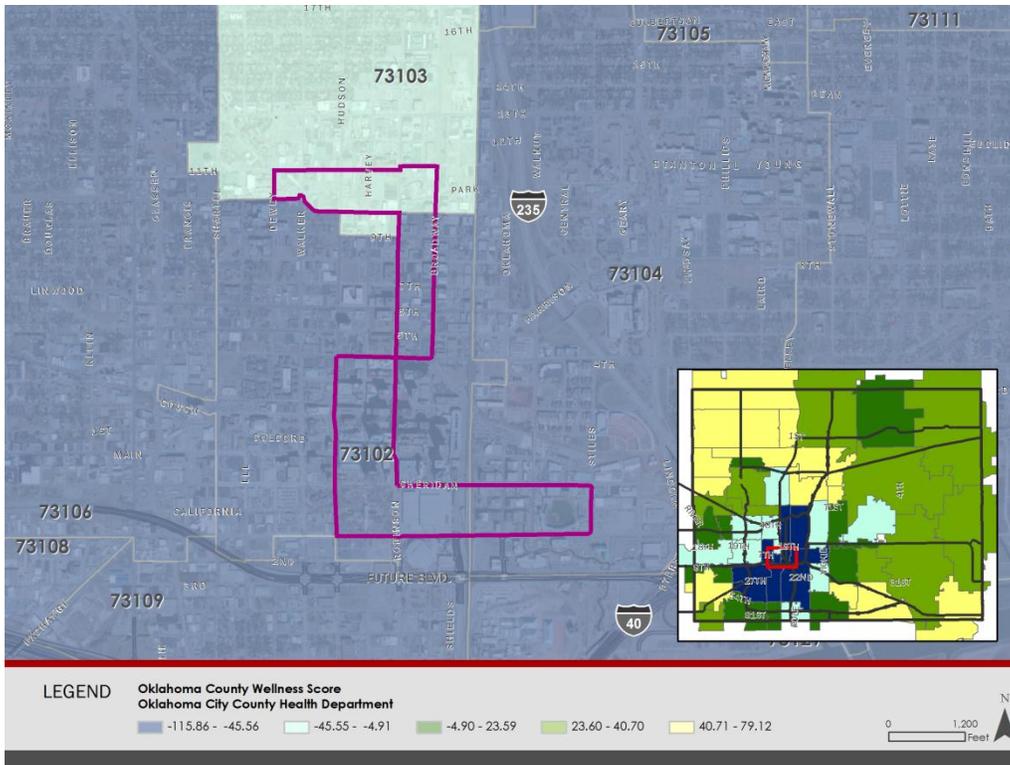
APPENDIX A:
MAPS 3 STREETCAR ROUTES IN RELATION TO
WELLNESS SCORECARD RESULTS



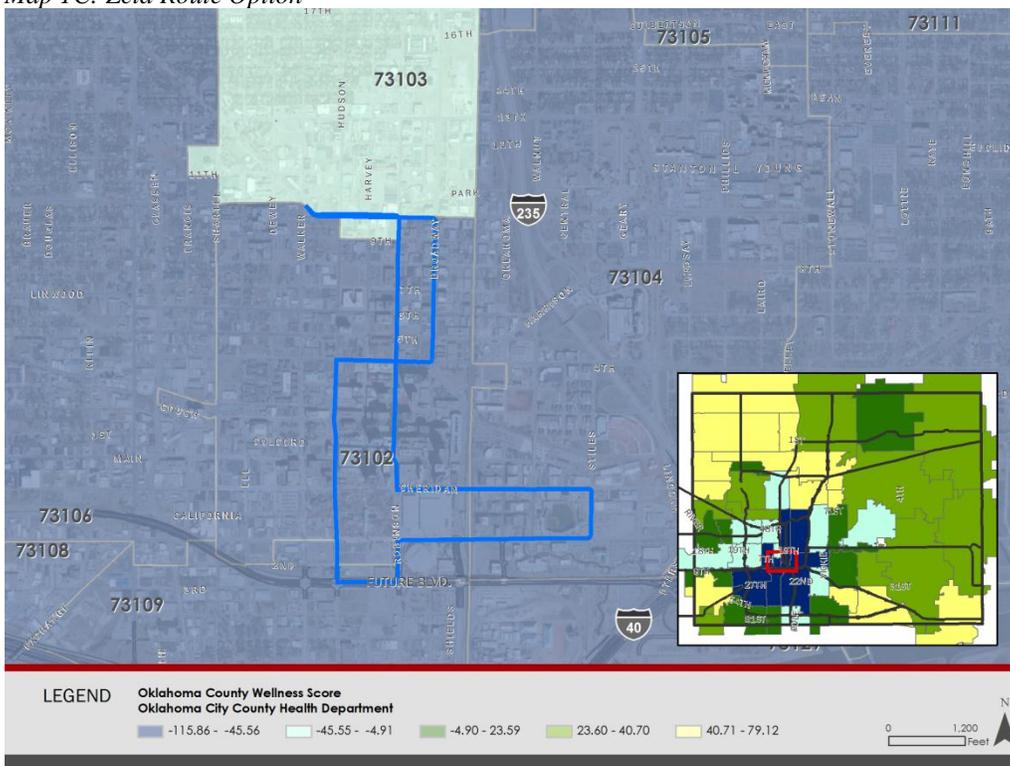
*OKC Streetcar alignments and Wellness Now's Wellness Scorecard Results
Map 1A: LPA Reverse Route Option*



*OKC Streetcar alignments and Wellness Now's Wellness Scorecard Results
Map 1B: Hybrid Route Option*

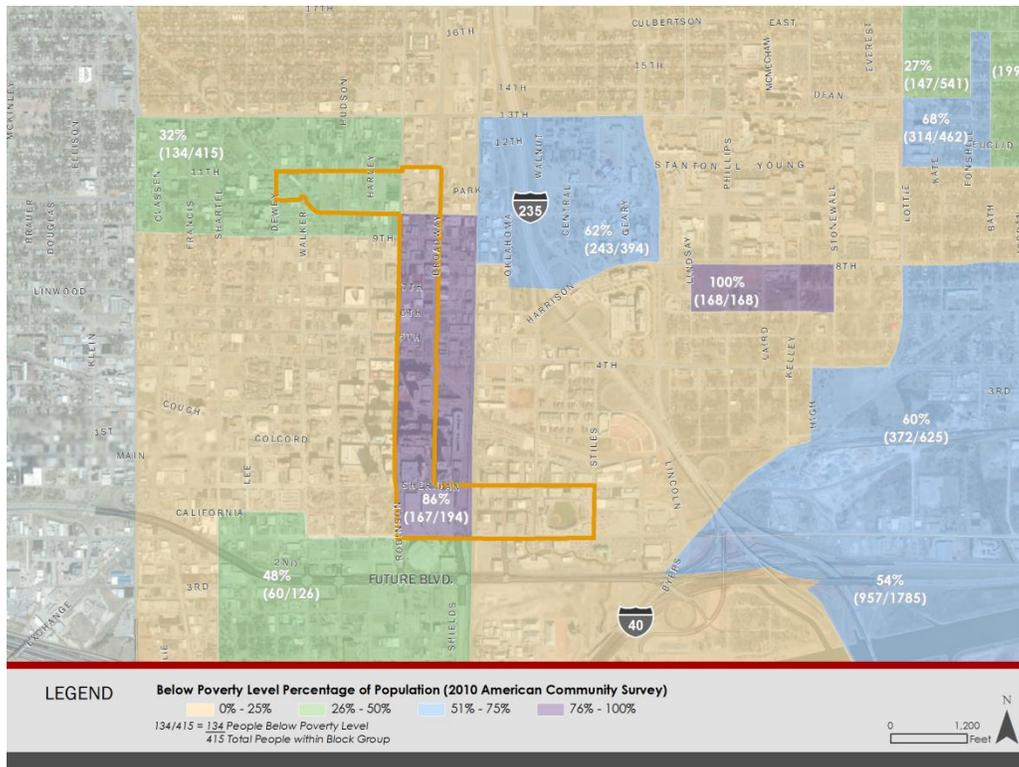


*OKC Streetcar alignments and Wellness Now's Wellness Scorecard Results
Map 1C: Zeta Route Option*

