dart Forward 2035
YEAR FIVE UPDATE

DART Forward 2035 Transit Services Plan

Year Five Update

DRAFT

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PREPARED BY:

TMD
TRANSPORTATION MANAGEMENT & DESIGN, INC.


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Introduction

The DART *Forward 2035 Transit Services Plan Year Five Update* guides the vision for public mobility and transit service in the Greater Des Moines region. The original DART Forward 2035 Transit Services Plan completed in 2011 was the agency's first comprehensive look at service operations and the first step towards building a better public transit system for Greater Des Moines.

As patterns in travel demand and travel behavior change over time, it is important that DART be ahead of these changes to ensure its service continues to meet public mobility needs and preferences of Greater Des Moines residents. The Year Five Update draws on the successes of the service changes implemented as part of the original plan and strengthens the long-range vision in order to better respond to current trends in ridership, regional development, consumer preferences and population/employment growth and distribution.

The Greater Des Moines region is not alone in looking to expand public mobility options. Cities across the country are presenting transportation and mobility plans that would greatly increase regional spending on public transit services in order to improve local economies and overall quality of life. Two examples are Nashville, TN and Indianapolis, IN, both capital cities like Des Moines. In 2015, Nashville, TN presented the nMotion plan, a 25-year, six-billion-dollar plan to improve public transit options in the region by increasing service frequency, expanding the service network, and introducing Bus Rapid Transit on major corridors. Similarly, Indianapolis is seeking a sales tax referendum this November to fund an additional $56 million each year for transit operations to increase service frequency, expand service hours, and develop Bus Rapid Transit routes. Both cities have larger populations than Des Moines, but they also currently spend almost twice as much per capita on public transit services and are looking to increase this amount even further to create a public transit network that truly meets the mobility needs of their residents. Developing a more robust public mobility network will help Des Moines remain competitive when it comes to attracting new residents and employers.

The Year Five Update also works to ensure that DART is able to maintain financial sustainability over the long-term. Costs increase each year due to factors outside of DART's control. Because of this, DART must have available funding streams that keep pace with rising costs in order to be able to maintain current levels of transit service. The service scenarios included in this plan are directly tied to carefully projected financial constraints so DART is able to successfully implement service recommendations.

Report Contents

The DART *Forward 2035 Transit Services Plan Year Five Update* includes the following sections:

Key Findings from Existing Conditions

- Overview of key findings and takeaways from the Market Analysis
- Overview of key findings and takeaways from the Service Evaluation
- Summary of public outreach efforts conducted and major takeaways from public surveys

Framework and Guiding Principles

- Discussion of guiding principles that provided a framework for the development of service recommendations
- Overview of proposed service types and their role in the DART transit and mobility network
- Introduced to five core service design elements of frequency, access, availability, experience, and flexibility that govern the look and feel of DART's service
- Service design policies that discuss how DART should work with third parties to ensure successful implementation of transit and mobility service

Service Recommendations

- Details on proposed services for three service scenarios: Minimal Growth Plan, Moderate Growth Plan, and Expanded Regional Plan
- Each service plan includes detailed route by route recommendations and accompanying capital improvement plan and network maps

Plan Approach

The DART Forward 2035 Year Five Update is the result of close collaboration between DART and the Greater Des Moines community. The visioning process was driven by extensive engagement with key stakeholders, current DART riders and the general public, including those who do not ride DART, to assess community priorities and preferences for public mobility service in the region.

Development of the Year Five Update included market analysis, evaluation of existing DART service, extensive public and stakeholder engagement, collaborative development of network and route design recommendations and an update of DART's 20-year financial plan.

Data-Driven Plan

In order to evaluate current market conditions and DART's existing services, a variety of data was collected, reviewed and analyzed. Data sources include 2010 Census, 2014 American Community Survey, population and employment projections as well as travel demand projections from Des Moines Area Metropolitan Planning Organization (DMAMPO), Automatic Passenger Count (APC) ridership data for all DART routes, results from multiple surveys conducted during the course of the project and information from the original DART Forward 2035 Transit Services Plan.

Market Analysis

The Market Analysis evaluated population and employment distribution, concentrations of certain demographic groups, urban development patterns and rider profiles to create an understanding of regional growth patterns and the market demand for transit in the Greater Des Moines region both now, and in the future. Understanding how market demand varies throughout the region allows DART to tailor service types and levels to meet the specific public mobility needs of each market segment, increasing ridership potential.

Service Evaluation

The Service Evaluation included a comprehensive review of the performance of DART's services based on ridership data from Fall 2015. Special attention was given to comparing ridership between 2010 and 2015 to see how riders responded to the original DART Forward 2035 service changes. The Service Evaluation identified strengths and opportunities in current service delivery and directly informed the development of service recommendations.

Public and Stakeholder Engagement

Community participation played a critical role in the development and review of the Year Five Update through multiple methods of engagement. At the beginning of the project, DART interacted with thousands of riders and community members to learn about their preferences for public transit and their opinions on the strengths and weaknesses of current service delivery through a series of online surveys and public open houses.

Overview of DART Service

DART's service area includes 19 member governments in Polk County and parts of Dallas County. DART operates 15 Local fixed-route services, 3 Flex Routes, 8 Express Routes, 2 Shuttles, and 5 On Call zones. Table 1 on the following page summarizes route frequencies and service spans by day type while Figure 1 shows a map of current route alignments.

Route	Service Type	Weekday Frequency (peak/ off peak)	Weekday Span	Saturday Frequency (peak/off peak)	Saturday Span	Sunday Frequency	Sunday Span
1-Fairgrounds	Local	15/30	5:30a.m.-11:15p.m.	60/60	6:45a.m.-9:45p.m.	60/60	7:45a.m.-6:13p.m.
3-University	Local	20/30	5:45a.m. -11:15p.m.	30/30	7:15a.m.-9:10p.m.	30/30	7:40a.m.-6:08p.m.
4- E. 14th	Local	15-30/60	5:47a.m. -11:07p.m.	60/60	6:45a.m.-9:45p.m.	60/60	7:45a.m.-5:45p.m.
5-Franklin Ave.	Local	60/60	6:12a.m. -8:15 p.m.	N/A	N/A	N/A	N/A
6-Indianola Ave.	Local	15/30	5:52a.m. -11:03p.m.	60/60	6:55a.m.-9:45p.m.	60/60	7:55a.m.-6:07p.m.
7- SW 9th St.	Local	15/30	5:30a.m. -11:03p.m.	60/60	6:50a.m.-9:45p.m.	60/60	7:50a.m.-6:07p.m.
8- Fleur Dr.	Local	8 trips in the a.m./ 7 trips in the PM	6:00a.m.-7:25a.m. and 3:05PM-5:50p.m.	N/A	N/A	N/A	N/A
11- Ingersoll/ Valley Junction	Local	7 trips in the a.m./ 7 trips in the PM	5:43a.m.-7:45a.m. and 4:105p.m.-5:180p.m.	N/A	N/A	N/A	N/A
13-SE Park Ave.	Local	3 trips in the a.m./5 trips in PM	6:10a.m.-7:17a.m. and 3:10p.m.-5:10p.m.	N/A	N/A	N/A	N/A
14-Beaver Ave.	Local	30/60	5:40a.m. -11:10p.m.	60/60	6:35a.m.-9:45p.m.	60/60	7:35a.m.-6:05p.m.
15-6th Ave.	Local	15/30	5:40a.m.-11:05p.m.	30/30	6:55a.m.-9:47p.m.	30/30	7:55a.m.-5:47p.m.
16-Douglas Ave.	Local	15/30	5:43a.m.-11:06p.m.	60/60	6:45a.m.-9:45p.m.	60/60	7:45a.m.-6:09p.m.
17-Hubbell Ave.	Local	15/30	5:44a.m.-10:45p.m.	60/60	6:25a.m.-9:45p.m.	60/60	7:25a.m.-6:24p.m.
52-Valley West/ Jordan Creek	Local	30/60	6:01a.m.-9:14 p.m.	60/60	6:45a.m.-9:15p.m.	60/60	7:45a.m.-6:19p.m.

Route	Service Type	Weekday Frequency (peak/ off peak)	Weekday Span	Saturday Frequency (peak/off peak)	Saturday Span	Sunday Frequency	Sunday Span
60-Ingersoll/ University		20/20	6:10a.m.-10:50p.m.	40/40	6:50a.m.-9:45p.m.	40/40	7:30a.m.-5:45p.m.
72-West Des Moines/Clive	Flex	30-40/60	6:19a.m.-9:04p.m.	60/60	6:50a.m.-9:05p.m.	60/60	7:50a.m.-6:05p.m.
73-Urbandale/ Windsor Heights	Flex	20/NA	5:30a.m.-7:59a.m. 4:05p.m.-6:11p.m.	N/A	N/A	N/A	N/A
74-NW Urbandale	Flex	60/NA	6:29a.m.-8:34a.m. 3:43p.m.-5:47p.m.	N/A	N/A	N/A	N/A
91-Merle Hay	Express	4 trips in a.m./4 trips in PM	6:03a.m.-7:33a.m. 4:07p.m.-5:37p.m.	N/A	N/A	N/A	N/A
92-Hickman	Express	7 trips in a.m./7 trips in PM	5:38a.m.-8:03a.m. 3:45p.m.-5:43p.m. 12:53p.m.-5:42p.m.	N/A	N/A	N/A	N/A
93-NW 86th	Express	7 trips in a.m./8 trips in PM	5:42a.m.-8:01a.m. 12:53p.m.-5:42p.m.	N/A	N/A	N/A	N/A
94-Westown	Express	3 trips in a.m./3 trips in PM	6:15a.m.-7:15a.m. 4:07p.m.-5:17p.m.	N/A	N/A	N/A	N/A
95-Vista	Express	4 trips in a.m./ 4 trips in PM	6:15a.m.-7:15a.m. 4:07p.m.-5:17p.m.	N/A	N/A	N/A	N/A
96-EP True	Express	4 trips in a.m./ 4 trips in PM	6:00 a.m.-7:17a.m. 3:42p.m.-5:12p.m.	N/A	N/A	N/A	N/A
98-Ankeny	Express	20/60	5:43a.m.-6:34p.m.	N/A	N/A	N/A	N/A
99-Altoona	Express	4 trips in a.m./ 4 trips in PM	5:3a.m.-7:09a.m. 3:38p.m.-5:13p.m.	N/A	N/A	N/A	N/A
The Link	Shuttle	15/15	5:30a.m.-6:30p.m.	N/A	N/A	N/A	N/A
D-Line Downtown	Shuttle	10/10	6:30A.m.-6:00PM	N/A	N/A	N/A	N/A

Table 1: Overview of DART Service

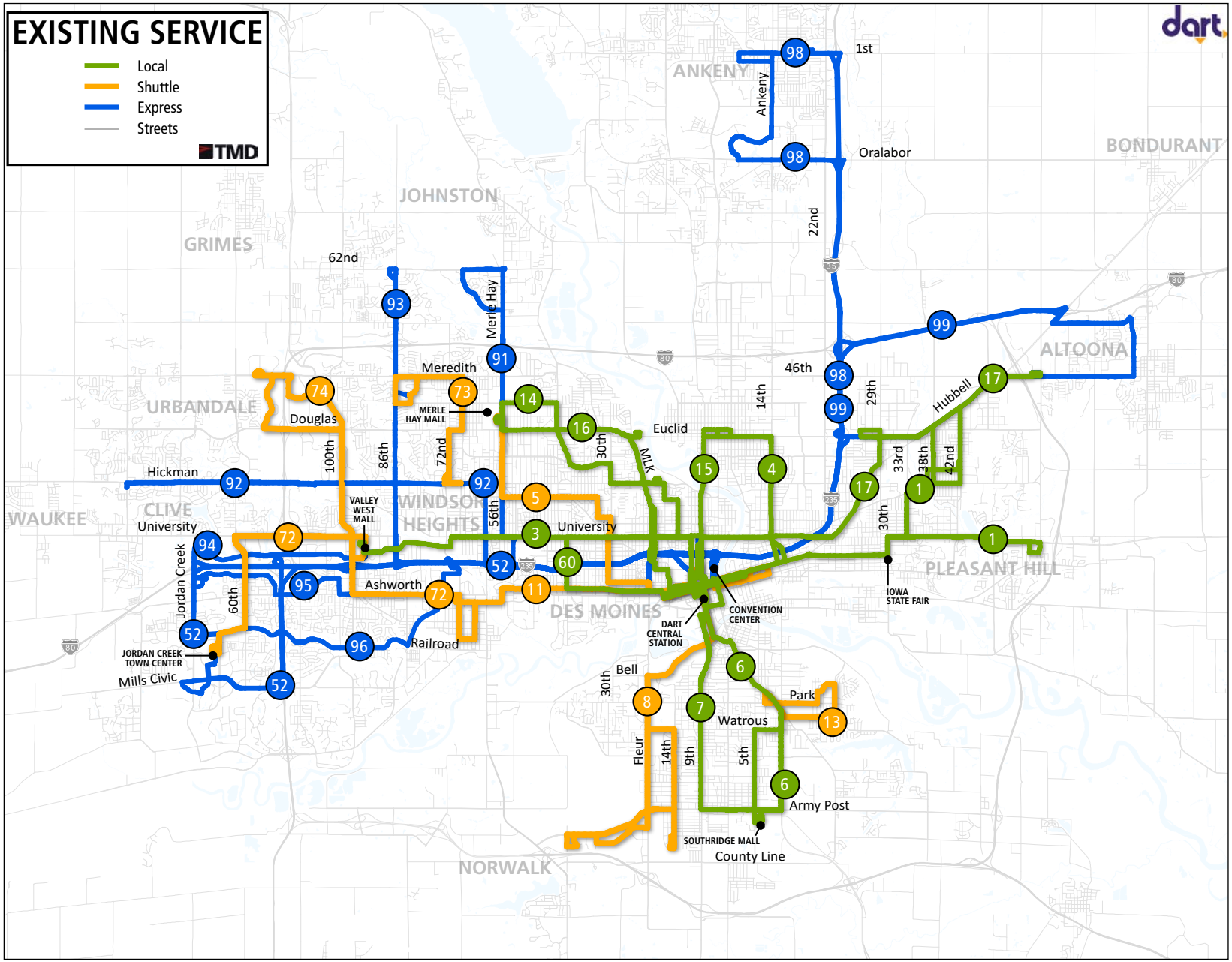


Figure 1: Existing Service Map

Key Findings from Existing Conditions

Market Analysis Key Findings

Greater Des Moines is a dynamic region with changing population, employment, demographic and development patterns. The Market Analysis examined how the service area changed over the last five years and how it is expected to grow and develop in the future. It examined a number of factors that affect regional demand for transit and identified opportunities for areas that may sustain increased areas of transit investment. Figure 2 and Figure 3 show population and employment densities in 2010 and 2030.

Key takeaways from the Market Analysis include:

- High vehicle ownership rates, low gas prices, low levels of traffic congestion and high levels of available free parking limit transit's competitiveness in the Greater Des Moines region.
- The Des Moines region's expected population growth between 2010 and 2030 is 34 percent. Des Moines' share of the regional population will decrease from 43 to 40 percent as population growth expands in suburban areas.
- Many employers, especially those without direct access to transit service, report difficulty recruiting and retaining employees because there is a large disconnect between the location of jobs and housing. Transit can play an important role in helping connect people to jobs to reduce Des Moines' unemployment rate and boost the overall economy.
- Employment opportunities are expected to grow 24 percent by 2030. It is projected there will be one job for every 1.5 residents, a decrease from the 1.4 ratio seen in 2010. Fewer job opportunities relative to the overall population may mean people have to travel outside the immediate region for work or may contribute to a larger unemployment rate.
- The western areas in the Greater Des Moines region (West Des Moines, Waukee, Urbandale, and Clive) are all expected to grow considerably in population and daily vehicle trips. However, development in these cities is primarily auto-centric, and unless an emphasis is placed on building sustainable transit corridors in these cities, new all-day fixed-route transit service is unlikely to be successful.

» To help the region realize the goals of the Tomorrow Plan and Mobilizing Tomorrow, the region must do more than invest in more transit service. It must work with cities and developers to create urban centers that can sustain fixed-route transit service, with strong pedestrian amenities and street networks that improve access to major corridors. This change in development patterns with increased mixed-use along corridors will increase transit access for current customers and attract new potential customers.

» Based on population and employment densities and the prevalence of demographic groups that are more likely to use transit, the following corridors provide opportunities for sustainable live-work-play transit service in the region:

- *Ingersoll Avenue*
- *University Avenue*
- *Martin Luther King Boulevard*
- *SW 9th Street*
- *Douglas Avenue*
- *6th Avenue*

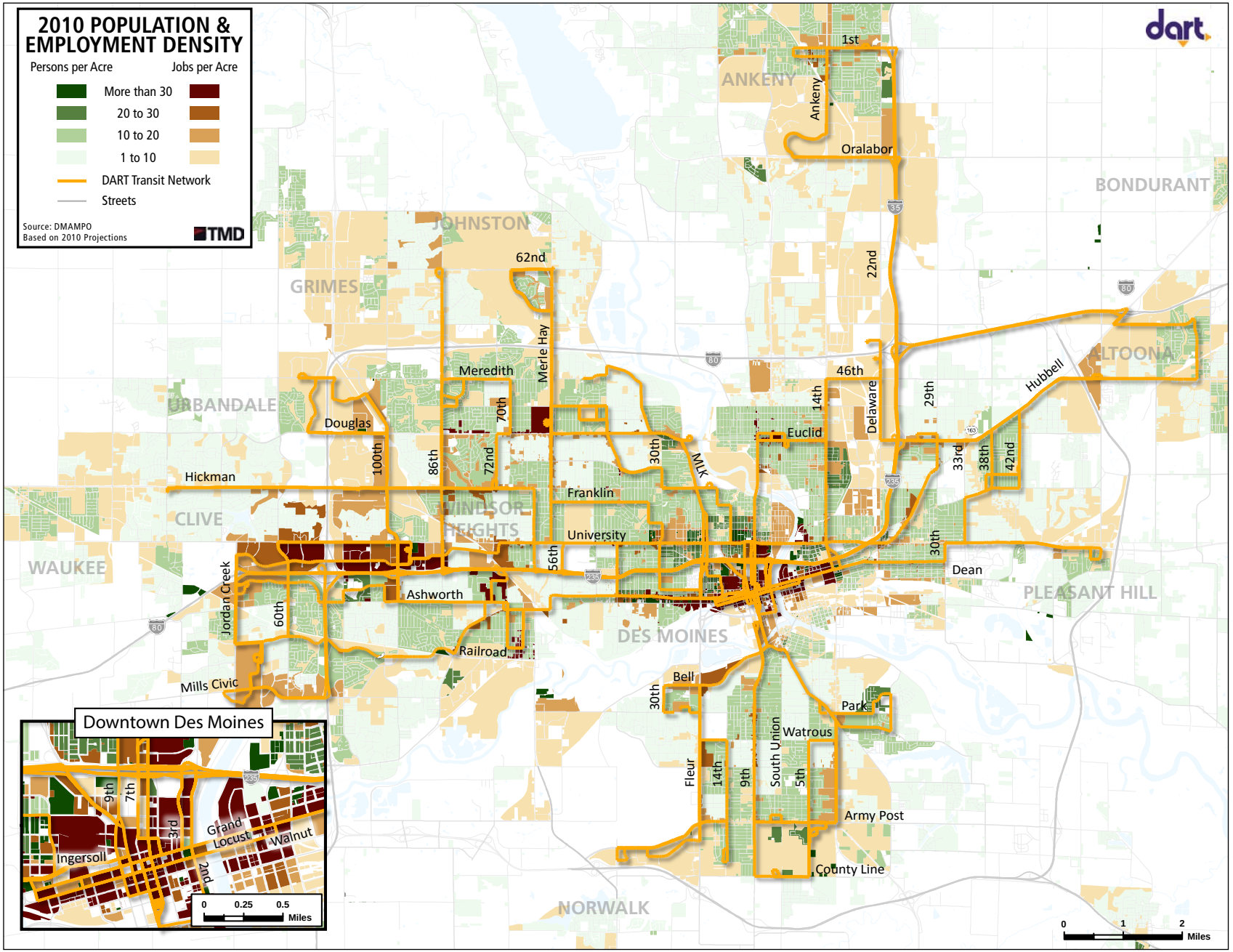


Figure 2: Population and Employment Density

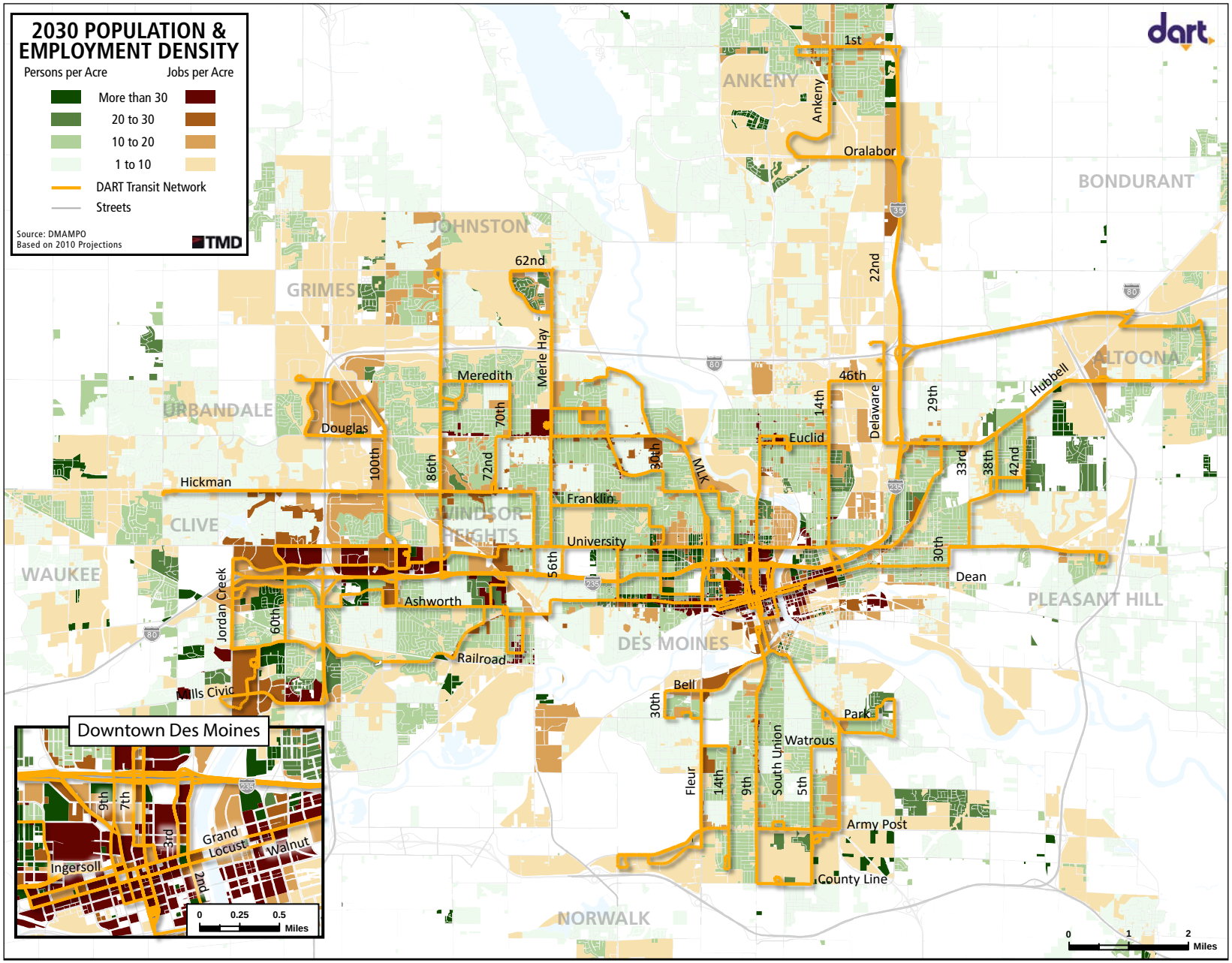


Figure 3: 2030 Population and Employment Density

Service Evaluation Key Findings

Analysis of changes to the DART transit system over the last five years and existing transit service provides a data-driven understanding of the system's performance that will inform the development of recommendations. The analysis identified current successes and challenges within the region and opportunities for improving service quality and growing ridership. The Service Evaluation compared how riders responded to the original DART Forward 2035 service changes implemented in FY12 and analyzed how riders are using the services today. Key takeaways from the Service Evaluation include:

