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PROMOTING THE CONCEPT OF SUSTAINABLE
TRANSPORTATION WITHIN THE FEDERAL SYSTEM - THE
NEED TO REINVENT THE U.S. DOT

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ABSTRACT

This paper argues that a major obstacle to progress towards sustainable development/transportation is the lack of an integrated approach to decision-making within the U.S. federal system. To address this problem, the concept of sustainable transportation is first broadened to include the transportation sector's interconnections with other sectors. This revised notion of sustainable transportation is then used to help visualize the need for horizontal integration and co-optimization of policies/regulations/initiatives across federal agencies. From the assumption that a national strategy for sustainable development will remain illusive in the short-term, a 'U.S. DOT reinvention model' is endorsed as a useful mechanism to promote sustainable development/transportation policy in the U.S.

THE U.S. AND SUSTAINABLE DEVELOPMENT/TRANSPORTATION

Since the international emergence of the concept of sustainable development, many nations have endorsed the concept as a national objective. However, while sustainable development has received attention in the U.S., there is currently no integrated national strategy to pursue this objective. At best, the U.S. position on sustainable development can be described as “*somewhat ambiguous*” (1, p. 4).

The closest the federal government has come to creating a national policy on sustainable development was the formation - during the Clinton Administration - of the President’s Council on Sustainable Development (PCSD) in 1993. During its six-year existence (1993-1999), the PCSD (2-4) prepared three reports that are often referred to as a basis for a national strategy on sustainable development (5-7). However, because neither the executive branch nor Congress made sustainable development a national priority, the work of the PCSD has not progressed.

Since the federal government has not endorsed the concept of sustainable development, it is hardly surprising that there is no formal policy on sustainable transportation. While some regulation and federal initiatives have focused on important aspects of the concept of sustainable transportation (8-15),ⁱ these cannot be considered to be a national strategy. A major obstacle to progress towards sustainable development/transportation is the lack of an integrated approach to decision-making within the federal system (16-18). At the center of this obstacle lies the challenge of *horizontal integration* - a concept explored in this paper.

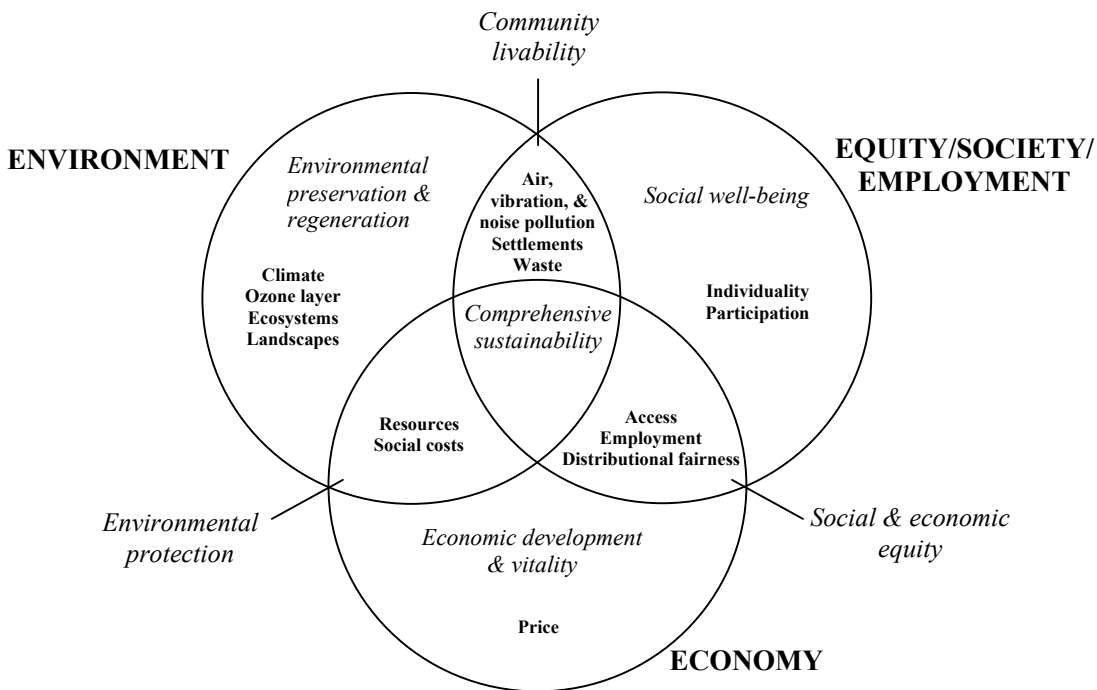
While the importance of sustainable development/transportation may be clear to its advocates, we recognize that many decision-makers remain unconvinced that the concepts present a viable, practical, or even a necessary way forward. The challenge of convincing key decision-makers of the vital need for sustainable development/transportation will not be easy and will require much consensus-building and substantive work. However, even if the majority of decision-makers supported the creation of sustainable development/transportation initiatives, there would still be several significant barriers that could limit progress.ⁱⁱ This paper acknowledges these challenges, but optimistically presents one way in which the U.S. DOT can become a more active participant and leader in the formation of national transportation policy that supports sustainable development/transportation.

SUSTAINABLE TRANSPORTATION

The core principles of sustainable development - i.e., meeting human needs and improving quality of life; living within the earth’s ecological carrying capacity and maintaining/enhancing natural capital; and protecting future generations (19-24) - have been incorporated to varying degrees in several conceptualizations of sustainable transportation.

Following the 1992 Rio Conference, the 1990s witnessed a surge of activity in the emerging field of sustainable transportation (25-37). In general, sustainable transportation is articulated using the Three E’s of Environment, Economy, and Equity/Society/Employment (27, 30, 38-40) (Figure 1) and is treated as “*an expression of sustainable development in the transportation sector*” (41, p. 10). A limitation of this conceptualization is that it has the potential to perpetuate the status quo by focusing only on change *within* the transportation sector to the exclusion of change *across* sectors. Thus, we argue that the sectoral focus implied by

sustainable transportation may limit opportunities for radical technological and societal transformations across several systems/sectors at once.