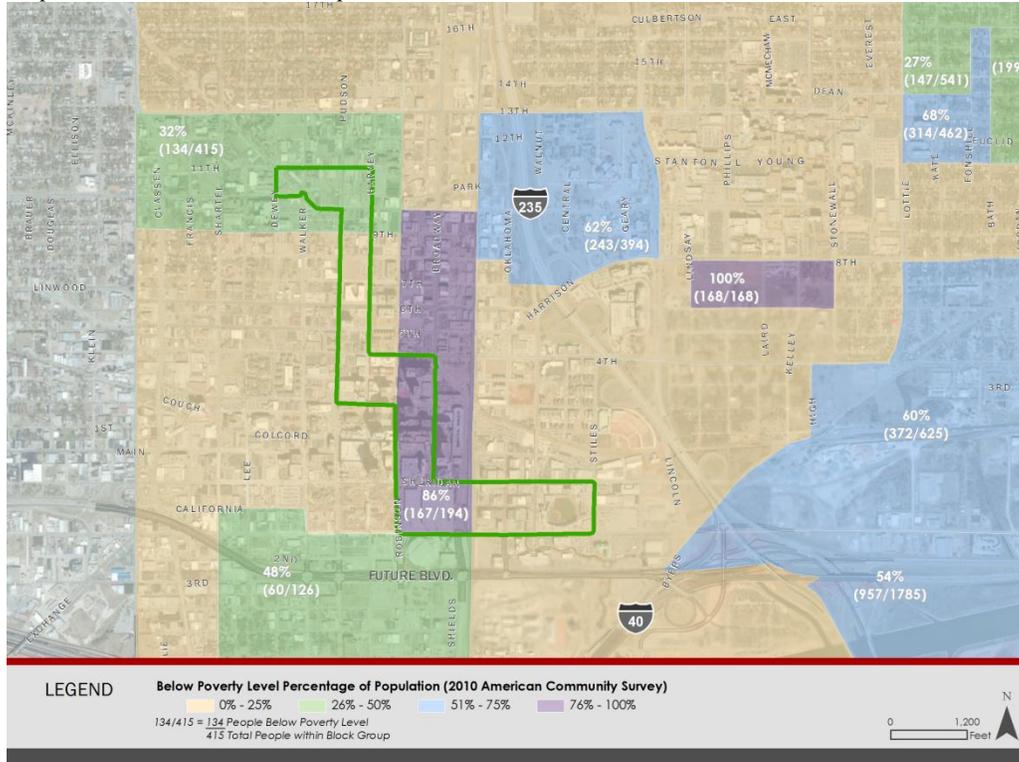


*OKC Streetcar alignments and Wellness Now's Wellness Scorecard Results
Map 1D: Zeta Plus Route Option*

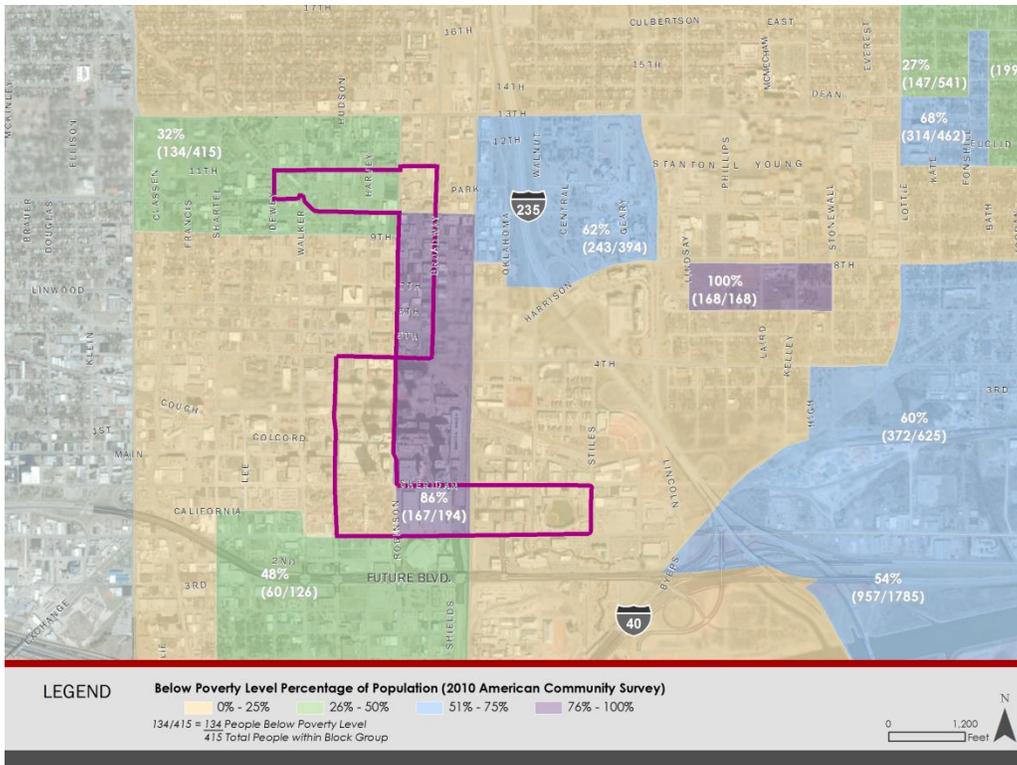
APPENDIX B:
MAPS 3 STREETCAR ROUTES IN RELATION TO
HIA CRITERIA #1



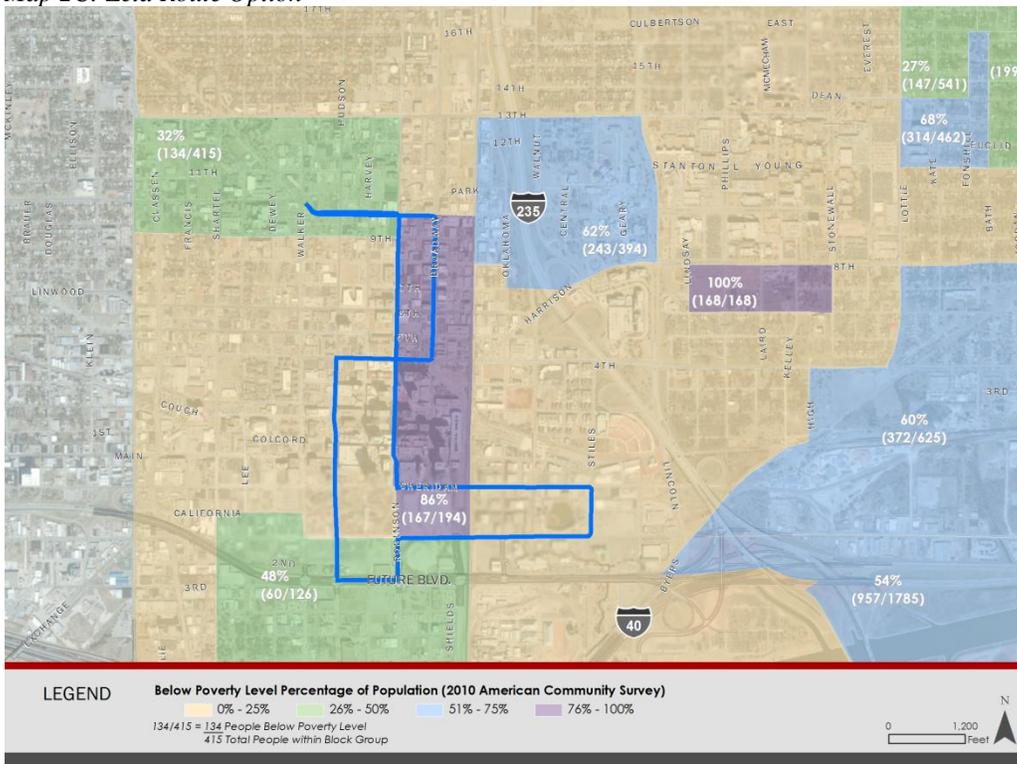
*OKC Streetcar alignments and Population Below the Poverty Level
Map 2A: LPA Reverse Route Option*



