

## **On Track for Equitable Mobility in the Suburbs:**

The case for a transition back to rail service on the former West Chester Rail Branch Corridor in the Greater Philadelphia area

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## Abstract

In many urban spaces in the United States, the personal vehicle continues to shape the landscape in unsustainable ways that prioritize the economically and socially dominant groups in society and cater to urban sprawl. Equitable access to density-promoting public transportation is often marginalized, creating transportation challenges for economically and socially disadvantaged groups. Throughout the heavily traveled northeastern United States, there are many branches of existing passenger rail networks that have had their service taken away over the past six decades of prioritized highway investments. These dormant rail lines might present an opportunity to improve equitable mobility in densely populated suburban centers using pre-existing infrastructure. A case study is conducted on the West Chester Rail Branch Corridor (WCRBC), located in the western suburbs of Philadelphia, which had its passenger rail service discontinued in 1986. A hybrid framework is created combining Critical Urban Theory's 'Right to the City' and Transition Theory to give structure to a more comprehensive analysis of the efforts and possibilities of returning passenger rail service to the WCRBC. Through the analysis of spatial data, semi-structured interviews and a survey, I suggest that it would be highly desirable yet moderately possible to accomplish a transition back to rail service in the WCRBC. This is conditional on the emergence of a niche-network made up of local actors which would combine its innovative, destructive and transformative power to pressure decision makers at the regime level to prioritize the project. The vision is for these decision makers to develop long-range strategies that actively work to reverse the trend of highway prioritization and promote equitable access to public transportation that meets the needs and desires of disadvantaged groups.

**Key words:** Equitable Mobility, Passenger Rail, Public Transportation, Transition Theory, Critical Urban Theory, The Right to the City

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## **Acronyms and Abbreviations**

BLUER	West Chester Borough Leaders United for Emissions Reduction
CCPC	Chester County Planning Commission
CU	Cheyney University
CUT	Critical Urban Theory
DCTMA	Delaware County Transit Management Association
DVARP	Delaware Valley Association of Rail Passengers
DVRPC	Delaware Valley Regional Planning Commission
PA-TEC	Pennsylvania Transportation Expansion Coalition
PT	Public Transportation
RTTC	Right to the City
SEPTA	Southeastern Pennsylvania Transportation Authority
ST-transition	Socio-Technical Transition
TMACC	Transit Management Association of Chester County
TOD	Transit Oriented Development
TT	Transition Theory
WC	West Chester Borough
WCRB	West Chester Rail Branch (the physical rail line and all its station stops)
WCRBC	West Chester Rail Branch Corridor
WCRHA	West Chester Railroad Heritage Association
WCU	West Chester University
WS	Westtown School



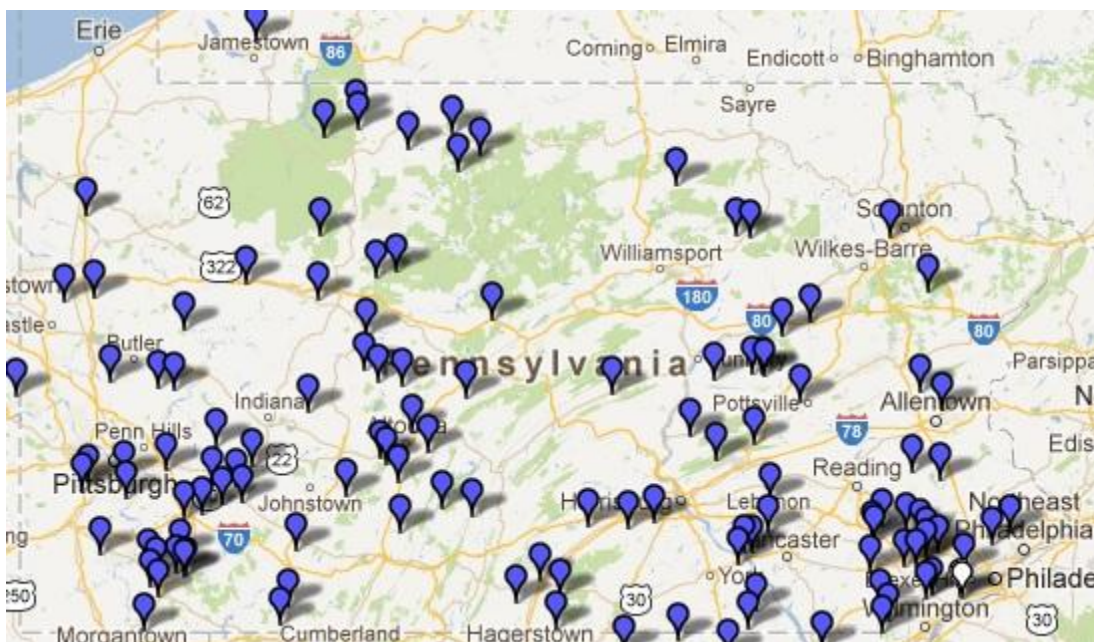
# 1. Introduction

## 1.1 Research Problem

At one time, the U.S. had one of the most comprehensive rail networks in the world. Railroads played a crucial role in opening up frontiers into less densely populated areas, symbolizing progress, ingenuity and freedom of mobility. Pennsylvania in particular was famous for its railroad, which directly shaped much of its landscape and settlements, resulting in many dense ‘railroad towns’. However, six decades of highway expansion prioritization has led to many rail branches on the outskirts of cities being cut out of regional public transportation (PT) networks, leaving the original tracks as deteriorating remnants of their former importance. There is public interest in maintaining or reviving these rail lines, as kept alive by heritage railroad associations and networks of rail enthusiasts (see Figure 1 for an overview of abandoned railroads, voluntarily compiled by local rail enthusiasts on [abandonedrails.com](http://abandonedrails.com)). However, this thesis argues that these disused rail lines have a greater potential than nurturing historic romanticism, and that they can still serve a very relevant purpose in our modern society by increasing the sustainability of modern transportation systems.

Today, these same former rail lines are part of a modern frontier: the suburbs. According to Baeten (2000), “it is more plausible that mobility patterns exert a much stronger influence upon spatial development than the other way round. Current urban sprawl, then, is the result of four decades of unrestrained growth of car possession and virtually unrestricted growth of car usage” (p. 82). Therefore, in the decades since passenger service ceased on these rail lines, the areas that the abandoned rails run through have been taken over by suburban sprawl, supported by a much more comprehensive highway and road network.

**Figure 1: Abandoned Railroads of Pennsylvania**



Source: ([Abandonedrails.com](http://Abandonedrails.com), 2013).

The present-day reality has become such that “current transport infrastructures are designed in the first place to fulfill the transport needs of the dominant groups of society. Mobility opportunities are highly unequally spread among different social groups, leading to the paradox of ‘more traffic for less people’” (Baeten, 2000, p. 82). Infrastructure investment decisions often prioritize profit far above equity for economically and socially disadvantaged groups, which results in the marginalization of PT. If sustainability requires striking a balance between the economic, environmental and social dimensions of transportation, the current system is unsustainable due to the market-oriented priorities of decision makers which favor highways and private car usage. A basic assumption of my thesis is that improved PT can help to even out the system’s imbalance between the three pillars by strengthening environmental and social sustainability.

Envisioning sustainable transportation in 2030, the OECD Guidelines towards Environmentally Sustainable Transport stated ten years ago that “There will be a significant decrease in car ownership [and] much greater availability and use of well-integrated public transport [...] with increases in the availability of high-speed rail and in the efficiency and capacity of all rail modes”(2002, pp. 21–22). In 2012, according to the U.S. Energy Information Administration, “about 28% of the energy we use goes to transporting people and goods from one place to another,” and “personal vehicles (like cars and light trucks) consume 60% of the total energy used for transportation,” while trains and buses account for a mere 3% (U.S. Energy Information Administration, 2012). This indicates that the environmental benefits of increased PT availability alone might not be enough to convince decision makers to adjust their priorities.

Arguments for social sustainability, on the other hand, might provide opportunities to rally for support among groups of people disadvantaged by the current transportation system in order to stimulate a transition towards a more sustainable transportation system in the region. The available transportation modes shape the way we can live our lives and fulfill our life’s hopes. Increasing social sustainability involves shifting away from the current economic bias and creating a PT system that serves the people and not the market and improves all people’s accessibility to jobs and education instead of simply trying to bring a select group of people to shopping areas so they can spend money. “In transport policy terms, taking ‘distribution’ instead of the ‘market’ as the prime institution for the allocation of goods would mean that everyone, regardless of his or her possibilities or preferences, would be guaranteed a basic level of transport opportunities” (Baeten, 2000, p. 80) Hence, this thesis will focus on socially sustainable transportation in the form of equitable mobility.

Acknowledging that “transport policies are equitable if they favor economically and socially disadvantaged groups, therefore compensating for overall inequities” (Litman, 2006, p. 3), I define equitable mobility as access for people of all socio-economic statuses to a variety of transportation modes that meet the mobility needs of the residents of a particular area. Based on this definition, I will look into the local transportation system in the Greater Philadelphia area.

According to a report by the Southeastern Pennsylvania Transportation Authority (SEPTA) (2009), “SEPTA is one of the only two truly multi-modal transit properties in the United States (Boston is the other) with bus, subway, high speed rail, trackless trolley, regional rail and paratransit vehicles” (p. 4). Multi-modal transit constitutes the makings of an equitable transportation system. However, there are still major gaps in public transit service within the denser-populated areas of the suburbs, particularly when it comes to passenger rail service.

The abandoned West Chester rail branch (WCRB) of the present-day SEPTA Media/Elwyn passenger rail line is a prime example of such a major public transit gap in an increasingly densely-populated section of the Philadelphia suburbs. There is a need for the creation of and the improvement upon existing transportation projects that will increase the transportation equity in the West Chester rail branch corridor (WCRBC), the geographical area that surrounds the WCRB.

## **1.2 Project Motivation, Aim, and Research Questions**

From my experience as a university student living in West Chester (WC) from 2007-2009 and again in early 2013, there is a need in the WCRBC for a transition from a car-dominated area to a more equitable transportation system that promotes the use of PT instead of marginalizing it. Despite this subjectively experienced need, there has not been any social movement relating to the inequitable PT infrastructure in the WCRBC immediately apparent to me. This constitutes my interest in the area and my motivation for this research project. In the words of critical urban theorist Henri Lefebvre:

“Considered as a whole, this society finds itself incomplete. Between the subsystems and the structures consolidated by various means (compulsion, terror, and ideological persuasion), there are holes and chasms. These voids are not there due to chance. They are the places of the possible. They contain the floating and dispersed elements of the possible, but not the power which could assemble them.”  
(Lefebvre, 1996, p. 156).

Looking into the WCRB case, this thesis will explore the idea that a disused rail line like the WCRB is such an ‘element of the possible’ which could provide an opportunity to improve equitable mobility in densely populated suburban centers. In pursuit of this thought, it draws on Critical Urban Theory (CUT) and Transition Theory (TT). Hence, the aim of my thesis is to answer the following two main research questions and each of their sub-questions:

**Research Question 1: How desirable is it from an equitable mobility perspective to bring rail service back to the WCRBC?**

*Sub-question 1: What is the current socio-physical situation in the WCRBC?*

*Sub-question 2: What is critical urban theory’s response to the socio-physical situation in the WCRBC?*

**Research Question 2: How likely is it that a transition back to rail service in the WCRBC could be accomplished given the current socio-political climate?**

*Sub-question 1: What actions have already been taken by regime and niche-level actors in the ST-transition to bring rail back to the WCRBC, and at what stage are they in the transition?*

*Sub-question 2: Who are the other potential niche-level actors, and how can they exercise their power in the ST-transition back to rail in the WCRBC?*

## **1.3 Thesis Structure**

The rest of the thesis is organized as follows: chapter 2 introduces the case study in more depth, while chapter 3 goes on to explain the field-research design for the collection and analysis of the data collected from the case study area. Chapter 4 is a discussion on the applicability of CUT and TT in adequately analyzing the case study. In this chapter, a hybrid CUT-TT framework is proposed.

Chapter 5 presents the results of the sub-questions used to answer the two main research questions, while simultaneously analyzing them and arriving at a final answer to each of the main research questions. Chapter 6 discusses the usefulness of the CUT-TT framework, implications for further research, and finally summarizes the research findings.

**2. Case Study Area: the West Chester Rail Branch Corridor**

The West Chester Rail Branch Corridor (WCRBC) is the geographic area surrounding the West Chester Rail Branch (WCRB). Figure 2 shows the geographic orientation of the WCRBC in the U.S., the northeastern region of the US, and its position in relation to the City of Philadelphia. The WCRBC is comprised of fourteen townships and four boroughs which would serve as catchment areas for riders who would use the rail line. These townships and boroughs and their locations are labeled in Figure 3. The physical boundaries of the case study area were chosen based on the area chosen for study in the Delaware Valley Regional Planning Commission’s (DVRPC) (2011) *Wawa to West Chester Regional Rail Extension – Ridership Forecast* (see Figure 3).

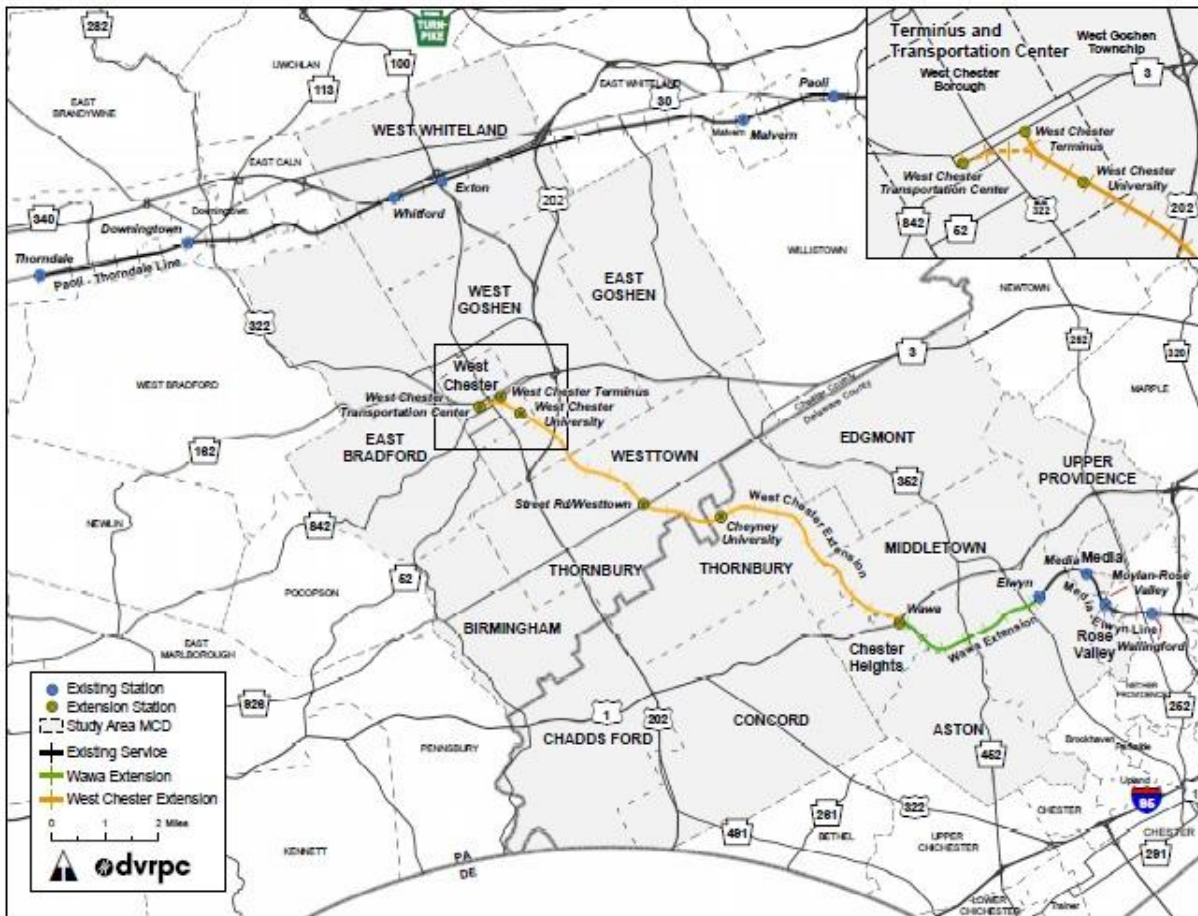
**Figure 2: Illustration of the Location of the West Chester Rail Branch Corridor**



Source: Created by the author using the U.S. Census Bureau’s ‘OnTheMap’ site (U.S. Census Bureau, n.d.).



**Figure 3: Map of DVRPC’s Study Area for their 2011 Wawa to West Chester Regional Rail Extension Ridership Forecast**



Source: (DVRPC, 2011, p. 6).

