



OTIG

Oregon Transportation
Improvement Group



THE SUNRISE PROJECT

MILESTONE 0 FINAL REPORT – SCOPING STUDY



Sunrise

I-205 to US 26



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Sunrise Project

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Milestone 0 Final Report – Scoping Study

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Appendix B: Environmental Assessment Report

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1. EXECUTIVE SUMMARY

The Sunrise Project is a proposed six-lane, limited-access highway stretching over five miles along OR 212/224 corridor between I-205 and Rock Creek Junction. The purpose of this project is to address traffic congestion and safety problems in the corridor. The project would serve the major truck and freight distribution center in the Clackamas Industrial Area, one of Oregon's busiest and most critical trucking centers and a major link connecting the state's farms, urban markets and ports.

The Sunrise Parkway is a proposed four-lane, limited-access highway stretching eight miles further east along the Highway 212 corridor from Rock Creek Junction to US Highway 26. It would serve the newly incorporated City of Damascus and would route regional through-traffic outside the Damascus Town Center. The project also would serve traffic from future development in Damascus as well as the growing need for access to the State highway system.

The Sunrise Corridor is comprised of the Sunrise Project and Parkway and would provide a direct connection between I-205 and US Highway 26 in Clackamas County. The two projects combined account for about 13 miles of roadway and would provide significant time savings for travelers, making the overall Sunrise Corridor project viable as a tolled facility.

There are currently no identified public funding resources for constructing the Sunrise Project or the Sunrise Corridor or any other transportation project of this magnitude. Because of this fact, ODOT is looking to a Public Private Partnership to shoulder some of the upfront financial risks of this project. Tolling is being considered as a possible funding option for construction, operation and maintenance of the Sunrise Corridor.

This Study

The purpose of the Scoping Study was to examine whether the Sunrise Project and Sunrise Corridor are technically and financially viable transportation solutions that could be delivered through a Public Private Partnership (PPP) for the State of Oregon. The study was also to identify major issues that must be addressed to reach an Implementation Agreement and Financial Close. This Scoping Study was undertaken by Oregon Transportation Improvement Group (OTIG) to determine if the Sunrise Project, the Sunrise Corridor or other potentially viable alternatives exist that could be moved forward to a next phase to assess the commercial and financial viability of the project, and if so, provide a basis for agreement between ODOT and OTIG on key development parameters.

OTIG's preliminary financial feasibility analysis suggests that none of alternatives identified are financially feasible given high construction costs and low estimated traffic volumes at this time. As population growth in the region continues, the Sunrise Corridor will become more economically viable; however, analysis suggests that funding gaps are likely insurmountable unless revenues from some other source are used to subsidize the Sunrise Project or Corridor. Alternative sources of revenues and/or funding are unlikely to be sufficient to fund the project given the magnitude of the funding gap and the uncertainty associated with these funding sources.

Project Alternatives

The following alternatives have been identified:

Option	Description
Option 0	No Build. This option is being addressed in the Supplemental Draft EIS, but will not be addressed further in this report.
Option 1a	Sunrise Project with Interchange Distance Tolling Build two lanes in each direction between I-205 and the Rock Creek Junction (the Sunrise Project), with a midpoint interchange at 122 nd Avenue. All vehicles traveling on the Sunrise Project will be tolled on a distance basis. OTIG will maintain the Project.
Option 1b	Sunrise Project without Interchange Distance Tolling Build two lanes in each direction between I-205 and Rock Creek (the Sunrise Project), with no midpoint interchange at 122 nd Avenue. All vehicles traveling on the Sunrise Project will be tolled on a distance basis. OTIG will maintain the Project.
Option 1c	Sunrise Project with Interchange Corridor Tolling Build two lanes in each direction between I-205 and Rock Creek (the Sunrise Project), with a midpoint interchange at 122 nd Avenue. All vehicles traveling on both the Sunrise Project and OR 212/224 will be tolled (corridor tolling) on a distance basis. OTIG will maintain the entire Sunrise Corridor, including the existing 212/224.
Option 2a	Sunrise Corridor with Interchange Distance Tolling Build two lanes in each direction between I-205 and US26 (the entire Sunrise Corridor), with a midpoint interchange at 122 nd Avenue. All vehicles traveling on the Sunrise Corridor will be tolled on a distance basis. OTIG will maintain the entire Sunrise Corridor.
Option 2b	Sunrise Corridor without Interchange Distance Tolling Build two lanes in each direction between I-205 and US26 (the entire Sunrise Corridor), with no midpoint interchange at 122 nd Avenue. All vehicles traveling on the Sunrise Corridor will be tolled on a distance basis. OTIG will maintain the entire Sunrise Corridor.
Option 2c	Sunrise Corridor with Interchange Corridor Tolling Build two lanes in each direction between I-205 and US26 (the entire Sunrise Corridor), with a midpoint interchange at 122 nd Avenue. All vehicles traveling on both the Sunrise Corridor and OR 212/224 will be tolled (corridor tolling) on a distance basis. OTIG will maintain the entire Sunrise Corridor, including the existing 212/224.

