



DART

DART's rail system

Each year, the Dallas Area Rapid Transit (DART) Rail System saves area travelers about 8.8 million gallons of gasoline - the same amount of fuel consumed by more than 15,000 cars annually.

Transportation is responsible for more than two-thirds of our nation's oil consumption and nearly a third of our carbon dioxide emissions. To reduce pollution and our dependence on oil, we



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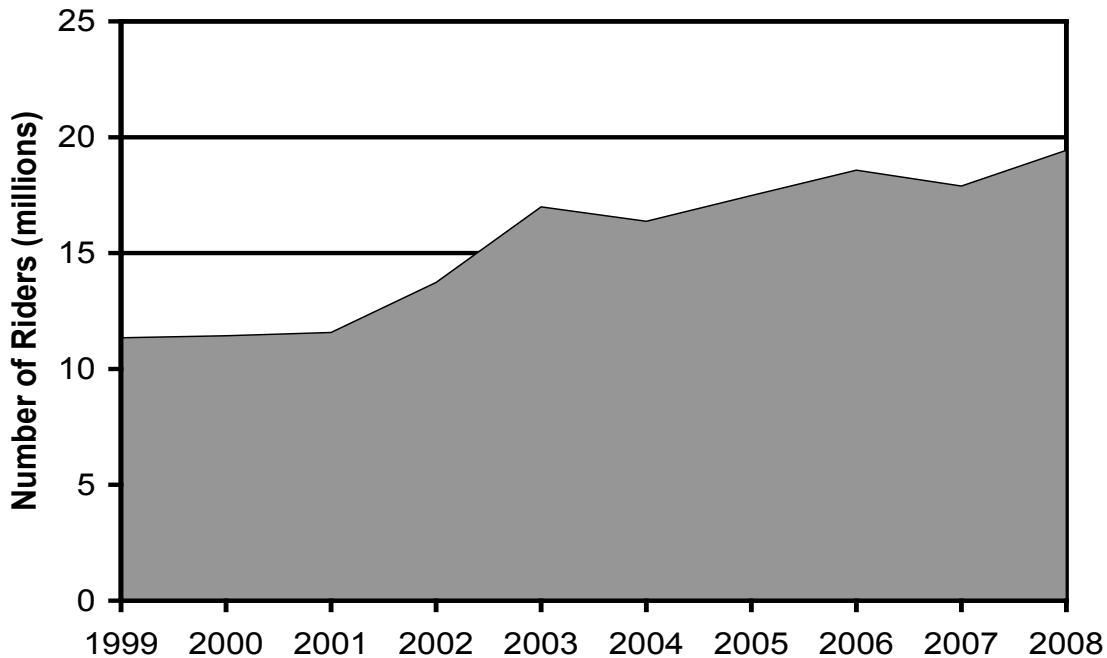
need transportation alternatives that use less energy.

DART's rail system is a great example of how we can reduce energy consumption, curb our dependence on oil, and minimize pollution while at the same time improving our quality of life, saving commuters money, and strengthening the economy.

The rail system is an important part of DART, which serves a 700-square-mile area.¹ Commuters can ride DART rail to residential, business, and recreational destinations in Dallas, Garland, Plano, and Richardson. Commuters travel across the metropolitan area along three lines:

- **Green:** Service runs from Victory Station to MLK, Jr. Station, slightly southeast of downtown.
- **Red:** Service runs from the northern Parker Road Station through Richardson and downtown Dallas to Westmoreland Station, southwest of the city's center.
- **Blue:** Service runs from the northeastern Downtown Garland Station, through Bethard, Rawlins, and downtown Dallas, to Ledbetter Station south of Cedar Crest.

Figure 1. DART Rail Riders Per Year: 1999 – 2008



DART ridership has increased steadily in recent years, growing by an average of 6.5 percent per year from 1999 to 2008.² (See Figure 1.) DART's 2030 Transit System Plan projects that population and employment will increase by 12 percent and 30 percent, respectively, within DART's service area from 2005 to 2030.³ Consequently, demand for and use of public transit will continue to increase for the next several decades. DART's expansion projects that will be completed within the next three and a half years will boost ridership by 60,000 passengers per weekday, essentially doubling ridership from 2008 levels.⁴

DART rail reduces energy consumption, oil dependence, and pollution

The DART rail system uses less energy and oil than automobiles. A single rush-hour DART train carries hundreds of passengers, replacing hundreds of car

trips and enabling highway traffic to flow more freely – reducing the amount of fuel wasted in traffic jams.

Moreover, while automobiles are predominantly powered by oil, DART rail cars are completely electric-powered.⁵ They therefore receive their energy from the power grid, which receives its energy from non-petroleum sources.⁶ Currently, 5.6 percent of this energy comes from renewable sources, such as wind.⁷ In years to come, an even greater share of this energy will come from renewable sources as Texas ramps up its production of clean energy.

