Effectiveness of Contemporary Public-Private Partnerships for Large Scale Infrastructure Projects in the United States

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ABSTRACT

Increasingly, states are relying on creative financing and asset management to maintain and improve the nation's transportation infrastructure since budgetary challenges constrain potential options. One method of tapping into alternative sources of capital is the public-private partnership (PPP or P3). A public-private partnership is a long-term contractual agreement in which the public sector authority assigns a traditionally public responsibility (such as operations and/or financing) to the private sector participant, in hopes of achieving mutual benefit. First employed in the contemporary era in the late 1980's by California and Virginia, the public-private partnership has continued to become a more popular delivery method. A thorough review of the literature on the subject reveals both academic and institutional material covering a wide variety of P3 topics.

Garvin's (2007) P3 Equilibrium Framework supplemented the current body of knowledge by building upon past research to better analyze the performance of existing and proposed PPP's or serve as a resource when developing future projects. The Framework allows the user to assess a project or program and determine its potential for producing desirable results. This research utilizes case studies to gain further insight into P3 projects and programs, as well as the performance of the original P3 Equilibrium Framework. The cases include the evolution of legislation in California and Virginia, and four projects that resulted from these programs: the State Route 91 Express Lanes, Dulles Greenway, Pocahontas Parkway, and failed I-81 Improvement proposals.

Application of the original framework to the case studies led to several refinements. The changes provide more comprehensive appraisal mechanisms and improve the applicability and consistency of the P3 Equilibrium Framework. In addition, the concept of "tension" is introduced, which in effect is a means of describing the stress between the interested parties of a P3 arrangement. Ultimately, the revised Framework helps to structure perspectives of P3 arrangements and is underpinned by the notion that these strategies must balance the interests of society, the state, industry, and the market for ultimate success.

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Chapter 1 - Introduction

1.1 Background and Significance

1.1.1 Current State of U. S. Infrastructure and Transportation Funding

Currently, America's infrastructure is in a state that requires significant investment to constantly maintain and improve. Experts disagree in regards to the exact amount of construction necessary; however, it is considerable. Some critics propose that America's infrastructure is deteriorating at a rate faster than new construction and maintenance are being performed. Of the 46,000 miles of interstate highway, approximately 2,000 are in need of reconstruction per year. Stone (2007) references a 2006 study by the United States Department of Transportation that reports 26% of the country's bridges are structurally deficient or functionally obsolete.

During the 1950's, 60's and early 70's, Federal spending on infrastructure was at an all-time high. The interstate highway system was approved with the Federal-Aid Highway Act of 1956. The Clean Water Act in 1972 also dedicated substantial federal funds to water supply infrastructure. In the 1970's however, federal investment declined steadily. Federal investment in infrastructure as a percentage of total federal spending fell from 6% in 1966 to 3% in the late 80's, where it remains today (CBO 2007). Clearly, the importance that had been placed on infrastructure has shifted to other public uses.

In 2005, a report by the American Society of Civil Engineers gave the U.S. transportation system a D rating and concluded that $1.6 trillion is needed over the next five years to improve the condition of the infrastructure in the United States (Algarni et al 2007). Figure 1:1 displays the amount of federal spending on infrastructure (black line) in billions of 2006 dollars and how that relates to the percentage of total federal spending, shown in gray, as calculated by the Congressional Budget Office in a 2007 report.

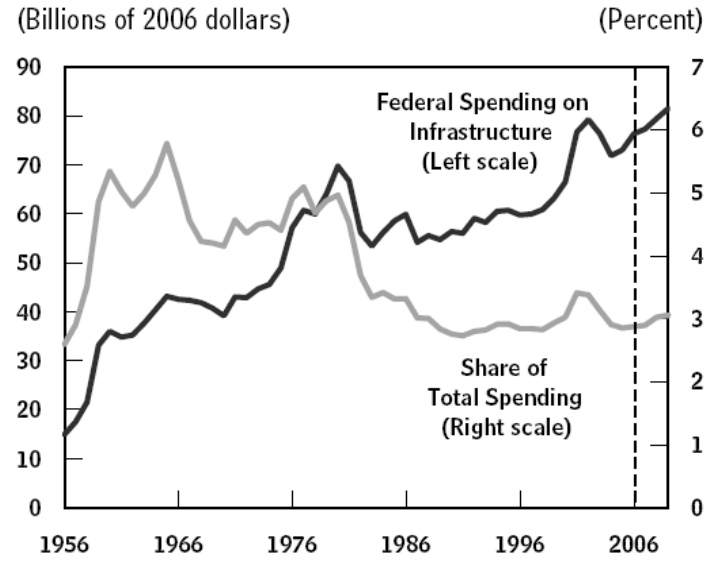

Figure 1:1 Federal Spending on Infrastructure, and % of Federal Spending
Source: Trends in Public Spending on Transportation and Water Infrastructure, CBO (2007)

Although overall totals are higher, graphs from U.S. DOT in 2001 also show the aforementioned relative decrease in government spending on infrastructure. Figure 1:2 more clearly shows the federal infrastructure spending as a percentage of total federal spending since the mid 1950's. Clearly, there is a decrease in percentage of spending on infrastructure, specifically for highway projects.

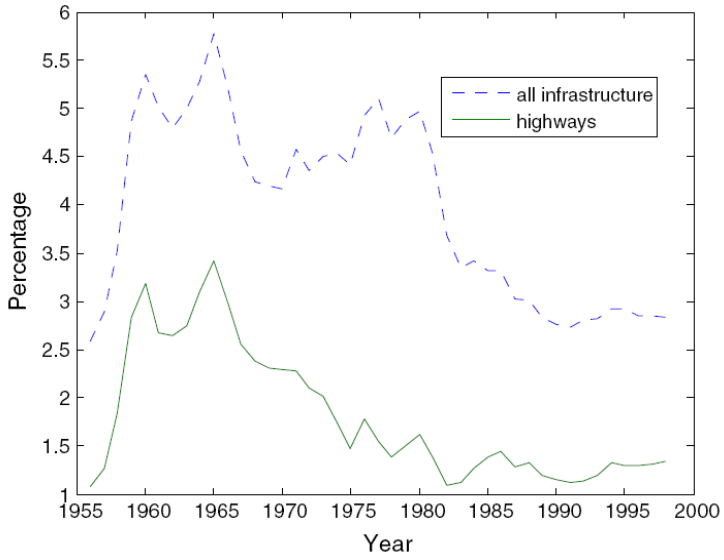

Figure 1:2 Spending on Infrastructure and Highways as % of Federal Spending
Source: Government Transportation Financial Statistics 2001. BTS, US DOT.

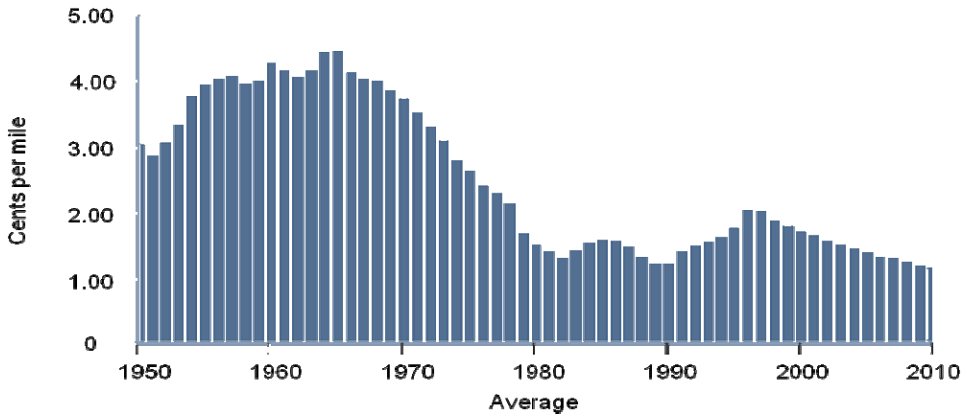

Figure 1:3 Decline in Real Value of Gas Tax (1997 $)
Source: KPMG Fall PPP Forum Proceedings, Oct 2007

One of the major sources of funding for transportation comes from the fuel tax, enacted in 1932. The Federal-Aid Highway Act of 1956 established the Highway Trust Fund and directed 100% of the gas tax be deposited into the fund (US DOT 1997). Currently, about 60% of the 18.4 cents per gallon tax is allocated to the Highway Trust Fund (Ifill 2007). Figure 1:3 shows the decrease in the real value of the fuel tax over time. The graph illustrates the fact that the fuel tax is becoming less effective as a means of funding transportation.

As outlined above, budgetary constraints prohibit the federal government from investing the amount of money necessary to close the infrastructure gap (Engel et al 2006, Ybarra 2004). Furthermore, federal programs often place the most emphasis on building new projects, leaving the states and municipalities with the burden of operating and maintaining the systems. Figure 1:4 shows the amount of federal spending has remained fairly constant over the 15 year period from 1985 to 2000, while state and local governments have been forced to pick up a much larger portion of the tab. The scarcity of federal, state, and local infrastructure funding, along with an increasingly outdated infrastructure, combine to produce the current state of affairs; in which creative financing and asset management is necessary to maintain and improve the nation's infrastructure.

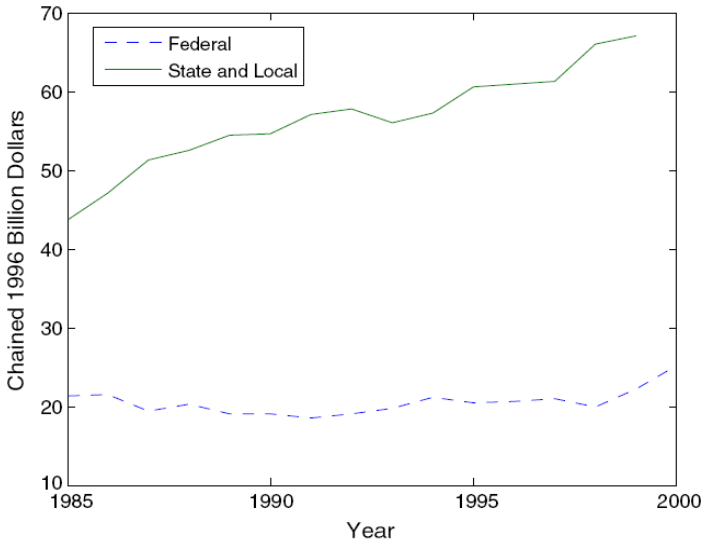

Figure 1:4 Spending on Highways in Billions of 1996 Dollars
Source: Government Transportation Financial Statistics 2001. BTS, US DOT.

One method of tapping into alternative sources of capital is the public-private partnership. In this type of project, the government relies on private capital to fund all or part of the project. **A public-private partnership is a long-term contractual agreement in which the public sector authority assigns a traditionally public responsibility (such as operations and/or financing) to the private sector participant, in hopes of achieving mutual benefit.** Beginning in the 1990's, the public-private partnership has become an increasingly relied upon delivery method. However, this procurement option is nothing new to the United States.

1.1.2 History of Project Delivery in the United States

An early example of a form of public-private partnership is that formed between the federal government and Ebenezer Zane in the late 1700's. Zane petitioned the government to finance the construction of a road crossing from east to west of what is now the state of Ohio. The government gave Zane land grants where the river crossed the Muskingum, Hocking, and Scioto Rivers, in order to pay for his surveying costs. Zane operated a ferry across the Ohio River at Wheeling, West Virginia, at the start of the road, and deeded the other river crossings to his brother and sons. His ferry served the Ohio River crossing until a bridge was constructed in 1837. This system can be viewed as a form of privately operated toll-road, with the ferry crossing serving as the toll collection stations. A design-build-finance-operate agreement such

as this was widely used in the United States before 1910, but rarely used since, until recently (Miller 2000).

America's infrastructure post-World War II has been clearly segmented, with elements of design, finance, and construction separated. Typically, a Design-Bid-Build approach has been used, in which the government funds the project, first hiring a design firm to design the project, then a construction company to build it. This shift towards a segmented delivery occurred for several reasons. Just after the War, a statute by Congress mandated that the public directly finance all projects. In 1972, the Brooks Act made qualification based selection mandatory, which further forced the separation of design and construction services (Miller 2000).

The trend of separating design and construction services began to reverse in the 1990's with the passing of the Federal Acquisition Reform Act of 1996 (FARA). This opened the door for procurement of federal projects in which the same firm can provide design and construction services. Design-build has become increasingly popular since FARA, as public owners attempt to achieve increased efficiency and lower cost. FARA also paved the way for the current public-private partnership initiatives. Although no formal program exists at the national level, many states have begun to promote public-private partnerships (PPPs) as a means of delivering projects that could otherwise not be funded (Miller 2000).

The shift towards public-private partnerships is gaining momentum due to several factors. Arguably the most influential force in favor of the PPP is a lack of funding for the desired projects (Orr 2006). As federal aid becomes increasingly difficult to obtain, states and municipalities are turning towards alternative funding sources. Individual states are enacting legislation that allows for PPPs, with varying degrees of freedom. These states are following the lead of many foreign countries that have been promoting public-private partnerships for some time. The United Kingdom's Private Finance Initiative and Australia's Partnerships Victoria are examples of programs that can be found abroad. The Private Finance Initiative began in 1992 and has facilitated over 800 projects, ranging from car parking services, to schools and hospitals, to toll roads, to energy provision (www.hm-treasury.gov.uk). The United States and Canada take a slightly different approach from the U.K., allowing their states and provinces, respectively, to decide the extent to which they will participate in the PPP market.

Currently, many states are active in the public-private partnership market. California was among the first states to embrace PPPs, with its Assembly Bill 680 legislation that allowed for

transportation partnerships. Other states such as Texas, Virginia, Utah, Alabama, Florida, Colorado and Georgia have legislation in place to promote PPP transportation projects. In fact, the Federal Highway Administration identifies twenty-three states with significant transportation PPP authority (http://www.fhwa.dot.gov/ppp/legislation.htm). The partnerships range from "Greenfield" toll roads to leases of existing assets. For example, California's 1989 Assembly Bill 680 allowed private consortiums to propose unsolicited transportation projects that they believe will be successful. California Department of Transportation (Caltrans) officials then evaluated the projects and selected those they believed are in the best interest of the public. Currently, California has a second generation of legislation, called AB 1467, passed in 2006. Leasing is also a form of public-private partnership being explored by states. For instance, in 2005 the City of Chicago signed a 99 year lease agreement with a private consortium to operate and maintain the existing Chicago Skyway, a 7.8 mile stretch of toll road running through the city. The private concessionaire paid the City of Chicago $1.83 billion dollars for this right. Some states and municipalities also have projects in other areas, such as water treatment and air travel. It is clear that public-private partnerships are becoming a growing part of the infrastructure solution throughout North America. Supporters such as Florian (2006), Gribbon (2006), and others, point to their ability to improve infrastructure without government funds and increased value for money over more traditional approaches as the key strengths of PPPs.

1.2 Problem Statement

Although public-private partnerships continue to gain popularity in North America and abroad, a surprising number of PPP contracts executed throughout the 1990's have been renegotiated. Worldwide, approximately 40% of public-private partnership projects from this decade have reworked the contract, a costly process that usually signals an unsuccessful project (Orr 2006). It is quite common for the private company to restructure the debt of a project due to demand and revenue falling well below expectations. A prime example of this is the Dulles Greenway project in the greater Washington D.C. area. The Greenway, which opened in 1995, is an extension of the existing Dulles Toll Road from Dulles International Airport into less developed areas northeast of the airport near Leesburg, VA. In the early years of the road, ridership was less than half of the projected volume; toll receipts did not even cover operations and maintenance costs. This financial distress led the project's creditors to seek a plan for

restructuring loan contracts in order to defer debt payments (Garvin 2003). In more extreme cases, the public owner has been forced to step in and assume control of a struggling project, at a great financial cost to both parties. An example of this is the Royal Armouries Museum in England, a Private Finance Initiative project. When the demand (number of patrons) did not materialize, the public owner stepped in to aid the private operator, in order to keep the museum open, as is often the case (Froud 2003).

A substantial amount of literature exists in the area of public-private partnerships. The existing research has attempted to highlight factors critical to the success of public-private partnerships. However, no comprehensive tool exists to contemplate and measure all of the various factors. Without such a tool, it is difficult for government owners, industry personnel, and academics to accurately and effectively analyze a PPP program or project. Furthermore, states, provinces and countries are scrambling to enact legislation that enables these partnerships without a firm grasp of the key components that will ultimately produce successful projects. One must keep in mind that the goal of public-private partnerships is to develop infrastructure in a way that provides better value for money than the traditional delivery methods. In many cases, it is just assumed that this will be the case. Little research attempts to measure the effectiveness of these programs or projects, leaving governments to find their own way, while risking failed projects that are costly to both the public and private partners. Furthermore, there exists a need for a widely applicable evaluation technique to analyze public-private partnership projects. Garvin (2007) attempted to address this gap in the literature. He presented a "P3 Equilibrium Framework", which is a tool that can be used to assess the effectiveness of public-private partnership projects and legislative programs.

1.3 Objectives

This research will utilize Garvin's P3 Equilibrium Framework to examine public-private partnerships at both the program and project level, in an attempt to better understand what makes a project successful and further refine the P3 Equilibrium Framework. The primary objectives are to:

1. Present Garvin's initial P3 Equilibrium Framework
2. Conduct several in-depth case studies and analyze using P3 Equilibrium Framework
3. Improve upon Garvin's initial P3 Equilibrium Framework
4. Utilize the P3 Equilibrium Framework to examine effectiveness of P3 Approach

It is the goal of this research to measure and/or predict the effectiveness of public-private partnerships at both the legislative program and project level. To accomplish this aim, the work will improve upon Garvin's initial P3 Equilibrium Framework, which was based upon existing literature and the preliminary research for this thesis.

1.3.1 Present Garvin's initial P3 Equilibrium Framework

Before beginning case studies or improving the evaluation tool, Garvin's initial P3 Equilibrium Framework will be presented and discussed at length. With a firm understanding of how to properly utilize the Framework, the next objective will be pursued.

1.3.2 Conduct several in-depth case studies and analyze using P3 Equilibrium Framework

The overarching goal of this research is to examine the effectiveness of the P3 approach to infrastructure development. To accomplish this, several detailed case studies must be conducted in order to gain real world knowledge of projects delivered through public-private partnerships. Furthermore, these case studies will serve as the initial tests of the P3 Equilibrium Framework that assesses the effectiveness of legislation and individual ventures. An important consideration for this aspect of the research is performing the case studies using the appropriate methodology. Every effort will be made to produce thorough, fair, and accurate case studies through validated methods. More detailed information on case study methodology is contained in future sections.

1.3.3 Improve upon Garvin's initial P3 Equilibrium Framework

This research uses Garvin's Framework as a starting point in analyzing the case studies. Utilizing an inductive and deductive approach, the case studies will serve as a performance test for the Framework. With the experience of applying the P3 Equilibrium Framework to actual cases, it can then be improved to more accurately assess the success of both P3 programs and projects. This objective involves honing the Framework to more accurately evaluate P3 arrangements.

1.3.4 Utilize the P3 Framework to examine the effectiveness of the P3 approach

The final step in the research will be to apply the improved P3 Equilibrium Framework to gain insight into the effectiveness of the selected case studies and enabling legislation. This

work will serve as an example for others in industry and academia; these groups can then assess more projects and programs and further refine the lens if necessary. The Framework can also serve as a guide to those in government and industry when crafting P3 legislation or contractual agreements.

1.4 Scope

This research will include case studies from North America only. However, relevant literature from all over the world will be used to best understand public-private partnership projects. Case studies, research, and academic literature will first be used to determine the important success factors in a project or program. The P3 Equilibrium Framework described in previous sections will be used to evaluate these individual projects or programs.

An attempt to follow appropriate case study methodology will be made at all times. However, several constraints may lead to slight variations from ideal case study methodology. For instance, time and money will be a limiting factor to the level of detail provided in the case studies. Furthermore, the relatively small number of cases and information available prevent a truly random selection procedure. Every effort will be made to keep the entire process as unbiased and scientifically rigorous as possible.

1.5 Research Methodology

To achieve the objectives of improving the original Framework and examining the effectiveness of the P3 approach, the following steps are required:

1. Utilize a case-based approach
2. Understand the history and current state of United States infrastructure
3. Present Garvin's P3 Equilibrium Framework
4. Develop case studies for P3 projects and programs
5. Apply Framework to specific cases
6. Revise P3 Equilibrium Framework
7. Apply revised P3 Equilibrium Framework to case studies

The following sections will describe these seven major steps in more detail, as well as the case based approach to research that will be used to apply the lens to specific projects and

programs. The following figure better illustrates inductive and deductive approach that will be used to perform the case studies and improve the P3 Equilibrium Framework.

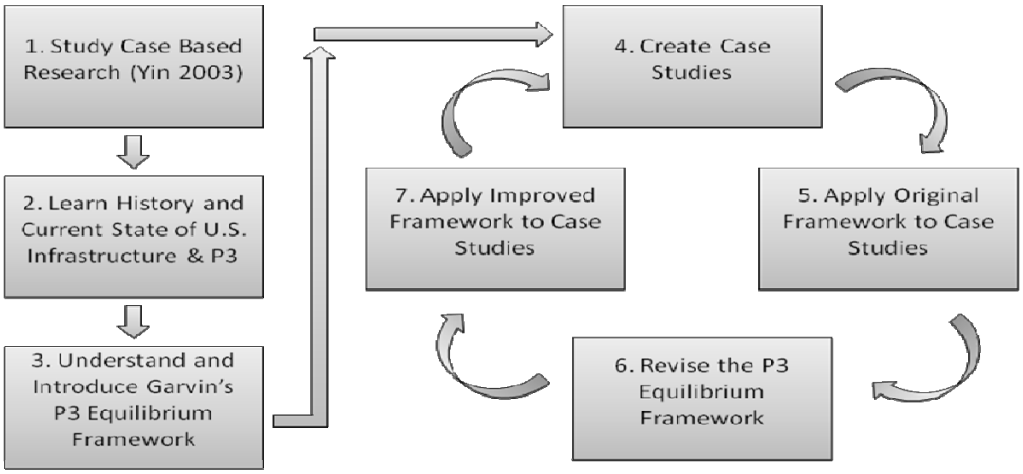

Figure 1:5 Research Methodology

1.5.1 Utilize a case-based approach

The formulation and application of the evaluation tool created by this research will rely heavily on case study research. For this reason, a scientifically sound case base approach will be used. Yin (2003) provides an excellent resource for creating a methodological framework that produces reliable and unbiased case studies. He stresses the importance of construct validity (establishing correct operational measures for the concept being studied), and reliability (demonstrating that the operations of a study can be repeated, with the same results). Construct validity will be maintained by using multiple sources of evidence, that will triangulate to establish a chain of evidence. Various sources of evidence will include primary sources (actual construction documents, contract agreements, etc), secondary (any document produced by a third party, such as a journal or newspaper article), and interviews with key project personnel. In order to produce reliability, a consistent case study protocol must be used. For this research, that refers to treating all cases in an identical manner, so that if another academic applied the evaluation tool to the same case, similar results would be obtained.

Due to the number and nature of projects and legislation available, as well as the resource limitations of this research, a slightly augmented case base method will be used. The use of public-private partnerships in infrastructure is a relatively recent movement; therefore, the pool of samples is quite limited. The scope of the research is limited to North America, and the

samples used must be rich in data. These constraints limit the ability of a researcher to take a truly random sample of projects or legislation. Every attempt will be made to pull from a random sampling of first and second generation projects and programs (generations will be defined in section 1.5.5). Furthermore, the realities of the research time and budget will limit the depth to which cases can be examined. With case based research methodology in mind, the aforementioned steps will be taken, as described in the following sections.

1.5.2 History and Current State of United States Infrastructure and P3 Approach

The initial phase of research and literature review consists of reviewing the history of infrastructure in the United States, up to the current landscape. This background provides a better understanding of the current forces acting on infrastructure development. The history of infrastructure in North America is also particularly valuable, as public-private partnerships were a widely used form of procurement until the early 1900's. Therefore, this knowledge not only allows one to understand where infrastructure has been and where it is going, but also contains examples of public-private partnerships and how they were utilized in the past.

This step includes an extensive review of literature pertaining to all aspects of public-private partnerships. Academic literature will be central to this endeavor, particularly those journal articles that address critical success factors of public-private partnerships. Furthermore, reviews of actual enabling legislation in participating jurisdictions and the guidelines set forth by governments regarding this type of contracting is also necessary. Publications by the World Bank and International Monetary Fund provide insight and guidance to those entities engaging in public-private partnership contracts. Gathering information from these sources and others enables one to gain a firm grasp on public-private partnerships and their place in today's infrastructure delivery.

1.5.3 Present Garvin's P3 Equilibrium Framework

With the necessary background knowledge of infrastructure and the public-private partnership delivery method, Garvin's P3 Equilibrium Framework can be properly presented and explained. A thorough understanding of this tool must be achieved before attempting to apply it to case studies and improve upon the original version.

1.5.4 Develop Cases Studies for P3 Programs and Projects

Case studies serve as an important learning tool and critical component of this research. The cases will be chosen from an inventory of cases in the United States with information that is available and in sufficient detail for this purpose. The programs will be divided into first generation and second generation legislation, hoping that significant improvement in the drafting of PPP programs has taken place. First generation programs are defined as those enacted before 1995-1996, and second generation as all programs thereafter. The classification of projects near 1995 and 1996 will be based on the prior experience of the authority in charge. For instance, California had enabling legislature as early as 1989; therefore a project or program in 1996 in California would clearly be second generation. However, for states or localities with little experience in public-private partnerships, it would be classified as first generation. A table of example programs and projects is shown in Figure 1:6. Bold text indicates topics that will be covered in case studies throughout later chapters.

First Generation	Second Generation
Program Level	
California AB 680 (1989)	**California AB 1467 (2006)**
Virginia Highway Corporation Act (1988)	**Virginia PPTA (1995)**
Washington PPI Program (1993)	Texas Pass Through Financing
Project Level	
California SR 91 Express Lanes (1995)	JFK Terminal 4 (2001)
Virginia's Dulles Greenway (1995)	Chicago Skyway (2005)
California SR 125 (began in early 90's)	**Virginia I-81 Corridor Improvements (2006)**
JFK AirTrain (1996)	**Virginia's Pocahontas Parkway (2006)**

Figure 1:6 First and Second Generation Projects and Programs

1.5.5 Apply the Framework to Specific Cases

A very important step in the research methodology involves utilizing the Framework to evaluate specific cases. The legislative programs from Virginia and California, as well as several of the resulting projects will be evaluated using Garvin's original tool. This will allow for a test of the Framework, as well as taking the first step in using the Framework to better understand public-private partnerships, why they fail, and what makes them successful.

1.5.6 Revise the P3 Equilibrium Framework

It is anticipated that actually applying the Framework to real world case studies will expose new concepts and require adjustments to the original P3 Equilibrium Framework. The case studies will serve as the initial proving ground for the Framework. Knowing the actual result of the projects that serve as case studies will allow one to calibrate the Framework to more accurately measure the success of a project or program. Ideally, it will reflect what actually occurred with each particular project. With the Framework honed from examining specific cases, a rating system may be devised. After an individual has used the P3 Equilibrium Framework to evaluate the many different aspects of a public-private partnership, it would be beneficial if the individual could assign the project or program a general rating. Ratings could then be documented, and as various projects and programs reach maturity, one can check to ascertain if the ratings are indeed correlated to project success. However, the basic nature of this evaluation tool is to serve as a framework, rather than a detailed model. It may be better left as a general framework, instead of a model that provides a specific rating or grade. Evaluating the case studies before devising a rating system allows for a more informed evaluation regarding the feasibility of a rating system for the P3 Equilibrium Framework.

1.5.7 Apply revised P3 Equilibrium Framework to Case Studies

With the creation of an improved P3 Equilibrium Framework, the case studies will again be subjected to evaluation. This will serve as the final testing of the Framework, as well as the most important and in-depth evaluation of performance for those projects in the case studies. This final version can be used by those in academia, government, and industry to evaluate projects or predict the effectiveness of other P3 arrangements.

1.6 Organization of Thesis

This document will be divided into seven chapters. The first two will serve as the introduction and literature review. The third chapter presents Garvin's P3 Equilibrium Framework. Chapter 4 details the enabling legislation in the two states from which the case studies are taken. Chapter 5 will consist of case studies performed on four different public-private partnership transportation projects, which will each be evaluated using the P3

Equilibrium Framework. With the evaluations performed, Chapter 6 will revisit the Framework for improvements resulting from use on the case studies. The thesis will conclude with a final presentation of the Framework and research findings. A visual representation of the organization is shown in Figure 1:7.

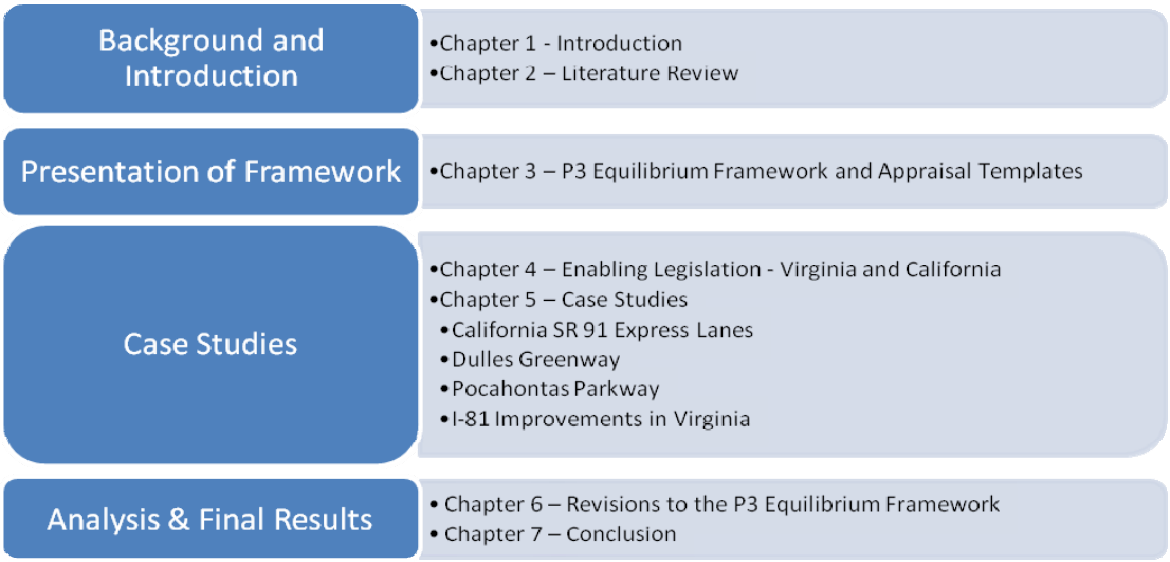

Figure 1:7 Organization of Thesis

Chapter 2 - Literature Review

A thorough review of current literature searched for documentation of all aspects of public-private partnership agreements. A general review of texts and literature relating to the state of North America's infrastructure, as well as the history, was also conducted. Government documents from the United States and abroad, including actual legislation and guidelines for implementing projects, serve as a large source of information. A select number of journal articles relating to rating systems were examined. Sources of literature include textbooks, journal articles, conference papers, testimony to congress, and various other reports. For ease of reference, the literature is divided into three groups, Background, Institutional and Archival. Background literature consists of works that provide general insight into infrastructure or project delivery. In most cases, these documents reviewed the history of infrastructure in the United States. Institutional literature refers to works produced by governments (such as laws, implementation guidelines, or testimony to Congress) or other institutions, such as the International Monetary Fund or World Bank. All other literature is classified as archival. This category encompasses journal articles, textbooks, conference papers, and similar sources of information.

2.1 Background Literature

Background literature was reviewed to set the scene for today's infrastructure landscape. Choate and Walter (1981) provide one view of the United State's lack of infrastructure funding and the environment that influenced the decision to pursue private financing for public infrastructure. Gramlich (1994) further pursued this area of study. After discussing the various studies done on infrastructure, he concludes that evidence to whether there is an infrastructure shortage is decidedly mixed. All of the approaches to studying the subject have major flaws. A sensible approach would be to give more power to state and local governments to find their own optimal stock. More recently, Giglio (1996) also discusses the lack of infrastructure funding. Other background literature includes Garvin and Cheah's (2004) article, which discusses various methods and calculations that can aid in deriving the value of infrastructure assets. This can be particularly difficult because they are not traded in an open market. General information on infrastructure funding is presented in the Congressional Budget Office's "Trends in Public

Spending on Transportation and Water Infrastructure, 1956 to 2004" (Musick, 2007). This document provides tables and figures showing infrastructure funding trends over the past 50 years, at both federal and local levels.

2.2 Institutional Literature

A logical place to start learning about public-private partnerships is by reading the enabling legislation and procurement guidelines set forth by various countries, states, and provinces. Various countries abroad have a more mature market for P3, so they were studied first. *Value for Money Assessment Guidance* is the United Kingdom's government document for procurement of such projects. Produced by the HM Treasury, the central proposition is that the Public Finance Initiative should always be considered, but only be pursued if it delivers value for money. This is defined as the optimum combination of whole life costs and quality to meet the user's requirement. The document attempts to clarify value for money by outlining several project and program level assessments and giving other valuable insight. Similarly, Canada's *Public Sector Comparator* is a self-help guide for government officials at all levels considering a public-private partnership procurement method. It aims to provide a tool for assessing the viability of a partnership on a project by project basis by comparing costs to that of a project delivered in a more traditional way. *Partnerships Victoria* is the Australian province's version the aforementioned documents, and contains many of the same concepts.

Various agencies and offices at different levels within the United States government have studied the subject in detail. In February of 1997, the Congressional Budget Office produced a memorandum titled, *Toll Roads: A Review of Recent Experience* that outlines the history of federal funding for toll roads and the increased use of private funds, such as for then recently completed SR 91 Express Lanes and Dulles Greenway. The memorandum continues on to discuss the benefits of toll-financed roads, such as market-based efficiency and as an alternative source of funding. It also delves into the obstacles to toll-financed roads, such as acquiring right of way, environmental permits, and financing, as well as overcoming motorists' resistance to tolls and anticipating tort liabilities. The United States General Accounting Office (GAO) has also done some work on the subject, publishing *GAO Public Private Partnerships: Terms Related to Building and Facility Partnerships*. The 1999 work contains a glossary of definitions and terms to aid in understanding these types of arrangements, such as Design-Build-Operate,

Turnkey, and others. Furthermore, the U.S. Department of Transportation released *A Report to Congress On Public Private Partnerships* in December of 2004. The document contains a thorough history of projects and initiatives to encourage P3 arrangements, the value of such agreements, impediments to P3, and comments and recommendations for those interested in pursuing public-private partnerships.

The Federal Highway Administration (FHWA) is also very active in this field; performing many studies and producing guidelines and case study's for states to consider when enacting legislation. In 2005, at the request of the FWHA, the firm of Nossaman, Guthner, Knox & Elliot produced *Overview of Key Elements and Sample Provisions for State PPP Enabling Legislation for Highway Projects*. This document highlights the major issues involved in P3 agreements, the importance of each, and sample provisions regarding each issue. The FHWA has also produced the *Working Draft Concerning Public-Private Transportation Initiatives.* This document serves as model legislation for State and Local agencies to reference when drafting their own legislation. Fourteen pages long, it addresses all the major aspects necessary in creating such legislation. On the Federal Highway Administration's website devoted specifically to public-private partnerships (www.fhwa.dot.gov/ppp) one can also find the 2005 *Manual for Using Public-Private Partnerships on Highway Projects*. The manual serves as a reference for state and local agencies when dealing with such projects. It gives information regarding the background of PPP's in the United States, the federal financing options available, and applicable federal laws and regulations. Case studies of major public-private partnership projects are also available on the FHWA Website, and have also been reviewed.

In the summer of 2007, the U.S. House of Representatives Transportation and Infrastructure Committee Chairman James Oberstar and Highway and Transit Subcommittee Chairman Peter DeFazio sent out a series of letters and recommendations to state and local agencies. The first letter, to governors, state legislators, and state transportation officials, warned against rushing into P3 arrangements, and threatened, "the Committee will work to undo any state PPP agreements that do not fully protect the public interest and interest and integrity of the national system" (Oberstar 2007a) The very next month, the Committee released preliminary recommendations to state governments that conceded, "under the right circumstances and conditions, public-private partnerships (PPPs) can lead to more efficient and effective construction, management, operation and maintenance of transportation facilities" (Oberstar,

2007b) The document went on to give advice on advancing public objectives, maintaining the integrity of the transportation planning process, and preserving an integrated national surface transportation system. The final recommendation, titled, *Preserving an Integrated National Surface Transportation System*, backed even further off the earlier warnings and basically states that PPPs should be pursued only with vigorous federal oversight (2007). Although not adding any groundbreaking concepts to the public-private partnership arena, these documents give insight as to the current political landscape, which is an important aspect of these arrangements.

Testimony to congress is also a source, though in most cases it was a stakeholder in the industry, providing a very pro-partnership opinion. For instance, DJ Gribbon, the Division Director of Macquarie Holdings presented testimony on public-private partnerships before the U.S. House Transportation on Infrastructure Committee (Gribbon 2006). Some of his points were very well grounded, while a few provide a clearly lopsided view, in favor of partnerships. He refers to infrastructure as "captive capital", which can be released by placing the asset (toll road) in a market that allows it to be purchased by whichever entity places the highest value on it. He continues on to outline the benefits of concession agreements, including risk transfer, accelerated project delivery, O&M cost risk transfer and funding security, and the rational pricing of user fees. In 2006 Mark Florian of Goldman Sachs and Company also provided testimony to the Committee, in which he gives an overview of the partnerships, the current market, and some of the benefits. The appendix to his testimony also contains case studies on the Indiana Toll Road, Chicago Skyway, UDOT, and TexDOT projects.

The review of relevant literature also included extensive reading on actual State legislation and guidelines for implementing public-private partnerships. The research focused on two of the most active states, California and Virginia. Virginia paved the way with the Highway Corporation Act of 1988, passed specifically to enable the Dulles Greenway project, which will be discussed as a case study in later chapters. Virginia later enacted the *Public-Private Transportation Act of 1995* (PPTA), which produced the Pocahontas Parkway, governed the I-81 Improvement proposals, and has led to the possible development of a variety of other projects which are currently ongoing. Furthermore, Virginia Department of Transportation (VDOT) released *PPTA Implementation Guidelines*, most recently updated in October of 2005. The guidelines cover the entire project lifecycle, from proposals to evaluation and selection, through to the comprehensive agreement. In the late 80's California followed Virginia's lead, passing

Assembly Bill 680, which enabled up to four demonstration projects in the state. One of these projects is the State Route 91 Express Lanes, another case study that follows in later chapters. State Route 125, the South Bay Expressway, which is finally expected to open for traffic in late 2007, after over 15 years of development, also progressed under this legislation. California updated its partnership program in 2006 with *Assembly Bill 1467*. The legislation in California and Virginia is examined more closely in Chapter 4.

In addition to enabling legislation, significant time was spent reading and understanding the franchise and concession agreements specific to individual projects. As mentioned previously, this document contains four case studies: the State Route 91 Express Lanes, Dulles Greenway, the Pocahontas Parkway, and the proposed I-81 Improvements in Virginia. Each of these stand-alone case studies required extensive analysis of the respective franchise agreements, along with personal interviews of those involved with the projects. Other government documents produced in conjunction with the agreements include request for proposals, oversight board recommendations, environmental approvals, federal funding applications, and others. Furthermore, literature relating to these projects was reviewed in order to gain a better perspective on the projects. Examples are third party documents such as newspaper articles, journal articles, books, and case studies performed by other sources, including the Federal Highway Administration.

2.3 Archival Literature

A substantial amount of archival literature relating to construction projects and public private partnerships was reviewed for this research. Most of the archival documents are peer-reviewed journal articles from the past ten years. In order to review the literature in a more organized format, the works have been divided into four categories as they relate to public-private partnership projects; General, Policy, Implementation and Risk Allocation.

2.3.1 General

Several of the reviewed articles relate to the future of construction and engineering management research. Hanson et. al. (2006) attempted to identify the research necessary to form a comprehensive approach to the design, planning, construction, and management of infrastructure. Hanson and Verwater-Lukszo (2006) explored the same topic. In his call for

future research Levitt (2007) mentioned drivers of increased integration, including value for money and global competition. He discussed the positives of PPP's, as well as the negatives, such as extended payback periods and need for continued political support and stability.

Garvin (2003) aimed at clarifying the misconceptions surrounding the various project delivery systems, such as design-bid-build, design-build, build-operate-transfer, and other popular methods. In addition, Garvin described the ongoing research initiative to develop case studies that examine procurement strategies and practices where alternative delivery methods are used. This thesis serves as a part of that initiative, as it employs case studies to hone a tool capable of evaluating the delivery of various public-private partnership projects.

2.3.2 Policy

A number of the articles reviewed attempt to analyze the positives and negatives about enabling legislation, such as the United Kingdom's Private Finance Initiative, or Australia's Partnership Victoria. Some considered the general movement towards public-private partnerships. Orr (2006) described the increased worldwide use of P3 arrangements and the rise in Infrastructure Funds by various financial institutions and infrastructure groups. He attributed their growing popularity of these funds to high yield, long term returns that are not closely related to more volatile market swings. Orr also discussed drawbacks of the projects, such as the difficulty with contracting for the uncertainty and changes that occur in long-term agreements and improper risk allocation. Dailami and Klein (1997) examined the emergence of privatization in emerging countries. An interesting point made in the article is that governments often end up paying for projects that do not perform well, which reinforced a common theme that governments do not shift as much risk as they initially believe. A 2007 article by Blanken et al discussed the relatively new means of managing infrastructure through privately financed projects. It outlines the rationale behind P3, which is usually described as achieving value for money. The authors argued that more emphasis should be placed on the long-term social effects and less on the up-front cost when attempting to quantify value for money. An assessment framework based heavily on risk allocation and management is presented.

Russel and Nelms (2006) discussed the possible "uses and abuses" of Canada's Public Sector Comparator, which is the Canadian tool to benchmark the value for money achieved by partnering with the private sector. The Public Sector Comparator is typically a cost estimate

based on the assumption that assets are acquired through conventional funding and that the procurer retains significant managerial responsibility and exposure to risk. Russel and Nelms theorized that in the early stages of the decision making process, the government has the most knowledge about the project, but this quickly shifts to the private sector when the public-private partnership mode is selected, therefore putting the public at a disadvantage. The difficulty in assessing the actual savings of P3 is also difficult, and estimates range from a 5% to 20% savings over traditional methods. Also in 2006, Engel and colleagues compared the public and private approaches to delivering infrastructure. Potential problems with Build-Operate-Transfer (BOT) contracts are discussed, including the creation of a monopoly, commercial and policy risks, negotiations, and the rigidity of long-term contracts, which fail to adapt to changing situations over the many years of the contract. Ultimately, the group advocated flexible-term franchises based on Present Value of Revenue auctions and formulas for determining present value.

