

TRANSPORTATION EFFICIENCY ACT TO END OIL ADDICTION: SECURING AMERICA'S FUTURE

BY

LIEUTENANT COLONEL TROY GALLOWAY
United States Army

DISTRIBUTION STATEMENT A:

Approved for Public Release.
Distribution is Unlimited.

USAWC CLASS OF 2011

This SRP is submitted in partial fulfillment of the requirements of the Master of Strategic Studies Degree. The views expressed in this student academic research paper are those of the author and do not reflect the official policy or position of the Department of the Army, Department of Defense, or the U.S. Government.



U.S. Army War College, Carlisle Barracks, PA 17013-5050

The U.S. Army War College is accredited by the Commission on Higher Education of the Middle State Association of Colleges and Schools, 3624 Market Street, Philadelphia, PA 19104, (215) 662-5606. The Commission on Higher Education is an institutional accrediting agency recognized by the U.S. Secretary of Education and the Council for Higher Education Accreditation.

REPORT DOCUMENTATION PAGE				Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing this collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.					
1. REPORT DATE (DD-MM-YYYY) 17-03-2011		2. REPORT TYPE Strategy Research Project		3. DATES COVERED (From - To)	
4. TITLE AND SUBTITLE Transportation Efficiency Act to End Oil Addiction: Securing America's Future				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S) Lieutenant Colonel Troy Galloway				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Colonel Thomas J. Sexton Department of Military Strategy, Planning, & Operations				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) U.S. Army War College 122 Forbes Avenue Carlisle, PA 17013				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION / AVAILABILITY STATEMENT Distribution A: Unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT This paper advocates reform of the National Transportation Policy (NTP) in a manner that seeks to balance the United States' approach to domestic transportation. The United States faces increasing security risks as a result of its appetite for an ever-increasing share of world oil supplies required to fuel an outdated transportation system enabled by a failed or absent National Transportation Policy (NTP). The Transportation Efficiency Act to End Oil Addiction (TEATOA), advocated within this paper, provides a template that will facilitate the transformation of the current energy gluttonous transportation system into one that is much more efficient and tailored to enable prosperity in an energy constrained environment.					
15. SUBJECT TERMS Energy Security, Peak Oil, Oil Dependence, Transformation Reform					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT UNLIMITED	18. NUMBER OF PAGES 28	19a. NAME OF RESPONSIBLE PERSON
a. REPORT UNCLASSIFIED	b. ABSTRACT UNCLASSIFIED	c. THIS PAGE UNCLASSIFIED			19b. TELEPHONE NUMBER (include area code)

USAWC STRATEGY RESEARCH PROJECT

**TRANSPORTATION EFFICIENCY ACT TO END OIL ADDICTION:
SECURING AMERICA'S FUTURE**

by

Lieutenant Colonel Troy Galloway
United States Army

Colonel Thomas J. Sexton
Project Adviser

This SRP is submitted in partial fulfillment of the requirements of the Master of Strategic Studies Degree. The U.S. Army War College is accredited by the Commission on Higher Education of the Middle States Association of Colleges and Schools, 3624 Market Street, Philadelphia, PA 19104, (215) 662-5606. The Commission on Higher Education is an institutional accrediting agency recognized by the U.S. Secretary of Education and the Council for Higher Education Accreditation.

The views expressed in this student academic research paper are those of the author and do not reflect the official policy or position of the Department of the Army, Department of Defense, or the U.S. Government.

U.S. Army War College
CARLISLE BARRACKS, PENNSYLVANIA 17013

ABSTRACT

AUTHOR: Lieutenant Colonel Troy Galloway

TITLE: Transportation Efficiency Act to End Oil Addiction: Securing America's Future

FORMAT: Strategy Research Project

DATE: 17 March 2011 WORD COUNT: 5,552 PAGES: 28

KEY TERMS: Energy Security, Peak Oil, Oil Dependence, Transportation Reform

CLASSIFICATION: Unclassified

This paper advocates reform of the National Transportation Policy (NTP) in a manner that seeks to balance the United States' approach to domestic transportation. The United States faces increasing security risks as a result of its appetite for an ever-increasing share of world oil supplies required to fuel an outdated transportation system enabled by a failed or absent National Transportation Policy (NTP). The Transportation Efficiency Act to End Oil Addiction (TEATOA), advocated within this paper, provides a template that will facilitate the transformation of the current energy gluttonous transportation system into one that is much more efficient and tailored to enable prosperity in an energy constrained environment.

TRANSPORTATION EFFICIENCY ACT TO END OIL ADDICTION: PARAMOUNT TO SECURING AMERICA'S ENERGY FUTURE

The Federal Government must LEAD and develop a coherent national vision for transportation and focus on reducing dependence on foreign oil.

—Robert Puentes¹

This paper advocates reform to the National Transportation Policy (NTP) in a manner that seeks to balance the United States' approach to domestic transportation and temper its thirst for fuel while confronting the realities of increasingly scarce and expensive petroleum supplies. This reform should be crafted in a manner so that transportation policy acknowledges and is fully nested with the energy security tenets identified in the National Security Strategy (NSS) and the National Defense Strategy (NDS).