DART rail's energy efficiency, combined with avoided highway congestion and the role of DART in bringing about less auto-dependent forms of development, results in a reduction of overall energy use by an amount equivalent to 8.8 million gallons of gasoline per year.⁸



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DART's rail system also emits fewer pollutants than automobiles. Each year, DART averts 54,000 metric tons of carbon dioxide pollution, and reduces emissions of pollutants that cause respiratory problems.

DART rail strengthens our economy and improves our quality of life

DART rail also strengthens the economy of the Dallas area and improves our quality of life in several ways.

Light rail transit systems like DART help enable the creation of compact, walkable communities that deliver a high quality of life while reducing the pressure to build sprawling developments in outlying areas. For example, Lake Highlands Town Center in northern Dallas will feature 1,700 residences, 300,000 square feet of retail space, 50,000 square feet of office space, and a 20-acre park for recreation and entertainment, all within easy walking and biking distance of each other.⁹ A new Blue Line station adjacent to Lake Highlands will allow the community's residents, employees, and visitors to access the development – and the opportunities available throughout the Dallas area – without needing a car.

DART rail also saves commuters money. A ticket on DART is often cheaper than paying to own, operate, fuel, and park an automobile. City drivers who use public transit to the point that their household requires one less car save as much as \$9,453 every year by avoiding the costs of vehicle ownership, parking, and fuel.¹⁰

Investing in rail also creates jobs. In the year since the American Recovery and Reinvestment Act, investments in transit and rail have created more than twice as many jobs per federal dollar invested than comparable investments in new road projects.¹¹ Investment in projects like the DART rail system creates high quality, green jobs.

In addition, rail transit is one of the safest forms of commuting. Light rail has a death and injury rate 40 percent lower than comparable automobile travel per passenger mile.¹² Recently, the Obama Administration announced a \$30 million federal transit safety program to address critical needs and ensure a high and standard level of safety across all rail transit systems.

DART rail has the potential to improve and expand, further benefiting the public and the environment

To achieve these benefits in reducing energy use and improving the environment and economy, DART has several short- and long-term plans to increase and improve service across the rail system:

Short-term plans

- **The Blue Line's Lake Highlands Station** (2010) will be constructed between the White Rock and LBJ/Skillman Stations on the Northeast Corridor.¹³ The station will provide direct access to the new Lake Highlands Town Center, which serves a population of 155,000.¹⁴
- **The Green Line's Southeast Corridor** (December 2010) will be extended 7.4 miles to Buckner Station and include four new stations.¹⁵
- **The Green Line's Northwest Corridor** (December 2010) will be expanded 17.6 miles to North Carrollton/Frankford Station and include 12 new stations, providing access to Love Field, the University of Texas Southwestern Medical Center, the Asian Trade District, and the Dr. Pepper StarCenter.¹⁶
- **The Blue Line's Northeast Corridor** (December 2012) will be expanded 4.5 miles to Downtown Rowlett Station, serving the city of Rowlett.¹⁷
- **The Orange Line Corridor** will be constructed running west from Bachman Station on the Green Line directly to DFW Airport. The line will be 14 miles long and contain seven new stations. The line will be constructed in three segments, with the first two opening by December 2012.¹⁸ The timing for construction of the third segment is being evaluated by DART.¹⁹



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- **The Cotton Belt Corridor**, which would provide an east-west link across the northern part of DART's service area. The route will run from the northern part of the Red Line, crossing the Green Line, to DFW Airport. The corridor will give rail commuters access to major employment and activity centers, such as the University of Texas at Dallas and a new Texas Instruments facility.²⁰
- **The Scyene Road Corridor** would be a branch off of the Green Line's southeastern corridor. The route would run approximately 4.3 miles to Masters Drive, providing access to the Baylor/Fair Parks areas.²¹
- **The Southport Corridor** would extend the Blue Line's southern corridor approximately 2.9 miles to the University of North Texas, with a separate branch traveling to Southport gateway near Bonnie View/IH 20. Southport will be the

Long-term plans

Longer term plans for expansion of the DART rail network include:

northernmost section of the planned Dallas Logistics Hub, an extensive industrial and inter-modal center that will create 30,000 to 40,000 new jobs.²²

- **The West Dallas Corridor** would run approximately 6 miles west from the city's center to the former naval air station north of Mountain Creek Lake. The route could be along Singleton Boulevard, Fort Worth/Commerce Avenue, or the Union Pacific railroad corridor.²³
- **The West Oak Cliff Red Line Extension** would extend the Red Line approximately 4.3 miles southwest of Westmoreland Station to the Dallas city limits. This extension would serve growing employment and residential communities in Southwest Dallas.²⁴

Effective policies will allow DART rail to further benefit the public and the environment

In order to make these improvements a reality, our leaders should make expansion of the DART rail system and projects like it a priority for transportation investments by taking the following approaches:

Increase federal investment in public transportation, including light rail, commuter rail and high-speed rail, as well as other transportation alternatives, such as walking and biking, by:

- Prioritizing funding for rail, transit, and cleaner transportation options that will help create sustainable communities like those developing within the DART service area, and



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reduce oil consumption and pollution; and

- Encouraging and rewarding states that “flex” eligible federal funding toward public transportation. State departments of transportation have great latitude on how federal money is spent once it is allocated to the state. Currently, however, federal funding is apportioned to each state based on formulas that end up rewarding higher fuel consumption, lane-miles of highway, and vehicle-miles of travel – formulas that encourage states to invest in highways rather than transit. These formulas should be revised so funding provides incentives to reduce, not increase, oil use and pollution.

