Transport 2050

Ian Pitts - Spring 2011

sustainable manhattan 2050

Master Plan and Transportation System

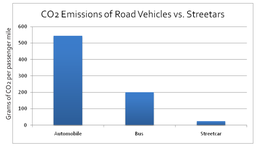
The Future of the Past

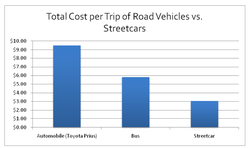
FLINT HILLS TRANSIT

Why Streetcars?

Lower CO2 Emissions

The most obvious benefit of streetcars over automobiles and buses is that they run on electricity, which can be generated from clean, renewable sources. Even streetcars that run on electricity generated by coal burning power plants use that energy more efficiently than cars or buses utilize the energy stored in gasoline. In the world of ever decreasing oil supplies, this makes streetcars a more resilient transportation system that can operate on any energy source, transmitted through the medium of electric power.



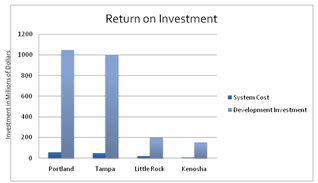


Lower Cost Per Trip

Maintaining a family "fleet" of vehicles is not cost effective, especially in the present reality of ever-increasing gas prices and ever-scarcer oil. Travel by diesel bus is even cheaper than a hybrid automobile, and streetcars reduce that cost further. Streetcars are based on the simple technology of electric traction, and are built with parts that can last decades and require little maintenance. Streetcars have a cheaper lifetime cost because they lack tires, oils, fluids, and fragile parts that need constant replacement.

Streetcars as Urban Investment

By far the most important reason cities around the United States are looking at implementing streetcar systems is their ability to spur development and densification. Portland, Oregon was the first system built in recent years that has produced major real estate investment in the areas it serves, and it is the model upon which systems in Tampa and Little Rock were based. The most astounding example is Kenosha, Wisconsin. Due to its very low construction cost of $4 million, the $150 million in lakefront development the line created was the largest percentage of return on investment seen in any streetcar system constrution to date.

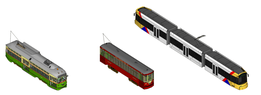


What Do They Cost?

One of the biggest hurdles for streetcar system proposals to overcome is the stigma of great expense that has been created by light rail systems. Light rail systems are built to different standards than streetcar systems and can cost as much as $50 million per mile to construct. In contrast, the most expensive streetcar system built to date is the one in Tampa, Florida, costing roughly $14 million per mile. However, streetcar projects like Tampa's include massive streetscape improvements and roadway realignments that drive up the cost. A simple system like the one in Kenosha costs as little as $2 million per mile to construct, and is well within the budgetary constraints of most small cities like Manhattan.

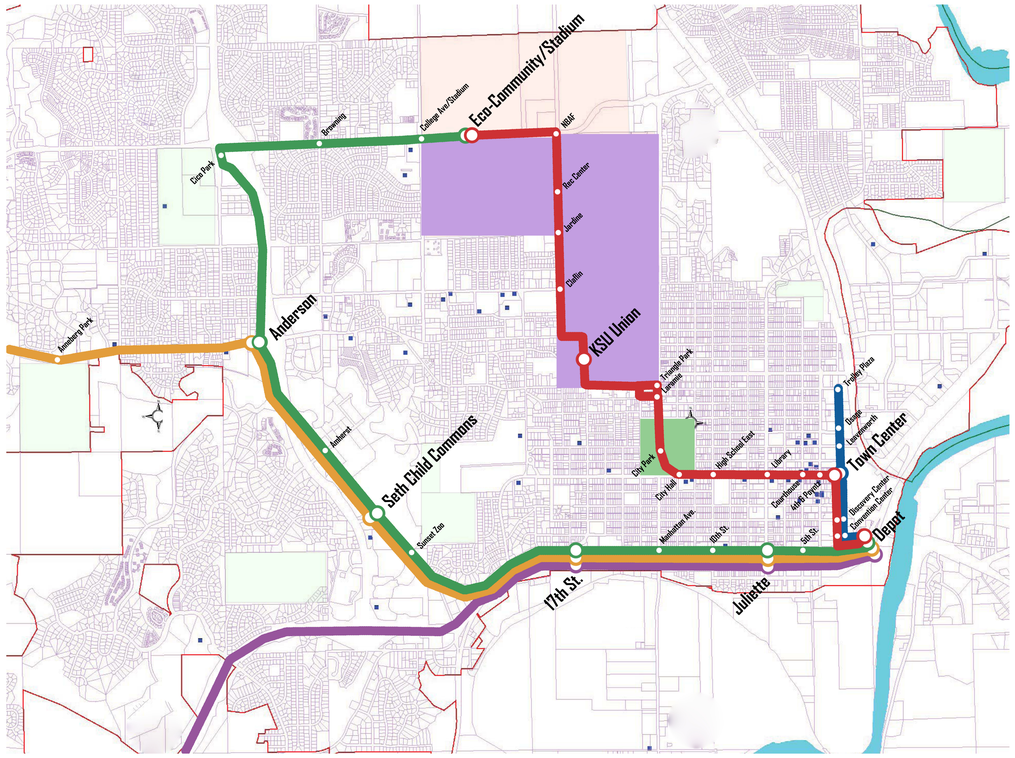
Another factor crucial to the cost of a streetcar system is the type of streetcars used. Vintage cars can cost as little as $25,000, replica cars are usually around $900,000, and modern cars are usually around $3,000,000. While it may cast a "greener" image to use modern streetcars in any new system construction, the cost savings of historically styled cars cannot be overlooked. Little Rock and Tampa both used replica cars, and Kenosha utilized restored vintage PCC cars. For the Avenue Line in Manhattan, using historic cars makes sense as they fit better with the historic areas of the city the line passes through and cut costs for the initial phases of construction. Historic cars would also be a tourist draw, helping reinforce the existing tourist market along the route.