Because the no build option would not require OTIG participation, it was not carried forward as an alternative for further consideration.

Tolling

Regardless of the tolling options eventually chosen to fund and develop the Sunrise Project or Sunrise Corridor, it is imperative that system does not slow traffic. Therefore, electronic tolling is considered as a collection method for all scenarios in this report.

Two methods of electronic tolling, distance and corridor, were considered.

- Distance Tolling - Under this tolling regime, each vehicle is electronically charged a toll that matches the distance it travels on the toll road.
- Corridor Tolling – This method of tolling requires all vehicles using the tolled facility, which would include Hwy 212/224 and the Sunrise Project/Parkway, to pay a toll.

Preliminary Public Information Plan

On behalf of OIPP and OTIG, community leaders and members of the Sunrise community were interviewed to determine perceptions about the Sunrise Corridor and potential use of tolling to fund the project.

General observations concluded that, while education and outreach efforts need to be expanded to the broader community, business and community leaders understand the state's transportation funding challenge and there is strong support for the use of Public Private Partnerships for major transportation projects based upon the belief that the private sector can construct such facilities faster and operate them more efficiently than the public sector.

Resistance is expected to tolling any existing facilities, with less opposition to tolling new facilities. Any tolling scheme will require an aggressive public education effort to gain acceptance. However, the use of non-stop Electronic Toll Collection (ETC) would be a powerful tool in gaining acceptance of tolling. The promise to stop collecting a toll once a toll project is paid for is the single best condition to win public support.

Environmental Classification Assessment

This assessment provides preliminary input and an overview from OTIG regarding potential approaches, considerations and options for securing *National Environmental Policy Act* (NEPA) compliance. The primary responsibility for the selection of the appropriate NEPA process, managing this task and obtaining all required environmental approvals remains with ODOT.

Air, Archaeological and Cultural Resources, biology, farmlands, floodplains and geology were examined in order to establish the environmental impact of the project.

A Supplemental Draft Environmental Impact Statement (SDEIS) has already been initiated for the Sunrise Project and the EIS team recently completed the Statement of Purpose and Need, and the description of alternatives to be considered in the SDEIS. Both items have been approved by the Collaborative Environmental and Transportation Agreement for Streamlining (CETAS) group.

OTIG has reviewed the approved Statement of Purpose and Need, the scope of work of the environmental consultant, and the evaluation/selection criteria to ensure that any specific needs related to the potential imposition of tolls or other objectives of OTIG have been addressed or not precluded.

The Sunrise Project EIS process is expected to be completed in early 2008. The acquisition of Right-of-Way and preliminary engineering have been initiated and are expected to be completed by end of 2008, with construction beginning in 2008 and ending in 2011. These dates assume sufficient funding is available for Right-of-Way, final design, and construction. At this time, a source of funds outside of a Public Private Partnership arrangement has not been identified.

The Sunrise Parkway will require the preparation of a NEPA EIS because it is proposing a new transportation corridor in a rural setting. This particular project is still in its infancy, and several milestones must be reached before the initiation of the NEPA process.

Opportunities to Accelerate the Schedule

As stated above, several milestones are required prior to the commencement of the NEPA documentation process for the Sunrise Parkway. However, the requirements of NEPA should be considered throughout the planning process in order to streamline the development of the Purpose and Need Statement, alternatives, and analysis of project impacts on environmental resources. Additional studies will likely be required to support the selection of alternatives to be evaluated in the EIS.

Project Schedule

The preliminary schedules outline two approaches: The ODOT Suggested Schedule which is the traditional conservative and sequential approach, and the OTIG Proposed Schedule which proposes more of an overlap of activities to optimize resources and coordination, and reduce the overall program implementation duration. The key schedule driver for both schedules is the NEPA/EIS process.

The ODOT Suggested Schedule indicates a projected commencement of construction for the Sunrise Project in early 2010 and for the Sunrise Parkway in early 2012. By combining the corridor study required for the City of Damascus's Transportation Plan update with the NEPA process through using the study as an alternatives analysis for the NEPA process, it may be possible to cut as many as 12 months of the total process duration.

This schedule outlined in this report indicates a potential early construction start for the Sunrise Project in mid 2008 and late 2009 for the Sunrise Parkway.

The proposed project has several potential risks that could affect the schedule including the level of public acceptance for tolling in general, and corridor tolling specifically. Economic conditions, material and labor prices and limited available funding for tasks that must be undertaken by ODOT and/or Metro, along with having to identify a funding source to pay for an earlier than planned Parkway NEPA process, are among the risks.