*OKC Streetcar alignments and Population Below the Poverty Level
Map 2B: Hybrid Route Option*

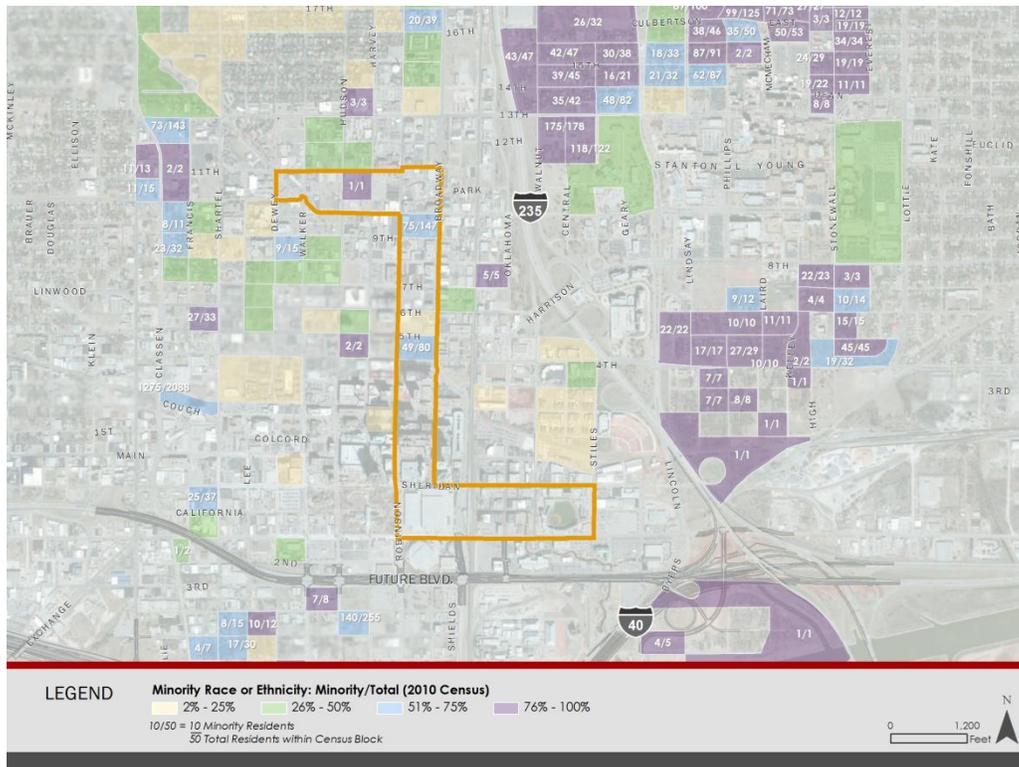


*OKC Streetcar alignments and Population Below the Poverty Level
Map 2C: Zeta Route Option*

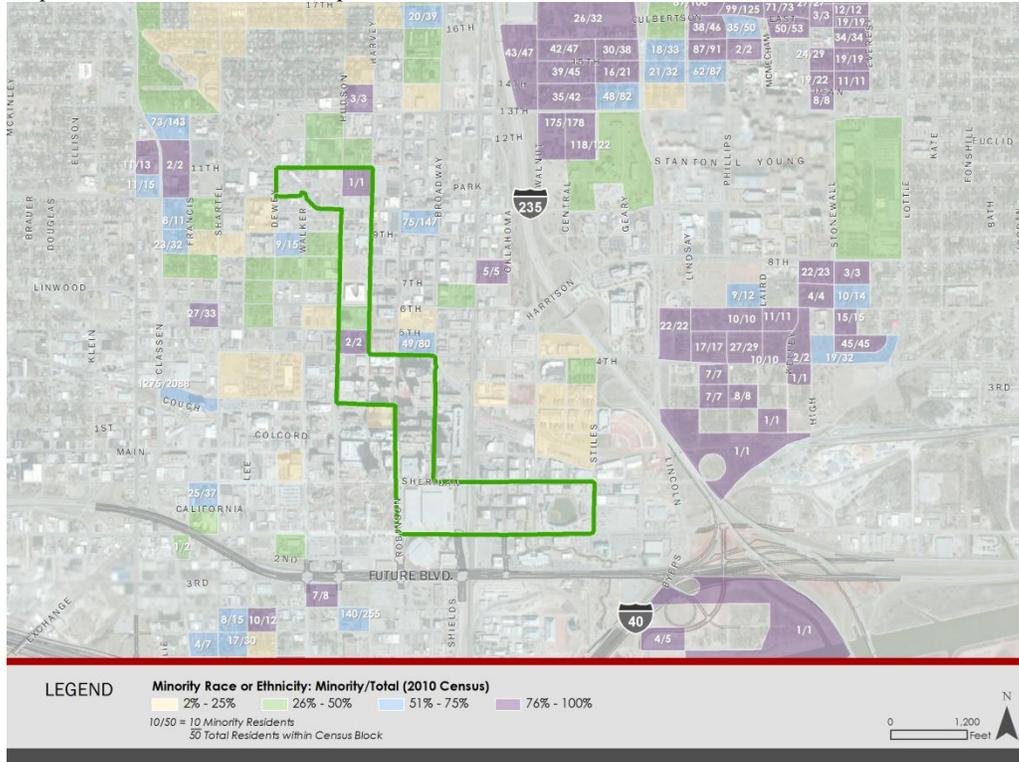


*OKC Streetcar alignments and Population Below the Poverty Level
Map 2D: Zeta Plus Route Option*