Sources: Adapted (30, p. 2) and (42, p. 8).

FIGURE 1 Visualization of the Three E's of sustainable transportation.

By considering the transportation sector in the broader context of sustainable development, one can question whether the sectoral focus implied by the term 'sustainable transportation' is too narrow and constraining. Indeed, it implies that the transportation system can be made sustainable in its own right, possibly without the need to consider other sectors. Thus, an important question is whether it is more beneficial to develop transportation policies from a *sustainable development* (i.e., holistic) rather than a *sustainable transportation* (i.e., transportation-centered) perspective. Of course, this question sidesteps the difficult issue of whether it is feasible to pursue either of these approaches and, if so, whether one is more realistic than the other. For example, it may be easier to focus on transportation-centered policies rather than tackle the political complexity that is likely to accompany the holistic approach. However, if sustainable development is to become a serious public policy goal, the holistic approach would be essential.

The holistic approach is important since it defines the boundaries (the ecological limits) within which all sectors must collectively operate. Two important frameworks that lend themselves to this perspective are the 'capital model' of sustainable development (23, 43-45) and ecological economics (46-49). In contrast, the transportation-centered view is important since it provides *sector-specific* objectives that guide the development of transportation policies and programs using the Three E's of sustainable transportation. The problem with existing definitions and principles of sustainable transportation is that they fail to explicitly recognize the need to integrate/coordinate transportation policies with those of other sectors. Hence, the *link*

between the holistic and transportation-centered perspectives of sustainable development has not been defined operationally.

One way to adjust the existing definitions of sustainable transportation is to recognize the need for the transportation sector to coordinate (or even better, integrate) its decision-making processes with those of other sectors. Thus, we recommend the following change (shown in square brackets) to an internationally recognized definition of sustainable transportation. A sustainable transportation system is defined as one that:

- *“allows the basic access and development needs of individuals, companies and societies to be met safely and in a manner consistent with human and ecosystem health, and promotes equity within and between successive generations;*
- *is affordable, operates fairly and efficiently, offers choice of transport mode, and supports a competitive economy, as well as balanced regional development;*
- *[in coordination with other sectors,] limits emissions and waste within the planet’s ability to absorb them, uses renewable resources at or below their rates of generation, and, uses non-renewable resources at or below the rates of development of renewable substitutes while minimising the impact on the use of land and the generation of noise” (50, pp. 15-16).*

While the adjustment to the definition appears minor, it presents an explicit requirement for the transportation sector to work with other sectors to solve problems associated with the natural environment. Of course, the parallel definitions of sustainable energy, agriculture, manufacturing, etc. must also include similar language for this approach to be effective. In effect, the revised sustainable transportation definition makes inter-sectoral cooperation a primary agenda item in the pursuit of sustainable development. By considering both approaches (shown in Figure 2) the disadvantages of each approach are countered by the advantages of the other.

Sustainable Transportation <i>(the transportation-centered view)</i>	Viewing Transportation from the Perspective of Sustainable Development <i>(the holistic view)</i>
<p><i>Advantage:</i></p> <ul style="list-style-type: none"> – Provides sector-specific objectives and principles that guide the development of transportation policies and programs. – Does not require a strong federal commitment to sustainable development to enact sustainable transportation policies/programs at the regional/local level. <p><i>Disadvantage:</i></p> <ul style="list-style-type: none"> – Does not explicitly connect impacts from the transportation sector with those from other sectors. Thus, transportation tends to be considered in a vacuum. <p><i>Focus:</i></p> <ul style="list-style-type: none"> – Single system/sector. 	<p><i>Advantage:</i></p> <ul style="list-style-type: none"> – Highlights the need to establish a national framework/policy to address sustainable development that can encourage sectors to coordinate/integrate their activities. <p><i>Disadvantage:</i></p> <ul style="list-style-type: none"> – Does not provide detailed sector-specific objectives and principles to guide the development of transportation policies and programs. – Requires a strong and long-term federal commitment to sustainable development that may not be forthcoming in the current political climate. <p><i>Focus:</i></p> <ul style="list-style-type: none"> – Multiple systems/sectors.

FIGURE 2 Advantages and disadvantages of adopting a transportation-centered or holistic view of sustainable development.

In practice, neither the transportation-centered nor the holistic approach will be easy to implement. However, the need for a strong and long-term federal commitment to sustainable development makes the holistic approach significantly more challenging. This observation is perhaps one reason why the transportation-centered approach has monopolized the attention of sustainable transportation researchers and practitioners.

We view sustainable development/transportation not as an *end state*, but rather as a *process* of continual improvement that removes perverse incentives and halts or reverses clearly unsustainable activities. Thus, specific emphasis should be given to the design of *integrated* and *coherent* policies and programs that seek to improve the social, environmental, and economic performance of the transportation sector without negatively affecting the performance of other sectors.

VISUALIZING THE CHALLENGE OF HORIZONTAL INTEGRATION

While there are several significant barriers to moving towards sustainable transportation,ⁱⁱ the need to address the problem of *horizontal integration* within the federal system is perhaps the most challenging from an organizational perspective. Horizontal integration can be defined - in the context of the federal government - as the need to overcome the balkanization/fragmentation of issues across and within federal agencies and Congress.

Figure 3 provides a diagram of the key agencies that fall under the executive branch of the U.S. federal government. This macro view highlights the challenge of coordinating/integrating U.S. DOT transportation policies with initiatives that arise from other departments or agencies. For example, while the U.S. DOT has primary responsibility over transportation, other entities such as the Department of Energy (DOE), the Department of Health and Human Services (HHS), the Department of Homeland Security (DHS), the Department of Housing and Urban Development (HUD), and the Environmental Protection Agency (EPA) can also establish policies that significantly impact the transportation system. Since the focus of these other agencies is not primarily on transportation - but energy, human health, security, land use, and the environment, respectively - their institutional missions can create silos of activity that support the design of single purpose (or sector-oriented) policies. To explore the challenge of horizontal integration further, Figure 4 was created to try and capture (diagrammatically) how important issues relating to sustainable development cut across government activity areas.