Funding Options

OTIG has analyzed multiple sources of funding most commonly used to finance transportation projects in Oregon including:

- government earmarks
- gas taxes
- vehicle registration fees
- regional property taxes
- land value capture
- cross-subsidization
- tolling

Tolling was identified in the public opinion surveys conducted by OTIG as the option likely to have more public support than increases in property or gas taxes, and offers more certainty than Federal or State funding sources.

Alternative financing options potentially available to pay for the upfront construction costs include:

- Transportation Infrastructure Finance and Innovation Act (TIFIA)
- Private Activity Bonds (PABs)
- Oregon Transportation Infrastructure Bank (OTIB)
- Grant Anticipation Revenue Vehicle GARVEEs

Cost Estimates, Revenue and Financial Feasibility Analysis

Six options were analysed in this Scoping Study with regard to cost estimates, revenue projections and financial feasibility. Construction cost estimates, lifecycle costs, operating and maintenance expenses, and tolling implementation and operation costs were considered. Revenue forecasts were based upon existing traffic data and represent a reasonable expectation for the future. A financial feasibility analysis was conducted to identify the potential of tolling as a significant source of funding for the Sunrise Project and the Sunrise Corridor.

The capital costs of the options range from \$393 to \$923 million, depending on whether the option considers Sunrise Project only, or the entire Sunrise Corridor. The revenues in some options are insufficient to cover the operating costs and suggest that some options might not be financially feasible within any financial structure. In other options, the forecasted revenues cover operating costs but cannot cover the repayment of principle and interest for debt necessary to finance the project. The results are still too broad to support a final decision and, depending on the option that gains public support, there could be either a gap or surplus.

Summary

OTIG's preliminary financial feasibility analysis suggests that none of alternatives identified are financially feasible given high construction costs and low estimated traffic volumes at this time. As population growth in the region continues, Sunrise will become more economically viable; however, analysis suggests that funding gaps are likely insurmountable unless revenues from other projects are used to subsidize Sunrise. Alternative sources of revenues and/or funding are unlikely to be sufficient to fund the project given the magnitude of the funding gap and the uncertainty associated with these funding sources.

While the Scoping Study results indicate that neither the Sunrise Project nor Sunrise Corridor can generate enough toll revenue to be a viable self-sufficient project, it does not offer any opinions regarding the need for the project. It is clear that a highway facility such as the Sunrise Corridor is an essential part of the traffic management plan in the Damascus area to handle the longer term population and traffic growth projections. While the results of this report conclude that the Sunrise Corridor cannot be funded through tolls on the new facility, it remains viable should alternative supplemental sources of funding be identified, or the projects be coupled with other potential toll projects in the greater Portland metropolitan region that can generate excess revenue.

2. OVERVIEW

2.1 Purpose of Report

This Scoping Study (Report) has been prepared by the Oregon Transportation Improvement Group (OTIG) for the Sunrise Corridor, which includes both the Sunrise Project and the Sunrise Parkway, as required by Milestone Zero of the Pre-Development Agreement.

At present, the Sunrise Parkway is in a conceptual phase while the Sunrise Project has advanced to the NEPA/EIS phase. As stated in the Sunrise Project Statement of Purpose and Need (November 2004), the purpose of the Sunrise Project is to effectively address the existing congestion and safety problems in the Highway 212/224 corridor between its interchange with I-205 and Rock Creek Junction, and to serve the growing demand for regional travel and access to the state highway system.

The following points were identified in the Statement of Need:

- Highway 212/224 between I-205 and Rock Creek Junction is currently experiencing unacceptable levels of congestion and delay during the peak travel periods. In 2030, the projected traffic volume will far exceed the volume that the existing four-lane arterial can be expected to handle at an acceptable level of service, given the expected increases in the number of household and jobs in the area (136% and 85% respectively).
- Both the north and southbound weave sections of I-205 between 82nd Avenue and Highway 212/224 are approaching capacity resulting in frequent stop-and-go movements, difficulty in changing lanes, and long queues forming because of minor incidents. By the year 2015, this section of I-205 will exceed its design capacity and the length of these stop-and-go movements will continue to grow if no action is taken. Traffic traveling on the Milwaukee Expressway (Hwy 224) heading east on Highway 212/224, as well as the reverse direction, must either use the above section of I-205 or the currently congested 82nd Drive.
- Highway 212/224 near I-205 is ranked in the top 10 percent of state routes for vehicle crash rates. Over 500 vehicle collisions were reported for this area during the five-year period of 1998 through 2002. The high crash rate is attributed to severe congestion and roadway deficiencies. Inadequate bicycle and pedestrian facilities reduce the safety and connectivity for these modes of travel in the project area.
- Highway 212/224 is designated as a statewide and regional freight route with 12 percent of the traffic on the project section of this highway being trucks. Highway 212/224 serves the Clackamas Region Industrial area, which is a major freight distribution center for the Northwest. This area is expected to nearly double its employment by the year 2015. Long delays are currently being reported for trucks accessing I-205 from the distribution center.