A truly comprehensive NTP nested within the NSS and NDS is paramount in order to reconcile dwindling petroleum resources with the need to sustain domestic transportation availability while also contributing to American security at home and abroad. More specifically, the United States must have a domestic transportation policy that better aligns with the realities of less abundant and more expensive energy sources needed to fuel its transportation systems, and that also recognizes the nexus between its bloated oil appetite and risks to national security. A diversified and more efficient transportation system contributes significantly to reducing American dependence on foreign oil which translates into the potential for a more prosperous and secure nation.

This paper will appropriately scale the problem with emphasis placed on providing background data that includes but is not limited to the amount (11.7 million

barrels) of crude oil that the United States imports daily, the percentage of that oil that is dedicated to transportation, domestic consumption trends, and how the United States' dependence on oil imports may help to fund nations and non-state actors that pose security threats to our nation.² Additionally, some emphasis is placed on explaining peak oil theory and how that theory impacts the future of global oil supplies and what that may mean to the United States. The paper must contain some discussion of the domestic transportation policies that helped to shape the current transportation and energy environment, to include the advent of the Federal Highway system. These policies fostered changes in American culture and proffered the way American's associate personal freedom with the automobile. A short discussion of that cultural change will precede the recommended policy changes. The Transportation Efficiency Act to End Oil Addiction (TEATOA), outlined in this paper, provides a template to transform our transportation system by diversifying the modes of transportation, reforming transportation funding, and more closely aligning transportation policy with land use policy. These recommended changes are critical to salvaging workable transportation solutions and systems for the United States and helping to preserve its security by weaning its citizens from their dependence on foreign sources of oil.

Background

Thirty-six years after the Organization of the Petroleum Exporting Countries (OPEC) Oil Embargo of 1973-74, the United States transportation system remains dependent on petroleum for over 95 percent of its energy needs.³ Nearly 60 percent of this volume of petroleum originates from foreign sources that require a constant and expensive commitment to secure.⁴ So expensive is this security commitment that the cost of a gallon of gasoline in the United States is certainly much more expensive than

what Americans pay at the pump. These hidden costs add to the total price per gallon even though most American's are ignorant to what these costs are, or how they came to be. The majority of these costs are paid through taxes to support the military security requirements. More indirect costs linked to American dependence on foreign oil are associated with lost jobs and lost domestic revenues that contribute to the ever increasing Federal budget deficits. Economist Philip Verlenger suggests that oil costs have drained over 15 percent of the US economic growth since the Second World War, resulting in over \$1.2 trillion in direct losses that equate directly to the loss of jobs and reduced tax revenues.⁵ The free market process that determines the price at the pump does not and probably never will reflect these costs that the entire nation must bear. At the time of this writing, pump prices for gasoline products ranged from \$2.80 to \$3.20 per gallon. A 2003 National Defense Council Foundation study concluded that the real price of gasoline is well over \$5.00 per gallon.⁶ This calculation takes into account nearly \$50 billion in annual defense expenditures to secure the free flow of oil from the Persian Gulf region – the equivalent of adding a \$1.17 to the price of every gallon of gasoline consumed in the United States; the loss of over 800,000 jobs in the U.S. economy; the loss of \$160 billion in GNP annually; the loss of nearly \$14 billion in state and federal revenue annually; and total economic penalties approaching \$300 billion annually.⁷ When totaled, these direct and indirect costs add well over \$2 to every gallon of gasoline pumped in the United States. These costs, derived by using 2003 data would certainly be even more expensive today considering the United States' expanded military footprint in the Middle East and its expanding military role around the globe associated with securing more geographically diverse energy sources.

The cost is not only economic; it also manifests itself through the funding of governments and despotic regimes that pose direct and indirect threats to the security of the United States. As an example, 40 percent of all Iranian revenues are oil derived, helping to fund the most dangerous state sponsor of terrorism in the world.⁸ Saudi Arabia benefits from over \$300 billion annually in oil revenues, some of which reportedly funds extremist organizations that are antagonistic towards the United States.⁹ Venezuela's Hugo Chavez, benefits greatly from oil exports to the United States, and reminds Americans that there are petro-states in their own hemisphere that utilize oil riches to support aggressive foreign policy actions, such as the Venezuela-Columbia military crisis in 2008.¹⁰ Evidence suggests that petro-states such as Venezuela and Iran who are led by "revolutionary" style leaders are significantly more aggressive and much more likely to launch interstate disputes than similar "revolutionary" style governments that do not have the benefit of petrodollars.¹¹ Additional chief exporters of oil to the United States include Iraq, Nigeria, Colombia, Angola, Algeria, Canada, and Mexico.¹² These nations require a significant annual monetary commitment from the United States to help ensure security and access to their respective petroleum resources.

The ever increasing percentage of oil that originates from foreign sources only serves to exacerbate an already tenuous situation. This over reliance degrades American national security and imparts great risk to its national economy.¹³ There should be no question that American dependence on foreign countries to satisfy its energy requirements treads on its independence. According to a study released by the Center for Naval Analysis Military Advisory Board, this dependence "weakens our

international leverage, undermines foreign policy objectives, undermines economic stability, entangles us with unstable or hostile regimes, undermines combat effectiveness, and exacts a huge price tag in both dollars and lives.”¹⁴ In many cases we find the United States’ national interests shaped by an ever increasing need for expanded energy supplies. Instead of shaping the international environment, the United States is shaped by its endless appetite for a greater share of a diminishing global supply of oil.