- Overall, DART ridership and service performance has responded extremely well to recent service changes. System ridership is up nine percent since FY12 and productivity remains strong after significant service increases. Expansion of weekend spans positively affected ridership, growing weekend ridership by 30 percent.
- Considerable growth, shown in Figure 4, is seen at the major transfer hubs (DART Central Station, Merle Hay Mall, Southridge Mall, and Valley West Mall), indicating riders are using the services more as one cohesive network rather than just a series of individual routes.
- The top three routes, Routes 60, 16, and 7, account for 34 percent of weekday ridership. This means improvements in these three routes will benefit over one in every three DART riders.
- Productivity is higher during the midday than it is during the morning and afternoon peaks. This suggests that there may be a greater demand for more frequent service during midday periods. It is a positive aspect of DART's ridership as it signals the potential for a live-work-play transit system where riders use transit service for all trip purposes, not just work and school trips.
- Productivity by segment mapped in Figure 5 shows the relationship between route productivity and market demand for transit. Productivity refers to the number of passengers carried per hour of service provided and is a measurement of how effectively DART resources are being utilized. Productivity is highest in the City of Des Moines. Des Moines has the highest population and employment densities making it the easiest to serve effectively with transit. Productivity decreases radially from the City of Des Moines, the further away from downtown, the lower the productivity. The Flex Route segments perform the worst in the DART System, and they are located in some of the region's most suburban, low-density areas. West Des Moines has high employment concentrations and a large population but segment productivity is very low with the exception of Routes 3 and 52 east of Valley West Mall.

» There are limited areas in the Greater Des Moines region that have the development patterns and densities to support successful all-day fixed-route transit services. However, because DART is comprised of 18 different member cities, it must balance investing service where it will be most successful and geographic service distribution. DART currently provides alternatives to fixed-route services in areas with lower demand in the form of Flex Routes and On Call Zones. The analysis shows that these service types are the lowest performing in the system and require a greater share of resources relative to the number of riders who benefit from the services. DART must work to find a cost-effective solution to providing regional mobility as well as working with developers to encourage new development along pre-existing transit corridors.

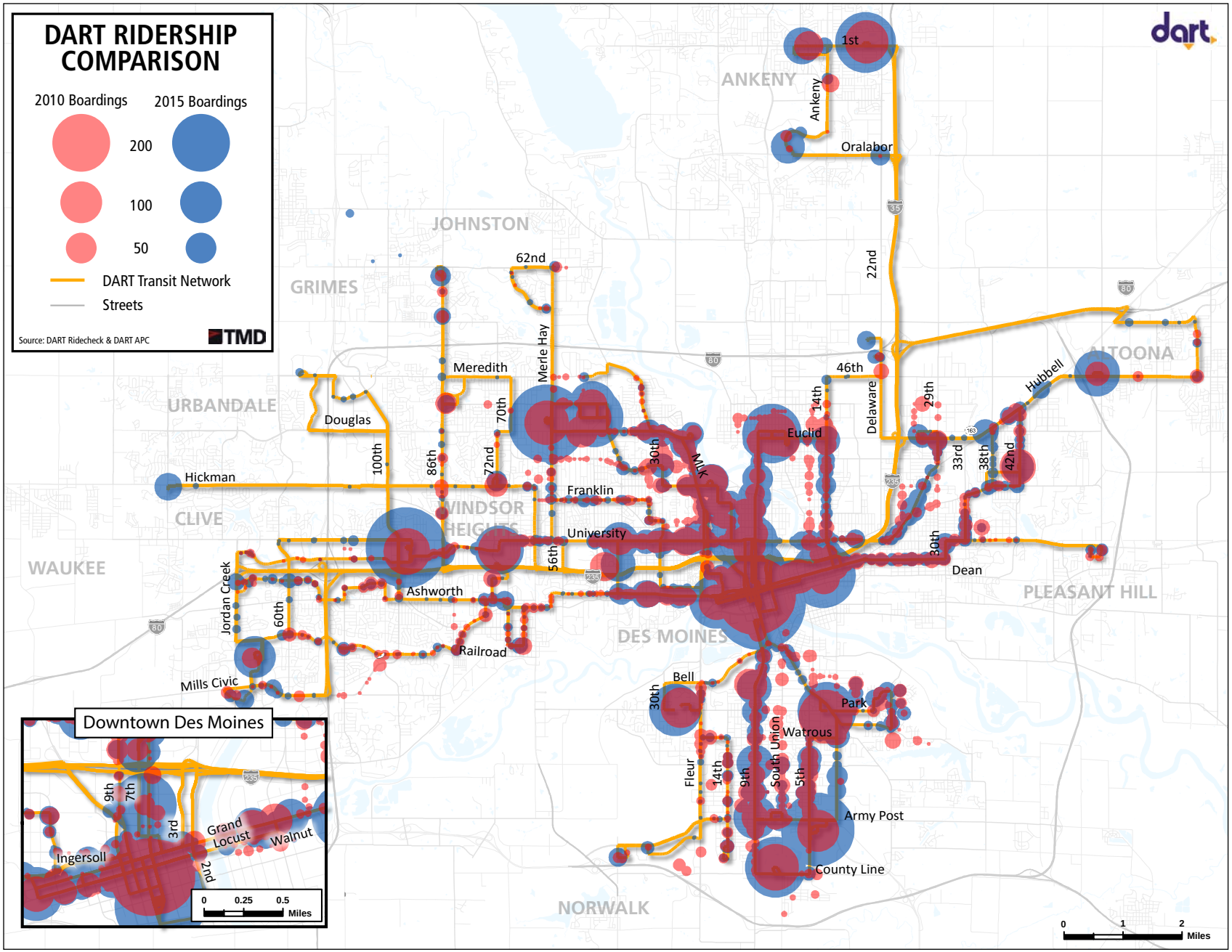


Figure 4: Comparison of Stop-Level Ridership in 2010 and 2015

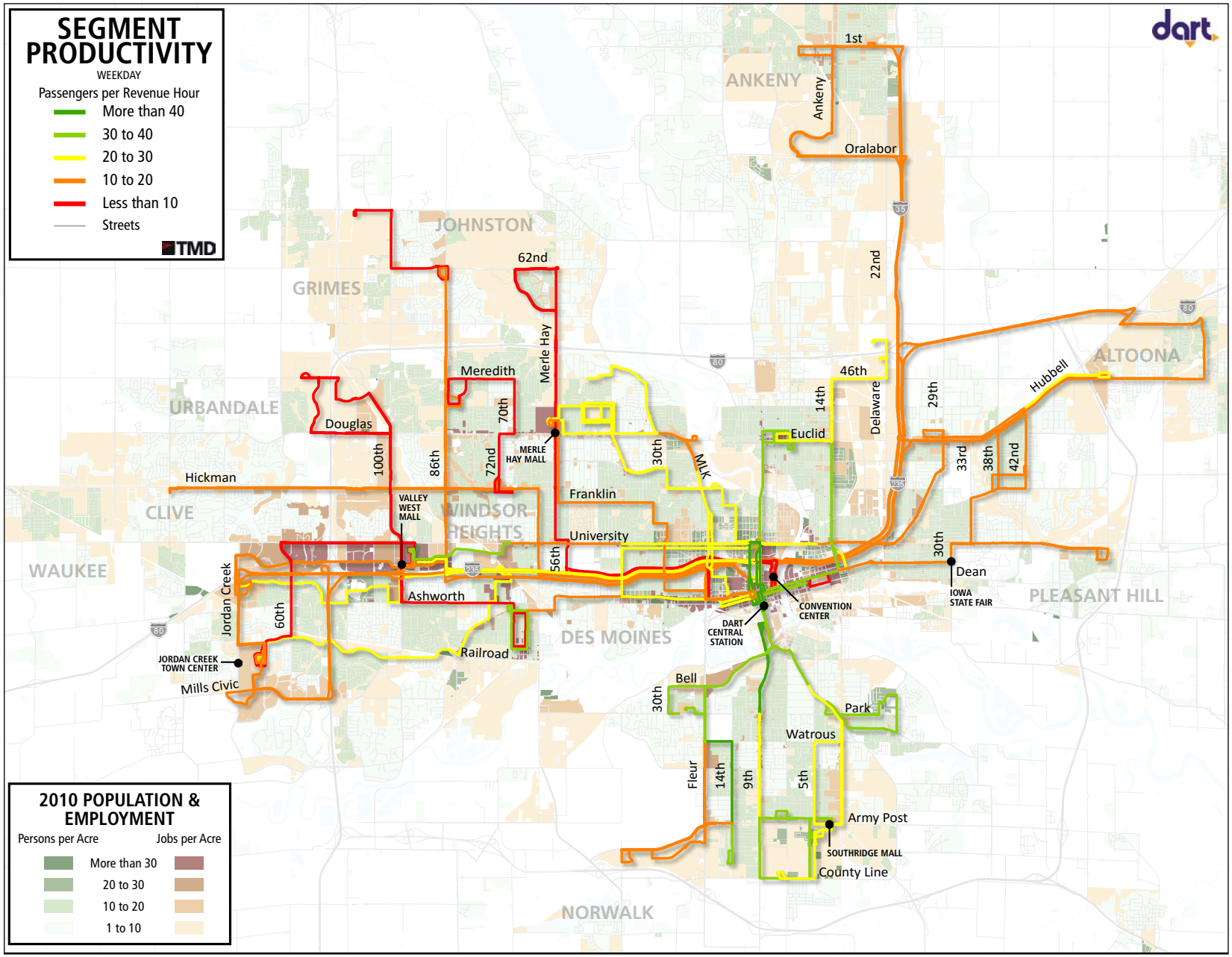


Figure 5: Route Segment Productivity

Public and Stakeholder Engagement

DART recognizes that the process of realizing a vision for public mobility in the Greater Des Moines region requires extensive community and financial support. Throughout the visioning process, DART engaged key stakeholders, current riders, and members of the general public to learn about priorities and preferences for public mobility in the Greater Des Moines region.

The initial round of outreach was conducted between January and March 2016 and provided key stakeholders, riders, and members of the general public an overview of the project and key findings from the market and service analyses. Multiple methods were used to hear from participants about their priorities for transit service and their vision for public mobility in the region, outlined below.

Non-Rider Survey

DART conducted a community survey to assess non-rider opinions and perceptions of DART's service. A total of 2,323 surveys were collected and analyzed with statistical representation from DART's member cities.

Key findings from the non-rider survey are as follows:

- 94 percent of respondents believe DART is a valuable service to the community.
- 84 percent of respondents believe transit is important to a thriving community.
- 81 percent of respondents believe it is important for the region to support and fund public transportation.
- 69 percent of respondents think current level of funding for transit should be "somewhat greater" or "much greater" over the next five years.
- The top three reasons respondents do not use DART is because they prefer to drive (32 percent), transit service is not offered near their home (19 percent), and they have too many places to go during the day (18 percent).
- The top three factors that would encourage respondents to start using DART would be if transit stops were located closer to their homes (28 percent), traffic congestion increased driving time (14 percent), and if shelters were located at stops (12 percent).

Online Survey

Through an online survey and print surveys handed out at public outreach events, DART collected 2,470 responses from current riders (1,557), former riders (211), and non-riders (702). DART also distributed surveys to four senior centers, two foodbanks, at DART Central Station and public meetings to ensure responses were collected from those without internet access.

Key findings from the survey include:

» 79 percent of current riders have a "good" or "excellent" impression of DART.

» 81 percent of both current riders and former riders think that funding for public transportation should be "somewhat greater" or "much greater" over the next five years.

» The top three factors to encourage former riders to ride again are if transit stops were located closer to their work or home (40 percent), if buses arrive more frequently at stops (10.5 percent), and if DART provided faster service (10.5 percent).

» The top three factors to encourage current riders to ride more often are if transit stops were located closer to their home, if service were operated earlier and later, and if buses were scheduled to arrive at stops more frequently (all around 10 percent of responses).

Express Survey

DART also conducted an online survey specifically targeted to Express Routes in December 2015. A total of 1,226 responses were collected from current riders (486), non-riders (601), and former riders (139).

Key findings from the survey include:

» The primary reason non-riders and former riders do not use DART Express service is because there is no service near their home. The primary reason current riders do not use the service more often is because service is not offered at the time they need to use it.

» Service operating earlier or later was the number one reason that would encourage former riders to begin using DART service again (80 percent responding "likely" or "very likely").

» Employer incentives are the number one reason current riders use the Express services.

Stakeholder Engagement

DART engaged a number of key stakeholders throughout the DART Forward Year Five Update process. A Staff Advisory Committee and Project Advisory Committee were formed to guide the process. DART also engaged the existing Transit Riders Advisory Committee (TRAC), the DART Board of Commissioners, the Transit Future Workgroup, the MPO Technical Committee, and many other organizations throughout the community. DART presented information about the DART Forward Update at a total of 37 meetings to Des Moines Area City Councils, community steering groups, area chambers, and community/health services.

Stakeholders attending the above meetings were asked to rank 10 service attributes in order of priority where they would like to see service improvements. A total of 117 valid responses were collected. The number one priority for stakeholders was that transit service should be reliable, with frequency a close second.

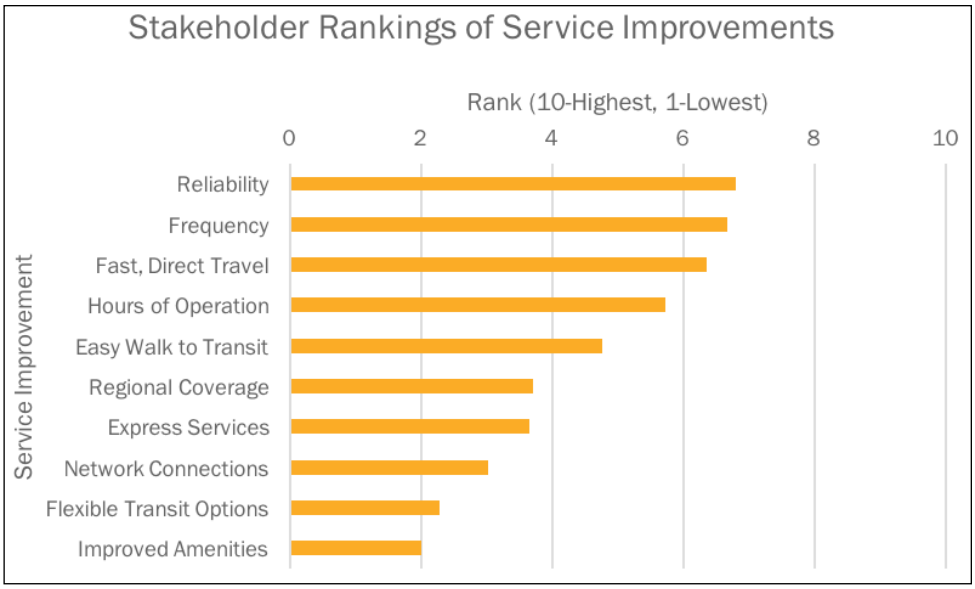


Figure 6: Stakeholder Ranking of Service Improvements

Public Meetings

In March 2016, DART held eight public meetings and multiple drop-by sessions to inform riders and members of the general public about the plan.

Meetings were held at the following locations:

- » DART Central Station
- » Altoona Hy-Vee
- » DMACC Southridge Campus
- » DMACC Urban Campus
- » Pleasant Hill Public Library
- » Ankeny City Hall
- » Urbandale Public Library
- » North Side Public Library
- » Johnston Public Library
- » Jordan Creek Town Center
- » South Suburban YMCA

Participants in public meetings were asked to "invest" ten dollars into various service improvements. The following chart shows the result of the investment. Frequency and service span tied for the top service improvements riders and members of the general public would like to see in DART's service.

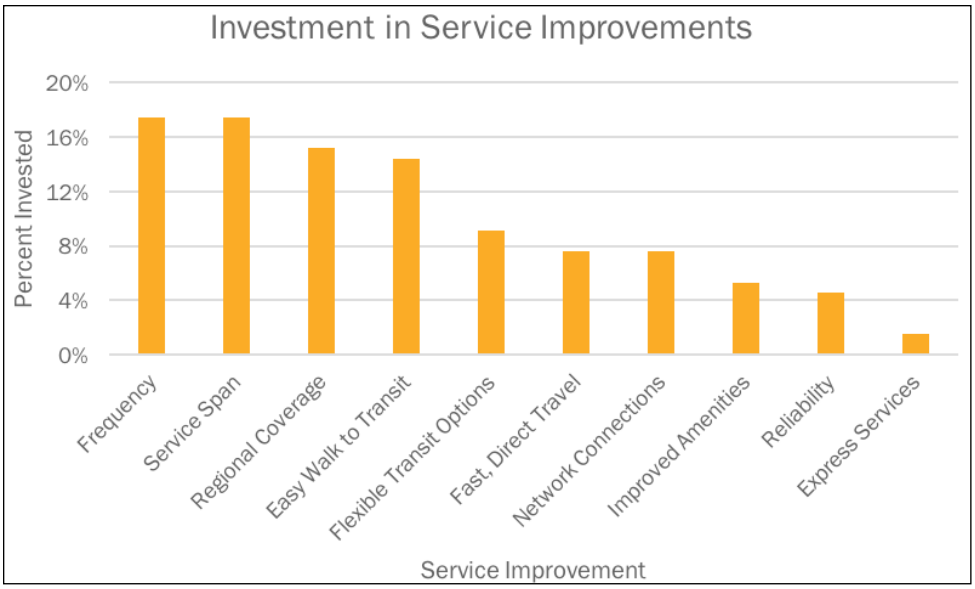


Figure 7: Public Investment in Service Improvements

Feedback from all surveys, meetings and public outreach events were considered as part of the development of the draft service plan recommendations.

Framework and Guiding Principles

The following framework and guiding principles provide a foundation for improving DART service. The guiding principles identify the goals for DART's service while the service design strategies in the following section outline strategies to realize those goals.

Guiding Principles

Design a Market-Based Network

The DART service area encompasses a wide variety of market types with a strong urban core in Des Moines surrounded by suburbs of varying development and density patterns. The range in market conditions indicates that different areas will warrant different types and levels of service investment.

DART cannot be everything to everyone, and service should be tailored to meet the specific mobility needs and market opportunities of each community to maximize the use of limited resources.

Service investment should be focused in areas where transit is most competitive – the transit-oriented, high-density areas with a mix of land uses and walkable street network – in order to ensure the success of the overall network. In these transit "lifestyle" areas, residents may choose to take transit because it is convenient, opting to make it part of their daily lifestyle. The role of transit in these livable communities is to provide a viable mobility solution for a majority of trip purposes (live-work-play). This requires transit to operate at high frequencies in order to provide "on-demand" service comparable to automobile travel. High frequency services are most successful in areas with high population and employment densities and mixed-use development, areas that generate enough all-day all-week demand to support high levels of investment.

Transit is also used in areas to provide "lifeline" mobility to address unmet mobility needs. In areas with lower densities, fewer people are spread over a greater geographic area, making it difficult for transit to provide convenient trips for all potential customers. Transit service in these "lifeline" areas tend to operate at lower frequencies and provide connections for those customers who are reliant on transit for mobility.

By matching services to market demand, DART will maximize ridership from each hour of service, ensuring it is able to make the most effective use of its limited resources while continuing to grow system ridership.

Refocus Service Network

For DART to be truly successful, it must function as a cohesive, comprehensive mobility network, not simply a collection of individual routes. Rarely are origins and destinations aligned such that riders are able to use a single route to complete their trips. DART services and other mobility modes must work together to provide seamless transitions for riders making multi-modal or multi-route trips.