2.3.3 Implementation

Many journal articles address key components and critical success factors of public-private partnerships. Bing et al (2005) grouped the factors into five categories: effective procurement, project implementability, government guarantee, favorable economic conditions, and available financial market. Similarly, Akintoye et al (2003) used interviews to determine how to best achieve success in Private Finance Initiative projects in the United Kingdom. They found that identifying and properly allocating risk, curtailment of cost escalation, faster project completion, innovation, and maintenance costs being accounted for are all positives that can lead to a successful project. Challenges to getting the best value are also described, such as high cost of management, lengthy negotiations, and complex contractual relationships. In their 1999 paper, Chua et al identified 20 different critical success factors for construction projects as they pertain to budget, schedule, and quality performance. Zhang (2005) took this a step further by applying the same concepts specifically to public-private partnerships. The paper not only identified the success factors, but also attempted to rank them in order of importance through surveys of industry personnel and academics.

The piece of literature that is most similar to this research is Ashley et al (1998), which created a Project Scoring Table to evaluate the critical decisions and factors involved in such projects. The goal of the evaluation tool was to encourage the public and private entities to

discuss and evaluate the critical factors and come out with a score based on how each factor is handled. The main categories were political clearance, partnership structure, project scope, environmental clearance, construction risk allocation, operational risk allocation, financing package, economic viability, and developer financial involvement. Each category contained a series of subcategories and the method of dealing with each decision gives a score for the public and private sector, which can be totaled to reach a cumulative score. It is important to differentiate that this tool was intended to assess the viability of a project at an early stage, in order to determine if development should continue, rather than assessing project success. Furthermore, each subcategory was assigned a specific weight based upon its importance with regards to project success. This complicated and detailed approach to evaluating potential projects can best be categorized as a model, while the intention of this research is to provide a framework, less like a "black box". Also, the P3 Equilibrium Framework quadrant system does not attempt to score projects; rather, it determines the balance among participants.

Still more articles discuss the implementation of P3 projects and the obstacles involved. Klijn and Teisman (2003) used Dutch projects to illustrate the difficulty in two or more groups with differing interests and goals coming together to complete a project. The work basically supported the idea that "synergy" and "joint development" are popular words, but do not seem possible within the existing fragmented decision making arenas, because the various actors have differing goals and objectives. An article discussing a recent survey by Algarni et al (2007) concluded that BOT and other integrated delivery systems are not being utilized fully for several reasons. The group surveyed public officials on the obstacles to BOT, which included the availability of other methods, political obstacles, lack of legislation, resistance to change, and the negative attitude in the private sector.

Aziz (2007) provides another valuable journal article discussing successful delivery of P3 infrastructure projects. The article reviewed the lack of funding in infrastructure, explored the obstacles to implementation, and ultimately suggested guidelines for improving infrastructure development through public-private partnerships. Aziz concluded that transportation authorities should strive for transparency and full disclosure, standardize the procedures and contracts to reduce transaction cost and time, and allow federal funding to be included in the finance structures. Furthermore, the financing approach should match the objective, and legislation should not limit the number of projects. Muller (1996) discussed another key obstacle,

inaccurate estimates of traffic volumes. The J.P. Morgan employee stated that only 2 of 14 toll road projects studied actually exceeded traffic projections in the first four years, while of the remaining twelve projects, most missed, or are likely to miss their projections by 40% or more. Poor traffic estimates are often a critical downfall of P3 projects, as they then cannot support the financing.

2.3.4 Risk Allocation

A substantial amount of literature contemplated the risk involved in partnering, such as a journal article by Loosemore et al (2007), who identified the public and private risks and how to best allocate them. Quiggin (2005) also detailed many aspects of risks in PPPs, including the fact that partnering creates new risks, the profit risk assumed by the private sector, the risk of the government renegotiating the contract, and others. In a 2006 article, Shen et al discussed the role of public-private partnerships to manage risks in public sector projects in Hong Kong. The authors examined the major risks due to implementation of a typical public sector project and the ways that PPPs can effectively manage the risks in project delivery. Similarly, Froud (2003) described the risks of PFI projects and how the private sector must genuinely assume the risks given to it. Froud argued that value for money can only be achieved if private sector expertise, innovation, competitive efficiency, and risk transfer can overcome the increased transaction, contracting, and negotiation costs, as well as the allowance for profit.

2.4 Summary and Conclusion

The literature review revealed the existence of a significant number of government documents and scholarly works relating to public-private partnerships. Furthermore, a few of the peer-reviewed journal articles attempt to identify the critical success factors and conditions that make a project successful; these sources will be central to improving the project appraisal template. However, the body of knowledge surrounding public-private partnerships is clearly lacking an effort to create a framework that systematically evaluates or predicts the success of partnerships at either the program or project level. Therefore, the intent of this research is to improve the P3 Equilibrium Framework, which fills this void by devising a tool that can be applied to P3 projects in order to give insight into the project's chances at success and fairness to the public and private stakeholders.

Chapter 3 – P3 Equilibrium Framework and Appraisal Templates

3.1 Introducing the P3 Equilibrium Framework

Garvin addressed the gap in the body of knowledge concerning an evaluation method for public-private partnerships (2007). The P3 Equilibrium Framework (the Framework) is a tool presented by Garvin in a 2007 paper for the Construction Management and Economics 25th Anniversary Conference in Reading, United Kingdom. The preliminary research for this thesis contributed to the development of the Framework. Garvin divided the main stakeholders into four categories; the State, Society, the Market, and Industry, each with a corresponding quadrant. The "state" refers to the elected or allotted body, whether it be federal, state, or local, governing the jurisdiction in which the project or program resides. This could be a state department of transportation, or local agency, such as Orange County Transportation Authority. "Society" is characterized by the citizens living and working within the jurisdiction. "The market" is the financial system which allows investors to exchange wealth and risk through time. Lastly, "industry" encompasses the various enterprises engaged in providing goods and services to the jurisdiction. The basis of this quadrant framework relies on the proposition that in order for P3's to be successful, they must balance the interests of the aforementioned parties (Garvin 2007). Figure 3:1 shows the Equilibrium Framework.

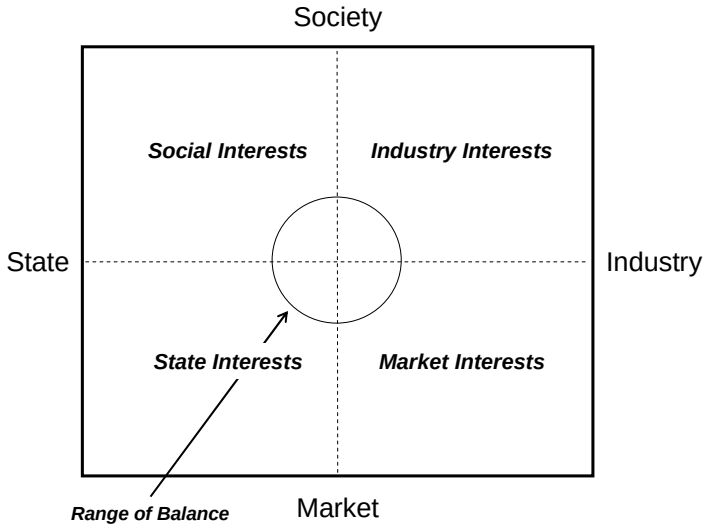

Figure 3:1 P3 Equilibrium Framework for P3 Evaluation
Source: Garvin (2007)

Garvin also states that another proposition critical to applying the framework is that projects represent the operational expressions of the P3 program. Therefore, projects can either maintain the equilibrium of the overall program, or distort it. All of the projects produced by a program can be plotted on the framework to determine the collective performance of the P3 policy. This proposition and the previous statement that a balance of the four interests is desirable in both projects and programs is not an entirely new concept. Literature from Lessard and Miller (2000) on the risks of large engineering projects, and work by Linder and Vaillancourt Rosenau (2000) on the terrain of P3 arrangements both present similar arguments. The key proposition of this research is that a program's projects must cluster around the range of balance to be successful. A group of projects that are unbalanced towards one quadrant or another will surely lead to one or more interests becoming alienated by the arrangement, while others reap a disproportionate amount of the benefits. Furthermore, a scatter of projects across the framework points to a poorly organized program that leads to unstable and unpredictable results, which is also very undesirable. Ultimately, the P3 Equilibrium Framework provides a platform for analyzing and plotting the general location of each project, in order to better evaluate and understand individual projects and legislative programs. Each axis on the framework can be thought of as a continuum, with the extreme positions for each quadrant found at the outside corner of that quadrant, furthest from the range of balance in the center of the framework.

3.2 Introducing the Appraisal Templates

With a firm understanding of the equilibrium framework and its usefulness in classifying projects, one can begin to place projects in the space. However, this requires a tool to guide the placement of the project based on the most important aspects of the contractual agreement. To enable an analysis that is clear and reproducible, Garvin developed the Program and Project Appraisal Templates, based on his past research, current literature, and preliminary work for this thesis. The appraisal templates provide the ability to identify the key aspects of the project and move the project or program in the appropriate direction based on how it manages each factor. The appraisal templates contain five key elements, each with their own set of specific issues, possibilities for each issue, and the direction that corresponds with each of the possibilities. The P3 Program Appraisal Template identifies the Scope of Work, Financing, User Fees, Acquisition

& Procurement, and Concession Management as the main elements. The P3 Project Appraisal Template is divided into Market Conditions, Socio-Environmental Conditions, Acquisition & Procurement, Concession Management, and Project Performance. Garvin's original templates are presented in Figures 3:2 and 3:3.

It is important to keep in mind that the templates presented in this chapter are the original templates created. The research methodology details a process of inductive and deductive learning, in which the templates evolve and improve as the case studies progress. Also, the directional measurements given are not as precise as some might hope. However, it would be very difficult to create a standard template to this level of detail that is applicable to all projects and programs. Furthermore, the movements in each direction are not quantified. Such a task may prove to be impossible, as the importance of each issue differs by project. Initially, this is thought to add immense complexity and could create results that are not nearly as widely transferable as desired (Garvin 2007). For an explanation of each issue and the resulting directional impact, refer to the Appendix.

Element	Issue		Impact
Scope of Work or Service	Source of definition	Solicited Only	–
		Unsolicited Allowed	↘
	Limitations	Mode restrictions	←
		Geographic restrictions	↙
		Project/service delivery restrictions	↙
Financing	Sources Allowed	All	–
		Private only	↘
	Allowances or Exclusions	Tax exemptions allowed	↗
		Diversion to public/general funds allowed	↙
User Fees	Method of establishment	Publicly driven	←
		Privately driven	→
		Negotiated	→
	Management	Not addressed	→
		Escalation controls	–
		Revenue sharing with state	←
Acquisition & Procurement	Comparative analysis	Not addressed	→
		Required	←
		Required and process defined	–
	Selection method	Undisclosed	↗
		Competitive	–
		Negotiated	↗
	Approvals	Legal exemptions obtained	–
		Permits/property acquired	–
		3rd-party consultants allowed	–
Concession Management	Auditing process	Undisclosed	→
		Disclosed	↙
		Disclosed/adequately defined	–
	Termination rights	Undisclosed	↗
		Unlimited	↙
		For Cause	–

Figure 3:2 P3 Program Appraisal Template
Source: Garvin (2007) *Are Public-Private Partnerships Effective Infrastructure Development Strategies?*

Element	Issue		Impact	Element	Issue		Impact
Market Conditions	Established demand	Yes	–	Concession Management	No-Compete Provisions	Allowed and absolute	↘
		No	↘			Allowed w/ exclusions	–
	Competing facilities	Yes	↖		Performance measurement	Clear & objective	–
		No	→			Absent	↗
Socio-Environmental Conditions	Project type	Greenfield	–			Vague	↙
		Brownfield	←		Conditions for renegotiation	Clear & objective	–
	Project scale	Large	↗			Absent	↗
		Moderate	→			Vague	↙
		Small	–		Termination provisions	Clear & objective	–
	Demographic impact	Diverse	–			Absent	↗
		Distinct	→			Vague	↙
	User Fees	Affordable	↖		Facility return provisions	Clear & objective	–
		Reflect 'cost' of service	–			Absent	↗
		Long-term plan	–			Vague	↙
Acquisition & Procurement	Financial/technical benchmark	Yes	–	Project Performance	Quality & Innovation	Readily apparent	✓
		No	↗			Difficult to judge	X
	Competition	No	↗		Price	Readily apparent	✓
		Comparable scope	–			Difficult to judge	X
		Price and other factors	–		Service availability	Readily apparent	✓
		Factors other than price	↗			Difficult to judge	X
	Selection criteria & process	Transparent	–				
		Objective	–				

Figure 3:3 P3 Project Appraisal Template
Source: Garvin (2007) *Are Public-Private Partnerships Effective Infrastructure Development Strategies?*

3.3 Discussion of the P3 Equilibrium Framework

This chapter presented and (combined with the information in the Appendix) explained the P3 Equilibrium Framework and corresponding appraisal templates. This knowledge prepares one to develop the following case studies with the purpose of applying the Framework to each specific project. Every case study will contain an analysis using the P3 Equilibrium Framework, with an explanation of why each decision was made. The analysis will conclude by plotting the

project on the Framework. Ideally, the location on the quadrant framework will correspond to the real world results achieved by the project.

As discussed previously, the Appraisal Templates presented in this chapter are the first draft of the templates, and by no means represent the final product. The research methodology calls for these templates to be used to analyze the case studies in the following chapters. This evaluation of case studies will most likely result in improvements to the Appraisal Templates, so that they more accurately assess the actual placement and performance of a project. Furthermore, consideration of sources from the literature review will have an impact on the final product. Chapter 6 details the changes made to the P3 Equilibrium Framework and presents the final version.

Chapter 4 - Enabling Legislation in Virginia and California

Chapter 5 presents four case studies from two states. These two states are among the first to adopt PPP legislation and follow through by implementing projects in the early 1990's. For this reason, it is beneficial to gain some insight as to why Virginia and California chose to purse PPP's, and discuss the details of the legislation and programs. This chapter presents information on both states' legislation in order to better understand the budgetary and political circumstances that drove the laws, as well as the legislation itself, as it forms the guidelines that the projects followed during their development.

4.1 Background

As detailed in Chapter 1, federal spending on capital projects such as highways and water treatment plants has declined steadily since the late 1960's. The 1972 Brooks Act called for separation of design and construction services. This led to an overwhelming majority of federal projects following the traditional design-bid-build format. In the 1980's, engineering experts placed a great deal of focus on the need for improvement in the United States' infrastructure. It became clear that the federal government did not have the resources to fund the necessary projects and improvements (Gramlich, 1994). Therefore, throughout the 1980's and 90's lawmakers created executive orders and legislation that loosened the rules for procurement, allowing for more integrated project delivery methods. The alternative methods include design-build, and public-private partnerships, in which the private sector provides financing, design, construction, and possibly operations and maintenance services for the public project. These methods allow the private sector to provide the funds for public projects, lessening the burden on federal, state, and local governments to provide financial support. For this reason, public-private partnerships became one solution, and are still rising in popularity (Miller, et al 2000). California and Virginia were two of the first states to enact legislation enabling private finance and construction of major transportation projects. The Virginia Highway Corporation Act of 1988 and California's AB 680 represent the first steps toward public-private partnerships in the United States.

4.2 Virginia

In the 80's the Virginia Department of Transportation (VDOT) faced the same budgetary constraints affecting transportation authorities throughout the nation. With federal funding becoming increasingly difficult to obtain, and state funds already being stretched, Virginia needed an innovative solution. In 1986 the newly elected Governor of Virginia, Gerald L. Baliles, announced that transportation would be a top priority, and quickly organized a committee called the Commission of Transportation for the 21st Century (COT 21) to develop a broad financing strategy for Virginia's transportation needs. In August of 1986, COT 21 identified $7 billion in transportation investments and recommended tax increases to generate approximately $550 million per year in funding. The Virginia State legislature met soon after, passing tax increases that would bring in approximately $425 million per annum, through a sales tax increase of ½ percent and raising the gas tax 2.5 cents, to a total of 6.5 cents per gallon. During this same time, private developers began to advance the idea of a private toll road extending the reach of the existing Dulles Toll Road (Pethtel Interview).

4.2.1 Virginia Highway Corporation Act of 1988

The Virginia Highway Corporation Act of 1988 was created specifically with the Dulles Toll Road Extension in mind. While drafting the legislation, safeguards were put in place to protect the public. The lawmakers ensured VDOT played an important role in the process, to increase the chance of gaining their support. The bill was introduced by Senator Waddell and passed with few changes in early 1988. The Virginia Highway Corporation Act of 1988 (HCA) establishes a framework for private toll road projects, with the appropriate government approval and oversight. The Act begins as follows:

> "The General Assembly finds that there is a compelling public need for rapid construction of safe and efficient highways… and that it is in the public interest to encourage the construction of additional safe, convenient, and economic highway facilities by private parties, provided that adequate safeguards are provided against default in the construction and operation obligations of the operators of roadways. The public interest shall include without limitation the relative speed of the construction of the project and the relative cost efficiency of private construction of the project."

The bill stated that Virginia will not exercise eminent domain on the operator's behalf, though local jurisdictions could choose to do so. The franchise expires 10 years after the initial debt is paid off. Therefore, the operator owns the roadway during the life of the franchise, making liability insurance a must. State police enforce traffic laws and are reimbursed for the expenses incurred. At the end of the franchise term, the facility is to be transferred at no cost to the state. Toll rates are set by the Virginia State Corporation Commission at a level that is "… reasonable to the user in relation to the benefit obtained and which will not materially discourage use of the roadway by the public and which will provide no more than a reasonable return." A fund is also created to allow for any excess revenue to be used for the improvement of nearby roads affected by toll road traffic. The legislation outlines a four-step process for licensing a private highway:

1. The Commonwealth Transportation Board (CTB) must approve the construction cost, location, and design of the road. Several considerations guide this approval, such as the public need, its connections to the existing highway network, the speed of construction, and allocation of the financial and human resources of VDOT.

2. Local jurisdictions must approve all interconnections with existing roads. Localities also have the right to participate in proceedings before the CTB.

3. The developer must apply to the State Corporation Commission (SCC) for a certificate of authority. The SCC acts as one of Virginia's primary regulatory agencies, with oversight of varied business and economic interests throughout the Commonwealth. The application to the SCC must include information such as plans for securing right of way, financing, proposed tolls, and projected traffic volumes.

4. The final step in the process is to enter into a comprehensive agreement providing for VDOT review of specifications, inspection of construction, and oversight of maintenance. As is now commonplace in such agreements, VDOT would be reimbursed for its direct costs in supervision of the project.

Under the Highway Corporation Act of 1988, applications submitted to the Commonwealth Transportation Board must be approved or denied within 60 days of its receipt or 45 days of a public hearing, to prevent the CTB from stalling proposals until they are no longer feasible. The CTB does not have the right to reject the design if the project meets VDOT standards for toll roads. One unique aspect of the legislation is the inclusion of the State Corporation Commission. The SCC's authority encompasses utilities, insurance, state-chartered financial institutions, securities, retail franchising, and railroads. The Commission also serves as the Commonwealth's central filing office for corporations, limited partnerships, limited liability companies, business trusts, and Uniform Commercial Code filings. At the time, the Commission had no experience with toll roads; however, it applied the same principals used for utility companies.

Virginia's Highway Corporation Act served as the leading edge of the movement towards public-private partnerships in the United States, and resulted in the delivery of the Dulles Toll Road Extension (later named the Dulles Greenway), which is analyzed as a case study in the next chapter.

4.2.2 Virginia's Public-Private Transportation Act

About the same time that the Dulles Greenway opened to traffic in Northern Virginia, state lawmakers in Richmond passed the Virginia Public-Private Transportation Act of 1995 (PPTA). This piece of legislation represents the second generation of public-private partnership legislation in Virginia. It enables the appropriate state and local authorities to enter into agreements with the private sector to provide much needed transportation infrastructure that could not be funded out of the state budget. Over the years, the PPTA has been amended and changed slightly. The following information reflects the most recent updates.

The Public-Private Transportation Act is the legislative framework enabling VDOT to enter into agreements with private entities to construct, improve, maintain, and operate transportation facilities. The first project delivered through the PPTA was the Pocahontas Parkway. More recently, in 2005 the Jamestown 2007 Corridor Constructors LLC completed a $31.8 million expansion of five miles of Route 199 near Jamestown, Virginia under the PPTA. These projects have allowed Virginia to obtain the desired improvements to the transportation network years before traditional state funding would allow (www.virginiadot.org).

Virginia's Public-Private Transportation Act allows for both solicited and unsolicited proposals. A fee may be charged for the review and evaluation of proposals. VDOT maintains the right to open up the unsolicited proposal to other competing entities, in an attempt to ensure competition and improve the value for money of the proposed project. All proposals must meet three key criteria to be advanced under the PPTA. First, the proposal must seek approval for a private entity to develop and/or operate specified transportation facilities. Second, the transportation facilities so specified must be one or a combination of the following: a road, bridge, tunnel, overpass, ferry, airport, mass transit facility, vehicle parking facility, port facility or similar commercial facility used for the transportation of persons or goods, together with any buildings, structures, parking areas, and other property needed to operate such facility. Third, the proposal must be submitted to the government authority with appropriate jurisdiction on the project. Proposal submission and review is a six-phase process:

Phase 1 – Quality Control
Phase 2 – Independent Review Panel
Phase 3 – Oversight Board Recommendation
Phase 4 – Submission and Selection of Detailed Proposal(s)
Phase 5 – Negotiations
Phase 6 – Comprehensive Agreement

The proposals consist of two parts. The first is the Conceptual Proposal, which must include:

Tab 1: Qualifications and Experience
Tab 2: Project Characteristics
Tab 3: Project Financing
Tab 4: Project Support
Tab 5: Project Benefit and Compatibility

If advanced, the next stage is the submission of a detailed proposal, which is Phase 4 of the process shown above.

Within 30 days of the close of the period for solicited proposals, the Department will review all proposals to determine whether the proposal(s) meet the requirements of the Solicitation For Proposals (SFP). All proposals which meet the requirements of the SFP shall

move forward to the Secretary of Transportation. The Secretary of Transportation will then have 60 days to appoint a Chair for an Independent Review Panel (IRP) to evaluate the proposals and establish a meeting schedule for the IRP. The IRP is composed of senior state transportation officials and other individuals having appropriate expertise to evaluate which PPTA projects. The IRP will review the proposals and evaluate them in accordance with selection criteria set forth in VDOT's PPTA Implementation Guidelines and make recommendations to the appropriate oversight body, usually the Commonwealth Transportation Board (CTB). The recommendation would include whether to advance one or more, or none of the proposals to the detailed stage, any specific issues that should be addressed in a detailed proposal. The IRP may recommend that the proposal(s) is/are an adequate basis to begin negotiations of an interim or comprehensive agreement (PPTA Implementation Guidelines).

The Oversight Board will consider the recommendations of the IRP and recommend for or against advancement of one or more proposals for further development. If public funds are proposed, the Oversight Board will be asked for a determination to support future allocations for such funding within the limits of pertinent distribution formulas for State appropriations. Final authorization to develop and/or operate any qualifying transportation facility will be contingent on successful negotiation and execution of a comprehensive agreement between the private entity and VDOT. The comprehensive agreement will, at a minimum, outline the rights and obligations of the parties, set a maximum return or rate of return to the private entity, allocate risk and liabilities, and establish dates for termination of the private entity's authority and dedication of the facility to the Commonwealth, in accordance with appropriate Virginia laws.

The PPTA code allows for any public entity, including the State, to dedicate public property interest to the qualified transportation facility. Furthermore, at the request of the private party, the responsible public entity may exercise any power of condemnation it has for the purpose of acquiring any lands, thought the cost of which is to be paid by the private party. The responsible public party is directed by the PPTA to proceed with procurement as directed by the PPTA Implementation Guidelines, which are heavily referenced in this chapter. The private entity may pursue appropriate federal funding, such as TIFIA loans, to help support the financing of qualified projects. This can greatly enhance the financial outlook of a project. Despite the availability of these funds, about half of the states with PPP legislation do not allow for this form

of funding (Aziz, 2007). Furthermore, the PPTA does not restrict the number of projects or geographic location, which is another mistake made by many states, according to Aziz (2007).

4.2.3 Comparison and Analysis of the HCA and PPTA

Clearly, the more recent Public-Private Transportation Act differs significantly from its predecessor, the Highway Corporation Act. However, both pieces of legislation provide the appropriate safeguards to protect the public welfare through extensive approval processes by various state and local agencies, commissions, and review panels. The PPTA provides fairly detailed guidelines for implementation, which have been consistently updated by VDOT throughout the existence of the legislation. One noticeable change is that the role of the State Corporation Commission is greatly reduced in the PPTA. The SCC was not created to handle transportation facilities, and although it filled in for the Highway Corporation Act, other resources were drawn upon in the PPTA. The main groups involved in the newer legislation are the Commonwealth Transportation Board and an Independent Review Panel, both of which are specifically picked based on the qualifications necessary to evaluate such projects. This is an improvement, since it relies upon the expertise of those with experience in transportation projects and related fields.

Overall, the PPTA makes Virginia one of the most active of the 23 states which currently have legislation in place (www.fhwa.dot.gov). The Act enables a wide range of possible projects and financing options, without restricting the number or location. Furthermore, implementation guidelines are in place to help streamline development procedures, in an attempt to reduce the transaction time and cost. The PPTA represents a natural evolution and improvement over the initial Highway Corporation Act, giving Virginia agencies an alternative to the traditional sources of funding.

4.2.4 Analysis with P3 Equilibrium Framework

Figure 4:1 utilizes the Enabling Legislation Appraisal Template to analyze Virginia's Public-Private Transportation Act of 1995. The Highway Corporation Act is not evaluated here because it was utilized specifically to deliver the Dulles Greenway.

Element	Issue		Impact	PPTA	Explanation
Scope of Work or Service	Source of Devinition	Solicited Only	--	↘	The PPTA provides for unsolicited proposals
		Unsolicited Allowed	↘		
	Limitations	Mode Restrictions	←	--	No mode, geographic, or project delivery restrictions exist.
		Geographic Restrictions	↙		
		Project delivery restrictions	↙		
Financing	Sources Allowed	All	--	--	The PPTA does not restrict funding sources.
		Private Only	↘		
	Allowances or Exlusions	Tax-exemption allowed	↗	↗ -- ↙	Both are allowed, so the two arrows cancel each other out
		Diversion to public funds allowed	↙		
User Fees	Method of Establishment	Publicly driven	←		Different projects have used different methods.
		Privately driven	→		
		Negotiated	→		
	Management	Not addressed	→	→ ←	User fee management is vaguely addressed in the PPTA, however no management plan is mentioned. Excess earnings are distributed to the Commonwealth's Transportation Trust Fund.
		Escalation controls	--		
		Revenue sharing with state	←		
Acquisition & Procurement	Comparative Analysis	Not Addressed	→	→	The PPTA provides for competition through competing proposals. However if no other proposal exists, the project is not subject to a comparative analysis.
		Required	←		
		Required and process defined	--		
	Selecion Method	Undisclosed	↗	--	The selection method aims to achieve competition and is defined in by the Implementation Guidelines
		Competitive	--		
		Negotiated	↗		
	Approvals	Legal exemptions obtained	--	--	Legal exemptions are obtained, property rights can be acquired, and 3rd party consultants are allowed.
		Permits/property acquired	--		
		3rd party consultants allowed	--		
Concession Management	Auditing Process	Undisclosed	↗	↗	Auditing processes are not addressed in the legislation.
		Disclosed	↙		
		Disclosed & Defined	--		
	Termination Rights	Undisclosed	↗	--	The comprehensive agreement may contain provisions under which the public entity may provide notice of default and cure rights
		Unlimited	↙		
		For Cause	--		

Figure 4:1 Virginia's PPTA - Analysis with Preliminary P3 Equilibrium Framework

Using the directional adjustments from the Enabling Legislation Appraisal Template, Figure 4:2 displays where Virginia's PPTA legislation plots on the P3 Equilibrium Framework:

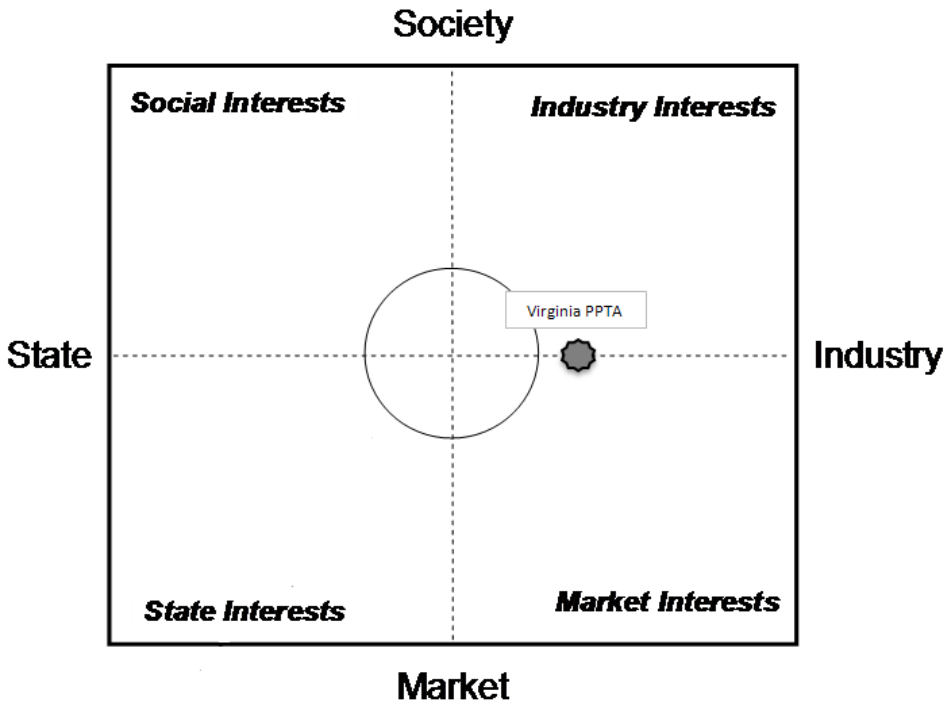

Figure 4:2 Virginia's PPTA Legislation Plotted On P3 Equilibrium Framework

4.2.5 Virginia Legislation Commentary

Virginia's PPTA falls outside the range of balance. According to analysis with the Enabling Legislation Appraisal Template, the PPTA favors the private sector, indicated by its placement in right half of the framework. This is due in large part to the possibility of unsolicited proposals and tax-exemptions. The legislation also fails to address either a comparative analysis procedure or an auditing process, both of which also benefit the private sector. Therefore, it is understandable why Virginia's legislation falls on the right side of equilibrium. The Public-Private Transportation Act projects and proposals have encountered mixed success, which seems to correspond to the position slightly outside the range of balance. With more information on how specific projects plotted, a more thorough analysis of the legislation can be made.

4.3 California

In the 1980's, the California Department of Transportation (Caltrans) faced the same budgetary constraints affecting transportation agencies nationwide. California's transportation network was increasingly congested and outdated, and the State lacked the funding necessary to maintain and improve its transportation network. At the time, California debated several different methods of sustainable financing for transportation projects. Possibilities included "impact fees" on real estate developers, additional bond authorizations, and raising the sales tax. At the time, the Democrat-controlled state legislature favored expanding the gasoline tax (Boarnet et al). In the late 80's Bob Poole of the Reason Foundation suggested that the private sector may provide the cash infusion necessary to improve the level of service provided to the public. A conference in August of 1988 allowed private developers to make presentations detailing the potential benefits that public-private partnerships can provide. This convinced Caltrans Director Robert Best, who, in conjunction with the Reason Foundation and other groups, successfully lobbied the California legislature to accept the plan. The California legislature passed Assembly Bill 680 (AB 680) in 1989, which allowed the California Department of Transportation and regional transportation agencies to seek private financing of transportation projects. The Bill sought to use private funds to supplement the State's insufficient transportation budget. Overall, the idea was that the use of public-private partnerships could aid in delivering a better level of service to the residents and businesses of California, without impacting their taxes or the State budget.

4.3.1 California's Assembly Bill 680

Assembly Bill 680 allowed the development of four privately funded transportation projects throughout the state, with at least one in the north, and one in the south. Each project would have to supplement existing facilities, meaning the project could not compromise an exclusive transportation service, for which there was not a free alternative. Furthermore, the projects would be owned by the State of California, and leased to the developer for a period of up to 35 years. This feature was thought to have tax advantages for the developers, reducing the liability risk of operating such a facility. The Bill also stated that no State or Federal funds be required in any of the projects chosen. The project developer must fully reimburse the State for

any services that it would be required to provide, such as highway patrol or maintenance services. The bill provides the developer the right to collect tolls in order to recover costs and secure a reasonable return. The term reasonable return was never formally defined, which gave the developer and Caltrans the ability to explore projects with varying risk and reward. The project agreement would, however, require that "excess toll revenues" be applied towards early repayment of private sector debt for the facility, or paid into a State Highway Account. At the end of the concession period, the State retains the right to charge tolls to recover operations and maintenance costs after it gains control of the facility. AB 680 further specifies that all designs meet or exceed State design standards, and comply with all state laws and regulations, including public labor acts.

When AB 680 passed, interested private companies rushed to form consortiums to be pre-qualified for the opportunity to suggest an unsolicited project. A total of ten different private consortiums were pre-qualified based on criteria in the Caltrans Request for Qualifications. The criteria and their respective weights are shown below:

Experience of principal organization and consortium members:	30%
Record of financial strength to commit to major transportation facility:	30%
Ability to work and cooperate with government agencies and public:	20%
Individual qualifications of key projects personnel:	10%
Organizational and management approach of consortium:	5%
Familiarity and experience with automated traffic operations:	5%

The next step for procurement under AB 680 consisted of submitting 'Conceptual Proposals' to Caltrans. This allowed the proposers to suggest transportation projects of their choice, with no direction from Caltrans, other than the evaluation criteria listed in the Caltrans Guidelines for Conceptual Proposals, sent out in March of 1990. Caltrans received eight separate proposals from the pre-qualified developers. The projects were then evaluated based on the following criteria:

Transportation service provided as a result of the proposal	20
Degree to which proposal encourages economic prosperity and makes overall good business sense	10
Degree of local support for proposal	15
Relative ease of proposal implementation	15
Relative experience and expertise of proposal sponsors	15
Degree to which the proposal supports the State's environmental quality and energy conservation goals	10
Degree to which non-toll revenues support proposal costs	5
Degree of technical innovation associated with the proposal	10
Degree of proposal's support for achieving the civil rights objectives regarding Minority and Women Business Enterprise	10

Four projects were selected for development from proposals enabled by Assembly Bill 680. Two proposals eventually yielded completed projects. The State Route 91 Express Lanes project is detailed as a case study in the following chapter. The other completed project is Route 125 in the San Diego area. Route 125 is a $411 million, four lane toll road stretching about 10 miles between State Route 905 and San Miguel Road, providing a north/south route for truck traffic crossing the U.S. and Mexico border at the city of Otay Mesa. The proposal is characterized by a long list of delays. Final environmental approval was obtained in 2000, and the finance phase completed in 2003. Construction commenced in November of 2003, and the facility opened to traffic in late 2007 (www.dot.ca.gov).

Two of the projects never made it past the development stage. The Santa Ana Viaduct Express offered to provide a tolled expressway connecting State Route 57, Interstate 5 in the north, and SR 22 with I-405 and SR 73 in the southern section of the congested Orange County region. To develop a road in a highly congested area required an innovative approach. The Santa Ana Viaduct Express (SAVE) Consortium proposed to build an elevated highway along the center of the existing Santa Ana River flood control channel for 8.3 miles of the total 11.7 mile project. Twin elevated structures with a width of 41.5 feet each were proposed to carry traffic in each direction. Several major interchanges were also proposed along the route. The toll collection plazas were to be located at major intersections and employ both automated vehicle identification technology and manually operated cash lanes. Congestion pricing similar

to the SR 91 Express Lanes was proposed, ranging from $0.25 to $5.00 throughout the day, leading to a projected revenue of $43 million per year under 1990 conditions and a projected $76 to $119 million per year in 1997 (Miller 2002). The construction cost provided by the SAVE Consortium in 1990 was $701.7 million. The SAVE Consortium predicted construction would last from 1992 to 1997, with the 25 year lease running until 2032. The agreement allowed a base rate of return of 20.25%, due to the high risk of the project. However, opposition from adjacent neighborhoods and the Army Corps of Engineers, who control the flood channel, ultimately derailed the project (www.dot.ca.gov).

Another failed project, called the Mid-State Tollway, was reduced in scope to a $600 million, 40 mile, toll road stretching from Route 680 near Sunol to Route 4 near Antioch. Caltrans awarded the franchise agreement to California Toll Road Company, and deleted a portion of the original project in 1993. Once again, extreme political opposition suspended the project, and the franchise was terminated in 2001 (www.dot.ca.gov).

4.3.2 California's Assembly Bill 1467

The latest reincarnation of public-private partnership enabling transportation in the State of California is AB 1467, passed in May of 2006. Similar to AB 680, this bill allows for the development of four privately funded transportation projects throughout the state; however, it requires two in the north, and two in the south. Each project would have to supplement existing facilities, and focus on the goal of improving the movement of goods throughout the state. Examples suggested in the bill include exclusive truck lanes, rail access, and operational improvements. Again, the projects would be owned by the State and leased to the concessionaire. The project developer must fully reimburse the State for any services that it would be required to provide, such as planning, environmental certification, design, highway patrol, or maintenance services. The bill provides the developer the right to collect tolls in order to recover costs and garner a reasonable return, although noncommercial vehicles with three axles or less cannot be tolled (with the exception of the increasingly popular 'high occupancy toll lanes'). As with AB 680, the bill is silent on constraints of a reasonable return. The project agreement again requires that "excess toll revenues" be applied towards early repayment of private sector debt for the facility, or paid into a State Highway Account. However it also offers a third alternative,

improving the project. At the end of the concession period, the State retains the right to charge tolls to recover operations and maintenance costs after it gains control of the facility.

4.3.2 Comparison and Analysis of AB 680 and AB 1467

Clearly, many similarities exist between the two pieces of legislation. Both allow for four transportation projects that may be solicited or unsolicited. The bills also place few constraints on the procurement in terms of negotiations, competition, and pre-qualification of bidders. They are similar in that the State of California will own the project after construction and lease it to the developers, then takeover the project at the end of the concession period and maintain the right to charge tolls. Both bills allow the developer to charge tolls to cover costs and receive a reasonable return on investment, although neither bill attempts to define the limits of reasonable return. Excess revenues are dealt with in a very similar way, with the options of either being used to retire debt early, be put into a State Highway Account, or the third option provided by AB 1467, which is to place the money back into the project with capital improvements. As one would expect, the two bills are quite similar, however, the legislature did make some significant changes.

The first noticeable difference is that AB 1467 calls for two projects in both the north and south, rather than at least one in each part of the state. With most of the population and traffic congestion near the major cities in the south, this is a noticeable change. The most significant difference is the goal of AB 1467 compared to AB 680. The stated objective of AB 1467 is to improve the transport of goods throughout the state, implying a focus on commercial traffic. The purpose of AB 680 is that "it is essential for the economic well-being of the state … that the people of the State of California have an efficient transportation program" (AB 680). This statement suggests that passenger vehicle traffic is the focus of the bill, and to a lesser extent, commercial vehicles. To further the goal of improving goods movement, AB 1467 states that non-commercial vehicles with three axles or less cannot be tolled, with the exception of high occupancy toll lanes. Also, AB 1467 prevents the tolling of existing roads, unless high-occupancy toll lanes are added. Unlike AB 680, the newer legislation does not forbid the use of state and federal funds in a project. This may help proposals that the government feels are very beneficial to the public, and accomplish the goal of enabling the transport of goods. Another feature of AB 1467 that may help strengthen the financial feasibility of projects from the private

perspective is the lack of a limit on the lease term. AB 680 clearly stated that the longest lease period would be 35 years, while AB 1467 is silent on such limits. This allows Caltrans to consider the lifecycle of the project, rather than an arbitrary time limit. The longer duration could make proposals more favorable to the private sector, as well.

The lessons learned from AB 680 are quite prevalent in the newer legislation. For instance, no-compete clauses are not permitted, ostensibly due to the issue it created with the Route 91 Express Lanes (see Chapter 5 Case Study). Furthermore, all AB 1467 proposals must be submitted to legislature for approval, which will be accomplished by the enactment of a statute. Legislative approval may have prevented Caltrans from pursuing the projects that were eventually unsuccessful. Along those same lines, a public hearing must be held on-site, or in the vicinity of the proposed project. This clause is most likely in response to the strong public opposition that contributed to the failure of the SR 57 and Mid-State Tollway proposals. In another measure to protect the public, AB 1467 includes language that forces all agreements to establish specific toll rates and toll increase mechanisms. Tolling guidelines can prevent the developer from setting excessively high toll rates, which is not good for the citizens, or the public image of Caltrans.

In many respects, California government officials learned from their mistakes in AB 680 and the projects that resulted. Most notably, the new piece of legislation does a far better job of protecting the interests of the state. Requiring all proposals to pass through the legislature, banning no-compete clauses, and setting the toll structure are all new additions that will ensure quality projects that do not hinder other aspects of the transportation system or charge excessive tolls. The legislation is also much more appealing to the private sector. The concession term is no longer limited to 35 years, leaving the private entity the possibility of a longer period to collect tolls and make a profit. Also, the ability to incorporate federal and state funds is a new feature in AB 1467 that did not exist in AB 680. This will allow the state and federal government to contribute funds to projects that it is particularly interested in supporting. Therefore, it is a way to add profitability to projects that Caltrans deems very worthwhile. Overall, the tighter control maintained by the State and failure of several AB 680 projects has meant that as of early 2008, there is little to no activity surrounding proposals enabled by AB 1467 (Ingles Interview).

4.3.3 Analysis with P3 Equilibrium Framework

Figure 4:3 utilizes the Enabling Legislation Appraisal Template to analyze California's Assembly Bill 680. AB 1467 is not evaluated in this section because no activity has arisen from the legislation to date.

