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At What Cost?: A Study of the American Highway System and the Maine East-West Highway Proposal

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AT WHAT COST?: A STUDY OF THE AMERICAN HIGHWAY SYSTEM AND THE MAINE EAST-WEST HIGHWAY PROPOSAL

by

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Abstract

Highway construction has been a staple of American development since the early twentieth century, drastically changing the American landscape. The United States is a nation characterized by, and dependent upon automobile transportation as constructed by this vast network of asphalt connectors, symbolizing a "high-modernist" ideology and state control.

Despite our obvious needs for road and highway construction, we must tread lightly. As America's continued quest for increased connectivity and infrastructure grows, there must also be a balanced and fair look at both the benefits and costs related to highway construction. Political, sociological, economic and environmental concerns must be considered, and this is demonstrated by this thesis through case studies, in particular the analysis of a proposed East-West Highway in Maine.

Ultimately, discussion of any extensive new highway construction must begin with inclusive discussion. Before any sizable public works project is undertaken, our analysis and examination should always consider political, sociological, economic and environmental questions and issues. Communities must decide whether the benefits of highway construction outweigh the costs and whether those costs are risks worth taking.

Dedication

I dedicate this thesis to my parents, Brenda and Skip Philbrook, who without their unending love, support, and guidance, my successes at the University of Maine and in life would not have been possible.

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This thesis would not have been possible without the tremendous help and support of my advisors, Mimi Killinger and Rob Glover. They were with me every step of the way, and their wisdom, assistance and mentorship were invaluable to this process.

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I. Introduction

Americans have had a love affair with automobiles since their introduction in the early 1900s. They have provided Americans with a freedom of choice, promised an escape from cities to rural areas (and vice versa), and re-emphasized the famous American pioneer attitude. For the first time in history, Americans were free to travel where they wanted, when they wanted, and were not confined to restrictive train schedules and railroad routes. The automobile opened up new job opportunities, affected how and where people made their livings, raised their families, went on vacation, and went to worship. Rural areas became connected to cities, and farmers could easily buy and sell equipment, goods, crops, and exchange with distant places that were never before available to them. In short, automobiles and the highways that were built to facilitate their use nationalized the country.

By 1900, the U.S. was known to have the greatest and most extensive railroad network in the world, but this U.S. preoccupation with railroads also meant poorly developed roads, given that the construction and maintenance of roads were left up to local governments and the people that used them (Gutfreund 2004, 8). Numerous groups lobbied for road improvements, but most notable were the American Automobile Association (AAA), and the United States Postal Service, who pressured land-owners to keep their roads in good condition for mail carriers (Weingroff 1996).

By the turn of the twentieth century, there was a high demand for paved roads and a new system of infrastructure for auto transportation. In 1956, President Dwight Eisenhower signed the National Defense Highway Act, making the development of highways and roads a staple in America's national development. The National Defense

Highway Act was originally intended to help our military better protect us at home were there ever to be an attack by the Soviet Union, but it soon became much more than that. In fact, the American highway system essentially became the largest public works project in world history (Weingroff 1996). While Eisenhower is often credited with the creation of the highway system, there were several others who made it a reality.

Carl Fisher may have taken the first step, just after the turn of the 20th century. Fisher, the owner of a small bike and automobile shop, was tired of getting stuck in the mud whenever he or his customers tried to go on a road trip and became agitated with the poor state of the roads. The pathetic state of the roads caused great difficulties for the growing number of Americans who chose bicycles as their primary mode of transportation (Gutfreund 2004, 9). As a result, Fisher proposed to several of his fellow automakers and dealers that they finance a transcontinental highway from New York to San Francisco. This became known as the Lincoln Highway and is roughly located where Interstate 80 now lies. By the 1920s, highways like Fisher's were becoming more common, but were disconnected and poorly designed (Weingroff 2011).

In 1907, the Supreme Court ruled that the Commerce Clause permitted Congress to construct interstate highways. This ruling eventually paved the way for what would be the first major step towards better roads in the U.S., the Federal Highway Act of 1916 (Weingroff, 1996). Fierce lobbying by AAA led to the passing of the act, and President Woodrow Wilson included the quality of roads in his platform:

> The happiness, comfort and prosperity of rural life, and the development of the city, are alike conserved by the construction of public highways. We, therefore,

favor national aid in the construction of post roads and roads for military purposes (Weingroff 1996).

President Wilson felt that a high quality network of roads was necessary not only for the economic integrity of the nation, but also for social and intellectual cohesion:

> My interest in good roads is not merely an interest in the pleasure of riding in automobiles, it is not merely an interest in the very much more important matter of affording the farmers of this country and the residents in villages the means of ready access to such neighboring markets as they need for the economic benefit, but it is also the interest in weaving as complicated and elaborate a net of neighborhood and state and national opinions together as it is possible to weave. It is of the most fundamental importance that the United State should think in big pieces, should think together, should think ultimately as a whole . . . I believe that it is the proper study of the statesman to bind communities together and open their intercourse so that it will flow with absolute freedom and facility (Weingroff 1996).

After Wilson had laid the groundwork, President Franklin Delano Roosevelt took the next step towards a national highway system, beginning with a blue pen and drawing six lines across a map of the United States (NPR 2011). Thomas MacDonald, an engineer from Iowa who served as the chief of the Federal Bureau of Public Roads for thirty-four years and served under seven different presidents, took over from there, and later, Eisenhower's National Defense Highway Act received the funding necessary to finally make the project a reality. But the world's largest public works project in history met with resistance, and in response were some persuasive tactics by the administration to go

along with it. MacDonald led a campaign to persuade the American public that new roads were a human necessity, and that they were needed to fulfill the growing needs of American society, even at the cost of the urban landscape (NPR 2011).

This thesis will examine some of the effects of the highway system, and how those effects can be studied. Also, there will be significant time spent on the discussion of the current proposal for an East-West Highway in Maine, using a theoretical framework and a variety of case-studies. The problem is that large-scale projects like highway construction are thought of too narrowly, and there is not significant forethought in different dimensions. For example, I will argue that as the state of Maine debates the merits of constructing an east-west highway, supporters of the project must first consider political, sociological, economic, and environmental concerns. I will emphasize the need for reflecting across these four dimensions through consideration of three case-studies: the Philadelphia Route 222 Corridor, the Appalachian Highway Development System, and the Swiss intermodal railway system. These case-studies will help to illustrate the factors mentioned above so that they can better be applied in a discussion of an East-West Highway in Maine.

II. Theoretical Framework

In the following sections I will present a theoretical framework to be used throughout this thesis, within the examination of a variety of case-studies and the Maine East-West Highway proposal. In past as well as current projects, the political, economic, and (to some extent) environmental factors have been examined. However, many sociological factors have either been ignored, forgotten, or examined inadequately.

Sociological studies have largely been shut out of public works projects because of the often negative factors that are revealed. A large portion of this thesis will focus on these sociological factors, their causes, and how they should be accounted for and understood in future projects.

A. Political

"Officials of the modern state are, of necessity, at least one step—and often several steps—removed from the society they are charged with governing. They assess the life of their society by a series of typifications that are always some distance from the full reality that these abstractions are meant to capture" (Scott 1998, 76). Many times, state officials will try to revamp a society from the top down utilizing scientific and technological innovations. In *Seeing Like A State* by James C. Scott, this is known as "high modernism," a type of social engineering led by the state in an "attempt to make a society legible, to arrange the population in ways that [simplify] the classic state functions of taxation, conscription, and prevention of rebellion" (Scott 1998, 2). The high-modernist approach to governance that Scott describes includes a strong focus on scientific and technological progress in accord with a higher perceived societal need.

Scott lays out three requirements for this type of engineering to be accomplished. First, there needs to be "the aspiration to the administrative ordering of nature and society." This includes the desire for progress, development of knowledge, expanded production and efficiency, increased order and infrastructure, the perceived growth in human needs, and a desire to control nature and the world around us. Second, there must be "an authoritarian state that is willing and able to use the full weight of its coercive power." The state must not only have the desire to build and effect change, but must also

possess a willingness to do so, while having the sufficient power over society to achieve it. Such massive high-modernist projects, like highway construction, are done with a high level of certainty that they will succeed. Third, there has to be "a prostrate civil society that lacks the capacity to resist these plans." The citizens must be either detached from their government and weak by nature of their suppression, or they must have an immense amount of trust in their leaders. The society provides the apparent need or purpose for change, the high-modernist ideology provides the motivation for change, the authoritarian state provides the means and the muscle to act upon it, and the weak civil society provides the foundation on which to build (Scott 1998, 88).

