

FINAL REPORT

**FEASIBILITY OF PROTECTING CORRIDORS THROUGH THE NATIONAL
ENVIRONMENTAL POLICY ACT**

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LIST OF ACRONYMS

APA	Administrative Procedures Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CTB	Commonwealth Transportation Board
EA	Environmental Assessment
EIS	Environmental Impact Statement
FAPA	Federal-Aid Project Agreement
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impact
HOV	High-Occupancy Vehicle
MPO	Metropolitan Planning Organization
NEPA	National Environmental Policy Act
NHS	National Highway System
PDC	Planning District Commission
ROD	Record of Decision
SYIP	Six-Year Improvement Program
VDH	Virginia Department of Highways (predecessor of VDOT)
VDH&T	Virginia Department of Highways and Transportation (predecessor of VDOT)
VDOT	Virginia Department of Transportation
VTRC	Virginia Transportation Research Council

ABSTRACT

The addition of interchanges, traffic signals, or unsignalized driveways to an arterial corridor can increase crash risk and reduce travel speeds for vehicles using the roadway. As vacant land adjacent to a corridor is developed, however, private landowners often show a strong interest in having a direct access point to the arterial route. Because the Virginia Department of Transportation (VDOT) has the authority to allow such direct accesses provided there is no immediate adverse impact, arterials in high-growth areas tend to show an increasing number of traffic signals as demands for direct access arise. In terms of long-range planning, it is practically difficult for the Commonwealth Transportation Board (CTB) to “mandate” that an arterial have a restricted number of access points since a subsequent CTB retains the ability to relieve such a mandate.

This study investigated the feasibility of using the National Environmental Policy Act (NEPA) to make adding direct access points to a corridor more difficult. The study found that under some circumstances, NEPA can help protect the mobility and safety of a corridor through making it more difficult, but not impossible, to add access points. Specifically, NEPA can be used to help protect a corridor through four administrative mechanisms: (1) including the limited access requirement as a condition in the record of decision; (2) effecting a contract between VDOT and the Federal Highway Administration, known as the Federal-Aid Project Agreement, that stipulates limiting access as a requirement; (3) implementing a supplemental agreement between VDOT and interested parties that indicates how the character of the corridor shall be maintained; and (4) documenting the corridor-preservation conditions that remove the requirement that a project have an Environmental Impact Statement.

Factors that limit the effectiveness of these techniques include the source of funds for the project, the extent to which the situation addressed during the NEPA process remains constant as time passes after the process is completed, the willingness of agencies to exercise the authority they are accorded through NEPA-related agreements, and the passage of legislation that enhances or restricts the scope of NEPA. Case studies of Virginia projects where the NEPA process has helped preserve corridor characteristics show that the process serves to raise barriers to adding access points but is not irrevocable. Because NEPA is inherently a consensus-building process that involves federal, state, local, and regional entities, a six-step blueprint for applying NEPA as part of a comprehensive corridor planning process is provided in the Appendix.

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INTRODUCTION

Roads serve a combination of two functions: mobility (the movement of vehicles from one point to another on the roadway) and access (the ease with which vehicles are transferred from an adjacent land parcel to the roadway) (Florida Department of Transportation [DOT], 2003). Roads are often categorized by which function they serve best. For example, interstate highways provide excellent mobility but relatively poor access, since a vehicle at a parcel adjacent to the interstate may have to travel several miles to reach an interchange. In contrast, local roads provide excellent access because of the direct connection from a driveway to the local road but relatively poor mobility because of low travel speeds.

The class of roadway where mobility and access functions conflict is that of arterial facilities, such as U.S. 29, where counties adjacent to the arterial may disagree as to the arterial's primary function (Florida DOT, 2003; Jernigan, 1999). For example, Culpeper County's 1995 Comprehensive Plan notes that access to U.S. 29 should be limited to emphasize mobility (Culpeper County, 1995). Madison County's Comprehensive Plan, on the other hand, portrays U.S. 29 as a tool for encouraging economic development (Madison County, 1995). Motorists who travel U.S. 29 from Lynchburg to Gainesville, therefore, experience a roadway whose characteristics vary dramatically depending on the county. In Culpeper County, for example, U.S. 29 is predominantly a limited access facility with a few interchanges and very few traffic signals. In Albemarle County north of Charlottesville, however, the signal density increases to more than four signals per mile in some sections, causing the arterial to function similarly to an urban street.

National research has shown that in locations where the number of signals and unsignalized driveways increases substantially, there is a marked increase in delay and crash risk (Gluck et al., 1998). For example, all other things being equal, increasing the number of signals from two to six per mile will increase travel times by one third. Depending on the characteristics of the facility, such a signal increase may lead to a doubling of the crash rate. In short, access management policies, defined herein as efforts to prevent through corridors from being burdened with additional access points, can improve both safety and mobility (Bowman and Rushing, 1999).

The intuitive appeal of limited access facilities is not new. Arterial and interstate bypasses were originally designed with the goal of limiting roadway access such that the road would serve only through, rather than local, traffic. The local traffic would take the central route (with many direct access points), and the through traffic would take the limited-access bypass route. Reflecting the importance of access, design guidance from the American Association of State Highway Officials (1973) stated: “Where there is no control of access and roadside businesses develop along the highway, interference from the roadside can become a factor of major importance, reducing the capacity of the highway and increasing the accident potential” (p. 142).

In Virginia, however, arterial facilities have had an increasing number of access points over the past few decades—even on facilities designated as serving through traffic, such as those that comprise the National Highway System (NHS). For example, U.S. 29 is an NHS route but the number of signals has climbed substantially between Gainesville and Charlottesville, despite the fact that this route is served by three bypasses originally designed to avoid the urban areas of Warrenton, Culpeper, and Charlottesville. To some extent and especially on local roads, additional signals are to be expected with increased land development. Table 1 illustrates, however, some corridors where signals have increased despite the roadway being classified an arterial facility.

An inability to maintain the integrity of a through corridor, such as U.S. 29, hampers the ability of the Virginia Department of Transportation (VDOT) to plan adequately for Virginia’s transportation needs over the long-term horizon. Ideally, VDOT should build and maintain arterial facilities that meet needs identified in statewide and regional plans but that do not induce secondary development effects—the addition of unanticipated access points—that adversely affect the roadway’s mobility and safety performance.

The challenge to restricting the number of access points for a corridor is exacerbated by the fact that Virginia’s Commonwealth Transportation Board (CTB) has the power to undo its prior actions. For example, the CTB may declare a road a limited access road where VDOT then acquires access rights for the road. The CTB does this now for certain roads such as Route 17 near the Great Dismal Swamp, where CTB approval was contingent on Route 17 being “a limited access highway, so that future development along the proposed highway will not cause more traffic than it will be designed to handle” (VDOT, 2004). However, there is no rule that would prevent a future CTB from adding access points to Route 17. Thus, for a CTB that wishes to ensure a road will remain a limited access road, the challenge is to identify other techniques beyond CTB resolutions that can potentially protect a corridor even after a current CTB has been replaced.

Table 1. Examples of Corridors Where Number of Signals Increased

Corridor	Length	Approximate Increase*
Route 3 from Ely’s Ford Road to I-95 in Fredericksburg	5 mi	8 new signals (1992 to 2003)
Route 17 from Village Parkway to I-95 in Fredericksburg	3 mi	11 new signals (1992 to 2003)
U.S. 29 in Culpeper District (Gainesville to Charlottesville, not including Warrenton where a bypass was constructed)	80 mi	26 new signals (1980 to 2003)

*These numbers are approximations based on interviews with Culpeper and Fredericksburg district personnel during February 2004; VDOT does not have records of signal installation dates.

Techniques for protecting a corridor from the addition of access points are well documented in the literature under the various headings of *access management* and *corridor preservation* (Gluck et al., 1998; South Carolina DOT, 2003; Federal Highway Administration [FHWA], 2000a; American Association of State Highway and Transportation Officials [AASHTO], 1990; Thomas and Payne, 1998). For example, three techniques of corridor preservation were documented in one report from the Virginia Transportation Research Council (VTRC) by Perfater (1989): advance corridor approval, protective buying, and accelerated right-of-way acquisition and zoning. Access management itself has been described as a family of more than 100 policy and engineering techniques, such as the establishment of an access management code, supportive zoning, and specific engineering designs that reduce traffic flow conflicts by sharing access points. Because access management and corridor preservation are described as a family of administrative, policy, and engineering techniques, the use of their terminology can invite confusion.

One technique that has not been explored to help protect a corridor from an unanticipated increase in the number of access points is that of using the National Environmental Policy Act (NEPA) process. At the request of VDOT management, VTRC investigated the feasibility of using NEPA as a corridor protection instrument.

PURPOSE AND SCOPE

This project investigated how VDOT can use the NEPA process to limit in a predictable manner the number of access points, such as interchanges, traffic signals, and unsignalized driveways, that will be added to an arterial roadway after the road has been built. The scope of this project was limited to corridor protection that can be accomplished through the NEPA process, with the understanding that other techniques for managing the number of access points are documented under the rubrics of access management and corridor preservation.