The WCRB is 12.4 miles of single-track rail that was part of what is now called the Media/Elwyn line. The WCRB used to serve nine additional stops beyond the rail line’s current terminus in Elwyn: Williamson School, Glen Riddle, Lenni, Wawa, Glen Mills, CU, Westtown, WCU, and its former terminus, WC (SEPTA, 1986, p. 2). Figure 3 shows the existing terminus of the Media/Elwyn line on the southern end of the WCRB, as well as the location of another nearby SEPTA rail line just five miles north of WC, called the Paoli/Thorndale line. The absence of the WCRB has opened up a large expanse of residential area that is not served by the SEPTA rail system. As will be demonstrated in research question 1, this is an area which has seen rapid population growth and over the past 27 years since WCRB service was discontinued.

SEPTA originally took over operations on the West Chester Branch in 1976 from Penn Central Transportation Company (Morris & Belz, 2007, p. 20). According to DVRPC (2011), “passenger rail service was discontinued to many locations during the decline of transit in the United States in the approximate time period 1960–1990. This culminated in cutting service to West Chester in 1986 due to low ridership and deteriorating track conditions” (p. 3). Although service has been stopped, SEPTA still owns the tracks and the right of way.

Since service was discontinued along the WCRB in 1986, PT service between several of these former rail stops and Philadelphia was replaced with bus service. This calls into question the adequacy of the existing bus network in substituting for the former rail line, which is an aspect of the case study that will be analyzed in research question 1. Table 1 shows that PT use in Chester County and WC is 2% below the average for Pennsylvania, while private vehicle use is above the state average in Chester County. Three out of the five proposed stops on the WCRB extension are located in Chester County (WC, WCU and Westtown), while the remaining two stops (CU and Wawa) are in Delaware County. These statistics alone point to the high likelihood of the need for more PT service and less accommodation for personal vehicles in the WCRBC. The extent of this need will be explored in research question 1.

**Table 1: Transportation Mode Choice for Work Commute**

<b>Commuting to Work (Based on workers 16 and over)</b>						
	<b>Pennsylvania</b>		<b>Chester County</b>		<b>West Chester</b>	
<b>Transportation Mode</b>	<b>Estimate</b>	<b>Percent</b>	<b>Estimate</b>	<b>Percent</b>	<b>Estimate</b>	<b>Percent</b>
Car, truck, or van -- drive alone	4,443,973	76.5%	202,078	81.4%	7,020	69.7%
Car, truck, or van -- carpooled	535,947	9.2%	18,146	7.3%	762	7.6%
Public transportation	311,753	5.4%	6,492	2.6%	293	2.9%
Walked	228,966	3.9%	5,443	2.2%	1,324	13.2%
Other means	73,908	1.3%	2,450	1.0%	370	3.7%
Worked at home	211,973	3.7%	13,707	5.5%	296	2.9%

*Source: Created by the author using the U.S. Census Bureau’s 2007-2011 American Community Survey (U.S. Census Bureau, 2011a).*

Although SEPTA passenger rail service has been discontinued on the WCRB, the rail line has other current and planned uses which require the tracks to be maintained and usable to some extent. On the north end of the WCRB, the West Chester Railroad Heritage Association (WCRHA) runs a 7.7-mile tourist heritage railroad from WC to Glen Mills (approximately one-third of the way between Cheyney University (CU) and Wawa; see Figure 3). On the south end of the WCRB, there is already a planned extension from Elwyn to Wawa (marked in green in Figure 3). These current and planned uses for the WCRB add to the complexity of the analysis of a potential return to passenger rail along the entire WCRB. This is an aspect of the case study that will be analyzed in research question 2.

### **3. Field-Research Design**

This thesis focuses on a case study evaluation, which “investigates a contemporary phenomenon within its real-life context, when the boundaries between phenomenon and context are not clearly evident, and in which multiple sources of evidence are used” (Yin, 1992, p. 123). To answer the research questions, a social research approach is used which operates within a wider political context. As such, “the training and personal values of the researcher cannot be ignored. They form the component of the context of social research methods in that they may influence the research area, the research questions, and the methods employed to investigate these” (Bryman, 2012, p. 7). I have lived in the case study area, in WC, at two different points and with two different perspectives: first from 2007-2009 as a car-owning student at WCU, and again in early 2013 as a car-free student living in the finished basement of a typical suburban cul-de-sac on the outskirts of WC. These are two very contrasting perspectives which have provided firsthand insight into the equity of the area’s transportation system. This has certainly to some extent informed my research questions and methods.

#### **3.1 Interviews**

Interviews were conducted using a semi-structured approach “so that concepts and theories can emerge out of the data” (Bryman, 2012, p. 12). They were conducted mostly in person and some over the phone with representatives from thirteen public and private organizations, and typically lasted between 30-60 minutes. When an interview was not possible, information was requested via email. All interviewees were asked if the interview could be recorded and if they could be referenced by name and title in the thesis. Appendix A provides a list of the questions asked in the interviews. Interviewees were chosen after conducting thorough preliminary background research on the case study area (Yin, 1992, p. 129). In some cases, interviewees recommended other actors for me to interview whom they thought might have a different or deeper insight on the case study, and these recommendations were pursued.

#### **3.2 Survey**

A nine-question survey was sent out via email using SurveyMonkey to all eighteen of the municipalities in the study area. Completion of the survey took on average between five to ten minutes, and included multiple choice questions as well as open-ended questions to which respondents could type their response in sentence or bullet-point form. The purpose of the survey was to gain an overall impression of the motives and perspectives that each municipality has related to transportation in general and the rail WCRB extension in particular, and to see if any municipalities stood out in either of these regards. Reminders were sent out to municipalities which had not completed the survey within one week of it being sent out, yet two municipalities did not respond. Responses to the survey can be seen in Appendix B.

#### **3.3 Analysis**

Given that my analysis deals with the ability of actors to contribute to an urban transportation transition, it can be said that my analysis comes from a constructivist perspective which “challenges the suggestion that categories such as organization and culture are pre-given and therefore confront social actors as external realities that they have no role in fashioning” (Bryman, 2012, p. 33). A deductive approach is used in the analysis, whereby the theory was used to interpret and reach a conclusion about the data (Bryman, 2012, p. 24). All interviews were transcribed in detail and a



content analysis was conducted to identify themes amongst the regime-actors and the niche-actors. A similar process was used to analyze the survey results. Through my firsthand observations and the analysis of interviews, surveys, and primary sources of data, it can be said that multiple sources of evidence are used which are in some instances “used in a converging fashion, so that data [...] triangulate over the “facts” of a case” and add to the study’s internal validity (Yin, 1992, p. 131).

### **3.4 Research Scope and Limitations**

CUT traditionally emphasizes the importance of speaking directly with the urban residents which, in this case, are the marginalized low-income residents and those who use PT in the WCRBC. However, TT typically studies organizations and public figures as niche-actors. Because I wanted to mainly focus on the local actors who interact with and represent the marginalized urban residents, my research provides one view of the equitable mobility issue in the WCRBC by focusing only on local-level decision makers. The user side of PT was not explored (e.g. through surveys and interviews), and therefore my research does not directly address the on-the-ground experiences of the riders themselves.

Additional limitations exist regarding the types of actors and the number of actors who were interviewed and surveyed. My interview base is not exhaustive; I could not interview every single niche and regime-level actor, but instead chose the ones that my research identified to be the most active or important. Therefore, there may be other actors who could have been explored in the context of my research, but due to the restraints of the research, I have limited them to the 34 actors chosen. Furthermore, two of the eighteen municipalities in the study area did not respond to the survey, which resulted in incomplete survey data. However, it was still possible to determine a trend or theme since most municipalities did respond.

## 4. Theoretical Frameworks

The WCRBC case study is embedded in a complex socio-political context which poses a challenge for the application of one single theory for its analysis. Re-establishing a rail line requires the involvement of a variety of actors who engage in much negotiating, planning, and re-negotiating before tangible progress can be seen. An analysis only of the tangible actions that have been taken towards re-establishing this rail line would lack the depth provided by putting the project into a particular socio-political context. With this in mind, two complementary theories emerged: Critical Urban Theory (CUT) and Transition Theory (TT). In the following, the basic elements of CUT and TT are first described. Then, the analytical tools from CUT and TT are combined into a hybrid framework which will be used in the analysis of the WCRBC case study.

### 4.1 Critical Urban Theory and the Right to the City

CUT is a social theory that analyzes the reflexive relationship between the *urban* population and the physical *city*. It has its roots with mid-20<sup>th</sup> century Marxist philosophers such as Henri Lefebvre, Peter Marcuse, and David Harvey and takes a leftist perspective in its critique of the dominant ideologies and power relations that shape urban spaces. It first emphasizes the malleability of urban spaces, starting from the premise that urban spaces are in a continuous state of change and are being made and remade by their inhabitants. However, all urban residents do not exert an equal amount of influence over how urban spaces take shape. In other words, urban spaces are not a composite image of all residents' needs or desires considered in aggregate.

Instead, CUT posits that an urban space's current form is a product of "historically specific relations of social power", and it "involves the critique of ideology (including social-scientific ideologies) and the critique of power, inequality, injustice and exploitation, at once within and among cities" while rejecting "technocratic, market-driven and market-oriented forms of urban knowledge" and "expos[ing] the forms of power, exclusion, injustice and inequality that underpin capitalist social formations" (Brenner, 2009, pp. 198, 200). It criticizes the way capitalist systems cater to the dominant groups in society which are directly shaping urban spaces and urban life. CUT holds urban spaces up for social critique and commentary and provides the lens through which marginalized groups can be identified and current urban landscapes can then be problematized from an equity standpoint.

CUT is constantly searching for ways to improve urban life and the physical form it takes; it believes in the possibility of more equitable and democratic urban spaces "even if such possibilities are currently being suppressed through dominant institutional arrangements, practices and ideologies" (Brenner, 2009, p. 198). It does not, however, propose a clear step-by-step strategy for how to enact social change and right the wrongs its philosophy points out. It simply works to inform strategies for change by recognizing latent forms of radical urbanism that are being suppressed and identifying obstructive or exploitative ideologies and power relations so that urban residents can find ways to liberate themselves from them.

The concept of the Right to the City (RTTC) stems from CUT, though it speaks more directly to CUT's moral and ethical aspects. RTTC was first proposed in 1968 by French Marxist philosopher Henri Lefebvre in his book *Le Droit à la ville*. RTTC can be thought of as an implied call to action for the marginalized groups in urban spaces. Lefebvre likens the RTTC to "a cry and a demand" – "a cry out of necessity and a demand for something more" (Lefebvre, 1996, p. 158; Marcuse, 2009, p. 190).

Marcuse (2009) differentiates between two different segments of society who either do the 'crying' or the 'demanding': the 'demanding' comes from those whose "most immediate needs are not fulfilled: the homeless, the hungry, the imprisoned, the persecuted on gender, religious, racial grounds", while the 'crying' comes from those who are "unfulfilled in their lives' hopes", and who are "superficially integrated into the system and sharing in its material benefits, but constrained in their opportunities for creative activity, [and] oppressed in their social relationships" (p.190). The *right* to the city "is earned by living out the routines of everyday life in the space of the city" (Purcell, 2002, p. 102).

RTTC does not say that the 'demands' are any less valid than the 'cries'. Ultimately, both are being oppressed by the dominant groups in society and do not currently have their right to the city. They aspire "for a broader right to what is necessary beyond the material to lead a satisfying life" (Marcuse, 2009, p. 190). Their common goal is to become the "majority and hegemonic voice" by defeating the currently dominant strategies and ideologies that are suppressing their right to an enjoyable urban life and to begin making and remaking the urban space after their needs and desires (Purcell, 2002, p. 103). Purcell (2002) states that the RTTC "must be seen not as a completed solution to current problems, but as an opening to a new urban politics", which he refers to as "an urban politics of the inhabitant" (p.99). This is the way in which I intend to use CUT and RTTC.

#### **4.2 Transition Theory**

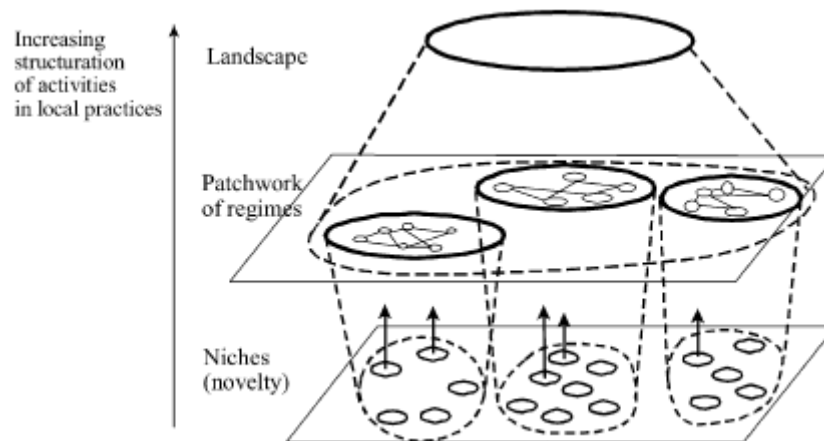
TT pulls on "insights from sociology, institutional theory and innovation studies" in an effort to create a framework for analyzing the relations of power in 'socio-technical systems of innovation' (ST-systems) that are working towards achieving a transition from one technology to another (Geels, 2004, p. 897). In attempting to reframe the WCRBC case study, there is an obvious tension between the case and TT from the start: TT usually is applied to cases where technological *innovations* are being adopted. However, the WCRBC case is about transitioning back to one of the earliest technologies of the industrial revolution: the train. The TT literature has not paid enough attention to transitions back to pre-existing technologies to address modern-day sustainability challenges. Therefore, I have chosen to apply TT in this 'new' context.

Geels (2004) defines ST-systems broadly as "the linkages between elements necessary to fulfill societal functions", and lists transport as one such linkage (p.900). ST-systems "consist of artifacts, knowledge, capital, labour, [and] cultural meaning" (Geels, 2004, p. 900). The ST-system is created and maintained by human actors that are "embedded in [specialized] social groups which share certain characteristics (e.g. certain roles, responsibilities, norms, perceptions)" and which deal directly with the technology in question, whether as part of its production, distribution, or use (Geels, 2004, p. 900).

The transition can be conceptualized as a bottom-up movement that is comparable to a game in which actors at the *niche* and *regime* levels take turns making moves. In doing so, they alter the rules of the game and influence the ways in which other actors react. Avelino & Rotmans (2009) define the *regime* as "the most 'dominant' configuration of actors, structures and practices; it dominates the functioning of the societal system and defends the status quo", while the *niche* level is defined as "also part of the societal system, but able to deviate from the dominant structures, practices and actors within that system", and are capable of innovation and radical change (p. 545). Additionally, "niches can mobilize certain resources that regimes cannot" (Avelino & Rotmans, 2009, p. 560). At

both the *niche* and *regime* levels, “different groups also interact with each other, and form networks with mutual dependencies” (Geels, 2004, p. 901). Stankiewicz (1992) refers to this inter-group coordination or overlap in functions as ‘interpenetration’. The *landscape* level is mostly comprised of the exogenous factors that influence the *regime* level, such as “material and environmental conditions, external agents, [and the] larger socio-cultural context” (Geels, 2004, p. 908). Figure 4 provides a visual representation of these three levels of TT.

**Figure 4: Transition Theory’s Multiple Levels as a Nested Hierarchy**



Source: (Geels, 2004, p. 913).

The aspect that creates the ‘game’ that actors play between each other and which gives regimes structure are their “semi-coherent sets of rules, which are linked together” which include “ways of handling relevant artifacts and persons [and] ways of defining problems; all of them embedded in institutions and infrastructures” (Rip & Kemp, 1998, p. 338). It is through this game that a transition evolves. The game is a continuous loop which evolves and its rules change as actors learn from the intended and unintended effects of their own and others’ decisions and actions. This results in *social learning* that directly affects the social rule systems and regimes and effectively propels the transition forward, and *actor structuring* in which actors reflect on their strategies, perceptions and preferences and adjust them as they see fit. The challenge in TT when it comes to radical technological changes such as those envisioned using CUT is that in general, changes are very slow and are mostly geared towards optimizing the existing regime. However, “niches act as ‘incubation rooms’ for radical novelties” and can thus be seen as the locus of hope for reaching the more radical visions that CUT tends to propose.

### 4.3 Critical Urban-Transition Hybrid Framework

Neither CUT nor TT can stand on its own to analyze technological transitions that have implications for environmental sustainability and are based heavily in concerns about equitable access to the technology. TT does not in itself provide a normative basis for judging what types of ST-transitions are the most desirable; it simply provides a more concrete conceptualization of the relations of power in a ST-system and helps to identify areas of existing and potential transformative power, as well as factions of resistance against the transition. However, it often neglects the power dimension and does not work to contextualize it into a particular sociological debate. Avelino and Rotmans

(2009) contributed a power dimension to TT, but CUT goes even deeper into the question of power in a transition by adding a normative socio-political dimension.