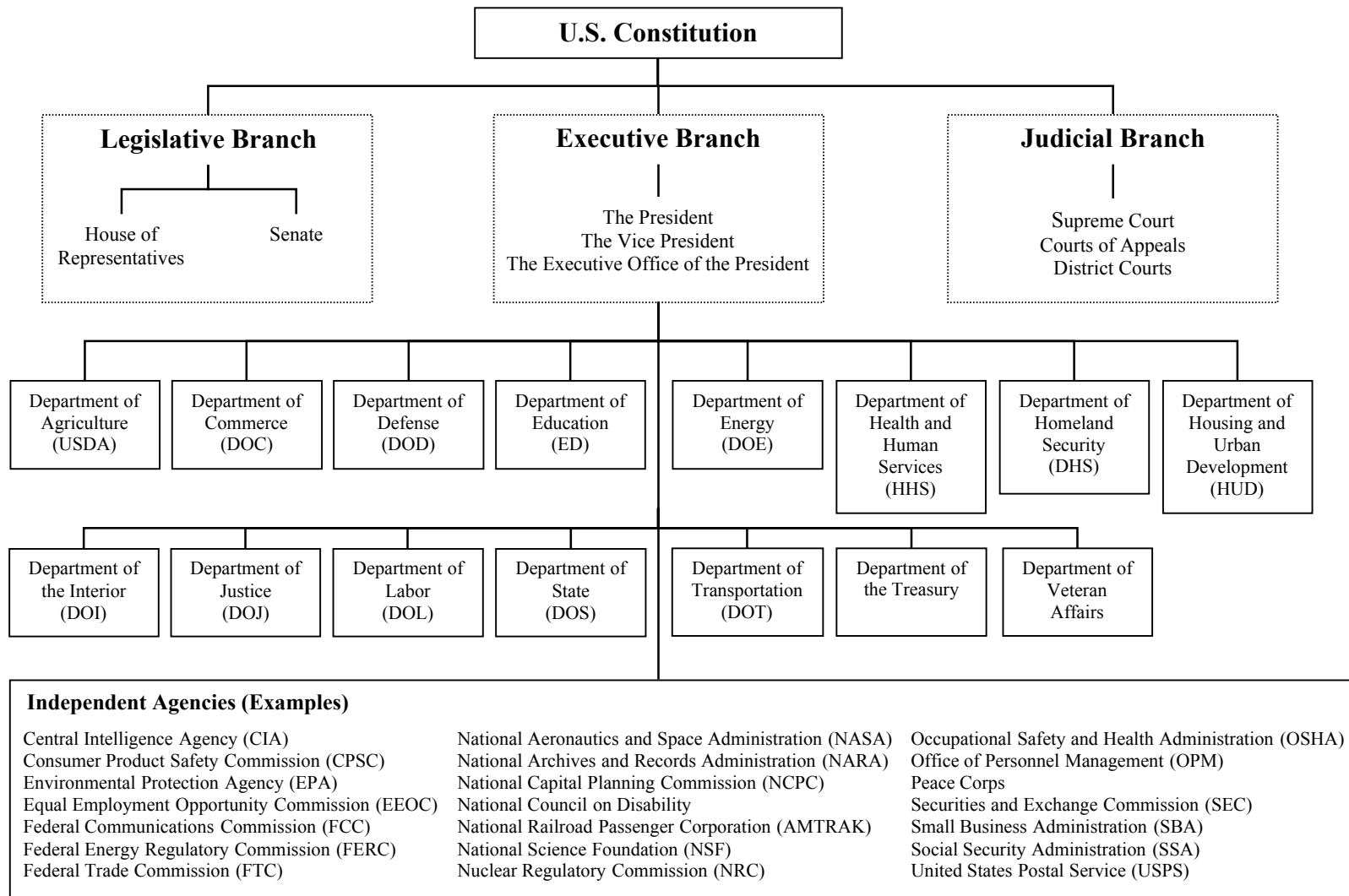


FIGURE 3 The U.S. federal government.