Thus, this study had two objectives:

1. Identify the extent to which NEPA can help protect a corridor and any limitations or caveats thereof.
2. Describe the specific methods VDOT should follow in order to use NEPA in this manner.

This paper defines the phrase corridor protection as the practice of using NEPA and supplemental documents to increase barriers to adding access points such as interchanges, traffic signals, and unsignalized driveways to a limited access facility.

METHODOLOGY

Three main tasks were conducted to investigate the feasibility of using NEPA as a corridor protection instrument, with the case study approach being used:

1. Describe how the NEPA process is applied to planning efforts for Virginia highway facilities.
2. Investigate specific case studies where NEPA was directly or indirectly used to protect a given corridor.
3. Synthesize the case studies and relevant case law into a set of policy options that VDOT can consider when corridor protection is desired and the NEPA process is applicable.

RESULTS

How the NEPA Process Is Applied to Planning Efforts for Virginia Highway Facilities

Overview

Enacted in 1970, NEPA (42 U.S.C. § 4321, 4331) is a relatively simple statute consisting of only a few pages and accomplishing two objectives (Rodgers, 2000; Yost, 1995). The first is to prevent environmental damage by federal agencies, and the second is to ensure that agency decision makers take environmental factors into account (Yost, 1995). “By focusing the agency’s attention on the environmental consequences of a proposed project, NEPA ensures that important effects will not be overlooked or underestimated only to be discovered after resources have been committed or the die otherwise cast” (*Robertson v. Methow Valley Citizens Council*, 1989). In short, NEPA promotes educated decisions but does not require that the best option for the environment be chosen. NEPA does require that the decision not be arbitrary or capricious. Further, via the Administrative Procedures Act (APA), NEPA requires that the decision maker not act in an arbitrary and capricious manner in making the decision.

NEPA does not guarantee attainment of any specific environmental standards; instead, its power stems from its procedural aspects. The Supreme Court stated, “NEPA does set forth significant substantive goals for the Nation but its mandate to the agencies is essentially procedural” (*Yankee Nuclear Power Corp. v. Natural Resources Defense Council, Inc.*, 1978). One of these better-known procedures is the requirement for an Environmental Impact Statement (EIS) for any “proposals for legislation and other major Federal actions significantly affecting the quality of human environment” (42 U.S.C. § 4332). NEPA also created the Council of Environmental Quality (CEQ), whose role is to develop regulations that make more explicit Congress’s intentions in the act (42 U.S.C. § 4342; Executive Order 11991). The CEQ provides guidance for federal agencies, which in turn develop more specific regulations that are then specified in the *Code of Federal Regulations* (CFR). For the transportation sector, therefore, specificity increases from NEPA (enacted by Congress) to CEQ regulations for implementing

NEPA (published in the CFR), to agency regulations implementing the agency's policy with regard to NEPA and the CEQ regulations (also published in the CFR) (CEQ, 1978a). The transportation agencies in this case are FHWA and the Federal Transit Administration.

NEPA is designed to be a part of existing decision paths rather than a fully independent set of requirements. Therefore, to understand the influence of NEPA in planning transportation improvements, it is appropriate to understand when NEPA is used in developing a transportation project relative to other Virginia transportation planning processes. NEPA addresses *federally* funded projects—thus, a state project that received no federal funds would not be subject to NEPA *per se*.

Link Between NEPA Process and VDOT's Transportation Project Development Process

NEPA does not have a specific enforcement provision. However, Judge Wright of the D.C. Circuit in *Calvert Cliffs Coordinating Commission v. United States Atomic Energy Commission* (1971) added a substantive component to the statute. Subsequently, any substantive component has been whittled down to mere procedure by the Supreme Court in cases such as *Strycker's Bay Neighborhood Council, Inc., v. Karlen* (1980). As a result, NEPA relies on the APA for its enforcement provision, and courts have adopted the APA's "arbitrary and capricious" standard when reviewing agency actions with regard to NEPA compliance.

Figure 1 summarizes the four major phases of moving a possible transportation project from conception to construction (VDOT, 2000).

1. *Planning phase*, where VDOT, a local government, or a metropolitan planning organization (MPO) identifies the need for a transportation improvement. This phase may be accomplished through a formal study (e.g., corridor study, feasibility study, regional or statewide long-range transportation planning study, highway needs assessment), a public involvement process, or some combination thereof. Anecdotal comments suggest that for routine projects this planning phase can take 6 to 24 months, although for controversial projects the planning phase can take more than a decade.
2. *Programming phase*, where specific projects are selected for funding and placed in the Six-Year Improvement Program (SYIP). Although there are limited project funding opportunities outside the SYIP, Figure 1 is representative of most projects.
3. *Preliminary engineering and right-of-way acquisition phase*, where the appropriate modal agency (usually VDOT for roadway projects) follows the NEPA process to select, locate, design, and mitigate the adverse effects of a transportation project.
4. *Construction phase*, where the project is built.

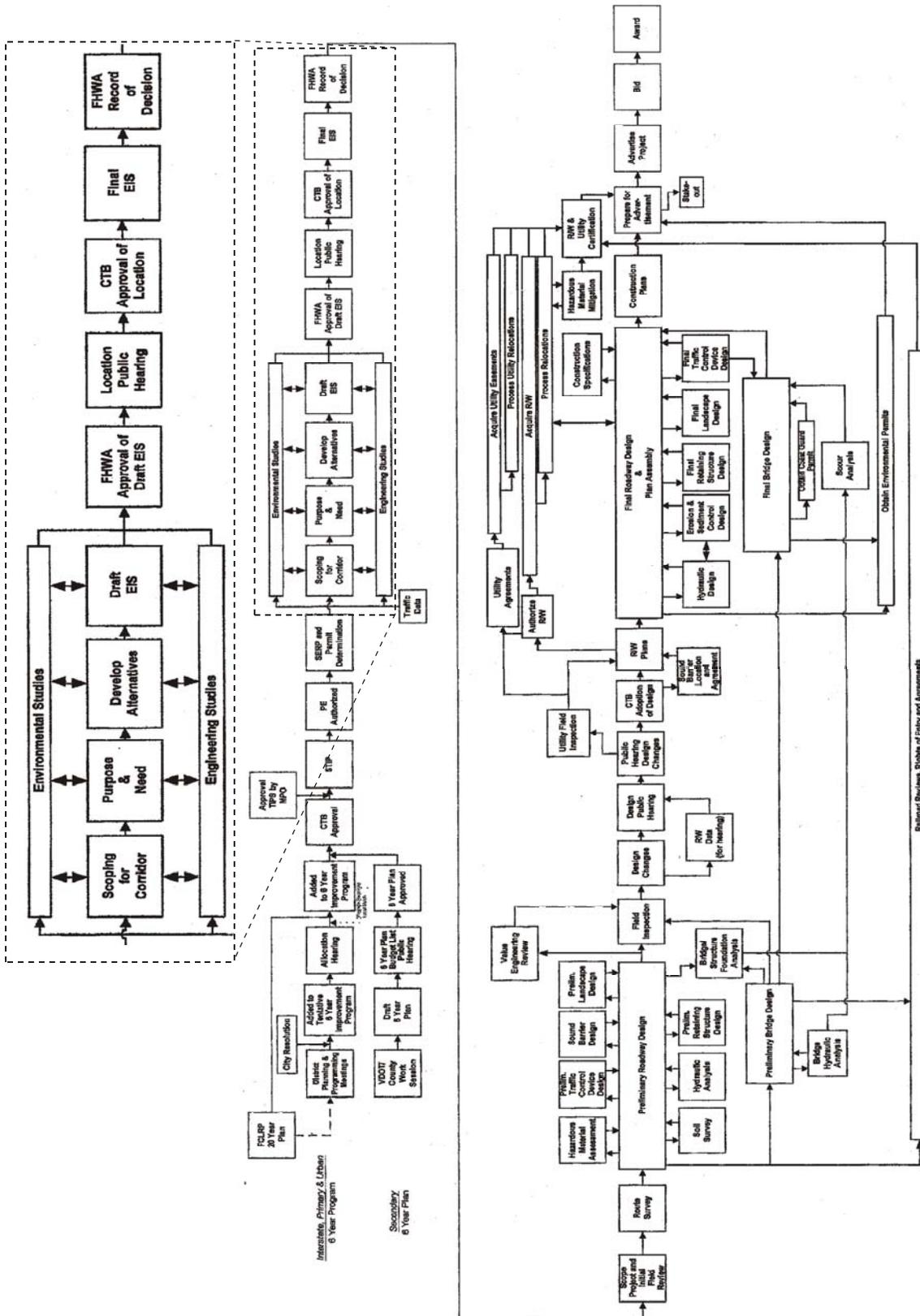


Figure 1. Role of NEPA in the Virginia Project Development Process
 (Courtesy of the Virginia Department of Transportation, Project Management Office.)