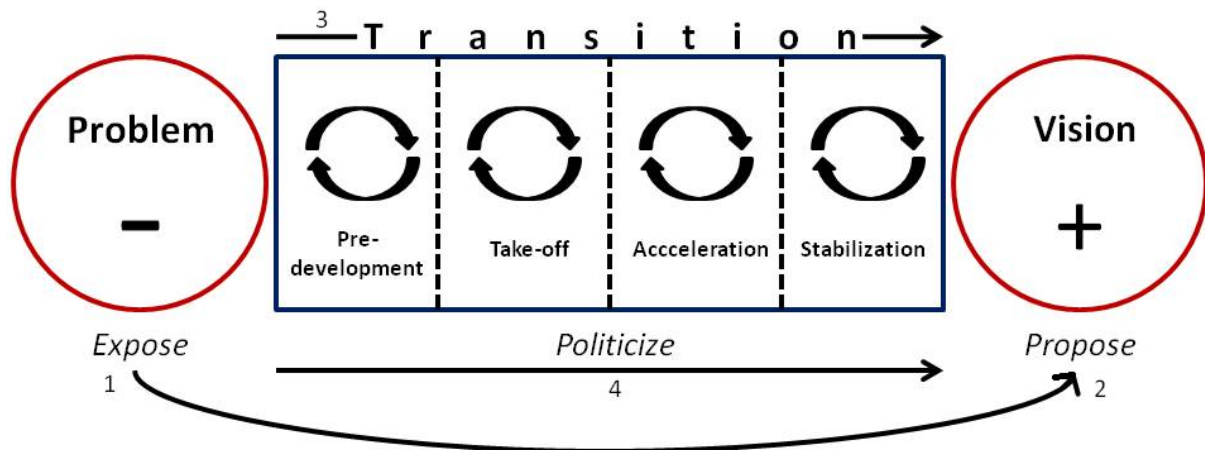
CUT problematizes the user aspect of a technology; instead of leaving adopted technologies to be up to competition and the market as TT usually accepts as given, CUT emphasizes the equity needs of the users, and implores the niche- and regime-actors to respond accordingly in the transition. As Marcuse (2009) argues, “‘the profit motive’ is a euphemism that tries to justify a system that relies on greed to produce growth at the expense of all other values, and that stifles creativity that does not serve profit” (p.187). In this way, CUT rectifies the somewhat neo-liberal assumptions of TT and provides it with a vision that prioritizes social sustainability over economic sustainability. RTTC’s three-step ‘action plan’ for analyzing an urban injustice (*Expose, Propose, and Politicize*, discussed below) is the conceptual framework part of CUT that fits directly in line with TT while providing TT with the normative basis and clear starting and ending points that its framework tends to lack.

Now that some of the tensions between CUT and TT are resolved such that they can work together toward a common analytical goal, it is possible to create a ‘hybrid framework’ which will inform the analysis of the WCRBC case study (see Fig. 5). The purpose of the framework is to take a ST-transition that is already occurring and reframe it by analyzing the ability of the actors and the ‘new’ technology to work towards solving an urban social-sustainability challenge. Application of the framework involves a four-step process which integrates key features from CUT and TT. The red circles on either side represent the part of the framework that uses tools from CUT, while the blue rectangle in between represents the part of the framework that uses tools from TT. TT in a sense bridges the gap between the problem and the vision of the possible by making “an analytical distinction between systems, actors involved in them, and the institutions which guide actor’s perceptions and activities” (Geels, 2004, p. 897). The four-step process is as follows:

1. Expose the socio-political problem that could be addressed by the ST-transition.
2. Propose a vision for the transition to work towards which addresses the problem.
3. Identify the actors, their rules and their actions in the ST-transition to gain an understanding of the ‘game’ that is currently being played and to identify the current phase of the ST-transition.
4. Politicize the ST-transition by identifying other potential niche-actors who have values, goals and beliefs that would support actions that directly address the socio-political problem and put pressure on the regime, and identify ways that these niche-actors can exercise their power.

Each step corresponds to each of this study’s research sub-questions. This builds up the case towards understanding how possible it is to accomplish a transition back to rail service in the WCRBC given the current socio-political climate. The tools and concepts taken from CUT and TT and used in this CUT-TT framework are explained in more detail below.

Figure 5: Critical Urban-Transition Hybrid Framework

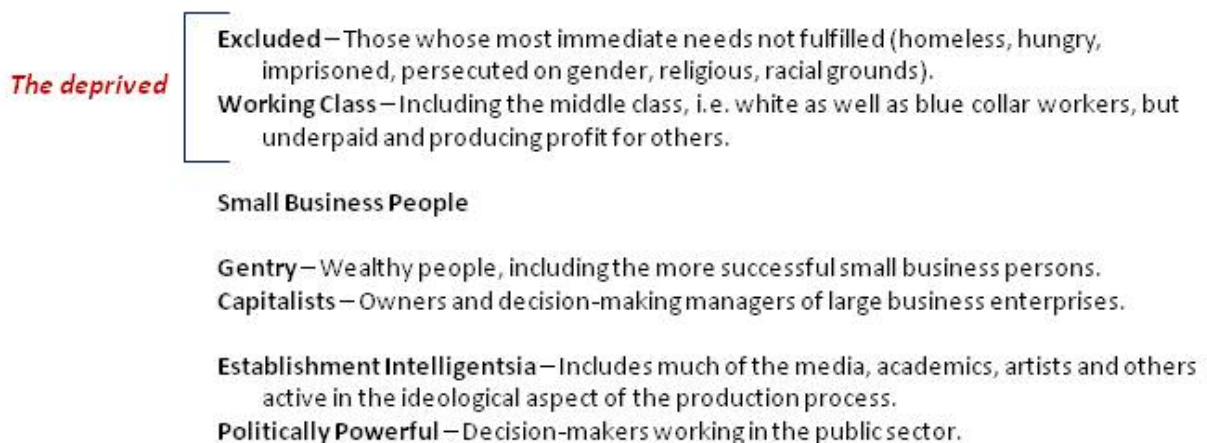


Source: Created by the author.

### Tools Taken From Critical Urban Theory and the Right to the City:

The WCRBC case study is in need of a new frame which exposes the inequities in the existing system and appeals directly to a moral and ethical call to action towards a more equitable transportation future. Marcuse (2009) concurs with Lefebvre that RTTC is “the right to a future city, indeed not necessarily a city in the conventional sense at all, but a place in an urban society in which the hierarchical distinction between the city and the country has disappeared” (p. 193). It truly is a place of the possible – a nearly blank slate that is all but begging to be remade. Although CUT traditionally deals with the entire architecture and infrastructure of a city and how it is made and remade, I have chosen to apply CUT specifically to the transportation infrastructure in the WCRBC. Within the WCRBC, CUT can here be applied to first identify “those whose rights are our concern” (see Fig. 6).

Figure 6: The Right to the City’s ‘Seven Groups of People Whose Rights Are Our Concern’



Source: Adapted from (Marcuse, 2009, p. 190).

Marcuse (2009) then outlines a three-step conceptual process for CUT to meet the aims of RTTC, which constitute the first, second, and fourth steps in the CUT-TT framework devised in this paper: *Expose*, *Propose*, and *Politicize*:

**“Expose** in the sense of analyzing the roots of the problem and making clear and communicating that analysis to those that need it and can use it.

**Propose**, in the sense of working with those affected to come up with actual proposals, programs, targets, strategies, to achieve the desired results. Critical urban theory should help deepen the exposé, help formulate responses that address the root causes thus exposed, and demonstrate the need for a politicized response.

**Politicize**, in the sense of clarifying the political action implications of what was exposed and proposed, and supporting organizing around the proposals by informing action. Politicizing includes attention to issues of organization strategy and day-to-day politics. And where appropriate, it includes supporting organization directly with interventions in the media and sometimes raising issues within the critic’s peer groups themselves, often academics”

(p.194).

#### **Tools Taken From Transition Theory:**

While CUT provides the normative aspect for the WCRBC case study, TT supplies the conceptual means by which a socio-technical (ST) transition can be accomplished to meet CUT’s vision of more equitable mobility. TT constitutes the third step in the CUT-TT framework devised in this paper. TT will first be used to identify the actors that have taken actions directly related to the WCRB. Holtz et al. (2008) refer to this group as the ‘action subsystem’, and define it as being comprised of “all actors and elements which are involved in executing certain typical actions; it integrates how the interaction of actors and structure shapes these actions” (p.632). These actors make up the existing regime surrounding the WCRB extension.

Once the regime has been defined, the rules that are guiding the ‘game’ that the actors are playing can be identified. Geels (2004) makes a distinction between three different kinds of coordinated action that actors engage in, which are *cognitive*, *normative* and *regulative* rules. An analysis of these guiding rules is applied in more detail to the WCRBC in section 5.2.1:

“The *regulative* dimension refers to explicit, formal rules, which constrain behaviour and regulate interactions.”

*Normative* rules “confer values, norms, role expectations, duties, rights, responsibilities.”

“*Cognitive* rules constitute the nature of reality and the frames through which meaning or sense is made.” (p.904)

Avelino and Rotmans (2009) contributed a power dimension to TT which it had previously lacked. These types of power will be used in my analysis to explain how the actors influence each other, and to identify areas of strength or weakness in their ability to propel the WCRBC’s transition back to rail forward.

*Innovative* power: the capacity of actors to create or discover new resources.

*Destructive power*: the ability to destroy or annihilate existing resources.

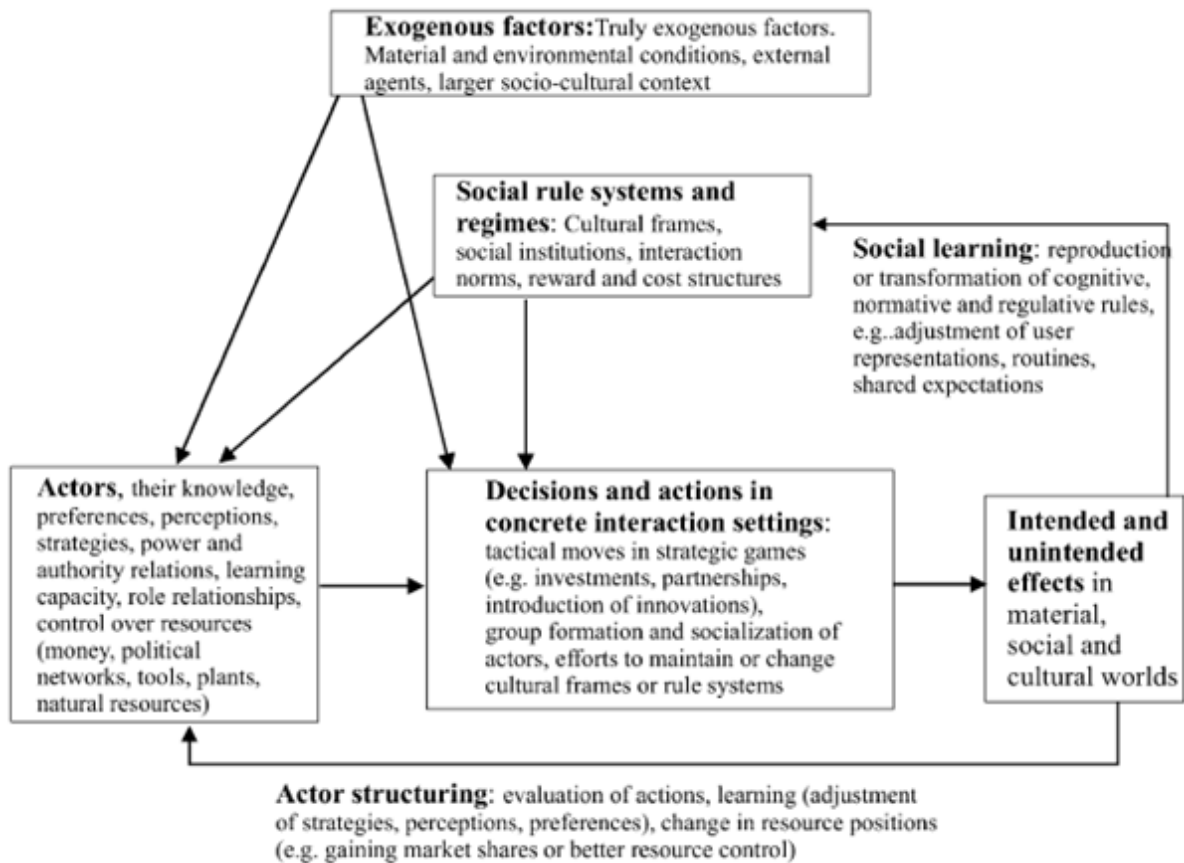
*Constitutive power*: the ability to constitute a distribution of resources.

*Transformative power*: the ability to transform the distribution of resources, either by redistributing resources and/or by replacing old resources with new resources.

*Systemic power*: the ‘combined’ capacity of actors to mobilize resources for the survival of a societal system, i.e. a particular region, sector, industry or business. (Avelino & Rotmans, 2009, p. 554).

Using the above tools, the overall actor-rule system dynamics are defined for the ST-transition game. Figure 7 provides a visual representation of this game.

**Figure 7: Actor-Rule System Dynamics**



Source: (Geels, 2004, p. 908)

From this overall picture of the ST-transition game that is being played, it is possible to determine how close the ST-transition has come to reaching the *Vision*. This is where the concepts of power and the phases of a transition developed by Avelino and Rotmans (2009) are of help. The WCRBC case will be analyzed and placed into one of these phases in section 5.2.1, and the potentials for it to move onto the subsequent phases will be discussed in section 5.2.2.

*Pre-development phase*: “changes occur in the ‘background’ at landscape and niche level, which are resisted by the regime.”



*Take-off* phase: “structural change picks up momentum, in the sense that these changes pressure the regime in such a way that it starts breaking down.”

*Acceleration* phase: “structural changes become visible as old regime structures are being replaced by new structures.”

*Stabilization* phase: “a new dynamic state of equilibrium is achieved; a new regime has been formed that has replaced the old regime.” (Avelino & Rotmans, 2009, p. 545).

Finally, once the ST-transition game has been analyzed to date, the potential for new niche-actors from the socio-political realm can be explored. This is where Avelino and Rotmans’ (2009) four conditions for the exercise of power will be used:

1. Access to resources
2. Strategies to mobilize them
3. Skills to apply those methods
4. The willingness to do so  
(p. 556)

The resources referred to in the above four preconditions are defined as persons, assets, materials or capital, including human, mental, monetary, artifactual and natural resources” (Avelino & Rotmans, 2009, p. 552). These preconditions will be used to determine the potential for new niche-actors to become influential players in the ST-transition game and to propel the transition into the next phase, towards the realization of the transition’s *Vision*.

## 5. Results and Analysis

### 5.1 Research Question 1

DVRPC's *Wawa to West Chester Regional Rail Extension Ridership Forecast* is the only official analysis that has been conducted on the feasibility of extending the WCRB. Through my interviews and personal communication with representatives from 13 local actors, this study is seen as the most important document that informs their opinion on the feasibility of the extension. It "is meant to be a rigorous evaluation of ridership potential on the West Chester line under certain constraints and assumptions", using "a computer simulation model that predicts people's travel behavior [...] to develop year 2035 forecasts of ridership" (DVRPC, 2011, pp. 1, 3). However, throughout its analysis, emphasis is placed on the need for parking facilities for park-and-ride customers while the need for more connecting bus service that could serve everyone regardless of whether or not they own a car is not directly addressed. Byron Comati, Director of Strategic Planning and Analysis in the department of Finance and Planning at SEPTA, summarized SEPTA's evaluation of the ridership forecast, saying that "the problem we have is that it doesn't stack up well to one or two of the other lines in terms of what we think its ridership potential could be" (B. Comati, personal communication, March 18, 2013). As a result, the WCRBC is left a large gap in Philadelphia's regional rail system.

Brenner (2009) argues that critical urban theorists "are concerned to excavate possibilities for alternative, radically emancipatory forms of urbanism that are latent, yet systematically suppressed, within contemporary cities" (p. 204). By focusing only on ridership potential as the primary means of justifying a rail extension project, and particularly by creating a vision for the WCRB that perpetuates the need for riders to drive to the stations, the needs of residents who are currently deprived of an equitable transportation system are downplayed and overlooked. Therefore, the goal of research question 1 is to demonstrate the extent of the inequity in the WCRBC's current transportation system and to use these insights to take the DVRPC ridership forecast study one step further by reframing the *Problem* that should be addressed and providing a new *Vision* or direction for the ST-transition.