Apart from Eisenhower's initial thoughts and ideas, the highway system ultimately came from a state desire to make cities more accessible to outsiders, and to unite the nation with a vast transportation network. Highways quickly became an attempt to improve the integration of the state, increase infrastructure, and enhance trade and commerce. But at what cost should mechanical progress be pursued?

B. Sociological

Often times, individual interests are put aside to make way for progress. Government officials know that wherever they plan for a public works project to take place, someone is going to have a problem with it. The government also realizes that society needs projects, such as highways. There are inevitably going to be conflicts with people who oppose but in the end, it is a sacrifice that is made, and sacrifices carry risk with them. Richard Hiskes argues in *Democracy, Risk, and Community* that these are sacrifices that sometimes need to be made, inconveniencing the few for the collective progress of the many (Hiskes 1998, 32).

> Technological society simply cannot abide all the claims of NIMBY that proceed on the basis of (allegedly) inalienable rights. It (whatever) must inevitably be in *someone's* backyard, and the individual's right to deny society's claim in effect denies the rights of many other persons, living now or in the future (Hiskes 1998, 32).

Our cultural obsession with the automobile and our increasing technological advances in infrastructure that went with it have taken their toll on the city, its surrounding environments, and the people who live there. In *The Highway and the City*, Lewis Mumford states that there has become "a curious compulsion to serve the machine rather than to respond to human needs" (Mumford 1963, 235). It is as though people become attached to a particular technology, and then feel obligated to advance it as if we owe it something in exchange for the service that it provides. This begs the question—what kind of relationship do we truly have with machines? In theory, it should be a relationship of master and slave, but in practice, it has become a relationship of mutual dependence.

Hiskes writes that, "modern technological risks threaten us in three ways: physically, psychologically, and morally" (Hiskes 1998, 12). Hiskes says that the first of these, the physical, applies to the most obvious threats of pollution, irradiation, occupational hazards, and transportation dangers. These risks are unique to an industrial society and are the result of technological innovation and development. The psychological aspect, he says, includes those risks that may be unknown but could have been present before modern society, but are then often compounded by certain characteristics of modern society. Some examples that he cites include secondhand

smoke and how its risk is compounded by modern urbanization and transportation technology. “It is difficult sometimes—cultural theorists would say impossible—with these second kinds of risks to separate conceptually the risk itself from its perception” of a lack of risk (Hiskes 1998, 12). The moral aspect, which is third, is recognized by Hiskes as risk that, “come[s] directly from the acquisition of some new knowledge itself, whether arcane or widely held” (Hiskes 1998, 12). These risks include “psychological or emotional harm or pain [that] would not have been possible before the knowledge or delivery technique was attainable” (Hiskes 1998, 12). An example of the moral risks that Hiskes gives is that which comes from genetic and reproductive technology that “require painful personal or social decisions” when used. (Hiskes 1998, 12).

It is important to understand that these three aspects of modern technological risk do not appear out of nowhere, but rather they are a product of our individual response to risk and that we as individuals are a product of our culture, which is a culture defined by the reality of risk. In this way, as Hiskes explains, the individual, risk, and culture are all interconnected. While we often blame technology and machines for transforming our culture and creating dependency on the mechanical, we forget that it is a function of our culture and ourselves. We are the root of the problem because we relinquish control over the machine. We are meant to be the controllers, the owners, and the inventors. Rather than letting modern technology and the risk it brings run our lives and control us, we ought to make modern technology work for us. We can eliminate or reduce these risks, particularly the sociological dimensions of risk through adequate examination and understanding.

In When Work Disappears William Julius Wilson argues that the development and construction of highways in and around cities were factors that led to increased race and class warfare in America. Like Scott, he suggests that a reckless government obsessed with technological advancement without regard for sociological implications is to blame for the warfare:

> By manipulating market incentives, the federal government drew whites to the suburbs and, in effect, trapped blacks in the inner cities. Beginning in the 1950s, the suburbanization of the middle class was also facilitated by a federal transportation and highway policy, including the building of freeway networks through the hearts of many cities, mortgages for veterans, mortgage-interest tax exemptions, and the quick, cheap production of massive amounts of tract housing (Wilson 1997, 228).

When highways were constructed around cities, it facilitated the movement of working and middle-class white Americans out of cities for the many incentives presented by the new and enticing suburbs. This movement, commonly known as "white flight," led to a dramatic change in racial and ethnic distribution, predominately leaving people in inner-city neighborhoods who didn't have the resources to leave. While the human environment is often enriched by increased accessibility, openness, and opportunities for economic prosperity, there is a negative effect in the form of the destruction and fragmentation of communities, homes, businesses, and the displacement of citizens.

There are many similarities between Scott's high-modernist theory, and Wilson's theories of the inner-city collapse. It can be argued that white flight and the ensuing inner-city poverty have been a function of the high-modernist ideology that Scott

describes, in which the building of highways through and around cities took place in a government effort to advance society in a technological and mechanical direction.

C. Economic

Interestingly, Scott's high-modernist highways, while having negative sociological effects, can have significant economic benefits for modern society, arguably outweighing the negatives. Century-long efforts toward road improvements have resulted in increased trade and commerce, and a more equal distribution of wealth, as regions previously isolated and suffering from being poorly connected reap the benefits of improved infrastructure and increased connectivity.

> No one who designed the Interstate Highway System could have predicted exactly what would happen to the overall economy as a result of the investment in the Interstate System. National, multi-state, regional, and local economies were all empowered to reorganize to take advantage of new capabilities in terms of speed, capacity, and safety. Regions that were not part of the nation's economy became integrated through new opportunities to have longer distance links for goods movement and for personal travel. Urban areas were able to expand and grow, enabling more agglomerations of industries and skills within much larger urban boundaries. Not everyone who was witness to these impacts applauded all of the impacts. The Interstate System was identified as a cause of urban sprawl as well as an enabler of urban growth (NCHRP 2006, 48).

Not only did the Interstate Highway System generate new infrastructure, higher rates of travel, and lower transportation costs, it changed how time, cost, and space related and interacted with one another. This created new economic opportunities that never would

have been revealed if not for highways. The Interstate Highway System allowed the economy to expand in size and productivity. However, we are now approaching the point in which this expansion is slowing rapidly (NCHRP 2006, 48) We are at a crossroads: do we expand the highway system, as in the Maine east-west highway, or do we look for new ways to encourage economic growth? If the answer is to expand the current system, then we also need to ask the following question: is it worth the price?

D. Environmental

If you look at a map of the United States, it is dominated by roads, highway systems, and route markers. No longer is America defined by its topographical features. Instead, it is characterized by a web of interconnected concrete passages. In many ways, we have assimilated to the machine's migrational needs rather than assimilating the machine to our own needs, while also acknowledging the preservational needs of our environment.

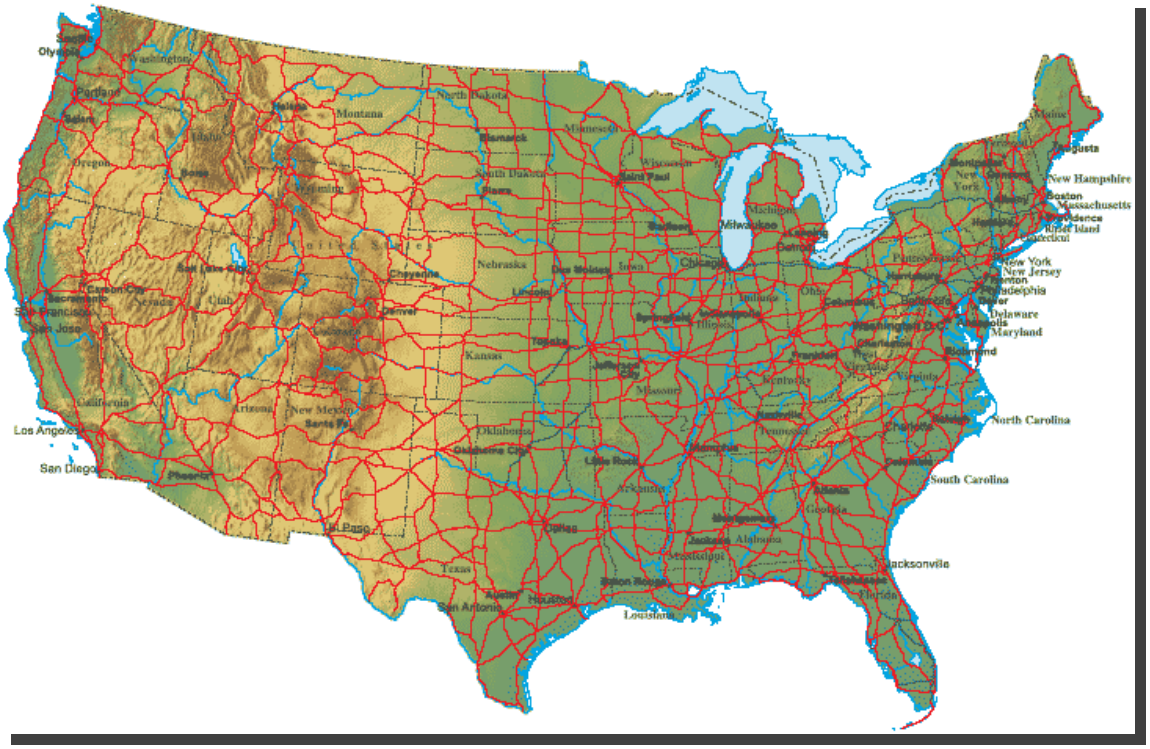

Figure 1 (united-states-map.com)

The United States has become characterized by a web of concrete passages. No longer is America defined by its natural landscape alone.