It is in the preliminary engineering and right-of-way phase that the NEPA process affects the future of the project. Generally, NEPA requires an Environmental Assessment (EA) to determine whether the proposed action is a “major federal action significantly affecting the quality of the human environment” (King, 1998, p. 43). If after the EA is produced, it is found that either there is no significant impact or the impact can be mitigated, then the agency will issue a Finding of No Significant Impact, or FONSI (Sheldon and Squillace, 1998). In contrast, if the project will significantly affect the human environment, then an EIS must be prepared. Key sections of the EIS include a statement of the purpose and need, descriptions of all alternatives to the project, the environment affected by each alternative, the effects on the environment, and any mitigation measures to each alternative that may be implemented (King, 1998). Following the preparation of the EIS and the decision by the CTB, the appropriate federal agency (which is FHWA for roadway projects) issues a record of decision (ROD) (Sheldon and Squillace, 1998). The ROD has two major components: (1) a description of the process used to make the final decision, and (2) steps that will be taken to mitigate the adverse consequences of the decision (*Robertson v. Methow Valley Citizens Council*, 1989; *Strycker’s Bay Neighborhood Council, Inc., v. Karlen*, 1980; *Vermont Yankee Nuclear Power Corporation v. Natural Resources Defense Council*, 1978). For example, mitigation measures outlined in the Winchester Bypass ROD include providing relocation assistance for displaced residents and constructing additional wetlands to compensate for wetlands lost during construction (FHWA, 2001).

Although Figure 1 shows the creation of an EIS, EAs are far more common. Nationwide, the CEQ reported that 50,000 EAs were prepared each year, compared to 500 EISs (CEQ, 1997a; *Cronin v. U.S. Department of Agriculture*, 1990; Sheldon and Squillace, 1998).

When an EIS is required, the cost in time and money is substantial. For example, nearly 3.5 years elapsed between the notice to proceed with the EIS and the issuance of a ROD on the Virginia Coalfield’s Expressway (email from Patricia Napier to Jeffrey Rodgers, June 3, 2003). The total expenditures for the planning phase of the 60-mile project including the EIS, a 2-inch-thick bound document, were \$3.9 million (VDOT, 2001).

Potential of Using NEPA Process to Protect Corridors

Although NEPA has often been properly viewed as an instrument for protecting the natural environment, the CEQ authorizes NEPA to protect the broader human environment, in which the CEQ includes “the natural and physical environment and the relationship of people with that environment” (40 C.F.R. § 1508.14). For example, because of Executive Order 12898, this broader human environment has included protection of disadvantaged groups under the heading of Environmental Justice (Forkenbrock and Weisbrod, 2001). Further, although the CEQ notes that “economic or social effects are not intended by themselves to require preparation of an environmental impact statement,” the CEQ’s directive to consider indirect and cumulative impacts suggests that it is possible to use NEPA to protect the transportation corridors themselves by strategically linking the preservation of good access management to the quality of human environment for persons using the corridor.

Thus to consider the feasibility of protecting corridors through NEPA, it is appropriate to consider the CEQ's directive regarding the environmental consequences of "direct, indirect and cumulative impacts" (King, 1998, pp. 51-52 ; 40 C.F.R. § 1502.9, 1508.7). Direct effects are easier to identify and include additional noise from greater traffic or the prevention of wildlife passage across the road. On the other hand, indirect effects are "caused by the action and occur later in time or farther removed in distance, but are still reasonably foreseeable" (40 C.F.R. § 1508.8; FHWA, 1992). Cumulative effects are those that result "from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions" (Louis Berger Group, Inc., 2002, p. 3; 40 C.F.R. § 1508.7). These cumulative effects assess the total additive impact on the environment by the project and include direct and indirect impacts.

For example, the construction of a new bypass may have the direct effect of removing several acres of wetlands. Yet the bypass may have the indirect effects of converting newly accessible farmland to residential use. This conversion is considered an indirect effect since it likely does not occur right at construction and it is a reasonably foreseeable impact. Finally, because the new bypass combined with the new development may generate substantial additional traffic on rural secondary roads in the vicinity of the existing farmland, the resultant congestion on these secondary roads is a cumulative impact. Some persons use the phrase *secondary impact* in lieu of *indirect impact*. A thorough discussion of direct, indirect (or secondary), and cumulative impacts is provided by the Louis Berger Group, Inc. (2002).

How Case Law and Congressional Action Influence NEPA's Relevance

Case law and congressional actions have influenced the NEPA process in at least four ways: definitions of open-ended concepts, determination of the extent to which courts may review NEPA-related decisions, the enforceability of NEPA, and exemption of particular actions from NEPA by Congress.

- *Definition of concepts.* The courts have decided that indirect and cumulative impacts include the effects of reasonably foreseeable actions or those that are likely to occur or are probable rather than those that are very unlikely. As noted by the First Circuit in *Sierra Club v. Marsh* (1992): "The terms 'likely' and 'foreseeable' as applied to a type of environmental impact are properly interpreted as meaning that the impact is sufficiently likely to occur when a person of ordinary prudence would take it into account in reaching a decision." From *Dubois v. U.S. Dept. of Agriculture* (1996), the First Circuit looked at determining not all conceivable impacts but only those reasonably foreseeable. Likewise, in *Sierra Club v. Marsh*, the court examined whether a person "of ordinary prudence" would take the indirect effect into account to determine whether or not it was relevant. In addition, the CEQ implies that *reasonably foreseeable* means probable (40 C.F.R. § 15.08b).
- *Scope of judicial review of NEPA.* Judicial review was established under the auspices of the APA (*Blue Ocean Preservation Society v. Watkins*, 1991; *Calvert Cliffs Coordinating Commission v. United States Atomic Energy Commission*, 1971; *Sierra Club, Illinois Chapter v. U.S. Department of Transportation*, 1997). In addition, the

CEQ explicitly authorizes judicial review of RODs and FONSIIs where 40 C.F.R. § 1500.3 states: “It is the Council’s intention that judicial review of agency compliance with these regulations not occur before an agency has filed the final EIS, or has made a final FONSI (when such a finding will result in action affecting the environment), or takes action that will result in irreparable injury.” However judicial review of NEPA decisions is limited to determining whether the agency’s decision was “arbitrary and capricious, an abuse of discretion, or otherwise not in accordance with law” (*Marsh v. Oregon Natural Resources Council*, 1989; 5 U.S.C. § 7062A). Courts cannot make a judgment for the agency under this standard; in order to overturn a regulatory decision, the court will look for a “clear error of judgment,” but the court cannot “substitute its judgment for that of the agency” (*Califano v. Sanders*, 1977; *Citizens to Preserve Overton Park, Inc., v. Volpe*, 1971; *Robertson v. Methow Valley Citizens Council*, 1989; *Sierra Club, Illinois Chapter v. U.S. Department of Transportation*, 1997).

- *Enforceability of NEPA*. The environmental mitigation measures discussed in an EIS are not enforceable unless they are adopted in subsequent documents, such as the ROD. *Robertson v. Methow Valley Citizens Council* (1989) notes: “There is a fundamental distinction, however, between a requirement that mitigation be discussed in sufficient detail to ensure that environmental consequences have been fairly evaluated, on the one hand, and a substantive requirement that a complete mitigation plan be actually formulated and adopted.” The reasoning is that the mitigation measures identified in the EIS are not enforceable by the courts because the agency does not have any more NEPA duties following its publication of the EIS (Sheldon and Squillace, 1998).
- *Exemption from NEPA of certain projects by Congress*. Congress sometimes exempts projects from NEPA. For instance, the Trappers Loop Road in the Snowbasin Ski Area in Utah was denoted a “non-discriminatory [action]” and thus de facto excluded from the NEPA analysis (Omnibus Parks and Public Lands Management Act of 1996). As is discussed in the third case study, Congress successfully exempted I-66 from certain conditions that had been in place since the completion of the I-66 EIS process in 1977.

Extent to Which a Record of Decision Is Enforceable by a Third Party

There is ambiguity regarding whether a third party who was not named in the ROD for an EIS can sue to have mitigation measures promised in the ROD implemented. Guidance from the CEQ suggests the answer is a definitive *yes*, noting that “the terms of a Record of Decision are enforceable by agencies and private parties” (CEQ, 1978b; CEQ, 1981). Further, work done for the National Cooperative Highway Research Program indicated that CEQ regulations form the basis for the legal review of environmental impacts (Louis Berger Group, Inc., 2002). Case law and relevant federal statutes, however, suggest that the answer is more vague, with arguments for and against enforcement of the ROD.

The case for suggesting that the ROD is enforceable by a third party stems from the argument that the ROD constitutes a final (not interim) and substantive (not procedural) agency action and is thus governed by the APA. The U.S. District Court for the District of Columbia, in a 2002 ruling for *Center for Biological Diversity v Pirie and Rumsfeld*, points out that the purpose of the APA was to prohibit illegal agency actions (5 § U.S.C. 7062A). APA does not apply to interim actions; however, *Pirie and Rumsfeld* states: “This Court has previously held that similar Records of Decision issued pursuant to NEPA are final agency actions for purpose of the APA.” Others have also viewed the ROD as a final agency action (Louis Berger Group, Inc., 2002).

