Regional Connections Streetcar Project
Ridership and Benefit Estimates

Dallas Segment:

For the Dallas Segment of the Regional Connections Streetcar Project, increase in ridership was used as a performance measure to estimate Vehicle Miles of Travel (VMT), Carbon Dioxide (CO_2) emissions and global CO_2 benefit.

Methodology:

- Vehicle Miles of Travel (VMT) reduction:
  - 0.5 miles of VMT reduction per ridership was utilized to estimate VMT reduction from the Down Town Loop project.
- CO_2 Emission: 407 grams/mile, CO_2 Emission Factor (EF) from MOBILE6.2 year 2030 model run is utilized to estimate the CO_2 emission.
- Project Life: 30 years is used as project life for all Mass transit projects.
- Global CO2 Emission Benefits: $33/metric tons of CO_2 emission was used to estimate the Global CO2 Emission Benefits.[1]

Analysis:

Average daily ridership for the Dallas segment is 5,636. Exhibit 1 illustrates the detailed ridership estimations for the Dallas segment for the year 2030.

Exhibit 1: Ridership Projection

Ridership Projections For Dallas Segment- 2030			
Rider Type	**Estimated Capture Rates**	**Estimated Streetcar Counts**	**Estimated Streetcar Ridership**
Resident	15.5% - 16.1%	13,236	2,051.58
Employees	4.0% - 4.4%	122,479	4,899.16
Tourism*	47.8% - 51.1%	8,200	3,919.6
Students	3.8%	10,600	402.8
		Total Average Daily Ridership	***11,273.14***
		Discounted 50%	**5,636.57**

Exhibit 2 illustrates benefits from implementing the Dallas segment. The project yields CO_2 emission reductions of 9,862 tons and global carbon benefit of 0.3 million dollars over the life of the project.

Exhibit 2: Benefits from Dallas Segment

Performance Parameters	Benefits/Day	Benefits/Project Life
Vehicle Miles of Travel Reduction (miles_	2,818.29	21,982,623
CO2 Emission (Tons)	1.26	9,862
Global CO2 Cost Benefit (Dollars)	37.84	295,184

Fort Worth Segment:

For the Fort Worth Segment of the Regional Connections Streetcar Project, increase in ridership was used as a performance measure to estimate Vehicle Miles of Travel (VMT), Carbon Dioxide (CO_2) emissions and global CO_2 benefit.

Analysis:

Total Average Daily Ridership for the Downtown Fort Worth area is 5,976-6,434.

Exhibit 3: Ridership Projection - Fort Worth:

Ridership Projections For Fort Worth Segment- 2030			
Rider Type	**Estimated Capture Rates**	**Estimated Streetcar Counts**	**Estimated Streetcar Ridership**
Resident	15.5% - 16.1%	4,774	740 - 769
Employees	4.0% - 4.4%	71,195	2,848 - 3,133
Tourism*	47.8% - 51.1%	4,354	2,081 - 2,225
Students	3.8%	8,082	307
		Total Average Daily Ridership	***5,976 - 6,434***

The Downtown Loop yields the CO_2 Emission Benefits of about 1 tons/day with global carbon cost benefit of about 10,000 dollar per year.

Exhibit 4: Fuel Use Savings Estimates (9 County Area):

Ridership #	VMT Reduced (Miles)	CO_2 Emission (grams/day)	CO_2 (Tons/day)	Cost Benefit (Dollars/Year)
5,976	2988	819,266.57	1	9,866
6,434	3217	882,055.08	1	10,622

Exhibit 5: Based on MOBILE6.2 EF:

Ridership #	VMT Reduced (Miles)	CO_2 Emission (grams/day)	CO_2 (Tons/day)	Cost Benefit (Dollars/Year)
5,976	2,988	1,216,116.00	1	14,645
6,434	3,217	1,309,319.00	1	15,767

Exhibit 6: Ridership Estimates for Entire Modern Streetcar System:

Total Average Daily Ridership for the Entire Modern Streetcar System is 14,383-15,334.

Ridership Projections For The Entire Modern Streetcar System			
2030			
Rider Type	**Estimated Capture Rates**	**Estimated Streetcar Counts**	**Estimated Streetcar Ridership**
Resident	15.5% - 16.1%	37,593	5,827 - 6,052
Employees	4.0% - 4.4%	136,650	5,466 - 6,013
Tourism*	47.8% - 51.1%	5,443	2,602 - 2,781
Students	3.8%	12,829	488
		Total Average Daily Ridership	***14,383 - 15,334***

The estimated CO_2 emission Benefits from the entire Modern Streetcar System is about 9-14 tons/day with a Global Carbon cost benefit of about 95,000-150,000 dollars per year.

Exhibit 7: 9 County Fuel use Based:

Ridership #	VMT Reduced (Miles)	CO_2 Emission (grams/day)	CO_2 (Tons/day)	Cost Benefit (Dollars/Year)
14,383	28,766	7,887,222.97	9	94,980.66
15,334	30,668	8,408,723.981	9	101,260.75

Exhibit 8: Based on MOBILE6.2 EF:

Ridership #	VMT Reduced (Miles)	CO_2 Emission (grams/day)	CO_2 (Tons/day)	Cost Benefit (Dollars/Year)
14,383	28,766	11,707,762.00	13	140,988.90
15,334	30,668	12,481,876.00	14	150,311.05

Sources:

1. Tiger Grant Application requirement
2. An Economic Impact Analysis from a Downtown Streetcar System in the City of Columbus, Ohio, The Danter Company (Capture Rates for Memphis & Portland).
3. 2015 / 2030 NCTCOG Figures, From NCTCOG 2030 Projections, NCTCOG Draft 2015 Projections (Residents & Employees).
4. City of Fort Worth Planning & Development, Downtown Fort Worth, Inc. (Total Hotel Rooms)
5. City of Fort Worth Planning & Development Comprehensive Plan (Student Enrollment)
6. Fort Worth Visitors Bureau (Tourist Attractions & Events Attendance)
7. Trinity River Vision Estimated Buildout.