One of the nation’s chief national security issues, mentioned no less than five times in the NSS, is energy security tied to American dependence on fossil fuels. The NSS admits that as long as the nation is dependent on fossil fuels, it must commit to securing the areas and sea lanes of the world that ensure the unobstructed supply of oil.¹⁵ The NSS goes on to encourage a diversification of the United States’ energy portfolio and stresses the need for a quick transition away from foreign oil supplies. The NSS recognizes the security risks that are inherent with the current approach and the second order effect fossil fuel usage foments toward environmental degradation and climate change – both of which pose increased instability throughout developing parts of the world.¹⁶ Americans are increasingly dependent on oil that originates from some of the most unstable regions of the world and there does not seem to be any urgency in domestic policy to address the situation.¹⁷ Instead, the United States acknowledges the nation’s reliance on foreign oil and the importance of that oil to the global economy in the NDS which states “the well-being of the global economy is contingent on ready access to energy resources and the United States will continue to foster access to and flow of energy resources vital to the world economy.”¹⁸

This statement highlights the disconnect that exists between the NDS which advocates moving away from fossil fuel dependence and the domestic transportation policies that do not acknowledge the energy crisis that Americans face – relic policies of a nation that once was energy independent.

The United States represents only 5 percent of the globe's population, yet it annually consumes more than 25 percent of global petroleum production while only controlling 3 percent of constantly waning world supplies.¹⁹ The price of crude rose from \$25 per barrel in 2003 to near \$90 per barrel in late 2010 resulting in annual foreign payments for oil ranging from \$250 to \$300 billion.²⁰ These numbers represent an uneasy dependence that the nation maintains on foreign suppliers. General Charles Wald, USAF (RET.) suggests that the chief problem that over-reliance on oil yields is dependence, “we need something that someone else has. We need their oil.”²¹ It is in the national interest to wean Americans from their addiction to foreign energy sources that plunge the nation deeper into debt and jeopardizes its security as a nation. Though not the primary emphasis of this research, it must be mentioned that this same dependence on oil accounts for 42 percent of the world's energy-related Carbon Dioxide emissions which plays a key role in the growing climate change concerns.²² As a nation, the United States produces 5 times the world average in green house gas (GHG) emissions despite having only 5 percent of the population.²³ The Center for Naval Analysis suggests that climate change may potentially add significant burden to the military workload in many already fragile regions of the world.²⁴ Reducing GHG emissions by reducing American oil consumption habits serves numerous national interests that all lead back to the nation's security environment. Global demand for

energy and climate change are both mentioned in the NDS as physical pressures that could combine with a myriad of other factors to produce greater levels of global uncertainty over the next decade or two.²⁵

Peak Oil

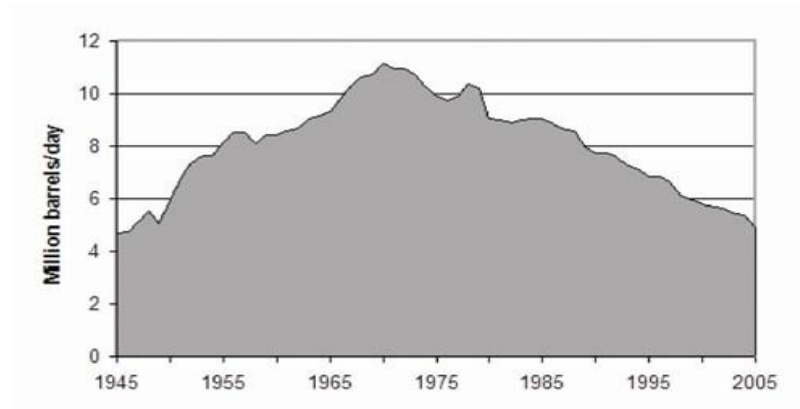


Figure 1: US Oil Production Source: EIA

M. King Hubbert, a geophysicist who worked for Shell Oil, predicted in 1956 that the United States' oil production would reach its peak between 1966 and 1972.²⁶ Hubbert understood that American domestic oil discoveries peaked in the 1930's and that production from these discoveries steadily increased in the 1950's and 1960's as the oil more easily accessed and pumped was siphoned from the larger reservoirs. He also understood that as more and more wells accessed these larger oil fields, effectively placing bigger and more numerous straws into the proverbial glass of oil, inevitably the glass would empty more rapidly. The technologies that allowed more efficient extraction techniques also hastened the process of reaching "peak" oil production in the United States, essentially allowing the United States to burn through its oil supplies much more rapidly than ever thought possible during the earlier days of oil production.