The current service network is designed as a hub-and-spoke system with the majority of services operating in and out of DART Central Station and the majority of route transfers occurring at that single location. To travel across town, many riders have to travel out of direction to DART Central Station to transfer to the route they need to complete their trip. The introduction of a multi-hub network provides transfer opportunities at more locations throughout the network, facilitating regional travel. Crosstown services allow riders to travel across town on a single route without having to go through DART Central Station. Both of these factors contribute to a cohesive mobility network that makes it easier for riders to complete their trips.

DART should also refocus its service network by starting to think of itself as a provider of public mobility, not public transit. Public transit service is part of a greater range of mobility options that are alternatives to car ownership. DART should work to integrate with other mobility modes such as bikesharing, carsharing, and ridesharing to promote multi-modal transportation throughout the region.

Ridership is the foundation for measuring transit success. Enhancing the customer experience will grow ridership by attracting new riders and encouraging current riders to use transit more frequently. Frequency of service and travel time are the top two factors that attract new users to a transit system. Reliability of service is the number one factor that keeps those riders coming back. Riders want service to be available when they need to travel, and they want to know they will be able to consistently arrive at their destination on-time.

Increasing service frequencies and extending service hours will provide riders with more flexibility to travel when they want to, increasing the likelihood they will use transit. Standardizing frequencies across the network makes it easier for passengers to understand how services operate, and makes it easier to coordinate timed transfers between services, facilitating use of the network.

Time saving measures such as streamlining route alignments, increasing stop spacing, and implementing delay reduction measures reduces overall travel time, increasing transit's attractiveness as a travel mode.

DART should refocus its service network by starting to think of itself as a provider of public mobility, not just public transit

Keeping the customer experience in mind when designing transit service will ensure that DART delivers a product that riders actively choose over other transportation alternatives.

Build Financial Sustainability

Like any service provider, DART works with limited financial resources. A focus on network improvements that will yield a high return on investment will help maintain ongoing financial sustainability. A route carrying 30 passengers an hour generates 3 times the revenue of a route carrying 10 passengers an hour. High productivity routes are often the most popular, so investment further increases ridership and fare revenue.

Adherence to service performance standards will help ensure that financial sustainability is maintained in future years. When proposing new service, it will be necessary to evaluate the potential productivity of that new service. If the service will not meet the current average service productivity, it will cause diversion of existing external funding to support a higher

subsidy, jeopardizing ongoing financial sustainability. Consequently, such services should only be considered for implementation if subsidized by third parties.

Finally, as costs increase, DART must ensure that revenue streams increase as well. Even with responsible financial management and no additional service investment, operating costs will increase around three percent each year due to factors outside of DART's control such as inflation, increases in costs of living, healthcare reforms, increasing gas prices, increasing costs of vehicles and materials, etc. The majority of DART's annual operating revenue comes from a levy on property taxes. Each DART member city has an individual property tax levy rate, with a cap of $0.95 cents per $1,000 property valuation. Property tax levy rates are increased each year to ensure revenue streams are in line with increasing service costs. However, this revenue source will become unsustainable once all cities reach the $0.95 cent cap, as increases in property valuation will not yield enough revenue increase to offset increasing costs. The chart below portrays DART's current funding structure, assuming no service increases and that all cities reach the $0.95 cent cap by 2023. The chart shows that expenses begin to consistently exceed revenue streams around 2029. In order to be financially sustainable without having to reduce service, DART must seek alternative revenue sources.

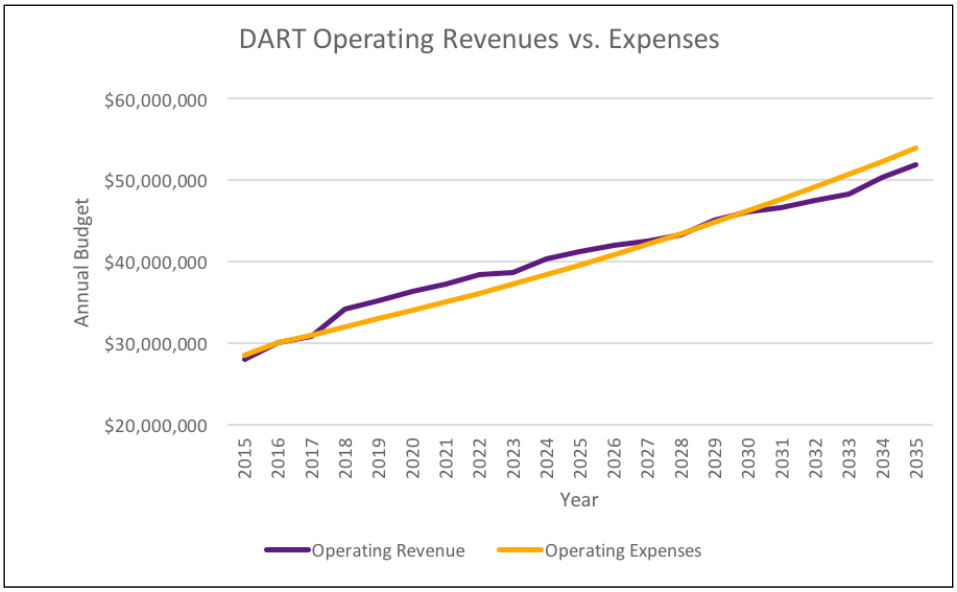


Figure 8: DART Operating Revenue vs. Expenses

Service Types

This plan proposes five different service types, each with different operating characteristics, associated capital features, and role in the DART mobility network, as summarized in Figure 9.

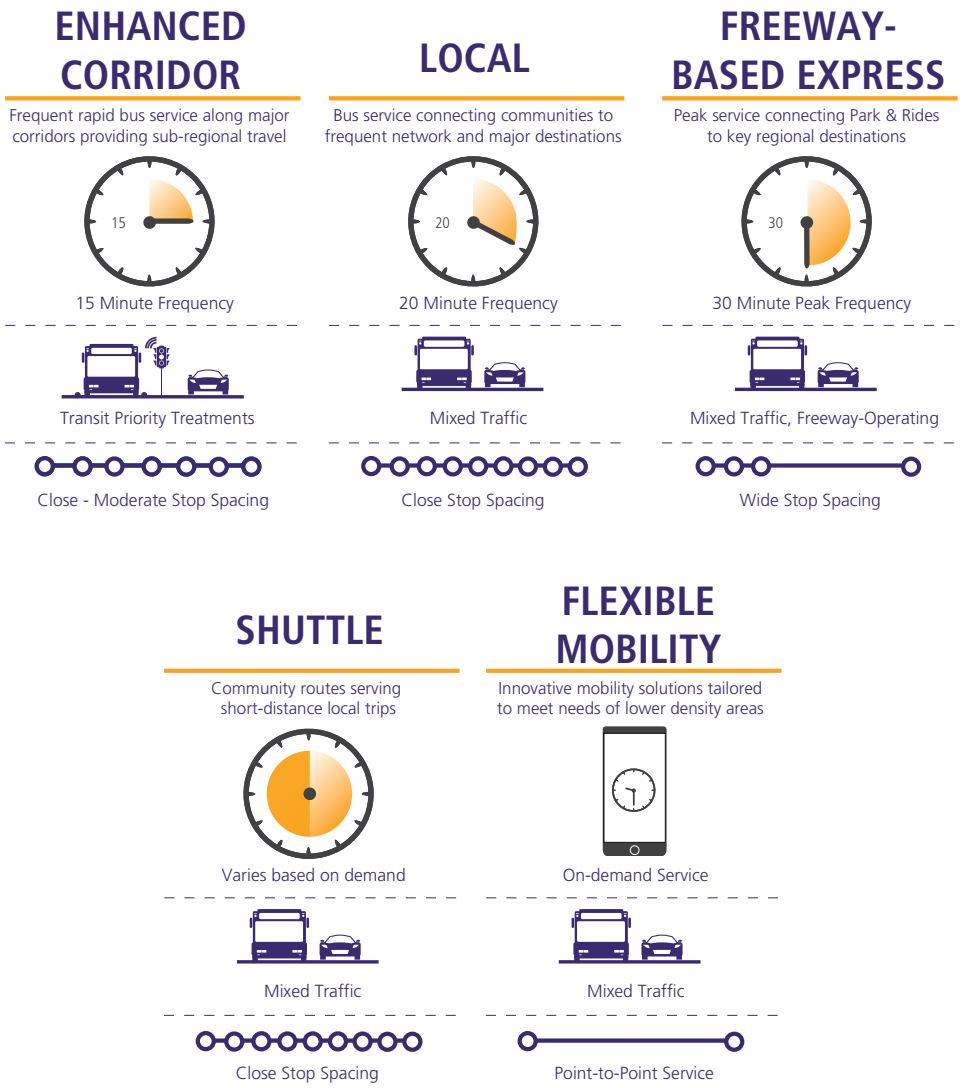
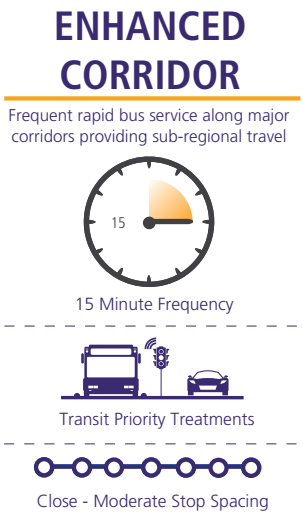


Figure 9: Overview of Proposed Service Types

Enhanced Corridor

Enhanced Corridor bus routes are proposed along strong performing ridership corridors with a mix of adjacent land uses. Corridors identified as part of this tier include a variety of mixed-use development with high densities that generate transit demand all day and all week. Buses will operate every 15 minutes from 6 a.m. to 6 p.m. on weekdays with reduced frequency in evenings and on weekends. All-day all-week demand is critical to sustain such high frequency levels. At the same time, such high frequency levels are required to allow spontaneous use of the network and generate increased ridership.



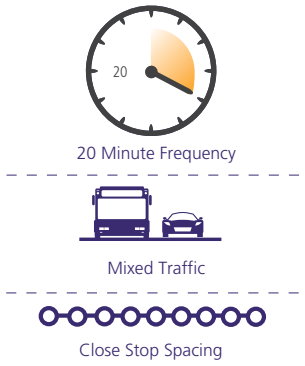
Enhanced Corridors will leverage the most cost-effective elements of Bus Rapid Transit to elevate the passenger experience on major transportation corridors.

- Stations will be branded and upgraded to include amenities such as shelters and benches to provide comfortable and safe places for passengers to wait.
- Corridor branding will increase the visibility as well as community ownership of the service. The corridor branding will link all components together: vehicles, stations, stops and signage. A branded service and accompanying infrastructure can be used to convey faster travel and an enhanced customer experience, allowing existing and potential riders to quickly associate "Enhanced Corridor" with an improved transit experience.
- Transit priority measures will speed up service, reducing travel times. At full implementation of transit priority measures throughout an entire corridor, running times can be expected to improve by 10 percent.
  - *Transit Signal Priority: Transit signal priority (TSP) facilities the movement of buses through signalized intersections by providing early or extended green time, which reduces delay from traffic signals and improves service speed and reliability.*
  - *Bus Bulbs: Bus bulbs are curb extensions that allow buses to board and alight passengers while remaining in their traffic lane, eliminating the need to merge in and out of traffic.*
  - *Queue Jumps: Queue jumps are short bypass transit lanes located at the nearside of intersections that allow buses to move past traffic queues and receive an early green signal to move ahead of traffic. Queue jumps are an effective method of improving bus travel times and reliability in areas of high traffic volumes.*

» Stop spacing will be improved to reduce dwell time. Stops will be spaced to balance access with travel speed. Stops that are too frequent are convenient for access but significantly slow down bus operations. On the other hand, stops spaced too far apart are difficult for passengers to conveniently access. Average stop spacing of every third of a mile achieves this balance between speed and access. Stop locations should be developed in collaboration with local communities to identify key ridership destinations, and stops should be located no closer than a quarter of a mile apart. Stops should also be placed on the far side of intersections wherever possible to reduce the likelihood of stopping twice at signalized intersections.

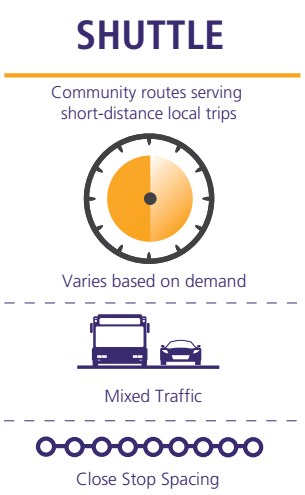
Local Bus

Local bus routes operate on corridors with strong potential for high ridership and all-day all-week demand. They operate every 20 minutes on weekdays from 6 a.m. to 6 p.m. with 30 to 60-minute frequency in the early morning and late evening and on weekends. Stops should be spaced no closer than a quarter of a mile, but stop spacing can average closer to a quarter than to a third of a mile.



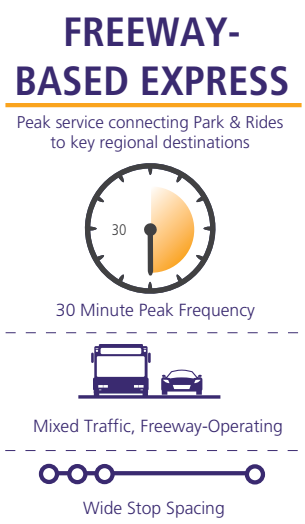
Shuttles

Shuttles integrate with Local and Enhanced Corridor services to complete the fixed-route network. They operate in areas with lower levels of density, auto-centric development patterns, and less transit demand than the above service tiers. Frequency and span of shuttle routes are tailored to demand with some operating every 30 to 60 minutes, and some operating only during peak periods.



Freeway-Based Express Services

Freeway-Based Express services are designed to provide fast service over long distances to facilitate regional travel. In order to increase travel speed, these express services should stay on the freeway as much as possible and minimize the number of stops. The market conditions in the Greater Des Moines region are such that express services have a difficult time being competitive with automobile travel. Traffic congestion is minimal, free parking in downtown in abundant, and gas is affordable. Therefore, in order for commute-based transit services to be competitive, they must be fast and convenient.



To provide increased flexibility in travel options, frequencies will be improved and service spans extended for all express services. Current service spans do not provide flexibility for parents who need to get their kids to school in the morning or for people who want to socialize downtown after work. At a minimum, all Express Routes will operate every 30 minutes between 5 and 9 a.m. and between 3 and 6 p.m.

To get the most use out of the transit vehicles, all services will operate in both the commute and reverse commute directions, carrying people in both directions. This will reduce the number of empty seats on buses and increase DART's revenue and revenue service.

Freeway Rapid Transit

In the future, as congestion increases in the region, Iowa Department of Transportation (Iowa DOT) will be looking at how to use technology to mitigate increased congestion; such as managed lanes, on ramp metering. Should the Iowa DOT look at managed lanes on the freeway for carpools or tolls, DART should work

Figure 10: Freeway Transit Station in Minneapolis, MN

closely with them to make use of these lanes for expedited travel on freeways. Allowing buses to travel in their own lanes lets them bypass congested lanes, giving transit a competitive advantage over automobile travel. Other successful ways that communities have addressed faster travel for transit is by allowing buses to utilize the freeway shoulder to operate. Both Minneapolis and Chicago are using shoulders for bus travel to bypass congestion.Furthermore, DART and Iowa DOT can work together to develop online stations to improve travel speed on freeway corridors. Such online stations bring riders to the bus, eliminating the need for buses to spend time entering and existing freeways. They often provide a convenient way for passengers to transfer vertically between transit services.

Figure 11: Freeway Diamond Interchange Bus Stop, San Rafael, CA

An interim step to allow freeway services to stop without spending time maneuvering on and off freeways is to make better use of freeway entrances/exits at diamond interchanges. Capital im-provements can be made to the freeway entrance and exit ramps to create bus only lanes and places for passengers to wait comfortably and safely. Buses can exit at diamond interchanges and get right back on the freeway without operating on local streets.

Park & Rides

The Express services are designed to attract riders, not chase riders. Frequent stops on local streets to pick up passengers at their homes is convenient for riders, but an inconvenience to everyone on the bus looking for a fast trip. Therefore, stops on local streets have been minimized with increased focus on Park & Rides.

Park & Rides should be located on the inbound side of the street to allow passengers to be picked up as quickly as possible. They should be located to have easy access/egress for transit vehicles, minimizing out-of-direction and turning movements. Pedestrian facilities should be improved to allow passengers to be dropped off on the other side of the street on the return trip and safely cross the street back to their vehicles. Finally, all Park & Ride locations should be clearly marked and easy for riders to find.

Flexible Mobility

In the five years that have passed since the original DART Forward 2035 Transit Services Plan was completed, Greater Des Moines society has entered an unprecedented stage where access to endless information and services is available at a single touch. People have grown accustomed to having access to what they want when they want it, and this does not exclude the world of public mobility. The emergence of Transportation Network Companies (TNCs) has redefined the meaning of transportation "on demand." Traditional on-demand services such as Dial-a-Ride and Flex services where riders have to call 24 hours in advance to reserve a spot on a particular trip cannot, and should not, try to compete with services that can be summoned at any time of day with 10 minutes advanced notice. Additionally, not only do people want "on-demand" access to public mobility services, they also want to be able to choose from a range of different mobility modes to complete their trips. While many still may choose to own a car, they also want the flexibility to be able to take the bus, bike, or walk to their destination.

Community Mobility Hubs

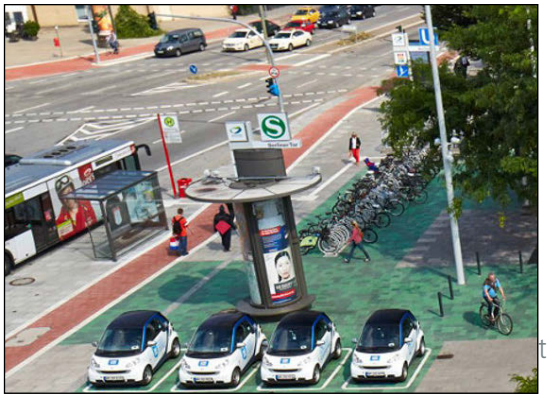


Figure 12: Example of a Mobility Hub

One solution to changing demand patterns is the integration of community services at mobility hubs. This concept recognizes that the fixed-route bus route cannot satisfy all trip needs, and by integrating multiple forms of transportation at a single location, people have the opportunity to choose the mode that best meets their travel needs for a particular trip. Transportation modes and facilities that can be located at mobility hubs include, but are not limited to: DART transit service, bike storage, bikeshare stations, parking for carsharing services (Car2Go, Zipcar), parking for taxis/TNCs, parking for private vans and shuttles and electric charging stations. Private vans/shuttles can provide first/last-mile access to residents or employees. For example, if a business locates two miles from the nearest transit service, instead of dedicating a fixed-route DART vehicle to serve the location, the employer can provide a few vans/shuttles at a nearby mobility hub to help employees complete their journey to work.

This concept allows fixed-route service to serve corridors where it provides the most benefit to a large number of riders while alternative transportation options provide effective mobility solutions for lower demand trips.

Mobility hubs can be a variety of shapes and sizes, depending on what space is available and the needs of specific communities. Ideal locations for mobility hubs are at key points in the network that already require a fair amount of space for fixed-route transfers. Mobility hubs are also beneficial on the outlying portions of the network, places where fixed-route service stops but development continues. Here, mobility options at the hubs provide transportation options to complete journeys beyond the DART service area. DART should work closely with member cities to identify good locations for mobility hubs. This plan includes three tiers of mobility hubs.

Tier 1: Large Mobility Hubs

Tier 1 Large Mobility Hubs are off-street facilities at major transfer points in the DART network. An existing Tier 1 Large Mobility Hub is DART Central Station in downtown Des Moines. Here, riders are able to transfer between most of DART services and also have access to bikeshare facilities and an indoor waiting location.

Figure 13: Example of Tier 1 Mobility Hub

Tier 2: Medium Mobility Hubs

Tier 2 Medium Mobility Hubs may be on-street or off-street facilities, located at key locations throughout the network. Tier 2 hubs may be placed at major transfer locations or may be placed at the edges of the network where multiple mobility modes are required for trip completion. The mobility hub provides the first/last mile solution for many trip destinations that lie outside of walking distance from a transit stop.

Figure 14: Example of Tier 2 Mobility Hub

Tier 3: Small Mobility Hubs

Tier 3 Small Mobility Hubs can be placed anywhere within the network. They offer convenient access to multiple mobility modes without a lot of infrastructure investment.

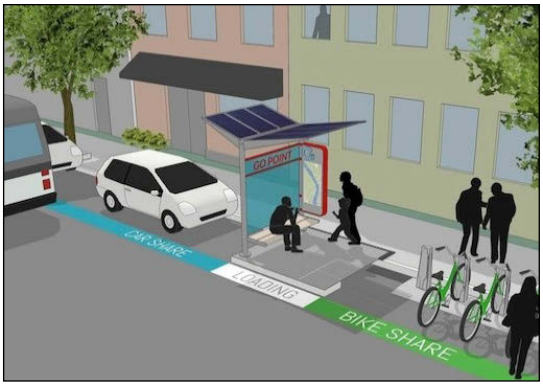


Figure 15: Example of Tier 3 Mobility Hub

Partnerships With On-Demand Services

Partnerships with on-demand services take the mobility hub concept a step further to integrate mobility options for residents to facilitate regional travel. Not only is it difficult for traditional Dial-a-Ride and Flex services to compete with emerging app-enabled ridesharing services, but these services are also extremely costly for DART to operate. By collaborating with other transportation providers, DART can provide more trips for riders at the same cost. DART currently spends an average of $30 per trip (before passenger revenue) for On-Call services. Entering into a partnership where DART subsidizes up to $5 per trip, DART can provide a minimum of six times the number of annual trips for the same cost.

These partnerships also provide significant benefits to riders. Reservations no longer need to be made 24 hours in advance, and riders will no longer be told that the trip they wanted to take is full. Riders can also access a greater geographic area, as they are not limited by designated flex and on-call zones.