Sunrise Project goals stated in the EIS include:

- **Goal 1:** Provide east-west transportation improvements from I-205 at the Milwaukee Expressway to the Rock Creek Junction to meet existing and future safety, connectivity, and capacity needs for statewide and regional travel within the Hwy 212/224 Corridor.
- **Goal 2:** Provide transportation improvements that support the viability of the Clackamas area for industrial uses.

- **Goal 3:** Support community livability and protect the quality and integrity of residential uses within and adjacent to the corridor.
- **Goal 4:** Provide a facility that minimizes and effectively mitigates adverse impacts to natural and cultural resources within the project corridor.

The objective of the Scoping Study is to determine the preliminary feasibility and provide a basis for agreement between ODOT and OTIG on key development parameters for the project, schedule and budget for further stages of the Pre-Development Phase.

The Scoping Study will establish the project feasibility in terms of engineering, traffic and revenue projections, and project finance as well as to identify any major issues that must be addressed to reach an Implementation Agreement and Financial Close. The Scoping Study will determine if one or more potentially viable alternatives exist and indicate that OTIG and ODOT should move to Milestone One, the Commercial and Financial Viability Assessment.

The two distinct elements addressed in this report are the Sunrise Project and Sunrise Parkway. This Scoping Study focuses on whether the project can be delivered as a Public Private Partnership.

2.2 Public Private Partnership Delivery

2.2.1 Definition of a Public Private Partnership

A Public Private Partnership is a contract between government and a private partner to provide a good or a service over the long term with financial and quality assurances for the taxpayer.

There are many different kinds of PPPs, with varying levels of private sector involvement, the most common being a Design-Build-Finance-Operate (DBFO) transaction.

Under a DBFO arrangement, the government grants a private sector partner the right to develop a new piece of public infrastructure under a long term "concession", which typically matches the useful life of the infrastructure. The private partner takes full responsibility for delivery and operation of the public infrastructure against pre-determined contractual standards of performance established by government. The private sector partner is paid by the right to a revenue stream, usually a user charge (e.g., highway tolls) or an annual government payment for performance (often called a Shadow Toll or Availability Charge).

A DBFO Public Private Partnership also offers some significant benefits to the public partners:

- Government typically continues to own the infrastructure. The private sector simply leases, or otherwise gets the right to use, the infrastructure until the end of the concession, the length of which is determined by the government.
- Government establishes the performance standards and may penalize its private sector partner by reducing the revenue stream in the event standards are not met. Performance standards typically relate to quality of the road, safety statistics and accident clearing. In significant cases of non-performance, government can also cancel the concession.
- Government usually establishes the user charges or toll regime and terms on which the public can access the infrastructure.

PPPs are not privatizations; Government retains control under transparent performance contracts. In this respect, PPPs are no different than the way in which many other essential services are

already delivered in Oregon. For example, electricity and gas utilities are largely private sector-managed but operate under a stringent regulatory regime.

When ODOT delivers new highway projects itself, without using a PPP model, it typically:

- Designs the project, or employs private sector consultants to design the project, then tenders construction to a private sector company. ODOT generally remains responsible for managing construction, and taxpayers bear the risks of any cost overruns or delays.
- Pays for construction from tax receipts on hand, or in some cases issues bonds, and taxpayers are responsible for repayment of interest and principal on the bond, even if the road is substantially delayed.
- When the road is completed, ODOT becomes responsible for operations and maintenance, elements of which it may contract out to a private company, and taxpayers bear responsibility for any quality defects or unexpected problems.
- If revenues on hand are insufficient to build the full project, it may be broken into units and phased in over many years, resulting in increased congestion for a longer period, higher costs and longer construction disruptions.

2.2.2 Benefits of PPP Delivery

A PPP integrates all of the above activities into one long term contract with a private sector partner. This means that:

- The contract ensures construction on time and on budget, and thus shields taxpayers from budget overruns and lengthy construction delays.
- The private sector partner ensures that the design meets the performance standards at the lowest possible construction cost. This typically results in savings of 15-30%¹ relative to Government delivery.
- The private sector partner is responsible for finance, thereby ensuring that interest rate, repayment and other financial risks are not taken by taxpayers.
- The private sector partner operates and maintains the road for 30 years or more to stringent performance standards. The partner is therefore strongly motivated to design a road that will last, and quickly repair any problems which may arise. Because of the integration of Design, Construction and Operation, PPPs typically achieve further cost savings of 15-20%¹ in maintenance costs over the life of the infrastructure.

Public sector capital available for highways is limited and government agencies have limited resources to ensure that cost overruns and delays do not occur. PPPs can mobilize private sector capital and management capabilities to ensure the efficient delivery of public infrastructure.