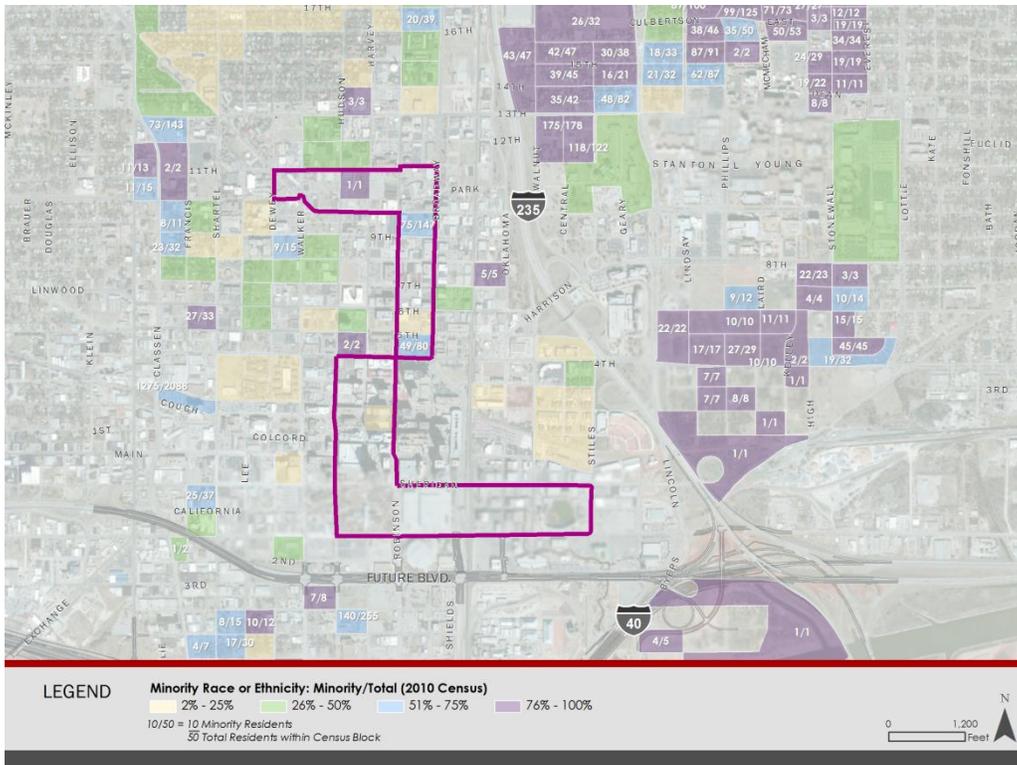
**APPENDIX C:
MAPS 3 STREETCAR ROUTES IN RELATION TO
HIA CRITERIA #2**



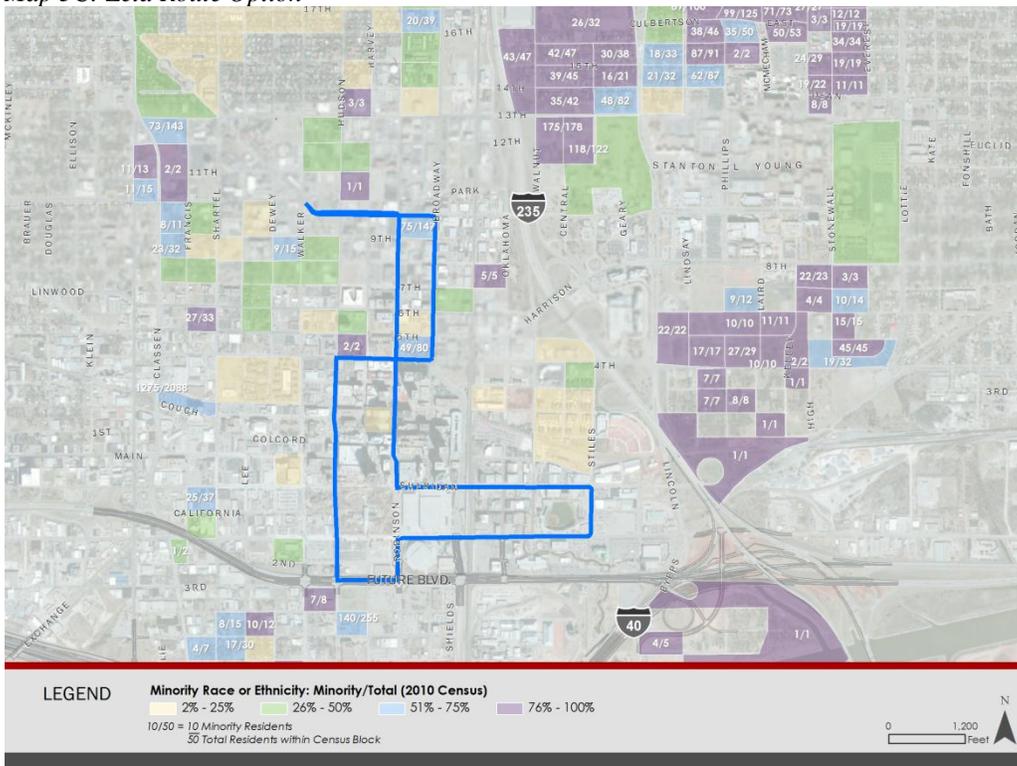
OKC Streetcar alignments and Minorities or Ethnically Diverse Population areas
Map 3A: LPA Reverse Route Option



OKC Streetcar alignments and Minorities or Ethnically Diverse Population areas
Map 3B: Hybrid Route Option

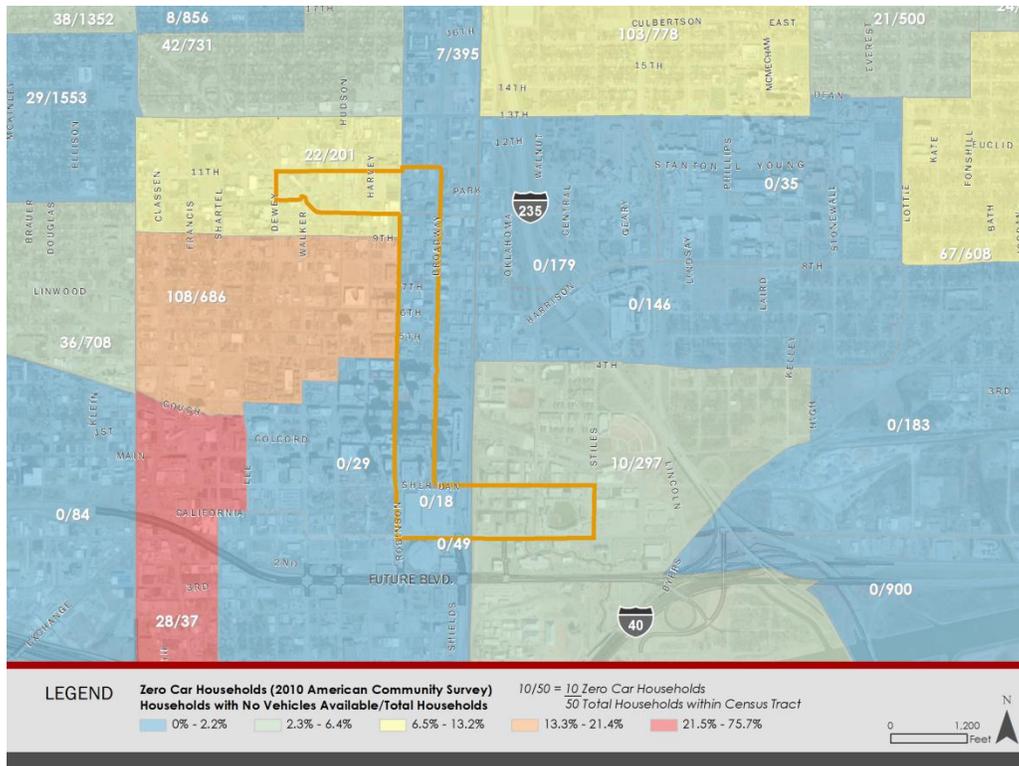


OKC Streetcar alignments and Minorities or Ethnically Diverse Population areas
Map 3C: Zeta Route Option