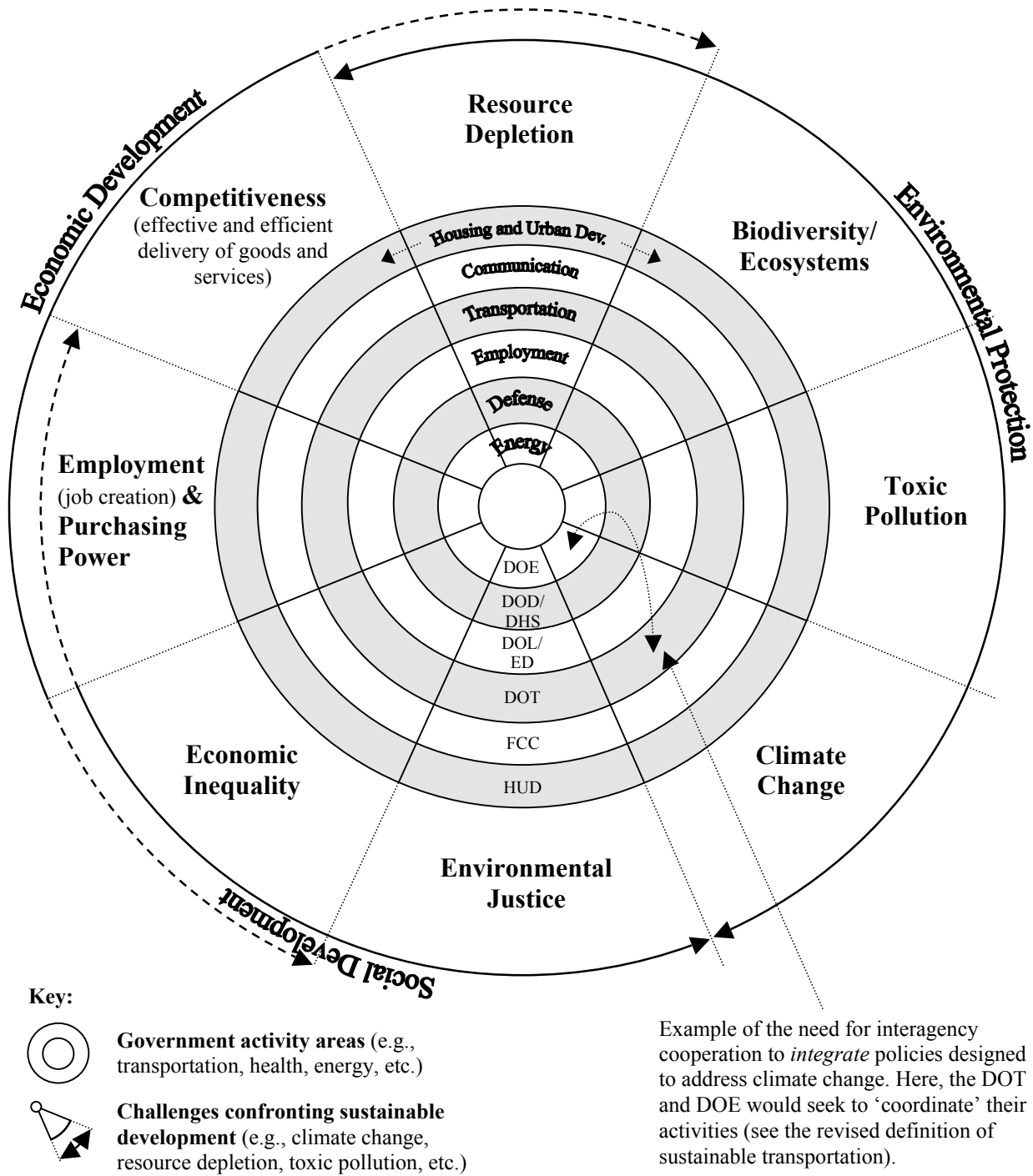


FIGURE 4 Government activity areas and sustainable development concerns - the challenge of horizontal integration.

The role of the federal government in the nation’s development can be characterized by activity areas (i.e., those areas where government provides basic goods and services), which are represented in Figure 4 by a series of concentric circles. These activity areas are usually

supported by cabinet-level departments or agencies. If necessary, each activity area could be broken down further. For example, transportation could be divided into transit, highway, airways, waterways, etc. There is no hierarchy to the activity areas shown in Figure 4. Thus, those located near the center of the circle are not necessarily more or less important than those located near the edge. In addition, only a representative group of activity areas has been shown in Figure 4; other areas that could be added to the diagram include agriculture and health and human services.

The wedges in the diagram represent the challenges (or important issues) that confront efforts to move towards sustainable development. For example, the ‘competitiveness’ wedge accounts for the economic challenge of delivering effective and efficient goods and services. The rationale is that competitiveness is a critical factor of economic growth and one that is closely related to technological innovation.

The three arrows that follow the circumference of the outer circle in Figure 4 identify the important issues (or wedges) that relate to environmental protection, social development, and economic development. The solid lines represent a direct connection between the theme of the arrow and an issue (e.g., economic development is directly related to employment and competitiveness), and the dashed lines indicate an indirect link. The dashed lines also mean that another theme is more closely related to a particular issue. For example, economic development is fueled by resources, but the availability of resources is not a traditional measure of economic development. Thus, resource depletion is directly related to environmental protection and indirectly related to economic development.

Employment appears in two different contexts in Figure 4. The employment activity shown in the concentric circle refers to the government’s role of ensuring an adequate supply of workers to fuel the industrial state. On the other hand, the employment wedge refers to the creation of better jobs and mechanisms that enhance individual purchasing power.

Figure 4 does not incorporate those governmental agencies that address *multiple-activity* areas such as environmental protection. In many ways, an organization such as the Environmental Protection Agency (EPA) is more closely aligned with the environmental wedges shown in Figure 4 than an activity area. This observation highlights an important question: Should the U.S. DOT develop policies and programs designed to encourage sustainable development, or should other federal agencies such as the EPA - whose authority over environmental issues spans across activity areas - take the lead? The critical issue is which government agency is really driving the system. In the case of transportation, the U.S. DOT is (in theory) the lead agency; however, other federal agencies also play influential roles. Thus, part of the horizontal integration problem is that there is no natural marriage between government entities that address activity or multiple-activity areas.

Given the current structure of the federal system, there are two general approaches to the creation of policies for sustainable development. In the first approach, separate policies are developed by each activity area such as transportation or energy to address specific problems facing the sectors. In the second approach, the federal government establishes a single policy to address a specific problem area - such as climate change - that influences the actions of all relevant federal agencies. Both approaches highlight different barriers to horizontal integration.

The problem with the first approach is that policies designed for a specific activity area might have significant impacts on other activity areas (as indicated by the double headed arrow within the climate change wedge in Figure 4). Thus, if activity areas were to independently

design strategies to address global climate change, the final array of policies might (in some cases) work against one another.

The problem with the second approach is that the challenges (i.e., the wedges in Figure 4) are not considered together when policies are designed to address a specific issue. For example, comprehensive policies that focus on reducing greenhouse gas emissions across all activity areas might inadvertently affect other challenges confronting sustainable development such as increased levels of toxic pollution. This situation might occur if it were decided that expanding the use of ethanol in fuels would be a good solution to reducing greenhouse gas emissions. The problem with this approach is that ethanol produces aldehydes (carcinogenic substances) during combustion. In addition, a dramatic increase in the production of ethanol would lead to an increase in the use of pesticides to grow crops. Thus, unless the system-wide impacts of a policy are considered *and* addressed, the single-purpose design of policies is unlikely to move a nation towards sustainable development.

In general, the problem of horizontal integration can be characterized by the lack of connectivity between [1] the activity areas (i.e., the concentric rings), [2] the issues within each activity area (i.e., the segments within a concentric ring), and [3] the social/environmental/economic challenges that cut across the activity areas (i.e., the wedges).