The natural environment suffers greatly as natural habitats and the wildlife that they contain are fractured and destroyed by highway placement, and further harmed by the ensuing pollution that is created. While human transportation is enhanced by highway construction, the opposite can be said for the ecosystems that they destroy. Migratory patterns are disrupted, species become isolated, endangered, and made extinct (Goffman 2005).

An industrial economy needs roads, but how far must we go in expanding those roads? Will we continue to grow until there is nothing left but asphalt? By no means am I arguing against the need or importance of roads, but rather, simply bringing to light certain questions that should be considered in our ever-growing and expanding mechanical society. In the following sections, I will discuss these questions, and the political, sociological, economic, and environmental dimensions more closely by using case-studies to illustrate them.

III. Philadelphia Case Study - (Political/Sociological)

In many ways, the highway system defines the American landscape and its people, like mountains that create their own weather. However, the weather has not been all good. As previously mentioned, highway construction in inner-cities has been detrimental to many communities and neighborhoods. Communities have been fragmented, and barriers indirectly created.

Some of the political and sociological problems related to highway construction have resulted from developers having failed to consult sociologists and urban planners regarding placement of highways. Instead, freeways were placed according to an engineer's vision.

> Engineers, and the political and economic interests that supported them, worked a tyranny on inner-city communities. Whole neighborhoods were sacrificed to generate capital gains for the influential. Planners seemed unresponsive to the human needs of people displaced or unappreciative of the neighborhoods and communities destroyed. The accepted values were those of business, government, and the supporting governmental bureaucracy. As commercial and industrial properties provided employment and paid substantive taxes, so those properties should be enhanced in worth. Where vacant land or other open space (such as parks) was unavailable, residential properties were readily sacrificed to freeway development. Even where neighborhoods were partially spared, traffic congestion, noise, and dirt generated by the new roads depressed property values. Often, surviving neighborhoods found their parts hopelessly disconnected by freeways that served as barriers to local movement (Conzen 2010, 416).

Indirectly, socio-economic divisions within neighborhoods have been formed due to poor highway placement, resulting in segregation and sometimes gang formation. This can be illustrated in the following diagrams of the gang-riddled Compton, California:

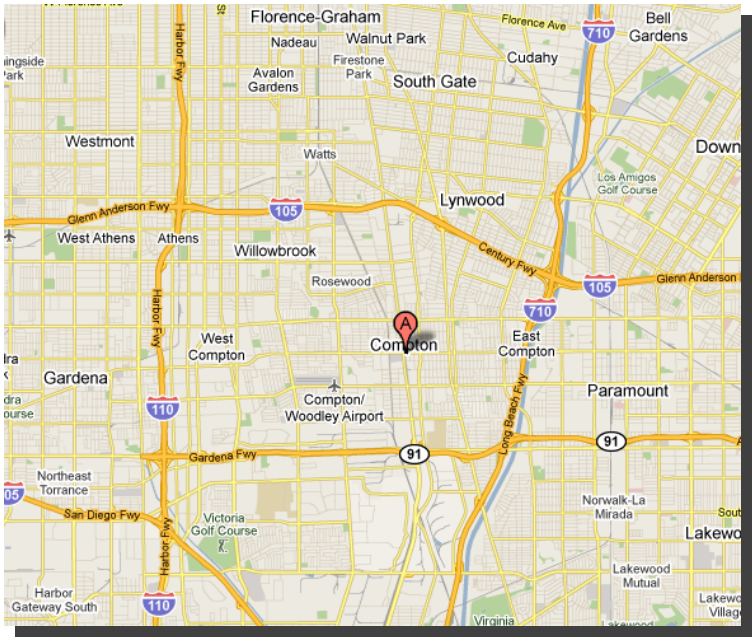

Figure 2 (Google Maps 2012)

The highways of Interstate-105, 110, 710, and Route 91 have created a box around Compton, segregating it from other parts of the area.

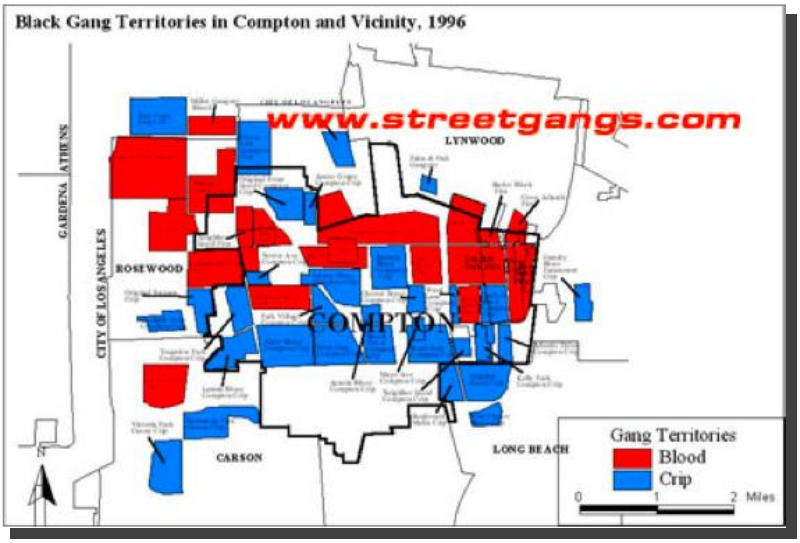

Figure 3 (streetgangs.com)

The box created by Interstate-105, 110, 710 and Route 91 has caused segregated gang violence, creating a high concentration gang activity within Compton.

Corridor highways can also lead to sociological problems and ensuing political initiatives and legislation in order to fix those problems. Philadelphia and its smaller surrounding cities—Easton, Bethlehem, Allentown, Harrisburg, York, Reading, and Lancaster—have been affected greatly by highway location and offer an interesting case study for political and sociological effects of highways construction. Many areas of Philadelphia have served as breeding grounds for gang violence with impoverished neighborhoods and low high-school graduation rates. The Route 222 corridor runs through Pennsylvania and connects Philadelphia, Baltimore, and New York City to the aforementioned cities (Birkbeck 2010).

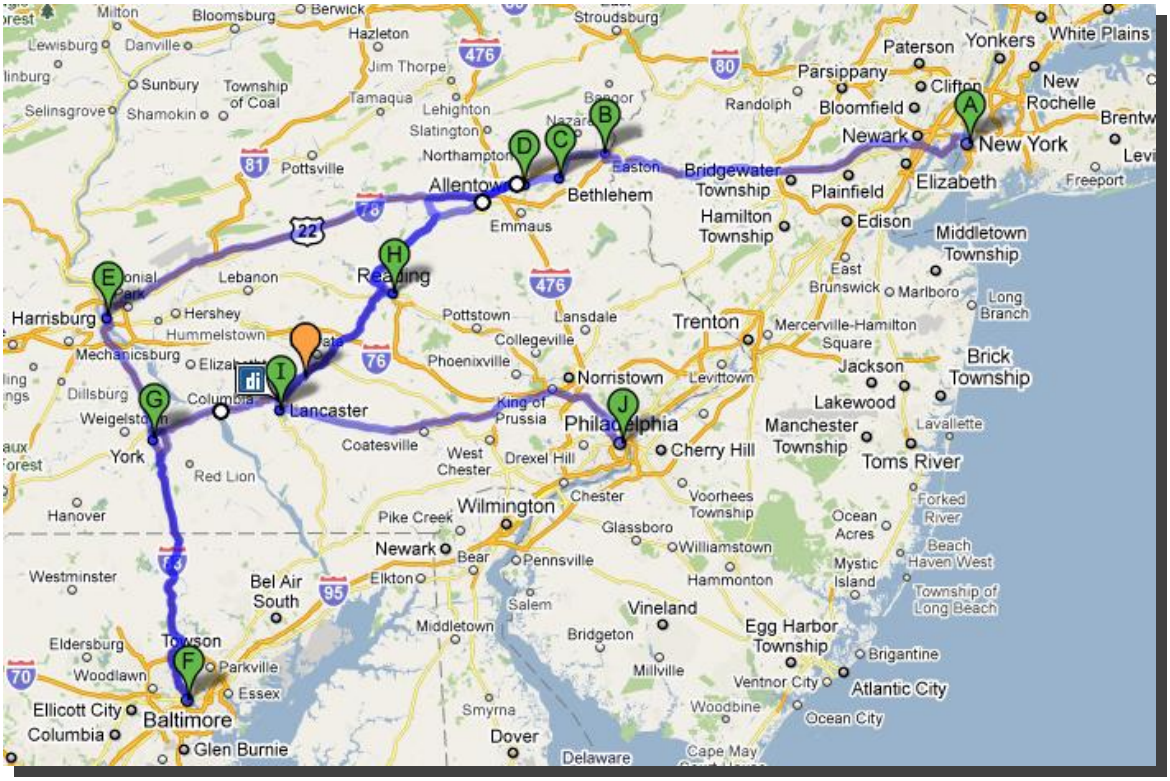

Figure 4 (Google Maps 2011)