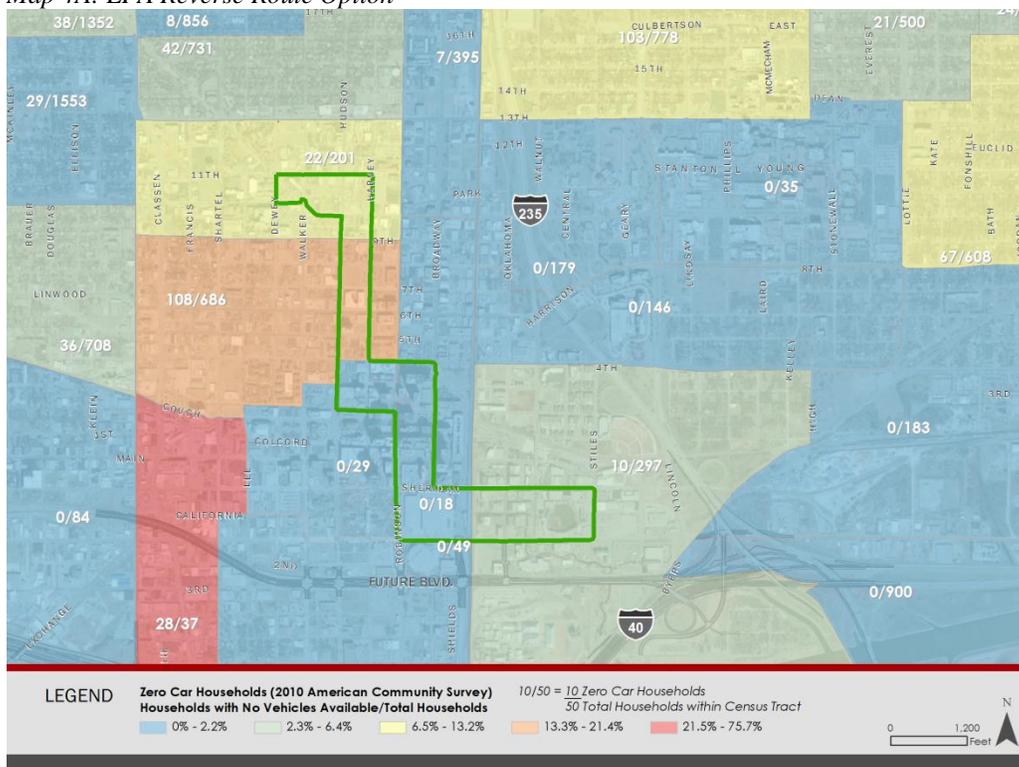


OKC Streetcar alignments and Minorities or Ethnically Diverse Population areas
Map 3D: Zeta Plus Route Option

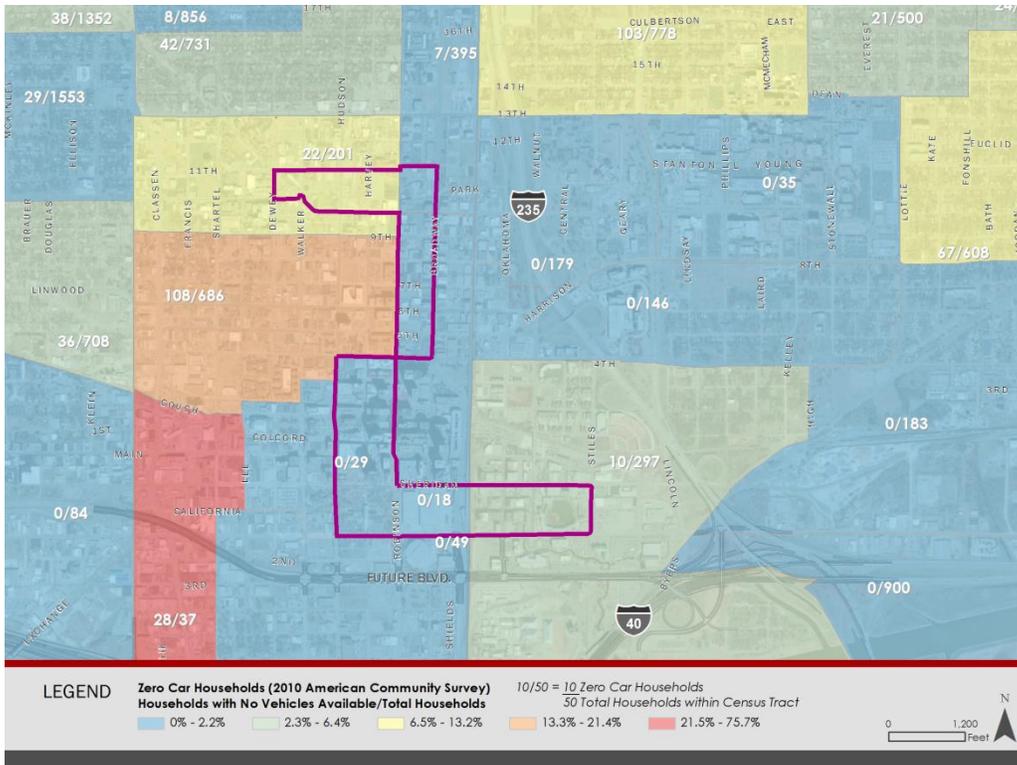
**APPENDIX D:
MAPS 3 STREETCAR ROUTES IN RELATION TO
HIA CRITERIA #3**



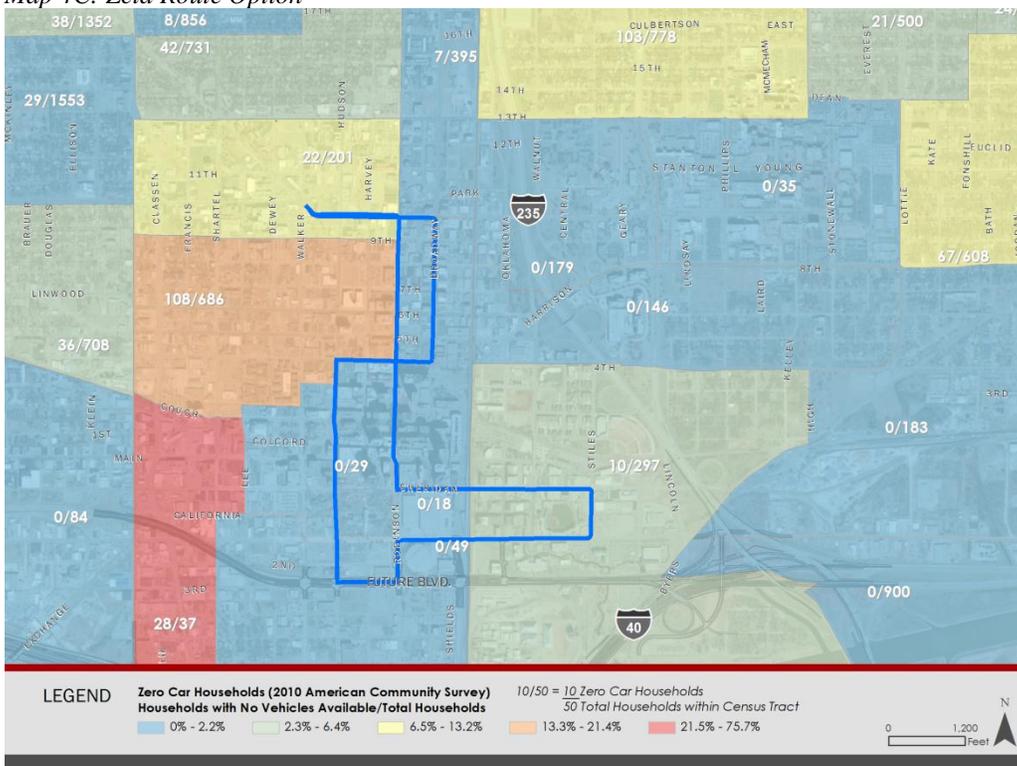
OKC Streetcar alignments and Zero Car Households
Map 4A: LPA Reverse Route Option