A linear analysis of “peak” oil prediction indicates that production peak occurs when approximately one half of the total oil contained in the reservoir is extracted.²⁷ Hubbert’s analysis and subsequent prediction, based on past oil production data and predictive analysis, proved correct when the United States reached peak oil production in 1970.²⁸ Many of Hubbert’s contemporaries were very skeptical of his peak oil methodologies and of the predictions that resulted from the methods. As a result, many of those contemporaries refined and improved Hubbert’s methods resulting in newer predictive models that offer arguably more reliable predictions.²⁹

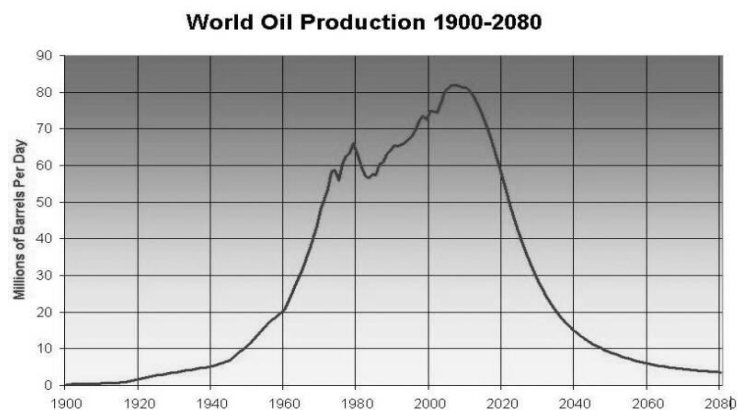


Figure 2: Source: EIA

The problem with determining exactly when peak oil occurs is that it is only possible to do so definitively in hindsight. The Association for the Study of Peak Oil and Gas (ASPO), using improved methodologies and historic data based on Hubbert’s model, predicted that global peak oil production occurred in 2008.³⁰ Numerous other study groups and think tanks arrived at peak oil predictions that range from as early as 2006 to as late as 2025. The bottom line is that world oil production has or will soon peak. That does not mean that oil production will be exhausted immediately but it does

mean that society writ-large has a precariously finite amount of time to find alternatives to this dwindling resource.

The oil that is left in the ground is increasingly difficult to extract, and the Energy Return on Energy Invested (EROEI), a marker established to determine the ratio between energy expended to extract a barrel of oil, eventually climbs to a point where it takes more energy to extract a barrel of oil than a barrel of oil yields.³¹ When EROEI “pins the needle”, oil supplies are effectively depleted and industrialized society that relies so heavily on this precious commodity will suffer greatly. Hubbert fully acknowledged the role that fossil fuels, especially oil, play in modern society. He lamented the chaos and great difficulty that society may have to endure as a result of declining petroleum production³²

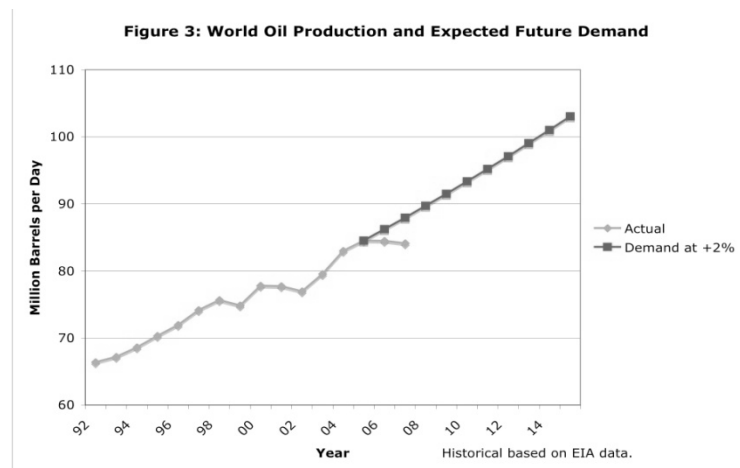


Figure 3: Source: EIA

Figure 3 depicts the growing delta that occurs once oil production peaks when compared to demand models that predict modest annual 2 percent demand increases. The United States Energy Information Administration (USEIA) predicts that by the year 2030 global demand for oil will reach 118 million barrels a day – roughly 30 million barrels above today’s rate of consumption.³³ This means that state and non-state actors

will aggressively pursue control of remaining supplies which may lead to the establishment of friction points and conditions that are ripe for conflict. In addition to the possibility for increased conflict over control of oil supplies, there are significant economic impacts to consider. The first order impact of peak oil on transportation is not necessarily about immediately running out of oil. Instead, peak oil's impact is about demand outstripping available supplies, the extreme price increases that will result, and the instability and chaos that will engulf the complexity of our society.³⁴ Economic disruption on this scale inherently causes instability in developing nations and introduces the possibility of instability in other areas considered stable under ordinary economic circumstances. Prudent policy decisions can alter or avoid these scenarios altogether with the proper nesting of mutually supporting transportation, energy, and security policies that are properly resourced and carried out post-haste.