Partnerships of these kind are emerging all over the country as all parties begin to recognize the mutual benefits of such arrangements. While many may think this reduces overall ridership on public transit, the opposite seems to be true. People begin to have more flexibility in travel options, and car-free lifestyles become more feasible. Someone who drives to work because the bus stops operating when they need to go home can now take the bus to work and a Taxi/Uber/Lyft home. This is of course always an option, but the cost-sharing arrangement as part of the DART partnership makes it more attractive and feasible.

The exact structure of such a partnership can take on many different forms. The ability to participate in the program would likely be limited to current DART pass holders. This way, DART would only be subsidizing trips for people who are already committed to taking DART service.

Core Service Design Elements

This update to the DART Forward 2035 Transit Service Plan presents three different service growth scenarios, varied by level of investment in future transit and mobility services. However, the core service design elements of the plan are the same across the scenarios. All of the service design elements work towards achieving the goals laid out in the Guiding Principles.

Frequency: 20-Minute Service Frequency on All Routes

46% of community survey respondents said buses arriving more frequently was likely to encourage them to begin using public transportation.

Frequency of service is the top service attribute that attracts new riders to transit or encourages current riders to use transit for additional trip-making. Routes with high service frequencies bene-fit passengers by reducing their out-of-vehicle wait times. At higher frequencies, passenger reli-ance on consulting timetables and planning their arrival at bus stops is less necessary with con-sumers catching the "next trip" rather than "a trip." Higher service frequencies also provide more convenient and reliable transfer connections with other transit services, making network transit use attractive. This is a critical element in attracting transit lifestyle riders, those who choose to use transit (and walking and biking) over transportation options.

As part of the Year Five Update, all Local routes will operate every 20 minutes between 6 a.m. and 6 p.m. on weekdays. The standardized frequency on all routes throughout the day makes the sys-tem very approachable for new and even current riders. Riders do not have to rely on schedules as much, knowing that their next bus will arrive within 20 minutes, even when transferring. Assum-ing random arrivals, the average wait time for a bus will only be 10 minutes. This will be a signifi-cant improvement over current midday service (9 a.m. to 3 p.m.) where most routes operate every 30 or 60 minutes.

Access: Transit Coverage in New Areas

Convenient access to a transit stop is a critical factor in attracting ridership. Among the various surveys conducted as part of this study, having transit stops closer to their work or home was consistently the number one reason non-riders stated they did not use transit service. With finite resources, DART is limited in the number of services it can operate and focuses service investment where it is likely to have the highest demand. This Year Five Update focuses on expanding geographic coverage of DART to new areas that are likely to generate and sustain enough ridership to support all-day all-week transit service. The Minimal Growth Plan scenario adds service to Pleasant Hill and along Merle Hay Rd. The Moderate Growth Plan scenario really focuses on expanding geographic coverage and adds all-day all-week service on Euclid Avenue, East 14th Street, Fleur Drive, NW 86th Street, Hickman Rd, EP True Parkway and express service to Bondurant and Carlisle. Finally, the Expanded Service Enhancements scenario adds service to potential new DART member cities.

Transit stops closer to work or home was the number one attribute likely to encourage community survey respondents to start using public transit (52% of respondents).

Availability: Extend Span on Weekdays, Saturdays, and Sundays

Service span affects ridership by limiting when passengers can travel. It often affects both ends of a trip, as riders often will not use transit service to get somewhere if they cannot use it to get back. Greater service span provides more travel flexibility and improves the customer experience. The original DART Forward 2035 plan increased weekday and Saturday evening span by four to five hours with very positive response from riders. The proposed plan further expands service span in the early morning and late evenings to accommodate a greater range of trip-making needs, as shown in Table 2

	Service Spans by Day Type		
	Weekday	**Saturday**	**Sunday**
Current Span	6:00 a.m. – 11:00 p.m.	7:00 a.m. – 10:00 p.m.	8:00 a.m. – 6:00 p.m.
Proposed Span	5:00 a.m. – 12:00 a.m.	6:00 a.m. – 12:00 a.m.	6:00 a.m. – 9:00 p.m.

Table 2: Service Spans by Day Types

Service operating earlier or later was the number one factor former Express riders said would encourage them to use Express service again (79% of respondents).

Service span of Express services greatly affects ridership. Findings from the Express survey found that schedules were not flexible enough to allow parents to board a trip after dropping their children off at school in the morning or to provide fallback options for employees who had to work late or wanted to stay downtown for social events or meals after work. This plan proposes a minimum seven-hour span for each Express service to allow DART to provide a range of trip time options for current and potential riders. It also proposes all-day service on a series of corridors that are currently only served with limited Express services including Merle Hay Rd, NW 86th Street, Hickman Road, and EP True Parkway to increase the availability of service to residents and jobs along these corridors.

Experience: Improved Passenger Experience

All elements of service design and delivery affect the passenger experience, but this core service design element focuses on passenger experience as it relates to waiting for the bus and travel time.

46% of community survey respondents said shelters located at bus stops was likely to encourage them to begin using public transportation.

Passenger amenities at bus stops greatly improve the experience of waiting for the bus, especially in inclement weather. Bus shelters provide protection from the elements and provide more comfortable places to wait. The plan includes an allocation plan for the distribution of new shelters at high ridership stops across the DART network.

In order for DART to be competitive with other travel modes, it must offer comparable travel times. Travel time is the second most important factor after frequency that people consider when deciding whether or not to take transit. The length of any delay is perceived as twice the actual time to on-board passengers, so minimizing delay wherever possible is critical to attracting and retaining ridership. Enhancing service speeds also improves reliability and on-time performance.

Proposed alignments are streamlined with minimal out-of-direction movements and deviations to make travel as fast and direct as possible. Route deviations may provide convenience for particular passengers but at the inconvenience of passengers already on the bus who are forced to ride through the deviation. Limiting deviations only to those where the boarding and alighting activity outweighs the impact to through passengers provides a faster and more attractive trip for through-riding passengers.

The number one reason former Express riders no longer ride Express services is because the travel time is too long (42% of respondents).

Routes are designed to operate on major corridors with high speed limits to increase overall travel speeds, while operation on local residential streets is minimized.

Flexibility: Mobility Hubs and On-Demand Service

The future of public mobility lies in providing riders with flexibility in how and when they travel. Increasing frequency and availability of traditional fixed-route service enhances flexibility in when riders travel, but they are still limited to a fixed schedule and fixed travel route.

The number two reason community survey respondents do not use transit is because they have too many places they need to go during the day.

One solution is the integration of community services at mobility hubs. This concept recognizes that the fixed-route bus route cannot satisfy all trip needs, and by integrating multiple forms of transportation at a single location, people have the opportunity to choose the mode that best meets their travel needs for a particular trip. Transportation modes and facilities that can be located at mobility hubs include, but are not limited to: DART transit service, bike storage, bikeshare stations, parking for carsharing services (Car2Go, Zipcar), parking for taxis/TNCs, parking for private vans and shuttles and electric charging stations. This plan proposes implementing mobility hubs at major transfer points and at the edges of the fixed-route network where first/last mile solutions are in higher demand.

A second solution is to partner with a third party transportation provider such as a Transportation Network Company (TNC) like Uber, Lyft or Bridj to redefine DART's "On-Demand" service. Through such partnerships riders benefit by having more flexibility in how they travel and have a viable alternative to transit service for trips outside the fixed-route network or outside of DART's service hours. DART benefits by utilizing a lower-cost service delivery alternative to traditional fixed-route service.

Service Design Policies

The following service design policies offer general guidelines for the provision of transit service. With limited resources, DART cannot be everything for everyone, and it must closely evaluate all requests for new service. These policies suggest ways that DART can work proactively with stakeholders, developers, and city governments to ensure it is able to serve as many potential riders as possible.

Partnerships and Cost-Sharing

Partnerships and cost-sharing arrangements can be good sources of revenue for DART and ultimately lead to higher ridership generation. In cases where DART receives requests for new transit service that it does not feel would meet its productivity standards, DART should suggest that the requesting party provide the costs to cover service operation. This allows the service to still be operated, but DART is reimbursed for the cost of operation. Of course DART would still incur some capital and overhead costs associated with increasing service, and these costs should always be considered when evaluating potential partnerships.

Additionally, DART should look to expand its bus pass partnerships programs. DART's Unlimited Access program allows employers to provide employees with "unlimited access" to free transit service. Other employers participate in Employer Support Programs that allow them to provide employees with discounted bus fares. These partnerships can be beneficial for all parties – DART's ridership increases, employers are able to provide benefits to their employees, employees have alternative transportation options for getting to/from work, and

The number one reason current Express riders use DART is because their employer contributes to the cost of the bus pass (29 percent). Employer incentives were the number two factor that would encourage non-riders to start using DART service (47 percent).

the cars are taken off the street, reducing carbon emissions. These types of programs introduce new riders to DART, riders who may begin to use DART for additional trip purposes.

Service Expansion

DART should work closely with business owners, schools, entertainment industries, residential developers, etc. when presented with a proposal for a new development. While land is often readily available and less expensive in areas around the fringes of urban development with low population and employment densities, locating new developments in such areas presents significant implications for transit service. Any expansion in the DART service area requires the use of additional resources, both for fixed-route service and complementary paratransit service. While new developments themselves may generate considerable ridership, when they are located away from transit-productive areas, they require DART to expend unproductive resources to access the remote location. Considerations for effectively delivering transit service to a new location should be included as part of the initial location decision process for any new development wishing to be served by DART. New developments that want transit service should locate themselves along existing or planned transit corridors.

Route deviations to serve destinations not along major corridors has implications for both service costs and the passenger experience. While deviations provide convenient access for passengers boarding along the deviation, they greatly inconvenience passengers already on the bus by adding travel time to their trip. Significant deviations may add enough travel time to discourage some passengers from using the service, as the length of the delay is perceived as twice the actual time to on-board passengers. Limiting deviations only to those where the boarding and alighting activity outweighs the impact to through passengers will provide a faster and more attractive trip for through-riding passengers.[1]

All proposed route alignment extensions should be closely analyzed for their impact on operating resources. In no case should service frequency ever be compromised for an extension. In the case where extending a route would require adding a vehicle to the route to maintain service frequency, the extension should undergo a cost-benefit analysis before being

1 Acceptable delay to through passengers is five passenger-minutes per new boarding gained along the deviation. To calculate the total impact to through passengers, take the load on the bus when entering the deviation, subtract the number of alightings on the deviation, and multiply by the duration of the deviation. This calculates total passenger-minutes. Then divide by the number of boardings gained along the deviation. If this number is greater than five, the impact to through riders is too great to justify the deviation.

implemented. Adding a vehicle to a route greatly increases operating cost, and this additional cost should be offset by considerable ridership generation. For example, for a route that uses two vehicles, operates 30 daily revenue hours, and carries 600 passengers, its productivity is 20 passengers per revenue hour. Adding a vehicle to the route would increase daily resources requirements to 45 hours, requiring the route to carry 900 daily passengers to maintain a productivity of 20. If the extension is not expected to generate an additional 300 passengers, the route's productivity will drop, decreasing DART's overall service performance.

Transportation and Land Use

Transit success is directly influenced by surrounding development patterns and density. In order for transit to be truly successful, an area must have a strong mix of population and employment densities as well as a street and sidewalk network that promotes walkability and access. Higher population and employment densities are supportive of transit because there is a larger potential customer base for the services to draw from. The road and sidewalk networks impact several aspects of transit: how easy it is for pedestrians to access the network; transit travel time; and connectivity between destinations. Because most transit trips begin and end as pedestrian trips, easy pedestrian access is key to transit success.

DART should be at the table when member cities plan future developments to encourage intensification of development along current and planned transit corridors. This plan identifies a few corridors for new transit service in the future, but these services will only be successful if there is enough ridership demand along the corridor to sustain the level of investment and all bus stops must have safe walking paths to nearby destinations. Figure 16 below shows how development should be concentrated around transit corridors.

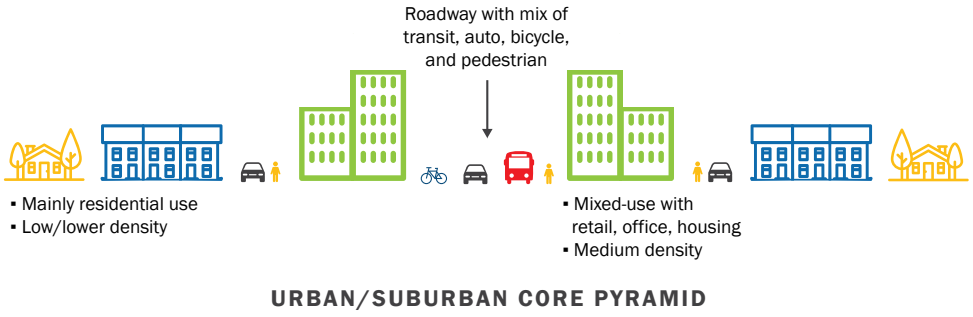


Figure 16: Urban/Suburban Core Development Pyramid

Service Recommendations

Service recommendations were developed in close collaboration with DART staff and informed by the key findings from the Market Analysis and Service Evaluation as well as feedback from surveys and public outreach efforts. The service recommendations are presented as a series of three different service growth scenarios. Acknowledging that any service expansion has an associated cost, all scenarios are tied to a specific funding strategy. Similarly, scenarios are presented in short-term (FY2017-FY2022) and mid-term (FY2023-FY2028) phases to allow DART to develop the network incrementally in line with available funding.

Minimal Growth Plan: This scenario focuses on strengthening the current DART network by improving all-week frequency on current routes and expanding service hours to better meet travel needs.

Moderate Growth Plan: This scenario greatly increases service access in the existing service area by adding service on new corridors and works to better address community mobility needs. It includes a series of new routes on major corridors and service enhancements along existing corridors.

Expanded Regional Plan: This scenario expands DART's service area by adding new member cities. New services are proposed for cities of Norwalk, Waukee, Indianola, and Ames if they were to join DART, and the services would be funded by the taxes paid by those cities once becoming a DART member.

Table 3 on the following page compares and summarizes the benefits of each scenario.

Service Plan Element		Current DART Network	Minimal Growth Plan	Moderate Growth Plan	Expanded Regional Plan
	**Frequency** *Access to 20-minute or better weekday service*	8% of the population	42% of the population	59% of the population	60% of the population
		22% of jobs	57% of jobs	73% of jobs	74% of jobs
	**Access** *Within 1/4 mile of all-day service*	65% of the population	69% of the population	70% of the population	75% of the population
		80% of jobs	82% of jobs	83% of jobs	85% of jobs
		-	-	-	Possible service to: Ames, Indianola, Norwalk, & Waukee
	**Availability**	6 a.m. to 11 p.m. weekday service	5 a.m. to midnight weekday service	5 a.m. to midnight weekday service	5 a.m. to midnight weekday service
		7 a.m. to 10 p.m. Saturday service	6 a.m. to midnight Saturday service	6 a.m. to midnight Saturday service	6 a.m. to midnight Saturday service
		8 a.m. to 6 p.m. hours Sunday service	6 a.m. to 9 p.m. Sunday service	6 a.m. to 9 p.m. Sunday service	6 a.m. to 9 p.m. Sunday service
	**Experience**	27 bus shelters	77 bus shelters	277 bus shelters	277 bus shelters
					5 enhanced corridors with transit priority measures
				5 enhanced corridors with transit priority measures	Freeway rapid transit
	**Flexibility**	Limited flex and on-demand services	Minimal investment in on-demand service	Moderate investment in on-demand service	Significant investment in on-demand service
			13 mobility hubs	19 mobility hubs	19 mobility hubs
	**Plan Operating Costs**	2025 - $39.6 M/year	2025 - $49.2 M/year	2025 - $69.9 M/year	2025 - $73.3 M/year
		2035 - $53.9 M/year	2035 - $66.8 M/year	2035 - $94.8 M/year	2035 - $99.3 M/year

Table 3: Service Recommendation Scenario Matrix

** Population and job percentages are based off of 2035 projections provided by DMAMPO*

Minimal Growth Plan

This scenario focuses on strengthening the current DART network by improving all-week frequency on current routes and expanding service hours to better meet travel needs.

Short-Term Recommendations

The short-term recommendations are planned to occur over the next five years and focus on strengthening the all-day all-week service network.

Key elements of the short-term recommendations include:

- Frequency Improvements
  - *Improved weekday frequency on key corridors to 20 minutes all day*
  - *Improved Saturday frequency on key corridors to 30 minutes all day*
- Span Improvements
  - *Expanded weekday service span by one hour in the morning (5-6 a.m.) and one hour in late evening (11 p.m.-midnight)*
  - *Expanded Saturday service span by one hour in the morning (6-7 a.m.) and two hours in late evening (10 p.m.-midnight)*
  - *Expanded Sunday service span by two hours in the morning (6-8 a.m.) and three hours in late evening (6-9 p.m.)*
- Express Service Improvements
  - *Regular 30-minute service between 5-9 a.m. and 3-6 p.m. for all Express Routes*
- New Routes
  - *Route 10 – Pleasant Hill*
  - *Route 76 – Ankeny Shuttle*
  - *Route 90 – Ankeny Commute Express*
- On-Demand Service
  - *Increased investment in on-demand service through potential partnerships with third-party transit providers or increase in in-house on-demand operation*

Table 4 on the following page describes individual route recommendations for the Minimal Growth Plan scenario in the short-term (2017-2022). Figure 17 maps proposed route alignments with routes distinguished by service type. Detailed descriptions of route recommendations can be found in the Appendix.

Route	Service Type	Description of Route Changes	Weekday Frequency		Saturday Frequency		Sunday Frequency	
			Current	Short-Term	Current	Short-Term	Current	Short-Term
1-Fairgrounds	Local	Consistent alignment all day using E 38th St, Hubbell, E 42nd St, and Easton Blvd terminus loop. Pleasant Hill service moved to new Route 10.	15/30	20	60	60	60	60
3-University	Local	Stop spacing increased to every 1/3 mile to provide a faster alternative to Route 60 along the University corridor.	20/30	20	30	30	30	30
4-E 14th Street	Local	No alignment changes.	30/60	20	60	60	60	60
5-Franklin Ave	Shuttle	Current Route 5 alignment extended north along Merle Hay Rd to NW 70th Ave to provide all-day local service on Merle Hay Rd.	60	60	--	--	--	--
6-Indianola Ave	Local	Restructured to enter downtown via Indianola Avenue and SW 2nd/3rd St instead of SW 7th St to provide transit access to residents east of Indianola Avenue and Principal Park.	15/30	20	60	60	60	60
7-SW 9th Ave	Local	Operated as a continuous route with Route 15 to provide crosstown service and reduce need to transfer at DART Central Station.	15/30	20	60	30	60	60
14-Beaver Ave	Local	No alignment changes.	30/60	20	60	60	60	60
15-6th Ave	Local	Operated as a continuous route with Route 7 to provide crosstown service and reduce need to transfer at DART Central Station.	15/30	20	60	30	60	60
16-Douglas Ave	Local	No alignment changes.	15/30	20	60	30	60	60
17-Hubbell Ave	Local	Will extend to new outlet mall once open.	15/30	20	60	60	60	60
52-Jordan Creek	Express	No alignment changes.	30/60	20	60	60	60	60
60-University/ Ingersoll	Local	Extended east to E 14th St to provide riders with a one-seat ride between East Village, Drake University, downtown, and destinations along Ingersoll Ave.	20	20	40	30	40	30
91-Merle Hay Rd	Express	See Route 5.	4 AM, 4 PM trips	--	--	--	--	--
92-Hickman Rd	Express	No alignment changes.	7 AM, 7 PM trips	8 AM, 6 PM trips	--	--	--	--
93-NW 86th St		Extended northwest to serve Grimes Walmart and destinations along NW 62nd Ave.	7 AM, 8 PM trips	8 AM, 6 PM trips	--	--	--	--
94-Westown	Express	No alignment changes.	3 AM, 3 PM trips	8 AM, 6 PM trips	--	--	--	--
95-Vista Dr	Express	No alignment changes.	4 AM, 4 PM trips	8 AM, 6 PM trips	--	--	--	--
96-EP True Pkwy	Express	No alignment changes.	4 AM, 4 PM trips	8 AM, 6 PM trips	--	--	--	--

Route	Service Type	Description of Route Changes	Weekday Frequency		Saturday Frequency		Sunday Frequency	
			Current	Short-Term	Current	Short-Term	Current	Short-Term
98-Ankeny DMACC Express	Express	Restructured to provide all-day connections between DMACC campuses.	20/80	20/40	--		--	
99-Altoona	Express	Extended east to serve new Park & Ride at Altoona Little League Field.	4 AM, 4 PM trips	8 AM, 6 PM trips	--	--	--	--
New 10-Pleasant Hill	Shuttle	Increased service between Pleasant Hill to downtown Des Moines via University Ave, currently a tripper service on Route 1.	3 AM, 3 PM trips	60	--	--	--	--
New 76-Ankeny Circulator	Shuttle	New circulator in Ankeny that allows for internal travel.	--	30	--	60	--	60
New 90-Ankeny Commute Express	Express	New Express route originally part of Route 98. Provides direct connections between Ankeny Park & Rides and downtown Des Moines during peak commute times.	--	6 AM, 6 PM trips	--	--	--	--

Table 4: Summary of Minimal Growth Plan Short-Term Recommendations

There are no recommended changes for Route 8-Fleur Dr, Route 11-Ingersoll/Valley Junction, Route 13-Park Ave. LINK, D-Line, Route 72-West Des Moines Flex, 73-Urbandale/Windsor Heights Flex, 74-NW Urbandale Flex in the short-term.