OKC Streetcar alignments and Zero Car Households
Map 4B: Hybrid Route Option

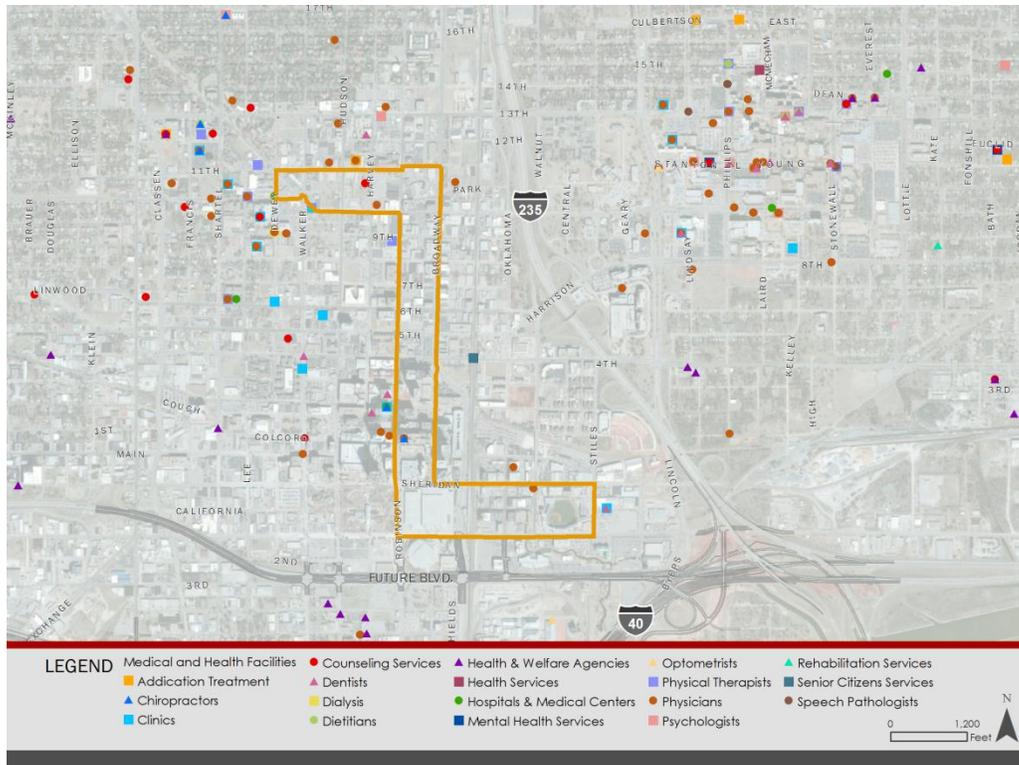


*OKC Streetcar alignments and Zero Car Households
Map 4C: Zeta Route Option*

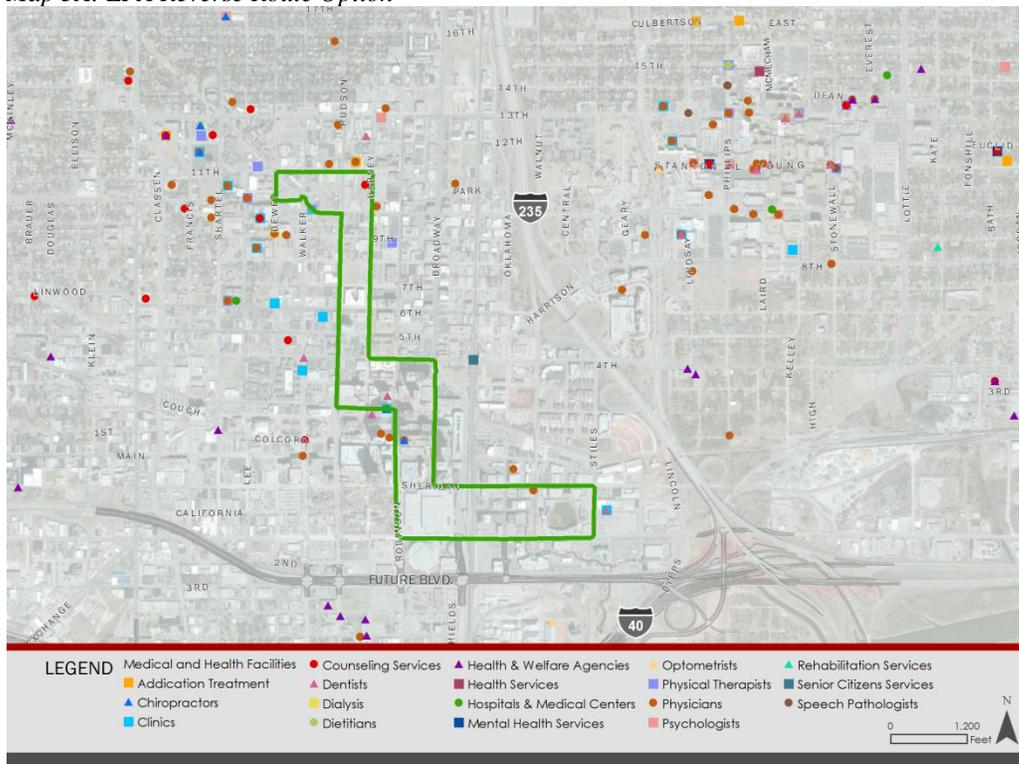


*OKC Streetcar alignments and Zero Car Households
Map 4D: Zeta Plus Route Option*