Current Policy

It is blatantly apparent that the United States' outdated and mostly absent national transportation policies contribute to excessive energy consumption which directly threatens national security. Current and past policies sired a transportation system that is nearly universally oriented toward the automobile as the primary mode of transportation. These same policies enabled a system that consumes 70 percent of the nation's oil contributing to a near total dependence on petroleum-based fuels.³⁵ To exacerbate the over-demand for petroleum fuels, transportation system design coupled with the current state of relatively cheap fuel costs encourages the highest use among the least efficient modes. A single automobile uses over 5,000 British Thermal Units (BTUs) per passenger mile, while a train car carrying 19 people uses about 2,300 BTUs

and a bus carrying the same 19 passengers uses about 1,000 BTUs³⁶. And yet, over 86 percent of all trips in the United States are made by automobile.³⁷

The nation's domestic transportation policies are legacy policies from an era of very cheap and abundant domestic oil supplies that predate dependence on foreign oil sources to fuel the transportation sector. New policies are desperately needed to confront this new reality of declining supplies and increasing prices. The Transportation Efficiency Act for the 21st Century (TEA 21) and the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) in sequence represents the statements of United States transportation policy dating back to the 1990s. TEA 21 allocated \$173 billion to highways while only providing \$40 billion for public / alternative modes of transportation. SAFETEA-LU allocated \$193 billion to highways while only providing \$45 billion for public / alternative modes of transportation. In both Acts, highway funding amounts are four times greater than public and alternative transportation funding. Transportation, representing a full one-fifth of our economy has only one fuel source – oil.³⁸ Dependence on a singular fuel type, 60 percent of which is imported, risks peril to national economic and physical security.

In examining the last 50 to 60 years of modern transportation policy, it is difficult to reason that past Presidents and Congressional leaders ever expected our transportation system to become so modally one-dimensional or to be so dependent on foreign oil. In 1956 when the National System of Interstate and Defense Highways Act was signed into law by President Eisenhower, the United States was energy independent domestically producing all of the oil that it needed with a seemingly endless supply. America also possessed one of the better passenger rail systems in the

world with very well developed street car, trolley, and bus systems in nearly all of the major cities of the nation. At the time, it was logical to expand and improve the highway system to enhance and compliment the other fully developed modes of transport available to the nation. Americans did not mind walking which was made easier by living and working in neighborhoods that were designed around the need to walk. Many of those neighborhoods also had access to some form of basic mass transit. The car was not yet king and the national transportation portfolio was much more diverse.

The National System of Interstate and Defense (Federal) Highways Act ushered in a new era in American transportation. National transportation policy from that point forward became nearly singular in vision focusing on accommodating the automobile. There is no doubt that the 46,508 mile web of highways helped to transform the nation. This Interstate system remains one of the greatest public works projects in the nation's history and is now integrated into American culture – as the primary means of transportation and as an integral part of the American way of life.³⁹ The creation of the interstate system is a strong indicator of what the United States is capable of doing on a continental scale when a national vision is communicated to the people and when that vision is properly resourced. Paradoxically, the grand scale of the Federal Highway system should be viewed as an example of the magnitude of effort required to solve our current transportation inefficiencies and as a way to set a new course to serve the nation's transportation and energy security needs well into the next century – much the way the Eisenhower system did for the last 50 years.

Prior to the advent of the Federal Highway system, the car had already made its way onto the American stage and captured the imagination of a fiercely independent

people. For many Americans, the automobile represents an expression of freedom that resonates within the national psyche. The ideals of freedom, pursuit of power over our human condition, and an insatiable pursuit of individualism are embodied in the automobile and widely adopted by a young nation enamored by this highly individualized mode of transportation.⁴⁰ This long embrace of the automobile conducted so thoroughly over the last 60 years strongly embedded the car into American culture. It did so to the point that the majority of citizens of the nation now view owning or driving a car more as a human “inalienable” right than a mere form of transportation.⁴¹ This perceived “right” and the co-opting of our transportation system to accommodate this new found “right” marginalizes our nation’s opinion of public and alternative modes of transportation. Public opinion is so distorted that modes other than the automobile are negatively viewed by the general public. America’s love affair with the automobile and the freedoms inherent with this form of transport contradict the changes that must be made. These changes must address the outdated infrastructure of the United States transportation system. More importantly, attitudes of average Americans must change to willingly embrace a future transportation system that will offer more choice and more freedom and result in greater security to the nation.

Confronting the Need to Change

Americans must acknowledge that reduced dependence on foreign oil will free the United States military from some of the burden of securing foreign oil sources and the sea lanes that ensure oil’s safe transport. Additionally, global oil production has already or will soon peak further straining already precarious world energy supplies. The nation must acknowledge the potential for reduced energy supplies in the very near future and confront the tough decisions that are necessary for the nation to survive and

thrive in an energy constrained environment. Chief among these tough decisions includes examining outdated transportation policies and their impact on national security. This undertaking requires significant policy additions and changes and asks the nation to commit to fundamentally changing the way Americans approach transportation. Robert Puentes, a Fellow with the Brookings Institution, in congressional testimony suggests that the United States must abandon the status quo and fundamentally change transportation policy.⁴² This change must include funding priorities, how responsibilities are established at the Federal, State, and Local level of government, and how transportation policy is linked with other policies.⁴³

The national appetite for energy – particularly in the transportation sector – must radically change or it will continue to risk the nation’s security while vying for this now essential commodity in the far corners of the world. The Center for Strategic and International Studies suggests that oil and natural gas are becoming increasingly scarce and difficult to extract and transport to market as a result of energy resources being more “geographically, geologically, technologically, environmentally, and financially challenging to bring to market.”⁴⁴ A significant portion of remaining conventional oil and natural gas is located in many of the more volatile regions of the world including the Middle East, Africa, and Eurasia.⁴⁵ The United States now finds itself saddled with a transportation system that limits choice, defies innovation, is incredibly expensive to operate, and that is reliant on fuel sources that require significant blood and national treasure to secure.