Element	Issue		Impact	AB 680	Explanation
Scope of Work or Service	Source of Devinition	Solicited Only	--	↘	The legislation called for unsolicited proposals.
		Unsolicited Allowed	↘		
	Limitations	Mode Restrictions	←	↙	Geographic restrictions are placed on the projects. Of the four, at least one must be in northern and southern California.
		Geographic Restrictions	↙		
		Project delivery restrictions	↙		
Financing	Sources Allowed	All	--	↘	No State or Federal funds are allowed.
		Private Only	↘		
	Allowances or Exlusions	Tax-exemption allowed	↗	↙	Excess revenue goes toward paying off debt for facility early, or the State Highway Account
		Diversion to public funds allowed	↙		
User Fees	Method of Establishment	Publicly driven	←	→	Only guidence given is that the private developer can secure a "reasonable return"
		Privately driven	→		
		Negotiated	→		
	Management	Not addressed	→	←	Reasonable return will govern user fee management, excess revenue placed into State Highway Account.
		Escalation controls	--		
		Revenue sharing with state	←		
Acquisition & Procurement	Comparative Analysis	Not Addressed	→	→	AB 680 does not compare projects to a bench mark of any kind. Since the proposals are all different, they cannot be compared to each other, either.
		Required	←		
		Required and process defined	--		
	Selecion Method	Undisclosed	↗	--	The selection method is competitive, based on the process outlined.
		Competitive	--		
		Negotiated	↗		
	Approvals	Legal exemptions obtained	--	--	The bill permitted four projects. Permits and property were not obtained. No third party consultants are mentioned.
		Permits/property acquired	--		
		3rd party consultants allowed	--		
Concession Management	Auditing Process	Undisclosed	↗	↗	No auditing process is disclosed in the bill.
		Disclosed	↙		
		Disclosed & Defined	--		
	Termination Rights	Undisclosed	↗	↗	Terminiation rights are not part of the legislation.
		Unlimited	↙		
		For Cause	--		

Figure 4:3 California's AB 680 - Analysis with Preliminary P3 Equilibrium Framework

Using the directional adjustments from the Enabling Legislation Appraisal Template, Figure 4:4 displays where California's AB 680 legislation plots on the P3 Equilibrium Framework:

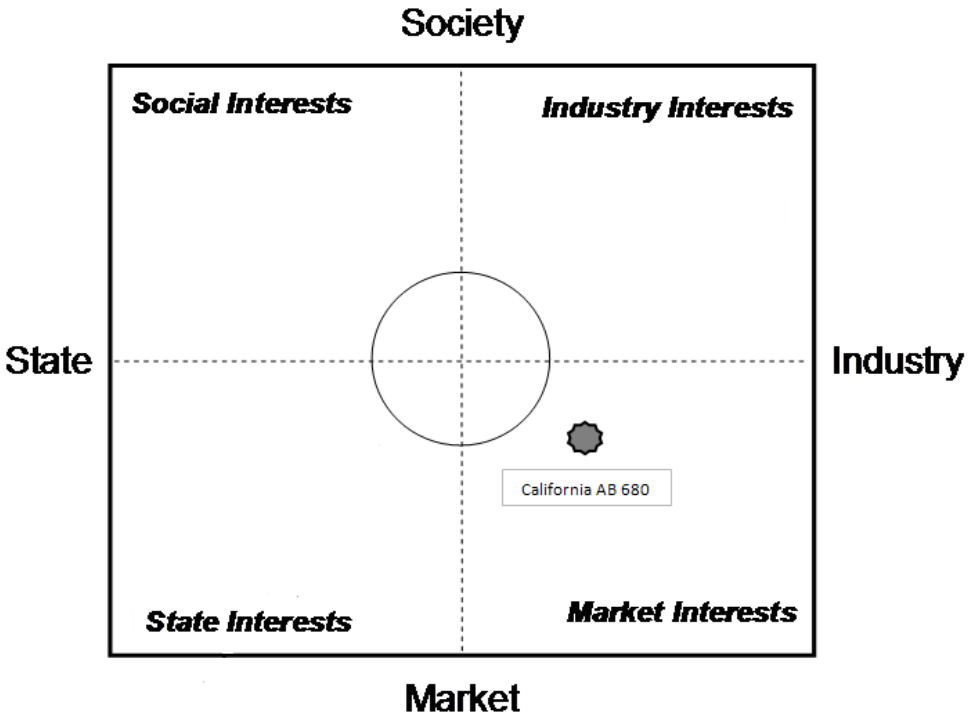

Figure 4:4 California's AB 680 Legislation Plotted on Equilibrium Framework

4.3.4 California Legislation Commentary

Using the preliminary version of the Enabling Legislation Appraisal Template, the AB 680 legislation is plotted outside of the range of balance. Assembly Bill 680 is well into the Market Interests quadrant for a variety of reasons. Because all proposals are unsolicited in nature, the qualified firms rely upon what plans they believe the market will best support. Furthermore, the inability to obtain any public funding places an even larger burden on the market. There are other factors that move the legislation in other directions, however market interests have the largest impact. The performance of the Bill corresponds strongly to its position on the framework. The placement outside the range of balance is an indication that the legislation may not achieve the desired results. Indeed, only two of the four projects selected were developed, and there is currently little public-private partnership activity in the State. Of the two projects, OCTA was forced to purchase the rights to the SR 91 Express Lanes after only

a few years, and SR 125 took more than a decade to develop. In this initial test, the P3 Equilibrium Framework seems to be performing well.

4.4 Conclusion

Both Virginia and California served as pioneer states in the initial experience with public-private partnerships in the United States. The first two generations of both states' legislation and projects have been met with mixed success, as will be illustrated in the case studies to follow. At this time, Virginia remains one of the most active states in the nation. As of early 2008, Virginia has five PPTA projects under construction, two active proposals, and two upcoming projects in the pipeline (www.virigniadot.org). Conversely, California's early experience has led P3 delivery to fall out of favor for the time being. However, with legislation in place and past experience to draw upon, the foundation is in place to develop future projects. In November of 2007, California Governor Arnold Schwarzenegger signaled a push to engage private companies in public works projects, claiming that California needs $500 billion in public works projects over the next twenty years to catch up and keep up with population growth. The LA Times reported that the Governor and his aides are crafting a plan that could create a central agency staffed with financial experts that will specialize in such agreements (LA Times, 2007). With this latest initiative, California may resume public-private partnership activity in the near future.

Chapter 5 - Case Studies

This chapter examines four case studies. Each study attempts to adhere to the principals found in Yin's *Case Study Research* (2003). Measures were taken to ensure unbiased, reliable, and reproducible results. The facts and events presented in the case studies were triangulated through the use of three distinct sources. The case studies rely most heavily on primary documents (such as the Comprehensive Agreement or Request for Proposals) for each project. Secondary documents are utilized as well; this includes newspaper and journal articles. Furthermore, interviews were conducted with at least one involved industry or government representative for each project. At the conclusion of each case study, the project is analyzed with the original version of the P3 Equilibrium Framework. The next chapter builds upon this exercise to improve the original Framework in order to more accurately evaluate the projects. Final analysis of each project is held back until Chapter 6 when the lens is fully improved and calibrated to the maximum extent possible.

5.1 California's State Route 91 Express Lanes

5.1.1 Introduction

In the 1980's, the California Department of Transportation (Caltrans) faced the same budgetary constraints affecting transportation agencies nationwide. The California legislature passed Assembly Bill 680 (AB 680) in 1989, allowing the California Department of Transportation (Caltrans) and regional transportation agencies to seek private financing of transportation projects. The Bill sought to use private funds to supplement the State's insufficient transportation budget. Overall, the idea was that the use of public-private partnerships could aid in delivering a better level of service to the residents and businesses of California, without impacting their taxes or the State budget. Ten private consortiums were pre-qualified based on their experience and qualifications. Refer to Chapter 4 for more information on AB 680 legislation and the pre-qualification and conceptual proposal process.

Caltrans received eight separate proposals from the pre-qualified developers. One of the four proposals selected by Caltrans was submitted by the California Private Transportation Company (CPTC), a company formed by the CRSS group. CPTC proposed the addition of toll lanes in the median of existing State Route 91 (SR 91). CPTC is a limited partnership between

Peter Kiewit Sons' Inc., Granite Construction, and Cofiroute Corporation. Kiewit is a well known firm with business in construction, mining, telecommunication, energy, and infrastructure. It has been around since 1884 and served as the major investor in CPTC and provided management and financial services to the project. Granite Construction is a large transportation contractor in the US, and has been in business since 1922. Cofiroute Corporation is a US-based subsidiary of the French toll road operator, Compagnie Financiere et Industrielle des Autoroutes (Cofiroute). The company focuses on private toll road development and in this partnership, Cofiroute provides services in operations, toll collection, and traffic management.

5.1.2 Background of State Route 91

California State Route 91 opened to traffic in 1968 as an 8 lane east-west highway that connects Riverside County to State Route 110 in Los Angeles County, crossing Orange County in the process. It represents a critical link between the inland and coastal regions, traversing through the Santa Ana Canyon (Please see map shown in Figure 5:1). Throughout the course of its service, SR 91 has witnessed a tremendous increase in traffic. Between 1980 and 1990, volume more than doubled, from 91,000 vehicles per day to 188,000 vehicles per day. At the time of their proposal, CPTC estimated traffic to be approximately 255,000 vehicles per day in 1995 and 330,000 to 400,000 vehicles per day by 2010 (Miller 2002). Prior to the CPTC proposal arising from AB 680, Riverside and Orange counties had already begun to address the urgent need for expanding the capacity of SR 91. The geography and extremely high land costs of the area made the addition of another route infeasible. In 1988, Caltrans and the two counties signed an agreement to jointly finance the planning of high occupancy vehicle lanes (HOV lanes) in the median of SR 91. Plans stalled, however, when Orange County was unable to fund the study. A request was made to include the project in the next State Transportation Investment Plan so that state funding could be used. The request was approved by the California Transportation Commission, but planning was not scheduled to start until 1996 (Miller 2002).

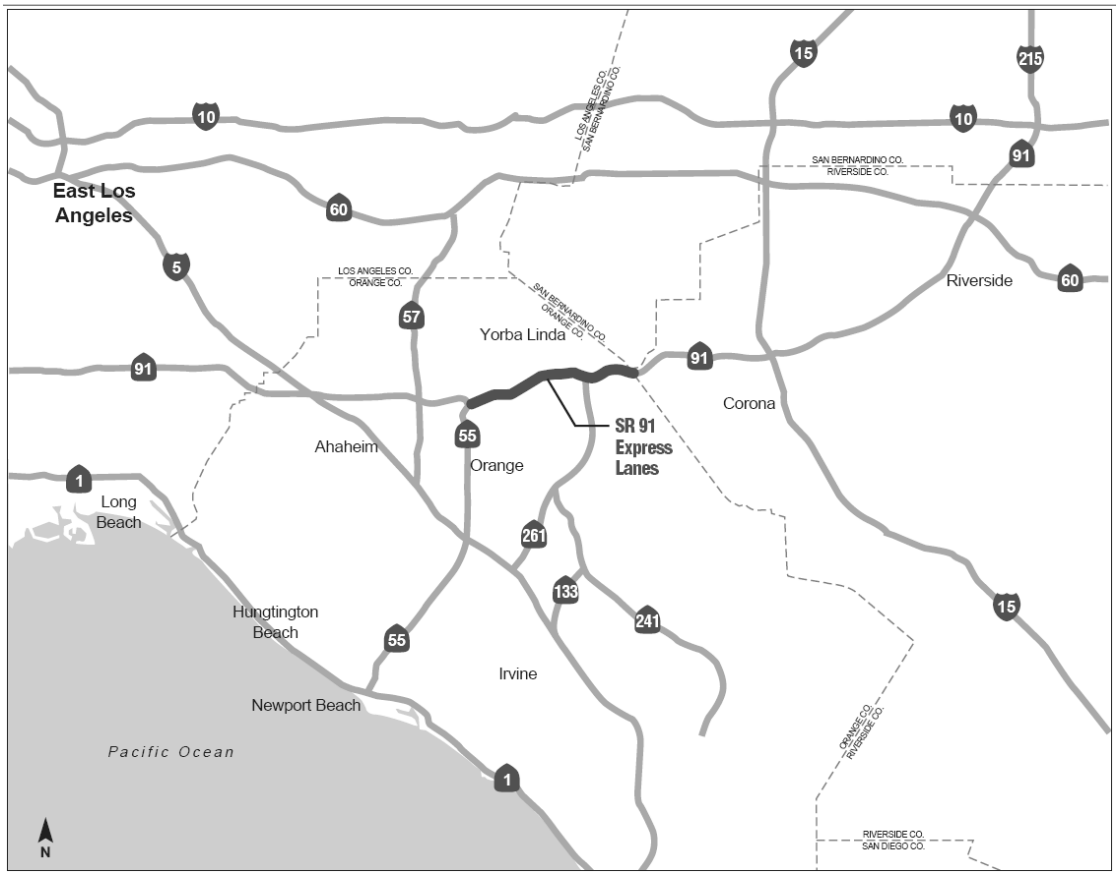

Figure 5:1 Map of Area Surrounding SR 91 Express Lanes
Source: FHWA "A Guide to Hot Lane Development" 2003

5.1.3 Proposed State Route 91 Toll Expressway: The Agreement

The scope of CPTC's proposal consisted of four lanes in the median of a 10 mile section of the existing SR 91 (shaded in dark gray, above). The facility would provide free access to high occupancy vehicles (HOV), as a means of advancing the State's environmental objectives, while charging a toll to vehicles that do not have enough passengers to meet the HOV requirements. The proposal stated that the project cost would come to approximately $126 million, and could be completed within three years.

Franchise Terms

The franchise agreement granted CPTC the rights for the design, development, acquisition, construction, installation, and operation of the project for 35 years. It also stated that no similar franchise is to be granted to any other party within a pre-defined "Absolute Protection Zone". This area is defined as being bounded by two imaginary lines a distance of 1.5 miles on

either side of existing SR 91 from Interstate 15 in Riverside County westward to the boundary line between Los Angeles County and Orange County. The "Absolute Protection Zone" clause effectively prevents any public or private transportation projects in the area. The only exceptions to this are rail passenger systems, improvements for safety reasons, other HOV's, roads not open to the public, or those deemed to not present economic competition. Furthermore, Caltrans must notify CPTC within 30 days of discovering plans to develop, design, or construct a transportation facility within a larger "Notification Zone".

The agreement may be terminated due to several different circumstances, resulting from actions by either party. The first is the day the 35 year franchise period ends. However, the agreement may be terminated: (i) at CPTC's discretion prior to construction, (ii) after the payment of all debt financing, if CPTC determines continued operation is no longer feasible for economic or other reasons, (iii) if construction of the facility has not commenced by December 31, 1994, (iv) Caltrans gives the Preliminary Termination Notice that CPTC has abandoned the project, (v) after Final Default notice, Caltrans elects to terminate the Agreement, (vi) if CPTC's interests in the project are acquired by Caltrans. Furthermore, Caltrans agrees that if at the end of the term, CPTC has not fully recovered the Reasonable Return on Investment allowed, it will attempt to push through legislation to extend the franchise term (Amended and Restated Development Franchise Agreement: State Route 91 Median Improvements 1993).

CPTC is responsible for submitting a variety of reports to Caltrans throughout the course of the agreement. The first major report is the Capital Costs at Completion, due within 120 days after the acceptance date of the facility. Many of the financial calculations performed will be based on the Capital Costs of the facility. Each fiscal year CPTC must submit to Caltrans their financial statements, including: (i) Total Revenues and Gross Toll Revenues, (ii) Operating Costs, (iii) Capital Costs, (iv) Available Cash Flow, (v) Base Return Rate based on Base NPV and Total NPV, (vi) Annual Peak Hour Vehicle Occupant Volume, (vii) Amount of Variable Franchise Fee to be paid to Caltrans, if applicable, (viii) Amount of Excess Franchise Fee, if applicable, and (ix) the size and changes in Reserve Account. All statements must be in accordance with Generally Accepted Accounting Principles (GAAP) and audited by an independent auditor who must submit reports to Caltrans on CPTC's system of accounting and compliance with the terms in the contract. Caltrans also has the right to conduct their own audit,

verifying these reports (Amended and Restated Development Franchise Agreement: State Route 91 Median Improvements 1993).

Project Implementation

The franchise agreement states that Caltrans must review all of CPTC's designs and plans before commencement of construction work, and that all designs must meet State standards. CPTC's rights and responsibilities are based on the Design-Build standards used by Caltrans and set forth in Exhibit C of the Agreement. The same review applies for the safety of operating practices, including the traffic operating plan. CPTC is responsible for obtaining the necessary environmental clearances and final approval of the facility is contingent upon a California state environmental review. Furthermore, it is CPTC's duty to negotiate and secure private parcels, if land acquisition is necessary. The cost of land acquisition is to be incorporated as part of the capital costs. The agreement also outlines the use of California Highway Patrol to be retained at a mutually agreed price for toll enforcement and oversight of general traffic laws. Furthermore, CPTC can acquire Caltrans' services for design, environmental, permitting, and any other necessary tasks, and reimburse Caltrans for the costs.

Operations and Maintenance

CPTC has the right and responsibility for toll collection, traffic management, and operations. Caltrans has the responsibility of approving the plans and overseeing all of these aspects of the facility. CPTC can establish, levy, and collect tolls, fees, and charges for use. Furthermore the private operator is free to adjust tolls and enter into arrangements with important users. Anyone collecting tolls must be in uniform, although CPTC is authorized to use AVI toll collection (defined in the Agreement as "a system for automatically identifying vehicles as they pass through a lane of roadway"). The contract also states that the Express Lanes shall attempt to achieve efficiencies through shared services with the State (such as maintenance and use of California Highway Patrol), if possible. All maintenance plans must be at or above Caltrans standards, and submitted and approved prior to operations. Caltrans furnishes all maintenance manuals, directives, and memo's applicable to this subject. If any maintenance activities will require an interruption of service, Caltrans must be notified 30 days prior.

Financials

The base franchise fee paid to Caltrans by CPTC is $10 per month payable annually, and commencing on January 1, 1991. The base rate of return on the project for CPTC is 17%, subject to adjustments provided in the contract. At the end of each fiscal year, the CPTC shall derive the Base NPV by subtracting the Capital Costs at Completion from the sum of the present values of each prior fiscal year's available cash flow retained by CPTC as base return, discounted at the base return rate. The agreement states 50% of the available cash flow can be retained by CPTC as incentive return and the remaining 50% is to be paid to Caltrans as variable franchise fee whenever Base NPV > 0. These rules allow for CPTC to achieve its desired rate of return (17%), while splitting any excess revenue with Caltrans. The adjustments mentioned previously provide for a 0.2% increase in Base Return Rate for the fiscal year for each 1% increase in Annual Peak Hour Vehicle Occupant Volume, with a maximum return rate of 23%. CPTC is also allowed to maintain an account for a working capital reserve fund, not to exceed 180 days' projected Operating Costs(Amended and Restated Development Franchise Agreement: State Route 91 Median Improvements 1993). The franchise agreement also provides for a maintenance reserve fund, capital improvements reserve fund, and debt service reserve fund, all with different maximum amounts allowed. CPTC must furthermore provide Caltrans with reports outlining revenue flows and the calculations used to variable and excess franchise fees, as well as the base return and incentive return. As with all AB 680 projects, CPTC is free to set toll rates as it sees fit; only the returns are subject to the limits stated above.

CPTC proposed to fund the project by raising the $126 million through a few different sources. Equity funded by the consortium would represent $19 million. Through 14.5 year loans from Citicorp, Banque National de Paris, and Societe Generale, CPTC planned to raise $65 million. Institutional Tranche purchased by Peter Kiewit Sons would total $35 million, and lastly, a three year loan from OCTA at 9% interest raised the remaining $7 million (Miller 2002). The actual cost of the project totaled approximately $134 million.

5.1.4 The Early Years of the State Route 91 Express Lanes

The SR 91 Express Lanes represent a landmark in American toll roads. The franchise was approved in 1990, and the Franchise Agreement was effective as of July 16, 1993. After 29 months of construction, the facility opened on December 27, 1995 (Boarnet et. al. 2004). The

roadway is the first private toll road opened in the United States since the 1940's. It is America's first toll road to employ variable congestion pricing, taking advantage of the concept of supply and demand to mitigate congestion. The prices are highest during rush hour in the morning and evening, and drop down during off-peak hours. The facility is also the world's first fully automated toll road; it utilizes electronic transponders to collect tolls. In order to use the Express Lanes, one must contact SR 91 Express Lanes (http://www.91expresslanes.com) to sign up for a transponder and account. The user then enters his or her credit card information and is sent a transponder to keep in the car. Each time the user enters the SR 91 Express Lanes, the appropriate toll amount is automatically drawn from this account. Initially, high occupancy vehicles carrying three or more people (HOV-3+) could use the Express Lanes free of charge. Later, these vehicles were charged 50% of the fee during peak hours.

In the first few years of operation, the SR 91 Express Lanes project was widely supported by scholars, industry, and the public. Opinion polls showed that most drivers supported the variable pricing scheme. Traffic studies showed a dramatic reduction in peak period travel times. In the six months after opening, the typical peak hour afternoon trip was reduced from 30-40 minutes to less than 10 minutes. A study funded by Caltrans and the U.S. Department of Transportation showed a 40% increase in HOV-3+ (Evaluating the Impacts of the SR 91 Express Lanes 1998). By the end of the first year and a half, about 13% of the total SR 91 traffic was using the Express Lanes. Total daily traffic on SR 91 (Free and Express Lanes) increased 14% due to the additional capacity of the new lanes. Accident rates decreased significantly after the Express Lanes opened, most likely due to reduced congestion (Evaluating the Impacts of the SR 91 Express Lanes 1998).

In the late 1990's, the non-compete clause that forbade public agencies from increasing highway capacity within a one-and-a-half-mile-wide corridor on either side of the toll lanes began to come under criticism (Boarnet et al 2004). At the time of the contract, financiers thought these clauses were necessary to ensure the revenue flow. This aspect of the contract, negotiated by Caltrans, prevented the improvement and expansion of competing free roads, most notably 30 miles of the Riverside Expressway and the expansion of the regular SR 91 lanes. The "Absolute Protection Zone" prohibited improvement to local roadways. In 1999, Caltrans moved to add more lanes in some locations on SR 91 to improve on- and off-ramp traffic flow. CPTC and Caltrans disagreed on the perceived need for these additions, and the impact on the

Express Lanes. Caltrans attempted to justify the need for the improvements by claiming they were necessary to improve safety, which, by contract, would allow the improvements to be made. The safety analysis presented by Caltrans was disputed (FHWA HOT Lanes Guide 2003). Eventually, CPTC sued to stop the plans, and Caltrans withdrew them. Furthermore, Riverside County later sued CPTC as an attempted to nullify the contract to operate the Express Lanes, stating that the agreement was an unconstitutional gift of public assets (FHWA HOT Lanes Guide 2003). These legal battles with government agencies, in conjunction with rising toll prices, quickly turned public opinion against CPTC, as it became clear to commuters that congested general purpose lanes are what drove profitability in the Express Lanes (Avila Interview).

5.1.5 The Current Status of State Route 91 Toll Expressway

Under a great deal of public and political pressure, the Orange County Transportation Authority purchased the 91 Express Lanes Franchise from CPTC for $207.5 million, as authorized by Assembly Bill 1010 Chapter 688 (September 2002). This included removing Article 3.2 of the Franchise Agreement, which contained the non-compete clause, in order to obtain the ability to improve the State Route 91 general purpose lanes and surrounding roads as it saw fit. The purchase came in the form of $72.5 million in cash (borrowed from other funds and to be re-paid) and OCTA assuming responsibility for the assets and liabilities of the franchise. As part of the agreement, OCTA assumed $135 million of taxable 7.63% Senior Secured Bonds that mature on August 15, 2028. To refinance these bonds, OCTA issued $195 million in Toll Road Revenue Refunding Bonds in November of 2003 (Avila Interview). OCTA continues to contract the operation of the road to Cofiroute, which has been the operator since the inception of the Express Lanes. Effective January 6, 2006, the 91 Express Lanes Fund entered into a second operating agreement with Cofiroute, effective through 2011, that pays Cofiroute $6,160,170 per year (plus inflation adjustments) to continue operating the facility. Furthermore, OCTA employs Caltrans for some general maintenance and cleanup of the facility, and several other private companies for day to day operations (Avila Interview). In effect, the road is still operated by the private sector, however it is now with oversight from a small staff within OCTA.

When the Orange County Transportation Authority took over in 2003, it negated the non-compete clause, and converted the expressway into high occupancy vehicle lanes and tolled only

those vehicles with less than three people. The lanes are also free to those driving hybrid vehicles, or those powered by electric or natural gas. The exception to this fee structure is during evening rush hour (4pm-6pm), when HOV and environmentally friendly vehicles are charged 50% of the normal toll. As of Jan 1, 2008, the peak toll (charged from 4pm-5pm in the eastbound lanes on Friday) is $10.00. At off-peak hours, the toll is as low as $1.20. The toll revenue for the 2006 fiscal year totaled over $37.5 million, which raised $768,000 in gross revenue. In August of 2007, approximately 28,500 cars per week utilized the Express Lanes. Since opening in 1995, the SR 91 Express Lanes have logged over 64 million vehicle trips (www.91expresslanes.com).

OCTA's Public Finance Manager, Kirk Avila, states that the Express Lanes are very beneficial for Orange County, and will continue to be throughout the Franchise Agreement. OCTA will turn the road over to Caltrans when the debt is paid off, or in 2030, whichever comes first. Due to the profitability of the road, OCTA will most likely not retire the debt early, instead placing the excess revenues toward SR 91 Corridor Improvements. Avila references revenue forecasts for the late 2020's that predict over $100 million in annual toll revenue, leading to excess revenue of approximately $50 million per year. Ironically, no major improvements have been made to the surrounding area since OCTA purchased the Franchise Agreement from CPTC and negated the no-compete clause. Some small projects have been completed, such as re-striping done in the City of Corona (Riverside County) and a $9 million additional westbound free lane in Orange County. The addition of another eastbound lane on the free section of SR 91 is scheduled for 2011 (Avila Interview). Avila cites the same budgetary constraints that spawned AB 680 and the Express Lanes remain, preventing improvements to the area. However, the extension of sales tax increases earmarked for transportation in both Orange and Riverside Counties, as well as the excess revenue being raised by OCTA through operation of the Express Lanes, have placed major improvements on the horizon in the years to come.

5.1.6 Analysis with the P3 Equilibrium Framework

The following chart utilizes the Project Appraisal Template to analyze the Original SR 91 Express Lanes Franchise Agreement:

SR 91: Evaluation with Project Appraisal Framework					
Element	**Issue**		**Impact**	**SR 91**	**Explanation**
Market Conditions	Established demand	Yes	--	--	There was already established demand on the congested SR 91.
		No	↘		
	Competing facilities	Yes	↖	↖	There are other roads in the area, which is well developed, but geography prevents another very similar and efficient route.
		No	→		
Socio-Environmental Conditions	Project type	Greenfield	--	←	The project is new lanes inside the existing SR 91, so it is brownfield in that respect.
		Brownfield	←		
	Project scale	Large	↗	--	The project cost is about $136 million, and it is 4 lanes for about 10 miles. Small compared to $3.8 Billion for Indiana Turnpike.
		Moderate	→		
		Small	--		
	Demographic impact	Diverse	--	--	The fee affects those who commute on SR 91, but the free lanes prevent any impact on a specific group
		Distinct	→		
	User Fees	Affordable	↖	--	The costs are affordable for some/most, but there is a management plan and the variable pricing reflects the value of the service.
		Reflect "cost" of service	--		
		Long-term management plan	--		
Acquisition & Procurement	Financial & technical benchmark	Yes	--	↗	There was no benchmarking done by Caltrans.
		No	↗		
	Competition	No	↗	↗ ↗	This proposal was the only one of its kind, so there were no projects to compare it to. It did compete against other project proposals, but this isnt true price or technical competition.
		Comparable scope	--		
		Price and other factors	--		
		Factors other than price	↗		
	Selection criteria & process	Transparent	--	No	Caltrans gave very loose guidelines and criteria by which to measure completely different projects, very discretionary
		Objective	--		

Figure 5:2 SR 91 Analysis with Preliminary P3 Equilibrium Framework (Part 1)

SR 91: Evaluation with Project Appraisal Framework					
Element	**Issue**		**Impact**	**SR 91**	**Explanation**
Concession Management	No-Compete Provisions	Allowed and absolute	↘	↘	The no-compete provision was the downfall of this project from a PPP perspective. Other projects and later legislation learned from this mistake.
		Allowed but with exclusions	--		
	Performance measurement	Clear & objective	--	↙	Operations and maintenance are to be overseen by Caltrans. Must be up to Caltrans standards, which will be supplied. Form and level of oversight not specific.
		Absent	↗		
		Vague	↙		
	Conditions for renegotiation	Clear & objective	--	↙	Article 5 states that the contract states parties should negotiate changes in good faith. Also Article 15 of Agreement outlines the arbitration process if there is a disagreement.
		Absent	↗		
		Vague	↙		
	Termination provisions	Clear & objective	--	—	Well-defined and fair termination provisions. Article 3 Section 5 of Agreement
		Absent	↗		
		Vague	↙		
	Facility return provisions	Clear & objective	--	↗	Return provisions not mentioned in the Agreement.
		Absent	↗		
		Vague	↙		
Project Performance	Quality & Innovation	Readily apparent	Positive	Positive	Quality must be up to Caltrans standards. Innovative AVI tolling system and variable priced tolls.
		Difficult to judge	Negative		
	Price	Readily apparent	Positive	Negative	No price benchmark formed by Caltrans.
		Difficult to judge	Negative		
	Service availability	Readily apparent	Positive	Positive	Congestion relief obtained before traditional funding would have allowed. AVI technology performs well, if maintenance and operations goes well, road will be available. Easy to judge.
		Difficult to judge	Negative		
Legend	- No Movement		→ Toward Industry/Market		← Toward Social/State Interests
	↗ Toward Industry Interests		↘ Toward Market Interests		Positive - Has a Positive impact on P3 performance
	↙ Toward State Interests		↖ Toward Social Interests		Negative - Has a Negative impact on P3 performance

Figure 5:3 SR 91 Analysis with Preliminary P3 Equilibrium Framework (Part 2)

Using the directional adjustments from the Project Appraisal Template, Figure 5:4 displays where the SR 91 Express Lanes project plots on the Equilibrium Framework:

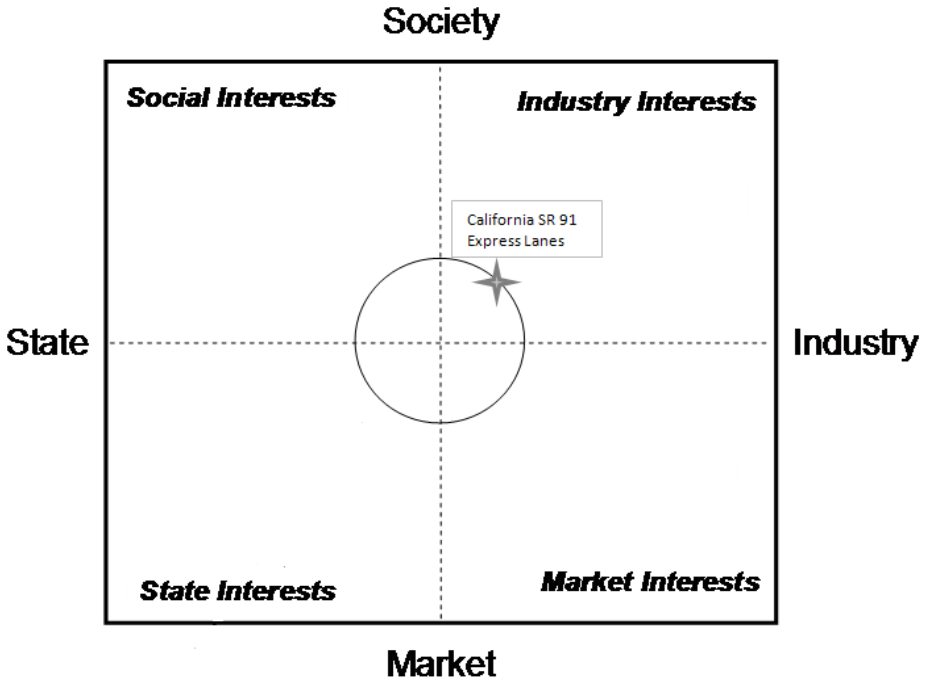

Figure 5:4 SR 91 Express Lanes Plotted on Equilibrium Framework

5.1.6 Conclusion

Plotting the project on the equilibrium framework shows the SR 91 Express Lanes positioned slightly outside the shaded region (which signifies a project that is poised for success) based on the framework developed. The innovative AVI toll collection and high service availability are qualities of a successful project, while the lack of price performance is a negative factor. Several key factors push it outside of the desired area in the center of the quadrant. First and foremost, the no-compete clause moved the project to the right. The lack of facility return provisions moved the project further towards the Industry Interests quadrant. Furthermore, the omission of a financial or technical benchmark by Caltrans and lack of competition by similar proposals, push the project further into the Industry Interests quadrant. This positioning implies that the agreement and events surrounding the project did not adequately protect the interests of the state, therefore skewing the project in favor of Industry. This is indeed how the project played out, as the state (which also includes local authorities, such as OCTA) was eventually forced to buy out the lease agreement in order to regain the necessary control of the toll road and surrounding transportation network.

The project itself is a success, as the Express Lanes increased capacity and safety, while reducing commute times, and still provided a free alternative. However, the SR 91 Express Lanes represent a failure of the AB 680 legislation, as Caltrans officials entered into an agreement that was detrimental to the overall transportation goals of the state. The no-compete clause forced the eventual re-purchase of the road from the private concessionaire, for a price much higher than the construction cost. Therefore, Caltrans or the Orange County Transportation Authority could have built the road for approximately $70 million less than it paid, and also benefited more substantially during the eight years when the CPTC was collecting a majority of the profits. However, the Express Lanes represent a fairly well balanced and potentially successful project, especially considering it was a first generation public-private partnership, paving the way for future P3's. Without the strict no-compete clause, the Express Lanes would most likely still be operated by CPTC and viewed as a model for similar agreements.

5.2 Dulles Greenway Case Study

5.2.1 Introduction

In the 80's the newly elected Governor of Virginia, Gerald L. Baliles, announced that transportation would be a top priority for the state, and quickly organized a committee called the Commission of Transportation for the 21st Century (COT 21) to develop a broad financing strategy for Virginia's transportation needs. Along with tax increases, lawmakers passed the Virginia Highway Corporation Act of 1988, created specifically for the development of the Dulles Toll Road Extension. Refer to Chapter 4 for detailed information on the Virginia Highway Corporation Act and the procedures contained therein.

5.2.2 Background of the Dulles Toll Road and Dulles Toll Road Extension

The Dulles Airport, opened in 1962, serves the greater Washington, D.C. area from its location approximately 25 miles northwest of downtown. In the following years, Fairfax County grew rapidly as residential and commercial development spread outward from Washington towards the airport. The Virginia Department of Transportation opened the original Dulles Toll Road in the fall of 1984, in response to the development pressures in Fairfax County. It serves as a 15-mile link, connecting the airport with the I-495 beltway that circles Washington D.C., and I-66, the main East-West highway through the city. The Dulles Toll Road was deliberately designed to serve airport traffic only; no interchanges were built between I-495/I-66 and the airport, so that local traffic did not congest the road. The federal government did have the foresight, however to purchase additional right of way wide enough to allow a second expressway to carry local traffic if the demand materialized, which it soon did. Construction costs totaled $57 million, which were financed by revenue bonds backed by the state. Traffic soon exceeded forecasts, and the 7 cents per mile toll began to cover the debt, operating costs, and generate a profit for VDOT. Early in the development of the Dulles Toll Road, there was no expectation of extending it further Northwest towards Leesburg, as that area of Loudoun County was largely undeveloped. However, the early success of the road, combined with the westward spread of development, soon began to generate interest in the possibility. Loudoun County officials supported the idea because of the potential jobs, income, and property value appreciation that come with easier access to Washington D.C. At the time, the main roads were

routes 50 and 7 in the east-west direction, and routes 28 and 15 served north-south travelers. The large area in the middle of these routes was undeveloped and served by much smaller roads (Miller 2002). Below is a map of the area, including the eventual location of the Dulles Greenway (www.Macquarie.com).

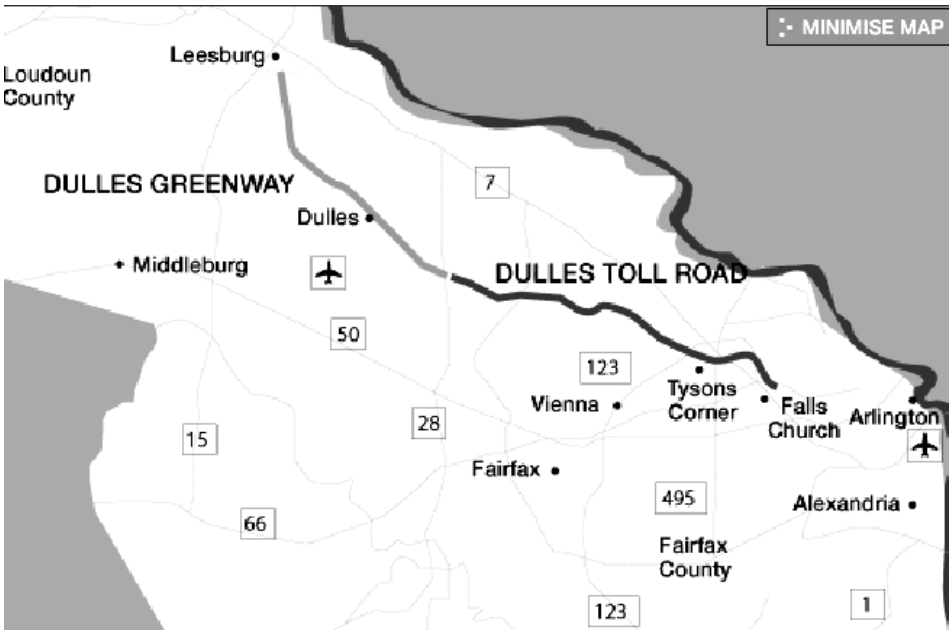

Figure 5:5 Map of Area Surrounding the Dulles Toll Road and Greenway
Source: Macquarie Website (http://www.macquarie.com.au/au/mig/asset_portfolio/us/dullesgreenway.htm)

As VDOT and Loudoun County mulled the idea of an extension, the private sector also took interest. John Miller of the Municipal Development Corporation (MDC) and Bill Allen of Parsons Brinckerhoff identified the Dulles Toll Road Extension (DTRE, later named the Dulles Greenway) as a possibility for private development. The Municipal Development Corporation was a small company that worked on developing private cogeneration plants in the early 1980's. Parsons Brinckerhoff had worked on the designs for the original Dulles Toll Road. Land acquisition was thought to be easier than usual, as there were less than 20 landowners along the 14 mile route, several of which were large developers who would benefit from such a project. In April of 1987, Miller met with Steve Pearson of Hazel & Thomas, to begin drafting legislation that would enable a private toll road in Virginia. Miller and Pearson also proposed the idea to COT 21, who were neutral on the project, but included a recommendation to explore the possibility in their final report. With the support of Senator Waddell, state transportation

officials, and Loudoun County representatives, the bill was drafted in time for the 1988 legislative session (Pethtel Interview).

The legislation outlined a four-step process for licensing a private highway. The first step was that the Commonwealth Transportation Board (CTB) must approve the construction cost, location, and design of the road. The second step required local jurisdictions must approve all interconnections with existing roads. With these two steps complete, the developer must apply to the State Corporation Commission (SCC) for a certificate of authority. The fourth and final step in the process involved entering into a comprehensive agreement providing for VDOT review of specifications, inspection of construction, and oversight of maintenance (Highway Corporation Act of 1998).

5.2.3 The Evolution of the Dulles Greenway Proposal

As MDC was working to advance legislation and develop a proposal, VDOT had begun preliminary planning for a publicly owned extension of the Dulles Toll Road, also to be financed with toll revenue. The excess tolls earned on the existing road would be used to support the debt service in the early years of the extension, which together would be operated as one facility by VDOT. The environmental impact statement had been produced, and a Record of Decision in place for proceeding with the development of the project. This is notable because such environmental permitting is difficult to obtain, costly, and time consuming. The private developer purchased the environmental plans from VDOT for $3 million, payable at the end of the franchise term (Pethtel Interview).

In 1988, as VDOT was preparing its plans, MDC encountered serious financial trouble, stemming from a number of its other projects. That summer MDC backed out of the project, and John Miller left for another position. However, ex-MDC director John Reilly, with the addition of Ralph Stanley, who had previously been the Administrator of the Urban Mass Transportation Administration, formed the Toll Road Corporation of Virginia (TRCV) to pursue the Dulles Toll Road Extension Project. An initial stock offering of TRCV's parent holding company brought in over $3.5 million to develop the proposal ("Mismanagement has MDC Teetering on the Brink" 1988). TRCV decided to locate in downtown Leesburg, in Loudoun County, to keep in touch with local politics and remain on the public radar. The new corporation quickly put together a high caliber team to develop the project. Parsons Brinckerhoff would perform the initial

highway design and environmental studies, Vollmer Associates would prepare the traffic and toll revenue projects, while Kiewit Eastern would be the construction contractor. Goldman Sachs was on board to prepare the financing plans, while Hazel & Thomas continued to serve as legal counsel and political advisors.

In March of 1989, TRCV submitted an application to CTB for a 14 mile road with two lanes in each direction and five interchanges, with the potential for four more to be added later. Construction would begin later in the year, and the $118 million facility would open in December of 1991. TRCV assumed that 100% of the land would be donated, and long term financing of $146 million would be used to pay project development costs and provide sufficient reserves to cushion the deficits expected in the early years of the road. The main debate before the CTB was over the detailed design and alignment of the road (which was different from VDOT's alignment) and the relative cost and timeliness of the public and private alternatives. The design issues raised by Loudoun County stemmed mainly from their preference for full cloverleaf interchanges, rather than the diamonds presented by TRCV.

At the time, the Virginia Highway Corporation Act was interpreted to include that a demonstration that the private road is cheaper and faster than the public alternative was necessary. Therefore, VDOT continued working on a plan for the extension, which was presented in public hearings. Despite VDOT possibly having a better alternative, TRCV managed to win the favor of the public in the hearings that followed. The comparison on the following page was available as part of a 19-page informational booklet that VDOT produced and distributed at the public hearings (VDOT Public Hearing Booklet 1989).

Toll Road Corporation of Virginia managed to depict VDOT as a disgruntled loser in the project, and played upon the feelings of many area residents that VDOT paid little attention to them in the past, and was untrustworthy. Furthermore, the public wanted the road built quickly, and a vast majority of those who spoke at the public hearings were in favor of TRCV (Pethtel interview). On July 20th of 1989, the Commonwealth Transportation Board approved TRCV's application, contingent on a number of design changes and on TRCV reaching an agreement with VDOT governing oversight of specifications, construction, and maintenance. The design changes included compromises with Loudoun County on the interchange design. Some interchanges would be switched to a more expensive cloverleaf, and others remained diamond.

VDOT's Comparison of Public and Private DTRE Projects

	Public	Private	
Project Costs (millions)			
Construction	$143.3	$118.4	
Right of way **Assuming 50% donated	$38.4**	$0*	*Assuming 100% donated
Development, Administration	$3.0	$9.2	
Total	$184.7	$127.6	
Schedule			
Begin Construction	May 1991	Early 1990	
Open	April 1993	Jan-Apr 1992	
Project Financing (millions)			
Tax-exempt bonds (7.5%, 30 yrs)	$188.4	$0	
Surplus of existing toll road	$51.6	$0	
Equity	$0	$35.6	
Senior debt (11%, 15 yrs)	$0	$40.0	
Subordinate debt (15%, 30 yrs plus 2% of operating income after 5 years)	$0	$70.0	
Total	$240.0	$145.6	
Tolls	$1.50	$1.50***	***rising to $3.25 by 2010
Summary of Costs to State Residents			
Operations, Maint. Reserves	$399.4	$732.1	
Debt Service	$472.1	$980.9	
Taxes not paid to Virginia	$105.0	($105.0)	
Taxes to federal government	$0	$524.5	
Travel time lost from late opening	$17.0	($17.0)	
Surpluses available to other VA proj.	$704.7	$0	
Dividends to investors	$0	$927.6	
Total (undiscounted)	**$1,698.2**	**$3,043.1**	
Present Value at 10% (millions)	**$232.4**	**$359.4**	

Figure 5:6 VDOT's Comparison of Public and Private DTRE Project
Source: Adapted from VDOT Public Hearing Booklet 1989

In September 1989 TRCV arranged for a much-needed infusion of capital. The American Security Corporation provided a $2.5 million loan to continue development and begin working on the State Corporation Commission (SCC) application. This application was particularly unique for the SCC, as it was the first toll road ever handled by the regulatory agency. The project raised a number of new issues for the utility division staff, who were accustomed to dealing with electric, telephone, and gas companies. Negotiations with TRCV and the SCC dictated that TRCV switch to a sale-leaseback scheme, so that TRCV would build the toll road, then sell it, and lease it back from another company that had other sources of income and could take better advantage of tax shields. Another major issue was the negative cash flows in the early years. TRCV wanted assurance that future SCC staff would remember these negative cash flows 20 years later, and ensure recovery. The solution involved a reinvested earnings account that allowed unpaid early year returns to accumulate for repayment at a later date. The two groups also settled on TRCV requesting an average lifetime return on equity of 21 percent per year (Application of TRIP to CTB 1989).