The advantages of PPPs are now well proven, with countries all over the world using them to great success. The United Kingdom has completed over \$26 billion in PPPs over the past 15 years. A survey by the United Kingdom National Audit Office confirmed the cost savings described above and found that 75% of PPPs were on time and 78% were on budget. This compared with 30% of traditional government projects completed on time, and 27% on budget. When PPPs were delayed or over budget, it was invariably because the public partner had changed project specifications during the construction period requiring the private sector to make substantial changes mid-stream.

¹ HM Treasury July 2003

2.2.3 The Early Partnering Approach to PPPs

The major benefits to ODOT by utilizing an early partnering approach with OTIG are:

- ODOT benefits from OTIG's project and cost management expertise, which has been proven in numerous competitive tenders. Since OTIG is funding costs through the Pre-Development Phase, they have every incentive to minimize these costs while still ensuring the work proceeds towards a successful outcome.
- ODOT avoids funding any development costs except in the event the project does not proceed. ODOT is able to mitigate its termination costs if there are early indications that the project is not viable.
- Macquarie Infrastructure Group (MIG) and Macquarie Securities (USA) Inc. (MSUSA) time and internal expertise are at risk.
- ODOT is assured of a competitive outcome to the Implementation Phase as the construction and financing components will be competitively tendered, and MIG and MSUSA's fees and returns are transparent and declared up front.

3. SCOPE OF WORK

3.1 Network Definition

3.1.1 Network Description

OR 212/224 is one of the main east-west highway routes (and designated freight route) in the eastern Portland metropolitan area, from I-205 to US Highway 26. This 13-mile highway route traverses an area known as the Sunrise area.

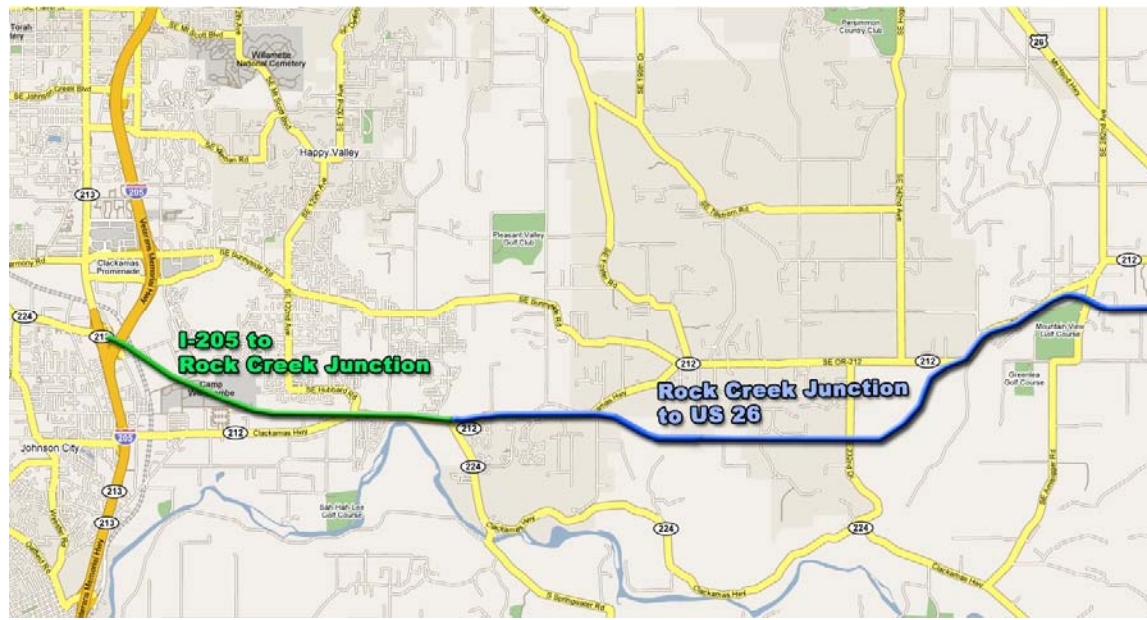
The Sunrise Corridor is a proposed new highway link that would provide a direct connection between I-205 and US 26 in Clackamas County. Two separate sections of the proposed corridor have been discussed over the years and are currently in different phases of planning – the Sunrise Project and the Sunrise Parkway.

The Sunrise Project final build-out is a six-lane with two auxiliary lane limited access highway but is initially proposed as a four-lane, limited-access highway stretching approximately five miles along the OR 212/224 corridor between I-205 and Rock Creek Junction. The purpose of the project is to address traffic congestion and safety problems in the corridor. The project also would serve a major truck and freight distribution center in the Clackamas Industrial Area, one of Oregon's busiest and most critical trucking centers. The OR 212/224 corridor currently carries more than 50,000 vehicles per day with trucks comprising close to 12% of the traffic.