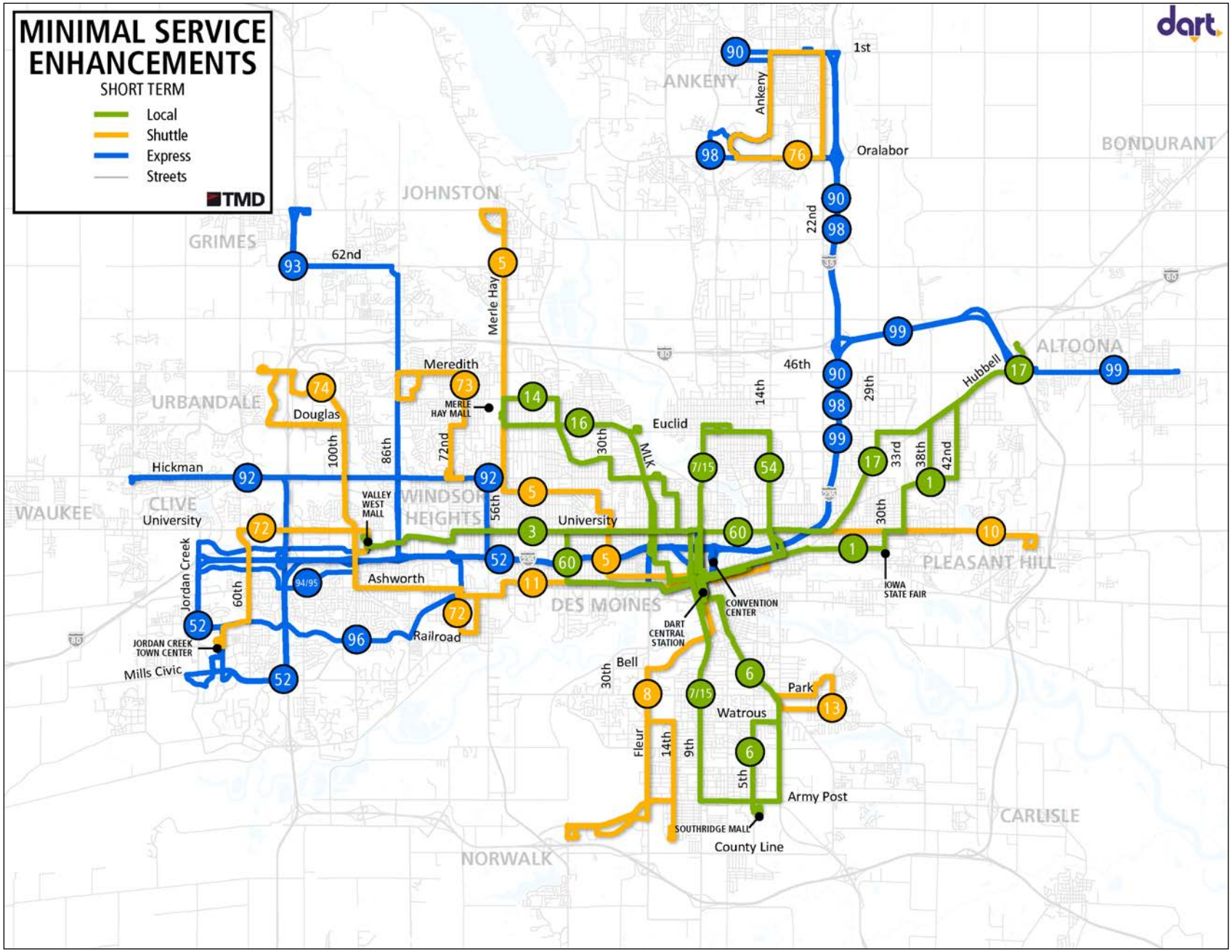


Figure 17: Map of Proposed Minimal Growth Plan Network - Short-Term

Mid-Term Recommendations

» Key elements of the mid-term recommendations include:

- *Route Alignment Improvements*
- *Route 3-University Ave extended west to new West Des Moines mobility hub.*
- *Route 74-NW Urbandale extended south to Valley Junction.*
- *Increased weekend frequency.*

» Span Improvements

- *New weekend service on Routes 74 and 98.*

Table 5 describes individual route recommendations for the Minimal Growth Plan scenario in the mid-term (2023-2028). Figure 18 maps proposed route alignments with routes distinguished by service type. Detailed descriptions of route recommendations can be found in the Appendix.

Route	Service Type	Description of Route Changes	Weekday Frequency		Saturday Frequency		Sunday Frequency	
			Current	Mid-Term	Current	Mid-Term	Current	Mid-Term
3-University	Local	Extend route west to new West Des Moines mobility hub via University Ave and 60th St.	20	20	30	30	30	30
6-Indianola Avenue	Local	Increase Saturday frequency.	20	20	60	30	60	60
16-Douglas Avenue	Local	Increase Sunday frequency.	20	20	30	30	60	30
17-Hubbell Avenue	Local	Increase Saturday frequency.	20	20	60	30	60	60
52-Jordan Creek	Express	Increase Saturday frequency.	20	20	60	30	60	60
72-West Des Moines Flex	Shuttle	Replaced with extended Route 3 and extended Route 74.	60	--	60	--	60	--

Route	Service Type	Description of Route Changes	Weekday Frequency		Saturday Frequency		Sunday Frequency	
			Current	Mid-Term	Current	Mid-Term	Current	Mid-Term
74-NW Urbandale	Shuttle	Extended south via NW 100th St/Valley West Dr to serve Valley Junction. Service span is from 5AM-7PM on weekdays and 6AM-7PM on weekends.	3 AM, 3 PM trips	45/90	--	90	--	90
98-DMACC Ankeny Express	Express	New weekend service 6AM-9PM on Saturdays and 6AM-7PM on Sundays. No weekend service to DMACC campuses.	20/40	20/40	--	60	--	60

Table 5: Summary of Minimal Growth Plan Mid-Term Recommendations

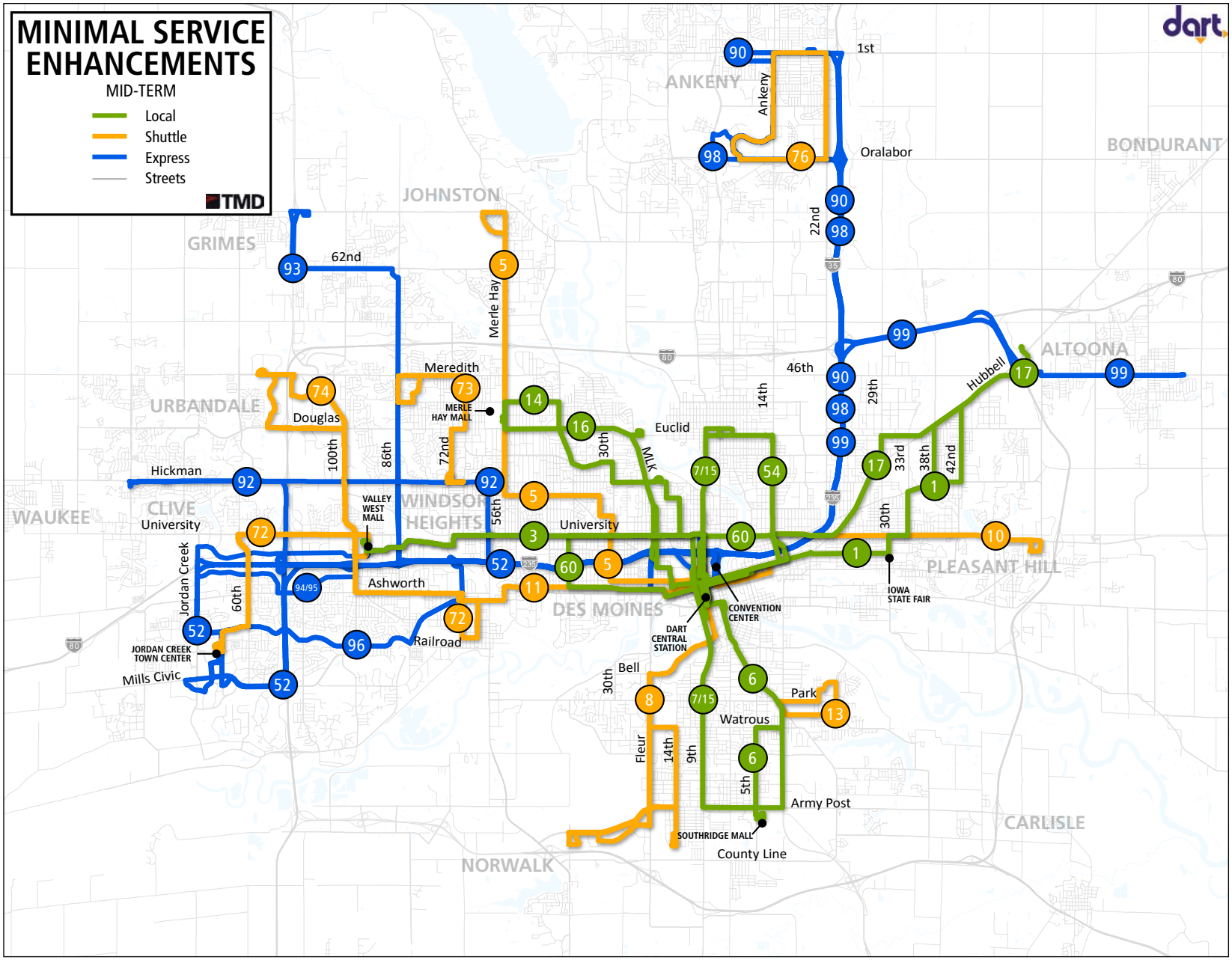


Figure 18: Map of Proposed Minimal Growth Plan Network - Mid-Term

Capital Improvements

A series of capital improvements are included in the Minimal Growth Plan plan to accompany service increases.

Mobility Hubs

The Minimal Growth Plan scenario includes funding for 13 mobility hubs: 1 Tier 1 hub and 12 Tier 3 hubs. Mobility hubs are placed at major transfer points in the network and on the fringes of the fixed-route network where first/last mile mobility solutions are integral for trip completion and traveling without a car. Table 6 recommends approximate locations for these mobility hubs, and the exact location will be decided on through collaboration among DART, local communities, and member city governments.

Number	Stop/ Intersection	Mobility Hub Tier	Notes
1	West Des Moines Hub S 64th St	Tier 1 - Large	Major transfer center in West Des Moines helping DART develop into a dual-hub network
2	Merle Hay Rd & Douglas	Tier 3 - Small	Major transfer point
3	Park Fair Mall	Tier 3 - Small	Major transfer point
4	Valley West Mall	Tier 3 - Small	Major transfer point
5	Hickman Rd & 156th	Tier 3 - Small	Provide additional mobility options in Urbandale
6	Johnston City Hall	Tier 3 - Small	Provide additional mobility options in Johnston
7	Southridge Mall	Tier 3 - Small	Major transfer point, provide additional mobility options in Easter Lake
8	Grimes Walmart	Tier 3 - Small	Provide additional mobility options in Grimes and first/last mile connections to Express Route 93
9	Ankeny Walmart	Tier 3 - Small	Internal circulation in Ankeny and first/last mile solutions from Express Routes 97 and 98
10	Altoona Walmart	Tier 3 - Small	Internal circulation in Ankeny and first/last mile solutions from Express Route 99
11	Pleasant Hill	Tier 3 - Small	Provide additional mobility options in Pleasant Hill
12	Bondurant	Tier 3 - Small	Provide for internal circulation within Bondurant
13	Carlisle	Tier 3 - Small	Provide for internal circulation within Carlisle

Table 6: Minimal Growth Plan Mobility Hubs

Improved I-235 Access

Funding is included to upgrade the diamond interchanges at the I-235 42nd Street and 22nd Street exits. Upgrades will include bus pads and shelter locations as well as sidewalk improvements to allow for safe pedestrian access to new stops. These stops will be primarily designed for the Route 52 to provide faster connections between downtown Des Moines and West Des Moines.

Bus Stop Shelters

The community-wide non-rider survey found that 46 percent of respondents were "likely" or "very likely" to start using DART is shelters were located at bus stops. The Minimal Growth Plan plan includes funding for 50 new shelters at bus stops in the mid-term. New shelters should be prioritized in areas with high all-day boarding and transfer activity, places they will provide the greatest benefit. Four shelters are proposed at major transfer intersections to help riders easily find the pickup location of their next bus. With the exception of downtown Des Moines, shelters should not be placed closer than a quarter of a mile apart to help DART adhere to its stop spacing standards. Table 7 lists 50 candidate shelter locations organized by their role in the proposed network. The "Ons" and "Offs" represent average weekday boardings and alightings.[2] With proposed stop consolidation and increased frequencies resulting in greater ridership, the actual passenger activity at each stop is expected to be higher. These locations are shown in the map in Figure 18.

2 Aggregate boarding and alighting data collected between August and November 2015.

Number	Stop ID	Stop Name	Ons	Offs	Notes
1	3612	Grand Ave & 3rd	49	25	Consolidated downtown stops to every other street, primarily for Express services. Ridership will be higher resulting from consolidation
2	3434	Grand Ave & 5th	149	308	
3	3435	Grand Ave & 7th	18	10	
4	3437	Grand Ave & 9th	79	91	
5	3618	Locust St & 3rd	28	34	
6	1928	Locust St & 5th	69	106	
7	1930	Locust St & 7th	120	211	
8	1932	Locust St & 9th	28	21	
9	New	University & 6th (EB)	N/A	N/A	Four shelters at major transfer intersection for Routes 3, 15, and 60. Higher proposed frequencies expected to result in greater transfer activity and ridership.
10	3739	University & 6th (WB)	121	54	
11	591	6th & University (NB)	105	22	
12	3360	6th & University (SB)	7	51	
13	2618	E University & E 14th (EB)	18	9	Four shelters at major transfer intersection for Routes 4, 17, 60, and new Pleasant Hill route. Higher proposed frequencies expected to result in greater transfer activity and ridership.
14	3799	E University & E 14th (WB)	28	31	
15	1093	E 14th & E University (NB)	8	7	
16	1094	E 14th & E University (SB)	4	6	

Number	Stop ID	Stop Name	Ons	Offs	Notes
17	2574	University & 42nd (EB)	82	68	Major transfer stop between Route 3 and 60
18	2573	University & 42nd (WB)	35	49	
19	2555	University & 31st (EB)	42	26	Drake University
20	2556	University & 31st (WB)	35	48	
21	3007	University & 13th (EB)	56	122	Family Dollar, transfer between Route 3, 16, and 60
22	3014	University & 13th (WB)	114	40	
23	405	Grand & 17th	10	9	Future major stop for downtown service
24	406	Locust & 17th	69	61	High ridership stop on major corridor
25	3610	Ingersoll & 18th (WB)	46	68	High ridership stop on major corridor
26	1781	Ingersoll & 18th (EB)	69	33	High ridership stop on major corridor
27	2941	42nd & Crocker St	68	30	High ridership stop on major corridor
28	2937	42nd & Chamberlain Dr	41	71	High ridership stop on major corridor
29	2248	Indianola Ave & SE 14th St	58	20	High ridership stop on major corridor
30	1754	Indianola Ave & Pleasant View	82	77	High ridership stop on major corridor
31	2431	SW 9th & Army Post Rd (NB)	108	8	High ridership stop on major corridor
32	2488	SW 9th & McKinley Ave (NB)	77	22	High ridership stop on major corridor
33	2420	SW 9th & Loomis Ave (NB)	53	65	High ridership stop on major corridor
34	2480	SW 9th & Loomis Ave (SB)	69	75	High ridership stop on major corridor

Number	Stop ID	Stop Name	Ons	Offs	Notes
35	544	6th & Allison Ave	62	19	High ridership stop on major corridor
36	563	6th & Euclid Ave	52	4	High ridership stop on major corridor
37	564	6th & Forest Ave (SB)	46	31	High ridership stop on major corridor
38	2889	13th & Clark St	93	20	High ridership stop on major corridor
39	2115	Park Fair Mall	199	129	High ridership stop on major corridor
40	2051	MLK Pkwy & Harding Hills Dr	42	8	High ridership stop on major corridor
41	2997	University & 23rd (EB)	42	35	High ridership stop on major corridor
42	1797	Ingersoll Ave & 35th St (WB)	40	48	High ridership stop on major corridor
43	1076	E 14th St & Euclid Ave	45	2	High ridership stop
44	3911	Ankeny DMACC	43	45	High ridership stop
45	3030	Ankeny Mercy North	109	90	High ridership stop
46	580	6th & Mercy North Hospital	65	38	Mercy North Hospital
47	816	Broadlawns Hospital	64	10	Broadlawns Hospital
48	3269	Jordan Creek Town Center	99	114	Jordan Creek Town Center
49	3292	Mills Civic at West Glen (EB)	1	2	West Glen Town Center, higher ridership stop with improved West Des Moines service
50	3284	Mills Civic at West Glen (WB)	1	1	

Table 7: Minimal Growth Plan Shelter Locations

Vehicles and Operating Facility

The Minimal Growth Plan scenario does not require an expansion in DART's vehicle fleet. Although service is greatly expanded, because many routes are moving from 15-minute peak and 30-minute off-peak frequency to a consistent 20-minute frequency, additional vehicles are not required. Therefore, DART's fleet requirement will not exceed capacity at the current DART Way facility. However, funds for a new facility have been included in the capital plan should DART decide to relocate to a new location that better meets its operational needs.

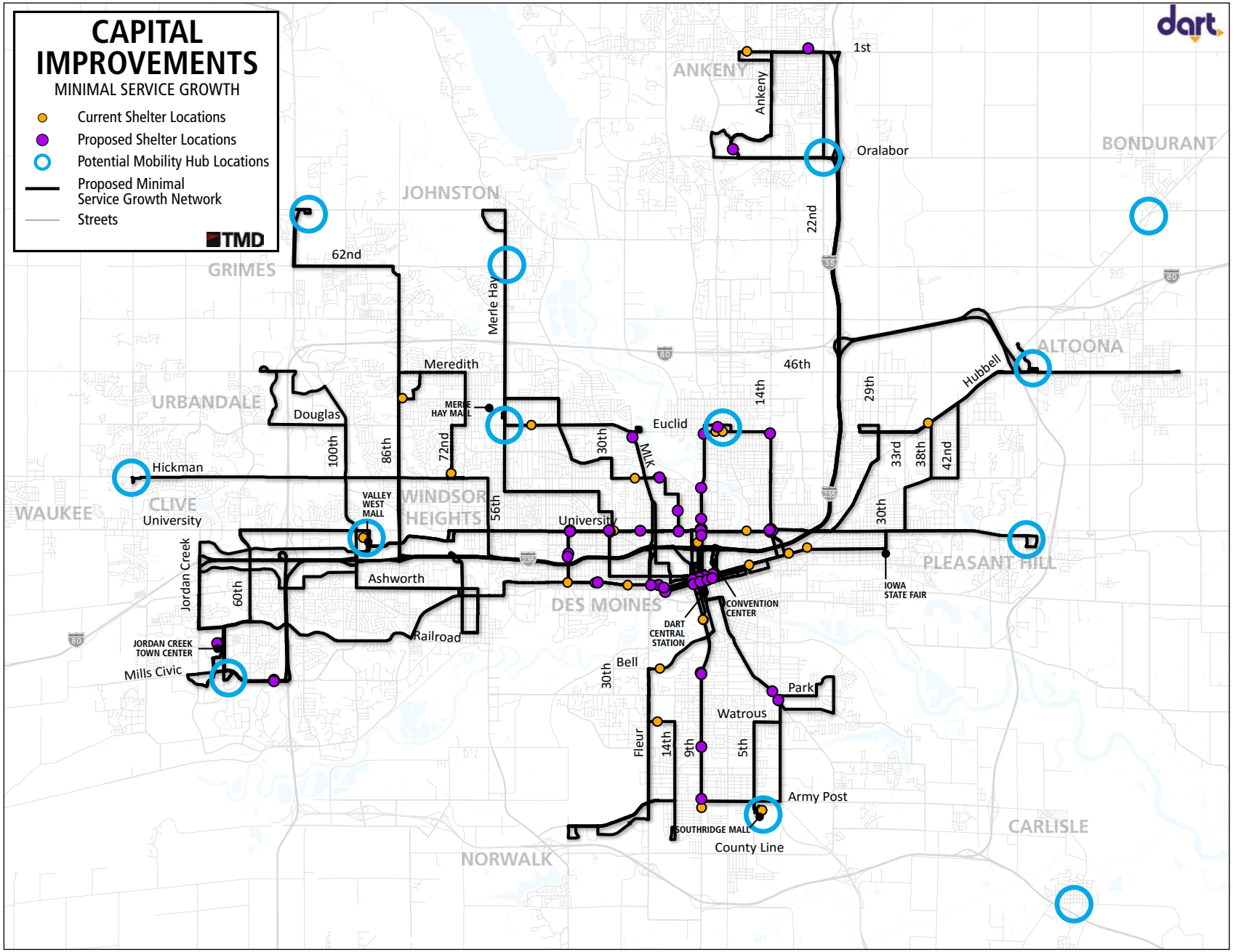


Figure 19 : Map of Proposed Minimal Growth Plan Capital Improvements

Customer Benefits and Impacts

A majority of riders and many members of the general public will experience a positive impact from the recommendations including reduced wait times, shorter travel times, and a greater range of available service options. These improvements are intended to generate additional use by existing customers and attract new customers to the system.

Frequency

The Minimal Growth Plan scenario focuses on improving frequency to 20 minutes all-day on all Local routes, greatly benefitting both riders and non-riders.

- The percentage of current weekday DART riders who will ride a service with 20-minute or better frequency will increase from 45 to 77 percent.
- The percentage of current Saturday DART riders who will ride a service with 30-minute frequency will increase from 15 to 70 percent.
- The percentage of current Sunday DART riders who will ride a service with 30-minute frequency will increase from 18 to 55 percent.

Access

The Minimal Growth Plan scenario mostly focuses on improving the current network, but it does add service coverage in new areas, increasing transit access for residents.

- Approximately 27,000 new Greater Des Moines residents and 8,000 jobs will have access to transit service. [3]
- The number of Greater Des Moines residents within a quarter mile walk of a 20-minute all-day weekday service increases from 54,000 to 288,000. The number of jobs increases from 99,000 to 255,000.
- Due to route restructuring and better optimization of stop spacing to improve travel speeds, 0.2 percent of current DART riders (38 riders) will be outside of a quarter mile walk from a proposed transit stop.

3 Access is defined as a quarter of a mile walk to a Local stop, a third of a mile walk to an Enhanced Corridor stop, and a half of a mile walk to a mobility hub.

Availability

This service span expansion will greatly increase travel flexibility and may attract new riders who need to travel outside of DART's current operating hours.