In April of 1990 the SCC released a two-part report which detailed the findings of the staff with regards to TRCV's proposal. The first part dealt with the financials of the proposal, was generally favorable, and concluded that a 21 percent return on equity was "quite reasonable". Part two of the report was highly critical of the deal, and suggested that a public road would be much cheaper. It also contained a Public vs. Private cost analysis, similar to VDOTs. The day after the report was released, the Commission ordered VDOT and TRCV to supply additional information by May 1st. VDOT soon put an end to the comparisons when, on April 30th, VDOT sent a letter to the SCC stating it had no plans to build an extension with public funds, and furthermore that it hoped to sign a comprehensive agreement with TRCV soon. The following page shows the comparison made by the SCC in the staff report. It has been recreated, but all values remain the same (SCC Staff Report 1990).

SCC's Comparison of Public and Private DTRE Projects

	Public	Private	
Project Costs Through Construction (millions)			
Direct Construction			
Construction	$154.3	$145.4	
Right of way **Assuming 50% donated	$49.5**	$0.0*	*Assuming 100% donated
Engineering and Design	$7.0	$6.0	
VDOT Charges to TRCV	$0.0	$1.8	
Subtotal	$210.8	$153.2	
Other			
Development/Administration	$2.5	$13.6	
Financing fees, const. int.	$22.4	$30.4	
Taxes during construction	$0.0	$1.6	
Subtotal	$24.9	$45.6	
Grand Total	**$235.7**	**$198.8**	
Financing (millions)			
Revenue bonds (7.5%, 30 yrs)	$218.0	$0.0	
Dulles Toll Road Surplus	$22.3	$0.0	
Sale to Owner (for leaseback)	$0.0	$198.8	
Equity	$0.0	$30.0	
Tolls	$1.00 constant	$1.50 initially	
Direct Costs of Service (40 years, undiscounted)			
Debt Service	$456.5	$916.0	
Operations, Maint. Reserves	$438.1	$640.0	
Federal and State Taxes	$105.0	$689.0	
Local Taxes	$0.0	$96.0	
Dividends to Stockholders	$0.0	$1,127.0	
Total (undiscounted)	**$894.6**	**$3,468.0**	

Figure 5:7 SCC Comparison of Public and Private DTRE Project
Source: Adapted from SCC Staff Report 1990

With VDOT out of the running, the SCC granted TRCV its certificate on July 6, 1990. However, its opinion in the final order was somewhat reluctant, citing that the direct cost of service of a public road would be about $1 billion, while a private road would cost over $3 billion, as shown in the analysis. Financial analysts argue that that the cost of the VDOT proposal ignored certain real costs, and the taxpayers are shouldering the risk, without the prospect of a 21% return on investment. Regardless of the actual comparison, TRCV now had permission to proceed with its toll road.

Before TRCV could secure financing, the company had to assemble all the right-of-way necessary from the 18 landowners along the future alignment of the Dulles Toll Road Extension, as well as obtain an environmental permit from the U. S. Army Corps of Engineers. Half of the landowners were already on-board with the TRCV proposal, donating their land at no cost. Other owners, however, held out for compensation. TRCV set up a fund into which the larger landowners could donate money to be used for the procurement of the stubborn owners. By 1991, all the necessary land was acquired, at a higher cost than the baseline assumption of $0. The proactive environmental approach taken by TRCV was that of “aggressive compliance”. Rather than waiting for environmental groups to object, the company went out in search of these groups and asked them how to best mitigate the environmental impacts of the future road. This included building two new acres of wetland for each one filled (rather than the 1.5 required) and consulting duck hunters regarding where to place the new wetlands. The environmental awareness of the road led to the eventual name, Dulles Greenway. In April of 1991 the Army Corps offered a preliminary decision to approve their environmental permit. With these issues resolved, full focus could be placed on securing financing for the road and preparing the final plans.

5.2.4 The Dulles Greenway Delivery

Continued difficulty in reaching agreements with public bodies and securing financing continued to slow down the project, now called the Dulles Greenway. Between 1990 and 1993, conceptual and environmental designs were submitted and approved, financing arranged, and a resolution by the SCC approved a construction cost of $293.8 million, with a construction schedule commencing before September 30, 1993 and finishing before April 1, 1996. Also during this time, the certificate of authority from the SCC was transferred to TRCV’s successor

company, Toll Road Investors Partnership II (TRIP II). TRIP II consisted of the Shenandoah Greenway Corporation, Autostrade International, and Brown & Root. The Bryant family (who owned land in the area) controlled Shenandoah, and contributed approximately $22 million to preconstruction. Autostrade is the American Subsidiary of a French company that operates many European toll roads. Brown & Root served as the constructor of the facility, and also contributed about $16 million in equity. The final design was a four lane highway with seven interchanges built initially, and two more planned when traffic volume increased. The fourteen mile stretch of road travels over 36 bridges. The facility incorporated state of the art toll collection technology so that drivers would not have to stop to pay tolls. The design included space for future lane expansion, and possible mass transit in the median strip (Miller 2002).

The actual construction of the Dulles Greenway was a tremendous success. The facility was delivered ahead of schedule, within budget, with high quality, and gained recognition for environmental friendliness. At the time, it was the largest wetlands mitigation project in Virginia (Fowler et al 1995). The schedule called for 30 months of construction, but finished 6 months ahead of schedule, to open in September of 1995. The initial fare was $1.75 for the last four months of 1995, with a scheduled raise to $2.00 in January of 1996.

TRIP II financed the Greenway with $40 million in equity, and $310 million in privately placed taxable debt. Ten institutional investors led by CIGNA Investments, Prudential Power Funding Associates, and John Hancock Mutual Life Insurance Company provided $258 million in long-term, fixed-rate notes due in 2022 and 2026. Barclay's, Nations Bank, and Deutsche Bank provided part of the construction funding and $40 million in revolving credit. The original agreement with the State was for a 42.5 year lease period, at the expiration of which the facility would be transferred at no charge to the Commonwealth of Virginia on April 2, 2036 (FHWA Case Study).

5.2.5 The Early Years of the Dulles Greenway

The success of construction and excitement of opening the long-awaited Dulles Greenway was quickly tempered by a lack of traffic in road's first months. Studies by Vollmer Associates, a nationally respected firm, had predicted traffic on the order of 30,000 to 40,000 vehicles per day. Unfortunately, ridership during the first few months of service was closer to

10,000 to 12,000 vehicles per day. Figure 5:8 shows the predicted volume and revenue, in two separate reports from Vollmer to the TRCV, in March of 1989 and April 1991.

Total Average Daily Traffic		Forecast Year	
Year	Toll	1989	1991
1992	$1.50	19,550	
1995	$1.75	33,992	44,780
2000	$2.25	63,809	77,610
2010	$3.25	86,850	124,360

Annual Toll Revenues ($millions)			
Year	Toll		
1992	$1.50	$8.8	
1995	$1.75	$17.1	$25.4
2000	$2.25	$40.8	$58.2
2010	$3.25	$79.3	$161.4

Figure 5:8 Vollmer Traffic and Revenue Forecasts in 1989 & 1991
Source: Vollmer Traffic Forecast 1989 and Vollmer Traffic Forecast 1991

These predictions go against common sense, in that one would think that the 1989 forecast, which has the road opening in 1992, would have higher traffic in 1995 and later, since the road would be more mature, and traffic volume would have more time to grow. However, the 1991 prediction forecasted traffic volume in 1995 to be over 30% higher than the 1989 forecast, without the added years of traffic growth as in the earlier forecast. These overly optimistic numbers led the Greenway to encounter financial difficulties very early in the concession. The public was well aware of the difficulties, as the Washington Post headlines read "Toll Drives Traffic Off Greenway (10/5/1995), "Toll Road Underused" (12/8/95), and "Drivers Put the Brake on Toll Road's Future" (12/26/95) (Tollroads Newsletter March 1996). With ridership well below the expected levels, TRIP II decided to cut the toll to $1.00 in January of 1996, rather than raise it to the planned $2.00. This move did attract more users, but did not increase revenues. Tolls increased to $1.15 in July of 1997 and the speed limit was raised from 55 to 65 miles per hour. Still, the owners began to default on their financing commitments.

As early as 1998, TRIP II had begun filing with the Virginia SCC regarding refinancing of Greenway debt. In 1999, it refinanced with bonds that replaced all other outstanding agreements. The $332 million in AAA bonds were insured by MBIA and included $35 million

in current pay interest only bonds and $297 million worth of zero coupon bonds, maturing in 2003 and 2005 with blended interest rate of approximately 7% (FWHA Case Study). That very same year, TRIP II announced that it would be adding a third east-bound lane. In November of 2001, the SCC approved plans to call certain outstanding bonds and to raise additional capital by issuing new bonds. The final order also approved a request to extend the concession from 2036 to 2056, in order to allow the additional bonds time to mature (Toll Road Investors Partnership II - Final Order, SCC Case No. PUF010017, Nov. 7, 2001). Completion of a third lane for 6 miles in both directions also occurred in 2001, increasing the capacity of the road. Autostrade, the operator of the road, reported average daily traffic to be 52,102 in 2001, a 10% increase over the previous year (though still below both of Vollmer's forecasts. The operator also reported over $23.04 million in toll revenue, a 21% increase over the year prior, and $4.16 million in operating expenses (Autostrade International of Virginia 2001 Annual Report). For the first time since opening, the Dulles Greenway began to meet expectations. With refinanced debt and ridership increasing, the toll road was now poised to begin making the profit originally expected by investors.

5.2.6 New Owners

In 2005, with ridership around 70,000 vehicles per day, Macquarie Infrastructure Group paid $617.5 million for the rights to the Dulles Greenway. Macquarie paid $533 million to acquire 87 percent of the Greenway from TRIP II, and Kellogg, Brown & Root was compensated in the amount of $84.5 million for the remaining 13 percent of the road. This marked Macquarie's third toll road purchase in the United States, having recently acquired the Chicago Skyway and Indiana Toll Road for $1.8 and $3.8 billion, respectively. Australian based Macquarie Infrastructure Group (MIG) owns the rights to eleven toll roads in seven countries (www.Macquarie.com).

The structure of the deal provides MIG access to the cash flows generated by the asset, substantial control through ownership of TRIP II, as well as debt and option covenants. Macquarie has the ability to move to direct ownership via exercise of the call options. Macquarie expects an internal rate of return of 12.6%, with a yield of 5% over the first five years, and 10% over the first ten years. Steve Allen, CEO of MIG, stated that the Greenway represented a solid investment because "it serves an affluent region experiencing strong

population and employment growth". Furthermore, he notes that although the road experienced difficulties in the early years, the lifetime (1996 to 2004) compound average growth rate is 17% for traffic and 26% for revenue (www.macquarie.com). However as of 2005, the Greenway had never been profitable and there were no returns to the original investors until MIG's purchase in 2005. As a result, the balance of the Reinvested Earnings Account at year-end 2005 was approximately $1.2 billion, which represents returns that have been authorized, but not available to investors (TRIP II Toll Application to SCC).

In July of 2006, TRIP II (now owned by Macquarie) filed for an increase in tolls, as well as an altered toll structure for commercial trucks that is based on the number of axles. After another lengthy decision process, the SCC approved the requested toll schedule in September of 2007. The new toll schedule is summarized in the table below. Three axle trucks will pay twice the two axle rate. Four to six axle vehicles will pay the three axle rate plus an amount equal to 50% of the two axle rate for each additional axle (www.macquarie.com).

Starting Date	Maximum 2-axle toll (off-peak)	Maximum congestion management toll (peak hours and direction)
January 1, 2009	$3.40	$4.08
July 1, 2010	$3.70	$4.44
January 1, 2012	$4.00	$4.80
Weekday peak traffic is defined as 6am to 9am eastbound and 4pm to 7pm westbound		

Figure 5:9 Current Toll Schedule for Dulles Greenway
Source: Macquarie Website (www.macquarie.com)

5.2.7 Analysis with the P3 Equilibrium Framework

The following chart utilizes the project appraisal framework to analyze the Original Dulles Greenway Comprehensive Agreement:

Dulles Greenway: Evaluation with Project Appraisal Framework					
Element	**Issue**		**Impact**	**Greenway**	**Explanation**
Market Conditions	Established demand	Yes	—	↘	The Greenway led to a largely undeveloped area, suffered from lack of ridership in the early years
		No	↘		
	Competing facilities	Yes	↖	↖	Routes 7, 15,28 and 50 provide free alternatives
		No	→		
Socio-Environmental Conditions	Project type	Greenfield	—	--	New road, greenfield project
		Brownfield	←		
	Project scale	Large	↗	→	4 lanes, 14 miles, 36 bridges, $300 million. Larger than SR 91, but much less than some concession agreements such as Indiana Toll Road ($3.8 billion)
		Moderate	→		
		Small	—		
	Demographic impact	Diverse	—	—	Since there are free alternatives, such as Route 7, the road has a diverse impact as area travelors can choose a free route
		Distinct	→		
	User Fees	Affordable	↖	↖	At $1.75, then lowered to $1.00, very affordable. Currently on the rise.
		Reflect 'cost' of service	—		
		Long-term management plan	—		
Acquisition & Procurement	Financial & technical benchmark	Yes	—	--	Yes, VDOT's proposal serves as a benchmark
		No	↗		
	Competition	No	↗	--	VDOT's proposal can be considered competition of comparable scope on price and other factors.
		Comparable scope	—		
		Price and other factors	—		
		Factors other than price	↗		
	Selection criteria & process	Transparent	—	No	No real selection process. After VDOT dropped out, TRCV was the only other proposer.
		Objective	—		

Figure 5:10 Dulles Greenway Analysis with Preliminary P3 Equilibrium Framework (Part 1)

Dulles Greenway: Evaluation with Project Appraisal Framework					
Element	**Issue**		**Impact**	**Greenway**	**Explanation**
Concession Management	No-Compete Provisions	Allowed and absolute	↘	--	No-compete clause is not present in Agreement. The public has improved competing roads throughout the life of the Greenway
		Allowed but with exclusions	--		
	Performance measurement	Clear & objective	--	--	Detailed construction and maintenance requirements. For the most part, they must be up to VDOT's "B" standards
		Absent	↗		
		Vague	↙		
	Conditions for renegotiation	Clear & objective	--	↙	Section 16 of contract states that "this Agreement will require good faith cooperations of the parties" and if TRIP II and VDOT disagree, VDOT can notify TRIP II and give a resonable period of time to correct action before exercise of its remedies
		Absent	↗		
		Vague	↙		
	Termination provisions	Clear & objective	--	↙	Vague. Section 16 states that "nothing in this Agreement or Act shall be construed to limit VDOT's exercise of power of eminent domain"
		Absent	↗		
		Vague	↙		
	Facility return provisions	Clear & objective	--	↗	Return provisions not mentioned in the Agreement.
		Absent	↗		
		Vague	↙		
Project Performance	Quality & Innovation	Readily apparent	Positive	Positive	Construction was of good quality and with a short timeline.
		Difficult to judge	Negative		
	Price	Readily apparent	Positive	Positive	Yes, due to VDOT's proposal, it was able to be judges, but price comparisons may have been unfavorable
		Difficult to judge	Negative		
	Service availability	Readily apparent	Positive	--	Marginal. Although facility was delivered years before traditional funding would allow. Delayed development slowed service availability.
		Difficult to judge	Negative		
Legend	- No Movement		→ Toward Industry/Market		← Toward Social/State Interests
	↗ Toward Industry Interests		↘ Toward Market Interests		Positive - Has a Positive impact on P3 performance
	↙ Toward State Interests		↖ Toward Social Interests		Negative - Has a Negative impact on P3 performance

Figure 5:11 Dulles Greenway Analysis with Preliminary P3 Equilibrium Framework (Part 2)

Using the directional adjustments from the Project Appraisal Template , Figure 5:12 displays where the Dulles Greenway project plots on the Equilibrium Framework:

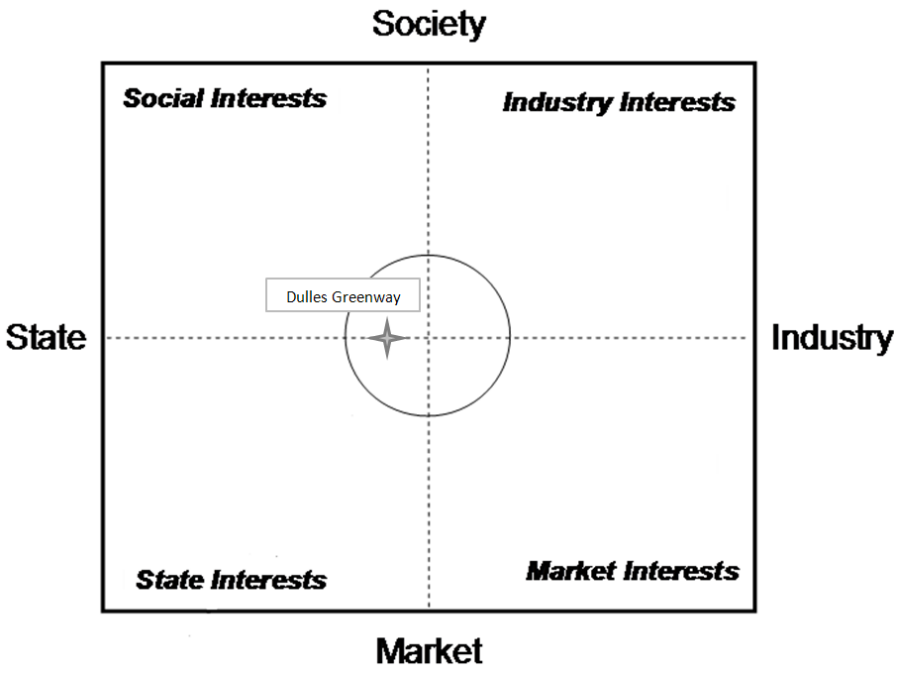

Figure 5:12 Dulles Greenway Plotted on Equilibrium Framework

5.2.8 Conclusion

Plotting the project on the equilibrium framework shows the Dulles Greenway positioned slightly to the left of the origin, but within the range of balance. This positioning is confirmed by the performance of the road to date. The market and industry interests have lost a significant amount of money on the project, as it has struggled to meet debt payments. The public has benefitted substantially, as it has gained an affordably priced alternative to the free routes that have a longer travel time. The road was delivered before VDOT could have financed it, without using funds from the state's transportation budget. One thing that may be deceptive about the placement on the framework is that many directional movements were made, which means there are many different aspects of the Agreement that are somewhat less than ideal. However as a whole, they are skewed slightly towards the State and Social interests.

The fact that there are competing facilities and affordable user fees pushed the project towards the social interest quadrant. A discretionary selection process, as well as vague conditions for renegotiation and termination resulted in movements toward the state interests. Pushing the project in the direction of market interests was the lack of established demand.

Industry interests were served through the lack of third party involvement in the process and omission of termination procedures in the Agreement. As mentioned previously, the net result of these movements is a placement one unit to the left of the equilibrium point, within the range of balance. It should also be noted that the Greenway scored well in the Project Performance category, receiving a "Positive" rating in Quality & Innovation, Price, Service Availability, and Environmental Friendliness. All of these issues were handled in such a way that leads to a successful project.

From the perspective of the original private investors, the performance of the Dulles Greenway to date has been disappointing. It was unable to meet debt payments throughout the first decade of operation, leading to significant losses by the private interests. The public sector has been served well by the facility, which provides a valuable service at an affordable price. With ridership and revenue increasing rapidly each year, the Dulles Greenway seems poised for success in the future. The purchase of the rights to the road by Macquarie Infrastructure Group serves as further evidence of this fact. MIG is operates eleven toll roads worldwide, and is very savvy in this arena. Therefore, if they have decided to purchase the rights to the cash flows, MIG must believe it has the potential to be profitable, as stated by Steve Allen, MIG's CEO. Only time will tell if revenue will continue to grow at a rate sufficient to meet debt payments and provide the 12.6% rate of return desired by MIG.

5.3 Virginia's Pocahontas Parkway Case Study

5.3.1 Introduction

As evidenced by the Dulles Greenway, Virginia is a pioneer state for public-private partnerships as a delivery method for transportation infrastructure. About the same time as the Dulles Greenway opened for traffic in Northern Virginia, state lawmakers in Richmond passed the Virginia Public-Private Transportation Act of 1995. This piece of legislation enabled Virginia to enter into agreements with the private sector to provide much needed transportation infrastructure that could not be funded out of the state budget. Virginia set forth guidelines for procuring such projects, and the Route 895 Connector was the first project delivered under PPTA legislation. Later named the Pocahontas Parkway, the Route 895 Connector consists of an 8.8-mile tolled highway, located seven miles south of Richmond, Virginia. The four lane road connects Chippenham Parkway at I-95 in Chesterfield County with Interstate 295 south of Richmond International Airport in Henrico County. A map of the area is shown below:

Figure 5:13 Map of Area Surrounding the Pocahontas Parkway
Source: VDOT Website (www.virginiadot.org)

5.3.2 Early Stages of Development

Pursuant to the Public-Private Transportation Act, on November 8, 1995, a limited liability company consisting of Fluor Enterprises and Morrison Knudsen (FD/MK) submitted an unsolicited conceptual proposal to the Virginia Department of Transportation for design, construction, operation and maintenance of certain transportation facilities, collectively referred to as the Route 895 Connector. FD/MK wished to designate the section of roadway as the Pocahontas Parkway.

With the Conceptual Proposal in hand, VDOT then followed the PPTA Implementation Guidelines, which called for the Department to publish notice of the proposal and refer it to the Initial Review Committee for preliminary review. No competing proposals were received in response to the posted and published notice. On March 21, 1996, following a determination by the Initial Review Committee, the Commonwealth Transportation Board adopted a resolution approving the Conceptual Proposal for further evaluation and inviting a detailed proposal. After FD/MK submitted their Detailed Proposal in July of 1996, the Advisory Panel evaluated it using the Proposal Evaluation and Selection Criteria set forth in the PPTA Implementation Guidelines. On May 5, 1997, the Advisory Panel recommended the project to the Commissioner for development, subject to the successful negotiation, execution, and delivery of a comprehensive agreement.

5.3.3 Pocahontas Parkway: The Original Comprehensive Agreement

After approximately one year of negotiating the Comprehensive Agreement, VDOT granted FD/MK the right to develop the Pocahontas Parkway on June 3, 1998. The Comprehensive Agreement provides the general structure and arrangements for implementing the project and refers to several other distinct project agreements, which are to be read and construed together. In addition to the Comprehensive Agreement, a separate Design-Build Contract exists between FD/MK and VDOT, which details the design and construction of the road, as well as various obligations and fees to be paid. A Completion Guaranty and Project Financing Agreement also represent two aspects of the agreement. The Project Financing Agreement between FD/MK, the Pocahontas Parkway Association (PPA), and VDOT details the arrangement in which the PPA issues bonds to pay for the costs of the project, and FD/MK agrees to turn over operations to the PPA upon opening the road, referred to as the Transition

Date. The Master Indenture and First Supplemental Indenture are the project agreements between the PPA and Crestar Bank, which govern the issuance of bonds and other financial details. They also set up various project funds to be managed by the PPA, which includes a construction fund, revenue fund, debt service fund, and surplus fund, among others. State Infrastructure Bank (SIB) Loan and Bond Agreements, Contractor Loan and Bond Agreements, and the Memorandum and Assignment make up the remaining project agreements. The following sections outline the terms of the original agreement between FD/MK, the PPA and VDOT.

Basic Agreement

Section 3 of the Comprehensive Agreement outlines the basics of the contract, as well as the roles and responsibilities of both parties. The Agreement states that the project is to be delivered by FD/MK through a Design-Build contract, included as part of the Agreement. It also establishes the formation of the Pocahontas Parkway Association, a nonstock, nonprofit corporation that will assist in financing the project. This unique arrangement is known as a 63-20 corporation. At the time, the Pocahontas Parkway was only the second project in the United States to use a 63-20 corporation, which has the power to issue tax-free revenue bonds (FHWA Case Study) to finance the project. When the road is complete and the bonds have been issued, the non-profit Pocahontas Parkway Association then pays a development fee to FD/MK. The franchise term stretches from the agreement date to the latest date the bonds are paid or fully defeased, at which time the roadway's operation is turned over to VDOT. The rights and responsibilities for each party as defined by the agreement are summarized in Figure 5:14.

Fluor Enter./Morrison Knudsen	Pocahontas Parkway Assoc.	Virginia DOT
Design	Issue Bonds backed by VA	Establish terms and conditions
Regulatory Approvals	Assume all operator duties	Provide oversight services
Utility Relocation	Fix and charge user fees	Acquire title of all right of ways
Construction	Promote, Market Advertise P.P.	Authorize bonds
Project Insurance		Operations & Maintenance
Transition to PPA when complete		Protect from competing facilities

Figure 5:14 Summary of Responsibilities within Pocahontas Parkway Project

Tolls

The agreement states that VDOT grants the operator the exclusive right to charge tolls from the opening date until expiration or earlier termination of the term, subject to the limitations and conditions set forth in Article 4. The operator is required to make a schedule of the current tolls available to the public, and may not impose tolls at any location other than the two facilities set forth in the agreement. The initial toll rates for the first two year period after the opening date are set forth in the contract are shown in Figure 5:8.

Mainline Plaza	**Toll**
Passenger Car & 2 Axle Truck or Bus	$1.50
3 Axle Truck or Bus	$3.00
4 Axle Truck	$4.00
5 Axle Truck	$5.00
Vehicle with 6 or More Axles	$6.00
Laburnum Ramp Plaza	**Toll**
All Vehicles	$0.50

Figure 5:15 Table of Initial Toll Rates on Pocahontas Parkway
Source: Comprehensive Agreement to Develop & Operate the Route 895 Connector

The Rate Covenant is included as part of the Master Indenture between the Pocahontas Parkway Association and Crestar Bank, which governs the details of the bonds. The Rate Covenant states that the fees charged shall be required to produce toll revenues which, beginning on the second anniversary of the Opening Date, and for each Fiscal Year thereafter, meet both the following conditions: (i) such Toll Revenues shall equal at least 1.25 times Aggregate Debt Service on outstanding Public Debt for each such Fiscal Year, and (ii) unless waived by the Department, such Toll Revenues shall equal at least 1.00 times the Aggregate Debt Service plus the projected Current Expenses for each Fiscal Year. Each year, the PPA reviews the financial status of the project in order to estimate and determine whether toll revenues will be sufficient to comply with the requirements above. If the PPA determines it did not meet the requirements in the last year, or will most likely fail in the upcoming year, it shall engage a toll consultant. This toll consultant will be instructed to analyze the appropriate financials and traffic information and recommend a method of altering the tolls or operations in order to meet the debt coverage requirements. With the report of the toll consultant in hand, VDOT, the PPA, and Crestar Bank

can determine a course of action to pursue with regards to toll revenue. VDOT, however, retains the right to require the operator to revise the tolls, alter its method of operation, or take other action as it deems appropriate, provided it would not materially discourage use of the Project or interfere with the minimum toll levels required by the Master Indenture to meet debt payments. The Rate Covenant is not the typical toll management plan seen in such agreements with a set schedule of toll increases, often dictated by increases in the Consumer Price Index (CPI) or Gross Domestic Product (GDP); rather, the main factor governing toll increases is the ability to meet the debt requirement.

Financing

The financial section of the Comprehensive Agreement governs the bond financing and issuance of bonds, VDOT and State authorizations, and the conditions precedent to the PPA issuing bonds. Some of the key conditions necessary before bonds can be issued include: (i) evidence to VDOT that the money raised will be sufficient to pay all costs of the project, (ii) a statement from the Toll Consultant confirming traffic and revenue predictions, (iii) the PPA secures an investment grade rating on a minimum of 80% of the Public Debt from at least two of Fitch, Moody's and S&P rating agencies, (iv) FD/MK's financial position has not changed, (v) the Project Agreements have been executed, (vi) each parties legal counsel approves the financial arrangements and, (vii) FD/MK has obtained all regulatory approvals necessary.

With these conditions met, bonds can be issued in the name of the Pocahontas Parkway Association on behalf of the State acting through VDOT as a department of the executive branch of the State of Virginia. This is a key advantage of using a 63-20 corporation to finance a public-private partnership project. Since the PPA is a non-profit organization, it can issue tax-free bonds on behalf of the State. Taxes usually make private financing of projects more expensive that public financing; a 63-20 corporation eliminates this extra cost, and upon issuing the bonds (also called public debt), the corporation pays the developer a fee (in this case, $6 million to FD/MK). The financing package is comprised of $354 million in 63-20 corporation tax exempt toll revenue bonds with maturities ranging between 2005 and 2035, $9 million in federal funds for design costs, and $18 million in State Infrastructure Bank loans. The last of the bonds are set to mature in 2035, which sets the term of the Comprehensive Agreement. Upon completion of

bond payments, operation of the Pocahontas Parkway reverts to VDOT, who technically owns the project throughout its lifetime.

Operations and Maintenance

The Comprehensive Agreement gives the Pocahontas Parkway Association the obligation to manage and operate the project. This includes keeping the road open for use by members of the public at all times and operate in accordance with all laws and conditions set forth in the contract. Operations and maintenance of the road are delegated to VDOT per the agreement. This includes: (i) managing and controlling traffic, including incident response services, snow and ice removal, and possible closures as VDOT sees fit, (ii) maintenance and repair of the project and all systems and components, including electronic toll and traffic management (ETTM) facilities and the ETTM system itself, (iii) operation of the ETTM system and facilities (iv) police and emergency services, and (v) maintain, comply with and renew regulatory approvals. VDOT agrees to perform these duties to the same standards it employs for comparable portions of state highways. Furthermore, the PPA is obligated to reimburse VDOT for all services rendered in this respect. VDOT also has the right to upgrade, change, or replace the ETTM facilities and system. A key clause in this section states that "in the event there are insufficient funds in the Association's working capital account to pay, when due, Current Expenses (for operations and maintenance), the Department (VDOT) shall pay such Current Expenses promptly after it receives from the Association an invoice…" This is very important, as it obligates VDOT to pay for operations of the Pocahontas Parkway if toll revenue is not sufficient to pay for debt coverage and operation of the road.

The Comprehensive Agreement gives VDOT the right to develop, operate, maintain and toll enhancements to the project as it sees fit. This most likely refers to a possible connection to the nearby Richmond Airport. Furthermore, the PPA cannot undertake any enhancements unless directed by VDOT or approved in writing. VDOT also maintains the right to oversee all aspects of design, permitting, financing, acquisition, construction, operations, and administration of the project.

Termination and Dispute Resolution

The contract allows for the termination of the agreement upon satisfaction of defeasance of the bonds issued by the Pocahontas Parkway Association. This is initially set in the year 2035, and referred to as the default term of the agreement. However, VDOT has the right to take over the project at any time by placing into escrow the amount sufficient to purchase, redeem, or defease the bonds. VDOT may at any time terminate if it determines that such an action is in the best interest of the State. This includes terminating FD/MK's rights and obligations (but not the PPA's) prior to substantial completion, as well as terminating the PPA's rights and obligations at any time during operation of the road. Dispute resolution is to be resolved in accordance with Section 105.16 of VDOT's Standard Specifications.

5.3.4 The Early Years of the Pocahontas Parkway

Construction of the Pocahontas Parkway began in October of 1998. The expected cost of construction projected by FD/MK and VDOT was $324 million. The 8.8 mile stretch of highway was more complex than most. The facility included 20 bridges, the largest of which crossed the James River. This 4,765 foot long cast-in-place concrete bridge towers 150 feet above the river, with a 673 foot clear span that allows oceangoing vessels to access the nearby deepwater Port of Richmond (Fortner 2001). FD/MK contracted the work out the construction to several subcontractors. The project was scheduled to be complete in April of 2002, however the complexities of the bridge delayed the opening. FD/MK transferred much of this risk to the contractors, who faced $25,500 in liquidated damages for each day the project is past due. The eastbound lanes opened in May of 2002, with the westbound lanes following in September of that year. This partial opening is a bit unusual, but allowed the private investors to begin receiving toll revenue sooner, in an attempt to offset some of the project's delay. The total cost of the Pocahontas Parkway was $314 million, coming in $10 million under the original estimate. The Pocahontas Parkway website (www.pocahontasparkway.com) claims that the project was delivered 15 years earlier than traditional (solely public) funding methods would have allowed.

By 2004, the Pocahontas Parkway was already having difficulty meeting the debt service on its bonds. Original traffic estimates by Wilbur Smith Associates had predicted traffic of about 20,000 vehicles per day at opening, increasing to 38,000 vehicles per day by 2015. In early 2004 Pocahontas Parkway Association chairman Jim Atwell told Toll Roads News that revenue and

traffic were both about half of the forecast that was incorporated into the business model. Revenue at the time was approximately $7 million per year, compared to the prediction of $14 million. Atwell blames slow regional and national economic growth after September 11, 2001, and less commercial and residential development than expected as the main reasons for the low traffic. In 2005, ridership rose to about 15,900 vehicles per day, increasing revenue to $11 million per year. However, this could not cover debt payments of about $25 million per year and operations and maintenance, which cost $2 to $3 million per year (Toll Roads News 960, 2005). Per the agreement, this low revenue left VDOT uncompensated for operations and maintenance costs.

5.3.5 New Lease Agreement

Transurban, an international toll road operator, first approached the Commonwealth of Virginia about taking over the Pocahontas Parkway in 2004. Transurban is Australia's largest toll road investor, and ranks 6th internationally. In April of 2005, Transurban and the state signed a memorandum of understanding to pursue the transaction further. The proposal involved a plan to run the toll road as a for-profit enterprise after defeasing all of the PPA's debt. On July 29, 2006, Transurban officially took over the business of the Parkway through a 99-year lease. Under the deal, which is Transurban's in the United States, the operator paid $611 million in all. $487 million of that went to the Pocahontas Parkway Association, to pay off the remaining debt. Transurban also paid $48 million to Virginia for uncompensated expenses it has incurred since the Parkway opened in 2002 (Toll Roads News 1418). The new operator also agreed to build a connector road to the nearby airport if federal funds can be obtained. After a short transition period, Transurban took over VDOT's responsibility of operations and managing toll collection subcontractors. The details of the new lease agreement are discussed in the following sections.

Basic Agreement

There are many significant differences in roles and responsibilities of VDOT and the operator, Transurban, under the new *Amended and Restated Comprehensive Agreement to Develop and Operate the Route 895 Connector* between VDOT and Transurban. The department grants Transurban a permit that includes the rights to develop, finance, maintain, improve, equip, modify, repair and operate the project, subject to the terms of the agreement. This is already more latitude than given to the Pocahontas Parkway Association. VDOT

maintains the right to perform oversight services (at a maximum cost of $50,000 per year to the operator), including on any project enhancements that the new operator may pursue. If Transurban is obligated to construct the Airport Connector Road, VDOT shall at no charge; grant access to all necessary land as part of the right of way, acquire any more land that is necessary, complete the environmental review process for the new road, and take acceptance of the title to the Airport Connector Road upon completion. The department of transportation must also compensate the operator if any competitive transportation facilities adversely impact the economics of the Parkway.

Transurban has the right to plan, design, develop, finance, construct, operate and maintain project enhancements and/or the Airport Connector Road, should the pre-defined conditions be met. As with the previous agreement, the operator has no fee title, leasehold estate, or other real property interest, all of which lies with VDOT. Of course, the new operator has the right to charge and fix tolls, subject to a very different agreement than that of the PPA. Since Transurban is a for-profit enterprise, the rules governing tolls are modified significantly from the Rate Covenant that guided the tolls under PPA's Master Indenture.

Tolls

The agreement between VDOT and Transurban clearly states that toll revenues "shall be first used to pay all current and delinquent costs and expenses of operating and maintaining the Project… before they are used for any other purpose." It continues to elaborate, clarifying that the Operator shall not use Toll Revenues to make any distribution to the holder of an equity interest until it first pays; (i) current and delinquent costs to operate and maintain the project, (ii) current and delinquent debt service, (iii) all taxes due, (iv) all currently required deposits to the extraordinary maintenance or repair reserve, and (v) all amounts due to VDOT. This is in contrast to the previous agreement, in which the Pocahontas Parkway Association was first concerned with debt service, and if it could not cover operations and maintenance, then VDOT still provided those services at its own cost. This agreement still requires debt service to be paid, but first calls for operations and maintenance to be paid first. As one would expect, payment to equity holders in Transurban can only happen if the above costs are covered first. Furthermore, toll revenues cannot be used to pay any debt or obligations unrelated to the Pocahontas Parkway agreement.

Toll rates are discussed at length in Exhibit F of the new lease agreement. The maximum toll levels applicable to vehicles on the Parkway are determined in accordance to the various toll levels set in this section. There are seven different toll periods defined between 2006 and 2016, each with their own corresponding maximum toll levels, as long as the increase is greater than the increase in the Consumer Price Index (CPI). If the CPI grows at a greater rate than these increases, Transurban may raise tolls at the same level as CPI increases. The initial toll period is set as January 1, 2006 to December 31, 2007; the maximum allowable toll levels are shown below:

Vehicle Class	Main Toll Plaza	Laburnum	Airport Connector Road	Wilton Farm East	Wilton Farm West
2 Axle	$2.25	$0.75	$0.75	$0.75	$2.25
3 Axle	$3.25	$1.75	$1.75	$1.75	$3.25
4 Axle	$4.25	$2.75	$2.75	$2.75	$4.25
5 Axle	$5.25	$3.75	$3.75	$3.75	$5.25
6 Axle	$6.25	$4.75	$4.75	$4.75	$6.25

Figure 5:16 Table of Toll Rates on Pocahontas Parkway Effective January 1, 2006
Source: Amended and Restated Comprehensive Agreement to Develop & Operate the Route 895 Connector

The next period is January 1, 2008 to December 31, 2010 for which the toll maximums are shown below:

Vehicle Class	Main Toll Plaza	Laburnum	Airport Connector Road	Wilton Farm East	Wilton Farm West
2 Axle	$2.75	$1.00	$1.00	$1.00	$2.75
3 Axle	$3.75	$2.00	$2.00	$2.00	$3.75
4 Axle	$4.75	$3.00	$3.00	$3.00	$4.75
5 Axle	$5.75	$4.00	$4.00	$4.00	$5.75
6 Axle	$6.75	$5.00	$5.00	$5.00	$6.75

Figure 5:17 Table of Toll Rates on Pocahontas Parkway Effective January 1, 2008
Source: Amended and Restated Comprehensive Agreement to Develop & Operate the Route 895 Connector

Provided the increases are greater than the increase in CPI, tolls in the next period (January 1, 2011 to December 31, 2012) are raised $0.25 at all classes and plazas. After this point the toll periods are only one year long, January to December, and the maximum rates are raised $0.25 per year until 2016, which is the last period is given in the contract as:

Vehicle Class	Main Toll Plaza	Laburnum	Airport Connector Road	Wilton Farm East	Wilton Farm West
2 Axle	$4.00	$2.25	$2.25	$2.25	$4.00
3 Axle	$5.00	$3.25	$3.25	$3.25	$5.00
4 Axle	$6.00	$4.25	$4.25	$4.25	$6.00
5 Axle	$7.00	$5.25	$5.25	$5.25	$7.00
6 Axle	$8.00	$6.25	$6.25	$6.25	$8.00

Figure 5:18 Maximum Toll Rates on Pocahontas Parkway on January 1, 2016
Source: Amended and Restated Comprehensive Agreement to Develop & Operate the Route 895 Connector

Over the first ten years of the agreement, these maximum allowable toll rates represent a 77% increase for 2-axle vehicles in the initial Main Toll Plaza and Wilton Farm West tolls, and a 200% increase in the tolls charged for a 2-axle vehicle at the remaining collection points. This will certainly outpace CPI growth (historically about 3-4% per year), and therefore will most likely govern the increases. After this time, the maximum toll levels can be raised by whichever is greater, the percentage increase in CPI, the percentage increase in Real Gross Domestic Product (GDP) per capita, or the minimum level of 2.8% per year. The operator is allowed to recalculate the toll levels quarterly, but not more often. Transurban maintains the right to implement tolls lower than the maximum rate, time-of-day variable tolling, congestion-related tolling, or any other method, provided it does not violate the maximum rates set forth in the agreement.

Closely related to toll revenue is the permit fee paid by Transurban to VDOT in exchange for operating the Pocahontas Parkway. If, at the close of any semiannual period, the project achieves the initial targeted return of 6.5%, the operator pays VDOT 40% of the aggregate toll revenues. If the project achieves the secondary targeted return of 8.0%, Transurban must pay the department 80% of the aggregate toll revenue. The targeted rates of return are defined as a pre-tax internal rate of return on total invested project funds, calculated based on the real net cash

flow of the project for each semi-annual period. This is clearly very different from the original agreement with the PPA, and allows VDOT to benefit from high ridership.

Financing

As mentioned previously, Transurban purchased the right to a 99-year lease of the Parkway for $611 million. $487 million went to the Pocahontas Parkway Association to payy of the remaining debt, and $48 million was paid to VDOT for expenses incurred over the last several years of operations. The two tranches break down into $308 million in permanent debt and $100 million in debt that can be refinanced with federal government TIFIA loans. Transurban contributed $136 million in equity, and guaranteed another $55 million to be drawn upon to assist in debt service during the ramp-up period. The senior debt has a length of 30-years, and is set up to encourage refinancing at year 10 (Pocahontas: In Foreign Arms 2006). The agreement states that any refinancing must be approved by VDOT. With revenue sharing that kicks in after 6.5% real project internal rate of return, Transurban predicts that this corresponds to an internal rate of return of 14.5% on equity (Toll Roads News 1418).

Operations and Maintenance

Exhibit H of the *Amended and Restated Comprehensive Agreement* contains eighteen pages that deal exclusively with the operations and maintenance standards and performance requirements. The operator must prepare and submit a number of plans to VDOT for comment and approval, examples of which include a Maintenance Plan, Inspection Plan, Traffic Control Plan, Environmental Protection Plan, and O&M Manual. Quarterly and Annual Reports are also expected at the appropriate points in the year. The agreement references the standards and procedures contained in over 50 manuals by VDOT, Federal, AASHTO, and other sources. It also restates the department's rights to inspect the facility, as well as the operator's right to upgrade. This section also specifies the minimum quality of the road when transferred to VDOT at the end of the term. The two parties will inspect the roadway together one year before the end of the term, and again 30 days before the end of the term to insure the road is in proper condition. Another 21 pages are devoted to performance measure on topics such as Debris and Roadkill, Litter, Fence, Signals, Paved Shoulders, and many more. This section of the contract is very well defined and leaves little room for misinterpretation.