In this image, the highlighted highway with the yellow marker is Route 222. The accompanying markers identify the affected surrounding towns.

Route 222 acts as a corridor connecting these cities, and its central location has made it a chief path by which narcotics and firearms are trafficked. It has also facilitated an increased growth in gang violence, not only within each city, but from city to city, as gangs have used the highway as a quick pathway to reach neighboring towns in their gang war. Highway corridors, like Route 222 have opened up gang violence beyond individual city walls (Birckbeck 2010, Elder 2009).

Beginning in 2006, a major federal initiative known as the "Route 222 Corridor Anti-Gang Initiative" was led by current U.S. House Representative, Pat Meehan. The initiative received $2.5 million in federal funding to "target and prosecute violent gangs and drug organizations" within the areas mentioned before, and their smaller surrounding towns. It is the only regional, anti-gang initiative in the U.S. and aimed to diminish the proliferation of gang violence, by partnering with elected officials and law enforcement agencies. The initiative was largely successful while it was active, eradicating several gangs, and over seventy gang members were arrested in two years. In addition, over a hundred former gang members were chosen for a counseling program, and seventy of those chosen have succeeded in remaining free from gang affiliation. In addition, many of the small grants in the initiative went towards anti-gang groups and youth organizations to help educate children about the dangers of gangs and prevent them from joining. Since funding for the initiative has run out, a rise in crime has taken place in many of these areas once again. Police departments of the towns involved in the initiative still share information with one another to combat the crime, but without the federal support, the results are not nearly as significant. These communities and the lawmakers

that represent them, have lobbied without success for the initiative to be revived, as the loss in federal funding has already been felt (Express-Times 2011, Opinion).

Construction of highway corridors, like Route 222, while creating economic benefits and greater connectivity, also can lead to severe sociological problems such as crime, in the form of gang violence, and drug and weapons trafficking. While these problems would not be as pronounced in Maine, due to differing socioeconomic and population characteristics, an east-west corridor across the state could pose some of these threats. Currently, central and northern Maine are suffering from the effects of an increase in substance abuse, most recently in the form of dangerous "bath salts" (Ricker 2011). An East-West Highway connecting to Montreal could potentially exacerbate this problem (even with the increased border protection that we have today) and in turn, could lead to similar legislation and initiatives as seen in Pennsylvania, in order to regain control. These concerns need to be taken into account as Maine considers an East-West highway.

IV. Appalachian Highway Development System - (Economic)

The Appalachian region is similar to Maine in its economic aspects, as the region lags behind the rest of the nation in terms of economic growth and living conditions. The traditional industries of the Appalachian region mirror Maine's, manufacturing, textiles, and paper and wood. As is the case in Maine, these industries have declined in the Appalachian region as international competition has risen. An aging workforce also plagues Appalachia, which along with Maine, has one of the worst problems with the migration of young people out of the region. There are many areas in the center of

Appalachia, like Maine, that suffer from heavy economic distress, with areas of high poverty, unemployment, low access to health-care, and under-performing schools (ARC 2012).

In 1965, the Appalachian Development Act was passed in Congress in order to spur economic growth in Appalachia, through the development of the Appalachian Development Highway System (ADHS). Legislators believed that for economic growth to take place in the region, its isolation would have to be overcome by building modern highways to serve the local residents better than the existing network of unsafe, slow, and winding roads that traveled through the mountain ranges. (ARC 2012) In 1964, a report by the President's Appalachian Regional Commission stated that, "Appalachia's geographic isolation from both the prosperous adjacent eastern seaboard and the mid-west was the 'very basis' of its developmental lag." (Goffman 2005) The proposed highway system would be built through or around the mountain ranges and connect isolated and undeveloped areas, with the aim of stimulating economic development and job opportunities. At the end of the 2011 fiscal year, 88 percent of the highway system was been finished, leaving roughly 370 miles of highway left to be completed (ARC 2012).

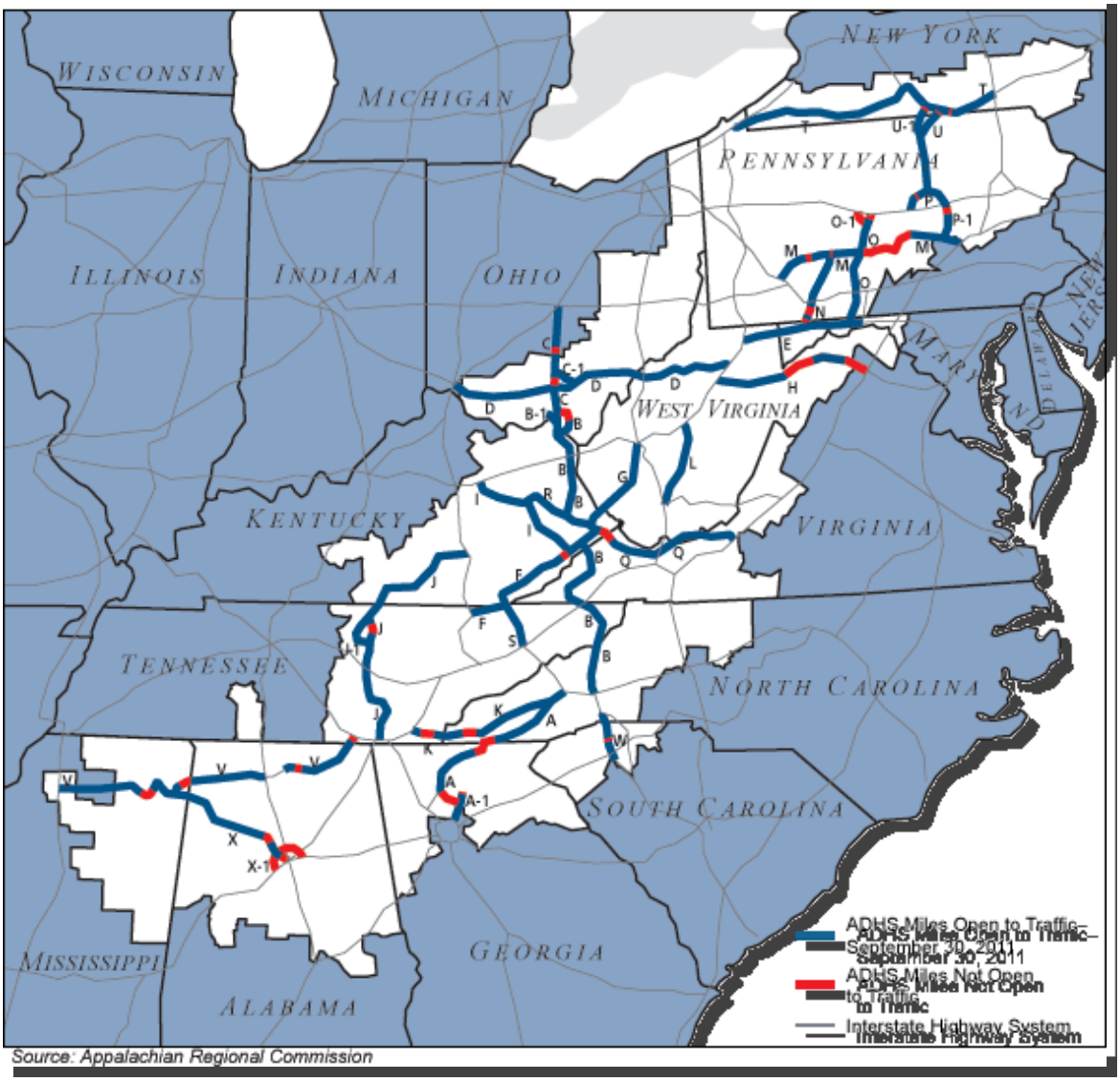

Figure 5 (ARC 2012)

The ADHS has allowed extensive highway construction and development in the Appalachian region, incorporating twelve different states.