#### **5.1.1 Sub-Question 1: What is the current socio-physical situation in the WCRBC?**

This sub-question provides the empirical basis for the analysis of the socio-physical situation using CUT in the following sub-question. The 'socio-physical situation' is comprised of the change in population density and student population since rail was taken away, the location of low-income households, and the SEPTA bus routes and stops that currently serve the area. Therefore, the socio-physical situation provides an overall impression of the level of demand that could be expected for bringing rail service back to the WCRBC. CUT can then be applied to the case to define the *Problem* and the *Vision* for the study area.

While DVRPC's ridership forecast motivates its analysis based on the fact that the "population in the area of the line has grown in the 25 years since service has been cut", it does not specify the extent of the population growth or place it in the context of the distribution of low-income households and their access to PT service (DVRPC, 2011, p. 3). Table 2 below shows that between 1990 and 2010 the population density in the study area has increased by 26%, which is quite sizeable. Municipalities in bold are the areas through which the actual rail tracks run. Several townships have experienced sharp increases in population due to increasing urban sprawl away from Philadelphia. Thornbury (Chester County) and Concord Townships have more than doubled their population, while East

Bradford, Thornbury (Delaware County) and Birmingham Townships have all increased by at least 50%.

**Table 2: Population Density Changes in the WCRBC in the Past 20 Years**

Township/Borough	Population			Density (people per sq. mi.)		
	1990	2010	Number Change	1990	2010	Percent Change
<i>Chester County</i>						
<b>West Chester Borough</b>	<b>18,041</b>	<b>18,461</b>	<b>420</b>	<b>9,805</b>	<b>10,033</b>	<b>2.3%</b>
<b>West Goshen Township</b>	<b>18,082</b>	<b>21,866</b>	<b>3,784</b>	<b>1,509</b>	<b>1,825</b>	<b>20.9%</b>
<b>Westtown Township</b>	<b>9,937</b>	<b>10,827</b>	<b>890</b>	<b>1,150</b>	<b>1,253</b>	<b>9.0%</b>
<b>Thornbury Township</b>	<b>1,131</b>	<b>3,017</b>	<b>1,886</b>	<b>291</b>	<b>778</b>	<b>166.8%</b>
West Whiteland Township	12,403	18,274	5,871	960	1,414	47.3%
East Bradford Township	6,440	9,942	3,502	426	657	54.4%
East Goshen Township	15,138	18,026	2,888	1,491	1,776	19.1%
Birmingham Township	2,636	4,208	1,572	404	645	59.6%
<i>Delaware County</i>						
<b>Thornbury Township</b>	<b>5,056</b>	<b>8,028</b>	<b>2,972</b>	<b>547</b>	<b>869</b>	<b>58.8%</b>
<b>Chester Heights Borough</b>	<b>2,273</b>	<b>2,531</b>	<b>258</b>	<b>1,024</b>	<b>1,140</b>	<b>11.4%</b>
<b>Middletown Township</b>	<b>14,130</b>	<b>15,807</b>	<b>1,677</b>	<b>1,051</b>	<b>1,176</b>	<b>11.9%</b>
<b>Aston Township</b>	<b>15,080</b>	<b>16,592</b>	<b>1,512</b>	<b>2,578</b>	<b>2,836</b>	<b>10.0%</b>
Chadds Ford Township	3,118	3,640	522	358	418	16.7%
Concord Township	6,933	17,231	10,298	508	1,262	148.5%
Edgmont Township	2,735	3,987	1,252	281	410	45.8%
Rose Valley Borough	982	913	-69	1,327	1,234	-7.0%
Media Borough	5,957	5,327	-630	7,838	7,009	-10.6%
Upper Providence Township	9,727	10,142	415	1,683	1,755	4.3%
<b>Twps/Boros with rail intersecting</b>	<b>83,730</b>	<b>97,129</b>	<b>13,399</b>	<b>1,467</b>	<b>1,701</b>	<b>16.0%</b>
<b>Overall</b>	<b>149,799</b>	<b>188,819</b>	<b>39,020</b>	<b>1,061</b>	<b>1,337</b>	<b>26.0%</b>

Source: created by the author using historical population data and land area data taken from DVRPC’s Municipal Data Navigator (DVRPC, n.d.).

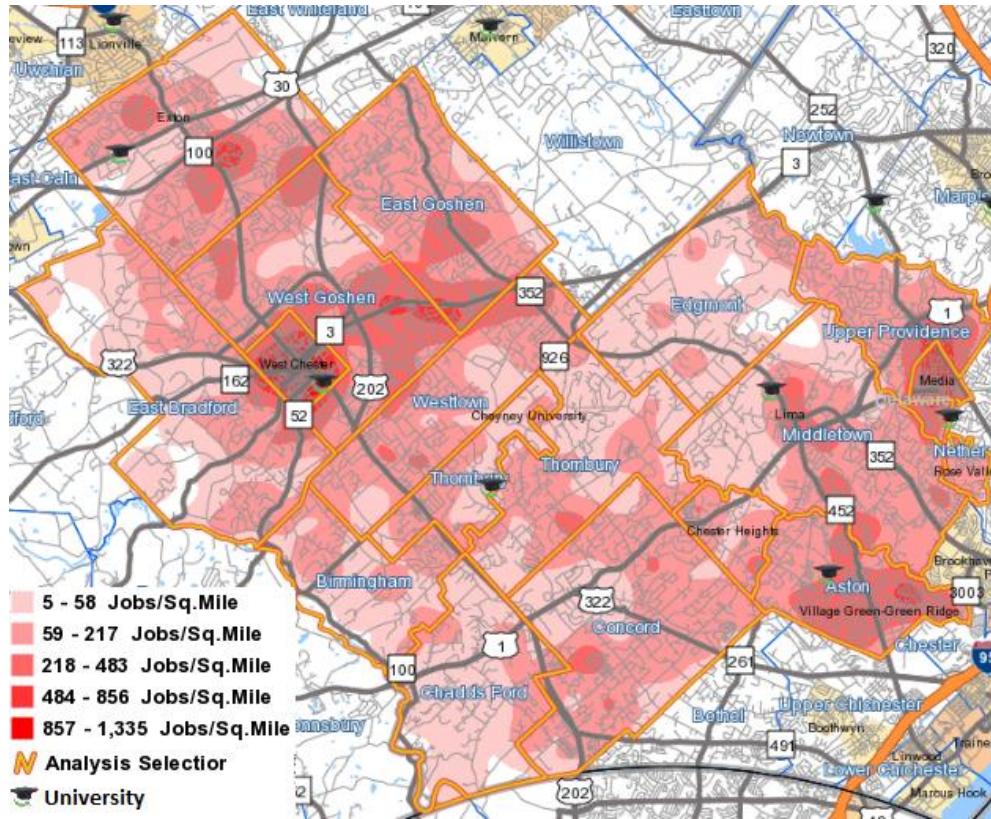
The WCRBC also has a prominent university student population. This demographic is of particular importance because students are often economically disadvantaged; many need to travel to part time jobs to finance their education, or to get to internship opportunities. The U.S. census often does not include students’ temporary residence while attending college, so it is necessary to point out the changes in the student population from the 1980s compared to today. WCU’s enrollment has increased by nearly 4,000 students, or 38% compared to its 1986 enrollment: from 10,496 students in 1986 to 15,415 students in 2012 (WCU, 2010, 2012). Historical enrollment data is not available for CU prior to 1997. However, According to Sharon Thorn, Director of Student Activities at CU, “Even in the 70s and 80s, Cheyney was a student population of 3,000 or more” (S. Thorn, personal communication, March 15, 2013). As of spring 2013, CU had a student enrollment of 1,262 (S. Adanu, personal communication, April 25, 2013). This is a decrease of about 1,800 students, or 60%. Overall,

however, the university student population in the WCRBC has increased by approximately 3,100 since rail was taken away.

Thorn speculated that the discontinuation of the WCRB could have played a role in their decreased enrollment due to students' increasingly limited transportation options. According to Sesime Adanu, Director of Institutional Effectiveness and Research at CU, the "majority of students enrolled at the University are first generation college students from low-income families" (S. Adanu, personal communication, April 25, 2013). Furthermore, according to Thorn, "somewhere around 25-30% of the students commute", and "at least 40% of the students are originally from the Philadelphia area. [...] The weekend service that we don't have is creating [a] problem because the students can't work and come back. [...] Certainly more service would allow more of them to [...] enroll in the school" (S. Thorn, personal communication, March 15, 2013). This demonstrates CU students' great need for improved access to PT.

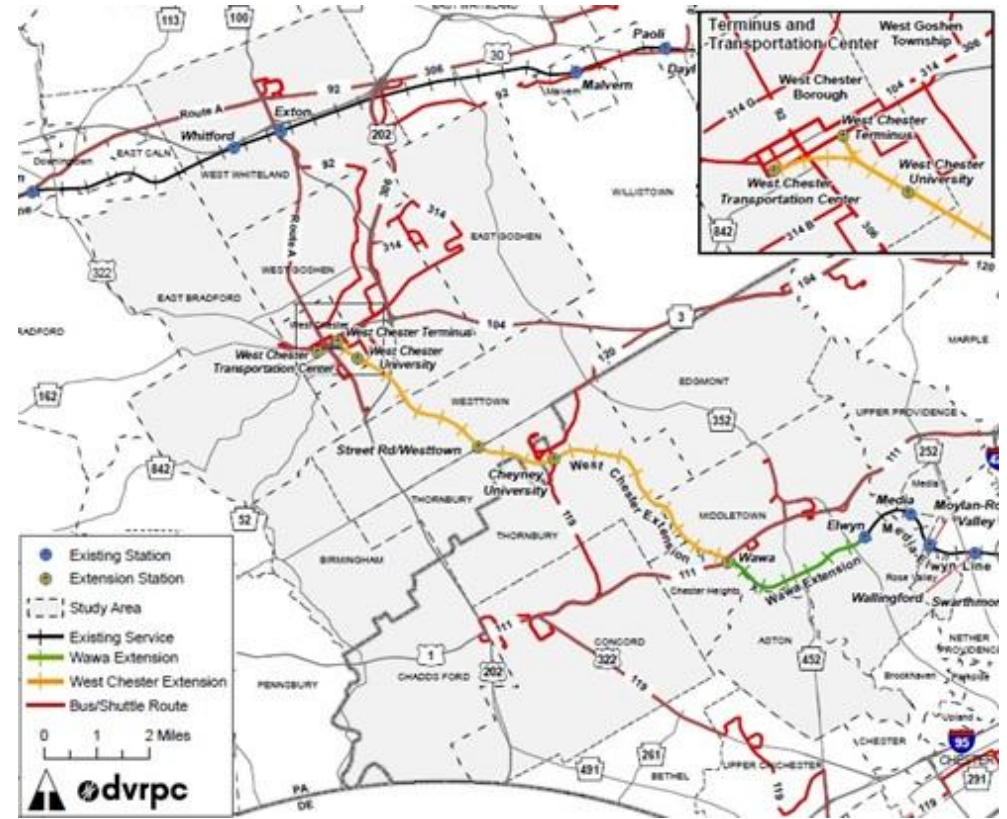
Figure 8 shows the distribution of low-income workers as well as the location of the universities, while Figure 9 shows the extent of the current bus service. Based on the data from this analysis, of the 149,799 residents in the WCRBC, 18,519 earn US\$1,250 per month or less (U.S. Census Bureau, 2013, p. 1). This amount is close to the poverty thresholds as defined by the U.S. Census Bureau (U.S. Census Bureau, 2012). This means that approximately 12.4% of the population in the WCRBC is near or below the poverty line, which is just marginally below the national poverty rate of 15% (U.S. Census Bureau, 2011b, p. 13). Dense pockets of low-income residents are present in WC, West Goshen and East Goshen Townships which are only partly served by walkable access to bus routes. These three municipalities are the most densely populated in the WCRB extension area and are also in the most need of more comprehensive PT for their low-income residents and students. Other low-income areas in Westtown and Concord Townships are not served at all by bus. This diminishes the ability of low-income residents to travel within the WCRBC or to Philadelphia.

Figure 8: Distribution of Workers Earning US\$1,250 Per Month or Less



Source: Created by the author using the U.S. Census Bureau's 'OnTheMap' site (U.S. Census Bureau, n.d.). It uses data from 2002-2010 and includes all jobs.

Figure 9: Bus Routes that Serve the West Chester Rail Branch Corridor



Source: (DVRPC, 2011, p. 9).

Today, many of the riders who would be served by the WCRB mostly either drive north to the Paoli/Thorndale line or south to the Media/Elwyn line so they can take the train (see Figure 9) (DVRPC, 2011). The two nearest stops (Elwyn on the Media/Elwyn line, and Exton on the Paoli/Thorndale line) both have large parking lots to accommodate park-and-ride customers, while bus service to either of these stations is extremely limited. For example, bus 92 technically stops at the Exton station. However, according to Jim Wylie of BLUER, “the bus stops on the way north but not on the way south, let alone it’s not even synchronized to the train schedule” (J. Wylie, personal communication, January 28, 2013). Only a very small portion of the WCRBC has bus service that connects them to the Elwyn station.

This lack of PT in the WCRBC is reflected in residents’ travel behavior. According to the U.S. Census Bureau (2010), 69.7% of residents in WC commute to work in a single occupancy vehicle, compared to 2.9% who use PT and 13.2% who walk to work. WC’s PT use is consistent with Chester County’s 2.6% overall use of PT. This data is not available for the rest of the municipalities. However, because WC is the municipal area with the highest population density in the WCRBC and is also served by the greatest number of bus routes with arguably the most convenient access to PT, these statistics are likely to be the highest rates of PT ridership in the study area. According to Casey LaLonde, West Goshen Township Manager, the biggest PT accessibility challenges are the many areas that have “intermittent sidewalks with no pedestrian access”, “SEPTA bus route stops that have no shelters [and] no access to get there”, and “no bike lanes really in our township at all” (C. LaLonde, personal communication, April 17, 2013). These are symptoms of the fragmented development found in much of the WCRBC which caters to the personal vehicle, and serves to further punctuate the inequity of the WCRBC’s PT infrastructure.

### ***5.1.2 Sub-Question 2: What is Critical Urban Theory’s response to the socio-physical situation in the WCRBC?***

Overall, it is found that this area has become a victim – and at the same time a supporter – of the capitalist-driven prioritization of highway expansion and the personal vehicle. Roads and highways dominate the landscape in the WCRBC, thus catering to the economically dominant groups, while the PT infrastructure is lacking. The only transportation expansions that are currently planned in the WCRBC other than the postponed Wawa extension are highway capacity expansions on several major roads (DVRPC, 2011). This image of the current landscape in the WCRBC supports Harvey’s (2008) claim that “neoliberalism has also created new systems of governance that integrate state and corporate interests, and through the application of money power, it has ensured that the disbursement of the surplus through the state apparatus favours corporate capital and the upper classes in shaping the urban process” (p. 38). These highway expansions will continue to shape the landscape for prioritized car use by the economically dominant groups, and will make any future PT infrastructure investments look less and less necessary or financially attractive to decision makers.

The presence of vast expanses of low income areas that are not served by walkable access to a bus stop supports the claim that the WCRBC is experiencing inequitable mobility. Based on the spatial data above, those who are being deprived of adequate access to PT in the WCRBC are the low-income households and the students. The data above does not, however, distinguish between those who are excluded and those who are part of the working class, as Marcuse (2009) does in his categorization of the seven groups of people whose rights are our concern. Therefore, only an overall



assessment can be made about the general level of equitable mobility deprivation in the WCRBC case.

Though the low-income residents are located in distinct clusters, the extensive highway system that surrounds them and the lack of bus service demonstrates that when it comes to transportation infrastructure investment decisions, they have not gained the “majority and hegemonic voice” (Purcell, 2002, p. 103). For example, in the DVRPC ridership forecast, much more consideration is given to park-and-ride customers compared to those who would exclusively use SEPTA as their means of transportation. Baeten (2000) speaks of a “disempowering spiral of transport exclusion”, in which “the already disempowered segments of society are further disadvantaged by the lack of control they can exert over transport supply (irrespective of transport modes), so that they are deprived of basic levels of transport opportunities” (p. 83). He contrasts this with the “mobile wealthy”, who “see their control over moving across space -- and therefore, by implication, their control over socio-economic conditions in society -- confirmed and reinforced by the current mobility system” (p.83). The decreasing PT service in the increasingly highway-dominated WCRBC landscape serves as visual evidence of this disempowering spiral of transport exclusion.

The DVRPC ridership forecast study, being the current agenda-setter for the WCRB extension, contributes to this disempowering spiral of transport exclusion. First, it overlooks the needs of both transportation-deprived groups (low-income people and students) by assuming that all stations will be served almost exclusively by a catchment area of park-and-ride users, thus marginalizing walk-up and bus users. Second, while trips made by WCU and CU students are included in DVRPC’s ridership forecast, they note that “what is not included in the model, however, is the special trip-making characteristics of these individuals in terms of where they travel (trip distribution) or by which mode they travel (mode choice)”, and that this “will tend to modestly underestimate the transit mode share from/to these locations and hence the total number of trips on the extension” (DVRPC, 2011, p. 24). Furthermore, DVRPC (2011) points out that the WCU and CU stations would attract a combined ridership of about 50% for the extension. This is a significant limitation of the ridership forecast when it comes to estimating the equity benefits for one of the two economically disadvantaged groups: students.