Termination and Dispute Resolution

After the 40th anniversary of the Agreement Date, VDOT has the right to terminate the agreement for public interest. However, it must notify the operator and pay to the operator the "fair market" value, as determined by a third party appraiser. If the agreement is terminated, the operator must turn over all records relating to operation, all money in the various funds and reserves, and of course, control of the project and project right of way, free of any encumbrances. As of the termination date, VDOT assumes full responsibility for project operations. If the agreement is terminated at a time earlier than the 40th anniversary by VDOT or the state, for any reason other than operator default, it shall be treated as a termination for public convenience, and Transurban is eligible to receive payment of fair market value for the termination.

Operator default, a possible remedy for which is termination, can rise from several events. If any representation or warranty made by the operator in the project agreement is inaccurate, or if the operator fails to pay VDOT any monies due within 30 days, it can be considered operator default. Other examples are a failure to comply with, perform, or observe any of the obligations in the agreement, or if the operator cannot pay its debts as they become due, or files for bankruptcy. If the operator does default, one possible remedy is termination of the contract by VDOT. If it involves a failure to pay monies due, the department can pay the money for Transurban. Department default is also discussed in the agreement. All of the same defaults apply, such as a misleading warranty or representation, failure to comply with obligations in the agreement, or failure to pay its debts. If these situations occur, the operator has the right to terminate the agreement, or seek to recover its losses.

If a dispute occurs, the agreement states that both parties shall attempt to resolve it in good faith within 15 days. If this is unsuccessful, upon notice by either party to the other, the dispute can be referred to mediation or any form of alternative dispute resolution acceptable to both of them. Both parties must share the expenses equally. If the dispute remains unsolved after 180 days, either party may litigate in the Circuit Court for the City of Richmond. Each party must bear its own attorney's fees and costs.

Airport Connector

The project also incorporates a possible 1.6 mile road that would link the Parkway to Charles City Road and Airport Drive at the Richmond International Airport

(www.pocahontas895.com). This would greatly enhance the financial prospects of the concession, while requiring additional work. The contract defines the roles and responsibilities of both parties with regard to the Airport Connector Road (ACR). The operator must submit a complete application for TIFIA financing within 30 days of the agreement date and use diligent efforts to obtain a written commitment for TIFIA financing from the U. S. Department of Transportation through the Federal Highway Administration (FHWA). If the FHWA agrees to provide loans not less than $150 million, the operator is obligated to develop, finance, design, construct, and operate the ACR. If federal financing is not obtained, VDOT has the right to withdraw the ACR from the project and perform the development, construction and operation through its own means. If the TIFIA funding is secured and the total ACR development cost exceeds $45.2 million, the Department has the option to withdraw it from the project. If the department chooses not to withdraw the ACR from the project, it is responsible for paying the any amount over the cost cap of $45.2 million. The total ACR development cost is defined as the sum of the: (i) tentative winning contract amount, (ii) 10% of the contract amount for Operator costs relating to project management, and (iii) all cost incurred for acquisition of right of way. The operator has the right to fix and charge tolls on the Airport Connector Road, subject to the appropriate maximum toll limits stated in the contract.

5.3.6 Current State of the Pocahontas Parkway

The Pocahontas Parkway is currently operated by Transurban, who expects traffic to continue to increase significantly in the coming years. With 2005 traffic at 15,600 vehicles per day and annual revenue of $11 million, Transurban's website predicts traffic growing to 22,000 vehicles per day by 2008, and rising to 33,000 in 2012. Tolling is accomplished through electronic EZ-Pass, which allows traffic to pass though without slowing down, and traditional cash toll booths for those without EZ-Pass.

Transurban closed the $150 million TIFIA refinancing in June of 2007. The deal represents the first instance of Federal debt funding for the refinancing and expansion of an existing, privately-operated road under the Transportation Infrastructure Finance and Innovation Act (TIFIA). As stated in the contract $45.2 million of the loan will fund the Airport Connector Road. In addition, $7 million is earmarked to upgrade the entire road's tolling with an electronic system and $2.6 million for transaction fees. The remaining $95.2 million will be used to repay part of the debt Transurban incurred for the lease agreement (Pocahontas Parkway: TIFIA

Connects 2007). The official Pocahontas Parkway website expects construction of the connector to start in early 2008 with anticipated completion early in 2010, at which point the toll is expected to be $1.00. Figure 5:19 shows the Airport Connector Road, taken from the Pocahontas Parkway website.

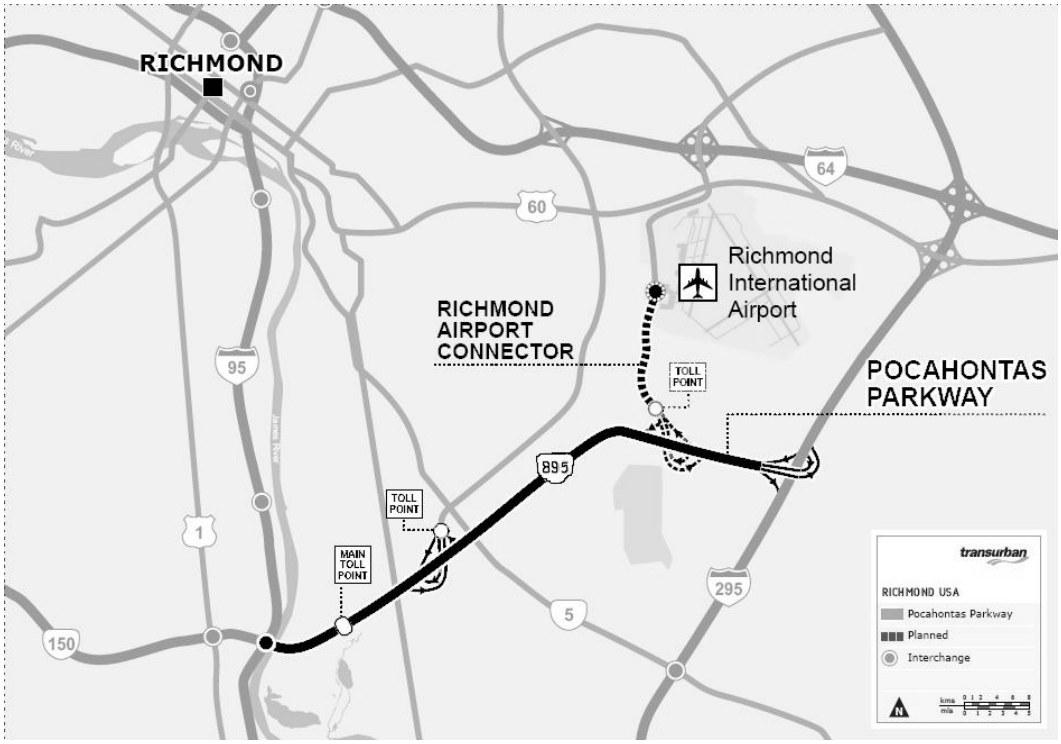

Figure 5:19 Map of Pocahontas Parkway with Airport Connector
Source: Pocahontas Parkway Website (www.pocahontas895.com)

5.3.7 Analysis with the Equilibrium Framework and Project Appraisal Template

The following chart utilizes the Project Appraisal Template to analyze the original Pocahontas Parkway Comprehensive Agreement (Pocahontas 1):

Pocahontas Parkway: Evaluation with Project Appraisal Framework					
Element	**Issue**		**Impact**	**Pocahontas 1**	**Explanation**
Market Conditions	Established demand	Yes	—	↘	Greenfield project without established demand. Traffic did not meet expectations
		No	↘		
	Competing facilities	Yes	↖	↖	Free alternatives exist in the area. However it is the only James River crossing for several miles
		No	→		
Socio-Environmental Conditions	Project type	Greenfield	—	--	Greenfield project
		Brownfield	←		
	Project scale	Large	↗	→	Moderate, with a construction cost of about $300 million. Bridge work is technical and fairly lengthy.
		Moderate	→		
		Small	—		
	Demographic impact	Diverse	—	—	Free alternatives in the area diversify the impact. You do not have to take the Parkway.
		Distinct	→		
	User Fees	Affordable	↖	↖	User Fees affordable, but lack of a long-term management plan is disconcerning
		Reflect 'cost' of service	—		
		Long-term management plan	—		
Acquisition & Procurement	Financial & technical benchmark	Yes	—	↗	VDOT did not require or provide a financial or technical benchmark. No competing proposals.
		No	↗		
	Competition	No	↗	↗	This proposal was unsolicited and no competition existed for the project.
		Comparable scope	—		
		Price and other factors	—		
		Factors other than price	↗		
	Selection criteria & process	Transparent	—	--	VDOT followed the procedures outlined by the PPTA Implementation Guidelines in evaluating the project.
		Objective	—		

Figure 5:20 Pocahontas Parkway 1 Analysis with Preliminary P3 Equilibrium Framework (Part 1)

Pocahontas Parkway: Evaluation with Project Appraisal Framework					
Element	**Issue**		**Impact**	**Pocahontas 1**	**Explanation**
Concession Management	No-Compete Provisions	Allowed and absolute	→	--	The no-compete provision exists for a distance of 3 miles in either direction over the James River section of the Parkway. This is reasonable.
		Allowed but with exclusions	--		
	Performance measurement	Clear & objective	--	--	No real perofrmance measurement terms exist in the contract, however VDOT provides the operations and maintenance of the road, and it agrees to hold itself to the same standards as similar highways.
		Absent	↗		
		Vague	↙		
	Conditions for renegotiation	Clear & objective	--	↗	No conditions for renegotiation are present in the contract.
		Absent	↗		
		Vague	↙		
	Termination provisions	Clear & objective	--	—	The termination provisions were clear, although they basically state that VDOT can terminate at any time.
		Absent	↗		
		Vague	↙		
	Facility return provisions	Clear & objective	--	↗	Facility return is not addressed in the Comprehensive Agreement
		Absent	↗		
		Vague	↙		
Project Performance	Quality & Innovation	Readily apparent	Positive	Positive	The quality of the work is warrantied, and toll collection is innovative; traffic does not have to slow down for electronic toll collection.
		Difficult to judge	Negative		
	Price	Readily apparent	Positive	Negative	Without a benchmark or competition, price performance is difficult to judge.
		Difficult to judge	Negative		
	Service availability	Readily apparent	Positive	Positive	VDOT maintains the road and has the ability to provide a very high level of service availability.
		Difficult to judge	Negative		
Legend	- No Movement		→ Toward Industry/Market	← Toward Social/State Interests	
	↗ Toward Industry Interests		↘ Toward Market Interests	Positive - Has a Positive impact on P3 performance	
	↙ Toward State Interests		↖ Toward Social Interests	Negative - Has a Negative impact on P3 performance	

Figure 5:21 Pocahontas Parkway 1 Analysis with Preliminary P3 Equilibrium Framework (Part 2)

The following chart utilizes the Project Appraisal Template to analyze the new Pocahontas Parkway Comprehensive Agreement, signed in 2006 between Transurban, VDOT, and the PPA (Pocahontas 2):

Pocahontas Parkway, 2006 Agreement: Evaluation with Project Appraisal Framework					
Element	**Issue**		**Impact**	**Pocahontas 2**	**Explanation**
Market Conditions	Established demand	Yes	--	--	Having been in existance for several years, Transurban has a good idea of traffic demand.
		No	↘		
	Competing facilities	Yes	↖	↖	Free alternatives exist in the area. However it is the only James River crossing for several miles
		No	→		
Socio-Environmental Conditions	Project type	Greenfield	--	←	The new agreement is a lease of an existing asset, which is brownfield.
		Brownfield	←		
	Project scale	Large	↗	--	Moderate, Transurban paid about $611 million for the rights to the road.
		Moderate	→		
		Small	--		
	Demographic impact	Diverse	--	--	Free alternatives in the area diversify the impact. You do not have to take the Parkway.
		Distinct	→		
	User Fees	Affordable	↖	--	The agreement provides a very detailed long-term management plan that reflects the cost of service.
		Reflect 'cost' of service	--		
		Long-term management plan	--		
Acquisition & Procurement	Financial & technical benchmark	Yes	--	↗	VDOT did not require or provide a financial or technical benchmark. No competing proposals.
		No	↗		
	Competition	No	↗	↗	No other bidders were involved. Transurban approached the Commonwealth of Virginia and PPA.
		Comparable scope	--		
		Price and other factors	--		
		Factors other than price	↗		
	Selection criteria & process	Transparent	--	--	Status of negotiations was public and fairly transparent.
		Objective	--		

Figure 5:22 Pocahontas Parkway 2 Analysis with Preliminary P3 Equilibrium Framework (Part 1)

Pocahontas Parkway, 2006 Agreement: Evaluation with Project Appraisal Framework					
Element	**Issue**		**Impact**	**Pocahontas 2**	**Explanation**
Concession Management	No-Compete Provisions	Allowed and absolute	↘	--	If competitive transportation facilities adversely impact the developer, VDOT must compensate them.
		Allowed but with exclusions	--		
	Performance measurement	Clear & objective	--	--	Exhibit H of the Amended and Restated Comprehensive Agreement contains 18 pages that deal exclusively with operations and maintenance requirements.
		Absent	↗		
		Vague	↙		
	Conditions for renegotiation	Clear & objective	--	--	Dispute resolution is outlined in the agreemnt.
		Absent	↗		
		Vague	↙		
	Termination provisions	Clear & objective	--	—	Various forms of default are detailed in the agreement. VDOT may terminate the agreement for public interest after the 40th anniversary of the agreement. Very clear and fairly objective.
		Absent	↗		
		Vague	↙		
	Facility return provisions	Clear & objective	--	--	Facility return provisions are contained in the Agreement. They are fair and stated clearly.
		Absent	↗		
		Vague	↙		
Project Performance	Quality & Innovation	Readily apparent	Positive	Positive	The quality of the work is warrantied, and toll collection is innovative; traffic does not have to slow down for electronic toll collection.
		Difficult to judge	Negative		
	Price	Readily apparent	Positive	Negative	Without competing proposals or a comparative analysis, the price performance is difficult to judge.
		Difficult to judge	Negative		
	Service availability	Readily apparent	Positive	Positive	Facility already exists. The service standards are clearly set and Transurban has the resources to operate the road efficiently and to high levels of service availability.
		Difficult to judge	Negative		
Legend	- No Movement		→ Toward Industry/Market	← Toward Social/State Interests	
	↗ Toward Industry Interests		↘ Toward Market Interests	Positive - Has a Positive impact on P3 performance	
	↙ Toward State Interests		↖ Toward Social Interests	Negative - Has a Negative impact on P3 performance	

Figure 5:23 Pocahontas Parkway 2 Analysis with Preliminary P3 Equilibrium Framework (Part 2)

Using the directional adjustments from the Project Appraisal Templates, Figure 5:24 displays where both the Pocahontas Parkway Agreements plot on the P3 Equilibrium Framework:

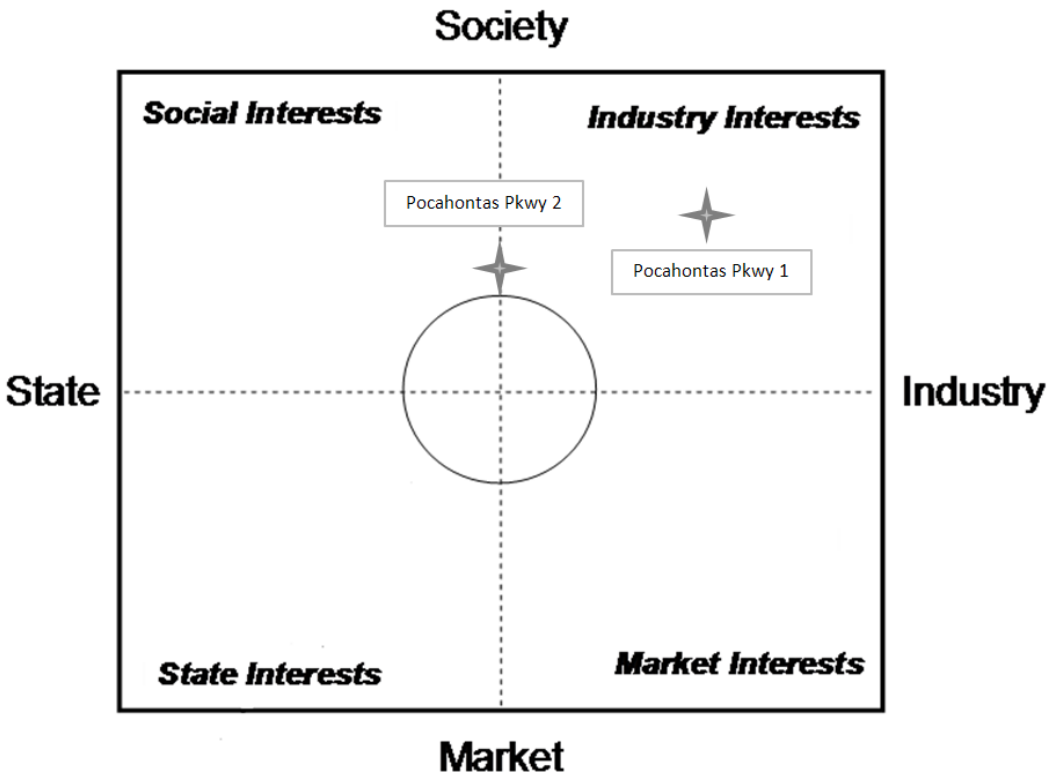

Figure 5:24 Pocahontas Parkway Agreements Plotted on Equilibrium Framework

5.3.8 Conclusion

Plotting the original Pocahontas Parkway project on the equilibrium framework shows the original Pocahontas Parkway agreement positioned far outside the range of balance. The project finds itself moved significantly inside the Industry Interests quadrant, due to a variety of factors. For one, VDOT did not procure a technical or financial benchmark, therefore giving the benefit of the doubt to FD/MK. Furthermore, the unsolicited proposal encountered no competition from rival firms or proposals. VDOT did not employ a third party consultant to aid in the evaluation process, which is also in the industry's favor. Neither renegotiation conditions nor facility return provisions are present in the contract. The lack of verbiage on these important topics clearly benefits industry, as they have can pressure VDOT into renegotiation and have no minimum conditions to meet when returning the road to state control.

Other factors positively influenced the plot of the Pocahontas Parkway, pulling it back towards equilibrium. The fact that the project was greenfield, and the no-compete provisions

serve as movements toward the lower right, in the direction of the Market Interests. In greenfield projects, the demand is unknown and relies upon the market, which is improved by the no-compete clause. The fact that free alternatives exist in the area moves the locus towards social interests, as does the reasonable pricing. However, these movements to not have a large enough impact to bring the project back towards the range of balance.

The conditions of the original Pocahontas Parkway agreement place it well into the Industry Interests quadrant. This position is not desirable for the public or the state interests, represented by VDOT. Based on the evaluation, the state has surrendered too much control to the private consortium, and failed to protect itself from many possible negative outcomes. By failing to ensure competition, or establishing a benchmark, the state has no idea if it is achieving value for money. The lack of return provisions and renegotiation conditions also loosen its grip on the project, giving the Pocahontas Parkway Association more freedom than is desirable.

The new Pocahontas Parkway agreement plots much closer to the range of balance. This is due largely to the inclusion of fair and objective conditions for renegotiation and facility return provisions. Furthermore, the new agreement contains a long-term structure for toll rates, protecting the public from extreme toll hikes. A more reasonable agreement regarding competing facilities also serves to move the project toward the origin. Overall, the agreement successfully manages many of the factors in the appraisal templates. Based on the preliminary evaluation by the P3 Equilibrium Framework, the new Pocahontas Parkway arrangement should encounter more success than its predecessor.

5.4 Interstate-81 Improvements in Virginia Case Study

5.4.1 Introduction and Background

Interstate-81 begins in Dandridge, Tennessee, at the intersection of I-40, and extends through New York to the U.S.-Canada border. Construction of the Virginia portion of the road started in 1957. Small pieces of the road were completed in the late fifties and sixties, until December 21, 1971, when all 325 miles in Virginia were completed when construction of a 14.4 mile stretch was opened from Dixie Caverns to Christiansburg, in the southwest corner of the state. Currently, I-81 is the longest stretch of interstate in Virginia (325 miles) and has 90 interchanges. AAA voted it as one of the 10 most scenic interstates in the United States (www.virginiadot.org). Interstate 81 is not only essential to the economic vitality of Virginia; it also serves as one of the East Coast's most important transportation facilities. Regularly listed as one of the top eight trucking routes in the U.S., I-81 carries out-of-state tourists, through travelers, a growing number of intra-valley commuters, and more than a third of all college and university students in Virginia. Traffic through this crucial corridor has tripled in the last 20 years, from around 20,000 vehicles per day to nearly 60,000 vehicles per day in the Roanoke Valley and Winchester regions. On some sections of I-81, the number of trucks nearly equals the number of passenger cars (www.virginiadot.org).

Figure 5:25 Map of Virginia Showing I-81 Corridor
Source: Star Solutions Detailed Proposal for Improvements to the I-81 Corridor – September 5, 2003

I-81 was designed to accommodate 15% truck traffic; however, Virginia Department of Transportation (VDOT) reports that trucks make up 34% of total traffic on the portion of the road in Virginia. Accepted design standards for a rural interstate call for a Level of Service B on a scale of A to F, with A being free-flowing traffic and F being traffic at a standstill. Currently 90% of I-81 achieves a grade of less than B. By 2025, it is projected that most of I-81 will be operating at or near failure during peak hours. By 2010, about one third of I-81 will be at level D or worse with stop-and-go traffic conditions reducing operating speeds, especially from the Roanoke area through the Harrisonburg area. The high level of truck traffic is exaggerated by the mountainous terrain and winding curves, which combine to form dangerous conditions. Accidents involving trucks are a major concern. During a recent 18-month period, there were 2,681 accidents on I-81 with 41 deaths and 1,528 injuries. Commercial trucks were involved in 825 accidents, which resulted in 15 deaths and 449 injuries (www.virginiadot.org).

Throughout recent years several improvements have been made to address safety issues. In January 2004, a 15-mile section of I-81 between Salem and Ironto was the first section of interstate in Virginia to be designated as a Highway Safety Corridor. If drivers are cited by law enforcement officers for traffic violations or criminal infractions in that area, they could receive tickets with increased fines up to $2,500, depending on the citation. The zone begins at mile marker 127 near Ironto in Montgomery County and extends to mile marker 142 near Salem. The purpose of the program is to reduce crashes, injuries and fatalities. The increased fines are part of a Highway Safety Corridor Program created by the 2003 General Assembly to improve safety on designated stretches of Virginia's interstate system. Furthermore, longer acceleration and deceleration lanes have been added to all of the interchanges in Pulaski, Montgomery, Roanoke and Botetourt counties, providing drivers with more room to merge on and off I-81. Starting in 2004, rumble strips have been added along the shoulders of I-81 throughout the state. Rumble strips are credited with preventing up to 70% of run-off-the-road crashes. Also, overhead message signs have been installed to communicate real-time traffic information to motorists all along the corridor. To assist in pinpointing the location of incidents that might slow traffic, 29 cameras were installed along I-81 from Exit 323 (just south of the West Virginia line) to mile marker 179 at Natural Bridge. The cameras are monitored 24 hours a day, seven days a week, and the images are available to the public at http://www.trafficland.com. Since 2002, new and better "strong post guardrail" has been installed in various locations along I-81. In 2000, speed

limits in the metro areas surrounding Harrisonburg and Roanoke were lowered from 65 mph to 60 mph (www.virginiadot.org). A great deal of much time, effort, and money has been spent improving the safety of I-81 in recent years. However, these measures improve current operation, but not future capacity.

5.4.2 Unsolicited and Solicited PPTA Request for Conceptual Proposals

In January 2002, VDOT received an unsolicited proposal from Star Solutions with the intention of expanding I-81 based on the safety concerns addressed by VDOT's safety studies and under the PPTA (Kozel, 2004). At the time, STAR Solutions consortium consisted of Adams Construction Company, Kellogg Brown & Root, W.C. English, Wilbur Smith Associates, and W-L Construction & Paving. The proposal answered some of the safety issues that concerned the state, but instead of the 3-lane expansion for the majority of I-81 that VDOT suggested in their 1997 widening study, STAR proposed a 4-lane expansion for the entire length of the interstate. The proposal also separated car and truck traffic, which addresses safety concerns involving commercial trucks and passenger cars. Even with the political and public support displayed for this project, the amended Public Private Transportation Act of 1995 required that bids were solicited by a state agency such as VDOT before they could pursue innovative project delivery and financing venture (PPTA 1995, 2003).

In September of 2002, VDOT issued *A Solicited Public-Private Transportation Act Request for Conceptual Proposals for Improvements to the Interstate 81 Corridor in Virginia* (the RFP*)*. The 24 page document calls for proposals "from private entities who wish to design, construct, improve, maintain, and/or operate all or part(s) of the Interstate 81 corridor in Virginia". The RFP goes on to discuss the functional needs of the state, stating that "improvements must be developed in a fashion that equally emphasizes moving people and goods, as well as moving cars, trucks, and freight… Proposals should focus on a range of short, mid, and long-term solutions, and clearly lay out the financial requirements for each." Twenty issues important to the successful development of the corridor are listed, and include: a high degree of efficiency and safety, shifting a portion of future commercial traffic to rail, a possible passenger rail corridor, connections to other means of transportation, avoidance of environmental and social impacts, innovative construction techniques, timely renovation, financial risk-sharing

systems, rest areas, competitive processes during all phases, maximum use of technology, and developing its full economic potential, among others.

The RFP also gives a schedule of events for submission of proposals, in which it requires conceptual proposals to be submitted by January 17, 2003. It gives February 14th as the date for a go or no-go decision on moving forward with one or more proposals to the detailed proposal stage. By July 11th, one or more proposals is to be selected to move forward to negotiations. VDOT set September 30th, 2003 as the target date for completing negotiations and approving a Comprehensive Agreement with one or more firms. A following section describes the various rights that VDOT reserves, including rejecting all proposals, requesting additional information, revising the RFP, declining to return any of the review fees, and requesting revisions to the proposals. A non-refundable minimum Proposal Review Fee of $50,000 is required to offset proposal review costs. A fee of $10,000 must accompany the conceptual proposal, with $40,000 required to review the detailed proposal. The RFP also outlines the general requirements of the proposal, including size, mailing address, and other details.

The evaluation process detailed in the RFP contains four phases. Phase One requires conceptual proposals to be submitted for a pre-qualification review by an Initial Review Committee (IRC), and concludes in a recommendation to VDOT Commissioner Philip Shucet to either reject or accept conceptual proposals for further processing. Phase Two will consist of review and approval/rejection of the conceptual proposals by the Commonwealth Transportation Board (CTB). Phase Three of the process is to consist of a recommendation to schedule submission of detailed proposal(s) for evaluation by a Public-Private Transportation Advisory Panel. Phase Four is the evaluation and final selection by the Commissioner. Final authorization will be contingent on successful negotiations and execution of a comprehensive agreement with the selected firm or firms, this is Phase Five in the PPTA process, although not specifically called out as such in the RFP. The final section of the RFP details some of the requirements of the comprehensive agreement, which is Phase 6 of the PPTA process. The most detail is given to Phase One, specifically the content of the Conceptual Proposals. Proposals are to be separated into five tabs, shown below:

Tab 1: Qualifications and Experience
Tab 2: Project Characteristics
Tab 3: Project Financing
Tab 4: Public Support
Tab 5: Project Benefit/Compatibility

The Request for Conceptual Proposals also outlines the proposal evaluation and selection criteria, to be used by the various panels when analyzing the proposals. There are five main sections, which each have subsections with a description that is usually a few sentences long. The RFP clearly states that the following items will be considered, but the weighting and final decision is subject to the sole discretion of the respective evaluating panel or official. Below is a chart that contains the main sections and subsections as listed in the RFP, but lacking the brief description given to each.

PROPOSAL EVALUATION AND SELECTION CRITERIA	
Qualifications and Experience	**Project Characteristics**
Experience with Similar Infrastructure Projects	Project Definition
Demonstration of Ability to Perform Work	Proposed Project Schedule
Leadership Structure	Operation
Project Manager's Experience	Technology
Management Approach	Conforms to Laws, Regulations and Standards
Financial Condition	Federal Permits
Project Ownership	Meets/Exceeds Environmental Standards
Participation of DBEs	State and Local Permits
Competitive Bidding	Right of Way
Long-Term Commitment to Safety	Maintenance
Appropriately Skilled Workforce	**Project Financing**
Project Compatibility	Financing
Compatibility with Existing Transportation System	Financial Plan
Fulfills Policies and Goals	Estimated Cost
Enhance Community-Wide Transportation System	Life Cycle Cost Analysis
Consistency with Local, Regional, and State Plans	Business Objective
Economic Development	**Public Support**
Intermodal / Rail	Community Benefits
	Community Support
	Public Involvement Strategy

Figure 5:26 VDOT PPTA I-81 Proposal Evaluation Criteria
Source: A Solicited PPTA Request for Conceptual Improvements to the Interstate 81 Corridor in Virginia

5.4.3 I-81 Improvements: Competing Proposals

Virginia Department of Transportation received two proposals in response to the RFP. STAR Solutions, which now consisted of APAC, Inc., Adams Construction Company, English Construction Company, Inc., KBR, Inc., Koch Performance Roads, Inc., W-L Construction & Paving, Inc. and Wilbur Smith Associates submitted a revised development plan. The other

proposal came from Fluor Virginia Inc. which consisted of Granite Construction Company in joint-venture with Lane Construction Company; Gilbert Southern Corp., a subsidiary of Kiewit, and Fluor assisted by Virginia-based Shirley Contracting Company. The proposals suggest developing the I-81 corridor in fairly different ways, which is to be expected, given the wide open scope given in the Request for Conceptual Proposals.

Fluor Virginia Inc.

The proposal presented by Fluor Virginia Inc. called for the addition of a minimum of one lane in each direction, primarily to the inside, which would be for passenger vehicle use only. It also created ten truck-climbing lanes as detailed in VDOT's Conceptual Studies report. The proposal also involved installing a broadband wireless spine to support traveler information systems, traffic management systems and work zone safety technology. Toll rates at completion (in 2013, as initially proposed) are to be $0.05 per mile for cars and $0.17 per mile for the average truck, making the cost $16.25 and $55.25, respectively, to travel the entire 325 miles. No tolls would be charged for trips less than ten miles, and discounted rates would be available for trips under thirty miles, as well as annual passes for regular customers for a fixed annual charge. Toll collection requires constructing electronic mainline toll facilities at interchange locations. The total estimated project cost is $5.878 billion, based on the anticipated date of expenditure. Other optional services in the proposal available at an additional cost are asset management/maintenance of both the existing facilities and Fluor's new improvements for 20 post-construction years at a cost for $930 million, rail capacity improvements for $132 million, and/or commercial truck parking facilities for $20 million. The schedule provided estimates a completion of roadway improvements by 2014 (I-81 PPTA Proposal Fact Sheet 2004).

The financing plan set forth by Fluor Virginia Inc. does not rely on state or federal funds. It is fully supported by the toll revenues from passenger and commercial vehicles. Overall costs for the I-81 roadway improvements, when adding in $1.139 billion of capitalized interest and other uses of funds, comes to $7.017 billion, not including the options outlined above. Similar analysis put the overall costs for the rail proposal and commercial truck parking facilities at $170.8 million and $32.0 million (I-81 PPTA Proposal Fact Sheet 2004).

STAR Solutions

The STAR Solutions proposal called for rebuilding I-81 into at least four lanes in each direction, including two dedicated to commercial trucks, which would be separated by spacing and rumble strips. Six dual interchanges to separate truck traffic from cars, and ITS and Weigh in Motion features were also included in the proposal. Electronic "boothless" tolling would be used for charging heavy commercial trucks only, while passenger cars travel for free. The toll rate for trucks in 2007 after initial construction (mile posts 180-227) is projected to be $0.123 per mile, rising to $0.368 per mile ($119.60 to travel the entire 325 miles) at completion of the project. The estimated project cost is $6.381 billion in 2003 dollars, with the option of a 20-year pavement warranty for an additional $660.5 million. A rail improvement option is available at a cost of $111 million. The STAR Solutions group is willing to consider various tolling schemes to provide relief to empty trucks, agriculture trucks, and commuters, but they are not included in the finance plan proposed (STAR Detailed Proposal 2003). A graphic from the proposal is shown below:

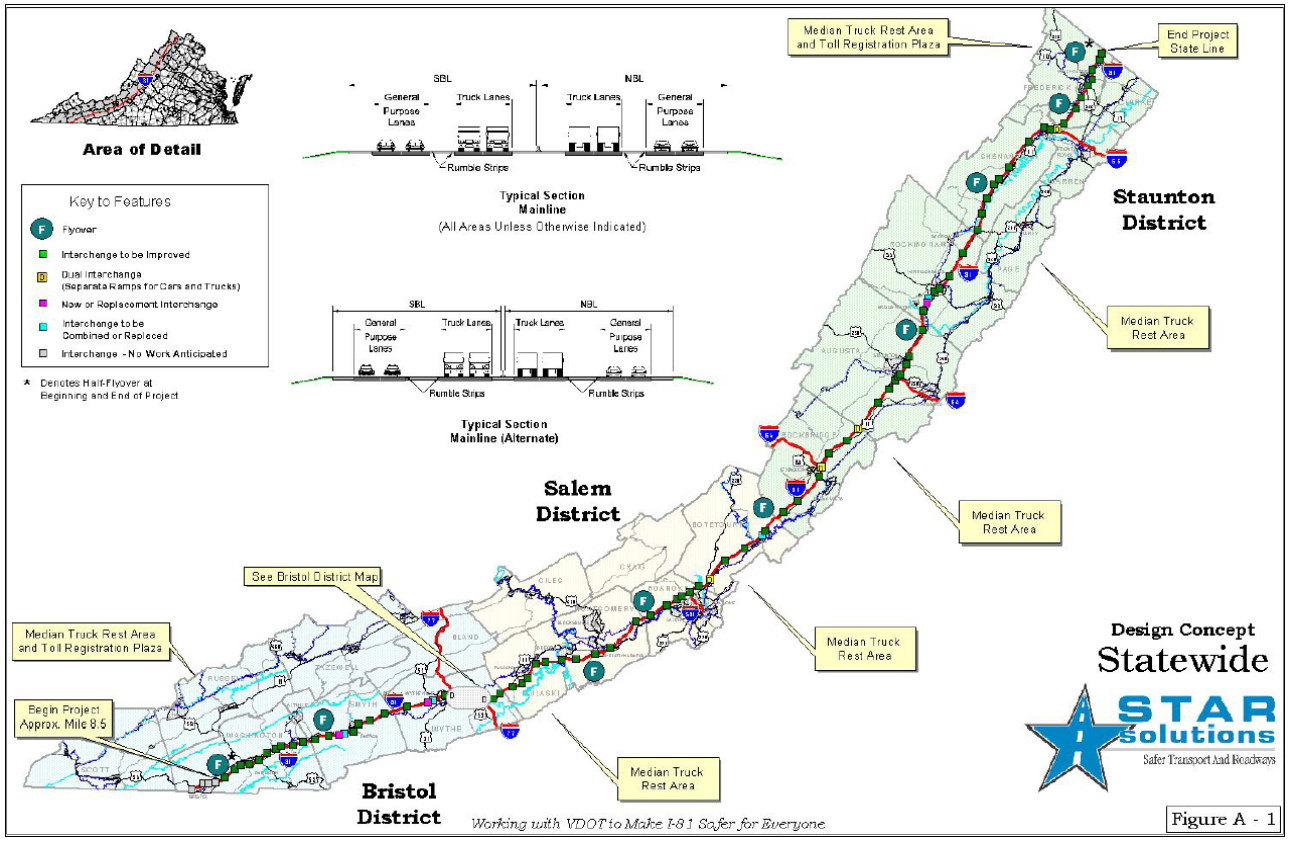

Figure 5:27 Map of STAR Solutions I-81 Corridor
Source: STAR Solutions Detailed Proposal for Improvements to the I-81 Corridor – September 5, 2003

The STAR Solution proposal's financing plan draws from three sources of funding. The first is toll revenues collected from heavy commercial trucks. The second is federal funds earmarked for truck and car separation on interstate highways, which is assumed to be $800 million in fiscal years 2004 through 2008, as well as $800 million in years 2010 through 2015. It also relies on $98 million in VDOT funds set aside for I-81 improvements in the current Six-Year Transportation Development Plan. When Capitalized interest and other uses of fund are included, the total cost of the STAR Solutions Proposal (without the rail option) is $13.006 billion, and the rail improvement is $143.2 million (I-81 PPTA Fact Sheet 2004). This is considerably higher than the estimated cost of the Fluor Virginia Inc. proposal, however they are very different concepts.

5.4.4 Proposal Evaluation and Selection

In February of 2003, within one month of receiving the proposals, VDOT ensured they met basic administrative requirements and moved both proposals to Phase One of the evaluation process described in the RFP. Both proposals were given to the Initial Review Committee (IRC), to perform a review of the conceptual proposals, and evaluate the proposers' qualifications, technical and engineering merit and financial feasibility. Upon completion of this review, the IRC recommended to Commissioner Shucet that both proposals continue on to the Commonwealth Transportation Board (CTB) for further evaluation of the proposed concepts, Phase Two. In March of 2003, the CTB concurred, and approved both the Fluor Virginia Inc. and STAR Solutions conceptual proposals to continue on to Phase Three, submission and evaluation of detailed proposals (Resolution of the Commonwealth Transportation Board, March 20, 2003).

In September 2003, both STAR and Fluor submitted detailed proposals to VDOT. Both were evaluated by the PPTA Advisory Panel, consistent with the terms of the RFP. The Panel met five times over the next several months, with one session fully devoted to public comment. In February of 2004, the PPTA Advisory Panel recommended that the Commissioner enter into negotiations with STAR Solutions for a Comprehensive Agreement for improvements to Interstate 81 in Virginia. They acknowledged that both proposals met the five sets of criteria established in the RFP, they concluded that the STAR Solutions proposal "comes closer to meeting the long-term needs of the corridor and relies on a more diversified, achievable

financing program" (Homer 2004). The advisory panel memo to the Commissioner contains five pages of findings, conditions recommended, and policies recommended. The findings state that the I-81 Corridor is in need of immediate and long-term improvements to address safety and congestion. Major improvements will not occur through traditional highway financing techniques; some form of dedicated toll revenue is the only reliable way to address the substantial capital needs. All vehicles should be tolled. Furthermore, the panel found an inappropriate "non-compete" clause could compromise the ability of VDOT to meet its basic mission of mobility of safety, apparently taking lessons learned from the State Route 91 Express Lanes. The conditions recommended in the Comprehensive Agreement include clearly describing the NEPA process and the effects on building, consider implementing the truck separation improvements and securing the $800 million in Federal Highway funds specifically for truck separation, and make implementation of the Comprehensive Agreement contingent on a total of $1.6 billion from the federal government. Also, the panel recommended the Agreement contain a phased approach to construction, beginning with the most congested, and again restate the avoidance of non-compete clauses. The additional policy recommendations of the Advisory Panel state the ruling of the FHWA that tolls cannot be used to improve the freight rail network, and that diversion of freight to rails must come from multi-state participation. The Panel further recommends that efforts be made to toll all vehicles and minimize the impacts of any improvements to the environmental, cultural, historic, and scenic resources within the corridor (Homer 2004).

5.4.5 Federal Laws and Studies

In the recommendation to Commissioner Shucet, the Advisory Panel conceded that the ultimate determination of need in this corridor will be made through the National Environmental Policy Act (NEPA) and other federal legislation and studies. Because I-81 is federally funded as part of the national interstate system, any changes must comply with federal laws. In the fall of 2003, VDOT and the Federal Highway Administration launched an I-81 Corridor Study, in accordance with NEPA. The study, titled the Tier 1 Draft Environmental Impact Statement (DEIS) considers reasonable improvements to the corridor, including separate truck lanes, rail improvements, and tolls as a funding source. The DEIS was released in early 2005, a year-and-a-half after the initial recommendation to negotiate with STAR Solutions.

In October 2006, the Commonwealth Transportation Board endorsed a series of actions for I-81 that are consistent with FHWA's proposed decisions on the Tier 1 DEIS. In a unanimous resolution, the CTB directed VDOT to complete the Final Environmental Impact Statement with a widening concept that would add not more than two general purpose lanes, only where needed. The board also requested VDOT to implement a program of short-term safety improvements. In addition, the CTB directed the Department of Rail and Public Transportation to identify short-term rail improvements in Virginia and to conduct a multi-state Freight Rail Study with Norfolk Southern Railway to determine possible future diversion of truck traffic to rail. Any funded rail improvements are to be factored into future traffic projections for I-81.

The Final Environmental Impact Statement (FEIS), released in March of 2007, made a series of recommendations to guide the future improvements to the I-81 Corridor. Some of the key conclusions found in the FEIS follow. During the last 25 years, travel demands along I-81 have more than doubled and nearly tripled in some locations. Travel conditions are expected to further deteriorate by 2035. Improvements are needed to address safety and congestion problems. Capacity improvements required vary throughout the corridor, with some locations needing one additional lane, and other sections requiring more. A widening concept with a varying number of lanes will most efficiently meet capacity needs. Separate lanes for trucks do not work for the entire length of I-81 without providing more lanes than are needed. Separate lanes are not proposed to be advanced for further study. There is an immediate need for smaller, independent safety and operational improvements along I-81. These include, but are not limited to, constructing truck climbing lanes, extending on- and off-ramps at interchanges, and installing guardrail. FHWA proposes advancing these types of projects independently. The FEIS goes on to describe the various potential improvements, including the addition of 1, 2, and 3 lanes, 1 and 2 exclusive truck or car lanes, and variable lane expansions. It concludes that no corridor-length concept satisfies the capacity needs, without providing excess capacity, and therefore a concept with a variable number of lanes would most efficiently address the needs of the roadway. The FEIS also contains a toll impact study, to attempt to predict the affect various toll schemes would have on volume and diversion to other roads, most notably US Route 11. The study found that tolls would have a low impact on volume and diversion to other roads, and therefore remain a viable option.

In the early years of the studies and proposals, VDOT was also in the process of determining the legality of levying a toll on I-81. In an October 2003 letter to the FHWA, VDOT inquired as to the interpretation of the Transportation Equity Act for the 21st Century (TEA-21) and the flexibility of this legislation to allow the state to decide the specific vehicles tolled, as well as the toll rates. The FHWA replied that the states do indeed have the flexibility to decide who and how much to toll. VDOT also asked whether TEA-21 allows for the use of toll revenue to improve other modes of transportation, such as rail. After evaluating the question, the FHWA concluded that toll revenue from roadways cannot be used to improve the rail system, it must be used to improve the interstate highway system. During this same timeframe, VDOT requested approval from the FHWA to apply as one of the three national pilot facilities for tolling under TEA-21. In March of 2003, the FHWA gave VDOT "conditional provisional" acceptance to the pilot program. This allows one of the three slots to be reserved for I-81, pending further information. Although the FHWA has conditionally agreed to allow tolls on I-81, current Virginia law allows I-81 tolls on vehicles *other than* cars, pickups, panel trucks, or motorcycles.