The Sunrise Parkway is a proposed four-lane, limited access parkway stretching eight miles further east along the Highway 212 corridor from Rock Creek Junction to US Highway 26. One of the main objectives of this route is to serve the City of Damascus (and its expected growth) and to route regional through-traffic around Damascus Town Center. The project has been examined in conjunction with the recently completed Damascus/Boring Concept Plan. The Concept Plan, including the City's Comprehensive and Transportation System Plans, is in the process of being refined and adopted.

While the focus of the current EIS process is the Sunrise Project (the western 5-mile section), OTIG has included the Sunrise Parkway in this analysis so that the entire Sunrise Corridor is examined.

Network Definition Map



Sunrise Project

The proposed network consists of:

- Two lanes in each direction
- Three interchanges: I-205/SE Milwaukee Expy (O - New exit), SE 122nd Ave (possible) and Clackamas Hwy 224 South
- Over/under Crossings at SE 94th Court (U - approximate location), SE 135th Ave (U), SE 142nd Ave (U), and SE162nd Ave (U)

Sunrise Parkway

The proposed network consists of:

- Two lanes in each direction
- Potentially three interchanges: SE 202nd Ave, SE Bartell Road/SE OR212 and Hwy 26
- Over/under Crossings to be determined but likely at SE 172nd Ave, SE Royer Road and SE 232nd Drive

3.1.2 Network Effects

3.1.2.1 Sunrise Project

One of the main objectives of this project is to provide another access to I-205 for freight from the major distribution centers located along the existing Hwy 212/224. The development of the midpoint interchange provides additional alternatives for traffic to access the wider network but would have a limited short-term effect on traffic.

Making this link untolled will maximize the re-routing of traffic from Hwy 212/224 to use the new link, but also eliminate the investigated source of funding. Tolling this link provides funding; however, the short length will make any tolled alternative unlikely to attract much traffic to the facility. There are limited potential travel time savings associated with the Sunrise Project (peak travel times on the competing route are currently less than 10 minutes) and travel on the Sunrise Project would not offer enough time savings to compensate for the toll, therefore reducing re-routing from Hwy 212/224.

The Sunrise Project will have limited strategic effects. The main effects will be on parallel routes (Hwy 212/224 and Sunnyside Road) and on the I-205, by reducing flows in the section between Sunnyside Road and Hwy 212/224 as traffic traveling southbound on I-205 will have the option of accessing the Sunrise Corridor at an earlier point.

3.1.2.2 Sunrise Parkway

The Parkway provides another alternative to travel to Hwy 26 from I-205/Sunrise Project. One of the main objectives of this project is to accommodate the forecast population growth in Damascus as a result of the proposed Damascus/Boring Concept Plan being developed.

Strategic effects include improved East-West movements and faster access to the Mt Hood recreation areas and other north central Oregon locations. This could direct more traffic to the southern end of the I-205 away from Hwy 26/I-205 interchange which provides one of the main East-West routes.

The inclusion of the Sunrise Parkway will increase traffic on the Sunrise Corridor project as the length of the project (13 miles) makes for greater time savings and thus willingness to pay for tolls. However the increase in costs is also considerable and it is unlikely that the level of toll required to fund it would be publicly acceptable.

3.2 Project Alternatives Definition

The Sunrise Project EIS document divides the Sunrise Corridor into two specific segments defined as I-205 to Rock Creek Junction (Sunrise Project) and Rock Creek Junction to US-26 (Sunrise Parkway). The Sunrise Project Environmental Impact Study (EIS) specifically describes the following alternatives:

1. No build alternative
2. Sunrise Project from I-205 to Rock Creek Junction with a mid point interchange
3. Sunrise Project from I-205 to Rock Creek Junction with no intermediate interchange

The midpoint interchange is proposed to be located near 122nd Avenue.

Although the no-build alternative was included in the PDA as a possible alternative, it relates to required improvements on other elements of the roadway network to mitigate the forecast effects of not building any of the other proposed EIS project alternatives. As such, the option would not require OTIG participation and thus is not carried forward as an alternative for further consideration in this Study.

Through a specially selected team of national and international traffic and tolling experts, and including ODOT, Clackamas County and Metro staff, OTIG and ODOT have jointly decided to analyse all build options using electronic tolling, using both a distance and corridor toll method. OTIG and ODOT have also decided to include the Sunrise Parkway so that the feasibility of the whole Sunrise Corridor (Sunrise Project and Parkway) is examined.

Distance and corridor tolling are briefly defined below and the alternatives examined in this Scoping Study are then presented.

3.3 Forms of Tolling

3.3.1 Distance Tolling

Under this tolling regime, each vehicle is charged a toll that matches the distance it travels on the toll road. In a cash based system this is achieved by the issue of a ticket to vehicles upon entry to the toll road and payment of the toll, upon presentation of the entry ticket on exit from the toll road. For most people, this is the “classic” toll road payment method and can be considered the most “equitable” as it directly links the level of toll paid to the distance travelled on the toll road.