- Overall service hours will increase by 36 percent on weekdays, 51 percent on Saturdays, and 67 percent on Sundays. Annual service hours will increase by 40 percent.
- Riders will have access to two additional hours of weekday service (5-6 a.m. and 11 p.m.-midnight) three additional hours of Saturday service (6-7 a.m. and 10 p.m.-midnight), and five additional hours of Sunday service (6-8 a.m. and 6-9 p.m.) on all Local Routes.
- Service will become available to Ankeny residents on weekends.

Experience

50 stops and 13 mobility hubs will receive new shelters, benefitting at least 4,300 current DART riders.

Flexibility

The Minimal Growth Plan scenario has set aside about $360,000 a year for on-call service or partnerships with on-demand transportation providers. This is a doubling of resource investment for this type of service, and successful partnerships could provide around 72,000 trips annually at a $5.00 subsidy per passenger, over 10 times the number of trips currently provided.

34,000 people and 28,000 jobs will be within walking distance of a mobility hub.

Changes in Required ADA Coverage

A buffer of three-quarters of a mile was applied to the fixed-route network to drive the updated ADA paratransit service area per federal regulations. Figure 20 shows the change in required ADA paratransit service area that accompanies this service plan.

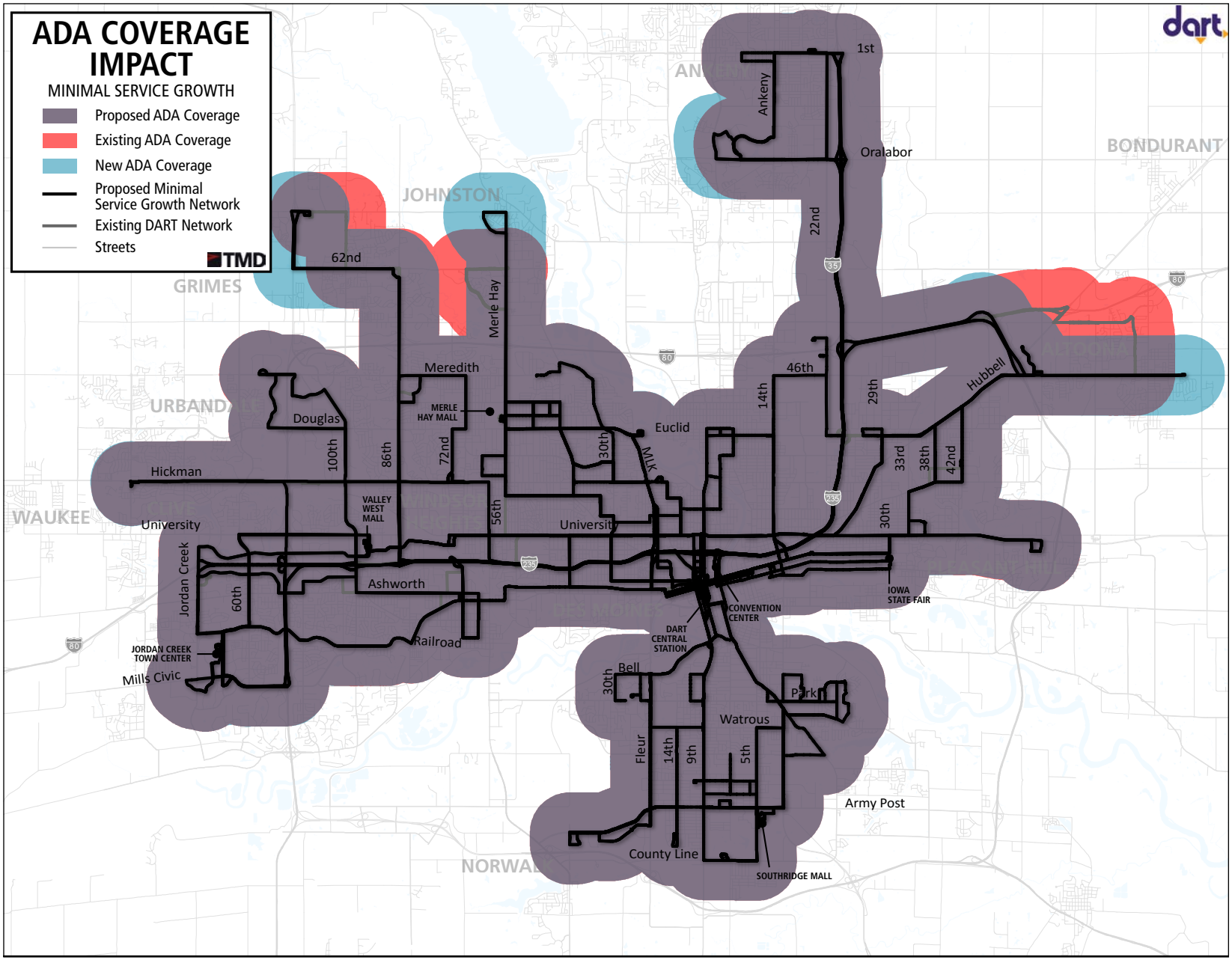


Figure 20: ADA Coverage Impact for Minimal Growth Plan Network

Minimal Growth Plan Overview

Table 8 provides a high-level overview of service characteristics over the life of the plan. Overall service expands by 43 percent in revenue hours and 53 percent in revenue miles. Average miles per hour increases as delay reduction measures are implemented and layover time is reduced by making more efficient use of resources.

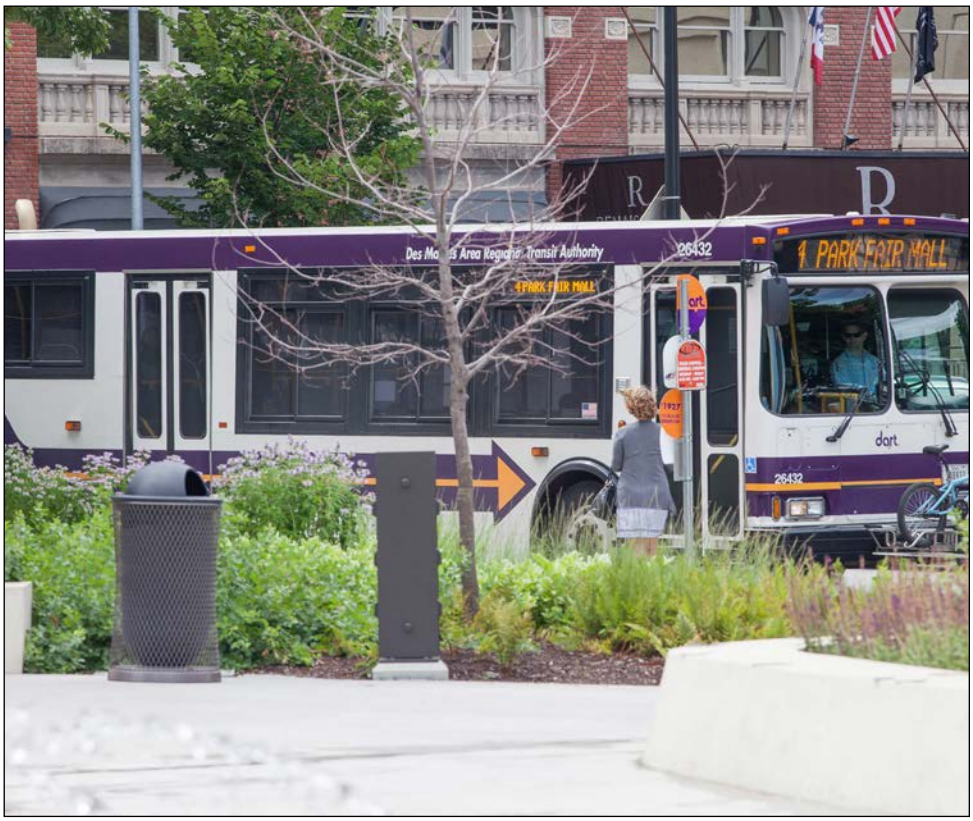
Overall ridership is expected to increase by 56 percent with weekend ridership increasing by 68 percent on Saturdays and 83 percent on Sundays. Ridership projections were based on a number of factors. Each year, every route is expected to gain two percent in ridership as a result of projected population growth. Ridership changes related to frequency/span changes were estimated using a 50 percent elasticity. For every 100 percent change in revenue hours, ridership was projected to change by 50 percent. These calculations assume that initially operating additional service hours will not achieve the existing level of productivity; rather, ridership will build over time. Projections also assumed a proportional ridership decrease in years with a fare increase (Simpson Curtin 30 percent elasticity was applied – a 10 percent fare increase will result in a three percent ridership decrease). Ridership for new services was estimated by taking the productivity of a comparable route and multiplying it by the number of projected revenue hours for the new service.

By investing in high performing services and maximizing use of available resources, DART is able to maintain a 20 percent farebox recovery ratio and increase system productivity over the long term. Part of maintaining farebox recovery is periodic increases in fares to keep pace with increasing operating costs. An equivalent of a 10 percent fare increase is planned every 5 years starting in FY2022. This does not mean all fares should increase by 10 percent; rather, DART should work to increase its revenue yield by 10 percent.

The required size of DART's fleet does not change over time. Although service is greatly expanded, because many routes are moving from 15-minute peak and 30-minute off-peak frequency to a consistent 20-minute frequency, there is no additional resource cost.

Year	2016	2021	2026	2031	2035
Revenue Hours	215,779	298,507	308,117	308,117	308,117
Revenue Miles	2,844,102	4,125,983	4,339,742	4,339,742	4,339,742
Weekday Ridership	18,000	23,350	25,000	26,500	27,600
Saturday Ridership	6,650	8,350	10,000	10,700	11,150
Sunday Ridership	3,750	5,250	6,150	6,550	6,850
Annual Ridership	5M	6.5M	7M	7.5M	7.8M
Farebox Recovery	19%	20%	20%	20%	22%
Productivity	23.3	21.9	23.0	24.4	24.6
Vehicle Requirement	Current Fleet	Current Fleet	Current Fleet	Current Fleet	Current Fleet

Table 8: Overview of Minimal Growth Plan Scenario



Moderate Growth Plan

This scenario greatly increases service access in the existing service area by adding service on new corridors and works to better address community mobility needs. It includes a series of new routes on major corridors and service enhancements along existing corridors.

Short-Term Service Recommendations

The short-term recommendations are planned to occur over the next five years and focus on strengthening the all-day all-week service network. Key elements of the short-term recommendations include:

- Frequency Improvements
  - *Improve weekday frequency on key corridors to 20 minutes all day*
  - *Improve weekend frequency on key corridors to 30 minutes all day*
- Span Improvements
  - *Expanded weekday service span by one hour in the morning (5-6 a.m.) and one hour in late evening (11 p.m.-midnight)*
  - *Expanded Saturday service span by one hour in the morning (6-7 a.m.) and two hours in late evening (10 p.m.-midnight)*
  - *Expanded Sunday service span by two hours in the morning (6-8 a.m.) and three hours in late evening (6-9 p.m.)*
- Express Service Improvements
  - *Regular 30-minute service between 5-9 a.m. and 3-6 p.m. for all Express Routes*
- New Routes
  - *Route 50 - Euclid Crosstown*
  - *Route 54 - E 14th St Crosstown*
  - *Route 10 - Pleasant Hill Service*
  - *Route 76 - Ankeny Circulator*
  - *Route 90 – Ankeny Commute Express*
- On-Demand Service
  - *Increased investment in on-demand service through potential partnerships with third-party transit providers or increase in in-house on-demand operation*

Table 9 describes individual route recommendations for the Moderate Growth Plan scenario in the short-term (2017-2022). Figure 21 maps proposed route alignments with routes distinguished by service type. Detailed descriptions of route recommendations can be found in the Appendix.

Route	Service Type	Description of Route Changes	Weekday Frequency		Saturday Frequency		Sunday Frequency	
			Current	Short-Term	Current	Short-Term	Current	Short-Term
1-Fairgrounds	Local	Consistent alignment all day using E 38th St, Hubbell, E 42nd St, and Easton Blvd terminus loop. Pleasant Hill service moved to new route.	15/30	20	60	30	60	30
3-University	Local	Stop spacing increased to every 1/3 mile to provide a faster alternative to Route 60 along the University corridor. Extend route west to new West Des Moines mobility hub via University Ave and 60th St.	20/30	20	30	30	30	30
4-E 14th Street	Local	No alignment changes.	30/60	20	60	30	60	30
5-Franklin Ave	Local	Current Route 5 alignment extended north along Merle Hay Rd to NW 70th Ave to provide all-day service on Merle Hay Rd.	60	60	--	--	--	--
6-Indianola Ave	Local	Restructured to enter downtown via Indianola Avenue and SW 2nd/3rd St instead of SW 7th St to provide transit access to residents east of Indianola Avenue and Principal Park.	15/30	20	60	30	60	30
7-SW 9th Ave	Local	Operated as a continuous route with Route 15 to provide crosstown service and reduce transfers at Central Station.	15/30	20	60	30	60	30
13-Park Ave	Shuttle	Double service investment to meet demand.	3 AM, 3 PM trips	6 AM, 6 PM trips	--	--	--	--
14-Beaver Ave	Local	No alignment changes.	30/60	20	60	30	60	30
15-6th Ave	Local	Operated as a continuous route with Route 7 to provide crosstown service and reduce need to transfer at DART Central Station.	15/30	20	60	30	60	30
16-Douglas Ave	Local	No alignment changes.	15/30	20	60	30	60	30
17-Hubbell Ave	Local	Will extend to new outlet mall once open.	15/30	20	60	30	60	30
52-Jordan Creek	Express	No alignment changes.	30/60	20	60	30	60	30
60-University/ Ingersoll	Local	Extended east to E 14th St to provide riders with a one-seat ride between East Village, Drake University, downtown, and destinations along Ingersoll Ave.	20	20	40	30	40	30
72-West Des Moines Flex	Shuttle	Replaced by extended Route 3 and extended Route 74.	60	--	60	--	60	--
74-NW Urbandale	Shuttle	Extended south via Valley West Dr to Valley Junction	3 AM, 3 PM trips	45/90	--	90	--	90

Route	Service Type	Description of Route Changes	Weekday Frequency		Saturday Frequency		Sunday Frequency	
			Current	Short-Term	Current	Short-Term	Current	Short-Term
91-Merle Hay Rd	Express	See Route 5.	4 AM, 4 PM trips	--	--	--	--	--
92-Hickman Rd	Express	No alignment changes.	7 AM, 7 PM trips	8 AM, 6 PM trips	--	--	--	--
93-NW 86th St	Express	Extended northwest to serve Grimes Walmart and destinations along NW 62nd Ave.	7 AM, 8 PM trips	8 AM, 6 PM trips	--	--	--	--
94-Westown	Express	No alignment changes.	3 AM, 3 PM trips	8 AM, 6 PM trips	--	--	--	--
95-Vista Dr	Express	No alignment changes.	4 AM, 4 PM trips	8 AM, 6 PM trips	--	--	--	--
96-EP True Pkwy	Express	No alignment changes.	4 AM, 4 PM trips	8 AM, 6 PM trips	--	--	--	--
98-Ankeny DMACC Express	Express	Restructured to provide all-day connections between DMACC campuses.	20/80	20/40	--	--	--	--
99-Altoona	Express	Extended east to serve new Park & Ride at Altoona Little League Field.	4 AM, 4 PM trips	8 AM, 6 PM trips	--	--	--	--
New 10-Pleasant Hill	Shuttle	New route that connects Pleasant Hill to downtown Des Moines via University Ave.	--	60	--	--	--	--
New 76-Ankeny Circulator	Shuttle	New circulator in Ankeny that allows for internal travel. Service operates in one direction.	--	30	--	30	--	30
New 90-Ankeny Commute Express	Express	New Express route originally part of Route 98. Provides direct connections between Ankeny Park & Rides and downtown Des Moines during peak commute times.	--	6 AM, 6 PM trips	--	--	--	--
New 50-Euclid Ave	Local	New crosstown service on Euclid Ave between Merle Hay Rd and E 42nd St.	--	20	--	30	--	30
New 54-E 14th St	Local	New crosstown service on E 14th St between Southridge Mall and Park Fair Mall.	--	20	--	30	--	30

Table 9: Summary of Moderate Growth Plan Mid-Term Recommendations

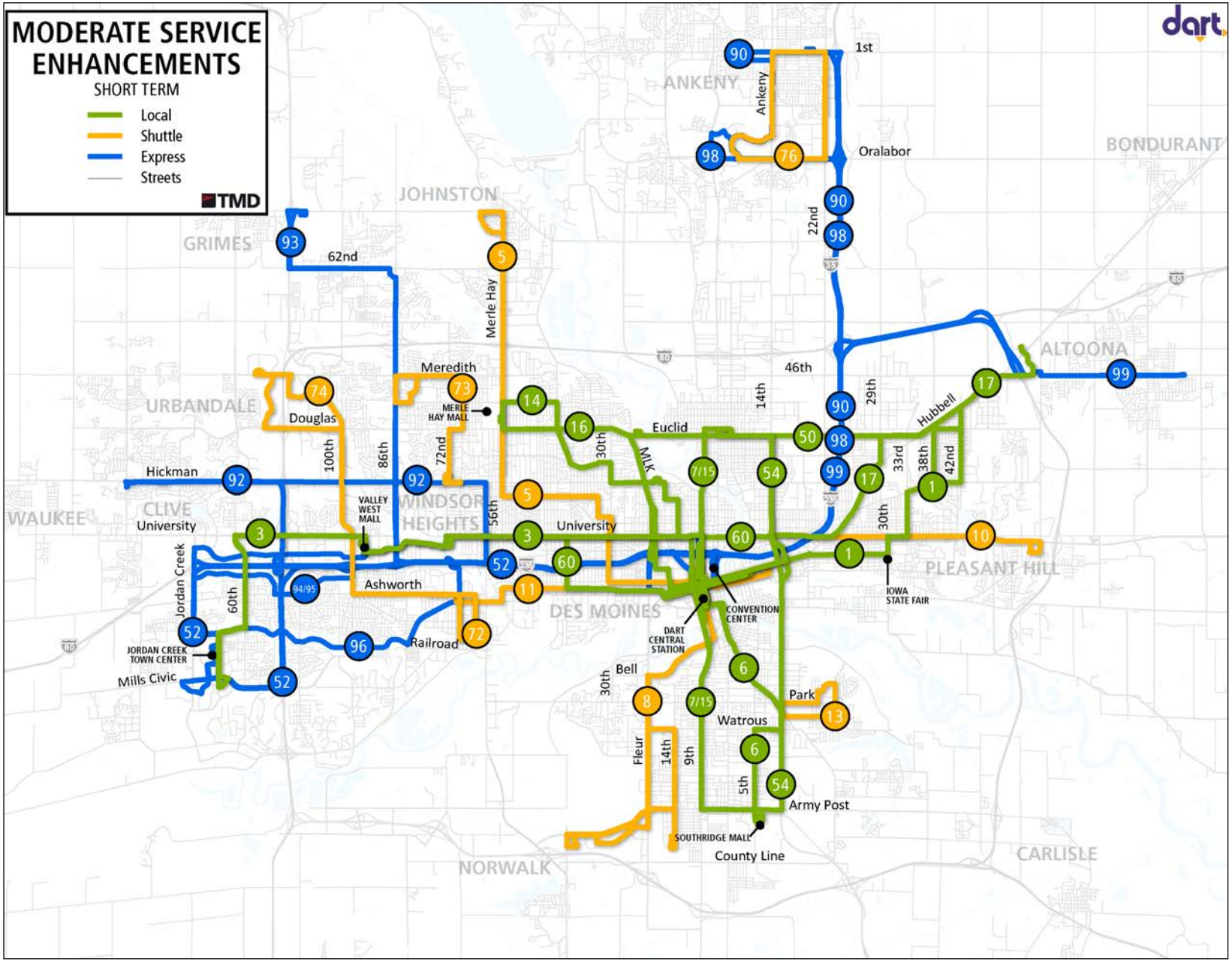


Figure 21: Map of Moderate Growth Plan Network - Short-Term

Mid-Term Recommendations

The mid-term recommendations are planned to occur over the next five to ten years and focus on implementing the enhanced corridor network and expanding DART's geographic coverage to provide more residents with access to transit service.

Key elements of the mid-term recommendations include:

- Frequency Improvements
  - *Enhanced corridor routes operate every 15 minutes all day*
  - *Route 52-West Des Moines peak frequency increased from 20 to 15 minutes*
- Span Improvements
  - *New weekend service on Route 8-Fleur Dr, Route 98-Ankeny Express, Merle Hay Rd, and Pleasant Hill.*
  - *Evening service on Express Routes extended one hour later to 7 p.m.*
- New Routes
  - *Route 23 - NW 86th Street*
  - *Route 22 - Hickman Road*
  - *Route 26 - EP True Parkway*
  - *Route 87 - Bondurant Express*
  - *Route 97 - Carlisle Express*

Table 10 describes individual route recommendations for the Moderate Growth Plan scenario in the short-term (2017-2022). Figure 22 maps proposed route alignments with routes distinguished by service type. Detailed descriptions of route recommendations can be found in the Appendix.