Based on the above discussion, the first aim of CUT is “to decipher the contradictions, crisis tendencies, and lines of potential or actual conflict within contemporary cities” (Brenner, Marcuse, & Mayer, 2009, p. 179). Therefore, the *Problem* definition portion of the CUT-TT hybrid framework can be summarized as follows:

***Problem:***

**The WCRBC is becoming an increasingly urban space that heavily prioritizes the car use of the dominant groups while marginalizing the PT use of the economically and socially disadvantaged groups, despite the presence of dense pockets of low-income households. Inequitable mobility is perpetuated in the area by:**

- 1. Necessitating the use of a car in order to reach the nearest rail stations on its north and south ends.**

## **2. Lacking walkable access to a comprehensive bus system which could improve its accessibility to rail.**

The second aim of CUT is “to demarcate and politicize strategically essential possibilities for more progressive, socially just, emancipatory, and sustainable formations of urban life” (Brenner et al., 2009, p. 179). Therefore, CUT’s response to the socio-physical situation in the WCRBC can take the discussion one step further and propose the *Vision* which will frame the transition that will be analyzed in the following section. In his vision of a sustainable city, Kenworthy (2006) notes two key processes that echo CUT’s call for a democratic community-oriented progressive vision for urban spaces: “vision-oriented, reformist thinking” (i.e. through ‘debate and decide’ instead of ‘predict and provide’), and a “strong, community-oriented sustainability framework for decision-making” (p. 67). The vision below can be seen as a goal for the decision makers in the WCRBC to be constantly working towards. The *Vision* for this transition can be summarized as follows:

### ***Vision:***

**All relevant stakeholders and decision makers in the WCRBC will work together to re-establish rail service, and will prioritize further infrastructure improvements that support equitable mobility, i.e. through the creation of a comprehensive bus network that connects to transit hubs at the various stations along the WCRB. This will be accomplished through the constant evaluation and re-evaluation of the transportation challenges faced by the economically and socially disadvantaged groups in the area.**

In order for the *Vision* to become a reality for the WCRBC, there needs to be a political response from the local decision makers that directly addresses the root causes and drivers of the area’s inequitable transportation system. According to Marcuse (2009), “the battle thus becomes ever more a battle of ideology, understanding, grounded in material oppression but not limited to it, combining the demands of the oppressed with the aspirations of the alienated” (p. 192). In the following section for research question 2, the actions and decisions of the actors in the dominant action subsystem will be identified and analyzed for their effectiveness in answering the call for equitable mobility by re-establishing the WCRB. The opportunities and challenges for the niche level actors to mobilize themselves and take back some level of control over the WCRB extension will then be discussed in this context.

### ***5.1.3 Research Question 1: How desirable is it from an equitable mobility perspective to bring rail service back to the WCRBC?***

Based on the above analysis of the equity of the transportation system in the WCRBC, the main research question 1 can be answered first in simple terms: it is highly desirable for the WCRBC to have rail service once again. This conclusion has been arrived at through what Lefebvre refers to as transduction. The above analysis “elaborates and constructs a theoretical object, a possible object from information related to reality and a problematic posed by this reality. Transduction assumes an incessant feedback between the conceptual framework used and empirical observations. Its theory (methodology), gives shape to certain spontaneous mental operations of the planner, the architect, the sociologist, the politician and the philosopher” (Lefebvre, 1996, p.151). Therefore, it is through transduction that the *Problem* and the *Vision* for the transition have been defined.



The problematic posed by the reality in the WCRBC is that it is a region in the Greater Philadelphia area that has an inequitable transportation system. Highways and roads dominate the landscape, while low-income residents do not have adequate access to PT. According to Jim Wylie, Secretary of West Chester Borough Leaders United for Emissions Reduction (BLUER), and Chair of the BLUER Transportation Committee, “Chester County is targeted as an area where [SEPTA feels] they can reduce service to reduce costs” (J. Wylie, personal communication, January 28, 2013). This local insight supports Fierl & Marcuse’s (2009) claim that “power relations (again, largely but not exclusively based on economic relations) determine the extent of public space, of recreational opportunities, of access and mobility, of environmental quality, of the differential management, maintenance and indeed availability of infrastructure” (p.266). Though the regional transportation authority (SEPTA) evidently does not see the WCRBC as an economically desirable area to invest in PT services, it has been demonstrated that it is desirable from an equitable mobility perspective.

The theoretical or possible object provides the *Vision* for what specifically would be desirable about bringing rail back to the WCRBC. It is found that the need for rail service brings with it the need for increased bus service to ensure that residents across the entire 18-municipality area have equitable access to the five proposed rail stations. The *Vision* that is proposed may be regarded by some as a utopian vision which does not consider funding limitations. However, Lefebvre (1996) speaks of an “experimental utopia”, where “utopia is to be considered experimentally by studying its implications and consequences on the ground” (p.151). This is where TT comes into play, analyzing the resources and possibilities available within actors to realize the *Vision*. Thus, “the first thing to do is to defeat currently dominant strategies and ideologies. [...] Urban strategy resting on the science of the city needs a social support and political forces to be effective” (Lefebvre, 1996, p. 154). This call to action will be explored in research question 2 below.

## **5.2 Research Question 2**

For finding out whether a transition back to rail service in the WCRBC could be possible, it is necessary to analyze the action subsystem that has already been directly involved. This currently dominant subsystem is comprised of regime-level actors and the niche-level actors who have exerted power on the regime. Holtz et al. (2008) state that “the description of an action subsystem contains specific characteristics of a typical actor like values, goals and beliefs. Further, it contains a description of the actor’s context. Finally typical actions are included” (p. 633). Table 3 differentiates between the actors who are part of the existing action subsystem (listed in bold) and the niche-actors who could become part of a future action subsystem, and specifies their roles.

**Table 3: Current and Potential Future Actors in the Transition Back to Rail in the WCRBC**

**(Actors which have already taken action are listed in bold)**

<b>Actor</b>	<b>Societal Function</b>
<b>Southeastern Pennsylvania Transportation Authority (SEPTA)</b>	<b>Public transportation provider for the Philadelphia area (passenger rail, bus, trolley, and paratransit).</b>
<b>Delaware Valley Regional Planning Commission (DVRPC)</b>	<b>Regional planning commission that works together with the nine counties in the Greater Philadelphia area regarding transportation, land use, environmental protection and economic development. It is tasked, in part, with conducting feasibility studies for SEPTA's PT projects.</b>
<b>Delaware County Transit Management Association (DCTMA)</b>	<b>Non-profit corporation that is an advocate for business and community transportation needs and fosters cooperation between the public and private sectors in Delaware County.</b>
<b>Transit Management Association of Chester County (TMACC)</b>	<b>Non-profit corporation that is an advocate for business and community transportation needs and fosters cooperation between the public and private sectors in Chester County.</b>
<b>Chester County Planning Commission (CCPC)</b>	<b>Advisory board appointed by the County Commissioners which does growth and preservation planning for Chester County.</b>
<b>West Chester Borough Council</b>	<b>Governing body of the Borough of West Chester.</b>
<b>West Chester Railroad Heritage Association (WCRHA)</b>	<b>Run a seasonal tourist rail line on 7.7 miles of the West Chester Branch, from West Chester to Glen Mills.</b>
<b>'Save Middletown'</b>	<b>Opposition group comprised of residents who are against the proposed transit oriented development at the Wawa Station.</b>
<b>Pennsylvania Transit Expansion Coalition (PA-TEC)</b>	<b>Non-profit transit advocacy group which primarily advocates for rail projects in SEPTA's service area.</b>
<b>Westtown School (WS)</b>	<b>Private boarding school for students from kindergarten through 12th grade.</b>
West Chester University (WCU)	Public state university located in West Chester Borough and West Goshen Township.
Cheyney University (CU)	Public state university which is the oldest historically African-American university in the United States. Located in Thornbury Township (Chester County and Delaware County).
Local Municipalities: 14 Townships and 4 Boroughs*	The level of government that has the final say in whether a PT project runs through their township/borough.
<b>Delaware Valley Association of Rail Passengers (DVARP)</b>	<b>Non-profit rail transit advocacy group for the Greater Philadelphia area.</b>
<b>West Chester Borough Leaders United for Emissions Reduction (BLUER)</b>	<b>Ad-hoc committee of volunteers formed by the West Chester Borough Council in 2006 which comes up with strategies to reduce the Borough of West Chester's greenhouse gas emissions, including those from transportation.</b>

Source: Created by the author.

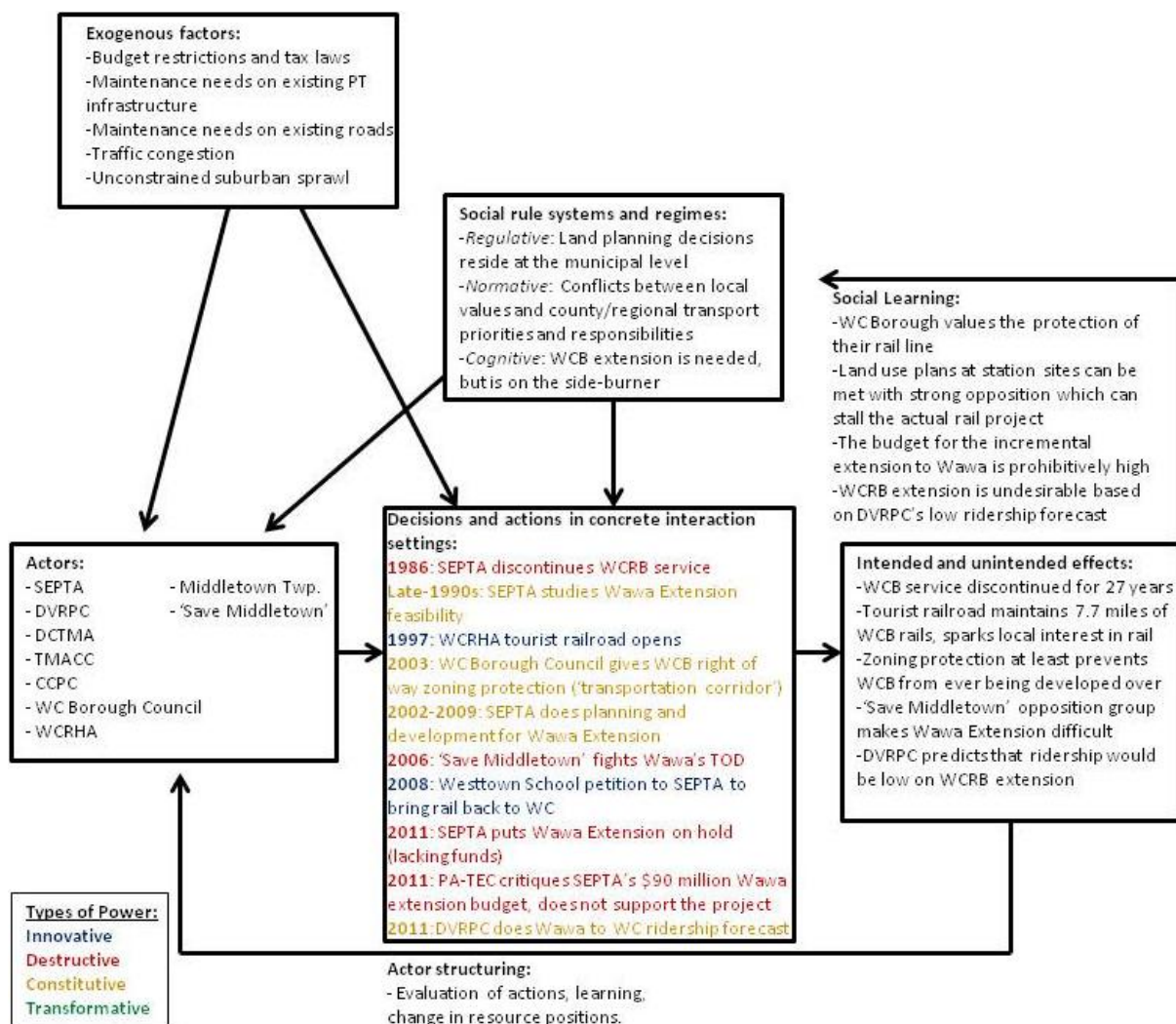
\*These townships and boroughs include: West Chester Borough, West Goshen Township, Westtown Township, Thornbury Township (Chester County), West Whiteland Township, East Bradford Township, East Goshen Township, Birmingham Township, Thornbury Township (Delaware County), Chester Heights Borough, Middletown Township, Aston Township, Chadds Ford Township, Concord Township, Edgmont Township, Rose Valley Borough, Media Borough, and Upper Providence Township. Of these townships and boroughs, only Middletown Township and West Chester Borough have been directly involved in the WCRBC transition back to rail.

Sub-question 1 analyzes the rules and types of power that have guided actors in the existing subsystem to take action directly related to the WCRB, and identifies the current phase of the transition. Sub-question 2 identifies the yet-uninvolved niche-level actors' untapped resources and analyzes their potential for joining together to fulfill the proposed *Vision*. The picture painted by this analysis of the action subsystem can be referred to as the socio-political 'climate', which will be judged whether it is favorable for a transition back to rail service in the WCRBC.

**5.2.1 What actions have already been taken by regime and niche-level actors in the ST-transition to bring rail back to the WCRBC, and at what stage are they in the transition?**

Figure 10 below illustrates the transition game that has been played by the existing action subsystem. The actions that have been taken are color-coded as to their underlying types of power.

**Figure 10: Actor-Rule System Dynamics in the WCRBC**



Source: Adapted from (Geels, 2004, p. 908).

On the north end of the line, niche- and regime-actors have mostly worked to preserve the WCRB to ensure that it will persist in good repair. WC "revised the zoning and created a new designation called a transportation corridor" which would prevent anyone from developing over it, while the WCRHA has acted as a steward of a 7.7-mile section of the WCRB, running their seasonal tourist rail

line from WC to Glen Mills (J. Jones, personal communication, February 15, 2013; J. Lake, personal communication, February 1, 2013).

The most substantial move for the improvement of equitable mobility in the WCRBC since 1986 is the planning and development work on an incremental extension of the south end of the WCRB up to the former Wawa rail station, about 3.2 miles beyond the Media/Elwyn line's current terminus. This project was spearheaded by regime-actors (SEPTA and DVRPC, in cooperation with Delaware County and Middletown Township). The plans for this extension in a sparsely populated part of Delaware County include a new station, a 600-space parking garage, and a 'town center' with transit oriented development (TOD), for which several developers were already onboard (Morris & Belz, 2007). The costly station would mostly stand to serve park-and-ride customers coming from the rest of the WCRBC and therefore would not work to support the broader vision of an equitable transportation system in the WCRBC as a whole. The extension project was met with controversy over land planning decisions and its increasing budget which incited two groups of niche-actors to act individually to exert destructive power on the regime actors responsible for the project.

The most vocal opposition to this extension was the 'Save Middletown' group, made up of several residents who live near the Wawa station who do not want their town turned into a densely populated 'city' due to the proposed TOD. 'Save Middletown' used its destructive power to launch a campaign which involved hiring a land-planning attorney to fight against the project. Cecile Charlton, Executive Director of DCTMA said that 'Save Middletown' slowed down the Wawa extension project and has been a major contributor to eventually stalling it (C. Charlton, personal communication, March 18, 2013).

PA-TEC is the other niche-actor which has spoken out against the project's ever-increasing budget. PA-TEC representative Jon Frey said of the Wawa extension that SEPTA has "designed a station that is so capital-intensive they can't get the money to do it" (J. Frey, personal communication, March 14, 2013). PA-TEC released a policy statement aimed at SEPTA in August 2011 which critiqued the \$30 million per mile budget and suggested that the project could downscale the 600 spot parking garage and the station itself. Ultimately, due to a lack of funds, the Wawa extension project has been put on hold, which consequently stopped the entire transition towards the WCRB extension.

Because only the pre-planning and development work has been done for an incremental extension of the WCRB that is now on hold, it can be said that the ST-transition is stalled in the *pre-development* phase. Suggestions for strategies that could help the ST-transition move out of *pre-development* and into the *take-off* phase will be discussed in sub-question 2. However, it is first necessary to deconstruct the rules guiding the transition game played so far. Once the rules of the game are understood, new strategic moves can be proposed that could change the rules of the game and propel the transition into the next phase. These rules fall under three categories: 1. *regulative*, 2. *normative*, and 3. *cognitive*.