Now is an opportune time to make wholesale changes to domestic transportation policy. The current transportation policy is on a life support system and is dependent on

continuing resolutions for funding since SAFETEA-LU expired on September 30, 2009. The disparity favoring highway funding over mass or alternative transportation funding in SAFETEA-LU underscores United States lawmaker's inability to reconcile the realities of peak oil with effective transportation policy. A more effective transportation policy will include at least as much funding for public and alternative modes of transportation as it does for highways and must include provisions to curtail individual automobile use which is nearly universally recognized as the chief offender of our gluttonous consumption of this now precious resource - oil. The United States has an opportunity to make a clean break from the past and look to the possibilities presented by a transportation policy that will focus on reducing American dependence on foreign oil and support the energy security and energy independence tenets contained in the NSS and NDS. "Without significant and timely adjustments, the nation's energy dependence will continue to undermine its security and prosperity, leaving it vulnerable to energy supply disruptions and manipulation."⁴⁶

TEATOA

Effective, nationally integrated transportation policy contains three pillars that support the overarching or primary tenet of oil independence. This policy, for the sake of this essay, is referenced as the Transportation Efficiency Act to End Oil Addiction (TEATOA). The first pillar of which is a coherent national transportation vision that lays the foundation for state and local transportation initiatives and that works to integrate all modes of transportation locally, regionally, and nationally.⁴⁷ The second pillar is fuel tax and state funding formula reform that abandons indirect automobile subsidies and reorients subsidies to more efficient, higher performing modes of transport that provide higher rates of return per tax dollar invested. The third pillar is the empowerment of

state and regional planning and mobility authorities in order to guide local and state land use policy and its linkages to national transportation policy. Integrating state and local land use law with state and Federal transportation policy is critical in order to establish land use and population growth patterns that efficiently accommodate mass and alternate modes of transportation. This fusion of land use and population growth patterns with transportation systems creates efficiencies that are instrumental in the development of functional and affordably scaled alternative modes of transport.

Successful implementation of the three pillars of TEATOA rests on a foundation of a strong federalist-style unity. Transportation policy is one area of domestic policy better adapted for Federal control, particularly with the far-reaching implications for energy security, economic security, and national security. This type of federalist-style effort was present in the Eisenhower Federal Highway system and its contribution to increased mobility for all Americans while also addressing national security issues germane to the times. TEATOA presents a similar opportunity to improve mobility for all Americans while contributing to national security. The United States must act with fifty states unified by one national transportation vision supported by one Federal Transportation Act outlined in TEATOA. Stronger federal control will help to ensure that TEATOA is properly nested with the NDS and NSS. This must be one policy for one nation.

TEATOA is differentiated from its predecessors by establishing, as its first pillar, a national vision and a nationwide transportation plan with the Federal government in the lead. Previous policies relied too heavily on state autonomy resulting in a national transportation system that is fractured and over-reliant on the Federal highway system

as the only system of truly national transport accessible to most Americans. These same policies produced a transportation system that is woefully short of mass or alternate transportation assets. Federal leadership helps to level the playing field among transportation modes encouraging more energy-efficient investments and creating an environment more supportive of mass transit.⁴⁸ In the current environment, public transportation improvements must take precedent over highway projects. There are many great examples of places that invest heavily in public transportation while maintaining some of the fastest growing economies. Hong Kong and London are arguably two of the most competitive business cities in the world. In fact, 90 percent of all travel in Hong Kong is conducted via public transportation while London boasts 3.4 million daily public transportation trips on its various public transportation systems⁴⁹

In 2001, 86 percent of all metropolitan trips in the United States were made by private automobile, compared to only three percent on public transit.⁵⁰ This statistic is indicative of a Federal government in denial or at the very least, out of touch with the consequences of the nation's choices. Unfortunately, not having a well established public transportation system may eventually contribute to the nation's economic peril and threaten its well-being unless Americans act to reverse the trends of the last 60 years. Richard Heinberg suggests that nations with good public transportation systems will fare much better as economies transition into the post-carbon⁵¹ era.⁵² If policy decisions move the United States in this direction, it must act with speed, because the process of constructing public transportation systems requires tremendous carbon-based energy investments to build the necessary infrastructure.