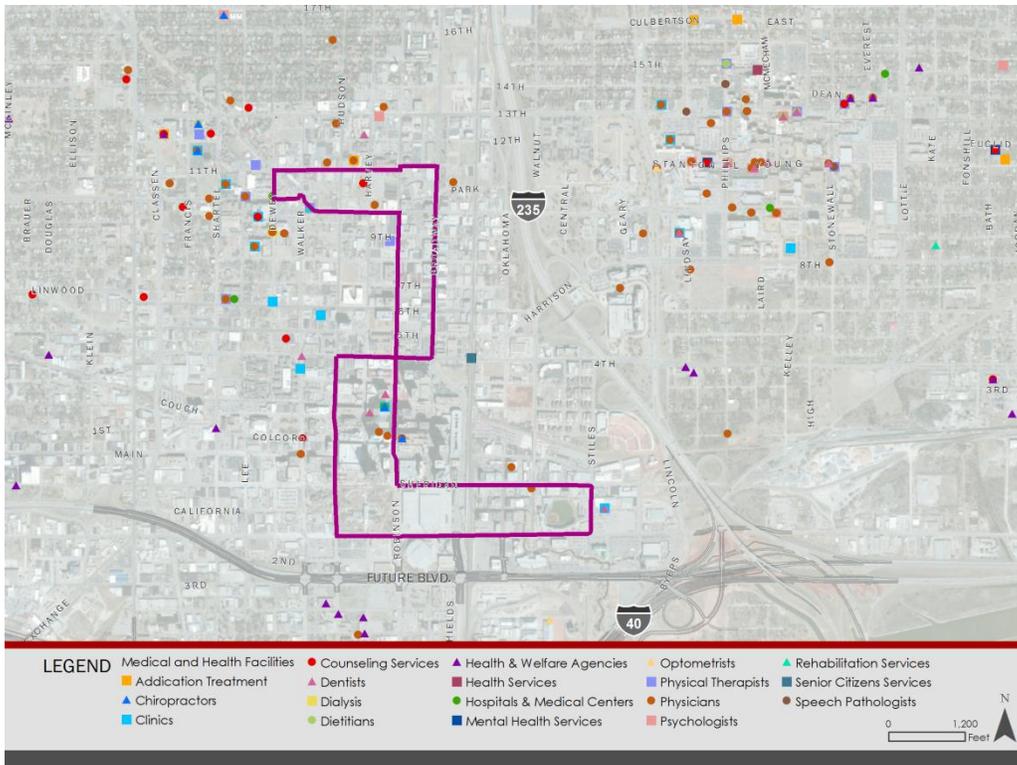
APPENDIX E:
MAPS 3 STREETCAR ROUTES IN RELATION TO
HIA CRITERIA #4



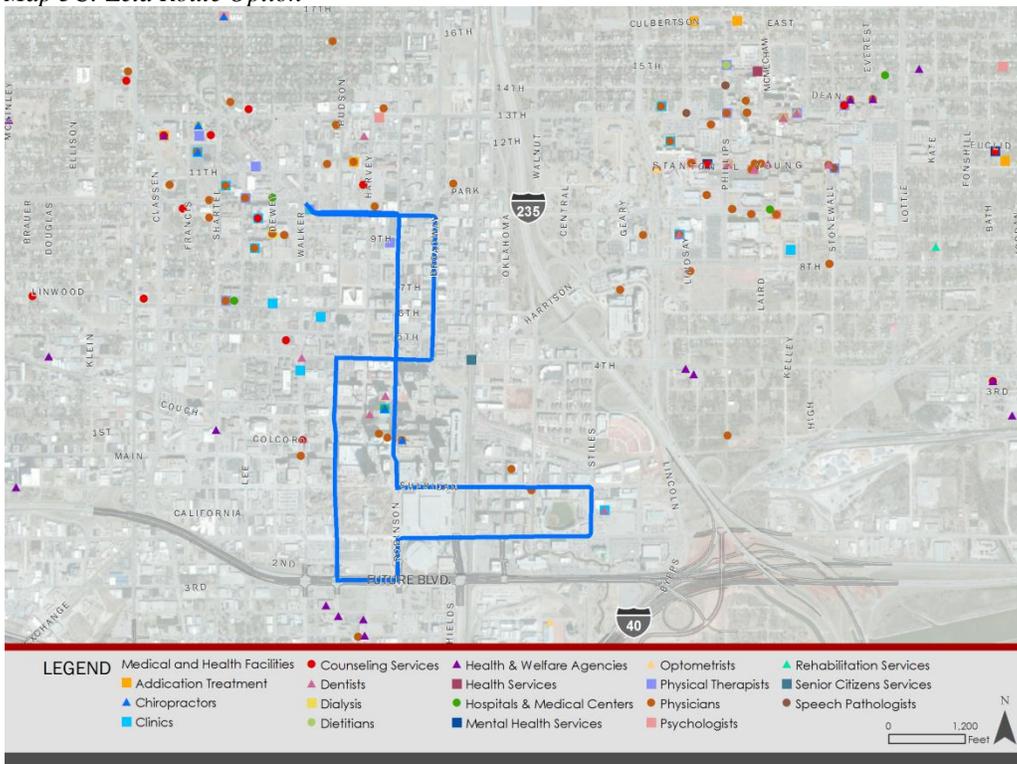
OKC Streetcar alignments and Medical and Health Facilities in the core
Map 5A: LPA Reverse Route Option



OKC Streetcar alignments and Medical and Health Facilities in the core
Map 5B: Hybrid Route Option

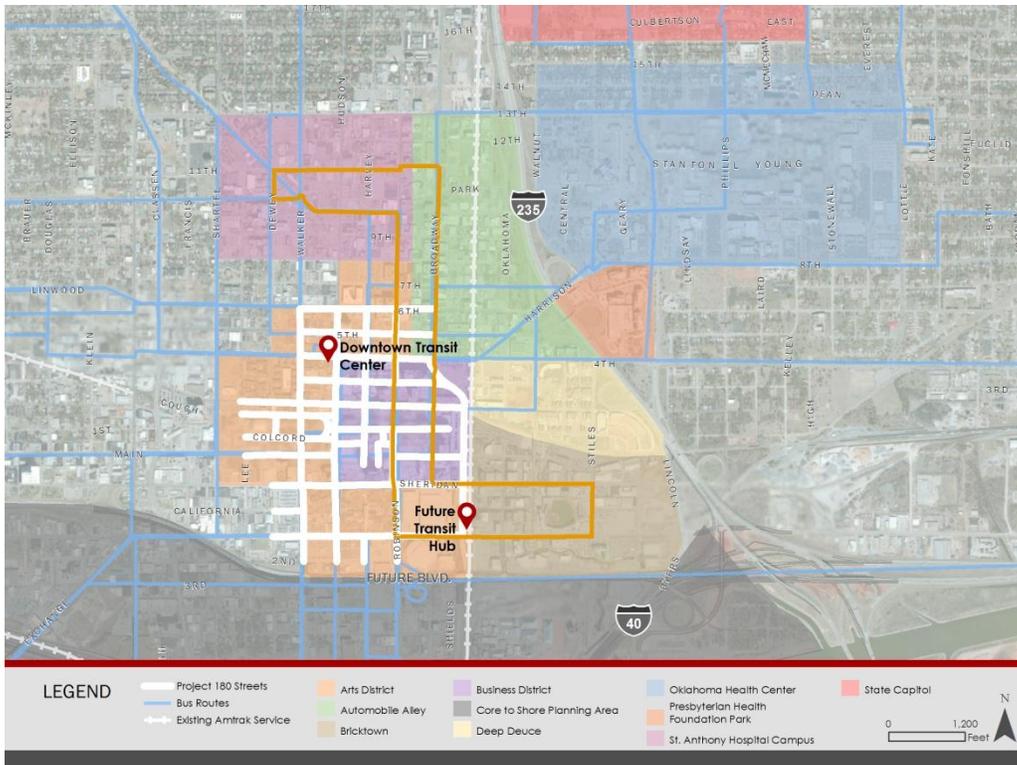


OKC Streetcar alignments and Medical and Health Facilities in the core Map 5C: Zeta Route Option