THE U.S. DOT REINVENTION MODEL

Those who have considered how the federal government might establish a national strategy on sustainable development have presented an array of approaches (2, 3, 5, 51-53). In general, the ideas range from making the existing federal system work more effectively to more radical approaches that focus on enhancing existing or creating new executive-level and Congressional entities to lead efforts on sustainable development. A problem with the more radical approaches is that they require a strong Presidential and Congressional commitment to sustainable development, which seems unlikely in the current political climate. Thus, *we judge that a national strategy for sustainable development will remain illusive in the short-term*. If one accepts this judgment, it significantly changes the environment within which sustainable development/transportation policies could be created. In particular, it places the responsibility for their creation on policy networks/entrepreneurs and the U.S. DOT (in the case of transportation). In addition, the absence of a national strategy on sustainable development increases the need for mechanisms to promote sustainable transportation legislation through the Congressional review process.

When a transportation bill is submitted to either the House or Senate, it is referred to the appropriate committee(s) for evaluation. At present, there are 20 standing committees in the House and 16 in the Senate as well as a number of select committees. Each committee has jurisdiction over specific subject matters, which means that when a comprehensive bill is considered by each house it may need to be divided among multiple committees with one committee acting as the lead.

The division of subjects among Congressional committees presents a significant hurdle for legislation designed to address sustainable development/transportation. For example, under the current committee structure, transportation legislation that adopts a systems view and tries to integrate highway, railroad, mass transit, airway, waterway, and pipeline policy into a single bill would be divided along subject lines and evaluated in a 'stove-piped' manner. Furthermore,

public and private sector interest groups that align themselves with the subject matter of Congressional committees are likely to resist policies that reduce the funding or emphasis given to their interests. Thus, the architects of transportation (and transportation-related)ⁱ legislation face significant challenges. Any attempt to integrate or significantly change transportation policy is likely to face staunch resistance from established, (typically) territorial standing committees and interest groups.

One way to increase the likelihood that a national transportation policy designed to support sustainable development remains intact through the Congressional review process would be to consolidate the transportation functions of the standing committees in both the House and Senate. However, restructuring the committee system will certainly receive strong resistance (54). Therefore, other mechanisms need to be identified to guide sustainable transportation policy through the Congressional review process as it stands. One approach that holds promise for making progress towards sustainable transportation is what we (ambitiously) call the '*U.S. DOT Reinvention Model*.'ⁱⁱⁱ

The idea of reinventing the U.S. DOT was originally conceived by John Hazard (55) in an insightful analysis of how the department should be restructured and revitalized to be an effective executive agency in the twenty-first century. We believe Hazard's ideas are still relevant and provide the basis for a model in which the U.S. DOT becomes a change agent that - with the necessary authorization of Congress and (ideally) the support of the President - reinvents both itself and national transportation policy to move towards sustainable development/transportation. The rationale for reinventing the U.S. DOT is to address the diffused decision-making authority within the Department that undermines its sense of purpose and inhibits the creation of a unified national transportation policy.

Prior to 1966 and the formation of the U.S. DOT, Congress's approach to transportation policy was fragmented and hampered by federal organizational problems (55, 56). A major issue was the lack of overall leadership and coordination in the transportation sector. Transportation policies (or laws) developed by Congress were delegated to numerous government agencies to be administered and no one agency was responsible for coordinating and promoting the transportation sector as a whole. With the federal government's role in transportation increasing following World War II, it became evident (through a series of influential national transportation policy studies)^{iv} that no existing cabinet-level department had the capacity to assume this necessary leadership role. This conclusion highlighted the need for a new Department of Transportation that could coordinate and promote all transportation policies.

The process of creating the U.S. DOT was far from straightforward and was plagued by the challenge of overcoming the vested interests of existing agencies and modal-oriented interest groups (56, 57). Virtually all of the existing agencies - especially the Federal Maritime Administration that resisted moving into the U.S. DOT until 1981 - were concerned about losing their independence, authority, and stakeholders. In response to these concerns, the final Department of Transportation Act of 1966 did not provide the new Secretary of Transportation or the U.S. DOT more generally with the authority initially envisioned. For example, instead of the Secretary being able to 'initiate policy,' the final bill reduced the Secretary's power to 'recommending policy' (55).^v In addition, the modal agencies retained a reasonable level of autonomy, weakening the powers of the Office of the Secretary of Transportation (OST). The end result was the creation of an 'umbrella agency' or 'holding company' rather than an integrated Department of Transportation (56).