TEATOA's second pillar identifies the need to reverse many of the tax policies and funding formulas that subsidize the automobile and the current highway-centric transportation system. Through fuel taxes, the United States charges drivers approximately two cents per mile for the use of the road system – the lowest rate in the developed world. This tax has not kept pace with the real cost of building and maintaining roads, so the fuel tax is augmented by more general tax instruments like local option sales taxes and general revenue bonds. These more general types of taxes shift the cost away from automobile users who actually use the roads, and unfairly pass these costs on to society at large. This subsidy, which makes driving relatively cheap and masks the real cost of the nation's transportation choices, is not granted to most mass transit systems or other alternate modes. This tax policy and resulting subsidy effectively limits the ability of government at all levels to encourage travel by modes other than the individual automobile.⁵³ This formula must be reversed to place the real cost of inefficient choices on individuals who make these choices. Programs and tax policies within the broader national transportation policy must be crafted to advantage the more efficient transport systems that more closely reconcile the realities of peak oil and seek to provide sustainable transportation options to society. The current fuel tax must be reallocated with the majority of the revenues earmarked for public transportation system construction. This will allow the United States to begin to address the shortfall of public transportation systems while there is an available revenue stream. A smaller portion of the available revenues must continue to be oriented toward maintaining the existing highway system but very few new public road or highway projects should be continued with the fuel tax. In effect, the current funding formula that

spends nearly \$4 on highway projects and maintenance for every \$1 on public or alternative transportation must be reversed. Fuel-based tax revenues will continue to contract as gas becomes more expensive and scarcer. Funding formula changes must be enacted quickly in order to create the time and resources necessary to make alterations to the transportation infrastructure.

Effective state and local land use law is the essence of the third pillar of TEATOA and must work to compliment multi-mode transportation systems by allowing higher population densities and mixed land use types. Higher population densities and mixed land use types were prevalent in nearly all American cities prior to the Automobile's sprawling impact on prevailing land use patterns beginning in the 1950's. Densely populated, mixed land use environments are much better suited for a variety of transportation options. In contrast, state and local laws that demand a clear separation of land use types and prohibit higher residential densities create car dependent communities that are not good candidates for public or alternative modes of transportation. TEATOA must be fused with land use policy at the local level to achieve true transportation reform.

The United States is expected to add an additional 120 million people by 2050. This growth will require an additional 213 billion square feet of residential, retail, office, and mixed use space.⁵⁴ Fusing this new building construction with newly built or renovated public transportation systems in more transit friendly designs will allow significantly more people direct access to public transportation systems. The current landscape of mostly low density, sprawling development does not maximize the use of public transportation systems. In these low density landscapes, housing tends to be too

far removed from the places where people work, where people socialize, and where people seek recreation, and subsequently too far from ideal locations for public transportation access points. Effective transformative transportation policy must be complimented by state and local land use policies that encourage higher population density and mixed use zoning that effectively weave transportation systems into neighborhoods.

The nation is left with very few good options to address declining oil supplies and the inevitable cost increases that will accompany demand that outstrips supply. TEATOA offers a way to tackle the single biggest user of petroleum in the nation and outlines a method that will allow Americans to significantly reduce the impact that declining oil supplies will have on the transportation sector. The United States must act boldly and swiftly before this opportunity to truly reform the national transportation system slips away. The status quo simply will not do. This path created a nation that is incredibly vulnerable to oil price fluctuations – causing it to strike tacit agreements with Saudi Arabia and other Persian Gulf oil producers.⁵⁵ The nation consumes over 25 percent of the oil produced in the world annually, inexorably binding it to some of the most volatile regions of the world.⁵⁶

TEATOA offers an opportunity to extract the United States from the servitude position that oil addiction binds it to. Change of the significance of TEATOA is never easy, however, paradoxically, there is precedent along the same order of magnitude. The National System of Interstate and Defense Highways, serves as a tremendous example of what the nation can do when it acts in unison with a common goal. This system required a national vision and a nationwide commitment of resources to

complete. TEATOA will require the same, and when enacted, will create a national transportation policy that, over time, will help to eliminate our nation's addiction to foreign oil and, in turn, help to create a more secure United States. In the end, sustaining the American experience should be the collective goal – even if it takes thinking and acting in ways that may seem contrary to the current American way of life!

Endnotes

¹ Robert Puentes, "Strengthening the Ability of Public Transportation to Reduce Our Dependence on Foreign Oil," Congressional Testimony, September 9, 2008, 2.

² *United States Energy Information Home Page*, <http://www.eia.doe.gov/> (accessed February 17, 2011).

³ Robert Puentes, Congressional Testimony, 2.

⁴ Jeffrey A. Connelly, "Escaping America's Future: A Clarion Call for a National Energy Security Strategy," Strategic Research Project (Carlisle Barracks, PA: U.S. Army War College, August 16, 2010), 1.

⁵ Natural Resources Defense Council, *Safe, Strong and Secure: Reducing America's Oil Dependence* (Washington, DC: Natural Resources Defense Council, October 2004), 1.

⁶ William Clark, *Petrodollar Warfare: Oil, Iraq, and the Future of the Dollar* (Gabriola Island, BC: New Society Publishers, 2005), 168.

⁷ Ibid. Originally appeared in "NCDF Report: The Hidden Cost of Imported Oil" Institute for the Analysis of Global Security, 2003.

⁸ Center for Naval Analysis, *Powering America's Defense: Energy and the Risks to National Security* (Washington, DC: Center for Naval Analysis, June 2009), 4.

⁹ Ibid.

¹⁰ Jeff D. Colgan, "Oil and Revolutionary Governments: Fuel for International Conflict," *International Organization* 64 (Fall 2010), 683.

¹¹ Ibid, 690.

¹² Jeffrey A. Connelly, "Escaping America's Future," 6.