Route	Service Type	Description of Route Changes	Weekday Frequency		Saturday Frequency		Sunday Frequency	
			Current	Mid-Term	Current	Mid-Term	Current	Mid-Term
3-University	Local	New Enhanced Corridor service with increased frequency, transit signal priority, 1/3 of a mile stop spacing, and upgraded passenger amenities at bus stops.	20/30	15	30	30	30	30
5-Franklin Ave	Local	Increased weekday frequency and new weekend service.	60	20	--	30	--	30
6-Indianola Ave	Local	Increased weekday peak frequency.	20	15/20	30	30	30	30
7-SW 9th Ave	Local	New Enhanced Corridor service with increased frequency, transit signal priority, 1/3 of a mile stop spacing, and upgraded passenger amenities at bus stops.	15/30	15	30	30	30	30
8-Fleur Dr	Local	New all-day service on Fleur Dr. to Des Moines International Airport. New weekend service.	4 AM, 4 PM trips	20	--	30	--	30
15-6th Ave	Local	New Enhanced Corridor service with increased frequency, transit signal priority, 1/3 of a mile stop spacing, and upgraded passenger amenities at bus stops	15/30	15	30	30	30	30
16-Douglas Ave	Local	New Enhanced Corridor service with increased frequency, transit signal priority, 1/3 of a mile stop spacing, and upgraded passenger amenities at bus stops	15/30	15	30	30	30	30
17-Hubbell Ave	Local	New Enhanced Corridor service with increased frequency, transit signal priority, 1/3 of a mile stop spacing, and upgraded passenger amenities at bus stops	15/30	15	30	30	30	30
52-Jordan Creek	Express	Increased weekday frequency during peak periods.	20	15/20	30	30	30	30
60-University/ Ingersoll	Local	New Enhanced Corridor service with increased frequency, transit signal priority, 1/3 of a mile stop spacing, and upgraded passenger amenities at bus stops	20	15	60	30	60	30
74-NW Urbandale	Shuttle	Extended south via Valley West Dr to Valley Junction	45/90	45	90	60	90	60
92-Hickman Rd	Express	Replaced by Local Hickman Rd service.	8 AM, 6 PM trips	--	--	--	--	--
93-NW 86th St	Express	Additional one hour of service.	8 AM, 6 PM trips	8 AM, 8 PM trips	--	--	--	--
94-Westown	Express	Additional one hour of service.	8 AM, 6 PM trips	8 AM, 8 PM trips	--	--	--	--

Route	Service Type	Description of Route Changes	Weekday Frequency		Saturday Frequency		Sunday Frequency	
			Current	Mid-Term	Current	Mid-Term	Current	Mid-Term
95-Vista Dr	Express	Additional one hour of service.	8 AM, 6 PM trips	8 AM, 8 PM trips	--	--	--	--
96-EP True Pkwy	Express	Replaced by Local EP True Pkwy service.	8 AM, 6 PM trips	--	--	--	--	--
98-Ankeny DMACC Express	Express	Increased weekday frequency and new weekend service.	20/40	20	--	60	--	60
99-Altoona	Express	Additional one hour of service	8 AM, 6 PM trips	8 AM, 8 PM trips	--	--	--	--
New 10-Pleasant Hill	Local	Increased weekday frequency and new weekend service.	60	20	--	30	--	30
New 76-Ankeny Circulator	Shuttle	Doubling of resources for bi-directional service.	30	30	30	30	30	30
New 90-Ankeny Commute Express	Express	Additional two hours of service.	6 AM, 6 PM trips	8 AM, 8 PM trips	--	--	--	--
New 23-NW 86th St	Local	New Local service on NW 86th St between NW 62nd Ave and I-235.	--	20	--	30	--	30
New 22-Hickman Rd	Local	New Local service on Hickman Rd between 156 St and downtown Des Moines.	--	20	--	30	--	30
New 26-EP True Pkwy	Local	New Local service on EP True Pkwy between West Des Moines mobility hub and Apple Valley Mall.	--	20	--	30	--	30
New 87-Bondurant Express	Express	New Express service between Bondurant and downtown Des Moines.	--	8 AM, 8 PM trips	--	--	--	--
New 97-Carlisle Express	Express	New Express service between Carlisle and downtown Des Moines.	--	8 AM, 8 PM trips	--	--	--	--

Table 10: Summary of Moderate Growth Plan Mid-Term Recommendations

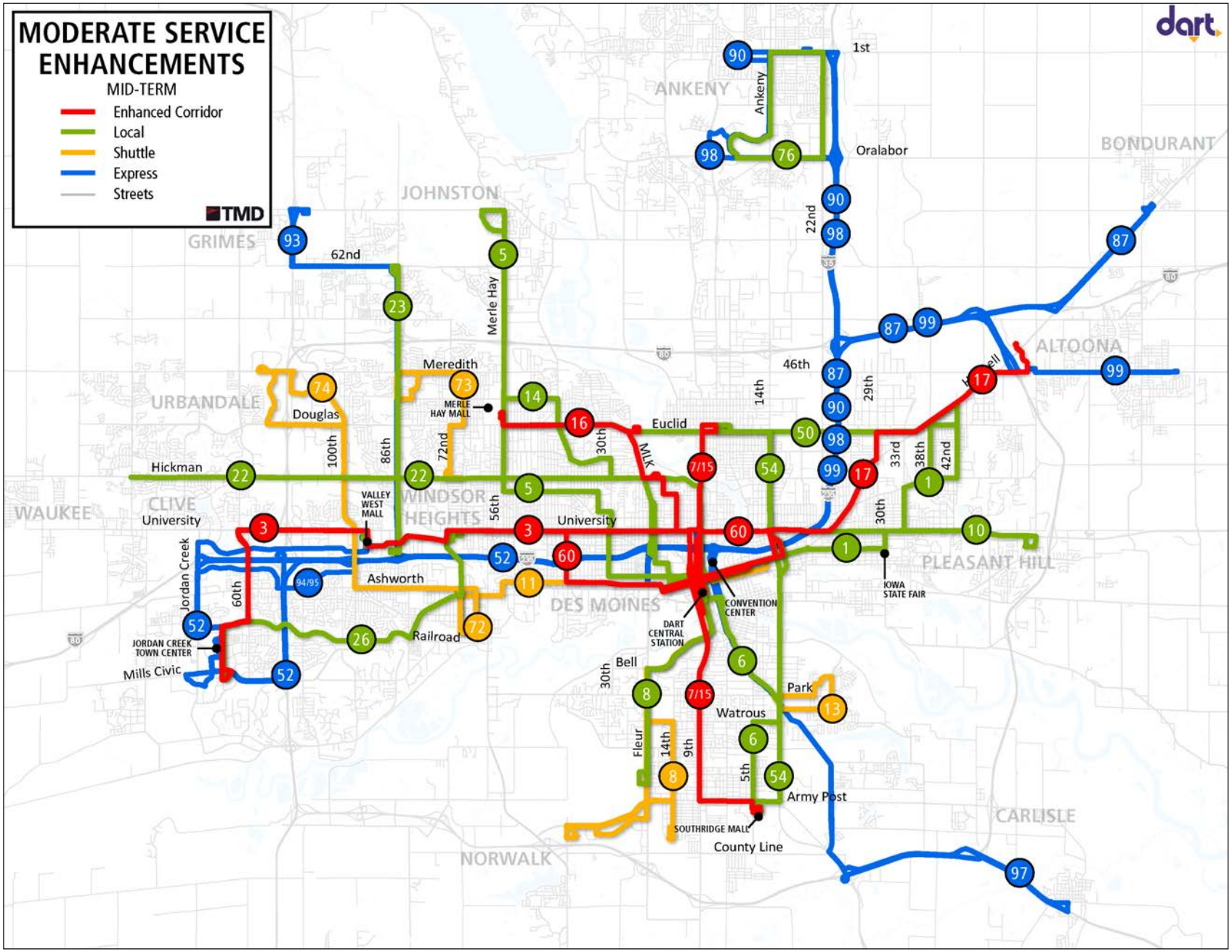


Figure 22: Map of Proposed Moderate Growth Plan Network - Mid-Term

Capital Improvements

A series of capital improvements are included in the Moderate Growth Plan plan to accompany service increases.

Mobility Hubs

The Moderate Growth Plan scenario includes funding for 19 mobility hubs: 1 Tier 1 hub, 6 Tier 2 hubs, and 12 Tier 3 hubs. Mobility hubs are placed at major transfer points in the network and on the fringes of the fixed-route network where first/last mile mobility solutions are integral for trip completion and traveling without a car. Table 11 recommends approximate locations for these mobility hubs, and the exact location will be decided on through collaboration among DART, local communities, and member city governments.

Number	Stop/ Intersection	Mobility Hub Tier	Notes
1	West Des Moines Hub S 64th St	Tier 1 - Large	Major transfer center in West Des Moines helping DART develop into a dual-hub network
2	Merle Hay Rd & Douglas	Tier 2 - Medium	Major transfer point
3	Park Fair Mall	Tier 3 - Small	Major transfer point
4	Valley West Mall	Tier 3 - Small	Major transfer point
5	Hickman Rd & 156th	Tier 2 - Medium	Provide additional mobility options in Urbandale
6	Johnston City Hall	Tier 2 - Medium	Provide additional mobility options in Johnston
7	Southridge Mall	Tier 3 - Small	Major transfer point, provide additional mobility options in Easter Lake
8	Grimes Walmart	Tier 3 - Small	Provide additional mobility options in Grimes and first/last mile connections to Express Route 93
9	Ankeny Walmart	Tier 2 - Medium	Internal circulation in Ankeny and first/last mile solutions from Express Routes 97 and 98
10	Altoona Walmart	Tier 2 - Medium	Internal circulation in Ankeny and first/last mile solutions from Express Route 99
11	Pleasant Hill	Tier 3 - Small	Provide additional mobility options in Pleasant Hill
12	Bondurant	Tier 3 - Small	Provide for internal circulation within Bondurant
13	Carlisle	Tier 3 - Small	Provide for internal circulation within Carlisle
14	University & 6th Ave	Tier 2 – Medium	Major transfer point

Number	Stop/ Intersection	Mobility Hub Tier	Notes
15	E Grand Ave & E 14th St	Tier 1 – Small	Major transfer point
16	Douglas Ave & 100th St	Tier 3 – Small	Provide for internal circulation within Urbandale
17	Valley Junction	Tier 3 – Small	Provide for internal circulation in Valley Junction
18	Apple Valley Mall	Tier 3 - Small	Provide for internal circulation in Des Moines
19	Ankeny Blvd & E 1st St	Tier 3- Small	Provide for internal circulation within Ankeny

Table 11: Moderate Growth Plan Mobility Hubs

Enhanced Corridors

Enhanced Corridors will leverage the most cost-effective elements of Bus Rapid Transit to elevate the passenger experience on major transportation corridors.

» Stations will be placed at all stops and will be branded and upgraded to include amenities such as shelters and benches to provide comfortable and safe places for passengers to wait.

» Corridor branding will increase the visibility as well as community ownership of the service. The corridor branding will link all components together: vehicles, stations, stops, and signage. A branded service and accompanying infrastructure can be used to convey faster travel and an enhanced customer experience, allowing existing and potential riders to quickly associate "Enhanced Corridor" with an improved transit experience.

» Transit priority measures will speed up service, reducing travel times. At full implementation of transit priority measures throughout an entire corridor, running times can be expected to improve by 10 percent.

- ***Transit Signal Priority:*** *Transit signal priority (TSP) facilities the movement of buses through signalized intersections by providing early or extended green time, which reduces delay from traffic signals and improves service speed and reliability.*
- ***Bus Bulbs:*** *Bus bulbs are curb extensions that allow buses to board and alight passengers while remaining in their traffic lane, eliminating the need to merge in and out of traffic.*
- ***Queue Jumps:*** *Queue jumps are short bypass transit lanes located at the nearside of intersections that allow buses to move past traffic queues and receive an early green signal to move ahead of traffic. Queue jumps are an effective method of improving bus travel times and reliability in areas of high traffic volumes.*

» Stop spacing will be improved to reduce dwell time. Stops will be spaced to balance access with travel speed. Stops that are too frequent are convenient for access but significantly slow down bus operations. On the other hand, stops spaced too far apart are difficult for passengers to conveniently access. Average stop spacing of every third of a mile achieves this balance between speed and access. Stop locations should be developed in collaboration with local communities to identify key ridership destinations, and stops should be located no closer than a quarter of a mile apart. Stops should also be placed on the far side of intersections wherever possible to reduce the likelihood of stopping twice at signalized intersections.

Improved I-235 Access

Funding is included to upgrade the diamond interchanges at the Valley West Drive and 42nd Stree exits. Upgrades will include bus pads and shelter locations as well as sidewalk improvements to allow for safe pedestrian access to new stops. These stops will be primarily designed for the Route 52 to provide faster connections between downtown Des Moines and West Des Moines.

Bus Stop Shelters

The community-wide non-rider survey found that 46 percent of respondents were "likely" or "very likely" to start using DART is shelters were located at bus stops. The Moderate Growth Plan plan includes funding for 250 new shelters at bus stops. New shelters should be prioritized in areas with high all-day boarding and transfer activity, places they will provide the greatest benefit. Four shelters are proposed at major transfer intersections to help riders easily find the pickup location of their next bus. With the exception of downtown Des Moines, shelters should not be placed closer than a quarter of a mile apart to help DART adhere to its stop spacing standards. This plan includes funding for shelters to be placed every 1/3 of a mile along Enhanced Corridor routes. Those stops that are primarily drop-off locations with few boardings may not warrant a shelter, and these shelters can be allocated elsewhere in the network. Table 12 shows the shelters proposed at stops that are not part of the Enhanced Corridor network while Figure 23 maps all proposed 250 shelter locations, as well as proposed mobility hub locations. The "Ons" and "Offs" represent average weekday boardings and alightings.[4]

4 Aggregate boarding and alighting data collected between August and November 2015.

With proposed stop consolidation and increased frequencies resulting in greater ridership, the actual passenger activity at each stop is expected to be higher.

Number	Stop ID	Stop Name	Ons	Offs	Notes
1	2248	Indianola Ave & SE 14th St	58	20	High ridership stop on major corridor
2	1754	Indianola Ave & Pleasant View	82	77	High ridership stop on major corridor
3	1076	E 14th St & Euclid Ave	45	2	High ridership stop
4	3911	Ankeny DMACC	43	45	High ridership stop
5	3030	Ankeny Mercy North	109	90	High ridership stop
6	3292	Mills Civic at West Glen (EB)	1	2	West Glen Town Center, expected to become higher ridership stop with improved service in West Des Moines
7	3284	Mills Civic at West Glen (WB)	1	1	
8	3459	Crescent Chase & NW 86th St	23	17	Projected higher ridership with all-day service
9	--	Merle Hay Rd & North Glen	--	--	New stop with projected high ridership
10-250	--	--	--	--	Shelters placed at stop pairs every 1/3 of a mile along Enhanced Corridors

Table 12: Moderate Growth Plan Shelter Locations

Vehicles and Operating Facility

The significant expansion in service and frequency requires that DART expand its vehicle fleet. DART's current operating facility at DART Way only has capacity to accommodate an additional 10 vehicles. Short-term service enhancements mostly involve increasing midday frequency which does not require additional vehicles. Overall, fleet requirements increase by five vehicles in the short-term which is not enough of an increase to require a new operating facility. However, in the mid-term, the addition of new service coverage greatly expands vehicle fleet requirements by an additional 30 vehicles. At this point, DART will need to either expand or relocate its DART Way operating facility in order to accommodate all the additional vehicles. **Funding has been including in the capital plan for both the purchase of new vehicles and a new operating and maintenance facility.**

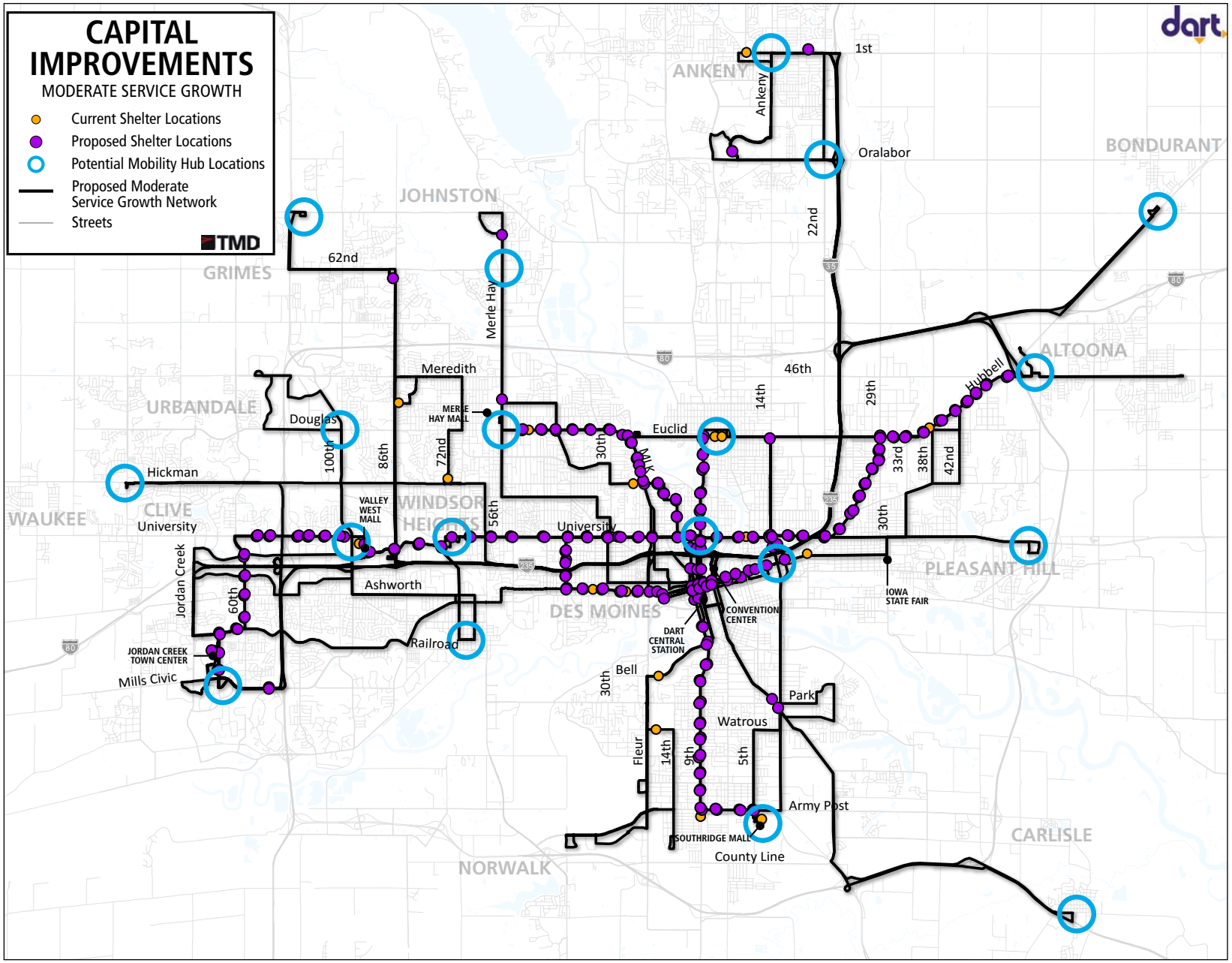


Figure 23: Map of Moderate Growth Plan Capital Improvements

Customer Benefits and Impacts

A majority of riders and many members of the general public will experience a positive impact from the recommendations including reduced wait times, shorter travel times, and a greater range of available service options. These improvements are intended to generate additional use by existing customers and attract new customers to the system.

Frequency

The Moderate Growth Plan scenario focuses on building the 15-minute frequency Enhanced Corridor network and standardizing frequency on all Local routes at 20 minutes.

- One in every two DART riders will benefit from 15-minute service on Enhanced Corridors.
- The percentage of current weekday DART riders who will ride a service with 20-minute or better frequency will increase from 45 to 82 percent.
- The percentage of current Saturday DART riders who will ride a service with 30-minute frequency will increase from 15 to 87 percent.
- The percentage of current Sunday DART riders who will ride a service with 30-minute frequency will increase from 18 to 98 percent.

Access

The Moderate Growth Plan scenario mostly focuses on improving the current network, but it does add service coverage in new areas, increasing transit access for residents.

- Approximately 38,000 new Greater Des Moines residents and 16,000 new jobs will have access to transit service.[5]
- The number of Greater Des Moines residents within a quarter mile walk of a 20-minute all-day weekday service increases from 54,000 to 395,000. The number of jobs increases from 99,000 to 327,000.
- Due to route restructuring and better optimization of stop spacing to improve travel speeds, 0.2% of current DART riders (36 riders) will be outside of a quarter mile walk from a proposed transit stop.

5 Access is defined as a quarter of a mile walk to a Local stop, a third of a mile walk to an Enhanced Corridor stop, and a half of a mile walk to a mobility hub.

Availability

This service span expansion will greatly increase travel flexibility and may attract new riders who need to travel outside of DART's current operating hours.

- Overall service hours will increase by 120 percent on weekdays, 208 percent on Saturdays, and 278 percent on Sundays. Annual service hours will increase by 134 percent.
- Riders will have access to two additional hours of weekday service (5-6 a.m. and 11 p.m.-midnight), three additional hours of Saturday service (6-7 a.m. and 10 p.m.-midnight), and five additional hours of Sunday service (6-8 a.m. and 6-9 p.m.) on all Local Routes.

Experience

250 stops and 19 mobility hubs will receive new shelters, benefitting at least 7,700 current DART riders.

Flexibility

The Moderate Growth Plan scenario has set aside about $730,000 a year for on-call service or partnerships with on-demand transportation providers. This is a doubling of resource investment for this type of service, and successful partnerships could provide around 146,000 trips annually (almost 600 trips a day) at a $5.00 subsidy per passenger, over 20 times the number of trips currently provided.

57,000 people and 59,000 jobs will be in walking distance of a mobility hub.

Changes in Required ADA Coverage

A buffer of three-quarters of a mile was applied to the fixed-route network to drive the updated ADA paratransit service area per federal regulations. Figure 24 shows the change in required ADA paratransit service area that accompanies this service plan.