There is a lot on the line for the ADHS. The highway is 3,751 miles long, with thirty-one corridors along thirteen sates. Federal money was used for an ADHS economic impact study, similar to the proposed feasibility study for the Maine east-west highway. The study assessed how corridor improvements would better connect Appalachian people

and businesses to each other, as well as to other highways, facilities, and markets. In addition, and most importantly, the study made estimates on immediate and long-term benefits, using a cost/benefit analysis to evaluate economic return to the Appalachian region and the rest of the U.S. The executive summary of the study was organized into four categories: travel efficiency benefits, direct economic impacts, total economic impacts, and benefit/cost analysis (Cambridge Systematics, Inc., 2008).

The travel efficiency benefits included reduced travel time and shipping costs to individuals and businesses. These benefits emerged from newer, wider, and safer roads with higher speed limits, and lower costs per mile. The study, which was done in 2008, estimated total user benefits of $1.6 billion annually by the year 2020 (expected year of completion) and for that number to rise to $5.1 billion by 2035. Travel time savings were estimated to be over 84 million annually by 2020, and 212 million hours annually by 2035 (Cambridge Systematics, Inc., 2008). The direct economic benefits included improvements in market accessibility, and anticipated reduced industry costs, and an increase in tourism, resulting from this increased accessibility. The region was estimated to gain $2.1 billion annually by 2035 in economic activity (Cambridge Systematics, Inc., 2008).

The total economic impact on the Appalachian region was predicted to result directly from reduced business travel times and costs, as well as increased regional growth from greater market accessibility. By 2035, the ADHS was estimated to create around 80,500 new jobs, $5 billion in increased value added per year, with $3.2 billion in wage increases for workers. The industries that were projected to benefit the most from the ADHS were warehousing and distribution, manufacturing, mining and utilities,

professional services, and other business services. Companies would have the ability to directly and more quickly ship their products to east coast ports, cutting shipping and travel cost, and increase reliability (Cambridge Systematics, Inc., 2008).

The benefit/cost analysis included the $11.2 billion needed to finish the remaining unfinished sections of the ADHS after 2008 (when the study was conducted). In the report, the ADHS was estimated to have a net present value of $10,800 in travel efficiencies to the region, and $31,030 in total economic benefits, or benefit/cost ratios of 1.9 and 3.6, respectively (Cambridge Systematics, Inc., 2008). This is an excellent example of the potential economic benefits that accompany highway construction.

From 2005 to 2009, the number of Appalachian counties with high poverty concentrations declined by 59 percent from 295 to 120 counties. Many communities have been able to expand their economies because of the ADHS. The recent economic recession beginning in 2008 has slowed the economic growth in Appalachia, and in some areas the gains that had been made have regressed. However, with the slowly recovering national economy, this growth is predicted to bounce back. The important thing is that the infrastructure is now there to facilitate the economic growth (Cambridge Systematics, Inc., 2008).

Maine's unemployment rate currently hovers just above seven percent (U.S. Bureau of Labor Statistics 2012) and over 12 percent of its residents live below the poverty line (U.S. Census Bureau 2012), Judging by Appalachia's similar demographics and economic situation to Maine's, the same economic growth could take place in the poor, rural areas of central and northern Maine with the building of an East-West Highway. This will be discussed more extensively in a later section.

V. Switzerland Case-Study - (Environmental)

Although since the early 20th century, the American cultural obsession has been with the automobile and highways, there was already an extensive rail network that existed, which could today be revived and updated to suit our needs, which would be a more environmentally conscious strategy than summarily turning to highway construction. In other words: why should society automatically turn to highways to solve its problems? Are there not other solutions available? An option for an east-west connector in Maine, other than a highway, could be an intermodal railway designed for road-to-rail freight transportation.

In Switzerland, this type of transportation has worked extremely effectively for decades. Switzerland acts as a crossroads in Western Europe and is an immediate connector between Italy and Germany, similarly to Maine which acts as a crossroads between New Brunswick and Quebec. In 1992, an official agreement to set up a "rolling highway" was signed by the three countries, and this plan became a reality in 2001. The "rolling highway" runs between Freiburg, Germany and Novara, Italy, and the trucks that use it never touch Swiss roads. Instead, they cross Switzerland by train. The rolling highway's use has consistently increased since its inception, with 105,000 trucks crossing in 2003 to 350,000 trucks in 2007 (Federal Department of Foreign Affairs - Presence Switzerland 2012).

Since the rolling highway is essentially a straight shot, with no traffic and no speed limit, it is much a quicker and safer option than driving. It is a much more productive form of freight transportation because most of the traffic is scheduled for

overnight transport, drivers do not have to pull over for rest. Insurance costs for companies are also lowered because there are fewer accidents that occur because a large portion of the trip is spent on a train with little room for error, and there are tighter controls on the freight leading to less theft and damage to freight. The costs are also a significant incentive for many companies, as they are able to save fuel costs while increasing productivity, benefit from the fewer accidents, and can pay their employees less because they are doing less work. However, what is most notable are the green advantages. Road to rail systems are much better for the environment, saving energy and an average of 55 percent of CO2 emissions are saved opposed to pure road transportation. Lastly, the rail transportation relieves roads that may be more suited for passenger transportation, and thus helps save tax dollars that would otherwise be used to fix roads that have been damaged by large trucks over time (HUPAC 2011). In a state like Maine, much of the environmental impact has already been absorbed by preexisting railroad beds that would only need to be updated and revived.

Could Maine adopt the Swiss rolling highway as a viable alternative to an East-West Highway? Construction time might be reduced, and logistical issues and challenges could potentially be simplified, were preexisting railways used. For example, the Montreal, Maine and Atlantic Railway—which was discontinued in 1994—might be perfect candidate for revival, as it runs east to west through Greenville and many other parts of the state allowing for multiple attractive stops along the way, while also still acting as a corridor to Canada (MMA Rail 2012). This is illustrated in the following map of the Montreal, Maine & Atlantic Railway:

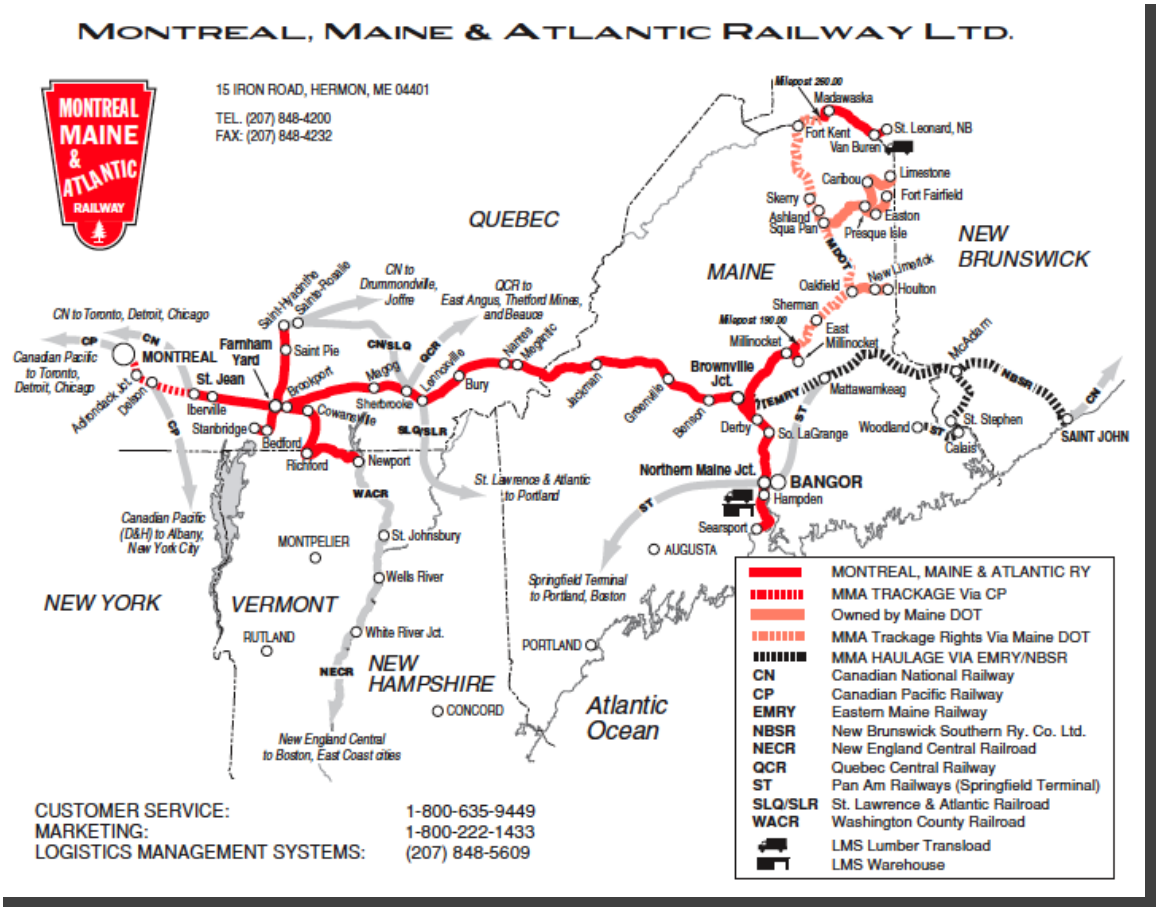

Figure 6 (MMA Rail 2012)