1. The *regulative* rules at play relate back to the power structure of the Commonwealth government in Pennsylvania. At the landscape level, this tension is exacerbated by the tight budgets under which the various actors are operating. In addition to the economic recession, according to Carolyn Comitta, Mayor of WC, "the state tax laws are restrictive and really punitive in a lot of ways", and "are a very important player in whether or not the Borough would be able to raise its share towards funding the renewed railroad" (C. Comitta, personal communication, March 21, 2013). Tax laws do not allow

municipalities to leverage any new taxes on themselves, which limits the amount of local funds available for PT projects. Additionally, federal and state level tax laws affect SEPTA's operating budget. "Currently, 2.86 cents of the 18.4 cents-per-gallon federal gas tax goes to buses, subways, and commuter rail lines", while the rest goes to highway projects (Nussbaum, 2012). According to a recent study conducted by the Economy League of Greater Philadelphia and Econsult Solutions, Inc. (2013), without an increase in capital funding, "over the long term, SEPTA will be forced to gradually truncate its system and eliminate services to make ends meet" (p. 6).

Luckily, some changes in transportation funding legislation may be on their way. In April 2011, Pennsylvania Governor Tom Corbett created the Transportation Funding Advisory Commission (TFAC) by Executive Order. In the opening statement of the commission's final report, Barry J. Schoch, Chair of TFAC, states that "the 40-member commission, made up of experts in transportation, finance, and local government, has spent months researching, studying, and debating new and innovative ways to meet our transportation needs" (Corbett, 2011, p. 1). Schoch then briefly mentions PT, but states that "there are many recommendations in the report for us to work smarter in stretching transportation dollars while increasing convenience to motorists" (Corbett, 2011, p. 1). This sounds as if exogenous factors of road traffic congestion and maintenance needs may still trump PT concerns. However, whatever potential funding package that could benefit SEPTA may be a window of opportunity for the WCRB extension to take off. Byron Comati Director of Strategic Planning and Analysis in the department of Finance and Planning at SEPTA said of the Commonwealth's efforts, "once we receive some package that makes some sense, Elwyn to Wawa will get built" (B. Comati, personal communication, March 18, 2013). Although there are no guarantees for when such a funding package may reach SEPTA's headquarters, this could be a future opportunity for niche-actors to present their case directing funds to the WCRB extension.

At the regime level, Tim Phelps, Executive Director of TMACC, summarizes the regulative rules: "It's a blessing and a curse of a commonwealth government: land planning decisions reside at the municipal level, then the county tries to coordinate those activities, and then DVRPC tries to coordinate the region, and the feds fund DVRPC, and then they have to allocate the money back out" (T. Phelps, personal communication, March 18, 2013). Phelps' statement exposes the disconnect between who allocates the transportation funding (DVRPC) and who gives the go-ahead for transportation infrastructure investments (municipalities). SEPTA's Byron Comati echoed Phelps' concerns, stating, "you want to work in partnership and harmony, but you all have to do your own self-preservation test and finding the balance point is not easy for [all stakeholders]. So it becomes a four-, five-, six-stakeholder push-pull situation, always." This dynamic characterizes the regulative rules of the existing action subsystem.

2. Conflicts between regime-actors can be further explained through *normative* rules. It is the stark contrast between the municipalities' individual transportation priorities and the priorities of county and regional actors that has slowed the transition. Greg Krykewycz, Manager of the Office of Transit, Bicycle, and Pedestrian Planning at DVRPC states "We have a vision for how we think the region should grow to be a more sustainable place and more energy efficient and have more vibrant centers of place and all that good stuff, but the way we work toward that is really more carrots than sticks. [...]There's only so much we can do in terms of transportation priority setting. Where the rubber meets the road in terms of growth outcomes is at the municipal level" (G. Krykewycz, personal communication, March 15, 2013).

The challenge for regional PT investments has historically been the difficulty of building consensus amongst the surrounding townships and boroughs. Both Jim Wylie of BLUER and Carolyn Comitta, Mayor of WC, have commented on this challenge from the perspective of WC, which is the municipality that seems to want the WCRB extension the most:

“Anything West Chester does, it does just with the blinders on of that little space and then the townships around...it’s hard to get them to cooperate on much. If you look at voting history, you’ll see the borough is a hotbed of Democrats and all of the surrounding townships are Republican” (J. Wylie, personal communication, January 28, 2013).

“My understanding is that there is opposition to this rail going through. [...] So in terms of trying to get consensus and inter-municipal letters signed by all of the affected townships and municipalities, there were a couple of sticking points where we were not going to get support. [...] There was a push six years ago, and when we got to the point of writing letters to the DVRPC [...] because there was not consensus with the townships through which the line runs, that sort of pushed us down the list in terms of those projects that were likely to be funded anytime soon” (C. Comitta, personal communication, March 21, 2013).

An analysis of the results of a survey sent to all fourteen townships and four boroughs in the WCRBC shows that although 68.75% of respondents say they would support a project to re-extend the Media/Elwyn passenger rail line back to WC, 25% expressed reservations unless certain unspecified details of the project would be made favorable for their municipality (see Table 4). Additionally, while 75% of municipalities believe that they would benefit from improved PT service, 100% identified roads and highways as their highest priority for transportation infrastructure investments (see Tables 4 and 5). This presents a barrier to consensus amongst the townships for the WCRB extension.

**Table 4: WCRBC Municipality Survey Results – Municipality Support for the WCRB Extension**

<b>Question 6: Would your township/borough be supportive of a project to re-extend the Media/Elwyn passenger rail line (former R3) to its former terminus in West Chester?</b>			
<b>Answer Choices</b>	<b>Percent Responses</b>	<b>Total Responses</b>	<b>Respondents</b>
Yes	68.75%	11	Media Boro., East Goshen Twp., Edgmont Twp., Middletown Twp., Thornbury Twp. (Delaware County), Upper Providence Twp., West Chester Boro., West Goshen Twp., East Bradford Twp., Chadds Ford Twp., Rose Valley Boro.
No	6.25%	1	Aston Twp.
Other (please specify)	25%	4	
<i>Thornbury Twp. (Chester County): "Depends on the details of the project"</i>			
<i>Westtown Twp.: "define supportive. Our Township would support the effort. However, the benefits are somewhat limited to our citizens that the support might also be limited."</i>			
<i>West Whiteland Twp.: "If not negative to service improvements on Paoli Line"</i>			
<i>Birmingham Twp.: "Defer to the Board of Supervisors. My guess is they wouldn't oppose it but probably wouldn't support it."</i>			

Source: Created by the author.

**Table 5: WCRBC Municipality Survey Results – Perceived Benefit from Improved PT Service**

<b>Question 2: Overall, do you think your township/borough would benefit from improved public transportation service?</b>			
<b>Answer Choices</b>	<b>Percent Responses</b>	<b>Total Responses</b>	<b>Respondents</b>
Yes	75%	12	Media Boro., East Goshen Twp., Edgmont Twp., Thornbury Twp. (Delaware County), Thornbury Twp. (Chester County), Westtown Twp., Upper Providence Twp., West Chester Boro., West Goshen Twp., East Bradford Twp., West Whiteland Twp., Chadds Ford Twp., Rose Valley Boro.
No	12.50%	2	Aston Twp., Birmingham Twp.
Other (please specify)	12.50%	2	
<i>Middletown Twp.: "Most people are used to cars so it might take some education."</i>			
<i>Thornbury Township (Chester County): "Yes, if service levels and costs were favorable"</i>			

Source: Created by the author.

**Table 6: WCRBC Municipality Survey Results – Highest Priority for Transportation Infrastructure Investments**

Question 1: Which area holds the highest priority for your township/borough when it comes to transportation infrastructure investments?			
Answer Choices	Percent Responses	Total Responses	Respondents
Roads/Highway	100%	16	Media Boro., Aston Twp., East Goshen Twp., Edgmont Twp., Middletown Twp., Thornbury Twp. (Delaware County), Thornbury Twp. (Chester County), Westtown Twp., Upper Providence Twp., West Chester Boro., West Goshen Twp., East Bradford Twp., West Whiteland Twp., Birmingham Twp., Chadds Ford Twp., Rose Valley Boro.
Public Transportation	0%	0	
Biking/Walking Trails	0%	0	

Source: Created by the author.

Another challenge is that some municipalities frame their PT needs through a normative preference of private cars as socio-economic status symbols. Two of the townships expressed that PT is not for them because of their ‘more mobile’ – and presumably wealthier – residents. Robert Layman, Township Manager of Westtown Township, expressed that “our population tends to be a bit more mobile. So we’re not like West Chester, where you have a core of people who are transportationally challenged” (R. Layman, personal communication, April 18, 2013). Westtown Township’s view on the WCRB extension was: “Our Township would support the effort. However, the benefits are somewhat limited to our citizens, [and therefore] the support might also be limited”

Birmingham Township’s respondent stated “this is the highest median income township in the County. Not much use of public transportation”, and that “residents would probably complain about the noise; congestion” if the WCRB were extended. The same respondent said that Birmingham “wouldn’t oppose it but probably wouldn’t support it”, and that “in the 25 years I have served as Sect./Treas. public transportation has never once been discussed”. This view on transportation speaks directly to what Baeten (2000) calls ‘the tragedy of the highway’: “The tragedy of the congested highway is that ‘others’ (‘additional road users’ in neo-classical jargon), whose activities are considered to be less necessary than vital economic activities, can make unrestrained use of this scarce public good and therefore unashamedly hinder those who contribute more to society” (p. 78). Furthermore, it becomes clear through these statements that “this is a world in which the neoliberal ethic of intense possessive individualism, and its cognate of political withdrawal from collective forms of action, becomes the template for human socialization. The defense of property values becomes of [...] paramount political interest” (Harvey, 2008, p. 32). These are obstructive views of PT which could turn several townships into physical barriers that prevent the WCRB from being extended all the way to its former terminus in WC.

However, there is hope for the municipalities to present a united front supporting the rail line: 56.25% of municipalities believe that the WCRB extension would benefit all of the fourteen townships and four boroughs in the study area, citing reduced road traffic volumes as the main benefit (see Table 7). Therefore, the key challenge for the revival of the ST-transition will be for the niche-actors to recruit the support of the local municipalities by convincing them that the rail line would help them to reduce road traffic volumes. These municipalities will be key actors in pressuring



other regime-actors such as Chester County, Delaware County, DVRPC and SEPTA when it comes to making the project a priority. However, so far, according to Westtown Township Manager Robert Layman, “the discussions have been limited” related to the WCRB extension, and “the specifics were never really gotten into in that kind of detail” (R. Layman, personal communication, April 18, 2013).

**Table 7: WCRBC Municipality Survey Results – Geographic Areas with the Greatest Perceived Benefit from the Proposed WCRB Extension**

Question 8: Which of the below geographic areas do you think would benefit the most overall from this hypothetical rail re-extension from Elwyn to West Chester?			
Answer Choices	Percent Responses	Total Responses	Respondents
All townships and boroughs (as a whole) along former rail line	56.25%	9	Media Boro., Middletown Twp., Thornbury Twp. (Chester County), Westtown Twp., West Chester Boro., West Goshen Twp., East Bradford Twp., Chadds Ford Twp., Rose Valley Boro.
Your township/borough in particular	0%	0	
Chester County	12.50%	2	Aston Twp., Upper Providence Twp.
Delaware County	12.50%	2	East Goshen Twp., West Whiteland Twp.
Philadelphia area in general	0%	0	
Other (please specify)	18.75%	3	
<i>Edgmont Twp.: “All o f the above- no body benefits from inactive rail lines that have not been converted to a trail.”</i>			
<i>Thornbury Twp. (Delaware County): “some of the areas not currently served in Delaware county and the areas in Chester county that would be served.”</i>			
<i>Birmingham Twp.: “Can only answer for Birmingham.”</i>			

Source: Created by the author.

3. The *cognitive* rules of the transition game are based on “the nature of reality and the frames through which meaning or sense is made” (Geels, 2004, p. 904). These rules were the most directly altered throughout the game by the various types of power that each actor exerted. For the incremental extension to Wawa, what started out as a top priority rail re-extension project that made sense for the region’s transportation needs eventually came up against changes at the landscape level (lack of funding) and niche level (‘Save Middletown’ opposition group) which caused SEPTA to shelve the project. The failure of realizing the rail extension to a single stop has the potential to make any further extension projects on the line look undesirable unless lessons have been learned and the project will be downscaled.

Cognitive rules in the existing action subsystem are also substantially influenced by the DVRPC ridership forecast. This is the most recent move made in the transition, and as was mentioned in research question 1, this study is seen by most actors as the single most important document that informs their opinion on the feasibility of the extension. In the same year that SEPTA announced that the Wawa extension project was put on hold, DVRPC released their ridership forecast for the Wawa to WC extension, which showed a maximum ridership forecast of “1,910 additional daily rides on the line between West Chester, Elwyn, and Philadelphia in 2035” (DVRPC, 2011, p. 1). According to SEPTA’s Byron Comati, this number was not large enough for them to prioritize the project. Comati ranked all proposed rail extension projects, stating that “Elwyn to Wawa is first, there’s no question”, then an extension to King of Prussia which would serve a large shopping mall, and tied for third place

are the WCRB and two other comparable rail line extensions (B. Comati, personal communication, March 18, 2013). However, before any rail line extension projects can be considered, many urgently needed maintenance projects are the first priority and may delay even the top priority Wawa extension for several years to come. As for the full extension of the WCRB, according to DVRPC's Greg Krykewycz, "the West Chester project hasn't had much public outreach lately, mostly because it's been on the back-burner, or on the side-burner, I should say, until it becomes more real" (G. Krykewycz, personal communication, March 15, 2013).

Through the above analysis, it becomes clear that the ST-transition is completely on hold until the regime's priorities are changed in favor of the WCRB extension and additional funding becomes available to make it happen. Avelino & Rotmans (2009) point out that "when the need for new resources is high, while the availability is low, space is offered to more 'radical' forms of innovative and transformative power (p. 560). This opens up a window of opportunity for new niche-actors to become part of the ST-transition game. However, as Harvey (2008) points out, "raising the proportion of the surplus held by the state will only have a positive impact if the state itself is brought back under democratic control. Increasingly, we see the right to the city falling into the hands of private or quasi-private interests" (p. 38). Therefore, until funding does become available, potential future niche-actors in the WCRBC who have it as their goal to work towards the proposed *Vision* need to have a strategy in place that pressures the regime to use the funds wisely and in ways that promote the overall equitable mobility of the WCRBC. Several lessons can be learned from the analysis above that would be valuable for an emergent niche-network to keep in mind when devising strategies to enact their innovative and transformative power on the regime:

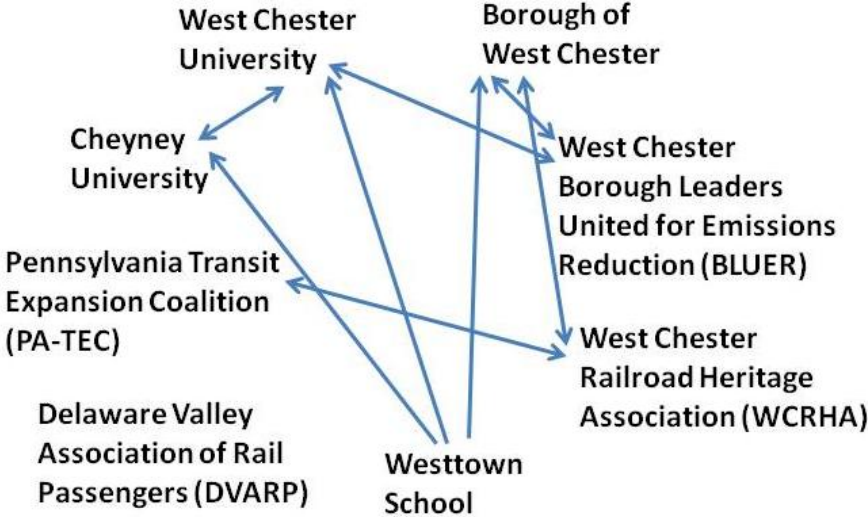
- Two separate niche-actors have already criticized and publically opposed the physical and budgetary size of the Wawa station project. There is clearly a need to advocate for smaller stations instead, particularly at Wawa, so that the transition can move forward. Part of this involves advocating for smaller parking facilities at the stations in exchange for increased bus service that would adequately connect residential and commercial areas to the stations.
- Niche-actors need to recruit the support of the municipalities by convincing them that the rail line would help them to reduce road traffic volumes, namely through the proposed increased bus service.
- The anticipated state transportation funding package could be a window of opportunity for strategic action from local niche-actors to present their case for funding to be directed to the WCRB extension.
- The WCRB extension project would need active group facilitation to manage the multi-stakeholder push-pull situation that SEPTA's Byron Comati mentioned is typical.