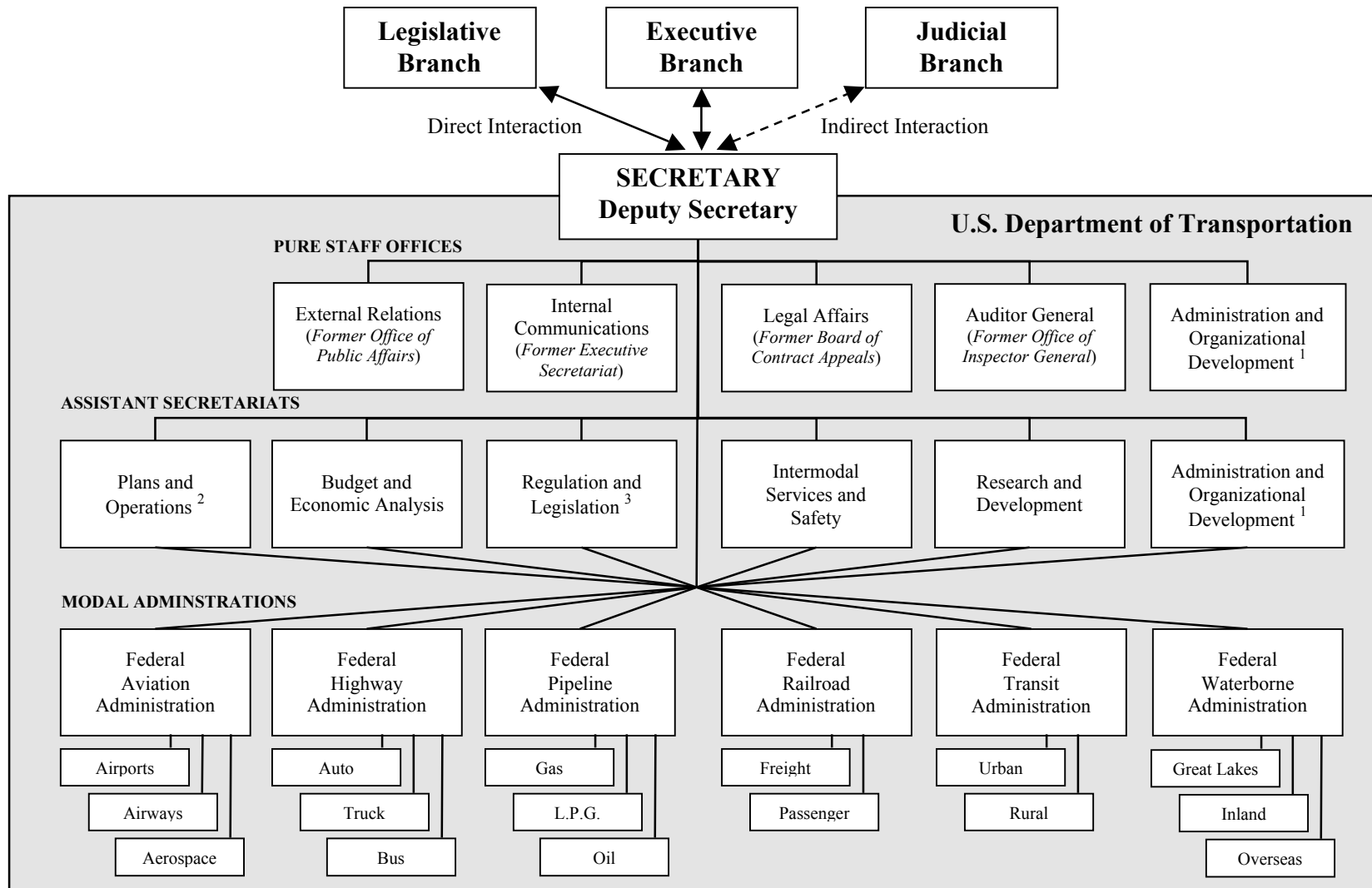
While the compromises that led to the creation of the U.S. DOT clearly limited its ability to unite transportation policy, the Department's significant and growing budget and extensive transportation knowledge/experience has given it an important role in transportation policy development. In this regard, the U.S. DOT could be described as a broker of federal funds and transportation knowledge that can be leveraged in the pursuit of specific programs or policies.

There are clearly numerous ways to restructure the U.S. DOT. However, Hazard (55) makes a convincing argument that any attempt to radically change the structure of the modal administrations would be very difficult politically. Thus, a more practical approach would be to keep the core modal administrations intact. The modal administrations have a high level of expertise that is well respected and relied upon by Congressional committees and other executive departments. Therefore, any restructuring of these administrations risks jeopardizing these valuable sources of knowledge.

Hazard (55) argues that a better approach would be to strengthen the authority of the OST by [1] giving the Secretary the freedom to 'initiate' policy development for Congressional consideration and approval, and [2] establishing more powerful Assistant Secretaries (outlined in Figure 5) with clearly defined cross-cutting responsibilities. The latter recommendation would require the creation of a sixth Assistant Secretary as well as the Congressional redesignation of the existing five Assistant Secretaries. Hazard's (55) objective was to organize the Assistant Secretaries on a 'functional basis' in much the same way as a private corporation organizes its finance, production, and marketing functions. He also recommends that the Department's modal administrations be streamlined into six system-oriented divisions covering aviation, highways, pipelines, railroads, transit, and waterborne modes (Figure 5) following a restructuring process that is phased in over time. The rationale behind Hazard's (55, p. 130) recommendations is that the U.S. DOT "*has never had a comprehensive set of modal administrations working under an enlightened ... [OST] structure*" and a "*comprehensive and responsive modal administration structure should be given a fair chance before abandoning the idea of a modal operating division altogether.*"

The strength of Hazard's (55) recommendations is that they provide a way to enhance the ability of the U.S. DOT to respond to changing economic, social, and environmental factors by making moderate changes to the Department's organization and decision-making authority. While the modal administrations would lose some autonomy to the OST, they would (by and large) remain intact, allowing the U.S. DOT to retain constituency groups that make useful allies when defending transportation needs against other national needs. In effect, Hazard's recommendations seek to centralize authority within the U.S. DOT - as originally proposed prior to the Department's formation in 1966 - to ensure that transportation decisions are less likely to be based upon interest group politics.

In practice, Hazard's recommendations would still require the modal administrators to develop the policies and programs to implement the President's/Secretary's agenda. However, these would now require the approval of the Assistant Secretaries before being formally included in U.S. DOT transportation bills. By giving the Assistant Secretaries the authority to sign-off on modal administration initiatives, their cross-cutting functional roles would become integrated with the activities of the vertically-oriented modal administrations. Thus, the oversight authority given to the Assistant Secretaries should enable the OST to push initiatives that aim to create a truly multimodal and more sustainable transportation system.



¹ Absorbs the Office of Civil Rights and the Office of Small and Disadvantaged Business Utilization.
² Replaces the Assistant Secretaries for Transportation Policy and Aviation and International Affairs.
³ Incorporates the roles of the General Council and the Assistant Secretary for Governmental Affairs.

Source: Based upon (55, pp. 126-129).

FIGURE 5 Organizational chart for a 'reinvented' U.S. DOT.