Language opposing the case that the ROD is enforceable by a third party has also been observed in the case law using one of two arguments regarding the action in question: (1) it is within an agency’s discretion or (2) it is not a final agency action.

1. The defendants in *Pirie and Rumsfeld* noted that the APA did not apply to the extent that “agency action is committed to agency discretion by law.” Although this reasoning was not successful in preventing the ROD from being enforced, conceivably a rationale for not allowing an ROD to be enforced by a third party could be that VDOT’s decision to add access points, for example, was within VDOT’s discretion. This discretion was clarified in *Methow Valley Citizens’ Council v. Regional Forester* (1986), where the court ruled that “no statute precludes judicial review of the Forest Service’s Record of Decision,” the exemption under 5 § U.S.C. 701(a)(2) of the APA (which does allow agency discretion) does apply: the discretion in that case was that the Forest Service could issue a special use permit for a ski resort.
2. It has also been noted that issuance of an individual permit by the U.S. Army Corps of Engineers for a proposed discharge is a “non-final agency decision” and thus not reviewable (Chertok, 2004). Conceivably, then, it could be argued that access permits granted on an individual basis are similarly not final VDOT decisions and thus not reviewable.

Additional cases suggest the enforceability of the ROD is context specific, and the delineation between the ROD and NEPA adds confusion. Although NEPA itself is procedural, an opinion by the General Accounting Office (GAO) suggests that the ROD may be substantive (Gamboa, 2001). In its review of the *Trinity River* ROD (where diversions of water from the river would be reduced to protect anadromous fish), the GAO noted that that the ROD was not procedural because of the “extensive discussion of mitigating the impacts of its implementation” in the ROD. The interpretation is contrasted with a procedural rule, which would not be reviewable under the APA. Yet the GAO also states in the same ruling that determination of a ROD being substantive is limited to the *Trinity River* case, with agencies issuing many types of RODs. Finally, any right of third parties to sue for enforcement extends only to the ROD and not to the EIS process itself. Cohen (2001), for example, argues that within the EIS process, there is no “private right of action to enforce the terms in the EIS” (p. 46). Although not stated explicitly by Cohen, it appears that Cohen’s remarks are limited to the EIS process and not the ROD per se.

Guidance from the CEQ and case law suggest that the ROD may be enforceable by third parties to the extent that such third parties can show the ROD was a final and substantive agency decision. This inference is tempered by the fact that in some cases it has been successfully argued that the ROD should not be reviewed, based on proving that either (1) the ROD is not an agency's final decision or (2) the actions within the ROD are within the agency's discretion.

Summary of How NEPA Affects Transportation Initiatives

NEPA influences the transportation planning process through the preparation of an EA or EIS, as denoted in Figure 1. Because of the general nature of some of the terminology, such as *indirect impacts*, this process is influenced by both the CEQ and case law. Further, congressional actions may override NEPA processes to some degree. Finally, there is ambiguity regarding the extent to which an ROD itself is enforceable by third parties. This study suggests that the enforceability by a party who was not a signatory is probable but not proven. Thus to analyze how NEPA can influence transportation planning decisions in a specific context, it is appropriate to examine case studies where the NEPA process affected project decisions in Virginia.

Case Studies Where NEPA Was Used to Protect a Virginia Corridor

Four case studies illustrate how the NEPA process can be used to protect Virginia corridors after construction of a project. Only the first directly addresses changing the number of access points; the next three address other long-term operational strategies. All four cases, however, portray the strengths and limitations of NEPA in the transportation field. The first case study of I-295 illustrates the *ROD conditioning approach*, where FHWA makes the approval of a project contingent upon conditions in the ROD. The second case study of Route 44 describes the *supplemental agreement approach*, where FHWA provides funds for a specific operational feature; if VDOT changes that purpose, then FHWA can force VDOT to pay back the money it used for the project. The third case study of the I-66 corridor illustrates the *design-specific approach*, which binds the parties to specific roadway operational and geometric characteristics. The fourth category of case studies, although not all cases are specific to Virginia, illustrates the *mitigated FONSI approach*, appropriate for instances where an EIS is not required.

ROD Conditioning Case Study with the I-295 Richmond/Petersburg Bypass

I-295 is an eight-lane highway loop that intersects I-95 at two locations—northwest of Richmond and southeast of Petersburg—allowing through traffic to avoid both urban areas. Originally, I-295 was planned as a Richmond bypass to make a complete loop with I-95. Just as the Virginia Department of Highways (VDH) requested final approval to begin construction in 1970, FHWA requested another hearing followed by a Section 4(f) analysis, which gives special consideration to public parks, recreation areas, wildlife/waterfowl refuges, and historic sites (Fay, 1978; King, 1970; 23 U.S.C. § 138). As this process continued for more than a year, FHWA informed VDH that it would have to prepare an EIS for I-295, which would be the first

EIS for a highway project in Virginia (Fay, 1978). It was not until November 26, 1975—5 years after VDH had initially requested approval to begin constructing I-295—that the NEPA process was completed and the project was approved for only the northern portion (Fay, 1978).

The section linking the southeast quadrant of the beltway was controversial. *The Washington Post* reported: “Richmond officials, who [saw] the road as a \$487 million concrete noose around the city’s economy, . . . fought the road for . . . four years with every weapon they have, including calling in their political IOUs with Jimmy Carter” (Frankel, 1980a). Richmond even alleged in a letter to the U.S. Secretary of Transportation that prominent politicians had a financial stake in the road (Frankel, 1980b). The proposed I-295 route initially traversed a historic Civil War site—the Richmond National Battlefield—until planners routed it further east and south past Petersburg. This change eliminated the possibility of a true beltway around Richmond, such that I-295 now bypasses a much larger area than only that city.

At the end of the project, the Carter Administration conditioned approval of the beltway on nine clauses specified in the project’s ROD. Clause 1 eliminated five interchanges and a connector to I-95 south of the James River (FHWA, 1981). However, it allowed them to be constructed at a later date under normal planning procedures. Clause 3 encouraged the state to sign the new highway as I-295 rather than I-95 as originally planned, in part to appease Richmond and Petersburg. It also specified that tourist information centers be located north of Richmond and south of Petersburg along I-95 (FHWA, 1981). Other conditions required the Virginia Department of Highways and Transportation (VDH&T) to work with the cities of Richmond and Petersburg to improve the conditions on I-95 and I-85 (FHWA, 1981).

VDH&T sought changes from the Reagan Administration in March 1981 and was granted two more interchanges at Routes 5 and 10 closing an 18-mile section without an interchange in May 1981 (King, 1981; FHWA, 1981). As construction proceeded in the mid-1980s, VDH&T sought two more of the deleted interchanges in Prince George County (Wray, 1984). This attempt was unsuccessful. FHWA declined to approve the interchanges at Routes 645 and 106. It cited its elimination of interchanges as a mitigating factor to offset the economic harm on Richmond and Petersburg and to soothe their opposition. FHWA also noted the unchanged conditions from the time of the approval of the project to 1984 and that conditions did not warrant reconsideration (Tumlin, 1984). Thus, conditions imposed on the ROD by FHWA were enforceable to the extent that FHWA chooses to abide by them, and that ROD is still governing the project. The remaining three interchanges have not been built to this day.

Supplemental Agreement Case Study With Route 44 Norfolk/Virginia Beach/Expressway

The use of high-occupancy vehicle (HOV) lanes began as an experiment on Route 44 in 1986. Because they were not adequately used, the HOV requirement was removed in 1988. Then, in 1992, a regional network of HOV lanes was completed on I-64 and I-564, which prompted the HOV requirement to be added to Route 44 (“HOV Lanes,” 1990). The continued lack of HOV traffic caused the Virginia General Assembly to remove the HOV requirement in 1999 (Peter, 1999). The caveat for the removal was that it would happen only if it did not jeopardize any past or future federal funds.

However, FHWA advised that Virginia would have to repay about \$170 million if the HOV lanes were removed. No congressional waivers were obtained, and the lanes remained. Virginia's obligation to refund the federal money for this project stems from the federal grant-in-aid agreements for the HOV lanes. FHWA viewed the removal of the HOV lanes as a breach of the contract and revised its guidance on HOV in 2001 (Curtis, 2001). The guidance noted that FHWA "cannot waive repayment nor allow a change, such as removing the HOV designation, by accepting any payback and substitution of state funds" (Curtis, 2001). If the HOV lanes were to be removed without FHWA approval, FHWA "has the authority to impose financial sanctions on the state's federal-aid highway program in order to force the state to reverse their action" (Curtis, 2001).

In 2001, the Virginia House of Delegates reopened the issue by trying to remove the HOV lanes from I-264 (the new designation for State Route 44), which were not built using federal funds (Messina, 2001). FHWA reacted by referring to a 1980 agreement where Virginia "became eligible to receive additional interstate funding for the HOV facilities on I-64 only with the understanding that Virginia would construct two HOV lanes on the old Norfolk Virginia Beach Toll Road or I-264" (Fonseca-Martinez, 2001; Kirk, 1980). FHWA concluded that Virginia could not take unilateral action by removing the HOV designation from the lanes on I-264 because federal regulations would then require FHWA to place sanctions on Virginia's Federal-Aid Highway Program (Kirk, 1980).