Streetcar Types



Type	Vintage PCC	Replica Birney	Modern
Length	46' 6"	47' 6"	66'
Width	8' 5"	8' 6"	8' 1"
Min. Turning Radius	50'	50'	60'
Maximum Speed	50 mph	30 mph	44 mph
Seats	46	40	29
Total Passengers	65	90	170
Air-conditioned	No	Yes	Yes
Accessible	No	Yes	Yes


Portland Streetcar | Tampa TECO Line Streetcar | Little Rock Streetcar | Kenosha Streetcar | First Run of FHT Avenue Line Streetcar



Legend

- Avenue Line
- Westside Loop
- Crosstown Link
- Wildcat Valley Line
- Junction City Line
- Seven Day — Regular Stop
- Depot — Transfer Stop

Transfers to FHT buses are available at Depot, KSU Union, Eco-Community/ Stadium, Anderson, and Seth Child Commons.

The Avenue Line, Westside Loop and Crosstown Link operate on a 10 minute schedule.

The Wildcat Valley Line to Riley and the Junction City Line to Fort Riley and Junction City both depart hourly from the Depot.

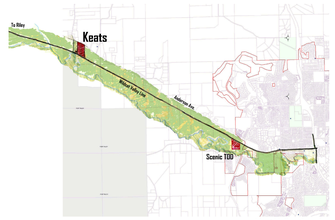
During festivals and holidays, the Crosstown Link operates every 5 minutes.

What is the Effect?

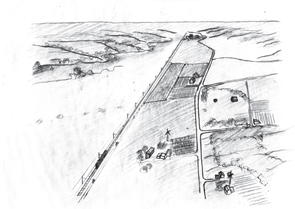
Apart from the effects on development and density within the core of the city, the streetcar system will have a profound impact on the physical layout and development of the Flint Hills region and the quality of life in the areas it serves.

One of the purposes of the system is to limit sprawl and allow the establishment of an Urban Growth Boundary (UGB) for Manhattan, protecting valuable agricultural and wildnerness lands just outside the city. By concentrating development in Transit Oriented Developments (TODs) along the interurban corridors, villages are established that can help develop a local food economy, leading to a more sustainable and resilient city.

The Wildcat Creek Valley corridor (right) is one of three major corridors in the region, home to several thousand commuters to the city per day and rich agricultural lands that could be threatened by normal suburban growth.



Wildcat Valley Corridor


Wildcat Valley Corridor Bird's Eye View

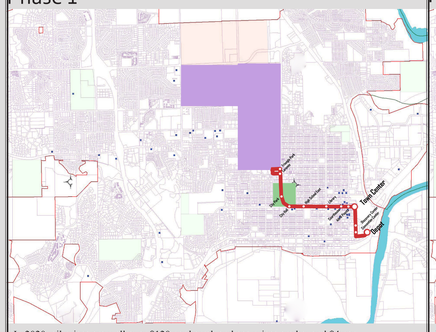
By densifying the village of Keats, utilizing the abandoned Rock Island railroad right-of-way for an interurban transit line, and establishing truck farms along the corridor, the resilience of the city and the rural areas around it are linked, each guaranteeing the success of the other. The same effect would be seen along the corridor to Junction City as well.

By establishing this kind of relationship between rural and urban areas, the risk of the mass abandonment of rural America posed by high gasoline prices is reduced.

Life in a society without oil is much slower paced and more local, making it feel like a long forgotten pattern of living from a time before the automobile. The world of a sustainable future, in the end, looks more like the quaint times of 1908 than any science-fiction imagining of the year 2108. The past has a very bright future indeed.