A map of the Montreal, Maine & Atlantic Railway

While an intermodal railway system might work for the state of Maine, and would arguably be better for the environment, an east-west railroad would mostly benefit Canada to Canada shipment, as it would be difficult for companies within Maine to take advantage given that multiple intermodal facilities and access/exit points would have to be built along the railroad as it crossed the state, adding to construction time and costs.

Furthermore, car travelers might prefer to just remain in the privacy and convenience of their cars or seek out another destination, rather than pay a fee to ride a train and then be stranded without a vehicle.

Perhaps the Swiss model reflects a deeper commitment to environmental preservation as a value higher than individual automobile travel. This alternative notion may pose a prohibitively serious risk to high-modernist communities and their attachment to machines. Do Maine residents share this mentality of environmental consciousness, or is it more of a tenacious NIMBY attitude? It may be that Maine residents are simply attached to the natural Maine landscape that separates them from the rest of the U.S., and are reluctant to conform to the direction of the rest of the country.

VI. East-West Highway

As the old Maine adage goes, "You can't get there from here." Most of Maine depends on Interstate 95, as it is the state's only Eisenhower Era highway, but it only serves part of the region. This restriction turns Maine into a type of peninsula, with one entry, and one exit, which is what Maine legislators and Peter Vigue, President of Cianbro, are trying to address (Collins and Cebra 2012). Nearly every state in the northeast has major intersecting north-south and east-west routes that run through the state. Maine is one of the few that does not.

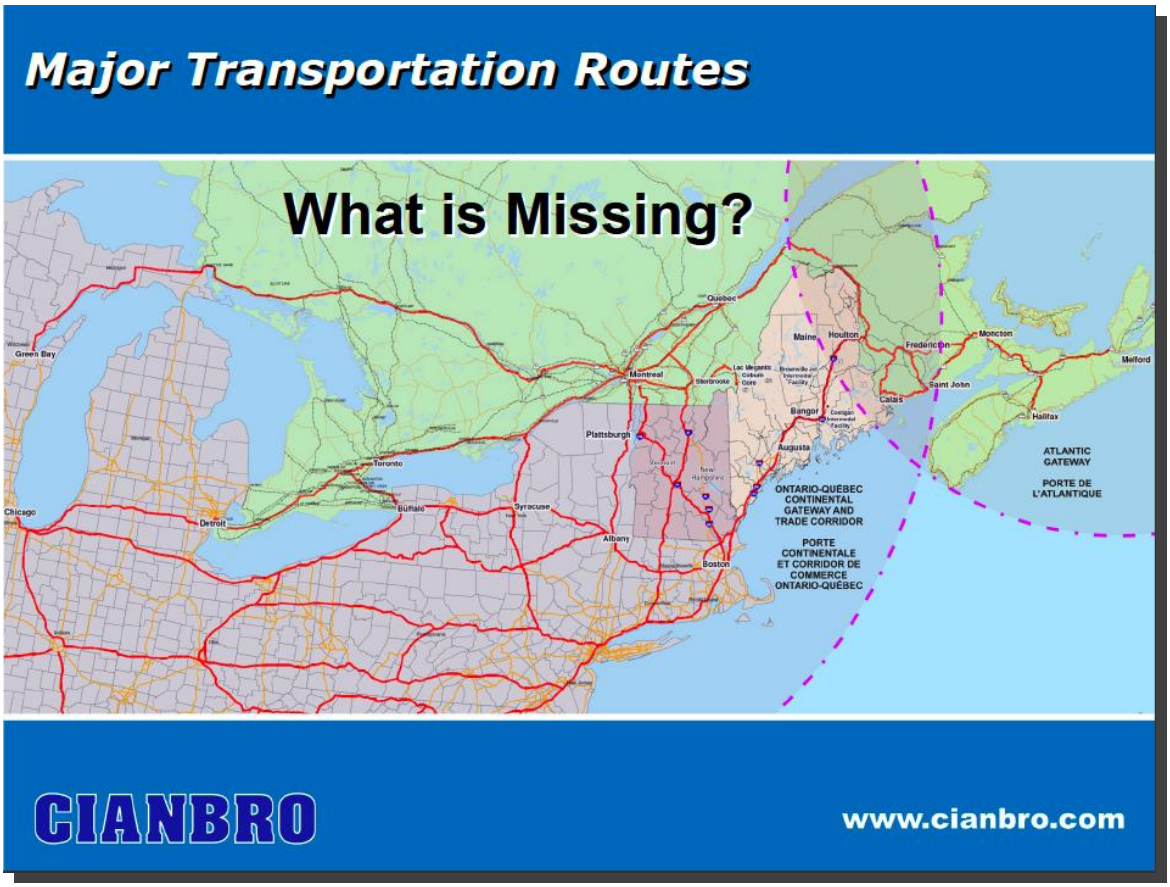

Figure 7 (Cianbro)

Maine is one of the few states without major highway intersections.

A. Political/Sociological

Proposals for an East-West Highway in Maine have existed since the 1940s in one form or another, and in 1969 a feasibility study was conducted by the Maine State Highway Commission. However, the previous proposals and their corresponding studies are not like the one before us today. The current proposal involves a different route, and a different plan for funding, which I will expand upon in the following sections. The current proposal is for a four-lane highway that would run through northern and central

Maine, from Calais to Coburn Gore, and would be approximately 230 miles long. According to Senator Douglas Thomas, R-Ripley, the proposal "crosses the Interstate just north of Old Town, goes through north of Charleston, south of Sebec, south of Milo and it goes just north of Dover" (Hedstrom 2012).

Additionally, the proposal includes a connection to Quebec Autoroute 10 which goes to Montreal. It would upgrade preexisting private roads used by the logging industry, and the estimated more than $1 billion needed for the project would be provided through private funding. The road would also include heavy toll for its use and would have no weight restrictions for heavy trucks. With no weight restriction, Canadian trucks that are normally excluded from Maine highways due to such limits would now be able to pass through the state with ease, cutting back on mileage and fuel costs wasted by going north and around the border by way of the Trans-Canada highway. The highway would also allow tandem-trailers, like in Canada. According to Vigue, construction of the highway could begin as early as 2015 after designs are completed and permits obtained. Ultimately, "the highway would better connect Maine and the Maritime provinces to markets in Quebec, Ontario and the central U.S." (Casey 2012).

At a public hearing held before the State Legislature's Transportation Committee last February, Vigue said that, "It's very important that the state of Maine work in a collaborative manner with our Canadian neighboors. . .We have the same economic challenges and issues to deal with" (Clark 2007). His vision is a highway that would connect and integrate, rather than divide and marginalize. While many think that Maine is at the end of the road for America, Vigue disagrees. To him, Maine has everything it needs to excel economically and is in the perfect place geographically, located in the

middle of the New England-Maritime Canada area. "We've got location, location, location. We're in a great spot, and we've got to think of ourselves in those terms," he says (Clark 2007).

What makes this particular project unique is that it is meant to be contracted to a private company (likely Cianbro), either entirely or in the form of a public-private partnership. While the state would be relinquishing total or partial control to a private company, high-modernist ideology would still exist as the state would be using the private company as a channel by which to exercise its influence on the masses. To most, the prospects of an east-west connector seem to have benefits that outweigh any potential impacts, and one may wonder what is taking so long to get the job started. The problem with building it by conventional means is simple: the federal interstate program ended thirty years ago, and it is too expensive for public funding. That is why Peter Vigue, president of Cianbro, and several Maine legislators have proposed that the project be a private investment project or public-private partnership, in which the state will lease it to a company for a certain amount of time. This could be a viable option as the incentives are very attractive to many Canadian companies who would make use of such a connector.