Thus, this case study illustrates that unlike the I-295 example, it was the supplemental agreement, in the form of the Federal Grant-in-Aid Agreement, that maintained the character of the Route 44 expressway (now I-264). Although this supplemental agreement pertained to the HOV designation, this approach could conceivably be applied for the purposes of limiting the number of interchanges for the corridor. In short, although the I-295 conditions were enforced through putting details in the ROD, this Route 44 case illustrates the potential of a supplemental agreement that goes beyond the ROD.

Design-Specific Case Study With I-66 in Arlington County

The concept of I-66 in Arlington and Fairfax counties began in 1938 when the planner for Arlington County proposed an east-west highway through Arlington (White, 2001). Almost 70 years later, the debate regarding how large that road should be has not ended (Arlington Coalition for Sensible Transportation, 2003). With the passage of the Interstate Highway Act in 1956, the Washington, D.C., metropolitan area was to have three beltways and 36 miles of limited access road crossing them (White, 2001). Ultimately, one beltway was built with 10 miles of limited access road. Virginia had two proposed highways leading into the District: the Shirley Highway (I-395) and an interstate connecting the Shenandoah Valley at I-81 with the District of Columbia at I-66 (Arlington Coalition for Sensible Transportation, 2003; *Arlington Coalition on Transportation v. Volpe*, 1972). In 1958, VDH began the route selection process for the latter route. The Arlington County Board and the Fairfax County Board endorsed the route, and the Bureau of Public Roads (predecessor to FHWA) approved I-66. Right-of-way acquisition was authorized between the Beltway and Rosslyn in 1961 and 1962. The project was expanded to eight lanes in 1965. The acquisition of the right of way would take time, and VDH

faced many legal wrangles acquiring the right of way from the Washington and Old Dominion Railroad. Further, a rapid rail project (Metro) was proposed, and Congress created the Washington Metropolitan Area Transit Authority (White, 2001). Plans were drawn up for a Metro line in the median of the proposed I-66. There was also a controversy over the proposed Three Sisters Bridge (I-266); construction was postponed because the size of I-66 depended on whether the parallel bridge would be built (White, 2001).

Because of the delay, VDH postponed construction until 1970 by which time institutional and cultural changes began to affect the project. As documented in Lewis's 1997 publication *Divided Highways*, the American people had begun to question the wisdom of building interstates into their cities, and environmental laws had changed (Sheldon and Squillace, 1998; White, 2001). By that time, all significant actions of the federal government required an EIS outlining the alternatives to the proposed actions and its environmental effects (42 U.S.C. § 4321). By 1970, VDH proposed 14 lanes through Rosslyn at a public hearing, which stirred many residents to action (White, 2001).

A protest organization, the Arlington Coalition on Transportation (ACT), was formed and filed suit to enjoin VDH from approving final plans of I-66 through Arlington on the basis that an EIS was not created (*Arlington Coalition on Transportation v. Volpe*, 1972). The court noted that "[t]he only activity on I-66 since January 1, 1970 [the effective date of NEPA] has been the completion of work authorized or approved prior to that date" and that Virginia was preparing to file an EIS before construction approval was granted and dismissed the ACT suit.

The Fourth Circuit reversed. It reasoned that FHWA had not approved the plans, surveys, and estimates; VDH had not awarded construction contracts, and indeed construction had not yet begun on the highway. The court decided that the voluntary completion of an EIS while the project continued did not conform to the requirements of NEPA and ordered work to stop until the EIS could be prepared (*Arlington Coalition on Transportation v. Volpe*, 1972). The court also enjoined VDH from continuing work on I-66 until the provisions of Section 4(f) of the U.S. Department of Transportation Act of 1966 were complied with and more public hearings were held.

In April 1975, after months of rancorous debate in the local communities and federal agencies, FHWA staff recommended that VDH build a six-lane I-66 (White, 2001). Despite that recommendation, U.S. Secretary of Transportation Coleman did not approve I-66. He noted changed circumstances, local opposition, the Metro system, air pollution, the energy crisis, and the elimination of the Three Sisters Bridge as reasons for his decision. Secretary Coleman did not prejudice any other roadway project VDH proposed on that corridor (White, 2001).

The secretary's action did not deter VDH Commissioner Fugate. He soon recommended that all money earmarked for I-66 be transferred to projects in southern Virginia and that that money not be used for the construction of a Metro line in the I-66 corridor. This created an impasse, which led to meetings among legislators, Virginia's Governor Godwin, Commissioner Fugate, and Secretary Coleman. In December, Secretary Coleman proposed a compromise, and in March 1976, VDH submitted a new proposal to FHWA using the median of the proposed I-66

for the Metro train (White, 2001). New hearings were held, and Secretary Coleman approved I-66 in January 1977 with eight conditions.

These conditions came to be known as the Coleman Decision (U.S. DOT, 1977) and included:

1. providing Metro with the right of way of the median
2. transferring the funds allocated for I-266 (Three Sisters Bridge) to Metro
3. restricting rush hour traffic to HOV and Dulles Airport traffic
4. excluding heavy trucks
5. submitting a plan for adequately enforcing the restrictions
6. precluding the construction of any additional lanes in the future
7. constructing the road in a fashion similar to that of the George Washington Parkway
8. ensuring that the construction provides opportunities for minority-owned firms.

These conditions were binding on Virginia indefinitely by the terms of the Federal-Aid Project Agreement (FAPA) between Virginia and FHWA. These terms were included as “Additional Provisions” appended to the agreement provisions of all FAPAs for I-66. Were the terms to be violated, FHWA would have obligated Virginia to “repay the Federal Share of the costs of constructing I-66, forego further Federal aid for highways, or face litigation by the Federal government to compel compliance” (U.S. DOT, 1977).

The Federal-Aid Highway Program is a statutory creature ultimately controlled by Congress. In 1999, Congress demonstrated this authority with I-66, where Frank Wolf (a representative from Virginia in the U.S. Congress) introduced legislation repealing the Coleman Decision in the FY 2000 Appropriations Act for FHWA (House Resolution 2084). This legislation repealed the requirements of the Coleman Decision except for the ban on heavy trucks and allowance of Dulles Airport traffic during HOV restrictions. Thus, the 2000 Appropriations Act eliminated the contractual requirements of VDOT put in place by the terms of the FAPAs regarding I-66 in 1977 (FHWA, 2000b). At present, the proposed size and character of a reconstructed I-66 in Arlington are being debated. Questions are being raised whether Congress has the power to remove the Coleman Decision. Arlington officials are preparing to challenge the congressional action in court if steps are taken to widen I-66 inside the Beltway (Gowan, 2003).

In short, the Coleman Decision differs from the previous two case studies in that conditions placed on I-66 were specific to the nature of the facility: details of roadway design, truck restrictions, and Metro service were described. As was the case with the Route 44 example, however, these details were placed not in the ROD but rather in a supplemental agreement. It is conceivable that a similar level of detail regarding the nature of access points could also be described, with the caveat that as is the case with I-66, the political process influences the extent to which these requirements may be specified. The I-66 case study also demonstrates that even a strong FAPA will not last indefinitely but rather for a finite but lengthy time period, which in this case was about a quarter century.

Mitigated FONSI Case Study

As noted previously, most EAs result in a FONSI rather than an EIS. In those situations, a mitigated FONSI may be an appropriate corridor protection tool. In fact, VDOT has used the mitigated FONSI in the past for projects that do not require the full analysis of an EIS, such as Route 17 in Chesapeake near the Great Dismal Swamp. Two cases, one in the Fourth Circuit Court and one in the District of Columbia Circuit Court, combined with documentation from the CEQ, illustrate that a mitigated FONSI can in itself avoid the requirement of an EIS (CEQ, 1981).

- In the 1991 case *Roanoke River Basin Association v. Hudson*, the Fourth Circuit held “[i]f a mitigation condition eliminates all significant environmental effects, no EIS is required.” The appellants argued that an EIS was required because the mitigation was not subject to public comment, but the court noted that the Army Corps of Engineer making the mitigation mandatory offered greater protection to the public.
- In the 1982 case *Cabinet Mountain Wilderness/Scotchman’s Peak Grizzly Bears v. Peterson*, the District of Columbia Circuit Court held that the U.S. Forest Service could approve mining exploration in a wilderness area because of a mitigated EA that avoided impacting the grizzly because the Forest Service could rely on the mitigation to determine whether the action would be significant. “If . . . the proposal is modified prior to implementation by adding specific mitigation measures that completely compensate for any possible adverse environmental impacts stemming from the original proposal, the statutory threshold of significant environmental effects is not crossed and an EIS is not required.” To require an EIS in such circumstances would trivialize NEPA and would “diminish its utility in providing useful environmental analysis for major federal actions that truly affect the environment.”