5.4.6 The Current Status of I-81 Improvements in Virginia

In June of 2007, the FHWA issued a Record of Decision (ROD) on the Tier 1 FEIS. The ROD gives federal approval of the study and allows VDOT to go forward with planning improvements to I-81. The ROD summarized the same key points established in the FEIS. It stated that the improvement concepts are to be advanced as a toll pilot study and that the non-separated variable lane concept should be pursued. "This stamp of approval from the federal government meshes with our overall strategy for the Interstate 81 corridor," said Virginia Secretary of Transportation Pierce Homer. "We're working toward adding truck climbing lanes, which many people have requested, and there is money in the governor's financial plan to make spot safety improvements. We're also working cooperatively with Norfolk Southern Railway to fund short-term rail and to study long-term rail improvements. With the Record of Decision, we are taking the next step in evaluating future highway improvements."(www.virginiadot.org). Also in June 2007, the VDOT website posted an update on the status of the I-8 Improvements. In the short-term, VDOT planned on extending on- and off-ramps at several locations to improve safety and traffic flow. The department hoped to begin adding truck-climbing lanes where

appropriate within the next few years. The update also stated that the long-term plan is to add general purpose lanes in congested areas, however currently there is no time-table for construction, and detailed, site-specific, Teir 2 studies must be completed before development can begin.

In the summer of 2007, negotiations continued with STAR Solutions under the PPTA legislation, however the scope was drastically reduced to include only two truck climbing lanes: northbound in Rockbridge County and southbound in Montgomery County. Given the recommendations of the ROD and CTB, the original STAR Solutions proposal (calling for 2 exclusive truck lanes in both directions the length of I-81 in Virginia) will not be pursued. In January of 2008, VDOT issued a statement confirming that negotiations had ceased, and the STAR Solutions proposal was no longer in consideration (VDOT News Release 1-16-2008). Long-term, an approach that adds the appropriate number of lanes as necessary to meet capacity will be developed.

5.4.7 Analysis with the Equilibrium Framework and Project Appraisal Template

The following pages contain an analysis of the I-81 STAR Solutions Proposal using the Project Appraisal Framework. Because VDOT and STAR Solutions never entered into an agreement, much of the information needed to fully complete the appraisal is not available. Some aspects of the agreement will be left as an unknown, while others will be predicted based on past VDOT agreements and the lessons learned from similar projects.

Virginia I-81: Evaluation Project Appraisal Framework

Element	Issue		Impact	I-81	Explanation
Market Conditions	Established demand	Yes	--	--	Yes, especially for trucks.
		No	↘		
	Competing facilities	Yes	↖	↖	Yes, there are other roads, but I-81 is most convenient, fastest.
		No	→		
	Manageable global risks	Yes		--	The global risks in this project are manageable.
		No	→		
	Project location	Developed world	--	--	The United States is in the Developed world.
		Developing world	→		
Socio-Environmental Conditions	Project type	Greenfield	--	←	I-81 already exists, any proposal would be an addition to existing lanes.
		Brownfield	←		
	Project scale	Large	↗	↗	Both proposals were of very large scale with costs well into the billions. The STAR Proposal is over $6 billion
		Moderate	→		
		Small	--		
	Demographic impact	Diverse	--	→	Clearly impacts truckers the most, they will be forced to pay a toll of over $100 to travel through the state.
		Distinct	→		
	User Fees	Affordable	↖	--	Most likely will reflect cost of service with a long-term management plan
		Reflect 'cost' of service	--		
		Long-term management plan	--		
Acquisition & Procurement	Financial & technical benchmark	Yes	--	↗	Poorly organized RFP by VDOT with no benchmarking done.
		No	↗		
	Competition	No	↗	↗ ↗	Scopes of two proposals not easily comparable. Decisions made on factors other than price. No competition for project of similar scope. Therefore two units of movement.
		Comparable scope	--		
		Price and other factors	--		
		Factors other than price	↗		
	Selection criteria & process	Transparent & objective	--	↙	No specific weighting given to criteria. Proposals are so different its difficult to compare fairly
		Discretionary or unclear	↙		
	Third party involvement	Yes	--	↗	VDOT did not employ a third party to aid in the evaluation of proposals
		No	↗		

Figure 5:28 I-81 STAR Solutions Analysis with Preliminary P3 Equilibrium Framework (Part 1)

Virginia I-81 Improvements, STAR Proposal: Evaluation with Project Appraisal Framework					
Element	**Issue**		**Impact**	**STAR**	**Explanation**
Concession Management	No-Compete Provisions	Allowed and absolute	↘	--	VDOT would most likely not enter into agreement with strict no compete provisions due to the lessons learned from SR 91.
		Allowed but with exclusions	--		
	Performance measurement	Clear & objective	--		Unsure (no Agreement)
		Absent	↗		
		Vague	↙		
	Conditions for renegotiation	Clear & objective	--		Unsure (no Agreement)
		Absent	↗		
		Vague	↙		
	Termination provisions	Clear & objective	--		Unsure (no Agreement)
		Absent	↗		
		Vague	↙		
	Facility return provisions	Clear & objective	--		Unsure (no Agreement)
		Absent	↗		
		Vague	↙		
Project Performance	Quality & Innovation	Readily apparent	Positive	Positive	Would be readily apparent. Most likely involve innovative toll collection and rate setting technology
		Difficult to judge	Negative		
	Price	Readily apparent	Positive	Negative	Since proposals are different, price performance would be difficult to judge
		Difficult to judge	Negative		
	Service availability	Readily apparent	Positive	Negative	After years of delay and scope changes, the project was finally abandoned. Currently, VDOT is planning $140 million worth of truck lanes on I-81.
		Difficult to judge	Negative		
Legend	- No Movement		→ Toward Industry/Market	← Toward Social/State Interests	
	↗ Toward Industry Interests		↘ Toward Market Interests	Positive - Has a Positive impact on P3 performance	
	↙ Toward State Interests		↖ Toward Social Interests	Negative - Has a Negative impact on P3 performance	

Figure 5:29 I-81 STAR Solutions Analysis with Preliminary P3 Equilibrium Framework (Part 2)

Virginia I-81 Improvements, Fluor Virginia Proposal: Evaluation with Project Appraisal Framework					
Element	**Issue**		**Impact**	**STAR**	**Explanation**
Market Conditions	Established demand	Yes	—	—	Yes, especially for trucks
		No	↘		
	Competing facilities	Yes	↖	↖	Yes, there are other roads. I-81 is the fastest and most convenient though.
		No	→		
Socio-Environmental Conditions	Project type	Greenfield	—	←	I-81 already exists. Any proposal would be an addition to existing lanes
		Brownfield	←		
	Project scale	Large	↗	↗	Both proposals were of large scale, the Fluor Virginia proposal is over $7 billion.
		Moderate	→		
		Small	—		
	Demographic impact	Diverse	—	--	Both cars and trucks impacted. Local trips toll-free.
		Distinct	→		
	User Fees	Affordable	↖	—	Most likely will reflect the cost of service with a long-term management plan. Most likely would not be considered "affordable" by many.
		Reflect 'cost' of service	—		
		Long-term management plan	—		
Acquisition & Procurement	Financial & technical benchmark	Yes	—	↗	Poorly organized RFP by VDOT with no benchmarking
		No	↗		
	Competition	No	↗	↗ ↗	Scopes of two proposals not easily comparable. Decisions made on factors other than price. No competition for project of similar scope, therefore two units of movement toward Industry Interests.
		Comparable scope	—		
		Price and other factors	—		
		Factors other than price	↗		
	Selection criteria & process	Transparent	—	No	No specific weighting given to criteria. Proposal are so different that it is difficult to compare fairly.
		Objective	—		

Figure 5:30 I-81 Fluor Virginia Analysis with Preliminary P3 Equilibrium Framework (Part 1)

Virginia I-81 Improvements, Fluor Virginia Proposal: Evaluation with Project Appraisal Framework					
Element	**Issue**		**Impact**	**STAR**	**Explanation**
Concession Management	No-Compete Provisions	Allowed and absolute	↘	--	VDOT would most likely not enter into agreement with strict no compete provisions due to the lessons learned from SR 91.
		Allowed but with exclusions	--		
	Performance measurement	Clear & objective	--	--	Unsure (no Agreement)
		Absent	↗		
		Vague	↙		
	Conditions for renegotiation	Clear & objective	--	--	Unsure (no Agreement)
		Absent	↗		
		Vague	↙		
	Termination provisions	Clear & objective	--	--	Unsure (no Agreement)
		Absent	↗		
		Vague	↙		
	Facility return provisions	Clear & objective	--	--	Unsure (no Agreement)
		Absent	↗		
		Vague	↙		
Project Performance	Quality & Innovation	Readily apparent	Positive	Positive	Involves electronic toll collection, congestion management and rate setting technology
		Difficult to judge	Negative		
	Price	Readily apparent	Positive	Negative	Since proposals are different, price performance would be difficult to judge
		Difficult to judge	Negative		
	Service availability	Readily apparent	Positive	Negative	Lost out to STAR Solutions proposal, which was eventually abandoned by VDOT.
		Difficult to judge	Negative		
Legend	- No Movement		→ Toward Industry/Market	← Toward Social/State Interests	
	↗ Toward Industry Interests		↘ Toward Market Interests	Positive - Has a Positive impact on P3 performance	
	↙ Toward State Interests		↖ Toward Social Interests	Negative - Has a Negative impact on P3 performance	

Figure 5:31 I-81 Fluor Virginia Analysis with Preliminary P3 Equilibrium Framework (Part 2)

Using the directional adjustments from the Appraisal Template above, Figure 5:31 displays where the Virginia I-81 STAR Solutions and Fluor Virginia proposals plot on the P3 Equilibrium Framework:

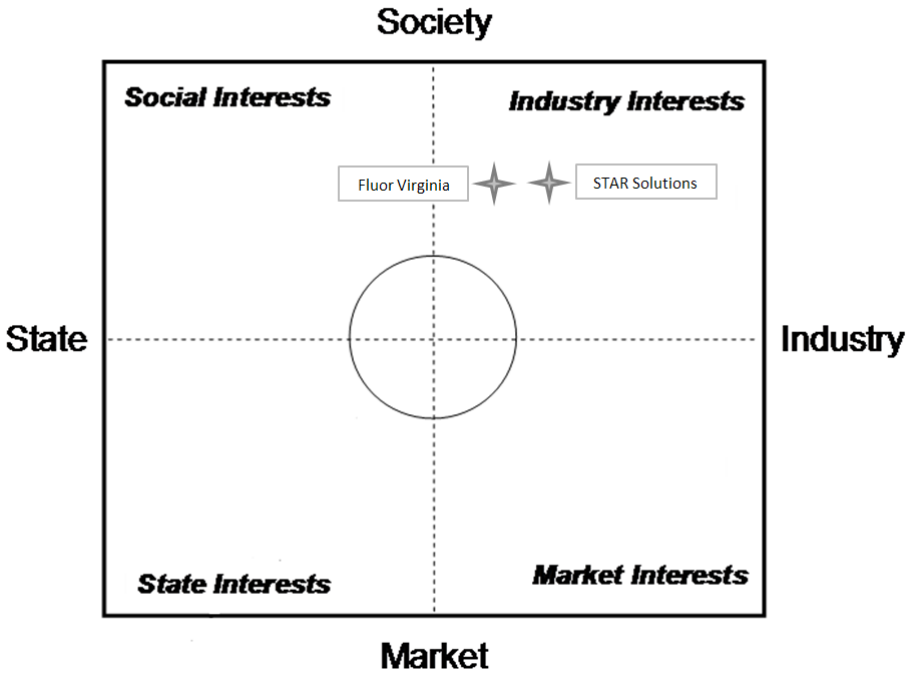

Figure 5:32 Competing I-81 Improvement Proposals Plotted on Equilibrium Framework

5.4.8 Conclusion

Plotting the proposed I-81 Improvements on the Quadrant Framework gives an indication how poorly the project might have gone, had VDOT had proceeded. The fact that both proposals rest so far in favor of industry interests is a strong warning sign that a project should not be progressed. The I-81 Improvements are placed in that quadrant primarily because of the lack of benchmarking done by VDOT and the difficulty in comparing two completely different proposals. The poorly defined scope of work led to the factors just mentioned. Consequently, VDOT lost control of the outcome of the proposals, as is shown by the project placement on the P3 Equilibrium Framework. The proposal did not adequately protect State Interests, and therefore was rightly abandoned by VDOT.

The I-81 Corridor Improvements in Virginia represent a failed attempted at a very large public-private partnership agreement. An RFP without a well-defined scope rarely leads to a successful project. In this case, the public sector agency did a poor job in defining exactly what

it wanted out of the proposers. Without detailed scope or evaluation criteria, the two proposers came up with very different ideas that are not only hard to compare, but also did not best meet the needs of VDOT. However, it is hard to blame Fluor Virginia Inc. and STAR Solutions, because VDOT itself did not know with any certainty what sort of improvements it was pursuing. This case provides a good example of a public agency over-anxious to take advantage of private sector capital, before truly understanding the needs of the transportation system in question. With a Tier 1 FEID now complete, and a Decision of Record, VDOT has a better understanding of the future requirements of I-81, and how to best go about improving it. This may lead to another opportunity for a PPTA project, if the conditions prove advantageous for both VDOT and the private sector.

Chapter 6 - Revisions to P3 Equilibrium Framework

This chapter builds upon the experience of applying the P3 Equilibrium Framework to case studies and applies that knowledge toward improving the performance of the lens. Utilizing the lens in real world applications stimulated the process of development by identifying areas with the potential for improvement. It also served as a catalyst for new ideas and a creative solution to the quandary surrounding a potential rating system. The following sections detail the improvements to the P3 Equilibrium Framework.

6.1 Revisions to Appraisal Templates

As described in the research methodology, the lens is developed through an inductive and deductive approach that utilizes continuous improvements while applying it to the case studies. The exercise of employing the appraisal templates to evaluate the case studies, as well as continued literature review and personal interviews resulted in several changes to the enabling legislation and project appraisal templates. The improved templates are presented below. Changes and additions to Garvin's original templates are shaded in gray for ease of reference.

6.1.1 P3 Program Appraisal Template

Figure 6:1 displays the revised and final version of the P3 Program Appraisal Template. The first change is the addition to the Scope of Work element. If the scope of work permitted by the program is addressed in the bill, the locus remains unmoved because this clarifies what the public sector desires, while also giving the private sector insight into which types of projects to develop. If scope is not addressed, the program moves to the right, in favor of industry and market interests, because the private sector can choose to develop projects of any scope as they see fit. Also, the Limitations category is expanded to include the response, "No such restrictions", in the case of enabling legislation that is silent on such limitations.

P3 Program Appraisal Template							
Element	**Issue**		**Impact**	**Element**	**Issue**		**Impact**
Scope of Work or Service	Addressed by Legislation?	Yes	--	**Acquisition & Procurement**	Addressed by Legislation?	Yes	--
		No	→			No	↗
	Source of Definition	Solicited Only	--		Comparative Analysis	Not Addressed	→
		Unsolicited Allowed	↘			Required	←
	Limitations	Mode Restrictions	←			Required & process defined	--
		Geographic Restrictions	↙		Selection Method	Undisclosed	↙
		Project delivery restrictions	↙			Competitive	--
		No such restrictions	--			Negotiated	↗
Financing	Addressed by Legislation?	Yes	--		Permitting & Property Acquisition	Handled by state	--
		No	↘			Handled by private sector	↙
	Sources Allowed	All	--			Not Addressed	↙
		Private Only	↘		Use of 3rd Party Consultatnts	Adressed & allowed	--
	Allowances or Exlusions	Tex-exemption allowed	↗			Not addressed	↗
		Diversion to public funds allowed	↙	**Contract Management**	Addressed by Legislation?	Yes	--
User Fees	Addressed by Legislation?	Yes	--			No	↗
		No	→		Auditing Process	Undisclosed	↗
	Method of Establishment	Publicly driven	←			Disclosed	↙
		Privately driven	→			Disclosed & defined	--
		Negotiated	→		Termination Rights	Undisclosed	↗
	Management	Not addressed	→			Unlimited	↙
		Escalation controls	--			For cause	--
		Revenue sharing with state	←				

Figure 6:1 Final P3 Program Appraisal Template

The only change to the Financing element is the question if it is addressed by the legislation. Clarifying this in the legislation is desirable, leaving the locus unmoved. If not addressed, market interests have the freedom to come up with any financing structure, represented by a movement to the lower right of the quadrant framework.

Similarly, if the topic of User Fees is addressed in the legislation, it provides all parties with an idea of what to expect and how to tailor the proposals to comply with the rules. This is beneficial to all parties and leads to a balance of interests, leaving the locus stationary. If user fees are not mentioned, members of industry and the market devise a plan to suit their needs, possibly at the expense of the public. This favors the private sector and releases some control from the state, resulting in a rightward movement.

The Acquisition and Procurement element also opens with the same question as the first three. If the process is addressed by the legislation, the locus remains unmoved. The state has

thought out the process and most likely produced guidelines, which benefit the public sector in terms of transparency and reproducibility, while also giving the private sector participants information on how proposals will be evaluated. If not addressed, industry interests are served, since they have more latitude to propose projects in a manner that they see fit and the state may enter agreements without a rigorous evaluation process. The issue previously titled "Approvals" has been divided into "Permitting & Property Acquisition" and "Use of 3rd Party Consultants". This should serve to clarify the purpose of these issues. If permitting and property acquisition activities are handled by the state agency, the locus remains unmoved. State and local transportation agencies possess more expertise and resources to obtain permits and property, therefore improving the chances of project success. The private sector is less skilled in these activities. If left to the private sector, the project moves in the opposite direction of private interests, towards the state. This is because the state has less responsibility while the private sector is burdened with the tasks of permitting and property acquisition. Legislation that is silent on the topic benefits the State, as it can choose to aid in the process if it desires, or leave the responsibility to the private parties involved. If the program specifically mentions the procurement and use of third party consultants to provide resources and advice to the state agency, all parties benefit. The state gains expertise and added manpower, while the private proposers receive an unbiased third party evaluation.

The Concession Management element has been renamed Contract Management to encompass the full spectrum of possible arrangements. Although every project may not be a concession, they are all governed by contracts, therefore the term Contract Management is more appropriate. The final addition to the enabling legislation template asks if the topic of contract management is addressed by the legislation. Contract management governs how the various parties will interact throughout the course of the long-term agreement; therefore, it is a desirable aspect of the legislation from the perspective of all stakeholders. If addressed, the program remains unmoved on the framework. If omitted, the industry benefits because the state loses some control. In most cases, industry is usually more able to make the rules as the concession goes on, resulting in a movement to the upper right.

6.1.2 P3 Project Appraisal Template

P3 Project Appraisal Template

Element	Issue		Impact
Market Conditions	Established Demand	Yes	--
		No	↘
	Competing Facilities	Yes	↖
		No	→
	Manageable Global Risks	Yes	--
		No	→
	Project Location	Developed world	--
		Developing world	→
Socio-Environmental Conditions	Project Type	Greenfield	--
		Brownfield	←
	Project Scale	Large (> $1 Billion)	↗
		Medium ($10 M - $1 B)	→
		Small (< $10 Million)	←
	Demographic Impact	Diverse	--
		Distinct	→
	User Fees	Reflect cost of service	--
		Unusually high	→
		Long-term management plan	--
		No long-term plan	↗
	Public & Political Support	Positive support	--
		Opposition	↖
Acquisition & Procurement	Financial & Technical Benchmark	Yes	--
		No	↗
	Competition	No	↗
		Of Comparable Scope	--
		Based on Price, Technical &/or Schedule	--
		Factors other than Price	↗
	Selection Criteria & Process	Transparent & objective	--
		Discretionary or unclear	↙
	Third Party Consultant Involvement	Yes	--
		No	↗

Element	Issue		Impact
Contract Management	Risk Apportionment	Assigned to proper party	--
		Transferred	↙
	No-Compete Provisions	Exist & Stringent	→
		Non-existent or reasonable	--
	Performance Measurement	Clear & objective	--
		Absent	↗
		Vague	↙
	Conditions for Renegotiation	Clear & objective	--
		Absent	↗
		Vague	↙
	Termination Provisions	Clear & objective	--
		Absent	↗
		Vague	↙
	Facility Return Provisions	Clear & objective	--
		Absent	↗
		Vague	↙
Project Performance	Quality & Innovation	Readily apparent	Positive
		Marginal	-
		Non-existant	Negative
	Price	Readily apparent	Positive
		Difficult to judge	Negative
	Service availability	Rapid & continued availability	Positive
		Slow or delayed availability	Negative
	Environmental Performance	Positive impact	Positive
		Does not benefit environment	Negative

Figure 6:2 Final P3 Project Appraisal Template

The first addition to the P3 Project Appraisal Template concerns global risks, which exist in all projects. However, if they are manageable the locus does not move. If not, the locus moves toward the right, as the private parties must take on the responsibility of mitigating them. Project location is also an important consideration. If the project is in the developed world, it is

likely that similar projects exist and all parties are usually capable and knowledgeable, keeping the locus centered. However, the conditions in developing countries usually include a large potential for growth and governments that may not be as sophisticated, benefitting industry and the market interests. In the case of a developing country, the project position moves to the right.

Socio-Environmental Conditions also experienced some change as the template evolved. Project scale is further defined by the monetary values given. To qualify as a large project, the cost must top $1 billion. A medium sized project is identified by a cost between $100 million and $1 billion. A project of less than $100 million allows for competition between many potential firms, without the State giving up operations of a potentially major asset. Therefore, the movement is toward the public interests. Furthermore, the User Fees section is clearer than in the previous version. The first question concerns the rate charged. If the rate is reasonable and reflects cost of service, the project remains balanced. If the toll rate is unusually high, this favors the private sector, as industry and the market are likely to make more money. High tolls can also be thought of as a movement away from the public interest. The other issue within User Fees concerns the existence of a long-term management plan for toll increases. Clearly, a pre-arranged plan benefits all parties and maintains equilibrium. Without such guidelines, the concessionaire is at an advantage, as they can raise tolls as they please. Therefore, the arrow for "No long-term plan" points towards industry interests.

In the Competition section of the Acquisition & Procurement category, "Price and other factors" was further clarified to "Based on Price, Technical, & or Schedule" for ease of use. The old Selection Criteria & Process listed Transparent and Objective separately, each with no movement. The revised version has Transparent & objective as one selection that maintains project balance. Discretionary or unclear is added as a possible selection. In this case, the state has more control to develop projects they want, without a clear and repeatable process. This is negative from the perspective of the private sector, and gives more influence to the state, as shown by the arrow pointing toward state interests. Although the arrow points toward the state, it is usually in the State's best interest to have a transparent process, which gives the public piece of mind and provides industry with a fair assessment. An issue concerning third party consultants has also been added. The guidance and expertise of third party consultants is an important asset for state transportation authorities that may not have extensive experience with public-private partnerships. Therefore, all parties benefit from engaging a consultant with

proficiency in such projects. Without such expertise, the project moves toward industry, who in most cases is at an advantage over state agencies.

Again, the Concession Management element has been renamed Contract Management. The only change within the Contract Management element is the addition of risk apportionment. Many articles on public-private partnership projects rate the allocation of risks as one of the most important factors to success (Aziz 2007, Chua et al. 1999, Froud 2003, Zhang 2005). The addition of risk management is an important improvement over the original template. Projects that assign the various risks to the proper party maintain the range of balance. If risk is unnecessarily transferred to the private sector, this moves the location of the project toward state interests in the lower left quadrant. Although the arrow moves in favor of the state, this could adversely affect the project over the long term. An unsuccessful project is not beneficial to any of the four parties. Therefore, agreements should be careful to assign each risk to the party with the ability to best handle that particular risk.

The Project Performance category underwent significant changes in the evolution of the template. First and foremost, Garvin's checkmarks and X's were replaced with the words Positive and Negative, to clarify their meaning. A Positive rating signifies that the issue has been managed in a manner that encourages success, while a Negative rating implies the project performance is lacking in that area, detracting from overall success. One of the main arguments for P3 as a delivery method is the innovation brought about by the integration of project activities. Therefore, innovation and quality should be readily apparent, producing a Positive rating. A project of average or marginal innovation and quality is considered neither a positive or negative. Meanwhile a project that lacks innovation and quality is met with a Negative rating. Similarly, the price performance of the project should be superior to that of segmented delivery systems and readily apparent, resulting in a positive score. If the project fails to meet this criterion, it is a Negative sign of project success. The Service Availability issue has been altered slightly to encompass the development time for a particular project. A facility that moves rapidly through the development process and remains available once opened receives a Positive, while slow or delayed availability is Negative. Environmental Performance was added to the Project Performance element of the template, as this is an important concern facing projects. If the project provides a positive impact to the environment, it receives a Positive rating, while a facility that does not benefit the environment scores a Negative.

6.2 Revisions to P3 Equilibrium Framework

Further revisions to the P3 Equilibrium Framework concern the applicability of the Framework, as shown in Figure 6:3. The area has been gridded to ensure all movements are of equal distance. This not only allows for more consistent placement, but also guarantees projects are placed correctly with respect to each other. Furthermore, the range of balance has been changed from a circle to a square, as part of the conversion to a grid system. The placement of the case studies contributed to the decision to use a four unit by four unit range of balance. As illustrated in the following sections, only the Dulles Greenway project falls in the range of balance, while the SR 91 Express Lanes straddle the outside edge. This indicates that a position within the range of balance is achievable, yet still fairly difficult to obtain, as only one in six projects warranted this placement. The further evolution of the equilibrium framework requires moving the axis labels to the corners of the quadrants. As initially labeled, it is difficult to visualize the axes as a continuum, due to the placement of the labels. With much thought, and input from fellow academics, it is determined that only labeling the quadrants results in a more intuitive use of the equilibrium framework. The continuum concept is still intact, as it is still clear that the further from the center, the more the project is in favor of the interest represented by the quadrant.

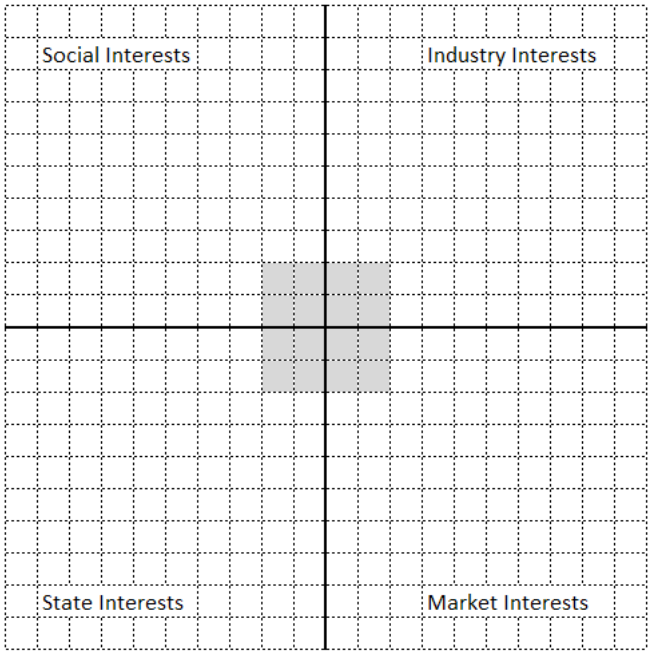

Figure 6:3 Final P3 Equilibrium Framework

Application of the P3 Equilibrium Framework to the case studies uncovered a critical shortcoming of the evaluation system. Clearly, the fewer movements that a projects has based on the appraisal templates, the more balanced the project and greater the chance for success. While analyzing the case studies, it became apparent that a project could possibly have many directional movements, yet still end up within the range of balance. Therefore, the position would be misleading because the final location indicates a high potential for success, while many aspects of the agreement were out of balance. Each arrow indicating a unit of movement in the appraisal template represents a feature of the agreement that most likely is undesirable, and may represent a potential pitfall of the agreement. For instance, a strict no-compete clause results in a unit movement towards market interests. In the case of the SR 91 Express Lanes, this clause turned public opinion against the facility and forced the purchase by OCTA. A project with many different directional arrows in the appraisal template has a greater chance to go awry than a project with little movement. Arrows do not necessarily signal a failed project, or even a negative situation. However, movements resulting from the appraisal template correspond to the amount of "Tension" that exists in the agreement. In order to further clarify the term "Tension", imagine that each of the categories in the four corners of the Framework is strung up by ropes or rubber bands. When an issue results in a directional movement, the group in the direction of the movement resolves an issue in a way that is advantageous to their interests. The group represented in the opposite corner has some power taken from them; the group is strained or stretched, resulting in Tension. Again using the no-compete clause example, the movement benefited "market interests" and strained the "social interests", as evidenced by extreme financial success of the Express Lanes and the turning of public opinion against it. Similarly, other movements along the Framework result in the formation of additional tension.

Tension should not be thought of as a sure-fire sign of failure. All projects are unique, and therefore likely to experience some directional movement around the P3 Equilibrium Framework. In general, these movements are natural, and each agreement has its own balance of give and take between the four parties involved. However, it is necessary to distinguish between projects that have many movements and those that manage most issues well, resulting in fewer movements and less Tension. A project with low Tension is desirable, most likely resulting in a successful project. Projects with high tension, that is many movements, may be susceptible to one or more aspects of the agreement leading to unsuccessful results. Only projects will be rated

in this way. Although a similar concept could be employed for P3 programs, it would be even more difficult to compare or rate them. Furthermore, projects are the operational expressions of the legislative program, and the collective performance of the projects serve as measures of the program's success.

In order to illustrate the amount of "Tension" in a project, the P3 Equilibrium Framework will also display the path taken to reach its final position. This allows the user and target audience to gain a better understanding at how the project arrived at the position and how many movements were made in the process. The concept of "Tension" also helps solve the question of creating a rating system for the P3 Equilibrium Framework. As initially stated by Garvin, it is thought that a numerical rating system would make the framework too much like a "black box" that takes the input and spits out a result. Furthermore, the unique conditions of different projects make it difficult to form a universal rating system, or to definitively state that one agreement is better than another. Therefore, in the place of a rating system, the amount of tension will be tracked as an indicator of success. A project with Low Tension can be thought of as having a strong chance for success. Medium Tension indicates project performance may be average or slightly above average. High Tension is below average and most likely undesirable. Projects with high tension have several different elements in the contract that could possibly lead to adverse results.

With the various levels of tension explained, they must now be defined in terms of the number of movements. This is a very delicate undertaking, as the desire to avoid a "black box" has already been expressed. It is important to keep in mind that the levels of tension are not concrete scores that ensure success or doom a project for failure. Instead, the category of tension indicates the amount of potentially troublesome aspects of the agreement. To determine the level of tension, first calculate the number of movements based on the P3 Project Appraisal Template, then subtract a movement for a "Positive" and add a movement for a "Negative" in the Project Performance category to reach the final score. The "Positives" and "Negatives" in the Project Performance category are incorporated into the level of tension because they are extremely important aspects of the project. A facility with exceptional innovation, price, service availability, or environmental performance can lessen the impact of negative aspects of the agreement. These broad areas of project performance often overshadow a poorly managed issue

in the contract. For instance, the public may be more tolerant of high user fees if the quality of the facility and environmental performance is excellent.

The case studies will served as points of reference when determining the number of movements for each category of tension. The improved project framework has 20 individual issues, each with the potential for movement in a particular direction. Utilizing the final version of the appraisal templates presented in this chapter, the SR 91 Express Lanes and original Pocahontas Parkway score a 10, the Dulles Greenway a 4, and the I-81 Improvements scored a 10 even though many of the Concession Management issues were not able to be definitively answered. The new Pocahontas Parkway agreement had the fewest directional movements, ultimately resulting in a 3. These scores provide a general sense of the range of values and where to delineate between tension levels. Those projects scoring 0-4 can be considered Low Tension, while 5-9 signifies Medium Tension and 10 or more is categorized as High Tension. It cannot be stressed enough that these are only loose categorizations, and do not definitely rate one project higher than another. Rather, the tension level only indicates how well the agreement addresses the critical issues in the appraisal template. By this measurement, the new Pocahontas Parkway agreement and the Dulles Greenway are Low Tension, while the SR 91 Express Lanes, failed I-81 Improvements STAR Solution proposal, and original Pocahontas Parkway agreement are High Tension. The final evaluations of the legislation and case studies with the improved P3 Equilibrium Framework are contained in the next sections.

6.3 Apply Final P3 Equilibrium Framework to Legislation

6.3.1 California's Assembly Bill 680

California's AB 680 - Evaluation with Enabling Legislation Template					
Element	**Issue**		**Impact**	**AB 680**	**Explanation**
Scope of Work or Service	Addressed by Legislation?	Yes	--	--	AB 680 addresses the scope of work, as shown by the following two issues.
		No	→		
	Source of Definition	Solicited Only	--	↘	The legislation called for unsolicited proposals.
		Unsolicited Allowed	↘		
	Limitations	Mode Restrictions	←	↙	Geographic restrictions exist. Of the four projects, at least one must be in northern and southern California.
		Geographic Restrictions	↙		
		Project delivery restrictions	↙		
		No such restrictions	--		
Financing	Addressed by Legislation?	Yes	--	--	Financing is addressed, forbidding state and federal funds and allowing for excess funds.
		No	↘		
	Sources Allowed	All	--	↘	No State or Federal funds are allowed.
		Private Only	↘		
	Allowances or Exclusions	Tex-exemption allowed	↗	↙	Excess revenue goes toward paying off debt early, or the State Highway Account
		Diversion to public funds allowed	↙		
User Fees	Addressed by Legislation?	Yes	--	--	Governed by reasonable return. Excess to State
		No	→		
	Method of Establishment	Publicly driven	←	→	Only guidance given is that the private developer can secure a "reasonable return"
		Privately driven	→		
		Negotiated	→		
	Management	Not addressed	→	←	Reasonable return will govern user fee management, excess revenue placed into State Highway Account.
		Escalation controls	--		
		Revenue sharing with state	←		

Figure 6:4 Final Evaluation of AB 680 (Part 1)

Element	Issue		Impact	AB 680	Explanation
Acquisition & Procurement	Addressed by Legislation?	Yes	--	--	Several acquisition and procurement principles are addressed in the legislation.
		No	↗		
	Comparative Analysis	Not Addressed	→	→	AB 680 does not benchmark projects. Proposals are all different, cannot be compared to each other either.
		Required	←		
		Required & process defined	--		
	Selection Method	Undisclosed	↙	--	The selection method is competitive, based on the process outlined.
		Competitive	-–		
		Negotiated	↗		
	Permitting & Property Acquisition	Handled by state	--	--	AB 680 states that Caltrans may exercise all powers, including environmental permitting.
		Handled by private sector	↙		
		Not addressed	↙		
	Use of 3rd Party Consultants	Addressed & allowed	--	↗	Third party consultants are not addressed in the legislation.
		Not addressed	↗		
Contract Management	Addressed by Legislation?	Yes	--	↗	Concession management issues are not addressed by AB 680
		No	↗		
	Auditing Process	Undisclosed		↗	No auditing process is disclosed in the bill.
		Disclosed	↙		
		Disclosed & defined	--		
	Termination Rights	Undisclosed	↗	↗	Termination rights are not part of the legislation.
		Unlimited	↙		
		For cause	--		

Figure 6:5 Final Evaluation of AB 680 (Part 2)

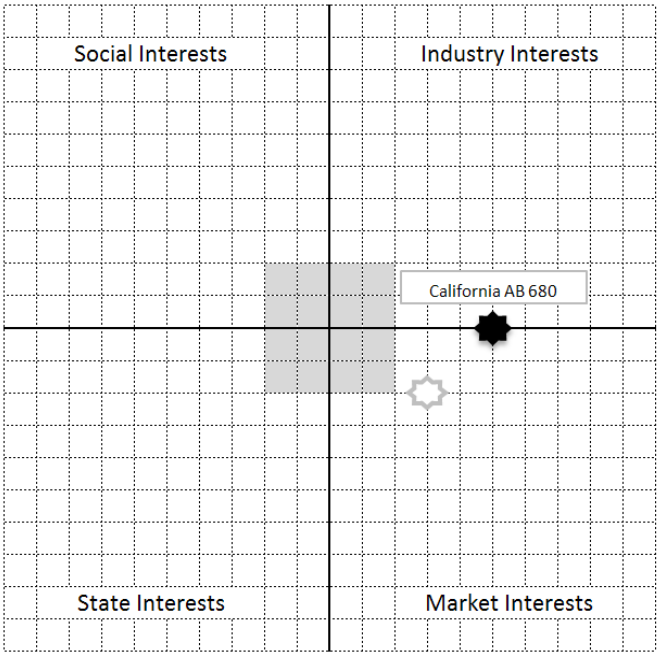

Figure 6:6 Final Evaluation of AB 680 on P3 Equilibrium Framework

Figure 6:6 displays the new position of California's AB 680 legislation in black, while the old position obtained using Garvin's version of the framework is shown as a hollow grey marker. As the figure shows, use of the new Enabling Legislation Appraisal Template results in AB 680 moving further up and to the right. The final resting place is well to the right of the range of balance, meaning that the legislation favors Industry and Market Interests. This position is undesirable from the point of the public and State, as too much power is given to the private sector. This is expected to result in projects in which industry makes a significant profit, possibly at the expense of public welfare. This exact situation occurred, in the form of the State Route 91 Express Lanes. Although the Express Lanes were a huge success and source of profit from a private perspective, the Agreement's no-compete clause went against the best interest of the driving public, forcing the OCTA to purchase the lease rights to the road from the private concessionaire. The results from the SR 125 project remain to be seen; the road recently opened after years of delay. With the information available, it appears that the P3 Equilibrium Framework has properly evaluated California's Assembly Bill 680; it's position on the equilibrium framework is appropriate based on the performance of AB 680's projects.

6.3.2 Virginia's Public-Private Transportation Act of 1995

Virginia's PPTA - Evaluation with Enabling Legislation Template					
Element	**Issue**		**Impact**	**PPTA**	**Explanation**
Scope of Work or Service	Addressed by Legislation?	Yes	--	--	Scope of work is addressed in several ways.
		No	→		
	Source of Definition	Solicited Only	—	↘	The PPTA provides for unsolicited proposals
		Unsolicited Allowed	↘		
	Limitations	Mode Restrictions	←	--	No mode, geographic or project delivery restrictions exist.
		Geographic Restrictions	↙		
		Project delivery restrictions	↙		
		No such restrictions	--		
Financing	Addressed by Legislation?	Yes	--	--	Financing is addressed. Public sources of funding, tax-exemptions, and diversion to public funds are allowed.
		No	↘		
	Sources Allowed	All	--	--	The PPTA does not restrict funding sources.
		Private Only	↘		
	Allowances or Exclusions	Tex-exemption allowed	↗	↗	Both tax-exempt financing and diversion to public funds are allowed
		Diversion to public funds allowed	↙	↙	
User Fees	Addressed by Legislation?	Yes	--	--	User fee management is addressed in the legislation.
		No	→		
	Method of Establishment	Publicly driven	←	→	Different projects have used different methods. But they can best be described as negotiated and privately driven.
		Privately driven	→		
		Negotiated	→		
	Management	Not addressed	→	→ ←	Vaguely addressed. No management plan mentioned. Excess earnings distributed to Commonwealth's Transportation Trust Fund.
		Escalation controls	--		
		Revenue sharing with state	←		

Figure 6:7 Final Evaluation of PPTA (Part 1)

Element	Issue		Impact	PPTA	Explanation
Acquisition & Procurement	Addressed by Legislation?	Yes	--	--	Several aspects of acquisition and procurement are addressed in the legislation.
		No	↗		
	Comparative Analysis	Not Addressed	→	--	The PPTA provides for competition through multiple proposals. However if no other proposal exists, the project is not subject to a comparative analysis.
		Required	←		
		Required & process defined	--		
	Selection Method	Undisclosed	↙	--	The selection method aims to achieve competition and is defined in by the Implementation Guidelines
		Competitive	-–		
		Negotiated	↗		
	Permitting and Property Acquisition	Handled by state	--	--	The PPTA gives the appropriate agencies the ability to obtain permitting and acquire property for projects.
		Handled by private sector	↙		
		Not Addressed	↙		
	Use of 3rd Party Consultants	Addressed & allowed	--	--	The legislation states the responsible public entity may rely on internal reports or the advice of outside advisors or consultants having relevant experience.
		Not addressed	↗		
Contract Management	Addressed by Legislation?	Yes	--	--	Many basic concession management issues are addressed, while others (such as auditing), are not.
		No	↗		
	Auditing Process	Undisclosed	↗	↗	Auditing processes are not addressed in the legislation.
		Disclosed	↙		
		Disclosed & defined	--		
	Termination Rights	Undisclosed	↗	--	The comprehensive agreement may contain provisions under which the public entity may provide notice of default and cure rights
		Unlimited	↙		
		For cause	--		

Figure 6:8 Final Evaluation of PPTA (Part 2)

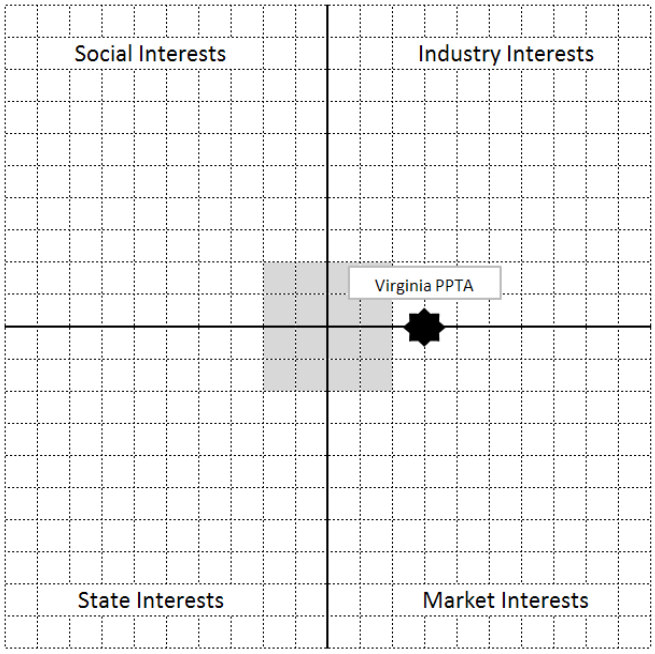

Figure 6:9 Final Evaluation of PPTA on P3 Equilibrium Framework

The updated Enabling Legislation Appraisal Template did not affect the positioning of Virginia's Public-Private Transportation Act of 1995 on the Equilibrium Framework. This legislation plots closer to equilibrium than AB 680, but still falls slightly outside the range of balance. According to the P3 Equilibrium Framework, the PPTA favors the private sector, indicated by its placement in right half of the framework. This is due in large part to the possibility of unsolicited proposals and tax-exemptions. The legislation allows for toll setting to be driven by the private sector, and fails to outline an auditing process, both of which also benefit the private sector. Therefore, it is understandable why Virginia's legislation falls on the right side of equilibrium. The Public-Private Transportation Act projects and proposals have encountered mixed success, which seems to correspond to the position slightly outside the range of balance. Virginia remains one of the most active states in the realm of public-private partnerships, with several projects on the horizon; in time more data will be available to analyze the accuracy of the P3 Equilibrium Framework.