¹³ Honorable Ray Mabus, Secretary of the Navy, "Clean Energy Economy Forum," scripted commentary, Washington, DC, July 27, 2010.

- ¹⁴ Center for Naval Analyses, *Powering America's Defense*, vii.
- ¹⁵ Barack Obama, *National Security Strategy* (Washington, DC: The White House, May 2010), 30.
- ¹⁶ Ibid.
- ¹⁷ Gerald, F. Seib, "The Economy; The Outlook: How Oil Dependence Fuels U.S. Policies," *The Wall Street Journal*, August 25, 2005.
- ¹⁸ Robert M. Gates, *National Defense Strategy* (Washington, DC: The Pentagon, June 2008), 16.
- ¹⁹ *United States Energy Information Home Page*, <http://www.eia.doe.gov/> (accessed February 17, 2011).
- ²⁰ David B. Sandalow, "Energy: Ending Oil Dependence," www.opportunity08.org (accessed December 8, 2010).
- ²¹ Center for Naval Analysis, *Powering America's Defense*, 2.
- ²² Sandalow, "Energy: Ending Oil Dependence,"
- ²³ James Hartman, United States Army War College, email correspondence (December 9, 2010).
- ²⁴ Center for Naval Analysis, *Powering America's Defense*. vii.
- ²⁵ Robert M. Gates, *National Defense Strategy*, 4.
- ²⁶ William Clark, *Petrodollar Warfare*, 76.
- ²⁷ Richard Heinberg, *The Party's Over: Oil, War and the Fate of Industrial Societies* (Gabriola Island, BC: New Society Publishers, 2005), 98.
- ²⁸ Ibid.
- ²⁹ Ibid., 99.
- ³⁰ William Clark, *Petrodollar Warfare*, 78.
- ³¹ Ibid.
- ³² Richard Heinberg, *The Party's Over*, 99.
- ³³ Jeffrey A. Connelly, "Escaping America's Future," 3. The USEIA provides independent statistics and analyses for all fuel and energy types that are critically important to U.S. policy makers.
- ³⁴ James Howard Kunstler, "Wake Up, America. We're Driving Toward Disaster," *The Washington Post*, May 25, 2008.

³⁵ Robert Puentes, Congressional Testimony, 2.

³⁶ Richard Heinberg, *The Party's Over*, 191.

³⁷ Brian D. Taylor, "Putting a Price on Mobility: Cars and Contradictions in Planning" *Journal of the American Planning Association* 72, (2006): 279.

³⁸ William Antholis, "Q and A with William Antholis," interview by David Mark, *Politico*, October 14, 2008.

³⁹ U.S. Department of Transportation, Federal Highway Administration, "History of the Interstate Highway System," <http://www.fhway.dot.gov/interstate/history/htm> (accessed December 17, 2010).

⁴⁰ Christopher J. Cassell, *The Automobile is American Society: Visions of Freedom and Control*, Honor's Project (Bowdoin College, Brunswick, ME, May 15, 1989), 2.

⁴¹ Ibid, 17. As originally discussed by J. Fink in *The Car Culture*.

⁴² Robert Puentes, Congressional Testimony, 1.

⁴³ Ibid.

⁴⁴ Verrastro, Frank, A., Ladislow, Sarah, O., Frank, Matthew, & Hyland, Lisa A, *The Geopolitics of Energy: Emerging Trends, Changing Landscapes, Uncertain Times* (Washington, DC: Center for Strategic and International Studies, October 2010), 5.

⁴⁵ Ibid.

⁴⁶ Barack Obama, *National Security Strategy*, 30.

⁴⁷ Robert Puentes, Congressional Testimony, 7.

⁴⁸ Robert Puentes, Congressional Testimony, 8.

⁴⁹ Jeffrey A. Connelly, "Escaping America's Future", 16.

⁵⁰ Ibid.

⁵¹ *Post Carbon Institute Homepage*, www.postcarbon.org (accessed March 6, 2011). Modern industrial civilization was built on fossil fuel energy, but climate change, overpopulation and resource scarcity require that we find other ways to power our societies. Post-carbon is a term used to identify the period of time after fossil (carbon) fuels have diminished in availability and are no longer available to power our energy gluttonous ways. The energy problems the world faces are too big, too complex, and coming too fast for us to responsibly hope that new technologies or new discoveries will save the day. Unfortunately, the decline of our most important energy source—petroleum—is already underway, and the resulting supply and price volatility will make investment in alternative infrastructure increasingly more difficult.

⁵² Richard Heinberg, *A Synopsis of The Party's Over: Oil, War, and the Fate of Industrial Societies* (Oakland: Post Carbon Institute, 2004), 10.

⁵³ Brian D. Taylor, "Putting a Price on Mobility", 279.

⁵⁴ Robert Puentes, Congressional Testimony, 3.

⁵⁵ Ricardo Bayon, "The Fuel Subsidy We Need," *The Atlantic Monthly*, January / February, 2003, 117. Bayon maintains that the United States provides military protection for and remains silent regarding the more unsavory aspects of the Saudi Arabian and other Persian Gulf oil producers. In exchange, these countries maintain production levels more or less commensurate with US needs and invest the petro-profits in US financial institutions.

⁵⁶ Ibid.