### ***5.2.2 Who are the other potential niche-level actors, and how can they exercise their power in the ST-transition back to rail in the WCRBC?***

From the list of actors in Table 3 above, it can be seen that WCU, CU, BLUER, DVARP, and sixteen of the eighteen municipalities have yet to directly engage themselves in the ST-transition back to rail in the WCRBC. Because the municipalities ultimately hold constitutive power over land use planning decisions that directly impact PT infrastructure investments, they can be considered to be part of the regime level; they have up until this point been working to maintain the status quo of prioritized road and highway investments (see Table 6).

The remaining four groups of local actors (WCU, CU, BLUER and DVARP) have been identified through my research as important stakeholders who would directly benefit from the WCRB extension, and therefore could find it in their mutual interest to advocate for it. They also hold various forms of innovative and destructive power as individual actors. These niche-actors could come together to form a niche-network with three of the existing niche-actors who have engaged in the current action subsystem analyzed above – WS, WC, WCRHA and PA-TEC – to create a sizeable amount of transformative power that could have the potential to influence actions at the regime level. The actors’ potential power will be discussed in more detail below. Figure 11 illustrates that most of these actors already have connections to one or more other actors, but they have yet to form a niche-network for the aims of bringing passenger rail service back to the WCRBC. These linkages were identified through my interviews with representatives from the actors, and are based on their past collaboration on PT-related efforts.

**Figure 11: Existing Links Between Niche-Actors**



*Source: Created by the author.*

These are the eight most prominent actors that represent a relatively large constituency which stands to benefit from the WCRB extension. WCU, CU and WS are educational institutions that would have a station adjacent to their campuses which would serve their combined student, faculty and staff population of approximately 19,503. BLUER and its Transportation Committee work on behalf of WC to reduce its GHG emissions by promoting the use of PT, walking and biking, and can advise and influence WC in its transportation-related actions. Finally, DVARP and PA-TEC are regional advocacy groups which could lend their services to advocating for the WCRB extension. These eight niche-actors could constitute a niche-network that combines their specialized knowledge systems (BLUER, WCRHA, PA-TEC and DVARP), and the sheer number of constituents which they represent (WC, WCU, CU and WS).

Now that the potential network of niche-actors has been proposed, Avelino & Rotmans’ (2009) four conditions for the exercise of power can now be applied to explore how they can exercise their power in the ST-transition. These four conditions are: 1. access to resources, 2. strategies to mobilize them, 3. skills to apply those methods, 4. the willingness to do so (p. 556). These four conditions need to be fulfilled before the niche-network can effectively exert any of the five types of power on

the regime level (innovative, destructive, constitutive, transformative, and systemic) and thus take the ST-transition to the take-off phase.

1. The first condition for the exercise of power is *access to resources*. Avelino & Rotmans (2009) define this as “the awareness that those resources (can) exist, information on where they can be found/how they can be created, and by whom they are/will be owned” (p. 556). Table 8 provides a list of the types of resources that each of the eight niche-actors is endowed with, and how these resources can contribute to the overall efforts of the niche-network. The resources mostly fall into two categories: those that could add to public support for the transition (i.e. building ‘strength in numbers’) and those that contribute to the devising and executing of strategies for future niche-network actions directed at the regime level.

Since resources constitute an actor’s power, amongst the actors that represent the four proposed stops on the WCRB, WCU and WC have more power than CU and WS. For this reason it becomes important that all four actors join together so that they can combine their power and become greater than the sum of their parts by virtue of the fact that they are representing all of the proposed stops as a unified group.

At the same time, the actors on the bottom half of the table (BLUER, WCRHA, PA-TEC and DVARP) can contribute insights from their specialized knowledge systems related specifically to PT and rail. According to Avelino & Rotmans (2009), “by constructing and communicating knowledge, one is exercising power, not only in terms of ‘mobilizing mental resources’, but also in terms of influencing how other actors mobilize all the other type of resources (human, artifactual, natural and monetary)” (p. 559). Therefore, the specialized knowledge held by BLUER, WCRHA, PA-TEC and DVARP can play an instrumental role in further strengthening the niche-network’s voice and overall transformative power as the transition moves through the take-off phase and on to the acceleration and stabilization phases.

**Table 8: Niche-Actors' Resources and their Contribution to the Niche-Network**

<b>Actor</b>	<b>Resources</b>	<b>Contribution to Niche-Network</b>
West Chester University (WCU)	<ul style="list-style-type: none"> <li>• Human capital: 15,415 students and 1,779 faculty and staff</li> <li>• Sustainability Advisory Council (SAC)</li> <li>• E.A.R.T.H. Group student environmental club</li> <li>• Parking Committee</li> </ul>	<ul style="list-style-type: none"> <li>• Add to public support</li> <li>• Devise strategies and contribute skills</li> <li>• Devise strategies for gaining student support</li> <li>• Power to discourage parking and encourage PT use at WCU</li> </ul>
Cheyney University (CU)	<ul style="list-style-type: none"> <li>• Human capital: 1,262 students and 303 faculty and staff</li> </ul>	<ul style="list-style-type: none"> <li>• Add to public support</li> </ul>
Westtown School (WS)	<ul style="list-style-type: none"> <li>• Human capital: 642 students and 102 faculty and staff</li> <li>• Human capital: knowledge/experience from prior engagement in the transition</li> </ul>	<ul style="list-style-type: none"> <li>• Add to public support</li> <li>• Devise strategies and contribute skills</li> </ul>
Borough of West Chester (WC)	<ul style="list-style-type: none"> <li>• Artifactual resource (tracks leased from SEPTA)</li> <li>• Local decision-maker</li> <li>• Human capital: knowledge/experience from prior engagement in the transition</li> </ul>	<ul style="list-style-type: none"> <li>• Influence physical state of tracks, provide zoning protection</li> <li>• Add to local municipalities' support</li> <li>• Devise strategies and contribute skills</li> </ul>
West Chester Borough Leaders United for Emissions Reduction (BLUER)	<ul style="list-style-type: none"> <li>• Human capital: knowledge</li> <li>• Connections to regime (TMACC, CCPC) and local developers</li> </ul>	<ul style="list-style-type: none"> <li>• Devise strategies and contribute skills</li> </ul>
West Chester Railroad Heritage Association (WCRHA)	<ul style="list-style-type: none"> <li>• Artifactual resource (using tracks leased to WC by SEPTA)</li> <li>• Human capital: knowledge</li> </ul>	<ul style="list-style-type: none"> <li>• Influence physical state of tracks, build public support from their riders</li> <li>• Devise strategies and contribute skills</li> </ul>
Pennsylvania Transit Expansion Coalition (PA-TEC)	<ul style="list-style-type: none"> <li>• Human capital: knowledge and skills about Phila. area rail advocacy</li> <li>• Human capital: knowledge/experience from prior engagement in the transition</li> </ul>	<ul style="list-style-type: none"> <li>• Devise strategies and contribute skills</li> </ul>
Delaware Valley Association of Railroad Passengers (DVARP)	<ul style="list-style-type: none"> <li>• Human capital: knowledge and skills about Phila. area rail advocacy</li> </ul>	<ul style="list-style-type: none"> <li>• Devise strategies and contribute skills</li> </ul>

Source: Created by the author.

2. All of the niche-actors I spoke with are aware of their own resources; however, they have not explicitly devised *strategies to mobilize these resources* individually or collectively for the end-goal of extending the WCRB. These strategies are a key step in working towards the vision that was

proposed in section 5.1.2. It is this key step which is lacking, due mostly to the fact that these actors have not yet formed a comprehensive and cohesive niche-network with the common goal of propelling the transition forward. In order for the niche-actors to devise effective strategies, actors need to consciously *politicize* their common vision, as Marcuse (2009) mentions in his three-step process for meeting the aims of RTTC. In order to do this, actors must create an organization strategy by “clarifying the political action implications of what was exposed and proposed, and supporting organizing around the proposals by informing action” (Marcuse, 2009, p. 194). Avelino & Rotmans (2009) list several types of possible strategic actions, such as formalization, lobbying, networking, protesting, ceremonial activities, voting, and contests. Marcuse (2009) also suggests doing interventions in the media.

Based on the resources listed in Table 8, these eight actors have the specialized knowledge systems and sheer number of constituents needed to devise some powerful strategies for raising awareness about the benefits of extending the WCRB and building public support for the project. When devising strategies, these actors should keep in mind the final lessons learned from the previous chapter’s analysis of the rules that have guided the transition thus far. This involves pushing for downscaling the stations, convincing the municipalities that the rail line would help them to reduce road traffic volumes, recognizing windows of opportunity for funding, and keeping the conversation open and productive by facilitating meetings between local stakeholders and the regime-actors to make sure that the process progresses smoothly. It could also be advantageous for some members of the niche-network to conduct their own feasibility study by speaking directly with their constituents and building their case for the return of their rail service.

3. The third condition for the exercise of power states that actors need to have the *skills to apply the strategies* they devise. Since this potential niche-network is comprised of educational institutions, political figures, and advocacy groups, it can be assumed that they have the necessary creative and rhetorical skills for presenting their case to the public and to the regime-actors. Furthermore, as specialized rail advocates, PA-TEC and DVARP could provide further insights and skills for building public support and persuading regime-actors. PA-TEC has, for example, done presentations for local communities in their advocacy work for other rail extension projects. According to PA-TEC’s John Scott, “anytime we went to a township or an environmental action committee, we always had higher turnout than the township had ever seen. So there’s always more interest in this than normal township business” (J. Scott, personal communication, March 14, 2013). Advocacy groups could therefore play a key role in maximizing the niche-network’s skills for mobilizing its strategies in the ST-transition ‘game’.

4. The most prevalent condition for the exercise of power that is present amongst the niche-actors is their *willingness* for collaborating with each other in the future. This relates directly to the fourth and final condition for the exercise of power: the *willingness of niche-actors to carry out their plans of action*. While no plans of action have explicitly been devised, there is a definite willingness and desire amongst the actors to join forces for solving their transportation challenges.

The niche-actors’ willingness to collaborate has already been demonstrated through several existing connections related to PT efforts (see Figure 11). A strong connection already exists between BLUER and WCU’s Sustainability Advisory Council, whose members attend each other’s meetings and exchange ideas (P. Morgan, personal correspondence, January 23, 2013). Another connection exists

between WS and WCU, CU and WC in the form of a petition that WS faculty member John McKinstry created in 2008 and asked the latter three to sign. The petition was sent to SEPTA, Chester and Delaware Counties, as well as Pennsylvania state legislators. This has been the only coordinated effort amongst the actors representing all four proposed WCRB stops (J. McKinstry, personal communication, May 9, 2013). WCU and CU have come together within the past few years to create a petition asking SEPTA not to go through with plans to take away bus service that served both campuses (S. Thorn, personal communication, March 12, 2013). Lastly, an informal connection exists between PA-TEC and WCRHA due to the fact that PA-TEC representative Jon Frey is also a volunteer for the WCRHA's tourist railroad. All of these connections point to the willingness and ability of these eight niche-actors to collaborate with each other; however, the existing connections do not create a complete niche-network with a unified vision.

As far as potential future partnerships, WCU and CU have been the clearest about their desire to partner with each other. Joan Woolfrey, Chair of the Climate Action Plan Committee and Associate Professor & Director of Peace and Conflict Studies at WCU made the comment that "Cheyney University – they're in worse straights than we are, so if somehow we could combine our efforts in leveraging SEPTA, I think that might be of help in the future" (J. Woolfrey, personal correspondence, January 23, 2013). CU's Sharon Thorn responded by saying that "it would definitely be advantageous for Cheyney when we're doing these kinds of things to have that kind of partner. That size partner, so to speak" (S. Thorn, personal communication, March 15, 2013).

The rest of the actors expressed their willingness to collaborate if an actual movement would already be in place. Jim Wylie of BLUER said that "if there were interest in a movement to advocate for the rail line, BLUER would certainly participate" (J. Wylie, personal communication, January 28, 2013). BLUER has already been organizing meetings with TMACC, CCPC, WCU and local developers to organize a shuttle bus that would connect WC with the Exton train station. This shows BLUER's interest and ability to facilitate group meetings with a network of local actors, which is exactly what these eight niche-actors would need to do.

PA-TEC expressed its willingness and even specified how it could be of service to the efforts, stating, "If there was a stable group in the West Chester area that was having a greater dialogue with all the stakeholders, we would probably team up with them. One of our strategies in Bucks County was to go out to the municipalities, hold presentations, and get the support documented" (J. Frey, personal communication, March 14, 2013). Furthermore, they pointed out that "most of the time the area as a whole supports it but nobody knows it. So we convince people that it's viable in some way, shape, or form" (J. Scott, personal communication, March 14, 2013).

A distinction should be made, however, between the actors' willingness to collaborate with each other in general for PT improvements and their beliefs about the benefits of this particular project for the WCRB extension. The overall tone from the niche-actors is that extending the WCRB is not their main focus now, but it would be desirable to eventually have it in the future. This implies that they all have the long-term vision of extending the WCRB. If this long-term goal is to ever be realized, it is necessary for these eight niche-actors to collaborate now and start building momentum and consensus for the project.

Through the above analysis, it becomes clear that it is not for lack of resources, skills, potential for strategies, or willingness that these eight actors have not yet formed a niche-network; it is the

absence of one or two actors who would need to volunteer to spearhead the movement and act as an initial liaison while the network recruits actors. Therefore, it can be argued that these eight key actors have the *resources* and *skills*, but in order to be fully empowered they need to act on their *willingness* and form a network that will come up with *strategies* which will position them as a unified group of leaders in the WCRBC. In this way, “niche-actors strengthen themselves by cooperating and forming networks, thereby actually exercising innovative power” (Avelino & Rotmans, 2009, p. 560).

### ***5.2.3 How likely is it that a transition back to rail service in the WCRBC could be accomplished given the current socio-political climate?***

Taking into account the above actions, attitudes and priorities of all existing and potential future actors who could become part of the ST-transition, it is moderately likely that a transition back to rail service in the WCRBC could be accomplished given the current socio-political climate. I have concluded that it is moderately likely for two reasons: 1. the dominant action subsystem does not provide much hope for this transition to be accomplished if it continues to act on its own, and 2. the success of the ST-transition appears to be almost entirely contingent on the potential future niche-actors taking it upon themselves to get together and form a niche-network with a common vision. A summary of these reasons is explored below.

1. Sub-question 1 exposed several critiques of the dominant action subsystem which can be summarized as follows:

- Regime-actors have mainly worked on a short incremental extension along the WCRB without a longer-term strategy for extending the rest of the way to WC.
- The budget for the Wawa station is prohibitively large and has led to the project being put on hold indefinitely.
- Even when endeavoring to expand the PT system (i.e. Wawa extension), regime-actors have focused more on accommodating park-and-ride users than they have to make sure that there will be regional bus connectivity and walkable or bikeable access to the stations.
- The municipalities are mostly thinking independently, engaging in the “self-preservation test” that SEPTA’s Comati referred to. They are not thinking of themselves as a region.
- The regulative power structure in the Commonwealth of Pennsylvania (where land planning decisions are made at the municipal level and not the county or state level) is not conducive to large regional PT improvements. Projects are forced to be incremental and continuously come up against opposition from the local level.

These critiques all lead to the conclusion that it would be highly unlikely for a transition back to rail service in the WCRBC to be accomplished given the current socio-political climate in the existing action subsystem. This also demonstrates the difficult obstacles that any emerging niche-network would come up against in trying to influence the regime-actors to redirect their efforts towards the envisioned transition. However, this is to be expected, as the ST-transition ‘game’ is characterized by “a highly antagonistic dynamic between niches and regimes in which innovative and destructive power are exercised to disrupt constitutive power” (Avelino & Rotmans, 2009, p. 561).

2. Sub-question 2 demonstrated the excellent potential for eight niche-actors to combine their resources and power to take the ST-transition from the pre-development phase to the take-off phase



and beyond. According to Baeten (2000), “only the re-empowerment of the disempowered through the creation of more democratic decision-making procedures in the transport field can effectively induce a breakthrough in the downward spiral of deteriorating transport conditions” (p. 71). By creating a new niche-network and inserting themselves into the local and regional dialog as advocates for a more equitable transportation system, the previously mentioned eight niche-actors can change the direction of the ST-transition towards a more explicitly-stated sustainable vision. By taking that step and presenting a united front, this new niche-network has the potential to facilitate a more regional conception of the WRBC, particularly at the key municipal level.

## **6. Discussion and Conclusion**

### **6.1 Usefulness of the Critical Urban Transition Hybrid Framework**

The CUT-TT hybrid framework was formulated with the goal of providing a more comprehensive analysis of the WCRBC case study that could produce insights for action that are not immediately apparent when looking at the case study on its surface. CUT and TT proved to be logically compatible due to their bottom-up angle they both take for solving issues, i.e. through RTTC in CUT and the promotion of niche-actors in TT. Additionally, the two theories complement each other nicely with CUT providing a normative frame focused on social issues, while TT provides a detailed strategy framework for implementing desired change. In this respect, the framework succeeded in formulating a clear sociological normative basis for the analysis of a social sustainability challenge and the potential for reaching a solution using pre-existing actors and resources. Its main contribution is thus to inform decision-makers about the broader sociological implications of their decisions, while empowering the identified niche-actors to realize their individual and collective power and take action. This framework has the potential to be applied to other similar case studies related to urban sustainability transitions, particularly when it comes to the distribution of more sustainable technologies.