Hazard's contribution is the clear articulation of a (feasible) structural change to the U.S. DOT. While we do not extend the organizational component of Hazard's (55) work, we go beyond Hazard in our motivation to enhance the U.S. DOT. Our interest lies in using his ideas to: [1] address the problem of horizontal integration – both within the U.S. DOT and between federal agencies; and [2] provide the U.S. DOT with the capability to advance the sustainable development/transportation agenda within the federal government. It should be recognized that the importance given to the concept of sustainable development/transportation by the international community occurred after the completion of Hazard's work in 1988, primarily following the Rio conference in 1992. We believe that Hazard's ideas have broader application now and can be used to establish a U.S. DOT with more focus and ability to lead change within the federal system.

A critical element of the U.S. DOT reinvention model - which goes beyond Hazard's structural innovations to the U.S. DOT - is the need for the President and/or the Secretary of Transportation to be advocates for, or sympathetic to, sustainable development/transportation. Since the modal administrations would be held accountable for implementing the President's/Secretary's agenda by the Assistant Secretaries, it is vital that the Department's agenda promotes the principles of sustainable development/transportation if substantive action is to occur in this area.^{vi}

In summary, for the U.S. DOT reinvention model to succeed, the following actions need to occur: [1] the U.S. DOT and its stakeholders (i.e., state and regional/local governments, industry, transportation carriers, etc.) need to acknowledge that the structure of the Department must be changed to enable it to address some of the most pressing transportation problems facing the nation; [2] the President and/or the Secretary of Transportation need to promote/support sustainable development/transportation; [3] the U.S. DOT's enabling legislation needs to be altered to provide the Secretary of Transportation with the ability to initiate transportation policies in the interest of the nation (55); [4] the Assistant Secretaries need to be organized on a functional basis (with well-defined assignments) and given sufficient authority to impact the policies, programs, and projects of the modal administrations (55); and [5] the U.S. DOT's modal administrations need to be streamlined (55).

Clearly, the U.S. DOT reinvention model advocates a structural change to the transportation decision-making environment. If the U.S. DOT's reinvention is successful, there should be a shift in the Department's political power to the OST. This would weaken the policy networks associated with the modal administrations and focus Congressional attention on the more powerful Assistant Secretaries. If the OST is able to foster strong working relationships with the leaders of the modal administrations, the U.S. DOT would be able to present a united front on policy initiatives. The real benefit of such a transition lies in the Department's ability to support policy initiatives during the Congressional review process. Instead of independent modal administrations seeking to promote their own modes (possibly) at the expense of others, the OST would become the central voice that supports the U.S. DOT's initiatives from a multimodal and holistic perspective.

The above discussion clearly presents an idealistic perspective and we acknowledge that any attempt to transform the institutional behavior of the U.S. DOT will take time and face setbacks as existing policy networks resist change. However, as history has often shown, if the right circumstances align, radical change can occur very quickly, as with the formation of the U.S. DOT itself some 40 years ago.

GOING BEYOND HAZARD: ADDRESSING THE CHALLENGE OF HORIZONTAL INTEGRATION

Having considered an institutional mechanism that could be used to promote sustainable transportation policy, an important question is whether this model can adequately address the problem of horizontal integration within the federal system.

We argue that the U.S. DOT reinvention model provides a way to enhance the ability of the U.S. DOT to lead the integration of federal transportation initiatives with other core government activity areas (shown in Figure 4). This more proactive role for the U.S. DOT in developing/shaping transportation and transportation-related initiatives goes beyond what was initially envisioned by Hazard.

The proposed changes to the U.S. DOT's organizational structure would also help address horizontal integration problems that exist *within* the Department. By granting the OST more decision-making authority, the ability of the Secretary and Assistant Secretaries to integrate the Department's own initiatives will be enhanced. This enhanced decision-making authority also increases the likelihood that sustainable transportation policies and programs will be developed if the Secretary and Assistant Secretaries support this overarching objective.

The ability of the U.S. DOT to initiate real progress towards sustainable transportation depends on its willingness to think beyond traditional ways of addressing transportation problems. The objective of Figure 4 is to help agencies identify areas where interagency collaboration could lead to progress on more than one critical challenge/issue at once. Thus, a situation might arise in which the U.S. DOT calls upon other agencies to take the lead on a critical transportation issue. For example, the U.S. DOT could use Figure 4 - or a suitable alternative - to identify those federal agencies that it needs to work with to address the full range of issues related to sustainable transportation. Having identified the key agencies, the U.S. DOT could establish an interagency regulatory liaison group (IRLG) - attended by agency administrators - to focus on initiatives that impact transportation.^{vii} This group would be able to identify which agency should take the lead on specific issues relating to transportation such as air quality, resource usage, competitiveness, etc. In all likelihood, each lead agency would have the statutory authority and ability to adequately address its chosen or (collectively) assigned issue(s). For example, the EPA or DOE might champion efforts to reduce greenhouse gas emissions from vehicles, either by promoting a carbon trading mechanism or leading/financing efforts to develop hypervehicles and advanced fuels. Of course, the U.S. DOT could also play a role via more stringent CAFE standards or value pricing mechanisms that could reduce CO₂ emissions by promoting more fuel efficient vehicles or reducing congestion, respectively. In addition, HUD could support these efforts by encouraging development patterns that reduce the need to drive and promote sustainable communities. If the political will existed, the creation of sufficiently stringent CO₂ or CAFE standards could also promote competitiveness by encouraging disrupting innovations in automobile technologies. The creation of such standards provides a good example of how regulatory initiatives focused on a specific challenge can significantly impact other areas. The critical issue is whether these impacts are unintended (possibly negative) side effects or desired system improvements.

While we have characterized the U.S. DOT as initiating activities to promote an integrated approach to national transportation (and transportation-related) policy, in reality it is also essential for the U.S. DOT to collaborate with other agencies that have a greater capacity to influence national priorities such as the Departments of State, Treasury, and Defense. In this

regard, the U.S. DOT reinvention model is only likely to be successful if other more influential executive agencies are willing to work with the U.S. DOT. Without such support, interagency cooperation will be limited, the problem of horizontal integration will remain, and opportunities to move toward sustainable development/transportation may falter at the federal level.