Despite those two cases and the fact that other courts have upheld mitigated FONSI, the preparation of a mitigated FONSI does not automatically mean that the mitigation presented will be adequate to prevent the preparation of the EIS (*Friends of the Payette v. Horseshoe Bend Hydroelectric Co.*, 1993; *Sierra Club v. U.S. Forest Service*, 1995; *Virgin Islands Tree Boa v. Witt*, 1996). Some courts have rejected proposed mitigation measures because they were not enforceable by the agency but rather were under the control of a third party (*Preservation Coalition, Inc. v. Pierce*, 1992). Reliance on third parties for mitigation measures is permitted if they are “more than vague statements of good intentions.” Yet the result of the mitigation must always be to “render the net effect of the modified project on the quality of the environment less than “significant” (*Audubon Society of Central Arkansas v. Dailey*, 1992).

As is the case with mitigation measures in the ROD, the FAPA, or another supplemental contract, the mitigation measures identified in a mitigated FONSI are enforceable (*Cabinet Mountain Wilderness/Scotchman’s Peak Grizzly Bears v. Peterson*, 1982). Although mitigation measures cited only in an EIS and not elsewhere are generally not enforceable, such measures when stated in a FONSI are enforceable because the FONSI “forms the basis for forgoing an EIS” and failing to mitigate may create a significant federal action invoking the EIS requirement of NEPA (Sheldon and Squillace, 1998). However, agencies should not depend on the mitigated

FONSI to avoid EIS requirements and “no statutory basis or case law exists for the proposition that mitigation measures may negate the need for an EIS” (Maffei, 1991, pp. 82-83; 40 C.F.R. § 1508.8, 1508.27).

Thus the case law suggests that with a mitigated FONSI, VDOT could conceivably identify good access management as the reason an EIS is not required. In that sense, the explicit corridor protection techniques are enforceable to the extent that they are the reason an EIS was avoided.

Summary of Corridor Protection Techniques Enabled by NEPA

By itself, the EIS is not an enforceable document. However, the first three case studies indicated how documents that follow the EIS can be used to protect corridors, and the fourth case study showed how the mitigated FONSI can be used for federally funded projects that do not require an EIS. With these four techniques, VDOT can expand its toolbox of corridor protection abilities for federally funded transportation improvements.

1. *VDOT may recommend that FHWA adopt an ROD conditioned on the environmental mitigation measures as specified in the EIS.* This is the first method the federal agency can adopt, and it was used in the construction of the I-295 Beltway between I-95 south of Petersburg and I-64 east of Richmond. In that project, the signature of the Director of the Environmental Program at the FHWA was asterisked and conditioned upon the approval of nine conditions attached to the ROD. FHWA can decide the best option for a project. It can choose to condition the approval of the project on the implementation of mitigation measures into the project. FHWA can enforce this by withholding federal funds for those areas of the project that do not comply. This method may, during construction, prevent the agency from changing the character of the facility in the short term and in the long term may not be applicable after the facility has been built. A corridor mitigation section may be inserted into the ROD mitigation table describing limits on access that the decision places on VDOT.
2. *VDOT and FHWA may agree to FAPA language indicating environmental mitigation measures.* These environmental mitigation measures may be included in the *State Remarks* or *Division Remarks* section of the FAPA. This method allows the state to insert terms and conditions such as “this corridor will have three access points.” FHWA can likewise insert terms and conditions such as “this authorization is subject to this facility remaining a four-lane divided highway without any new interchanges.” Such clauses would become the terms of the FAPA, a contract between FHWA and VDOT, and would be enforceable by either party. To the extent they were construed as a final agency action, they should likely be enforceable by a third party.
3. *VDOT and FHWA may create a supplemental agreement that details the size and character of the facility.* VDOT may create a supplemental agreement detailing certain aspects of the facility including environmental measures to mitigate against indirect and cumulative impacts. This agreement may be an independent contract or it could be reliant upon either of the two previous methods. For example, in the case

of I-66, the Coleman Decision was a supplemental agreement that came out of Secretary Coleman’s research into the project including the hearings he conducted and was agreed to by Governor Godwin through a letter. Further, the Coleman Decision was reinforced by the FAPAs because its key terms were inserted into each agreement. Although the Coleman Decision arose out of a unique situation, it serves as a good example of an environmentally sound result of the NEPA process.

It is probable but not definitive that a third party could also enforce these supplemental agreements. For instance, the Coleman Decision notes: “it appears that the conditions [of the Coleman Decision] could be enforced by third parties who are in the class intended to be benefited or protected by them. In the case of I-66, that would include a broad class of citizens—both those who live near the highway and those that use it” (U.S. DOT, 1977). The added possibility of litigation from third parties may also serve as a deterrent should an agency attempt to increase the number of roadway access points.

4. *VDOT may prepare a mitigated FONSI that stipulates that all grants include language indicating environmental mitigating measures.* All federal actions invoke NEPA to some degree, and those EAs that do not require an EIS ultimately require a FONSI. In those cases, and where applicable, corridor protection may be explicitly used as the mitigating factor for the reason an EIS is not required. This technique potentially applies to a much larger range of projects than the three techniques that rely on an EIS.

All four techniques have substantive limitations, as noted in Table 2. For example, the key limitation using FAPAs are that Congress may override any resultant agreement based on the FAPA. Because the Federal Road Aid program is a congressional product, Congress has the power to change its legislation, as was demonstrated with the I-66 example.

Table 2. Summary of NEPA-Related Instruments for Protecting Corridors

Acronym	Legal Instrument	Advantage	Disadvantage
Conditioned ROD	ROD conditioned on mitigation	Governs scope of project during planning and construction	May not be effective after facility is completed
FAPA	Federal-Aid Project Agreement	Effects a contract between VDOT and FHWA that remains in effect beyond the completion of the facility	Subject to congressional changes
Supplemental Agreement	Supplemental Agreement between interested parties	May or may not be able to be rescinded by Congress, depending on who participates in the agreement	
Mitigated FONSI	Mitigated FONSI	Creates enforceable mitigation measures; does not require EIS, and applies to a large subset of projects	Applies only to projects where EIS is required

CONCLUSIONS AND LIMITATIONS

1. *For federally funded projects, the NEPA process may be used to protect a corridor for some time period, but the period is not indefinite.* In the case of I-295, for example, the protections are still in place, but in the case of I-66, Congress has essentially removed them. Thus, NEPA raises barriers to additional access points, but those access points are surmountable. As described in the case studies and in step 3 of the Appendix, NEPA is affected by the political process.
2. *As shown in Table 2, NEPA can be used as a corridor protection instrument through at least four specific techniques:* conditioning the ROD, using the FAPA, using other supplemental agreements, and using the mitigated FONSI. None relies solely on the process for producing the EIS. For federally funded projects where an EIS is not required, a mitigated FONSI can be used to protect a corridor if it can be shown that the corridor protections in place are the reason an EIS is not required.
3. *The application of NEPA discussed in this paper should be viewed as one of many possible instruments for protecting corridors.* As is the case with any tool, protections through NEPA are subject to limitations. For the recommendations that follow to have credibility with VDOT and with external stakeholders, six limitations are stated:
 - NEPA applies only to projects that receive federal funding.
 - The protection strategies create additional hurdles to adding access points; they do not guarantee that a road will maintain a given level of access.
 - The additional hurdles apply to VDOT and other parties: If VDOT has mobility-related reasons for adding access points to a corridor that is already protected, VDOT will have to work through the NEPA process to “undo” the protections.
 - Because the NEPA process is procedural rather than results driven, the analysis might show that it is better not to limit access in some situations. For example, depending on the current speed limit on the corridor, an increase in speeds can raise nitrogen oxide emissions, thereby increasing ground level ozone (a pollutant responsible for poor air quality in several Virginia regions).
 - Because NEPA entails input from a diverse array of stakeholders, VDOT needs to introduce corridor protection concepts early in the NEPA process and ensure that they are carried throughout the process to the ROD.
 - The described techniques have generally not been applied on a wide scale for the purpose of corridor protection; thus, they have not been fully tested. The feasibility of applying NEPA as discussed in this report is thus plausible based on available evidence but not proven.

RECOMMENDATIONS

This study is not the first to note that NEPA has not been used to its fullest extent to assist strategic planning; others have noted that agencies have sometimes viewed EIS preparation solely as a way to reduce litigation rather than as an instrument for creating better decisions (CEQ, 1997b). This study suggests that NEPA's value in Virginia be enhanced by recognizing that the number of access points on a corridor is an issue that affects the human environment through mobility and safety. To use NEPA better, several recommendations emanate from the need for collaboration during the process and the potential for legal challenges to NEPA. Because recommendations 2, 3, and 4 add value only if they are incorporated in existing NEPA processes, there may be a need for additional training, for either VDOT staff or consultants, regarding how to include these corridor protection strategies, when appropriate, in the preparation of the EIS or mitigated FONSI.