Increase flexibility to use federal funds to pay for train maintenance and day-to-day operations, in addition to improving and expanding capacity. Rail systems like DART face growing demand, but many are having to reduce service and delay improvements due to strained budgets. Federal funds should allow for greater flexibility in funding operations – enabling buses and trains to keep running safely and effectively during economic downturns, when people need transit most.

By adopting these approaches, we can strengthen the DART rail system and create a future in which people have more transportation choices for traveling between where they live, work and play. The DART rail's widespread appeal demonstrates the demand and potential for better public transportation. It is imperative that policy and investments accelerate this trend in order to cut oil use, reduce pollution, and make our communities more vibrant and livable.

Methodology

We calculated gasoline savings by creating a hypothetical situation in which no transit is available and estimating how much gas would have been used in cars and light trucks to transport passengers who typically ride DART light rail, minus the amount of fuel consumed by transit vehicles carrying those passengers.

We calculated gasoline use in light-duty vehicles assuming that all trips that are taken by light rail would occur in a private vehicle rather than being canceled or combined with other outings, and that those trips would cover the same distance as a trip by rail. Travelers rode 152 million miles on DART light rail in 2008, per U.S. Department of Transportation, *National Transit Database, TS2.1 - Service Data and Operating Expenses Time-Series by Mode*. On average, a light-duty vehicle on the road carries 1.3 occupants and the vehicle averages 21 miles per gallon, according to U.S.

Environmental Protection Agency, *Light Duty Automotive Technology, Carbon Dioxide Emissions, and Fuel Economy Trends: 1975 to 2009*, November 2009. This gave us an initial estimate of how much gasoline would have been consumed in cars had DART light rail passengers driven instead.

We then factored in the secondary impacts of transit. Without light rail, not only would transit riders replace their regular transit trips by driving, but they would likely drive more overall, as development patterns and car ownership rates would change. Adding these secondary impacts of transit to our calculation increases vehicle gasoline use by 1.9 times, per Linda Bailey, Patricia Mokhtarian, and Andrew Little, ICF International for the American Public Transportation Association, *The Broader Connection Between Public Transportation, Energy Conservation, and Greenhouse Gas Reduction*, February 2008.

To compare light-duty vehicle gasoline use to energy used to move DART trains (which are powered by electricity), we converted data on electricity use in transit vehicles to a gasoline equivalent. We converted the total kilowatt-hours used by DART trains in 2008 to Btus and then to gasoline equivalent. DART energy use came from U.S. Department of Transportation, *National Transit Database, Annual Databases*, RY 2008.

We then subtracted transit fuel use from avoided passenger vehicle use to obtain a gasoline savings figure.

We calculated carbon dioxide savings by subtracting emissions produced by energy consumed in transit vehicles from emissions that would be produced by gasoline-powered passenger vehicles traveling the same distance. We assumed that a gallon of gasoline consumed in a passenger vehicle would emit 19.4 pounds of carbon dioxide, and that the electricity used by DART trains is responsible for 1,373 pounds of carbon dioxide per MWh, the Texas state average, per U.S. Department of Energy, Energy Information Administration, *State Electricity Profiles 2008*, March 2010.

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Endnotes

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⁷ 5.6 percent derived from dividing the amount of renewable and hydroelectric power by the total amount of energy generated by the state in 2009; U.S. Energy Information Administration, *Electric Power Monthly*, March 2010.

⁸ See methodology.

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¹⁰ American Public Transportation Association, *The Transit Savings Report*, May 2010.

¹¹ Phineas Baxandall, U.S. PIRG, *What We Learned From the Stimulus*, 5 January 2010.

¹² Light Rail Now!, *U.S. Rail Transit Excels in Safety*, September 2007.

¹³ Dallas Area Rapid Transit, *DART Expansion Plans*, downloaded from www.dart.org/about/expansion/otherprojects.asp, 9 April 2010.

¹⁴ Lake Highlands Town Center, *Retail*, downloaded from www.lakehighlandstowncenter.com/Retail.html, 9 April 2010.

¹⁵ See note 13.

¹⁶ Miles: see note 13; Stations and sites: Dallas Area Rapid Transit, *DART Green Line Expansion*, downloaded from www.dart.org/about/expansion/greenlinestations.asp, 9 April 2010.

¹⁷ See note 13.

¹⁸ Ibid.

¹⁹ Morgan Lyons, DART spokesman, personal communication, 3 May 2010.

²⁰ Dallas Area Rapid Transit, *2030 Transit System Plan*, October 2006.

²¹ Ibid.

²² Ibid.

²³ Ibid.

²⁴ Ibid.

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