CONCLUSION

This paper argues that the lack of an integrated approach to decision-making within the federal system is a significant barrier to progress towards sustainable development/transportation. By linking the notion of sustainable transportation to the broader concept of sustainable development, we have highlighted the need for a holistic and integrated approach to the development of transportation policy. A 'reinvented' U.S. DOT as described herein could become an effective mechanism for the promotion of sustainable development/transportation policy. When combined with the necessary leadership, the U.S. DOT could also be in a position to lead federal efforts towards sustainable development in the event that this overarching objective becomes U.S. policy. In the absence of any significant change to the U.S. DOT, it is hard to see how the Department will be able to advance the sustainable development/transportation agenda.

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ⁱ Since the formation of the U.S. DOT in 1966, the following *transportation-related* regulation was authorized to address specific issues/problems associated with sustainable development/transportation: 1966 National Historic Preservation Act; 1969 National Environmental Policy Act (NEPA); 1970 Occupational and Safety Health Act (OSH Act); 1970/77/90 Clean Air Act (CAA); 1972/77 Clean Water Act (CWA); 1973 Endangered Species Act (ESA); 1975 Energy Policy and Conservation Act; 1978 National Energy Act; 1979 Emergency Energy Conservation Act; 1980/86 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) - also known as Superfund; and 1990 Americans with Disabilities Act (ADA). In addition to these acts, there have been numerous Presidential Executive Orders (EOs) that focus on issues central to sustainable development/transportation. The most notable EO, written by President Clinton, raised the notion of 'environmental justice.' See President Clinton's Executive Order 12898, February 11, 1994, 'Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,' <http://www.archives.gov/federal-register/executive-orders/pdf/12898.pdf> (accessed on 07/28/06).

ⁱⁱ For example, if one assumes that the President and Congress supported the idea of making sustainable transportation a national objective, the following barriers are likely to limit progress towards this goal (53): [1] the lack of *horizontal integration* needed to overcome the balkanization/fragmentation of issues across and within federal government agencies and Congress; [2] the lack of *vertical integration* needed to overcome the bureaucratic barriers that exist between the multiple levels of government - i.e., federal, state, and regional/local; [3] the problem of *disparate time horizons* - i.e., the long-term nature of many issues related to sustainable development makes it difficult to address problems given the short-term focus of political cycles; [4] the complexity of the legislative process which is influenced by interest groups that tend to promote individual modes at the expense of a more integrated approach; [5] the problem of integrating or aligning federal policies and programs with the diverse transportation needs of different states, regions, and local areas across the U.S.; and [6] the inadequacy of tools

and/or planning guidance to inform and create a clear vision for the development of sustainable transportation policies and programs. For related discussions of barriers confronting progress towards sustainable development see (5, 16-18).

ⁱⁱⁱ Another model considered that is not discussed in this paper is the ‘Moynihan model.’ For a detailed discussion of this model see (53).

^{iv} One of the most influential studies was prepared by the Senate Committee on Interstate and Foreign Commerce (in 1961) (55-56). This study - known as the ‘Doyle Report’ - provided a comprehensive analysis of the state of U.S. transportation policy and was particularly critical of Congress and its fragmented approach to transportation policy development. It concluded that the federal government lacked the capacity to effectively coordinate and promote transportation activities. The main recommendations of the report were to create the U.S. DOT (by combining all executive functions and agencies under one roof), consolidate the regulatory agencies (e.g., the ICC, CAB, and FMB) into a single Federal Transportation Commission, and establish a House and Senate Joint Committee on Transportation to coordinate national transportation policy.

^v Congress limited the Secretary’s policy initiating and investment authority by including the following provision in the Department of Transportation Act of 1966: “*Nothing in this Act shall be construed to authorize, without the appropriate action of Congress, the adoption, revision, or implementation of (a) any transportation policy, or (b) any investment standard or criteria*” (P.L. 89-670 § 4(b)(2)). This provision remains in place today (see 49 U.S.C. § 302(b)) and continues to prevent the Secretary of Transportation from acting without ‘the appropriate action of Congress.’ Thus, Congress retains full control over the development of national transportation policy; however, the U.S. DOT is able to influence Congress through its modal connections to Congressional committees (i.e., through the established transportation policy networks in Washington, D.C.).

^{vi} Many modal administrations are already responding to public and private sector groups that are demanding better social, environmental, and economic performance from the transportation system. This observation indicates that there might be a bottom-up push for more sustainable transportation policies that would make it easier for the OST to pursue sustainable transportation as an overarching objective.

^{vii} The precedent for an interagency regulatory group dates back to the Carter Administration when the heads of the major environmental and public health agencies (i.e., the EPA, CPSC, FDA, and OSHA) formed the Interagency Regulatory Liaison Group (IRLG) in 1977 to coordinate their regulatory activities (58). The fact that the IRLG was formed by the agencies themselves and connected their activities at the political appointee level was significant. Without high-level support, agency staff would have found it difficult to take action and direct resources to address the group’s recommendations. While the formation of the IRLG can be described as ‘organic,’ similar interagency entities have been formed at the request of U.S. Presidents. For example, in 1978 President Carter established the U.S. Regulatory Council (RC) in an effort to coordinate and improve regulations (59). While the RC was disbanded at the start of the Reagan Administration, the idea of creating an interagency group to coordinate regulatory activity surfaced again in 1993. The proposal, put forward by the National Performance Review (59, p. 20), recommended that the President establish the interagency Regulatory Coordinating Group (RCG) to “*provide a forum for agencies to discuss issues of common concern, to assist agencies in finding more innovative approaches to regulation and better methods of developing regulation, and to improve coordination of regulatory policies.*” President Clinton (60) responded to this request by creating the interagency Regulatory Working Group (RWG) in Executive Order 12866 to “*assist agencies in identifying and analyzing important regulatory issues.*” Both the RC and RWG provide examples of how it is possible to establish an interagency group to coordinate agency regulation and standard setting.