1. *For upcoming potential transportation projects, determine if corridor protection is essential to the success of the transportation improvement.* Not all corridors are suitable for protection through NEPA; for some, however, such as Route 17 in the Great Dismal Swamp where access points were limited, corridor protection may be appropriate. This determination of corridors that are suitable for protection may be accomplished through a six-step public involvement process detailed in the Appendix.
2. *Within the scope of performing the NEPA process, consider explicit corridor protection concepts when writing an EIS, EA, and, especially, an ROD:*
 - *Establish a clear purpose and need for the facility.* This can enhance the EIS analysis by allowing a more careful examination of cumulative and indirect impacts. For example, if mobility is part of the purpose and need, then mobility should be quantified in terms of speed as a function of capacity.
 - *When applicable, include changes to a corridor's access as potential indirect or cumulative impacts.* Because the addition of signals, interchanges, or unsignalized driveways can in some cases reduce speed or adversely affect safety, these effects should be noted in situations where the potential for adjacent land development exists.
 - *For the given corridor, quantify the indirect and cumulative impacts of different levels of access.* Generally, limiting the number of interchanges means a reduced accident rate, a higher average travel speed, and possibly a reduced cumulative impact if denser development near widely spaced interchanges is encouraged. However, by using national research to quantify directly the benefits of various access strategies, decision makers will have access to better information about the alternatives.
3. *Consider the use of the mitigated FONSI as an instrument for directly relating access management to future project decisions.* To the extent that the number of access points affects mobility and safety for the corridor, VDOT should document how changes in these access points or their design will affect mobility and safety.

Further, for situations where a local jurisdiction or planning district commission (PDC) strongly supports a transportation project and there exists the possibility that an EIS will not be required, it may be appropriate to investigate whether corridor protection in the form of VDOT agreeing not to increase the number of access points is sufficient to move the project into a mitigated FONSI category from the EIS category. If yes, then VDOT can offer this protection as an incentive to the locality: if the locality will support VDOT's access management policy, VDOT can reduce the length of the environmental review process otherwise attributable to adverse impacts of increasing the number of access points.

4. *Modify the form for the ROD such that the ROD is amenable to corridor protection.* The "Remarks" section of the form may not be the best place for these terms. A "NEPA-related Provisions" section should be added to the electronic form that can be entered by FHWA or VDOT. Templates for particular characteristics that reappear frequently in these projects could be created, and a pull down menu programmed into the electronic form could facilitate their entry. To ease the transfer of the terms from the ROD to the FAPA, a special section in the ROD, perhaps in the mitigation table, should be inserted detailing the provisions to be included in the FAPA in a numbered format such as those found in the FAPA for I-66. (The value of this special section is to encourage VDOT and FHWA to transfer information from the ROD to the FAPA.)
5. *Investigate the feasibility of using agreements between local governments and VDOT as a mitigation technique for placing roads in the SYIP.* Additional legal research should address the extent to which local governments' agreement with VDOT access management policies can constitute a supplemental agreement. To clarify, although VDOT controls the granting of an access point, local governments influence whether pressure is placed on VDOT to grant a direct access point through local land use decisions. The question to be resolved with additional work is whether an agreement between VDOT and local governments regarding access would be enforceable by third parties. Given that an increasing number of local governments now have transportation elements as part of their county comprehensive plan, however, this recommendation may be more productive now than it would have been in the past.

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APPENDIX

A POTENTIAL PROCESS FOR USING NEPA TO PROTECT CORRIDORS

Because NEPA is designed as a collaborative process and because of the large number of stakeholders who may have different opinions regarding whether corridors should be protected, VDOT will likely need a systematic process for determining how and when NEPA should be used to protect corridors. Such a process should foster well-informed debate regarding each corridor's mobility and access function and the extent to which the corridor should serve each purpose.

The six steps outlined here indicate one potential process that VDOT may consider using and are enumerated here for demonstrative purposes only. In practice, VDOT might find it more efficient not to create an entirely new corridor protection process but instead to use the steps shown here to augment existing procedures. In short, other processes in addition to these steps are also feasible. Their benefit is that they illustrate how VDOT can incorporate the use of NEPA, where appropriate, into routine planning functions.

These six steps are:

1. Establish policy that identifies sensitive corridors needing protection.
2. Establish clear statements of purpose and need and direct, indirect, and cumulative impacts.
3. Present a summary of these results to the CTB, enabling it to decide the access character of the new corridor.
4. Seek input from localities and other stakeholders regarding the CTB's decision, and provide an opportunity to propose mitigating strategies.
5. Work with FHWA to incorporate the CTB's decision into NEPA-related documents.
6. Consult with FHWA as to whether supplemental agreements beyond the ROD are necessary to protect the corridor in question.

Step 1. Establish policy that identifies sensitive corridors needing protection.

VDOT will need a process for establishing corridors that would benefit from protection, and logically this step would coincide with other VDOT access management efforts. There are a number of ways to accomplish this step:

- *Perform a statewide assessment to identify historically valuable or ecologically sensitive areas.* These sensitive corridor or region designations should not prohibit the construction of a new road but should indicate the need for more careful analysis

of the purpose and need and the potential indirect and cumulative impacts from the proposed facility.

- *Rank sites based on their environmental and mobility contributions to the Commonwealth.* This ranking system would trigger a corridor protection analysis for facilities deemed critical either to statewide mobility of the environment. If the trigger is pulled, stakeholders at the local, state, and national level should be identified and a coordinating group could be established to summarize each agency and group opinion and incorporate them into the purpose and need statement. This would help guide the development of the NEPA process in the EA and EIS.
- *Obtain input from counties as they update the transportation element of their comprehensive plans.* A survey by VDOT’s Transportation Planning & Mobility Division showed that more than 90% of counties reported their county comprehensive plan contains a transportation element; as these elements are updated, it may be possible for VDOT to work with such counties to identify corridors that need protection.

For example, one possible result of this first step (using a statewide assessment) might be the identification of a 6-mile corridor known as Route 27 that merits further consideration.

Table A1. Potential Corridors Needing Protection

Corridor	Description	Suitable for Corridor Protection Strategy Through NEPA?
Route 2	18-mile 4-lane divided highway in urban Virginia serving mostly local traffic	<i>No:</i> the corridor serves mostly local traffic and already access is not well managed
Route 8	10-mile 2-lane divided highway in suburban Virginia serving a mixture of local and through traffic	<i>No:</i> although the corridor does serve through traffic, almost all local stakeholders are opposed to any restrictions on access.
Route 27	12-mile 2-lane undivided highway in rural Virginia serving through traffic	<i>Yes:</i> growth pressures are being placed on the corridor such that rapid land development is expected in the next 5 to 10 years.
Route 34	6-mile 4-lane undivided highway in rural Virginia serving local and through traffic	<i>Probably in the future,</i> however, given local opposition to access management, VDOT must work more with the locality to determine a suitable level of access

Step 2. Establish clear statements of purpose and need and direct, indirect, and cumulative impacts.

Establishing a clear and concise purpose and need statement serves two objectives.

1. It lays out the *raison d’etre* for the facility, which can be used by the planners, the public, and the decision makers in their processes and analysis.

2. It aids planners and officials in creating a responsive mitigation program that can minimize impacts while allowing the facility to serve at its full capacity. With local cooperation, this is an opportunity to conduct workshops with the public regarding the purpose and need of a new facility. Most important, the scoping process should produce a specific purpose and need that can be fulfilled by a finite number of identifiable alternatives that can have their direct, indirect, and cumulative impacts analyzed.

The specific purpose and need statements should be analyzed to determine alternatives to avoid adverse indirect and cumulative impacts as they relate to mobility and safety. The analysis should be detailed enough so that the CTB can make an educated decision whether to use one of the four tools to manage the corridor in the future.

This step may reduce project development costs if stakeholders help develop the purpose and need statements guided by instructions for a narrow and concise end result. With such a precise statement in hand along with defensible analyses of cumulative and secondary impacts, VDOT may be able to produce, smaller, shorter EISs with a sharper focus on the project. An excerpt of the results of this second step is shown here as a sample purpose and need statement along with the appropriate analysis of cumulative and secondary impacts for the Route 27 corridor.

The purpose of this project is to preserve statewide mobility and to improve safety for east-west passenger and freight traffic moving between Queen Anne and Prince Charles counties. At present, such traffic has two possible routes, one of which is I-4 and the other of which is State Route 48. Both routes, however, dovetail with Route 27, and increasing through traffic on this existing two-lane road is resulting in increased rush hour congestion and increased crash rates. For the past 5 years, Route 27 has consistently been shown to have a higher crash rate than the statewide average, and HTRIS results suggest that for the past 3 years Route 27 has exceeded the critical accident rate. An improved Route 27 is also a high priority for the newly formed Chichester MPO, and a widened Route 27 is part of the transportation element in the Davis County comprehensive plan.

One of the alternatives for the Route 27 improvement is to widen the 12-mile facility from two to four lanes. Based on an HCS analysis and examination of Virginia crash rates for similar types of facilities, Route 27 when widened should have an average travel speed of 45 mph and a crash rate of 5 crashes per 100 million vehicle miles traveled (VMT). Travel demand models suggest that there will be 300 million VMT using the corridor annually. The service life for the corridor without substantial modification is expected to be a decade.