6.4 Apply Final P3 Equilibrium Framework to Case Studies

6.4.1 California State Route 91 Express Lanes

SR 91: Evaluation with Project Appraisal Framework					
Element	**Issue**		**Impact**	**SR 91**	**Explanation**
Market Conditions	Established Demand	Yes	––	––	There was already established demand on the congested SR 91.
		No	↘		
	Competing Facilities	Yes	↖	↖	There are other roads in the area, which is well developed.
		No	→		
	Manageable Global Risks	Yes	--	––	Global Risks are very manageable for this project
		No	→		
	Project Location	Developed world	––	––	United States is a developed country.
		Developing world	→		
Socio-Environmental Conditions	Project Type	Greenfield	––	←	The project is new lanes inside the existing SR 91, so it is brownfield in that respect.
		Brownfield	←		
	Project Scale	Large (>$1B)	↗	→	The project cost is $136 million, which categorizes it as a medium scaled project.
		Medium	→		
		Small (< $100M)	←		
	Demographic Impact	Diverse	––	––	The fee affects those who commute on SR 91, but free alternative prevents impacting this distinct group
		Distinct	→		
	User Fees	Reflect cost of service	--	––	The costs are affordable for some/most, variable pricing reflects the value of the service.
		Unaffordable or unusually high	↘		
		Long-term management plan	--	--	There is a long-term management plan in place
		No long-term plan	↗		
	Public & Political Support	Positive support	--	--	Initial support turned into opposition as the surrounding roads could not be improved to relieve congestion. Currently no opposition.
		Opposition	↖		
Acquisition & Procurement	Financial & Technical Benchmark	Yes	––	↗	There was no benchmarking done by Caltrans.
		No	↗		
	Competition	No	↗	↗ ↗	This proposal was the only one of its kind, so there were no projects to compare it to. It did compete against other project proposals, but this is not true price or technical competition. One arrow because there was no direct competition for a proposal of comparative scope, and the other because it was judged against other proposals on factors other than price.
		Of comparable scope	––		
		Based on Price, Technical & / or Schedule	––		
		Factors other than price	↗		
	Selection Criteria & Process	Transparent & objective	––	↙	Caltrans gave very loose guidelines and criteria by which to measure completely different projects. Therefore the process was very discretionary.
		Discretionary or unclear	↙		
	Third Party Consultant Involvement	Yes	––	↗	Caltrans did not use a 3rd party analyst/consultant to aid them in decision making.
		No	↗		

Figure 6:10 Final Evaluation of SR 91 Express Lanes (Part 1)

SR 91: Evaluation with Project Appraisal Framework					
Element	**Issue**		**Impact**	**SR 91**	**Explanation**
Contract Management	Risk Apportionment	Assigned to proper party	-–	–	Construction, financing, and demand risk taken by CPTC, as it should be.
		Transferred	↙		
	No-Compete Provisions	Exist & stringent	↘	↘	The no-compete provision was the downfall of this project from a PPP perspective. Other projects and later legislation learned from this mistake.
		Non-existent or reasonable	-–		
	Performance Measurement	Clear & objective	-–	↙	Operations and maintenance are to be overseen by Caltrans. Must be up to Caltrans standards, which will be supplied. Form and level of oversight not specific.
		Absent	↗		
		Vague	↙		
	Conditions for Renegotiation	Clear & objective	--	↙	Article 5 states that the contract states parties should negotiate changes in good faith. Also Article 15 of Agreement outlines the arbitration process if there is a disagreement.
		Absent	↗		
		Vague	↙		
	Termination Provisions	Clear & objective	-–	–	Well-defined and fair termination provisions. Article 3 Section 5 of Agreement
		Absent	↗		
		Vague	↙		
	Facility Return Provisions	Clear & objective	-–	↗	Return provisions not mentioned in the Agreement.
		Absent	↗		
		Vague	↙		
Project Performance	Quality & Innovation	Readily apparent	Positive	Positive	Quality must be up to Caltrans standards. Innovative AVI tolling system and variable priced tolls.
		Marginal	-		
		Non-existent	Negative		
	Price	Readily apparent	Positive	Negative	No price benchmark formed by Caltrans.
		Difficult to judge	Negative		
	Service Availability	Rapid & continued	Positive	Positive	Delivered without too much delay. AVI technology performing well. Easy to judge.
		Slow or delayed	Negative		
	Environmental Performance	Positive impact	Positive	Positive	Roadway has minimum negative impact to environment. Congestion relief reduces vehicle emissions.
		No benefit to environment	Negative		

Figure 6:11 Final Evaluation of SR 91 Express Lanes (Part 2)

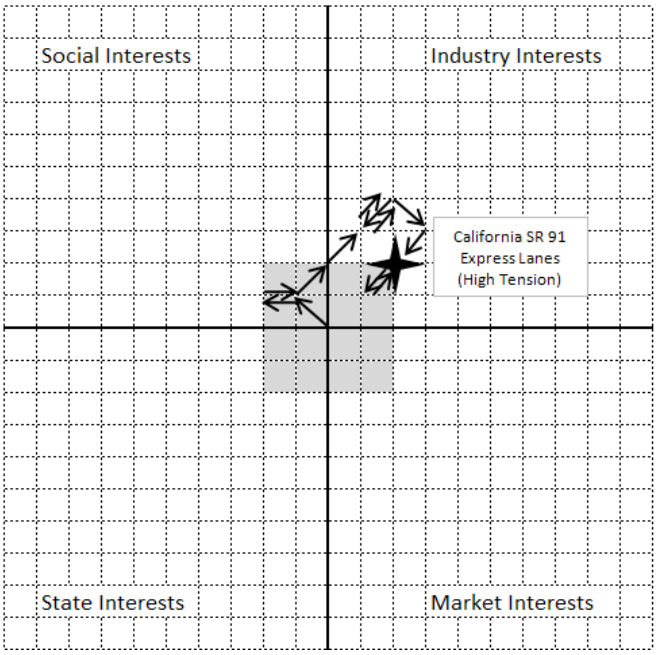

Figure 6:12 Final Evaluation of PPTA on P3 Equilibrium Framework

The State Route 91 Express Lanes position did not change with the revisions to the P3 Project Appraisal Template. However, due to the evolution of the P3 Equilibrium Framework, the project's movements are shown as direction arrows that plot the path to the project's final resting place, on the edge of the range of balance. The insight provided by the graphic now shows that although the SR 91 Express Lanes project occupies a desirable position, the project agreement has High Tension, which is a warning that many aspects of the agreement may be less than desirable. That's not to say that it is automatically deemed a failure, but the new information may make one cautious to proclaim the project as a success merely because of the balance indicated by the final position. Having benefitted from more than a decade of project performance data, one can conclude the placement is fairly accurate. The Industry Interests quadrant is appropriate, since the no-compete clause favored industry to the point of pitting public opinion against the project. As mentioned previously, the Orange County Transportation Authority purchased the facility from CPTC several years after the road opened, to eliminate the no-compete clause and allow the improvement of the surrounding transportation network. In this case, it did not take long for the tension in the original agreement to affect the project's success from a public-private partnership standpoint.

6.4.2 The Dulles Greenway

Dulles Greenway: Evaluation with Project Appraisal Framework					
Element	**Issue**		**Impact**	**D. G.**	**Explanation**
Market Conditions	Established Demand	Yes	––	↘	The Greenway led to a largely undeveloped area and suffered from a lack of ridership in early years.
		No	↘		
	Competing Facilities	Yes	↖	↖	Routes 7, 15, 28, and 50 provide free alternatives.
		No	→		
	Manageable Global Risks	Yes	--	––	The global risks are manageable for this project.
		No	→		
	Project Location	Developed world	––	––	The United States is a developed country.
		Developing world	→		
Socio-Environmental Conditions	Project Type	Greenfield	––	--	The Dulles Greenway was a completely new road, therefore a Greenfield project.
		Brownfield	←		
	Project Scale	Large (>$1B)	↗	→	The project consists of 4 lanes, 14 miles, 36 bridges, and is worth about $300 million. Larger than SR 91, but not huge.
		Medium	→		
		Small (< $100M)	←		
	Demographic Impact	Diverse	––	––	Free alternatives diversify impact. Users can travel other roads for free if they desire.
		Distinct	→		
	User Fees	Reflect cost of service	--	––	At $1.75, and later $1.00, very affordable and reflect cost of service. Tolls are currently on the rise.
		Unaffordable or unusually high	↘		
		Long-term management plan	--	--	There is a long-term management plan in place for the Dulles Greenway tolls.
		No long-term plan	↗		
	Public & Political Support	Positive support	--	--	A great deal of public support backed the Dulles Greenway.
		Opposition	↖		
Acquisition & Procurement	Financial & Technical Benchmark	Yes	––	--	VDOT's proposal is a good financial and technical benchmark.
		No	↗		
	Competition	No	↗	--	VDOT's proposal can be considered competition to some degree. It is of comparable scope and decisions can be made based on price, technical and schedule.
		Of comparable scope	––		
		Based on Price, Technical & / or Schedule	––		
		Factors other than price	↗		
	Selection Criteria & Process	Transparent & objective	––	↙	No real selection process. After VDOT dropped out, TRCV was the only developer.
		Discretionary or unclear	↙		
	Third Party Consultant Involvement	Yes	––	↗	VDOT did not acquire the services of a third party consultant to aid in evaluation or negotiations.
		No	↗		

Figure 6:13 Final Evaluation of Dulles Greenway (Part 2)

Dulles Greenway: Evaluation with Project Appraisal Framework					
Element	**Issue**		**Impact**	**D. G.**	**Explanation**
Contract Management	Risk Apportionment	Assigned to proper party	-–	–	Fairly allocated risks. TRCV (TRIP II) assigned construction, financing, and demand/revenue risk.
		Transferred	↙		
	No-Compete Provisions	Exist & stringent	↘	--	Not present in agreement. Public has improved competing roads throughout the life of the Dulles Greenway.
		Non-existent or reasonable	-–		
	Performance Measurement	Clear & objective	-–	--	Detailed construction and maintenance requirements. Concessionaire must maintain VDOT "B" standards.
		Absent	↗		
		Vague	↙		
	Conditions for Renegotiation	Clear & objective	--	↙	Section 16 of contract states that "this Agreement will require good faith cooperation of the parties" and if a disagreement occurs, VDOT can notify TRIP II and give time to correct action before exercise of its remedies
		Absent	↗		
		Vague	↙		
	Termination Provisions	Clear & objective	-–	↙	Vague. Section 16 states that "nothing in this Agreement or the Act shall be construed to limit VDOT's exercise of the power of eminent domain."
		Absent	↗		
		Vague	↙		
	Facility Return Provisions	Clear & objective	-–	↗	Facility return provisions are not contained in the Agreement
		Absent	↗		
		Vague	↙		
Project Performance	Quality & Innovation	Readily apparent	Positive	Positive	Construction was of good quality and with short timeline.
		Marginal	-		
		Non-existent	Negative		
	Price	Readily apparent	Positive	Positive	Yes, due to VDOT's proposal, it was able to be judged, but price comparisons may have been unfavorable.
		Difficult to judge	Negative		
	Service Availability	Rapid & continued	Positive	Positive	Delivery longer than expected, but faster than traditional funding. Currently, roadway has high availability.
		Slow or delayed	Negative		
	Environmental Performance	Positive impact	Positive	Positive	Called the "Greenway" because of its method of "aggressive compliance" with environmental laws, going above and beyond what is required.
		No benefit to environment	Negative		

Figure 6:14 Final Evaluation of the Dulles Greenway (Part 2)

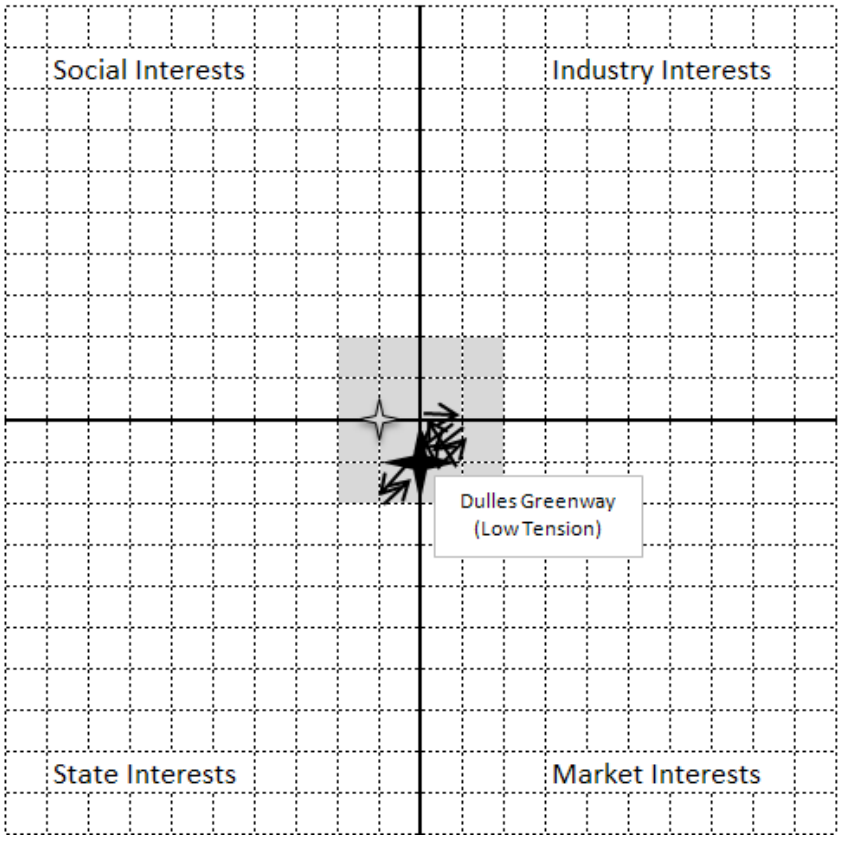

Figure 6:15 Final Evaluation of Dulles Greenway on P3 Equilibrium Framework

The position of the Dulles Greenway project changed slightly with the revised P3 Equilibrium Framework. The grey star represents the outcome with Garvin's template, while the black star is the new position. The various directional movements were clustered around a very small area within the range of balance. Garnering a Positive rating with respect to all four of the Project Performance issues allowed the Greenway to overcome eight directional movements to achieve a categorization of Low Tension. With a position in the range of balance and Low Tension rating, the analysis with the final P3 Equilibrium Framework is very favorable. With this information, one can predict the Dulles Greenway project will be successful. The first decade of the facility's operation was met with low traffic volume and financial hardship for the private concessionaire. However, the public sector has been well served. With reasonable toll rates, citizens received the facility years before it would have been possible for VDOT to fund the project. The early struggles of the Dulles Greenway appear to be over; the surrounding area is now developed, ridership has improved, and Macquarie Infrastructure Group is the new concessionaire.

6.4.3 The Pocahontas Parkway

Original Pocahontas Parkway: Evaluation with Project Appraisal Framework					
Element	**Issue**		**Impact**	**P. P. 1**	**Explanation**
Market Conditions	Established Demand	Yes	––	↘	Greenfield project without established demand. Traffic did not meet projections.
		No	↘		
	Competing Facilities	Yes	↖	↖	Free alternatives exist in the area, although they may not be quite as convenient.
		No	→		
	Manageable Global Risks	Yes	--	––	The global risks for this project are manageable, as with most projects.
		No	→		
	Project Location	Developed world	––	––	The United States is in the developed world.
		Developing world	→		
Socio-Environmental Conditions	Project Type	Greenfield	––	--	The Pocahontas Parkway is a greenfield project.
		Brownfield	←		
	Project Scale	Large (>$1B)	↗	→	Medium, with a construction cost of $300 million.
		Medium	→		
		Small (< $100M)	←		
	Demographic Impact	Diverse	––	––	Free alternatives in the area diversify impact, as no one particular demographic is forced to pay.
		Distinct	→		
	User Fees	Reflect cost of service	--	––	Tolls are affordable, and tolls are set at level to cover debt payments.
		Unaffordable or unusually high	↘		
		Long-term management plan	--	↗	The Rate Covenant does not discuss a long-term management plan. Rather, tolls are kept at a level necessary to cover debt payments.
		No long-term plan	↗		
	Public & Political Support	Positive support	--	--	Virginia lawmakers are in favor of PPTA, and no major public support obstacles were encountered.
		Opposition	↖		
Acquisition & Procurement	Financial & Technical Benchmark	Yes	––	↗	VDOT did not require or provide a financial or technical benchmark.
		No	↗		
	Competition	No	↗	↗	This proposal was unsolicited and no competition existed for the project.
		Of comparable scope	––		
		Based on Price, Technical & / or Schedule	––		
		Factors other than price	↗		
	Selection Criteria & Process	Transparent & objective	––	--	VDOT followed the procedure outlined in the PPTA Implementation Guidelines to evaluate and procure the project.
		Discretionary or unclear	↙		
	Third Party Consultant Involvement	Yes	––	↗	VDOT did not use the services of a third party consultant to aid in the evaluation of the project.
		No	↗		

Figure 6:16 Final Evaluation of Original Pocahontas Parkway Agreement (Part 1)

Original Pocahontas Parkway: Evaluation with Project Appraisal Framework					
Element	**Issue**		**Impact**	**P. P. 1**	**Explanation**
Contract Management	Risk Apportionment	Assigned to proper party	-–	–	Risk was properly delegated to FD/MK, the PPA, subcontractors, and VDOT
		Transferred	↙		
	No-Compete Provisions	Exist & stringent	↘	↘	The no compete provision exists for a distance of 3 miles in either direction over the James River section of the Parkway
		Non-existent or reasonable	-–		
	Performance Measurement	Clear & objective	-–	--	No real performance measurement terms exist in the contract. However, VDOT provides the O & M for the road, and agrees to hold itself to the same standard as similar highways, which is sufficient.
		Absent	↗		
		Vague	↙		
	Conditions for Renegotiation	Clear & objective	--	↗	No conditions for renegotiation are present in the contract.
		Absent	↗		
		Vague	↙		
	Termination Provisions	Clear & objective	-–	--	Termination provisions are clear, although they basically state that VDOT can terminate at any time.
		Absent	↗		
		Vague	↙		
	Facility Return Provisions	Clear & objective	-–	↗	Facility return is not addressed in the Comprehensive Agreement
		Absent	↗		
		Vague	↙		
Project Performance	Quality & Innovation	Readily apparent	Positive	Positive	The quality of the work came with a warranty. Toll collection was innovative; traffic does not have to slow down for electronic toll collection.
		Marginal	-		
		Non-existent	Negative		
	Price	Readily apparent	Positive	Negative	Without a benchmark or competition, price performance is difficult to judge.
		Difficult to judge	Negative		
	Service Availability	Rapid & continued	Positive	Positive	Timely delivery of facility. VDOT maintains the road, providing excellent availability.
		Slow or delayed	Negative		
	Environmental Performance	Positive impact	Positive	Negative	Facility did not strive to be particularly green or stand out in environmental performance.
		No benefit to environment	Negative		

Figure 6:17 Final Evaluation of Original Pocahontas Parkway Agreement (Part 2)

New Pocahontas Parkway Lease Agreement: Evaluation with Project Appraisal Framework					
Element	**Issue**		**Impact**	**P. P. 2**	**Explanation**
Market Conditions	Established Demand	Yes	––	--	Having been in existence for several years, volume and baseline data for traffic demand exists.
		No	↘		
	Competing Facilities	Yes	↖	↖	Free alternatives exist in the area, although they may not be quite as convenient.
		No	→		
	Manageable Global Risks	Yes	--	––	The global risks for this project are manageable, as with most projects.
		No	→		
	Project Location	Developed world	––	––	The United States is in the developed world.
		Developing world	→		
Socio-Environmental Conditions	Project Type	Greenfield	––	--	The new agreement is a lease of an existing asset, which is brownfield.
		Brownfield	←		
	Project Scale	Large	↗	→	Medium; Transurban paid about $611 million for the rights to the road.
		Medium	→		
		Small	←		
	Demographic Impact	Diverse	––	––	Free alternatives in the area diversify impact; no particular demographic is forced take the Parkway.
		Distinct	→		
	User Fees	Reflect cost of service	--	––	The agreement provides a very detailed long-term management plan that reflects the cost of service. After first several years, toll escalation based on economic variables.
		Unaffordable or unusually high	↘		
		Long-term management plan	--	--	The agreement provides a very detailed long-term management plan that reflects the cost of service.
		No long-term plan	↗		
	Public & Political Support	Positive support	--	--	There was little to no opposition to the new agreement from the public or political arenas.
		Opposition	↖		
Acquisition & Procurement	Financial & Technical Benchmark	Yes	––	↗	VDOT did not require or provide a financial or technical benchmark. No competing proposals.
		No	↗		
	Competition	No	↗	↗	No other bidders were involved. Transurban approached Virginia and the Pocahontas Parkway Association. Therefore there was no competition.
		Of comparable scope	––		
		Based on Price, Technical & / or Schedule	––		
		Factors other than price	↗		
	Selection Criteria & Process	Transparent & objective	––	--	The negotiations were transparent and the public was kept informed of progress.
		Discretionary or unclear	↙		
	Third Party Consultant Involvement	Yes	––	--	VDOT did consult third party experts when working the new agreement.
		No	↗		

Figure 6:18 Final Evaluation of 2006 Pocahontas Parkway Agreement (Part 1)

New Pocahontas Parkway Lease Agreement: Evaluation with Project Appraisal Framework					
Element	**Issue**		**Impact**	**P. P. 2**	**Explanation**
Contract Management	Risk Apportionment	Assigned to proper party	-–	–	Risk is properly apportioned between Transurban and VDOT
		Transferred	↙		
	No-Compete Provisions	Exist & stringent	↘	--	If competitive transportation facilities adversely impact the developer (Transurban), VDOT must compensate them accordingly.
		Non-existent or reasonable	-–		
	Performance Measurement	Clear & objective	-–	--	Exhibit H of the Amended and Restated Comprehensive Agreement contains 18 pages that deal exclusively with operations and maintenance requirements. Also, conditions for default are clear.
		Absent	↗		
		Vague	↙		
	Conditions for Renegotiation	Clear & objective	--	--	Dispute resolution and future negotiation is outlined in the Agreement.
		Absent	↗		
		Vague	↙		
	Termination Provisions	Clear & objective	-–	--	Various forms of default are detailed in the project. VDOT may terminate the agreement for public interest after 40 years. Very clear and reasonably objective.
		Absent	↗		
		Vague	↙		
	Facility Return Provisions	Clear & objective	-–	--	Facility return provisions are contained in the Agreement. Both parties will walk though facility together 1 year before turn-over. Fair and Clear.
		Absent	↗		
		Vague	↙		
Project Performance	Quality & Innovation	Readily apparent	Positive	Positive	The quality of the work came with a warranty. Toll collection was innovative; traffic does not have to slow down for electronic toll collection.
		Marginal	-		
		Non-existent	Negative		
	Price	Readily apparent	Positive	Negative	Without competing bidders or comparative analysis, the price paid by Transurban is difficult to evaluate.
		Difficult to judge	Negative		
	Service Availability	Rapid & continued	Positive	Positive	Facility already open. Transurban has the resources to operate the road to provide a high level of service availability.
		Slow or delayed	Negative		
	Environmental Friendliness	Positive impact	Positive	--	Not Applicable to lease situations. Facility already complete.
		No benefit to environment	Negative		

Figure 6:19 Final Evaluation of 2006 Pocahontas Parkway Agreement (Part 2)

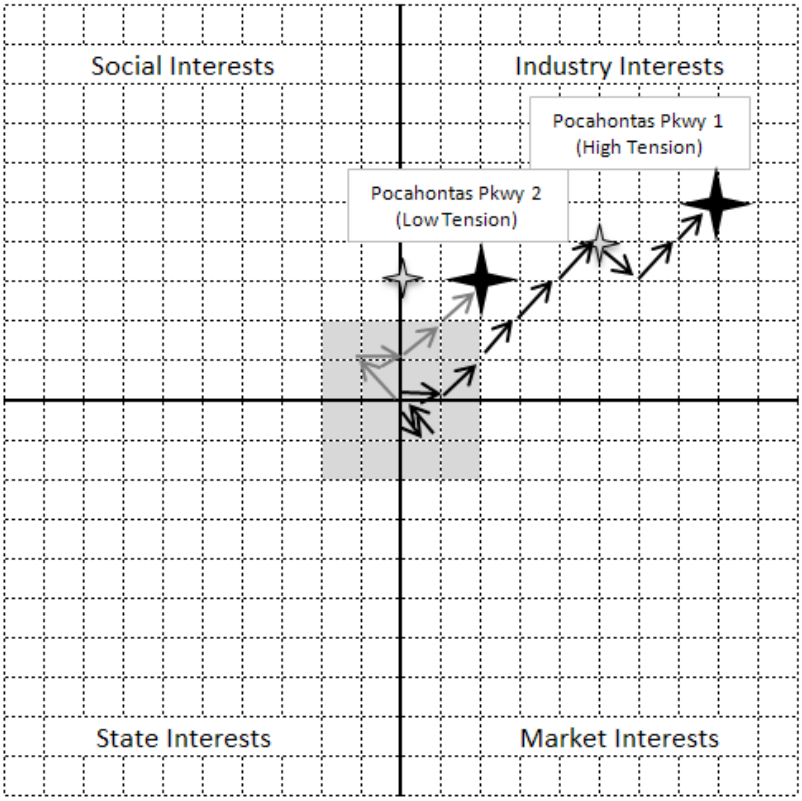

Figure 6:20 Final Evaluation of the Pocahontas Parkway Agreements on P3 Equilibrium Framework

Similar to the assessment with Garvin's template (gray stars), the original Pocahontas Parkway Agreement (black arrows, black star) is significantly out of balance, skewed drastically toward Industry Interests. Not surprisingly, the project is categorized as High Tension. VDOT failed to encourage competition, provide benchmarking, or obtain third party expertise to aid in development. Furthermore, renegotiation conditions and facility return provisions were omitted from the contract. These factors cement its position in the upper right quadrant.

Conversely, the new Pocahontas Parkway agreement (gray arrows, black star) manages many of these issues well, positioning itself much closer to the range of balance and can be characterized as Low Tension. The significantly improved evaluation is due largely to the inclusion of fair and objective conditions for renegotiation and facility return provisions. Furthermore, the new agreement contains a long-term structure for toll rates, protecting the public from extreme toll hikes. Overall, the agreement successfully manages many of the factors in the appraisal templates. Based on the P3 Equilibrium Framework assessment, the new Pocahontas Parkway arrangement should encounter more success than its predecessor.

6.4.4 Proposed I-81 Improvements in Virginia – STAR Solutions & Fluor Virginia, Inc.

I-81 Improvements – STAR Solutions: Evaluation with Project Appraisal Framework					
Element	**Issue**		**Impact**	**STAR**	**Explanation**
Market Conditions	Established Demand	Yes	-–	--	Yes, especially for trucks. Mature roadway has established demand.
		No	↘		
	Competing Facilities	Yes	↖	↖	Yes, there are other roads, but I-81 is most convenient, fastest.
		No	→		
	Manageable Global Risks	Yes	--	-–	The global risks in this project are manageable.
		No	→		
	Project Location	Developed world	-–	-–	The United States is in the Developed world.
		Developing world	→		
Socio-Environmental Conditions	Project Type	Greenfield	-–	←	I-81 already exists; any proposal would be an addition to existing lanes.
		Brownfield	←		
	Project Scale	Large (>$1B)	↗	↗	Both proposals were of very large scale with costs well into the billions. The STAR Proposal is over $6 billion
		Medium	→		
		Small (<$100M)	←		
	Demographic Impact	Diverse	-–	→	Clearly impacts truckers the most, they will be forced to pay a toll of over $100 to travel through the state.
		Distinct	→		
	User Fees	Reflect cost of service	--	-–	Most likely will reflect cost of service with a long-term management plan. Though some said truck tolls were excessive.
		Unaffordable or unusually high	↘		
		Long-term management plan	--	--	Most likely will have a long-term management plan, based on recent PPTA projects.
		No long-term plan	↗		
	Public & Political Support	Positive support	--	↖	There was enough opposition to the plan to de-rail negotiations. Many felt the cost was too high for trucks.
		Opposition	↖		
Acquisition & Procurement	Financial & Technical Benchmark	Yes	-–	↗	Poorly organized RFP by VDOT with no benchmarking done.
		No	↗		
	Competition	No	↗	↗ ↗	Scopes of two proposals not easily comparable. Decisions made on factors other than price. No competition for projects of similar scope. Therefore two units of movement.
		Of comparable scope	-–		
		Based on Price, Technical & / or Schedule	-–		
		Factors other than price	↗		
	Selection Criteria & Process	Transparent & objective	-–	↙	No specific weighting given to criteria. Proposals are so different its difficult to compare fairly
		Discretionary or unclear	↙		
	Third Party Consultant Involvement	Yes	-–	--	VDOT employed a third party to aid in the evaluation of proposals
		No	↗		

Figure 6:21 Final Evaluation of the I-81 STAR Solutions Proposal (Part 1)

I-81 Improvements – STAR Solutions: Evaluation with Project Appraisal Framework					
Element	**Issue**		**Impact**	**STAR**	**Explanation**
Contract Management	Risk Apportionment	Assigned to proper party	-–	–	Assigned to proper parties. VDOT retains responsibilities such as right of way acquisition, law enforcement and ownership. Schedule, cost and inflation are STAR risks
		Transferred	↙		
	No-Compete Provisions	Exist & stringent	↘	--	VDOT would most likely not enter into agreement with strict no compete provisions. Lesson learned from SR 91.
		Non-existent or reasonable	-–		
	Performance Measurement	Clear & objective	-–	--	Unsure (no Agreement). Most likely performance measurement would be addressed, based on recent PPTA agreements.
		Absent	↗		
		Vague	↙		
	Conditions for Renegotiation	Clear & objective	--		Unsure (no Agreement)
		Absent	↗		
		Vague	↙		
	Termination Provisions	Clear & objective	-–	--	Unsure (no Agreement). Most likely termination provisions would be addressed based on recent PPTA agreements.
		Absent	↗		
		Vague	↙		
	Facility Return Provisions	Clear & objective	-–		Unsure (no Agreement)
		Absent	↗		
		Vague	↙		
Project Performance	Quality & Innovation	Readily apparent	Positive	Positive	Quality and Innovation would be readily apparent. Most likely involve innovative toll collection and rate setting technology.
		Marginal	-		
		Non-existent	Negative		
	Price	Readily apparent	Positive	Negative	Since proposals are different, the price performance would be difficult to judge.
		Difficult to judge	Negative		
	Service Availability	Rapid & continued	Positive	Negative	Development halted. Service not available in foreseeable future.
		Slow or delayed	Negative		
	Environmental Performance	Positive impact	Positive	--	Unsure of potential green-ness. Likely minimal impact since road already exists.
		No benefit to environment	Negative		

Figure 6:22 Final Evaluation of the I-81 STAR Solutions Proposal (Part 2)

I-81 Improvements – Fluor Virginia, Inc: Evaluation with Project Appraisal Framework					
Element	**Issue**		**Impact**	**STAR**	**Explanation**
Market Conditions	Established Demand	Yes	-–	--	Yes, the mature roadway has established demand for both cars and trucks.
		No	↘		
	Competing Facilities	Yes	↖	↖	Yes, there are other roads, but I-81 is most convenient, fastest.
		No	→		
	Manageable Global Risks	Yes	--	-–	The global risks in this project are manageable.
		No	→		
	Project Location	Developed world	-–	-–	The United States is in the Developed world.
		Developing world	→		
Socio-Environmental Conditions	Project Type	Greenfield	-–	←	I-81 already exists; any proposal would be an addition to existing lanes.
		Brownfield	←		
	Project Scale	Large (>$1B)	↗	↗	Both proposals were of very large scale with costs well into the billions. The Fluor Virginia Inc is over $7 billion
		Medium	→		
		Small (<$100M)	←		
	Demographic Impact	Diverse	-–	--	Diverse impact because brownfield project will not seriously affect nearby residents, cars and trucks both tolled.
		Distinct	→		
	User Fees	Reflect cost of service	--	-–	Reasonable tolls that reflect cost of service. Starting at $0.025/mile and rising to $0.05/mile for cars.
		Unaffordable or unusually high	↘		
		Long-term management plan	--	--	Most likely will have a long-term management plan, based on recent PPTA projects.
		No long-term plan	↗		
	Public & Political Support	Positive support	--	↖	STAR Solutions proposal chosen over Fluor's. Both failed to produce results due to lack of support.
		Opposition	↖		
Acquisition & Procurement	Financial & Technical Benchmark	Yes	-–	↗	Poorly organized RFP by VDOT with no benchmarking done.
		No	↗		
	Competition	No	↗	↗ ↗	Scopes of two proposals not easily comparable. Decisions made on factors other than price. No competition for projects of similar scope. Therefore two units of movement.
		Of comparable scope	-–		
		Based on Price, Technical & / or Schedule	-–		
		Factors other than price	↗		
	Selection Criteria & Process	Transparent & objective	-–	↙	No specific weighting given to criteria. Proposals are so different it is difficult to compare fairly
		Discretionary or unclear	↙		
	Third Party Consultant Involvement	Yes	-–	--	VDOT employed a third party to aid in the evaluation of proposals
		No	↗		

Figure 6:23 Final Evaluation of the I-81 Fluor Virginia, Inc Proposal (Part 1)

I-81 Improvements – Fluor Virginia, Inc: Evaluation with Project Appraisal Framework					
Element	**Issue**		**Impact**	**STAR**	**Explanation**
Contract Management	Risk Apportionment	Assigned to proper party	––	–	Assigned to proper parties. VDOT retains responsibilities such as right of way acquisition, law enforcement and ownership.
		Transferred	↙		
	No-Compete Provisions	Exist & stringent	↘	--	VDOT would most likely not enter into agreement with strict no compete provisions. Lesson learned from SR 91.
		Non-existent or reasonable	––		
	Performance Measurement	Clear & objective	––	--	Unsure (no Agreement). Most likely performance measurement would be addressed, based on recent PPTA agreements.
		Absent	↗		
		Vague	↙		
	Conditions for Renegotiation	Clear & objective	--		Unsure (no Agreement)
		Absent	↗		
		Vague	↙		
	Termination Provisions	Clear & objective	––	--	Unsure (no Agreement). Most likely termination provisions would be addressed based on recent PPTA agreements.
		Absent	↗		
		Vague	↙		
	Facility Return Provisions	Clear & objective	––		Unsure (no Agreement)
		Absent	↗		
		Vague	↙		
Project Performance	Quality & Innovation	Readily apparent	Positive	Positive	Quality and Innovation would be readily apparent. Most likely involve innovative toll collection and rate setting technology.
		Marginal	-		
		Non-existent	Negative		
	Price	Readily apparent	Positive	Negative	Since proposals are different, the price performance would be difficult to judge.
		Difficult to judge	Negative		
	Service Availability	Rapid & continued	Positive	Negative	STAR Solutions selected over Flour. Development halted. Service not available in foreseeable future.
		Slow or delayed	Negative		
	Environmental Performance	Positive impact	Positive	--	Likely minimal impact either way, since road already exists. Not enough congestion to provide significant air quality benefit.
		No benefit to environment	Negative		

Figure 6:24 Final Evaluation of the I-81 Fluor Virginia, Inc Proposal (Part 2)

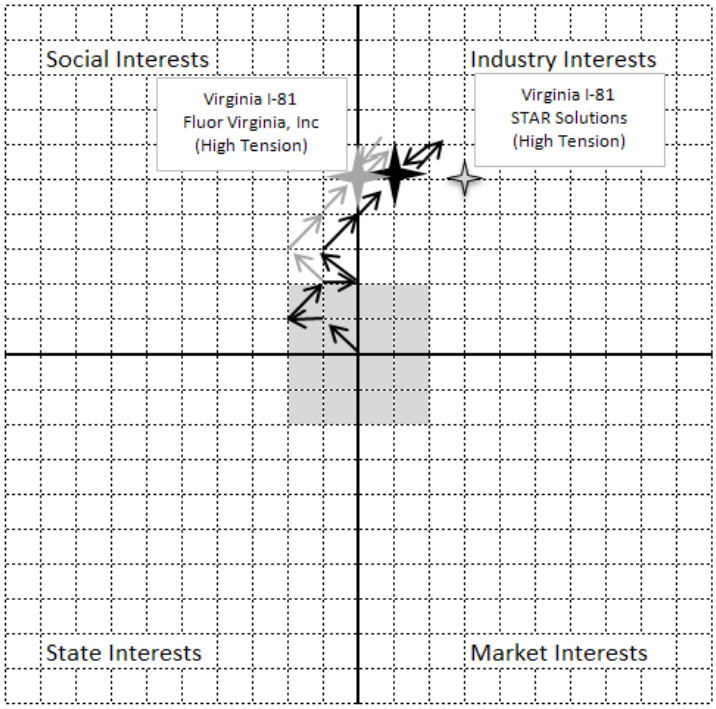

Figure 6:25 Final Evaluation of the I-81 Proposals on P3 Equilibrium Framework

As with the previous evaluation (small gray star), the STAR Solutions Proposal is positioned well outside the range of balance, while achieving a rating of High Tension. The fact that the project rests so far in favor of industry interests is a good indication of a project that should not be progressed. The project was placed in that quadrant for a number of reasons, as shown in Figures 6-21 and 6-22. The proposal did not adequately protect State Interests, and therefore was rightly abandoned by VDOT. This analysis also includes the losing proposal (large gray star), submitted by Fluor Virginia Inc., which falls well outside the range of balance. After the sharing the initial first three movements with STAR Solutions, the gray arrows display the remainder of Fluor Virginia's path. This project is also categorized as High Tension.

The I-81 Corridor Improvements in Virginia represent a failed attempted at a very large public-private partnership agreement. The unsolicited proposal was followed by an RFP without a well-defined scope, which rarely leads to a successful project. In this case, the public sector agency did a poor job in defining exactly what it wanted out of the proposers. Without detailed scope or evaluation criteria, the two proposers came up with very different ideas that are not only hard to compare, but also did not best meet the needs of VDOT. In this case, the P3 Equilibrium Framework served as an accurate indicator of project success. Both the STAR Solutions and

Fluor Virginia proposals occupy undesirable locations on the framework and possess High Tension, foreshadowing VDOT's the eventual decision to abandon the project in January of 2008.

6.5 Compare and Contrast Agreements and Effectiveness

The previous sections discussed each project on an individual basis. For the most part, the P3 Equilibrium Framework accurately placed projects in the correct location, corresponding to the outcome of each respective project. This section examines the performance of the P3 Equilibrium Framework based on all of the projects and how they performed relative to each other. For each case study, at least several years of real world data exists regarding project performance, except the I-81 Improvements. The hypothesis is that better performing projects should be located closer to the range of balance, while less effective agreements lie further from equilibrium. If this is true, it will further validate the effectiveness of the P3 Equilibrium Framework. Figure 6-26 displays the position of each of the projects examined in Chapter 5's case studies.

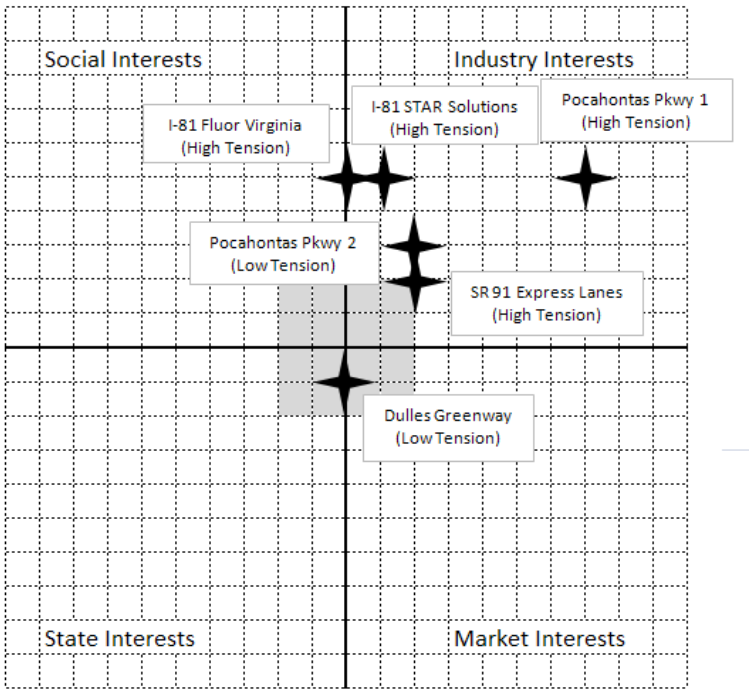

Figure 6:26 Final Evaluation of All Projects on P3 Equilibrium Framework

Examining Figure 6-26 reveals the original Pocahontas Parkway agreement received the poorest appraisal by the P3 Equilibrium Framework. The factors that contribute to the position can be found in the preceding section. The aim of this section is to determine if this assessment is appropriate compared to the other projects on the Equilibrium Framework. Based on the many movements stemming from the appraisal template and resulting categorization as High Tension, the Pocahontas Parkway performance should be one of the worst of the group. Indeed, no single part of the arrangement caused a catastrophic failure of the project, nor was public opinion strongly opposed to the project at any time. However, construction experienced significant delays and within two years of opening, the facility was generating less than half of the revenue needed to meet debt financing. As per the comprehensive agreement, VDOT was not compensated for its operations and maintenance expenditures on the roadway during this time, as the PPA did not have to reimburse VDOT if it could not meet debt payments. Two years after initially approaching VDOT and the Association, Transurban paid $611 million to take over operations for the PPA and retool the comprehensive agreement. This information confirms that the original Pocahontas Parkway agreement was not very successful; therefore, it should be regarded among the least balanced projects. The new agreement is much closer to the range of balance; however, it is too soon to judge the long term performance of the agreement. According to the P3 Equilibrium Framework, the new reincarnation of the agreement should be much more successful than the original.

The other projects that plot far from the range of balance are the I-81 Improvements proposals. The fact that neither proposal was developed actually makes analyzing it easier. VDOT decided to discontinue negotiations and not pursue the project through the PPTA for the time being, because both proposals were severely flawed. VDOT felt that the project was not likely to produce a successful result that is beneficial to all parties. For this reason, the I-81 proposals are placed appropriately, as two of the least balanced projects.

Ironically, the two projects that plot closest to equilibrium are the two first contemporary public-private partnerships developed in the United States. Despite their locations, the State Route 91 Express Lanes and Dulles Greenway both have a very turbulent past. As described in the case study, several years after opening, the Express Lanes were met with strong public opposition because a no-compete clause in the agreement prevented needed improvements to roads in the surrounding area. Orange County Transit Authority was forced to buy out the

concessionaire and take over the lease agreement, which was amended to remove the no-compete clause. However, since that time the road has operated efficiently and profitably. Therefore, one of the aspects of the agreement that was out of balance ended up having a huge effect on the project. These facts justify the rating by the P3 Equilibrium Framework as accurate. The project was categorized as High Tension, and indeed, the tension took its toll in the form of the no-compete clause and buy-out. The placement on the outskirts of the range of balance is also accurate, as now the project is a great success, since the main source of tension has been eliminated.