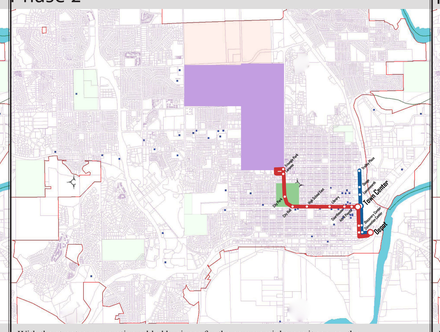
Tickets

Phase 1



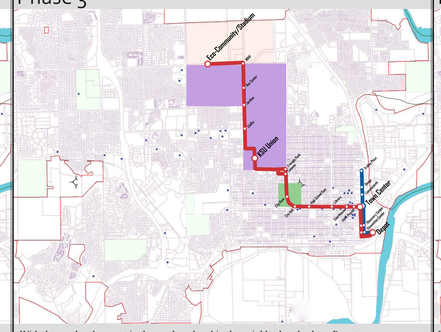
In 2020, oil prices are well over $120 per barrel, and gas prices are beyond $4 per gallon. With students and young professionals craving ever denser urban living, added transit service beyond the bus system is necessary. Streetcars are chosen to provide relief for the city from the expense of buying diesel fuel for additional buses. The first phase "starter" system connects the major points of the core of the city, and provides a major link between the visitor functions in the Convention Center/Discovery Center district in the southeast and the additional convention function of the KSU campus in the center of the city.

Phase 2



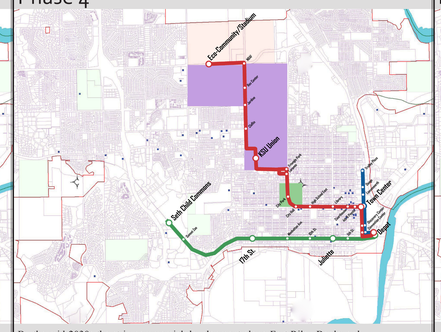
With the streetcar generating added business for the commercial areas it serves, the "big box" retailers in the North Redevelopment District have begun clamoring for an extension of the line into their empty parking lots to bring back their lost customers. The city sees the opportunity to generate the mixed-use density originally intended in the north end development, and goes ahead with an extension of the system in 2025, only five years after the first section entered service.

Phase 3



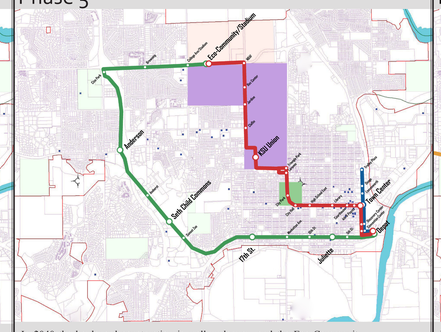
With denser development in the north end and in the neighborhoods along Poyntz bringing in additional tax revenue, the city has looked kindly upon its investment. In 2030, the university has unveiled a plan to develop the farmlands north of the football stadium as an urban agriculture demonstration community. The community is intended to absorb some of the housing needs of the NBAF facility and its associated industries, while also providing additional student housing near the new agricultural campus. The university and the city jointly fund a doubling of the length of the streetcar system, bringing this new infill development into the city's public transport network.

Phase 4



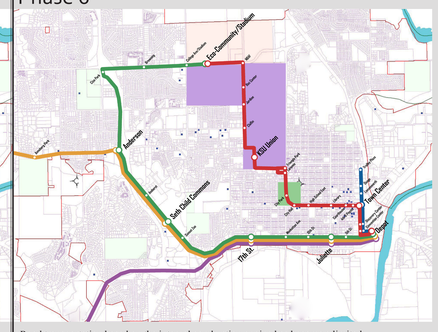
By the mid-2030s the strip commercial development along Fort Riley Boulevard has become as much of a liability to the city as the abandoned mills and warehouses of the North and South redevelopment areas were. Using the streetcar system to drive density and investment, in 2035 the city launches a redevelopment campaign to transition the highway into a true urban boulevard environment lined with mixed use buildings. The return of intercity rail service and the construction of a new transportation hub to the south of the historic depot brings more riders and further spurs boulevard development.

Phase 5



In 2040 the boulevard construction is well underway, and the Eco-Community has nearly reached full buildout. The city's population has grown the most within the dense historic core areas in the eastern half, leaving some of the more remote suburbs as half-abandoned slums. In order to reduce pressure on the most historic areas of the core, the West Side line is built to the Eco-Community, completing the streetcar loop around the city. The streetcar brings denser redevelopment into the west side neighborhoods, weaving the auto-dependent suburbia back into the city.

Phase 6



Road transportation based on the internal combustion engine has become a limited market by 2050, and the denser, greener cities that have emerged from the transition away from oil have led to a resurgence in rail transport nationwide. As abandoned railroads are resurrected around the rural areas of the country, the same happens in Manhattan at the hands of Flint Hills Transit. The bus connections to Junction City and Riley have become too expensive to maintain, leading to the resurrection of the old interurban line to Junction City and the Rock Island railroad to Riley. The emerging sustainable metropolitan region has been stitched together with steel rails to carry its success into the brighter future of the post-oil age.