The introduction of electronic tolling technology to this type of toll system is very easy as the measurement of distance travelled is achieved either by a matching of transponder readings upon entry and exit, as per Toronto's 407ETR, or the observation of a transponder per road section, as per the new Santiago de Chile free flow toll roads. Distance tolling under an electronic platform is considered to be much more efficient than cash collection given the time savings achieved for users.

3.3.2 Corridor Tolling

Corridor tolling requires all vehicles using the highway corridor to pay a toll, regardless of which lane or road they travel in. In the context of the Sunrise Corridor this would involve tolling users of Hwy 212/224 and the Sunrise Project/Parkway. Tolling all users of the Sunrise Corridor provides the highest revenues as everyone has to pay a toll.

The characteristics of the corridor allow for relatively simple electronic tolling, although if physical toll collection facilities were required this would add cost, environmental impacts, and technical complexity.

Key issues to resolve would be:

- types of payment, i.e.: cash, debit, credit, token
- basis of tolling i.e.: flat charges, distance related tolls, off peak discounts
- method of collection i.e.: transponder/e-sticker only, license plate recognition
- trip redistribution to alternative free routes and impacts on the feeder road network.

These are all challenging issues and to ensure the acceptability of tolled facilities, a combination of cash/debit/credit/token could be used if required, with a combination of manned and unmanned

lanes. Although manned facilities are considerably more expensive and disrupt traffic flow, they can mitigate some of the challenges of fully implementing a fully electronic tolling system at the outset.

In the case of the Sunrise Corridor, through-traffic would have an alternative free route by utilizing Sunnyside Road further north but truck traffic serving the freight and distribution area on Hwy 212/224 traveling eastbound may not have a readily accessible alternative free route. While acceptance of this approach may be high among through-traffic users given the time saving benefits and the existence of an alternative free route, consideration must be given to tolling existing capacity.

A number of 'pinch-points' have been identified at Rock Creek and in the vicinity of 257th Street, where the proposed new road alignment runs parallel to the existing road. These points would be the ideal locations for the application of the corridor tolling concept. Firstly, it would create a common 'entrance' to the tolled area for both roads and secondly it would reduce operation costs and environmental impacts with one gantry location dealing with all through traffic.

It will also increase the acceptability of the scheme if traffic using the length of the project pays the toll (and not all traffic serving the developments between I-205 and Rock Creek Junction).

3.4 Summary of Alternatives

The following table summarizes the alternatives jointly agreed to by ODOT and OTIG and addressed in this Scoping Study.

Alternatives Under Consideration

Option	Description
Option 0	No Build. This option will not be addressed further.
Option 1a	Sunrise Project with Interchange Distance Tolling Build two lanes in each direction between I-205 and the Rock Creek Junction (the Sunrise Project), with a midpoint interchange at 122 nd Avenue. All vehicles traveling on the Sunrise Project will be tolled on a distance basis. OTIG will maintain the Project.
Option 1b	Sunrise Project without Interchange Distance Tolling Build two lanes in each direction between I-205 and Rock Creek (the Sunrise Project), with no midpoint interchange at 122 nd Avenue. All vehicles traveling on the Sunrise Project will be tolled on a distance basis. OTIG will maintain the Project.
Option 1c	Sunrise Project with Interchange Corridor Tolling Build two lanes in each direction between I-205 and Rock Creek (the Sunrise Project), with a midpoint interchange at 122 nd Avenue. All vehicles traveling on both the Sunrise Project and OR 212/224 will be tolled (corridor tolling) on a distance basis. OTIG will maintain the entire Sunrise Corridor, including the existing 212/224.

Option	Description
Option 2a	<p>Sunrise Corridor with Interchange Distance Tolling</p> <p>Build two lanes in each direction between I-205 and US26 (the entire Sunrise Corridor), with a midpoint interchange at 122nd Avenue. All vehicles traveling on the Sunrise Corridor will be tolled on a distance basis. OTIG will maintain the entire Sunrise Corridor.</p>
Option 2b	<p>Sunrise Corridor without Interchange Distance Tolling</p> <p>Build two lanes in each direction between I-205 and US26 (the entire Sunrise Corridor), with no midpoint interchange at 122nd Avenue. All vehicles traveling on the Sunrise Corridor will be tolled on a distance basis. OTIG will maintain the entire Sunrise Corridor.</p>
Option 2c	<p>Sunrise Corridor with Interchange Corridor Tolling</p> <p>Build two lanes in each direction between I-205 US26 (the entire Sunrise Corridor), with a midpoint interchange at 122nd Avenue. All vehicles traveling on both the Sunrise Corridor and OR 212/224 will be tolled (corridor tolling) on a distance basis. OTIG will maintain the entire Sunrise Corridor including the existing 212/224.</p>

4. PRELIMINARY PUBLIC INFORMATION PLAN

ODOT and OTIG have formed a Public Education and Acceptance Working Group (PEAWG). This group was charged with developing the non-NEPA public outreach requirements for the project during the Pre-Development and Implementation Phases.