Highways are sometimes leased to private companies that charge their own tolls for a period of time until the debt is recovered for the company and its investors, and then normally hand over to government control once the lease is up. This was done in Georgia, with a private toll road created to connect I-285 and I-85. In its first four years of operation, the road collected $55 million (Hakim and Blackstone 1999). This type of relationship between the private and public sectors allows governments to satisfy

transportation needs in spite of tight budget constraints, then can sometimes retain public ownership in the long term.

Senator Thomas recently submitted a bill to fund a feasibility study for the highway. The bill requested approximately $300,000 in State Transportation Department funds. The bill was approved by the Republican majority State Senate on March 13, 2012 by a 19-15 vote along strict party-lines. While most Democratic lawmakers are not opposed to a feasibility study or the construction or the highway itself, they were opposed to the use of public tax dollars for the study of a project that would be privately funded and owned. However, Republicans have held that investors, whom they claim are already lined up in large numbers, are seeking reassurance that the state would support the project. The co-chair of the Legislature's Transportation Committee, Senator Ronald Collins, R-Wells, asked his fellow senators, "Would you invest in something like this if the state wasn't behind it?" A common concern of for many people is the idea that there are "two Maines" in which the southern part of the state is very different (and some say out of touch) with northern Maine. An East-West Highway could compound this even more, as it would create an actual physical divide within the state.

The study is planned to be performed by an independent agency, and currently funds are not limited in the bill, so if needed, the total could be much higher than the estimated $300,000 once the study is underway, making it essentially a blank check for taxpayers. The Maine Department of Transportation estimates that the cost of constructing the highway would be near $2 billion (Mistler 2012). Senator Roger Katz, R-Augusta, was surprised by the opposition to the perceived "minor expense." "We will never spend $2 billion on this, but [$300,000] amounts to six one-thousandths of this

project. That's a pretty darn good deal" (Russell 2012). The bill was approved by the state House of Representatives on March 21, 2012 with a Republican-sponsored amendment that would require the highway developer to reimburse the Department of Transportation for the $300,000 feasibility study, once final authorization is given. This amendment helps quell any fears that legislators and citizens alike had about the use of public funds to pay for a feasibility study for a privately funded project. In addition, this also ensures that the study remains in state control. Republicans were happy with the amendment, as both sides of the aisle were able to come to compromise. "This allows the state to still spend the money because it's vitally important that the state is behind the steering wheel on this project," said Representative Richard Cebra, R-Naples. "So, we get to keep control of the study now and if and when the project occurs, the developer pays the state back. That's a good compromise" (Russell 2012). The bill then went back to the Senate, as they needed to vote on the amended form of the bill, and it was passed on March 27, 2012 by a vote of 18-14 (Mistler 2012). Many legislators feel that this is an amazing opportunity to get a 230-mile highway for virtually no cost to the public, after the state funds for the study are reimbursed. The bill was signed into law by Governor Paul Lepage on April 3, 2012 (Poindexter 2012).

While the prospect of the highway reveals many potential economic benefits, many people are still skeptical as to whether these potential benefits will truly outweigh the costs, as the bill's proponents say they will. It has been called a highway to nowhere by some people, and its opponents fear that it would further divide northern and southern Maine even more. At the same time that deals are being hammered out in the legislature,

there is actual political mobilization and protest around the feasibility study, and overall highway project.

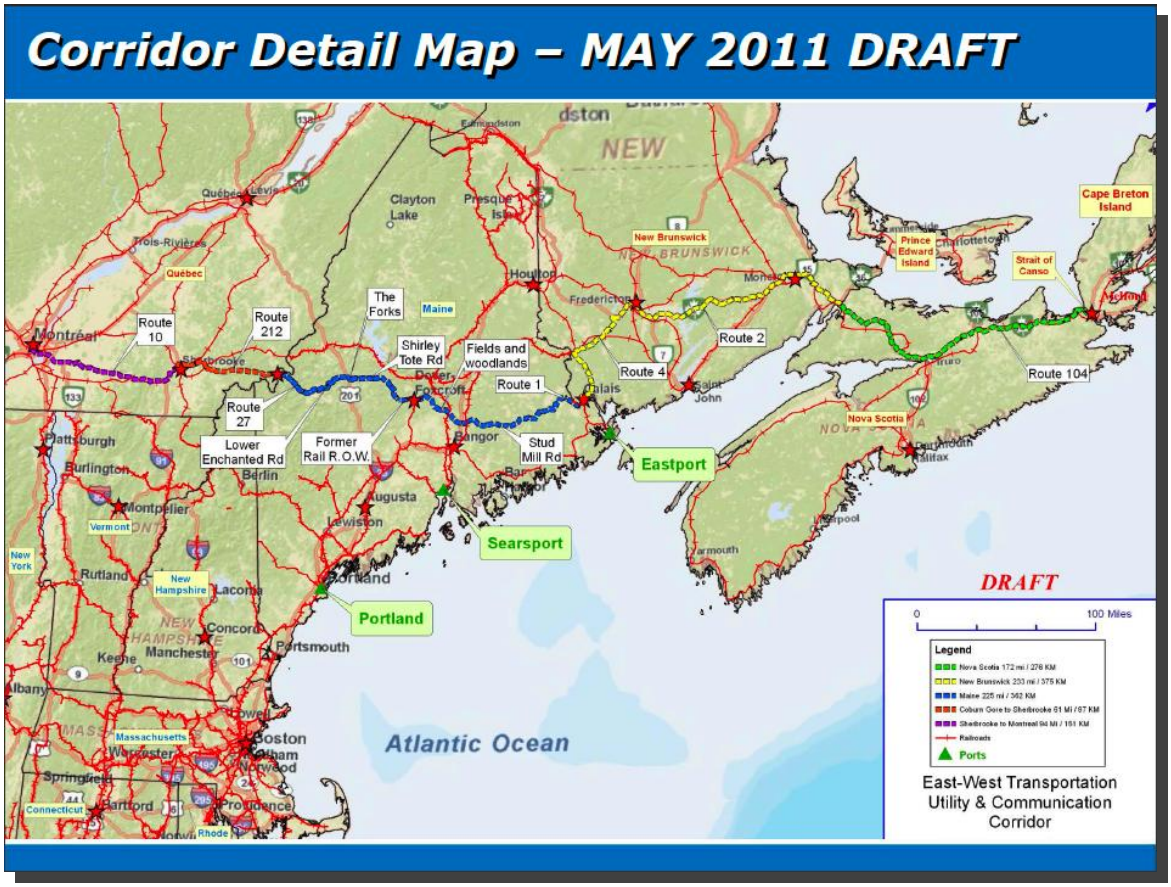

Figure 8 (Cianbro)

Cianbro's proposed route for the East-West Highway

B. Economic

Among other benefits, an east-west highway would fill Maine's "hollow middle" as Vigue referred to it, attract new investments, business and trade opportunities, reduce travel time, create long-term jobs, and expand the tax base. In addition, pollution would potentially be lessened because the distance travelled by Canadian trucks would be cut in

half. Trucks would be traveling shorter distances, thus burning fewer fossil fuels, leading to less pollution. With an east-west highway, Maine could easily become “The Northeast Trade Gateway” to the rest of the world.

> "If we build this east-west highway, the Canadians will be very happy. It costs a minimum of a hundred dollars an hour to run a tractor-trailer truck. If you go over the top of Maine, that's an extra four hours, four hundred dollars. If they think they could save four hours for a toll of fifty dollars, they'd jump on it," Vigue said. "And that means Maine gets a free highway" (Clark 2007).

There would be a significant toll enforced in order to help pay for the construction and maintenance of the road, but proponents such as Vigue argue that it would ultimately be more cost effective for companies to pay the toll and travel across the state rather than wasting time and fuel going up and over the state. If trucks were to utilize the highway, instead of going north, it would save them almost 125 miles and at least two hours of driving.

Proponents further claim that there are many economic incentives for the construction of an east-west highway. First, it will open Maine up to a new market in Montreal. The distance from Bangor to Boston is the nearly the same as Bangor to Montreal, but due to the lack of a fast, direct route, it takes almost twice as long to get to Montreal. The absence of an east-west corridor has also led to higher transportation costs. In 2003, Fraser Paper reported at a Bangor conference that the company’s transportation costs in Maine were greater than any other place in North America. Another company, Georgia-Pacific, closed its mill location in Old Town after citing high transportation costs as a primary factor (Collins and Cebra 2012). According to Vigue and other proponents,

Maine is currently isolated from the rest of the world, but an east-west highway could change that. If the East-West Highway does become a reality, it could become economic vein that Maine has not experienced since its introduction to Interstate 95 (Higgins, 2012)

The road itself would mostly benefit Canadian trucking companies who have to travel north of the state via the trans-Canadian highway, because of weight regulations. If a private road were to be created, a separate weight limit could be enforced to allow these trucks to travel across the state, putting Maine in the crossroads. While the road is essentially designed to connect Canada to Canada, Maine would be an important part of the equation and could take advantage of being in the crossroads of that traffic, while also making traveling easier for our own citizens. However, assumptions regarding economic benefits will ultimately rest upon what Cianbro decides to do, what the terms of a possible public-private partnership would be, and what the highway would eventually become for Maine. Would Maine residents lose control over the planning and placement of the highway? How will it effect Maine's environment?