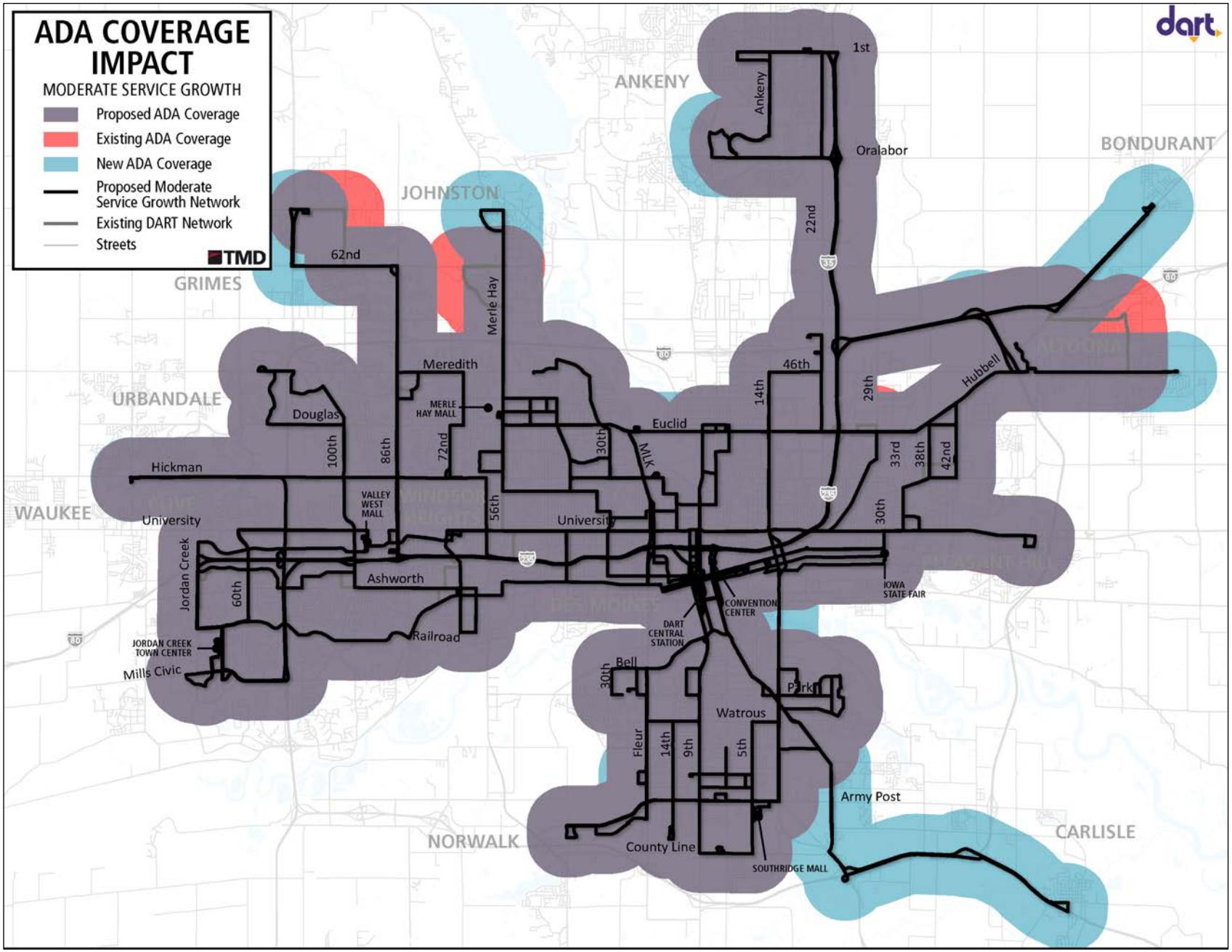


Figure 24: ADA Coverage Impact from Moderate Growth Plan Network

Moderate Growth Plan Overview

Table 13 provides a high-level overview of service characteristics over the life of the plan. Overall service expands by 134 percent in revenue hours and 156 percent in revenue miles. Average miles per hour increases as delay reduction measures are implemented and layover time is reduced by making more efficient use of resources.

Overall ridership is expected to increase by 120 percent with weekend ridership increasing by 160 percent on Saturdays and 207 percent on Sundays. Ridership projections were based on a number of factors. Each year, every route is expected to gain two percent in ridership as a result of project population growth. Ridership changes related to frequency/span changes were estimated using a 50 percent elasticity. For every 100 percent change in revenue hours, ridership was projected to change by 50 percent. These calculations assume that initially operating additional service hours will not achieve the existing level of productivity; rather, ridership will build over time. Projections also assumed a proportional ridership decrease in years with a fare increase (Simpson Curtin 30 percent elasticity was applied – a ten percent fare increase will result in a three percent ridership decrease). Ridership for new services was estimated by taking the productivity of a comparable route and multiplying it by the number of projected revenue hours for the new service.

By investing in high performing services and maximizing use of available resources, DART is able to maintain a 20 percent farebox recovery ratio and system productivity over the long term. Part of maintaining farebox recovery is periodic increases in fares to keep pace with increasing operating costs. An equivalent of a 10 percent fare increase is planned every 5 years starting in FY2022. This does not mean all fares should increase by 10 percent; rather, DART should work to increase its revenue yield by 10 percent.

DART's required vehicle fleet will increase over time as more routes and frequency are added.

Year	2016	2021	2026	2031	2035
Revenue Hours	215,779	367,927	505,672	505,672	505,672
Revenue Miles	2,844,102	5,057,718	7,275,177	7,275,177	7,275,177
Weekday Ridership	18,000	26,100	34,000	36,250	37,800
Saturday Ridership	6,650	11,500	15,450	16,500	17,250
Sunday Ridership	3,750	7,800	10,450	11,000	11,500
Annual Ridership	5M	7.5M	9.9M	10.5M	11M
Farebox Recovery	19%	20%	19%	19%	20%
Productivity	23.3	20.5	19.6	20.8	21.8
Vehicle Requirement	Current Fleet	+ 5 New Vehicles	+ 30 New Vehicles	+ 30 New Vehicles	+ 30 New Vehicles

Table 13: Overview of Moderate Growth Plan Scenario

Expanded Regional Plan

The Expanded Regional Plan builds off of the Moderate Growth recommendations and includes additional recommendations for potential new DART member cities. [6] New routes are included for Waukee, Norwalk, Indianola. Service is also recommended to be extended to Ames, and this service would be funded through a joint partnership. New routes can be added at any time should one of these cities choose to become a DART member city. The level of service added for each city is commensurate with the additional sales tax and/or property tax revenue they would contribute to DART. Table 16 summarizes the new routes proposed as part of the Expanded Regional Plan. Figure 25 shows the proposed route alignments integrated with the mid-term Moderate Growth Plan network.

Route	Service Type	Description of Route Changes	Weekday Frequency	Saturday Frequency	Sunday Frequency
12 – Waukee Local	Shuttle	New service connecting shopping destinations in Waukee and West Des Moines	60	60	60
18 – Norwalk Local	Shuttle	New service between downtown Des Moines and Norwalk via Fleur Dr	60	60	60
24 – University Extension West	Local	Local service extension on University feeding into frequent University service	30	30	30
88 – Waukee Express	Express	Express service between Waukee and downtown Des Moines	8 AM trips, 6 PM trips	--	--
89 – Indianola Express	Express	Express service between Indianola and downtown Des Moines via Indianola Avenue	8 AM trips, 6 PM trips	--	--
90 – Ankeny Commuter Express	Express	Addition of express service to Ames every hour during peak periods	5 AM trips, 5 PM trips	5 trips	--

Table 14: Summary of Expanded Regional Plan Recommendations

6 For financial modeling, it was assumed new routes would be introduced in 2025.

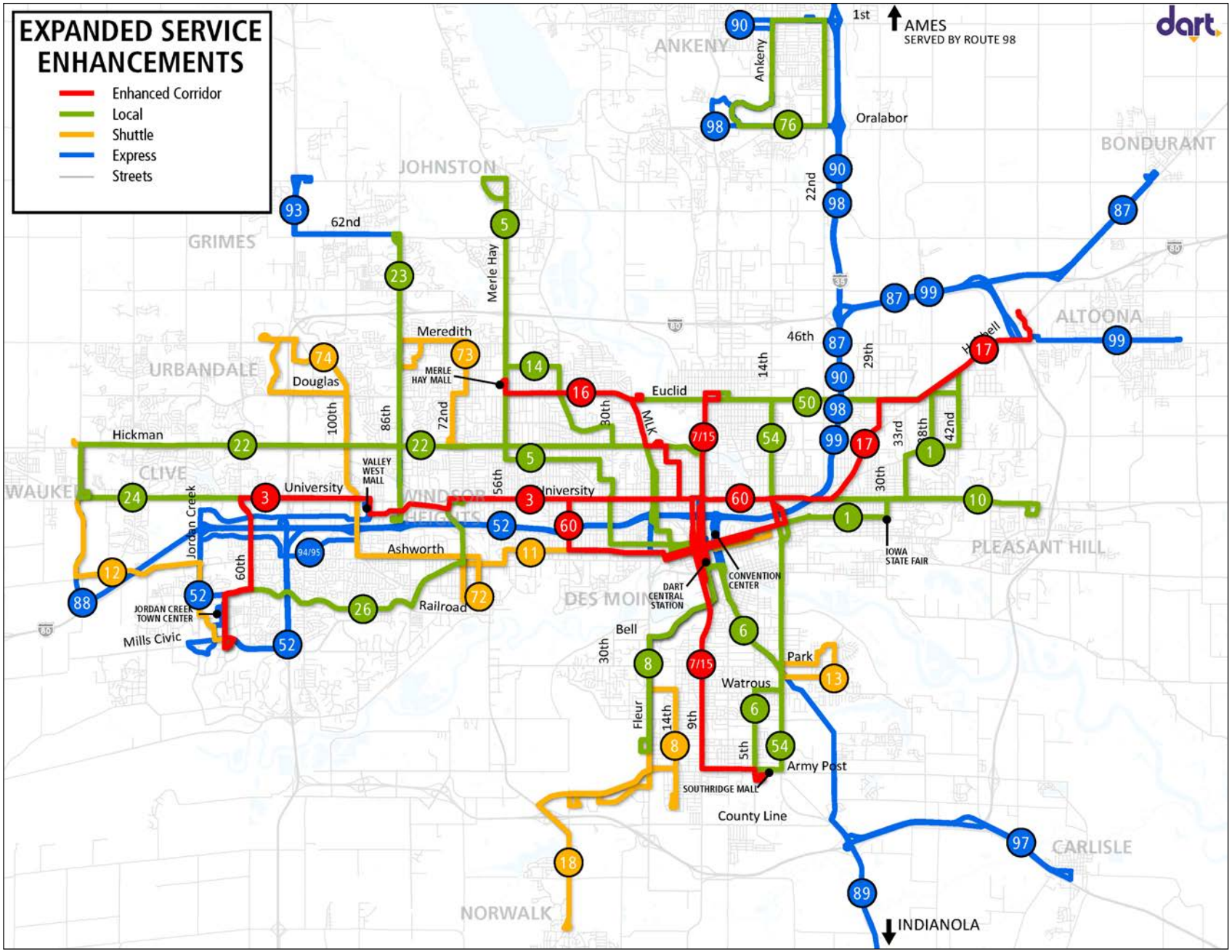


Figure 25: Map of Proposed Expanded Service Enhancements Network

Capital Improvements

All proposed mobility hubs and shelter locations included in the Moderate Growth Plan are included in the Expanded Regional Plan as well. The major capital project that is new to the Expanded Regional Plan is the full build out of Freeway Rapid Transit.

Freeway Rapid Transit

In the future, as congestion increases in the region, Iowa Department of Transportation (Iowa DOT) will be looking at how to use technology to mitigate increased congestion, such as managed lanes and on-ramp metering. Should the Iowa DOT look to managed lanes on the freeway for carpools or tolls, DART should work closely with them to make use of these lanes for expedited travel on freeways. Allowing buses to travel in their own lanes let them bypass congested lanes, giving transit a competitive advantage over automobile travel. Other successful ways that communities have addressed faster travel for transit is by allowing buses to utilize the freeway shoulder to operate. Both Minneapolis and Chicago are using shoulders for bus travel to bypass congestion. Furthermore, DART and Iowa DOT can work together to develop online stations to improve travel speed on freeway corridors. Such online stations bring riders to the bus, eliminating the need for buses to speed time entering and exiting freeways. They often provide a convenient way for passengers to transfer vertically between transit services. The capital costs for Freeway Rapid Transit are not included in the capital financial plan as they will be dependent on a more detailed design process. If approved, this service would take place on I-235 between Des Moines and West Des Moines.

Vehicles

Full build out of the Expanded Regional Plan requires 11 new peak vehicles above and beyond the required vehicles for the Moderate Growth Plan. DART should purchase 14 new vehicles to accommodate service growth and maintain a good spare ratio.

Customer Benefits and Impacts

The new routes in the Expanded Regional Plan primarily benefit residents of the new member cities by increasing access to transit in new communities.

Frequency

The Expanded Regional Plan includes all frequency improvements of the Moderate Growth Plan.

- One in every two DART riders will benefit from 15-minute service on Enhanced Corridors.
- The percentage of current weekday DART riders who will ride a service with 20-minute or better frequency will increase from 45 to 82 percent.
- The percentage of current Saturday DART riders who will ride a service with 30-minute frequency will increase from 15 to 87 percent.
- The percentage of current Sunday DART riders who will ride a service with 30-minute frequency will increase from 18 to 98 percent.

Access

The Expanded Regional Plan adds new routes in new member communities to increase transit access for residents.

- Approximately 10,000 new Greater Des Moines residents and 5,500 jobs will be within a quarter mile walk of a transit stop.
- The number of Greater Des Moines residents within a quarter mile walk of a 20-minute all-day weekday service increases from 54,000 to 402,000. The number of jobs increases from 99,000 to 329,000.
- Due to route restructuring and better optimization of stop spacing to improve travel speeds, 0.2% of current DART riders (36 riders) will be outside of a quarter mile walk from a proposed transit stop.

Availability

This service span expansion will greatly increase travel flexibility and may attract new riders who need to travel outside of DART's current operating hours.

» Overall service hours will increase by 138 percent on weekdays, 230 percent on Saturdays, and 300 percent on Sundays. Annual service hours will increase by 152 percent.

» Riders will have access to two additional hours of weekday service (5:00-6:00 AM and 11:00 PM-12:00 AM), three additional hours of Saturday service (6:00-7:00 AM and 10:00 PM-12:00 AM), and five additional hours of Sunday service (6:00-8:00 AM and 6:00-9:00 PM) on all Local routes.

Experience

» 250 stops will receive new shelters, benefitting at least 2,950 current DART riders.

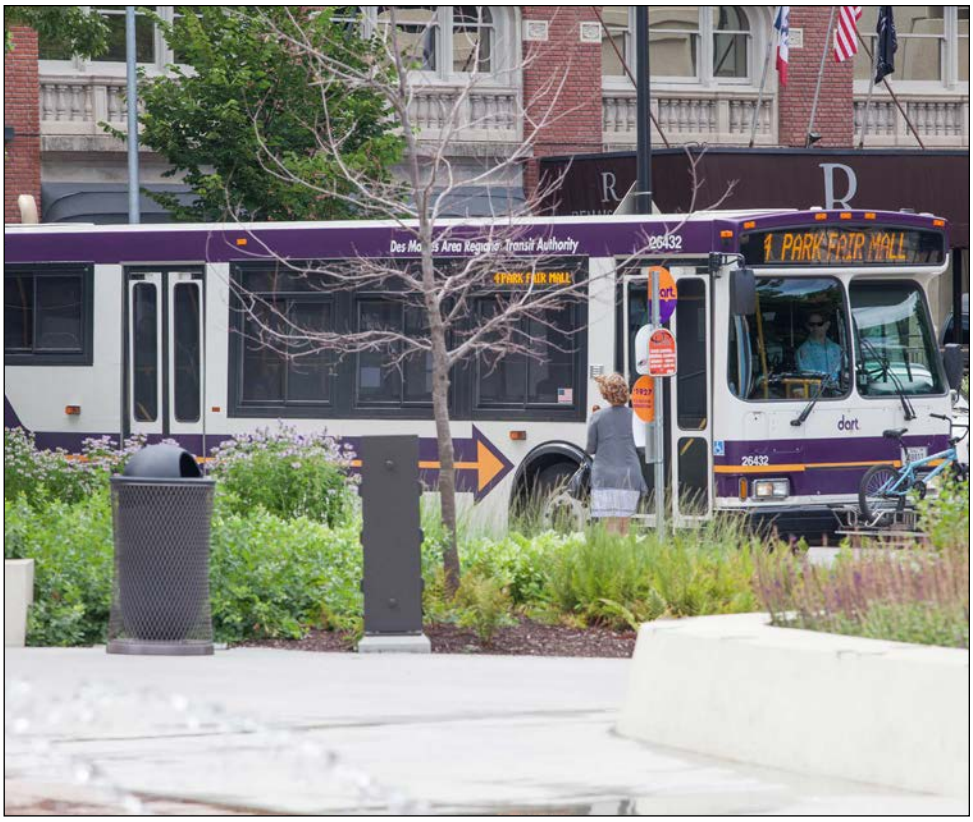
Flexibility

» The Expanded Regional Plan has set aside about $730,000 a year for on-call service or partnerships with on-demand transportation providers. This is a doubling of resource investment for this type of service, and successful partnerships could provide around 146,000 trips annually (almost 600 trips a day) at a $5.00 subsidy per passenger, over 20 times the number of trips currently provided.

» 57,000 people and 59,000 jobs will be in walking distance of a mobility hub.

Year	2016	2021	2026	2031	2035
Revenue Hours	215,779	367,927	544,818	544,818	544,818
Revenue Miles	2,844,102	5,057,718	8,016,160	8,016,160	8,016,160
Weekday Ridership	18,000	26,100	36,650	39,000	40,800
Saturday Ridership	6,650	11,500	16,600	17,650	18,500
Sunday Ridership	3,750	7,800	11,050	11,750	12,200
Annual Ridership	5M	7.5M	10.7M	11.3M	11.8M
Farebox Recovery	19%	20%	19%	19%	20%
Productivity	23.3	20.5	19.6	20.9	21.8
Vehicle Requirement	Current Fleet	+5 New Vehicles	+44 New Vehicles	+44 New Vehicles	+44 New Vehicles

Table 15: Overview of Expanded Regional Plan Scenario



Cost of Service Recommendations

Each service plan presented in this DART Forward 2035 Year Five Update has an associated cost. Like any service provider, DART works with limited financial resources. As costs increase, DART must ensure that revenue streams increase as well. Even with responsible financial management and no additional service investment, operating costs will increase around three percent each year due to factors outside of DART's control such as inflation, increases in costs of living, healthcare reforms, increasing gas prices, increasing costs of vehicles and materials, etc. Over time as costs increase above and beyond the limits of the property tax levy, DART must seek alternative, reliable revenue sources in order to maintain existing service levels. In exploring how DART service is funded, DART should also ensure the future funding structure is able to finance the service recommendations proposed in this plan in order to develop a public mobility network that meets the region's changing needs. It is also important that DART service is funded by a diverse set of funding sources so it does not rely too heavily on a single source. DART is evaluating a range of potential funding options including property taxes, sales taxes, and vehicle registration fees. Table 14 summarizes the cost of the proposed service plans in 2035. [7]

2035 Cost	Existing Network	Minimal Service Growth	Moderate Service Growth	Expanded Regional Network
Annual Operating Cost	$53.9 M	$66.8 M	$94.8 M	$99.3 M
Annual Capital Cost[8]	$9.6 M	$12.5 M	$17.0 M	$17.0 M
Annual Total Cost	$63.5 M	$79.3 M	$111.8 M	$116.3 M
Annual Cost per Capita[9]	$46.71	$68.05	$109.12	$114.73

Table 16: Proposed Service Plan Costs (2035)

7 All costs are in 2035 dollars and account for 18 years of cost increases and inflation.
8 This reflects the average annual amount each resident would pay in taxes to support the proposed plans and is calculated by dividing locally-generated revenue by the total population.
9 This reflects the average annual amount each resident would pay in taxes to support the proposed plans.

The Greater Des Moines region is not alone in looking to increase spending and investment in public mobility services. Cities across the country are presenting transportation and mobility plans that would greatly increase regional spending on public transit services in order to improve local economies and overall quality of life. Two examples are Nashville, TN and Indianapolis, IN, both capital cities with similarities to Des Moines. In 2015, Nashville, TN presented the nMotion plan, a 25-year, six-billion-dollar plan to improve public transit options in the region by increasing service frequency, expanding the service network, and introducing Bus Rapid Transit on major corridors. Similarly, Indianapolis is seeking a sales tax referendum this November to fund an additional $56 million each year for transit operations to increase service frequency, expand service hours, and develop Bus Rapid Transit routes. Both cities have larger populations than Des Moines, but they also currently spend almost twice as much per capita on public transit services and are looking to increase this amount even further to create a public transit network that truly meets the mobility needs of their residents. Developing a more robust public mobility network will help Des Moines remain competitive when it comes to attracting new residents and employers.

Implementation and Next Steps

Recommendations vary in terms of their impact on resource requirements and the network structure and therefore also vary on the timeframe and cost of implementation. The phased plan for service changes outlined above gives DART the ability to develop the network incrementally in line with available funding. The timeframe for each phase is fluid; the phasing helps establish a hierarchy of service investment priorities. Each year, DART will use the available funding to determine what components of the DART *Forward 2035 Transit Services Plan Year Five Update* to implement over the next couple of years. By working within identified funding sources, DART will ensure the plan is implemented in a manner that is financially sustainable.

In order to ensure continued progress towards the established guiding principles, the implementation phase will require ongoing monitoring of service performance and delivery to help prioritize subsequent service changes. New and existing services should be monitored quarterly to ensure they are meeting productivity, farebox recovery, and subsidy per passenger targets. Existing routes that fail to meet standards for two of the three performance metrics for three or more consecutive quarters require reevaluation. DART should prepare a Corrective Action Plan for these underperforming routes which will examine all aspects of route performance and develop recommendations to improve service performance. If a route continues to underperform after three consecutive quarters, it should be discontinued or significantly restructured to improve performance. DART should be clear to set performance expectations for new services from the beginning, so the general public and riders are aware the route must meet performance standards for continued operation.

Upon completion of the DART *Forward 2035 Transit Services Plan Year Five Update*, DART should work with stakeholders and community members to ensure the successful implementation of the service recommendations. Each phase of the plan will require a public hearing process to sufficiently notify the public of upcoming service changes. DART should work with member cities to ensure intensification of development continues along existing and proposed transit corridors and to develop cost-effective solutions to provide mobility options to areas without demand for all-day fixed-route transit service.

Ultimately, DART should work to become a provider of public mobility, not just public transit, in order to meet the mobility needs of Greater Des Moines residents as travel behaviors continue to evolve.