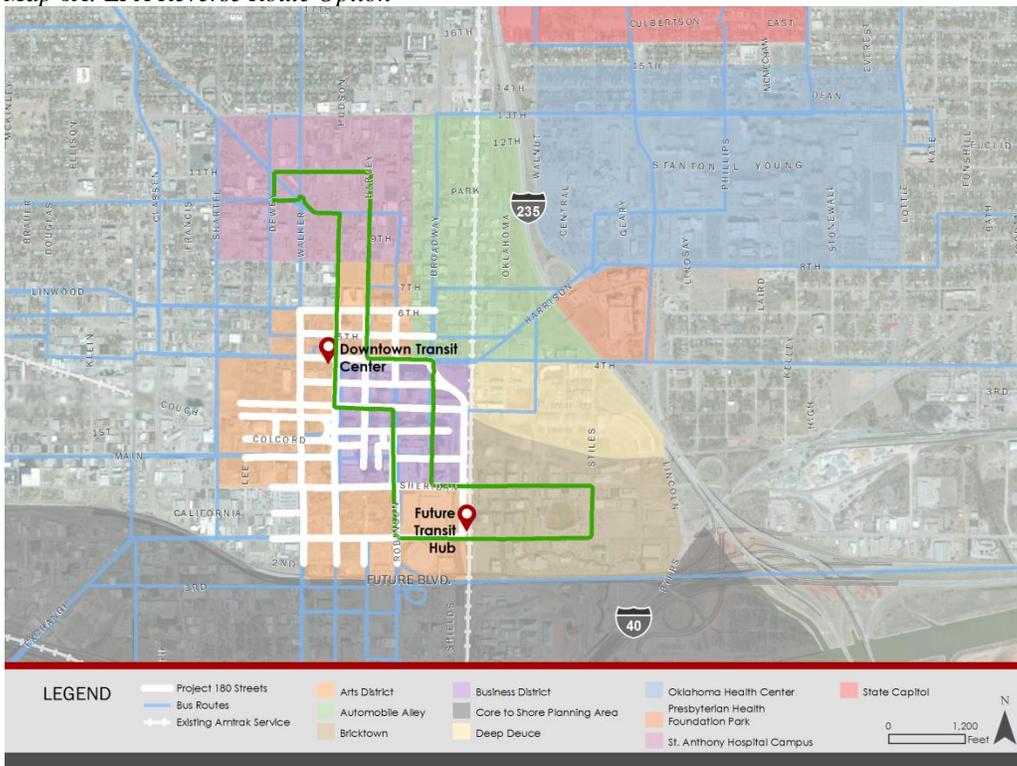


OKC Streetcar alignments and Medical and Health Facilities in the core Map 5D: Zeta Plus Route Option

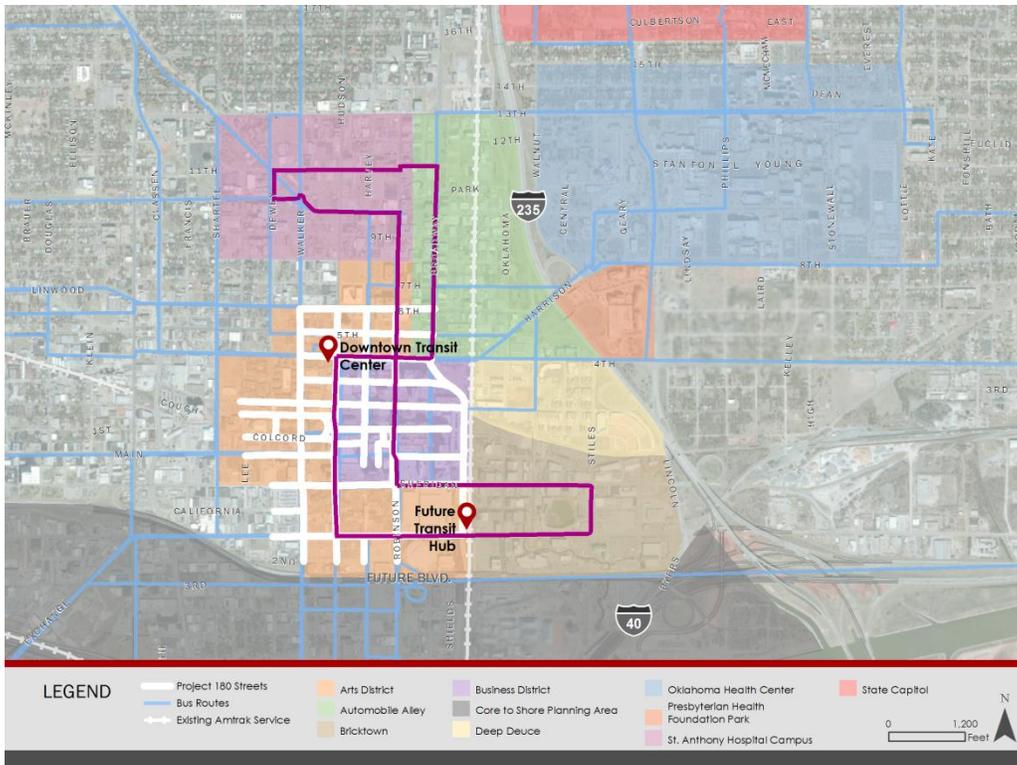
APPENDIX F:
MAPS 3 STREETCAR ROUTES IN RELATION TO
PROJECT 180 STREETS



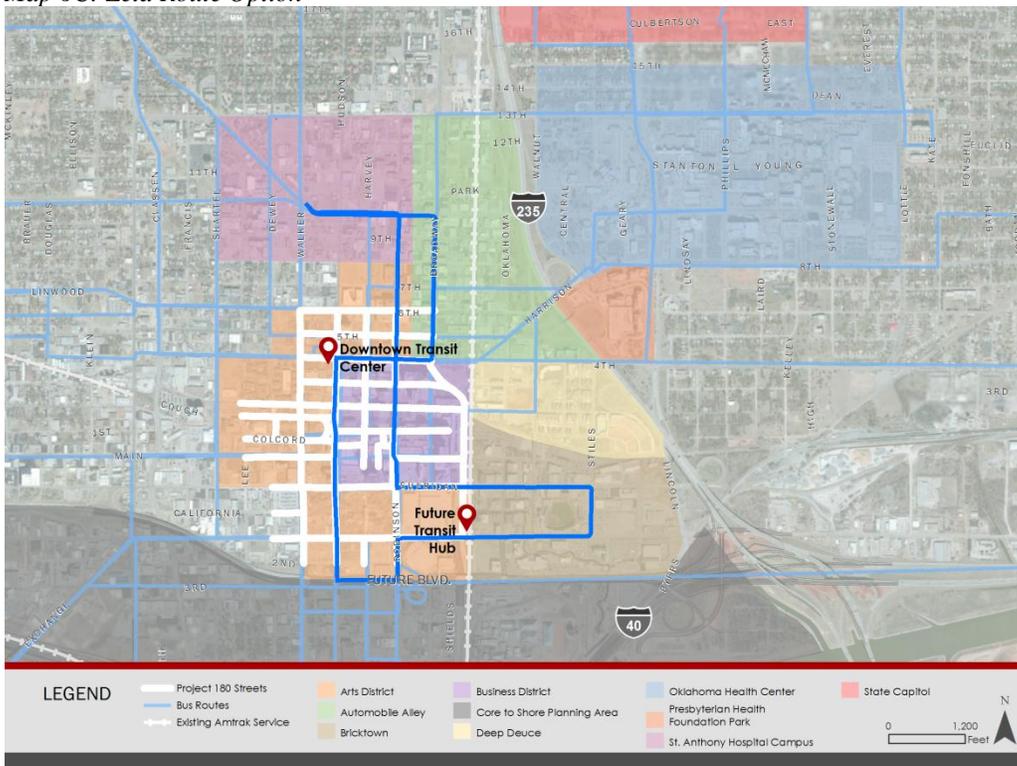
*OKC Streetcar alignments and Project 180 Streets
Map 6A: LPA Reverse Route Option*



*OKC Streetcar alignments and Project 180 Streets
Map 6B: Hybrid Route Option*



*OKC Streetcar alignments and Project 180 Streets
Map 6C: Zeta Route Option*



*OKC Streetcar alignments and Project 180 Streets
Map 6D: Zeta Plus Route Option*