### **6.2 Broader Implications and Further Research**

The results of this case study point to the possibility that wherever there are abandoned or disused rail lines, there might be potential for reactivation that facilitates a transition to increased rail service and more equitable mobility. As pre-existing transportation corridors, they might hold a variety of feasibility advantages over entirely new rail projects, e.g. through existing right of way, re-useable materials, or social support through historic nostalgia. The WCRBC case study suggests that the resources and power necessary to revive these rail lines are lurking right there at the niche-level. This holds promise for the hundreds of other disused rail lines in the U.S., particularly those in the highway-dominated suburban 'frontiers'. Future research into other disused rail lines could provide a better overview of the potential to reactivate this dormant infrastructure throughout the U.S., contributing to a nation-wide transition to sustainable transportation.

An additional finding outside of the original aims of my research is that there is a notable paradox within the power structure of the Commonwealth of Pennsylvania: the fact that land planning decisions reside at the municipal level seems on the surface to be more conducive to bottom-up movements such as those described in TT. However, in practice, at least when it relates to transportation planning decisions, municipalities in the WCRBC have tended to think and act individually, thus preventing any transition from happening. Mayer (2009) speaks to this paradox:

“Their mobilizing capacity has eroded, and most have buried formerly held dreams of ‘the self-determined city’ or even of liberated neighborhoods, as they limit themselves to what seems feasible under the given circumstances. And local governments which contract with these community-based service delivery and development organizations have come under enormous pressure, as more and more responsibilities and risks have been downloaded to municipal administrations, while their budgets are squeezed like never before. These developments have restricted and narrowed the space for social contestation in many ways” (Mayer, 2009, p.365-366).

In my research, this has been found to be a major obstacle for the transition. The main reason for this barrier is that these key actors at the municipal level do not conceptualize themselves as a region. This implies that further research on similar cases should look to actors outside of the local government level when it comes to transitions towards social sustainability on a regional level.

### **6.3 Conclusion**

The aim of this thesis has been to 1. gain a comprehensive understanding of the existing situation of equitable mobility in the WCRBC so that the area's transport needs are exposed and the preconditions for a transition back to rail service on WCRB and other equity-bolstering transport options such as bus service can be identified. Furthermore, this thesis has aimed to 2. identify obstacles and windows of opportunity in the current socio-political climate at the local and regional levels to assess the possibility in the WCRBC to realize a transition to equitable mobility in general, and to rail service in particular. Through the application of the CUT-TT hybrid framework, the findings can be summarized to state that it is desirable for the WCRBC to have rail service once again, and that it is likely that a transition back to rail service in the WCRBC could be accomplished given the current socio-political climate. Ultimately, these results have worked to make an informative case for the ability of the residents of the WCRBC to feel empowered as niche-actors to influence and ultimately take back control of their access to PT and their connection to Philadelphia.

Through the discussion in chapter 5, it has become clear that there is a need to heed the RTTC's call to "restructure the power relations that underlie the production of urban space, fundamentally shifting control away from capital and the state and toward urban inhabitants" (Purcell, 2002, pp. 101–102). This implies the need for a more democratic and participatory decision-making process, which necessitates the bottom-up "highly antagonistic dynamic between niches and regimes in which innovative and destructive power are exercised to disrupt constitutive power" (Avelino & Rotmans, 2009, p. 561). It has been demonstrated through the WCRBC case study that there is a viable niche-network with adequate resources and willingness for collaboration to create a socio-political 'movement' for the return of passenger rail service to the WCRBC. However, there seems to be only latent desire for this transition to happen; it has not yet manifested into a coordinated or publically recognizable movement. This raises the point that when it comes to a transition towards equitable mobility, the problem, the vision and the implementation are not always clear to those actors who hold the power to make the transition happen. There is a disconnect between need and possibility for a transition as shown in this thesis on the one hand and actual action on the part of powerful niche-actors on the other. Even though it goes beyond the aims of my thesis to address this disconnect, I hope that pointing it out can serve as a first step towards its resolution through a dialog between niche-actors. To end with a quote by Herbert Marcuse (2009), "It is not for lack of imagination or inadequate attention or failing thought that no more concrete picture is presented, but because, precisely, the direction for actions in the future should not be preempted, but left to the democratic experience of those in fact implementing the vision" (p. 194).

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## Appendices

### Appendix A: Semi-structured interview questions

#### Examples of questions asked in the semi-structured interviews

What actions have been taken by your organization in relation to transportation in the areas surrounding the former West Chester Branch rail line?

From your organization's perspective, what are the problems with the current mobility/transportation situation in the area?

Has your organization drawn inspiration from other actors regarding transportation strategies and solutions?

Who has your organization cooperated with, and who do you plan on cooperating with in the future?

Would your organization be open to cooperating and opening up a dialog with any other local actors?

Has there been any opposition to the goals or actions your organization has taken?

Have you gotten any input in recent years from residents along the West Chester Branch rail line about the possibility of service being restored?

Is funding an issue for your organization's projects? If so, how is it currently being funded and what options are being considered for future funding?

If your organization were to reach its transportation-related goals, how do you envision this helping the former rail line area specifically?

In your opinion, how feasible do you think it would be to restore service to the West Chester Branch rail line?

In your opinion, how desirable is it for service to be restored to the West Chester Branch rail line?

If the West Chester Branch rail line were to have passenger service restored, how do you envision this helping the former rail line area specifically?

What steps have been taken to empower your organization's constituents to be part of the projects it has been working on?

Would you say that your organization uses 'debate and decide' or 'predict and provide' as a model for its transportation-related decision-making?



## Appendix B: Municipality Survey Questions and Results

Results from sixteen of the eighteen municipalities (Concord Township and Chester Heights Borough did not respond)

Question 1: Which area holds the highest priority for your township/borough when it comes to transportation infrastructure investments?			
Answer Choices	Percent Responses	Total Responses	Respondents
Roads/Highway	100%	16	Media Boro., Aston Twp., East Goshen Twp., Edgmont Twp., Middletown Twp., Thornbury Twp. (Delaware County), Thornbury Twp. (Chester County), Westtown Twp., Upper Providence Twp., West Chester Boro., West Goshen Twp., East Bradford Twp., West Whiteland Twp., Birmingham Twp., Chadds Ford Twp., Rose Valley Boro.
Public Transportation	0%	0	
Biking/Walking Trails	0%	0	

Question 2: Overall, do you think your township/borough would benefit from improved public transportation service?			
Answer Choices	Percent Responses	Total Responses	Respondents
Yes	75%	12	Media Boro., East Goshen Twp., Edgmont Twp., Thornbury Twp. (Delaware County), Thornbury Twp. (Chester County), Westtown Twp., Upper Providence Twp., West Chester Boro., West Goshen Twp., East Bradford Twp., West Whiteland Twp., Chadds Ford Twp., Rose Valley Boro.
No	12.50%	2	Aston Twp., Birmingham Twp.
Other (please specify)	12.50%	2	
<i>Middletown Twp.: "Most people are used to cars so it might take some education."</i>			
<i>Thornbury Township (Chester County): "Yes, if service levels and costs were favorable"</i>			

Question 3: What modes of public transportation would you like to have improved upon/increased in your township/borough? (check all that apply)			
Answer Choices	Percent Responses	Total Responses	Respondents
Bus	56.25%	9	Media Boro., Aston Twp., East Goshen Twp., Edgmont Twp., Westtown Twp., West Chester Boro., West Goshen Twp., Chadds Ford Twp., Rose Valley Boro.
Bus rapid transit	12.50%	2	Westtown Twp., West Goshen Twp.
Passenger rail	43.75%	7	Media Boro., Middletown Twp., Thornbury Twp. (Delaware County), Westtown Twp., West Chester Boro., West Goshen Twp., West Whiteland Twp.
Trolley	6.25%	1	Media Boro.
None	12.50%	2	East Bradford Twp., Birmingham Twp.
Other (please specify)	12.50%	2	
<i>Upper Providence Twp.: "Infrastructure upgrades to address the current vehicular volume."</i>			
<i>Thornbury Twp. (Chester County): "Passenger Rail, if routes, stops, and service levels are favorable."</i>			

<b>Question 4: What types of improvements to public transportation would you like to have in your township/borough? (check all that apply)</b>			
<b>Answer Choices</b>	<b>Percent Responses</b>	<b>Total Responses</b>	<b>Respondents</b>
Improvements on existing routes that serve your township/borough	56.25%	9	Aston Twp., Westtown Twp., Upper Providence Twp., West Chester Boro., West Goshen Twp., East Bradford Twp., West Whiteland Twp., Chadds Ford Twp., Rose Valley Boro.
Adding entirely new routes or stops that would serve your township/borough	31.25%	5	Edgmont Twp., Westtown Twp., West Goshen Twp., East Bradford Twp., Chadds Ford Twp.
Bringing back old routes or stops that used to serve your township/borough but are now discontinued	43.75%	7	East Goshen Twp., Middletown Twp., Thornbury Twp. (Delaware County), Thornbury Twp. (Chester County), Westtown Twp., West Goshen Twp., East Bradford Twp.
Other (please specify)	25%	4	
<i>Media Boro.: "Additional parking at train station. Enhancements to the train and trolley stations. Cleanliness at bus shelters."</i>			
<i>Edgmont Twp.: "Bus stops short of our town - adding another 1.25 miles along State Route 352 would get folks here to work in our community."</i>			
<i>Middletown Twp.: "There are plans to continue the R-3 to Wawa and we are looking forward to that."</i>			
<i>Birmingham Twp.: "This is the highest median income township in the County. Not much use of public transportation."</i>			
<b>Question 5: Please list one or two (or more) main ways that your township/borough would benefit the most from the above desired public transportation improvements.</b>			
<b>Answers</b>			
<i>Media Boro.: "Enhanced parking and aesthetics may increase ridership."</i>			
<i>Aston Twp.: "No Comment public transportation is limited to bus service only."</i>			
<i>Edgmont Twp.: "Extension of an existing line would provide public transportation for employees at a local Health care/retirement community and the surrounding area."</i>			
<i>Middletown Twp.: "It would keep traffic from the western suburbs from driving through our town (helping our traffic issues) and would provide enough parking so that our residents could use the train."</i>			
<i>Thornbury Twp. (Delaware County): "Residents travelling to Philadelphia by Rail would have less travel time to the closest station."</i>			
<i>Thornbury Twp. (Chester County): "Alternative access to Philadelphia and West Chester. Reduced pressure on traffic congestions"</i>			
<i>Westtown Twp.: "Rte 202 is a busy corridor. In the mornings it will back up. Improvements to public transportation might help to take cars off the road, and eliminate backups."</i>			
<i>Upper Providence Twp.: "Reduced volume of vehicles"</i>			
<i>West Chester Boro.: "Restoration of train service would reduce vehicle traffic and parking demand. Bus service that would regularly connect the community with existing train service would also provide traffic and parking benefits."</i>			
<i>West Goshen Twp.: "1. Better transportation access for residents and visitors. 2. Providing better access to the business community for those using public transportation."</i>			
<i>West Whiteland Twp.: "Parking at Exton and Whitford train stations; improved evening service times for SEPTA; additional bus stops in Town Center"</i>			
<i>Birmingham Twp.: "N/A"</i>			
<i>Rose Valley Boro.: "Bus Stop"</i>			

<b>Question 6: Would your township/borough be supportive of a project to re-extend the Media/Elwyn passenger rail line (former R3) to its former terminus in West Chester?</b>			
<b>Answer Choices</b>	<b>Percent Responses</b>	<b>Total Responses</b>	<b>Respondents</b>
Yes	68.75%	11	Media Boro., East Goshen Twp., Edgmont Twp., Middletown Twp., Thornbury Twp. (Delaware County), Upper Providence Twp., West Chester Boro., West Goshen Twp., East Bradford Twp., Chadds Ford Twp., Rose Valley Boro.
No	6.25%	1	Aston Twp. <i>*see response to Question 7 for explanation.</i>
Other (please specify)	25%	4	
<i>Thornbury Twp. (Chester County): "Depends on the details of the project"</i>			
<i>Westtown Twp.: "define supportive. Our Township would support the effort. However, the benefits are somewhat limited to our citizens that the support might also be limited."</i>			
<i>West Whiteland Twp.: "If not negative to service improvements on Paoli Line"</i>			
<i>Birmingham Twp.: "Defer to the Board of Supervisors. My guess is they wouldn't oppose it but probably wouldn't support it."</i>			

<b>Question 7: Please list one or two (or more) main reasons why the re-extension of passenger rail to West Chester would be either desirable/undesirable for your township/borough.</b>
<b>Answer Choices</b>
<i>Media Boro.: "Mass transit is good for the environment."</i>
<i>Aston Twp.: "The Media/Elwyn line is in Middletown Township not Aston Township."</i>
<i>East Goshen Twp.: "It would take pressure off of the rail line that parallels Route 30."</i>
<i>Edgmont Twp.: "train stations in Glen Mills, Cheyney, Locksley would be reactivated, and are just 2 +miles from our community"</i>
<i>Middletown Twp.: "Same as above. It would keep traffic from the western suburbs from driving through our town (helping our traffic issues) and would provide enough parking so that our residents could use the train"</i>
<i>Thornbury Twp. (Delaware County): "Good reason in response #6. Bad reason is that it could create more problems for parking and commuters traveling to Thornbury to catch the train."</i>
<i>Thornbury Twp. (Chester County): "Desirable: alternative method to travel to West Chester and Philadelphia. Reduced automobile demand. Undesirable: noise disturbance to neighborhoods near rail line."</i>
<i>Westtown Twp.: "It could eliminate some of the traffic on Rte 202 - limiting the backups."</i>
<i>Upper Providence Twp.: "Hopefully would reduce volume of vehicles on roads"</i>
<i>West Chester Boro.: "See answers to #6 above."</i>
<i>West Goshen Twp.: "1. Provide an alternative to existing SEPTA bus transportation. 2. Reuse of an abandoned rail line is a great use of that line for additional public transportation opportunities."</i>
<i>East Bradford Twp.: "It would take the pressure off of the road network that runs through the township."</i>
<i>West Whiteland Twp.: "see above"</i>
<i>Birmingham Twp.: "Residents would probably complain about the noise; congestion."</i>
<i>Chadds Ford Twp.: "It would be good for traffic solution for the county."</i>
<i>Rose Valley Boro.: "People in our community would use it to get to West Chester"</i>

<b>Question 8: Which of the below geographic areas do you think would benefit the most overall from this hypothetical rail re-extension from Elwyn to West Chester?</b>			
<b>Answer Choices</b>	<b>Percent Responses</b>	<b>Total Responses</b>	<b>Respondents</b>
All townships and boroughs (as a whole) along former rail line	56.25%	9	Media Boro., Middletown Twp., Thornbury Twp. (Chester County), Westtown Twp., West Chester Boro., West Goshen Twp., East Bradford Twp., Chadds Ford Twp., Rose Valley Boro.
Your township/borough in particular	0%	0	
Chester County	12.50%	2	Aston Twp., Upper Providence Twp.
Delaware County	12.50%	2	East Goshen Twp., West Whiteland Twp.
Philadelphia area in general	0%	0	
Other (please specify)	18.75%	3	
<i>Edgmont Twp.: "All o f the above- no body benefits from inactive rail lines that have not been converted to a trail."</i>			
<i>Thornbury Twp. (Delaware County): "some of the areas not currently served in Delaware county and the areas in Chester county that would be served."</i>			
<i>Birmingham Twp.: "Can only answer for Birmingham."</i>			

<b>Question 9: Comments (Please feel free to elaborate on any of your responses in this survey or to provide any other input/feedback):</b>
<b>Responses</b>
<i>East Goshen Twp.: "We have a bus line on West Chester Pike and a large percentage of our house stock has access to it. We do not have public transportation available in our corporate parks. The problem is that the employees do not come from any specific area. Not sure if we will ever be able to resolve this problem."</i>
<i>Edgmont Twp.: "I have been on various committees attempting to convert these abandoned lines to multi use trails, and have faced objections by adjacent property owners. The land is federally owned and should be used for some means of transportation. If I can't ride my bike on it, please let me ride a train!!!!"</i>
<i>Middletown Twp.: "We greatly support the continuation of the R-3 line to Wawa and can see the benefit of extending it to West Chester."</i>
<i>Thornbury Twp. (Chester County): "It is expected that our elected officials and residents will have varying opinions on the extension of rail service through the Township."</i>
<i>Birmingham Twp.: "In the 25 years I have served as Sect./Treas. public transportation has never once been discussed."</i>