Based on both its position inside the range of balance and characterization as Low Tension, the Dulles Greenway represents the project as having the best chance for success, according to the P3 Equilibrium Framework. The first decade of operation produced lower than expected traffic volume and severe financial distress for the concessionaire. However, it now appears the road is on track for success. Within the next five to ten years, the Dulles Greenway will either live up to expectations as a successful project, or possibly serve as a case for which the Framework failed to make an accurate assessment.

6.6 Verification of Proposition II

In describing the research design for the original P3 Equilibrium Framework, Garvin (2007) made two fundamental propositions that constitute the basis of the current research. Proposition I was that the basic objective of a public-private partnership program is to nurture this market, which requires balance among the state, society, industry, and the market. Proposition II stated that projects are the operational expressions of a P3 Program. Garvin took it a step further, declaring that "the collective performance of all projects will determine whether or not the P3 Program is effective as a strategy or policy for infrastructure development and management". With this said, projects not only form the basis for evaluating the performance of program, but the projects' location on the P3 Equilibrium Framework should somewhat correspond to the legislative programs from which they arise. In order to represent this concept visually, Figure 6-27 displays the legislation and projects on the same Framework. Assembly Bill 680 and the SR 91 Express Lanes are shown in gray, while the PPTA legislation and resulting projects are black.

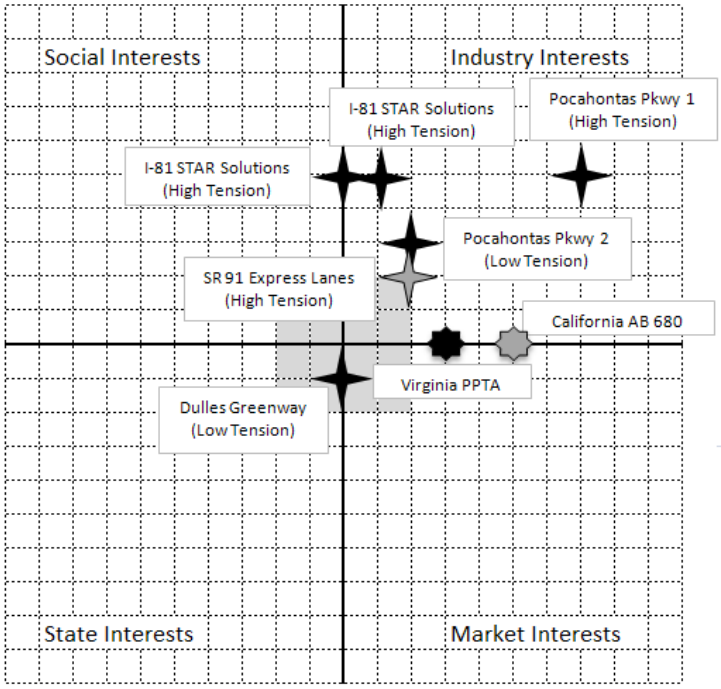

Figure 6:27 Comparison of P3 Programs and Resulting Projects

It appears that for the most part, projects do not deviate too significantly from their source program. Both Virginia's PPTA and California's AB 680 are skewed slightly in favor of the private sector. Meanwhile, the projects fall mainly within the Industry Interests quadrant. This clustering validates the proposition that projects are the operational expression of the legislative program. In the future California's SR 125 can be added to the framework, providing another reference point for AB 680 projects. The four PPTA projects (two I-81 proposals and two Pocahontas Parkway agreements) indicate that the Virginia legislative program may be too favorable to Industry Interests. This is clear in the case of the I-81 proposals, which are located farthest from the range of balance. The final outcome of abandoning both proposals validates both their position and the accuracy of the P3 Equilibrium Framework. As projects continue to be developed, adding these data points to the Equilibrium Framework will result in a more useful analysis. At the current time, having only one project from AB 680 and two from the PPTA is worth discussing, but lacks the number of projects necessary to perform a significant analysis.

Chapter 7 – Conclusion

The purpose of this research is to examine the effectiveness of public-private partnership legislation and projects in the contemporary United States. To achieve this, the research methodology outlined a process by which to develop case studies, apply the P3 Equilibrium Framework to the cases, and revise the Framework through an inductive and deductive approach. This chapter will discuss the success of those goals, contributions to academia, possible applications of the P3 Equilibrium Framework, and recommendations for future research.

7.1 Objectives and Contributions

The main objective of this research is to provide a method by which to examine the effectiveness of the public-private partnership approach to infrastructure development in the United States. To achieve this, several case studies were prepared to test, improve, and calibrate the P3 Equilibrium Framework.

Four cases studies of significant public-private partnership arrangements are also included in this research, as well as a detailed review of the evolution of legislation in California and Virginia. This aspect of the research endeavored to gain insight into real world situations and further identify key issues and elements of the P3 approach. The research conducted followed case study methodology, as described by Yin (2003). These case studies serve as a valuable learning tool for those interested in the details of the comprehensive agreements for such projects. Furthermore, they provided a test for the initial version of the P3 Equilibrium Framework. The Framework evolved through and inductive and deductive approach, meaning that not only did the Framework assess the performance of the case studies, but the information from the case studies impacted the final version of the Framework. Therefore, it was critical to develop detailed and accurate case studies that could be relied upon to calibrate the final product of this research, the P3 Equilibrium Framework.

The modified P3 Equilibrium Framework developed by this research represents a major contribution to the body of knowledge concerning public-private partnerships. It fulfills the goal of examining the effectiveness of the P3 approach through utilizing a tool by which projects and legislative programs can be systematically evaluated. No similar tool exists, making this an

important step towards evaluating and improving the P3 delivery system. Initial testing of the P3 Equilibrium Framework indicates that it provides a fair, reproducible, and accurate assessment of project agreements. This achievement satisfies the main goal of the research, which is to examine the effectiveness of public-private partnerships in the contemporary United States.

7.2 Applications

As the final product of this research, the P3 Equilibrium Framework has the potential to be extremely useful in a variety of applications. The Appraisal Templates highlight many of the key issues and critical success factors involved. Therefore, they provide a practical guide or checklist of issues to analyze when dealing with such projects. The P3 Equilibrium Framework is a completely new method of visualizing and evaluating programs and projects. This breakthrough tool provides the ability to better explain how the many key issues come together to affect the overall balance between the four parties affected by such agreements.

Academics focusing on the subject of public-private partnerships can add the Framework to their repertoire as a tool for evaluating legislative programs and the resulting projects. It can greatly enhance case studies, as shown by this research. Furthermore, the P3 Equilibrium Framework can trigger discussion and analysis of the performance of the entire public-private partnership market. In order to nurture this method of project delivery, academia must help industry and government officials improve the performance of future ventures through research and post-project critiques. The P3 Equilibrium Framework works toward achieving this goal.

This research is not only valuable for those in the academy. Government officials and industry personnel can also benefit. The P3 Equilibrium Framework provides a guide for drafting legislation and crafting project agreements. The Appraisal Templates can work through these documents issue by issue, suggesting methods for managing each key elements, and demonstrating the impact of those decisions through directional the movements on the Framework. It is understood that each project is unique and the Framework is by no means perfect; however, it makes for a good starting point when thinking about the issues surrounding the performance of public-private partnerships. Therefore, government officials can reference this work when planning new P3 programs. Members of transportation authorities may benefit from the work when determining the details of program implementation and project agreements.

Concessionaires may use the Framework as a means of determining the potential success of a project, or to review key issues in the agreement.

Furthermore, the P3 Equilibrium Framework can be tailored to the specific needs of each user. It can be altered on a project by project basis. Each user can choose to add categories to the Appraisal Templates, or discount the usefulness of certain issues, as he or she sees fit. Also, more or less weight can be given to various aspects. For instance, the extremely strict no-compete clause in the SR 91 Express Lanes could be given two units of movement, while the reasonable clause in the new Pocahontas Parkway could be assigned only a half unit. Assigning weights to all issues would not be feasible for this research, since each project comes with a unique set of circumstances. However, it could make sense for individual users, depending on the application.

For these reasons the P3 Equilibrium Framework is applicable to a wide variety of users. Furthermore, the Framework itself is easily adaptable for different uses. It can be thought of as a quick reference for key issues, almost like a checklist. It can aid in presentations to less informed audiences. The visual representation of balancing the interests of society, the state, industry, and the market is a new and unique concept that can enhance P3 analysis by any user. The Framework can be applied as it is presented, or modified to reflect the unique conditions of specific situations, making it a very versatile tool.

7.3 Recommendations for Future Research

This thesis attempts to improve the ability to assess the effectiveness of public-private partnerships in the United States. However, the resulting case studies and P3 Equilibrium Framework by no means represent the only research necessary on the subject. Future endeavors should continue to increase the body of knowledge on the subject, in order to better understand P3 delivery systems, with the ultimate goal of improving them, and consequently, America's infrastructure.

As the first to apply Garvin's initial Framework to case studies and improve upon it, the author recommends continuing the work contained in this thesis. Increasing the number of case studies will lead to a more accurate and robust evaluation tool, because the tool can be better calibrated with more data points to reference. Therefore, conducting more case studies will

allow academia to gain more information on the subject, while also possibly improving the accuracy of the P3 Equilibrium Framework.

Ultimately, the goal is to create a more widespread network of users. The P3 Equilibrium Framework can be beneficial to industry and government agencies. The author recommends gaining exposure from key industry and government personnel. After an initial pilot study with a very small and select subset of these two important factions, the researchers can receive feedback, make improvements, and achieve alignment from all sides. With the Framework further improved through suggestions and revisions by those outside academia, it may be ready for more widespread distribution throughout academia, government, and industry.

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Appendix

A.1Explanation of the Enabling Legislation Appraisal Template

The Enabling Legislation Template begins by assessing the Scope considerations. If the legislation only provides for solicited proposals, the locus is unmoved. This is because the state determines the specific projects for development, which protects public interests while still allowing for a fair amount of opportunity to the private participants. However, if unsolicited proposals are allowed by the legislation, this clearly benefits the market interests, since the market can produce any proposal that it believes can achieve the desired rate of return, moving directionally towards the lower right corner. If limitations are placed on the mode of transportation for the projects, this moves the locus to the left, toward state and societal interests, as the public dictates which modes of transportation are most in need of improvement. The presence of either geographic or project delivery restrictions move the program's location toward the lower left, since this clearly protects state interests, by ensuring one region does not receive all the projects, while others do not benefit from improved infrastructure.

The next category contains issues involving the Financing of the projects. If all sources of financing are allowed, the program is unmoved, because the option of using both public and private financing gives projects more flexibility and can vary the risk taken by both the public and private sector. If only private sources are allowed, the movement is toward the lower right, since market interests dictate if the toll revenue produced by the project is enough to fully support the financing. Tax exemptions for developers would move the locus towards industry interests, since these benefits would improve the cash flows to the developer. If a diversion of excess tolls towards a general or public fund is allowed under the legislation, the state benefits, pushing the locus directionally towards the lower left corner of the framework.

Similar to financing, User Fees raise an important category of issues that are critical to the success of a legislative program. If the method of establishing user fees is publicly driven, the program moves to the left, towards both state and societal interests. If it is privately driven, the result is a rightward movement, as industry and market interests set the tolls. Negotiated user fees also push the program to the right, because the concessionaire has a monopoly on the asset and can lobby for changes as they see fit. Furthermore, if the management of user fees is not addressed, the private sector is at an advantage, again moving the locus to the right. Without escalation controls, the market and industry can set rates as they please. The existence of

escalation controls protect the public interest, shielding society from unchecked toll increases and the state from a potential public opinion crisis, as rising tolls usually have a negative effect on the public's view of P3 agreements. Escalation controls also provide the private sector with knowledge of the highest possible tolls, which benefits their projections and removes unknown variables. Since escalation controls provide important services to all parties, the legislation remains unmoved. Many agreements provide revenue sharing agreements between the state and industry. This may apply to all revenue, or only revenue in excess of a pre-defined benchmark. Clauses such as this protect the public from wildly profitable agreements in which the industry makes excessive profits. It also takes potential profit away from the industry and lessons the impact of the market interests. Therefore, revenue sharing with the state moves the location to the left.

Following User Fees is the Acquisition & Procurement category. Literature and government documents agree that a comparative analysis of proposals is critical to the procurement process. If this process is required and defined in the legislation, all parties benefit from the knowledge of the process and transparency of results, leaving the locus unmoved. If a comparative analysis is not addressed in the legislation, the private sector benefits from the fact that the public may not have any idea if they are achieving best value for money or competitive project. This situation is undesirable from a public standpoint, shifting the program to the right. Conversely, if a comparative analysis is required, the public gains a better idea of the project and its benefits, resulting in a leftward movement. If the source selection method is undisclosed or negotiated, the locus moves toward the industry interests quadrant. Any type of negotiation usually benefits the industry, because they are ultimately providing the state with an asset it would not otherwise be able to produce. Similarly, an undisclosed method gives the industry a chance to be awarded the project without a rigorous and defined process, which is beneficial to industry and a movement away from state interests. If the source selection method is addressed and competitive in nature, the locus stays in the center. The public benefits from ensuring a competition, which usually lowers costs and improves the quality of proposals, while the industry is not necessarily put at any disadvantage by this requirement. The various approval processes that a project must complete may also play a key role in future success. If various steps are put into place to streamline this process, the locus remains unmoved. This includes legal exemptions, permits and property, and the availability of third party consultants.

Concession Management is the final category in the Enabling Legislation Appraisal Template. A process by which to audit the private participants to ensure compliance is very desirable from a public perspective, and is not harmful to the concessionaire. If this process is disclosed and adequately defined in the agreement, the locus stays central. If no process is mentioned or disclosed in the agreement, the public is conceding more leverage and flexibility to the public sector, causing a rightward movement. If auditing is mentioned in the legislation, but undefined, the state has protected its rights. At that same time, the industry has no guidelines as to what type of auditing to expect, therefore causing the locus to travel towards state interests. The final issue evaluated in the legislative template is the existence of termination rights. If the public fails to include termination rights in the legislation, this clearly leaves them without leverage to terminate the operator, benefitting industry, as evidenced in a movement towards the upper right. Unlimited termination rights maintain the state's control over the project, but provide industry with no assurance that the state will not step in at any time, whether they are performing well or not. Clearly, unlimited termination rights move the program towards state interests. If termination rights are reasonable and for defined causes, the locus is unmoved because the public and private rights are protected.

A.2 Explanation of the Project Appraisal Template

The first category in the Project Appraisal Template concerns the Market Conditions surrounding the project. If there is established demand, the locus remains unmoved because all parties benefit. Market and industry interests are insured adequate volume, while the society and the state gain infrastructure in an area with a clear need. If there is not established demand, the project moves toward market interests in the lower right, as the market will decide of the project is successful. The existence of competing facilities moves the locus towards social interests, because the public is not forced to use the project with user fees. This also reduces the demographical impact of the project and takes away from the market interests. If there are no competing facilities, the public is left with no alternative and industry and market interests have a monopoly on the service, which moves the locus to the right.

Socio-Environmental Conditions also have an impact of the potential success of public-private partnership projects. If the project is a greenfield facility, the locus remains in the center. Brownfield projects move the project to the left on the equilibrium framework because they benefit the public without a large environmental impact and the private sector has less influence on the development. Projects of large scale require a movement to the upper right, as the industry is more apt to have the resources to complete it than the state, which likely lacks the necessary funds. Moderately sized projects are in the private interest, shown by a rightward move; small projects are more easily manageable for all parties, so the locus does not shift directionally. Ideally, the demographic impact of the project is diverse. If the project severely impacts a specific subset of people, societal and state interests are likely to be against the project. Therefore, a diverse demographic impact does not move the locus, while a distinct impact pushes the project rightward, away from the public half of the framework. If user fees are affordable for the public, which is obviously in their best interests, the project shifts towards social interests in the upper left. If the user fees reflect the cost of service and have a long-term management plan, as are usually desired, the locus does not move.

Next, the project appraisal template moves on to evaluate the Acquisition & Procurement considerations of the legislation. Requiring a financial and technical benchmark is a practice that ensures the project is a value for the public, while pushing the industry to develop a solid project. This practice does not move the project location; however, the absence of a financial and

technical benchmark promotes industry interests and fails to protect state interests, quantified by a move towards the upper right. For these same reasons, a lack of competition for the project also moves the locus towards the upper right. Without competition, the state cannot be sure it is getting the best value, while industry is content to make the proposal without competition, increasing its chances of getting the project and gaining a better return. This is also the case if there is competition, but it is based upon factors other than price. Conversely, if competition of comparable scope exists and the projects are evaluated on price and other factors, the project remains in balance and no movement occurs. Similarly, transparent selection criteria and processes are beneficial to both the public sector and private sector, therefore no movement occurs. The public sector benefits because transparency and reproducibility are desired in all public actions, while the private sector benefits by gaining a clear definition of the criteria it will be judged upon and how the winning proposal will be selected.

Concession Management is critical to a successful public-private partnership arrangement, and therefore this category contains more issues than the others. No-compete provisions have been very damaging to the public sector in some projects, as evidenced by the State Route 91 Express Lanes. If this type of provision is both allowed and absolute, it pushes towards market interests. If allowed, but reasonable and with exclusions, the overall balance of the program is maintained, and no movement is necessary. Clear and objective performance measurements protect the public from poor maintenance and availability while also setting clear standards for the operator, which results in no movement. An absence of performance measurements benefits industry, as the operator can maintain and operate the project as it sees fit, leaving the state powerless and moving the locus toward the upper right. Vague or poorly addressed performance measurement guidelines are not ideal, but do attempt to protect state interests, therefore moving the program towards the lower left. Conditions for renegotiation are similar to performance measurement, and move in the same directions for the same reasons. If they are clear and objective, all parties benefit and no movement occurs. Absent renegotiation conditions benefit industry interests, while poorly addressed renegotiation conditions can be construed in favor of the state interests. The issues of termination provisions and facility return provisions follow the same directions for the same reasons as above. Clear and objective, absent, and vague move the locus toward no movement, industry interests, and state interests, respectively, for all the same rationale discussed above.

The Project Performance section differs from the others in that the issues do not necessarily move the program locus in one direction or another. However, these issues and conditions are critical to determining if the project successful or unsuccessful. Therefore, the resulting recommendations are either "positive" because they increase the chances of success, or "negative" because they decrease the chances of success. If the project is clearly of high quality and contains innovative aspects, this is a positive attribute, and signals a successful project. A project of mediocre quality and lacking innovation is not likely a good candidate for P3 delivery. If the project clearly has a lower cost than their traditional counterparts, the public-private partnership approach is beneficial. Otherwise, justification for a public-private partnership may not exist, due to the high transaction costs and complexities that accompany such arrangements. If the facility is readily available and in good condition for a high percentage of the time, it is likely to be a success, as users will benefit substantially from the service. Conversely, if the operator does not perform up to the specified standards and facility availability is questionable or worse, the project has little chance for success, resulting in a negative rating.

A.3 State Route 91 Express Lanes Structured Interview with Kirk Avila

SR 91 Structured Interview Questions – Kirk Avila (OCTA)
October 2, 2007

General (10 Minutes)

1. Name, Occupation, Employer, Years of Experience (in industry & innovative finance)
   Kirk Avila. Treasurer, Public Finance Manager, OCTA.

2. What PPP Projects have you been involved in, and to what extent?
   SR 91 Express Lanes - from OCTA perspective.

3. How did you first get involved in PPP's/Innovative Finance? **(if not really involved or knowledgeable, skip to SR 91 Questions)**

   Only SR 91 Experience. Skip to SR 91 Questions.

4. What are the strengths of Public Private Partnerships?
   a. Weaknesses?

5. What conditions are necessary for P3 to be mutually beneficial to the public and private interests?

   In this case, a very unique set of circumstances made it good (without no-compete) for both public and private. Depends on commuters, facilities etc. Population growth in Riverside County, jobs in OC and LA. Housing market imbalances, inexpensive housing in Riverside County and expensive houses in Orange County. Terrain makes another new route infeasible.

6. How do you feel most U.S. PPP's have performed in this regard/generally?

7. In your opinion, what are the most important issues with these agreements, and the best method to address them?

SR 91 Express Lanes (20-35 Minutes)

1. Are you familiar with the Original SR 91 Express Lanes Agreement between Caltrans and
   California Private Transportation Company? **(Yes- Continue, No – Skip to #4)**

   Basically still using the same agreement, just substitute OCTA for CPTC. Removed non-compete clause and added OCTA must create a plan to implement potential improvement projects in the coming years.

2. What were some of the strengths of the agreement?
   No problems or complaints about agreement. Fair.

3. Weaknesses? **Non-compete clause only real issue. Now its gone.**

4. Was the public satisfied with the level of service provided by CPTC?
   Yes, but they were dissatisfied with lack of alternatives and ability for public to add lanes to SR 91 and surrounding areas. Lawsuits followed.

5. Was OCTA satisfied with the performance of CPTC's operation of the road?
   From an operations standpoint, yes. Again, non-compete clause was only factor. OCTA still uses Cofiroute, the operator in the original agreement.

6. What were the key drivers in OCTA's initiative to purchase the Express Lanes?
   Elimination of no compete clause. More lanes in O.C. turned into fewer in Riverside, has funneling effect than angered travelers.

7. Were you involved in the agreement between CPTC and OCTA?
   a. If yes, how so? **(Yes – Continue, No – Skip to #10)**
      Yes, in current position.

8. Did OCTA take over the concession through 2030, or basically purchase the rights to operate the road indefinitely?
   OCTA took over concession for CPTC. Same agreement except changes mentioned above. The Franchise Agreement is still governing operations. OCTA has the Lanes until 2030 or debt payment is complete. Bond payments are $12.5 million per year until 2030. Could pay earlier but would lose road earlier, lose profit. Therefore, Kirk anticipates they will continue to make the minimum bond payments each year so that they can continue to operate the road for the maximum time period, 2030.

9. What were some of the strengths/weaknesses of the agreement?
   OCTA will be making quite a bit of money. Currently about $25 million left over per year. In 2020-2030, estimated revenue to double from $50 million in 2007 to about $100 million. This will raise a good deal of funds to improve the corridor.

10. Was/Is OCTA satisfied with the terms of the sale?
    Yes. They now own a valuable asset with minimal oversight and management.

11. Are there any specific "lessons learned" that the organization has captured from these negotiations?
    Not really. OCTA had to step in to end controversy, lawsuits. Obviously, the P3 community learned from the non-compete clause.

12. Is the sale of the lease to OCTA viewed as a good deal for the public? Why or why not?

    Yes. Now SR 91 Corridor will be improved with excess money rather than taxes. Public gets the extra profits returned into transportation funding instead of going to the private company.

13. How has the elimination of the "Absolute Protection Zone" clause affected the ability to improve nearby roads?

    State in similar position as 90's. Still no money to improve surrounding roads. There will be soon with extension of sales taxes for transportation in Orange County and Riverside County.

14. What improvements have been made since elimination of the protection zone?

    Some small jobs: re-striping in City of Corona, and a $9 million additional westbound lane in Orange County. Additional eastbound free lane is scheduled for 2011.

15. Is OCTA content with contracting Cofiroute for operating services? (latest agreement goes through 2011, about $6 mil per year to operate).

    Yes. Initially required by purchase agreement to have 5 yr agreement. 3yrs and +1 +1yr options. After 3 years, sent out an RFP to operate road. Two responses, chose Cofiroute. 5 year agreement with option for +2yr +2yr.

16. What are the guidelines for the current level of service provided by OCTA?
    a. What has changed since OCTA has taken over?

    Still the same.

17. Does Caltrans still oversee operations of the road?
        i. To what extent?

Technically yes, but they provide very little oversight. Caltrans performs maintenance for which OCTA reimburses them. OCTA files quarterly and annual reports, same as CPTC. Overall, there is very little oversight or interaction between the two. Kirk does not think the arrangement was much different when CPTC was the operator.

18. Last year Toll Revenues totaled $46 million, (operating costs about $16 million, capital costs about $2million) what is being done with the excess toll revenue? ($27 million)
    a. Is OTCA meeting debt payment requirements?

Meeting debt payments easily and banking money for future corridor improvements.

19. What is OCTA's current view towards operating the SR 91 Express Lanes?
    a. Any chance of re-leasing to a private operator?

    Happy with situation and will most likely continue until 2030. Making profit with little effort since most is contracted out.

20. Any other thoughts or lessons learned you would like to share/feel are pertinent?

Another important factor is that the OCTA transportation board is not affected by politics. Toll increases based on formula/volume. No elected officials have to make tough decisions to raise tolls and risk not getting re-elected.

21. Thoughts about the performance of AB 680?

SR 91 is a success. New road (SR 125) in San Diego is finally opening. The same man in charge of SR 125 was head of CPTC, very talented. Kirk mentioned that SR 57 was doomed from the start due to environmental opposition. He thinks PPPs can work but need specific conditions.

22. What did Caltrans learn from AB 680 and apply to 1467? (may not know)

Unfamiliar with AB 1467.

Summary of October 2nd Interview with Kirk Avila – Public Finance Manager, OCTA

I first came into contact with Mr. Avila when initially searching for the original SR 91 Franchise Agreement. He was very helpful and sent me a hard copy. I set up a phone interview not knowing what to expect. As it turned out, he was very knowledgeable about the details of the SR 91 Express Lanes history and current state, as well as a fairly strong general knowledge of P3 agreements, specifically those in California.

OCTA is still using basically the same agreement originally used by CPTC to operate the Express Lanes. There are a few minor differences, but the main change is the elimination of the non-compete clause that caused so much trouble and public outcry. He said when looking at the original Agreement, just substitute OCTA for CPTC. OCTA now olds the rights to operate the road until 2030 OR debt payment is complete, whichever comes first. Due to the profitability of the road, he said OCTA plans to pay the minimum debt payment required each year ($12.5 million) until 2030, in order to continue to have excess to the extra revenue. Currently about $25 million in excess revenue is generated (after paying for operations, maintenance, and debt, etc) per year. Estimates in the 2020-2030 years expect toll revenue to double from its current level of around $50 million to $100 million. OCTA still contracts with Cofiroute to operate the road, as well as other private companies to perform smaller tasks. They recently entered into a new 5 year agreement, in which Cofiroute receives about $6 million per year for it's services. OCTA is content with their performance, and basically can operate the road with only a very small group of people, since most of the work is contracted out.

Kirk went over the background of the road. Basically OCTA was forced to take over the road due to the public opposition and outrage over the non-compete clause. Until then, they were not able to add free lanes to SR 91, or improve nearby roads. Drivers were angry because the 91 had more lanes in LA county and funneled down to fewer lanes for the eastbound PM commute, causing a bottleneck. The unique terrain, real estate, and job market in the area, combine to make the road so busy. Most jobs are in LA county, while people live in Riverside County because it is cheaper. After lawsuits, political pressure, and public opinion issues, OCTA took over for CPTC with $72.5 million in cash (borrowed from other OCTA accounts and

slowly being repaid) and taking over all debt, which they quickly refinanced with tax exempt 4.5% bonds. Ironically, very little improvements have been made in the area, despite the elimination of the clause. Kirk said that there still isn't any money for improvements. However, they did spend about $9 million on an additional free westbound lane in Orange County, and plan on another eastbound lane in 2011. Some re-striping was also done in the City of Corona, as traffic sometimes diverts there when SR 91 is very congested. More money will be available soon for further improvements to the area, as tax increases for transportation have been approved in Orange and Riverside County. As with CPTC, OCTA receives very little oversight from Caltrans. They make their quarterly and annual report and that's about it. They also contract with Caltrans for regular maintenance.

Kirk said in general he thinks P3's can be very beneficial for the public and private interests. However, unique circumstances that guarantee ridership must exist. In this case, the terrain, population growth in Riverside County, housing market, and commuter habits made for an ideal situation. Of course, the non-compete clause ruined original agreement, but now it is sort of a public-public partnership in a way, as OCTA must turn over the road to Caltrans in 2030. He also mentioned the current arrangement is idea, because the 17 member Board that manages the road is not subject to political pressures, as they are not elected officials. The tolls are set on a loose formula, therefore the public is less apt to become angry and demand changes. The market governs the prices.

A.4 State Route 91 Express Lanes Structured Interview with Jeff Ingles

SR 91 Structured Interview Questions – Jeffrey Ingles (Caltrans)
October 12, 2007

General (10 Minutes)

8. Name, Occupation, Employer, Years of Experience (in industry & innovative finance)
   Jeff Ingles, Caltrans, 2 years in February. His background was running loan programs for State of California and private banking experience. His partner Weijian Ni (together they make up Caltrans' Innovative Finance Department) has a background in bonds. Neither have a construction or engineering background.

9. What PPP Projects have you been involved in, and to what extent?
   Has not yet had a project come through in the past two years. The innovative finance group in Caltrans is now 2 individuals. They have spent time drafting PPP guidelines and procedures, but have not used them yet. No project experience.

10. How did you first get involved in PPP's/Innovative Finance?
    They wanted someone with loan experience to compliment Weijian's bond experience.

11. In your opinion, what are the strengths of Public Private Partnerships?
    a. Weaknesses? **Not very knowledgeable.**

12. What conditions are necessary for a P3 arrangement to be mutually beneficial to the public and private interests?
    Not very knowledgeable.

13. How do you feel most U.S. PPP's have performed in this regard/generally?
    Not very knowledgeable on the subject.

14. In your opinion, what are the most important issues with these agreements, and the best method to address them?
    Not very knowledgeable.

SR 91 Express Lanes (20-35 Minutes)

23. Were you involved in the Original SR 91 Express Lanes Agreement between Caltrans and CPTC?
    a. If yes, how so? **No – Skip to #5.**
    b. If not directly involved, discuss level of knowledge of original agreement **(if low, skip to #5)**

24. What were some of the strengths/weaknesses of the agreement?

25. Was Caltrans content with the level of service provided by CPTC?

26. Did Caltrans and CPTC have a good working relationship?

27. What is the general opinion of the original agreement in Caltrans?
    At the time it was thought to be successful, and it was for the first few years before public opinion turned against it.

28. Are there any specific "lessons learned" that the organization has captured from the original SR 91 Express Lanes agreement?
    Everyone in the industry learned a valuable lesson about strict no-compete clauses. At the time it was thought necessary to secure financing.

29. Were you involved in the agreement between CPTC and OCTA? **(if no, skip to #9)**
    a. If yes, how so? **No - Skip**

30. Did OCTA take over the concession through 2056, or basically purchase the rights to operate the road indefinitely? **Already learned from Avila interview**

31. Is the purchase of the concession by OCTA viewed as a good deal for the public? Why or why not?

    Mr. Ingles presented himself as having very little knowledge specific to SR 91 Express Lanes.

32. How has the elimination of the "Absolute Protection Zone" clause affected the ability to improve nearby roads?

33. Have major improvements been made in the area?

34. Is Caltrans content with the level of service provided by OCTA?

35. How much oversight is required of Caltrans now that OCTA is the operator?
    He said that he doesn't interact with them at all. Very little oversight.

36. Do you feel OCTA is operating the road as efficiently as CPTC?

37. What is your organizations current view towards the SR 91 Express Lanes? Successful?

38. Any other thoughts or learnings you would like to share/feel are pertinent?

39. Thoughts/Learnings from AB 680?

After many years of delays, SR 125 is finally set to open sometime around the first of the year. Environmental and permitting issues should be handled before Franchise Agreements are awarded, because these tend to be the major sticking points. Public buy-in is also very important.

Currently, the public opinion is against P3's, due to 91 and 125 experiences.

40. How did Caltrans apply these lessons learned in AB 1467?

Four projects for goods movements. Limited toll setting authority. No mixing of public funds. Many layers of approvals required. These are all set in place to safeguard the public, however it makes it very difficult on private side of things.

41. What is the current status of AB 1467, any activity/proposals?
    a. Why or why not?

No current activity, due to reasons mentioned above and negative experience thus far.

Summary of October 12 Interview with Jeff Ingles, Caltrans Innovative Finance Dept.

This interview was not near as helpful as that with Mr. Avila. Mr. Ingles did not have any specific knowledge with regard to SR 91, or any real agreements at all. He did take some time to discuss the general state of affairs in California. Currently there is no activity, and they really aren't doing much in the office. Sometimes a little interest will be shown by a financial institution, but nothing comes of it. Investment firms have been helpful in answering questions and working on some documents. He believes that public opinion and the political climate are VERY important aspects to these projects. In November 2006, Issue 1B passed for $19.9 billion in transportation funds, which seems like a lot but is really a drop in the bucket, according to Jeff. At one point he drafted a Government Office Action Request in which Caltrans requested more money from the Governor. However it was never sent.

Jeff believes that these projects can be beneficial, and the best way to go about them is Targeted Corridor development to relieve congestion from existing highways. He thinks in order to get the market going again in California, a series of smaller projects is necessary to prove that they can be successful.

A.5 Dulles Greenway Structured Interview with Ray Pethtel

Dulles Greenway Structured Interview Questions with Ray Pethtel
Nov. 5, 2007

General (15 Minutes)

1. Name, Occupation, Employer, Years of Experience (in industry & innovative finance)
   Ray Pethtel, Comissioner of VDOT at time of Greenway. Currently employed by Virginia Tech Transportation Institute and still active in PPP proposals (helped with concept for Fluor's I-81 Proposal).

2. What PPP Projects have you been involved in, and to what extent?
   Dulles Greenway, I-81, and also brought in to help resolve Pocahontas Parkway Agreement negotiations.

3. How did you first get involved in PPP's/Innovative Finance?
   In late 80's, very active. Helped draft Virginia Highway Corporation Act with Steve Pearson while serving as VDOT Commissioner.

4. What are your general feelings towards Public Private Partnerships?
   They can be very beneficial to help with funding gap. They should be and will continue to be part of the solution for infrastructure.

5. Do you think that if the agreement is ideal, they can be mutually beneficial to the public and private interests?

6. What do you feel is the rational for choosing a PPP delivery method?
   PPP is chosen because of the perception that the private sector can do it faster and cheaper, as well as bring additional funding to the table.

7. How do you feel most U.S. PPP's have performed in this regard/generally?
   Skipped in interest of time
8. In your opinion, what are the most important issues with these agreements, and the best method to address them?
   Skipped in the interest of time.

Dulles Greenway (20-35 Minutes)

9. We have come across a document that goes into great detail regarding the early years of the Dulles Greenway development, and ends just about the time an agreement is reached. You are heavily referenced as a source. Do you have any recollection of who/what group put this together?

   Not sure, contact Steven Pearson and/or Mike Profator??? at Virginia Transportation Research Council. Several academics were interested. Specifically remembered a Harvard person (Ibanis??? or similar last name).

10. What was your involvement with the Greenway as Transportation Commissioner?
    a. From the standpoint of VDOT's proposal

    This was one of MANY VDOT projects at the time, not really involved.

    b. From the standpoint of negotiating with TRCV/TRIP II

    Involved in lengthy negotiations.

11. What was the rationale for pursuing the Greenway as a PPP?

    The Governor and administration thought private sector could bring new resources. In Ray's opinion, they only brought different resources (long-term bonding). There was a feeling the private sector could build the road faster and cheaper. He feels this is mostly because the public has more regulations. At the time VDOT could not use Design-Build.

12. If you had known the delays that would impact the start of construction for TRCV, would VDOT have continued to pursue the toll road as a VDOT project?

    No, once the commitment was made to PPP, political pressures would not allow for VDOT to attempt to take over development, even after delays.

13. How would you explain the extremely overestimated traffic projections? How did this affect the project's approval and financing?

    He suspects a methodological error in the process. Mr. Pethtel also pointed to the downturn in the housing market, which was expected to be booming and create most of the traffic. Obviously, the real traffic numbers would have made the project much less appealing at the time.

14. In your opinion, why was the public so strongly in favor of the Greenway in the early years?

    "Route 7 was a mess, they wanted a faster route." Also, the public opinion campaign against VDOT by TRCV was effective. It started when VDOT questioned traffic projections at a public hearing, TRCV then painted VDOT as the bad guy, unwilling to let the private sector build the road.

15. Do you think the public interest was appropriately safeguarded in the agreement?
Yes, evidenced by the fact that the private investors lost millions (Maggie Bryant lost $50 million alone) and the State was not forced to step in and pay, as happens in many cases (Pocahontas Parkway).

16. Do you feel that in the end, a PPP was the best delivery method? Was it a success?
It was successful and worthwhile. No such thing as "best", but it was a successful alternative, cheaper and faster. Especially since VDOT was not permitted to use Design-Build at the time and Virginia was looking towards other sources of funding.

17. Are there any specific "lessons learned" that VDOT captured from the process?
Do not call into question or criticize the private sector after you have already agreed to progress with them as the developer. Public will believe private sector.

18. How was this reflected in PPTA legislation?

19. Do you feel there is a future for successful PPP delivered projects in Virginia?
Yes, definitely. Ray feels they will be major roads and big projects. The main reason is the state's debt limitations.

Ray Pethtel's Narration of the Greenway Development

In 1986 the new Governor (Baliles) and Secretary of Transportation (Watts) were looking for innovative ways to fund transportation. At the time Mr. Pethtel was Transportation Commissioner and Chairman of the Commonwealth Transportation Board. In a legislative session in 1987 or 1988, they eliminated the law against private toll roads. Steve Pearson (a Richmond lawyer) and Ray worked together to draft the Virginia Highway Corporation Act, which was passed largely as they wrote it.

John Miller approached them as interested in a public-private partnership transportation project and Dulles Toll Road Extension was selected as the best opportunity. At the time, VDOT had already completed the environmental impact statement and received a Record of Decision to proceed. TRCV bought the environmental approval and documents for $3 million, to be paid at the end of the concession period. As far as he knows, that still exists and is outstanding.

VDOT disagreed with the traffic volume projections presented by TRCV and brought it up at the public hearing. It was at this point the Director of TRCV went on a tirade and turned public opinion against VDOT. The downturn in the housing market also played a role in the exaggerated traffic figures. He said that TRCV contacted him and asked if Route 7 improvements were planned and he said YES. This apparently did not deter them from pursuing the Greenway.

The Greenway was built on a design-build basis, making it faster and cheaper than VDOT could have built it at the time. He believes that the toll rates have not ever been so expensive as to be a major source of controversy. The most he has ever heard about them has been around this most recent 2006 application for toll hikes.

A.6 Pocahontas Parkway & I-81 Structured Interview with Herb Morgan

Pocahontas Pkwy and I-81 Structured Interview Questions with Herb Morgan
February 11, 2008

A. Pocahontas Parkway

1. What was your role with Fluor in regards to the Pocahontas Parkway Project?

   Fluor's E-470 tollroad project in Colorado was finishing up about the same time the Pocahontas Parkway (PP) was starting, so the same Fluor/MK partnership was transferred to Virginia. Herb Morgan became involved toward the end of the three-year development period (1995-98).

2. How did the idea originate, as it was an unsolicited project?
   VDOT had already identified the need and performed the preliminary engineering for PP, but funding would not be available for another 15 years to place the project on the Six-Year Plan. Fluor's proposal allowed significantly accelerating the road's construction.

3. How did you feel about the treatment you received from VDOT?

4. Rationale 63-20 Corporation, PPA? Do you see future applications for the 63-20 model?

   63-20 tax-exempt corporations (such as the Pocahontas Parkway Association) were the "preferred mechanism" for public-private partnerships in the late 1990's, when PPP's were "in their infancy" and before the concession model had been developed. Since Henrico County didn't want to sell bonds for the PP, Fluor used the 63-20 model instead. Herb noted he still sees some limited potential for future applications of 63-20 corporations as conduits for issuing Private Activity Bonds, particularly depending on future interest-rate developments.

5. Negotiations took about a year, what were the key issues that took so long to work out?

   Factors which contributed to the PP development delays included the necessity to get legislation in place and coordinate with a DOT which had never negotiated an arrangement like this before. There were many discussions about price and risk issues, with VDOT needing time to ensure due diligence on its end. Hence part of the delay was due to the learning/education process, and part to the negotiation process. VDOT's Innovative Project Delivery group was established partway through the road's development and became more significant in 2002-03, toward the end of the process. Many DOTs are now establishing similar groups.

6. Do you feel that this year impacted the financial performance of the road?

   Traffic projections contain "a lot of black-box items," with their attempts to estimate what the economy will do 30-40 years from now. Gauging the impact of fuel prices, etc. on future travel patterns is very difficult. 63-20 traffic projections are typically more conservative than private-equity investors' estimates. When the PP traffic was estimated, planners anticipated significant development in the electronics market in the eastern part of Henrico County, but this market experienced a downturn instead. Herb felt "I don't think we over-estimated" the PP traffic projections; the favorable bond ratings from Standard & Poor's and Fitch's provided independent support for the estimates' soundness. Compare the Greenville Connector, a 63-20 project in South Carolina which was also a "development road": it too was built in anticipation of development which did not materialize.

7. Why was the decision made to lease the road to Transurban?

8. Do you feel that Transurban will be able to operate the road profitably?

9. Were 3rd party consultants used by VDOT during any part of negotiations?

10. Any other thoughts you would like to share/feel are pertinent?

B. I-81 Improvements

11. What was your role with Fluor in regards to the I-81 Improvements proposal?

    Herb Morgan was involved in the I-81 project from its inception, when VDOT requested competing proposals for STAR's unsolicited submission.

12. How did you feel about the treatment you received from VDOT?

13. If possible, could you discuss the strengths and weaknesses of the RFP?

    The problem with this procurement was that "politics was driving the selection process," and in Herb's opinion, "we should have pulled out." The eventual Tier 1 solution was very similar to what Fluor proposed. The prospect of 2 x $800 million federal funding—even though it was unlikely these full amounts ever would have materialized—was too much of an allure for politicians.

14. What is your opinion on RFPs in general that lack a defined scope?

    As for unsolicited vs. solicited proposals, Herb feels the former allow more creativity and flexibility. But with VDOT's process becoming more structured and prescriptive, as evidenced in the recent 495 project, this flexibility in scope can complicate negotiations. VDOT is trending more toward solicited proposals—simpler to negotiate, because VDOT's scope goals are known up front, but enabling less creative solutions. As a public agency, VDOT is necessarily influenced by

political pressures, such as the legislature's requirement to solicit Route 460 as a PPP. To deal with these influences, VDOT is moving more toward solicited proposals, which have advantages and disadvantages but are helpful, in Herb's opinion, for "leveling the playing field." He feels the Beltway project is a good roadmap and good risk-sharing model for other states. Fluor has done availability projects in Europe and is watching the Florida market.

15. How did you feel about the VDOT Evaluation Process?

16. Would you/Fluor participate in another VDOT PPTA RFP?

    Yes. In considering potential PPP opportunities, Fluor first investigates whether a project is viable: can it be financed at all from any combination of sources? Second, what are the commercial terms? Is there too much risk? Sometimes there can be too many terms between the design-builder and concessionaire for the project to remain attractive. Third, what is the political will? Herb doesn't see excessive appropriations risk in availability contracts: once a public agency signs a contract, it can't really default on that obligation. But the Florida availability-contract provisions are "very onerous": the Spanish companies may be willing to accept this risk, but Fluor is not certain whether it will participate.

17. Did VDOT employ 3rd party consultants to help with the RFP or any part of the process?

18. Are there any specific "lessons learned" that Fluor has captured from the process?
    The main lesson learned: "to read political winds better, not just dollars and cents and technical proposals."

19. Do you feel there is any potential for a PPP on I-81 in the future?