Note, however, that the impact on safety and mobility will be affected by the number of signalized and unsignalized access points along the corridor. Within the scope of this Environmental Assessment, it has been presumed that Route 27 would have, on average, no more than one traffic signal per mile and no more than eight unsignalized driveways per mile. However, it is possible that development pressures may lead to additional breakpoints in the roadway. Data from NCHRP Report 420 (Gluck et al., 1998) suggest that in suburban areas, increasing the number of access points could increase crashes and reduce speeds as follows for Route 27:

Table A2. Impact on Safety of Increasing Number of Access Points for Route 27

How many additional direct access points will be granted?	Number of access points per mile	Crash rate from NCHRP 420* (Gluck et al., 1998)	Revised Route 27 crashes as result of existing and additional access points*	Annual crashes**	Net crashes over next 10 years
None	10	2.9	$\frac{5 \text{ crashes}}{100 \text{ million VMT}} \left[\frac{2.9}{2.9} \right] = 5$	15	150
Moderate	20	4.0	$\frac{5 \text{ crashes}}{100 \text{ million VMT}} \left[\frac{4.0}{2.9} \right] = 6.9$	20.7	207
Substantial	40	6.0	$\frac{5 \text{ crashes}}{100 \text{ million VMT}} \left[\frac{6.0}{2.9} \right] = 10.3$	30.9	309
Unlimited	60	7.5	$\frac{5 \text{ crashes}}{100 \text{ million VMT}} \left[\frac{7.5}{2.9} \right] = 12.9$	38.7	387

*Crash rates are the number of crashes per 100 million VMT.

**Increase in crashes is based on 300 million VMT annually on the corridor.

Data from NCHRP 420 (Gluck et al., 1998) also show that average speeds are expected to drop as the number of access points increases, as suggested in Table A3. Additional analysis may be done than what is shown here. Further, although VDOT should make all details available to those who are interested, as shown in step 3 it may be more productive to present only the highlights of these calculations.

Table A3. Impact on Mobility of Increasing Number of Access Points for Route 27

Number of additional direct access points granted	Number of access points per mile	Decrease in speed as result of adding access points based on NCHRP 420 (Gluck et al., 1998) (mph)	Resultant Route 27 speed (mph)	Net increase in travel time for this 12-mile route (per vehicle) (min)	Total additional delay per day based on 20,000 vehicles traveling during congested hours (hr)
None	10	0	45 – 0.0 = 45.0	None	None
Moderate	20	2.5	45 – 2.5 = 42.5	1	333
Substantial	40	7.5	45 – 7.5 = 37.5	3.2	1,067
Unlimited	60	10 (extrapolated)	45 – 10.0 = 35.0	4.6	1,533

Step 3. Present a summary of these results to the CTB, enabling it to decide the access character of the new corridor.

This information found in the analysis of the cumulative and secondary impacts can be presented to the CTB, so they can ascertain what corridor management tool fits with the purpose and need of the facility. They can then assess the vulnerability of the region to encroachments

on historical and environmental resources caused by the construction of the facility. Informed decision making was the ultimate purpose of NEPA and it need not allow only the federal government to make better decisions. It can help the CTB and others to learn about the potential impacts of the projects before them. For example, the results of the Route 27 corridor might be presented as follows:

Supporting calculations are detailed in the accompanying report; however, they may be summarized as shown in Table A4.

Table A4. Potential Cumulative Impacts of Widening Route 27 from Two Lanes to Four Lanes

Scenario	Impact on Safety Over Next Decade	Impact on Mobility Over Next Decade
No additional access points granted	150 crashes are expected	During peak periods, travel speeds will be 45 mph with some delays expected
Moderate number of access points granted	Roughly 200 crashes are expected	During peak periods, motorists will suffer an extra 300 hours of delay on a daily basis than would have occurred with no additional access points
Substantial number of additional access points granted	Roughly 300 crashes are expected	During peak periods, motorists will suffer an extra 1,000 hours of delay on a daily basis than would have occurred with no additional access points
Unlimited number of additional access points granted	Roughly 400 crashes are expected	During peak periods, motorists will suffer an extra 1,500 hours of delay on a daily basis than would have occurred with no additional access points

Note that in the CTB presentation or other presentations to the public, Table A4 is simplified in two ways: first, numbers are rounded so as not to convey falsely a higher level of precision than is reasonably expected, and second, calculations are left out so as to highlight the net impact of changing the number of access points. The full calculations performed in step 2, however, are necessary supporting material that are made available to any stakeholders who want to evaluate how the results in step 3 were obtained.

Since the CTB is appointed by an elected official (the Governor) and CTB decisions are influenced by public opinion, it is expected that the CTB would use public sentiment in its decisions regarding which corridors should be protected. Further, given that NEPA has extensive stakeholder involvement protocols, it is expected that public sentiment will influence the extent to which NEPA is used to protect a given corridor.

Step 4. Seek input from localities and other stakeholders regarding the CTB’s decision, and provide an opportunity to propose mitigating strategies.

The local government and officials may play a part in this process and indeed may or may not be driving the planning and construction of the new facility. VDOT could, after the CTB’s decision, return to the coordinating group and present the CTB’s decision and the

probable impacts that the decision will have on the localities. VDOT would then ask the group for suggestions regarding how to mitigate adverse impacts. This should be a conciliatory and public process that can create a consensus to minimize unwanted impacts so that the local population will view the facility as an asset and not as a risk for potential unwanted cumulative and secondary impacts. This can happen under two extreme scenarios: one, VDOT sees the facility as necessary on a statewide level and there is local opposition, or two, the locality is pushing for the construction of the facility but VDOT sees potential for significant secondary and cumulative impacts.

In this particular case, the result of step 4 might be as follows:

The results of the analysis of indirect and cumulative impacts suggest that how we manage access to the corridor will substantially affect mobility and safety. For example, as shown in Tables A3 and A4, it is apparent that having a strong versus a weak access management program could cut the expected number of accidents by more than half. Thus, if the county will agree with VDOT not to allow additional breakpoints to Route 27 but instead to ensure that all new land development will be provided access via existing access points, then the county and VDOT can improve safety along the corridor. Assuming that the outcome of the upcoming Environmental Assessment will be that an EIS is required, we propose to include managing access as one of the mitigating strategies in the upcoming Record of Decision.

Note that this step 4 may be trivial in those situations where VDOT and the affected locale are in agreement and the CTB's decision was expected. There may be cases, however, where step 4 is an opportunity to resolve disputes given that more facts are known here than were known at step 1.

Step 5. Work with FHWA to incorporate the CTB's decision into NEPA-related documents.

VDOT may incorporate the CTB's decision into the NEPA documentation and recommend that FHWA approve the corridor management initiative adopted by the CTB. In this particular case, therefore, the output from this step would be included in the ROD language as in the following:

One of the potentially adverse cumulative consequences of widening Route 27 is an increase in accidents. Such an increase could result because improved travel time on Route 27 would make current undeveloped parcels attractive for residential development. If VDOT were to adhere only to the *Minimum Entrance Requirements for State Highways* (VDOT, 2003) then the number of additional access points along the corridor could greatly increase beyond the present case, and national research suggests that there would be a corresponding increase in the number of accidents.

To mitigate this impact, VDOT will not allow additional access points as a matter of routine and will do so only as a result of consultation with the Chief Engineer (VDOT) and FHWA Division Office. It is expected that over the next 10 years, therefore, there will be on average no more than three additional access points granted for the extreme situations of the Johnson, Pike, and Broyhill parcels.

Thus, this language would be included in FHWA's ROD, making it possible for either FHWA or VDOT to refer to the ROD when challenged to provide additional direct access points. This fifth step is what adds some "teeth" to corridor protection with NEPA; failure of VDOT and FHWA to take this fifth step would essentially maintain the status quo in terms of how corridors are presently protected.

Step 6. Consult with FHWA as to whether supplemental agreements beyond the ROD are necessary to protect the corridor in question.

FHWA can initiate the proposition of limitations on the character and access control of the future facility through conditioning their approval of the ROD on their proposed mitigating measures or additional terms in the FAPA or supplemental agreement. VDOT can consult with FHWA and ask whether such agreements are likely necessary for the corridor in question. For the Route 27 corridor, for example, FHWA might recommend to VDOT the following.

For Route 27, FHWA recommends that a supplemental agreement between VDOT and the local county be pursued, since even though VDOT controls the granting of access permits, such a supplemental agreement would provide support to future resident engineers who might be asked by a new board of supervisors to provide direct access at a developer's request.

VDOT would then explore the feasibility of pursuing such an agreement.

Summary of the Six-Step Process

The six steps presented here illustrate one of several possible approaches that VDOT may follow to use the NEPA process to protect a corridor's level of access. There may be other ways to incorporate these key elements into existing VDOT processes.

The four key elements are:

1. deliberate, systematic identification of which corridors need protection (step 1)
2. coordination with localities to select these corridors and choose strategies (steps 1 and 4)
3. rigorous quantification of access-related impacts (calculations in steps 2 and 3)
4. active use of NEPA and related documents to protect the corridors (steps 5 and 6).