C. Environmental

With a strong attachment to Maine's natural landscape, it may be challenging to get approval from Maine residents for an East-West Highway. The 230-mile long, half-mile wide route could potentially have a negative effect on the southern end of Moosehead Lake and several of Maine's other natural landmarks, destroy wetlands, wildlife habitats, and forests. In addition, three of Maine's major rivers—Penobscot, Kennebec, and possibly the Piscataquis—and the Appalachian Trail would need to be crossed. While Vigue called Maine's middle, "hollow," many feel that this is not the case as it is full of what makes Maine special and sets us apart from the rest of our asphalt

infested nation. Maine is famous for its endless forests, lakes, rivers, wildlife, and natural landscape. A noisy trucking super-highway that runs through all of this may disrupt Maine's appeal to tourists and its local inhabitants alike, ruining the peace and tranquility which that portion of the state offers. In addition, land values could decrease, tourist appeal could diminish, and local agriculturally dependent economies could be weakened.

Many of these points are being argued by an organization called Defending Water for Life in Maine (DWLM) . While Vigue and his fellow proponents of the east-west highway believe that the highway would be a step in the right direction, DWLM's director, Chris Buchanan, feels that it would be a massive step in the wrong direction (DWLM 2012)

One environmental concern that has been voiced by DWLM is the dangers of natural gas fracking and its speculated connection to the East-West Highway. On both sides of Maine, in Quebec and New Brunswick, multiple leases have been taken out for natural gas fracking, a dangerous and risky procedure that involves the fracturing of hard shale underground in order to release gas. Fracking has been believed to be a possible cause of earthquakes in other parts of the world, and the chemicals released from the procedure have even been able to find their way into water wells. This has caused the contamination of drinking water, and has even led to explosions and house fires. This has led DWLM to speculate that one of the investors' first moves will be to run a natural gas pipeline through the state, along the highway, connecting Canadian suppliers on either side. Since the proposed highway could potentially be a private throughway, Maine's citizens may not have a say in the pipeline, and it would thus be left to federal and state agencies to step in and regulate (Buchanan 2012).

Interestingly, an LPG propane tank has been proposed to be built in Searsport. The significance of this is that the use of propane gels in fracking is more productive than using water (CBS News 2012). DWLM speculates that the propane from Searsport would be transported to Canada for the fracking operations. Searsport town selectmen have also shown strong support for the east-west highway, and this could be why (Buchanan 2012).

Not only would the pipeline potentially create an eyesore and bring with it problems related to natural gas fracking, but it might also pose dangerous threats to natural habitats and wildlife if anything were to go wrong in the construction or while the pipeline is in use.

Despite some the perceived negatives of a natural gas pipeline, it could also be beneficial to the state of Maine. If Maine residents are allowed access to such a pipeline, it would help many homeowners in northern and central Maine who do not already have access to natural gas, and lower their fuel costs significantly. As a function of these fuel savings, many people would have more money to spend on other goods and support local businesses, which would help to stimulate Maine's economy. Not only would increased natural gas availability lower fuel costs in Maine, but it is also commonly considered to be the most environmentally responsible fossil fuel source.

Fossil Fuel Emission Levels
- Pounds per Billion Btu of Energy Input

Pollutant	Natural Gas	Oil	Coal
Carbon Dioxide	117,000	164,000	208,000
Carbon Monoxide	40	33	208
Nitrogen Oxides	92	448	457
Sulfur Dioxide	1	1,122	2,591
Particulates	7	84	2,744
Mercury	0.000	0.007	0.016

Source: EIA - Natural Gas Issues and Trends 1998

Figure 9 (EIA 1998)

Natural gas has a significantly lesser impact on the environment, in terms of fossil fuel emission levels.

However, the use of fracking as a means of gaining access to these gases may undermine claims of environmental responsibility, as the risks associated with its processes (as previously mentioned) are often quite high. As previously discussed by Hiskes, risk is generally unavoidable, but it can be significantly reduced if handled correctly. The best way to accomplish this is through some sort inclusive democratic procedure that would give the community a chance to decide whether it is willing to bear the risk, and how best regulate it.

VII. Conclusion

Maine's citizens need to not jump to conclusions about whether an East-West Highway in Maine is a good or bad idea, as the feasibility study will only be the

beginning of a long and arduous process that will require countless more proposals and studies before construction is even considered. The feasibility study will help to answer the first question: can it be done? However, the more important question is, at what cost? High-modernism needs to be avoided, and the discussion needs to be a local and inclusive one, with widespread community involvement and input.

Further research will need to be conducted, taking into account a variety of case studies, and once more details are made available, only then can a legitimate debate about a specific proposal take place. At this point, the most important thing is to ensure that all political, sociological, economic, and environmental factors, as outlined in this thesis, are included in the discussion, in order to make the best possible decision for the state of Maine.

It is imperative to the successful growth and advancement of society that we approach any type of public works project by first examining its benefits and costs within the four dimensions discussed in this thesis: political, sociological, economic, and environmental. Politically, we need to ask what the motives are behind our government, and if high-modernist ideologies, as described by Scott, are taking precedence over the interests of the community. Sociologically, we must examine the needs of society and how best to accommodate those needs in a moral and ethical manner. Is it okay to sacrifice the needs or interests of the few to satisfy the many? Or must we seek solutions that benefit all citizens? We must also ask how these decisions affect our communities in the immediate and long-term sense. What risks are associated with them, and how should we address those risks? Ultimately, are the risks worth taking?

Economically, does this project promote economic growth and do the potential economic benefits outweigh the costs? Furthermore, are these benefits *worth* the costs that accompany them? Environmental costs often seem difficult to measure. Every new mile of asphalt is one less mile of natural landscape in America, and that landscape is decreasing more and more as time goes on. In Maine, we need to identify what our environmental values are, as well as what our relationship is with the natural landscape. Are we attached to it, and do we value our environment above potentially growing our economy at its expense?

Before we move forward with an East-West Highway in Maine, more debate needs to take place. Options for an inclusive discussion could include a town-hall style forum that brings together both proponents and opponents of the highway, and/or some sort of referenda that would make the public voice more clear. If the state of Maine is going to follow through with this project, decisions will need to be made about how these discussions will happen, where, and what the government's role will be in them. This last piece (the government's role) is very important as the issue of public versus private ownership comes into play. Responsibility for the project, and the actual highway itself, needs to be established. If it is not, and ownership is handed over to the private sector without clearly defined rules and regulations, then we could have a dangerous form of high-modernism on our hands, with a private corporation essentially imposing their will on the state, while being held accountable to no one.

In a recent town-hall forum meeting led by Vigue, and held in Dover-Foxcroft, only thirty people were allowed in, due to "safety concerns," while over fifty others gathered outside the forum to protest the East-West Highway (Barber 2012). In another

instance, the Lincoln Lakes Region Chamber of Commerce invited Vigue as a special guest to speak on the highway project, but at a price. Admission to the meeting cost thirty dollars for Chamber of Commerce members, and thirty-five dollars for the public (Walsh 2012). While these two examples are not overly concerning at the moment, they could represent a negative trend of restricted discussion of the East-West Highway and limited public involvement in the process, were things to continue along this track. This could lead to a slippery slope of privatized high-modernism for the state of Maine.

Although there are obvious potential economic benefits, we must continuously ask the question: at what cost? We need to think more deeply across all four dimensions: political, sociological, economic, and environmental. Are we considering all options or are we simply trying to hastily solve twenty-first century problems with twentieth century solutions? As citizens and taxpayers, we must demand that any discussion of an East-West Highway, or similar project, be examined thoroughly and responsibly with the best interests of society and its citizens in mind.

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Brian Philbrook was born in Bridgeton, New Jersey, on February 18, 1990. He was raised in Belfast, Maine and graduated from Belfast Area High School in 2008. Majoring in political science, Brian also earned minors in legal studies and professional writing. He is a brother of Sigma Phi Epsilon Fraternity and a member of Pi Sigma Alpha Honor Society. Upon graduation, Brian plans to apply to Law School and pursue a legal career.