The initial task was to complete a Protocol for Public Communications, Outreach, and Participation that outlines the goals, expected outcomes, and roles of ODOT and OTIG on this project.

Associated with this effort was the charge for the PEAWG to develop procedures that would be included in the public outreach program. To date, PEAWG members have generously given their time and have helped shape the work plan and thinking of the public outreach team. The PEAWG has been receiving regular briefings on the work in progress and input from committee members was sought, has been recorded in committee meeting minutes, and is generally reflected in this document.

The PEAWG has been meeting on a regular basis as determined by the team, to ensure proactive management of all public communications and community outreach issues associated with the project. The PEAWG was responsible for keeping ODOT and OTIG Project Manager informed about all communications issues. The PEAWG was the first point of contact for coordinating communications plans, information requests, and responses specific to the project.

Meeting participants generally included ODOT Region 1 and 2 communications and project staff, ODOT and Oregon Innovative Partnership Program (OIPP) staff, County representatives, Metro, and consultants (i.e., Carter-Burgess, Frank Wilson & Associates, Cogan Owens Cogan and EnviroIssues).

The work plan for public education, outreach and awareness was determined jointly by ODOT and OTIG in close consultation with PEAWG. In accordance with the Pre-Development Agreement (PDA) and communications protocol, ODOT has assumed the lead for public information and outreach, which has consisted primarily of briefings of local stakeholders, meeting with reporters covering the story and responding to citizen inquiries.

OTIG has played an important but supporting role in this effort, has assisted with development of public information, assessment of stakeholder concerns and public attitudes, briefings of local stakeholders and making presentations to and/or participating in community meetings where requested.

Going forward, there is a need to supplement ODOT resources with additional expert consultant resources to carry out the public outreach plan outlined in this document.

4.1 Interviews with Key Stakeholders

On behalf of OIPP and OTIG, Cogan Owens Cogan interviewed 44 community leaders and members of the Sunrise community in an effort to better understand the community's perceptions about the Sunrise Project and potential use of tolling to fund the project. These interviews were conducted jointly with those for the South I-205 project. The purpose of interviews was to assess:

- Perceptions, interests and issues regarding transportation funding challenges, statewide and within their region.
- What interviewees think about the OTIG/OIPP partnership.

- Support and opposition to tolling as a financing mechanism, the nature of the opposition, and recommendations for overcoming that opposition.
- Knowledge of the project and associated key issues.
- Other parties to involve in scoping or future public education efforts.

4.1.1 General Observations

Some general observations from the interviews include:

Observation	Comment
<i>Limited Perspective</i>	<p>By their own admission, the views of the opinion leaders selected for interviews are not necessarily representative of public opinion. These stakeholders have a higher level of awareness than the general populace on transportation funding challenges, the concept of public private partnering on transportation projects, the mechanics of tolling, and the specifics of the project.</p> <p>OTIG cannot rely on the opinions of these stakeholders alone to gauge public acceptance.</p> <p>Education and outreach efforts need to be expanded to the broader community.</p>
<i>Limited Understanding of Funding Challenge</i>	<p>Generally speaking, community leaders and the business community understand the state’s transportation funding challenge.</p> <p>However, these stakeholders do not believe that the general public understands the challenge, or that they can be convinced that there is inadequate funding for key transportation improvements.</p> <p>There is a perception that ODOT does not make the most efficient use of available funds.</p>
<i>Perception That the Private Sector Can Do It Better</i>	<p>There is strong support among most opinion leaders interviewed for the use of Public Private Partnerships for major transportation projects based upon the belief that the private sector can construct such facilities faster and operate them more efficiently than the public sector.</p> <p>While little public opposition to Public Private Partnerships would be expected, it is noted that it is still early in the planning process and further information is needed before residents and leaders will be able to provide wholehearted support.</p> <p>There is concern about turning over to the private sector some of the decision-making about how projects are constructed. “Does this push us to build bigger/longer roads than we would otherwise build?”</p>
<i>Suspicion of Out-of-State Company</i>	<p>The general public is expected to be suspicious of a non-Oregon firm.</p> <p>Fears include money leaving the state, loss of long-term control over the region’s highways, and that Oregon firms won’t get the construction jobs.</p> <p>OTIG will need to make widely known its existing practice and future intentions to hire local firms.</p>
<i>Opposition to Tolling Expected</i>	<p>Not surprisingly, stakeholders expect that there will be opposition to</p>

Observation	Comment
	<p>tolling.</p> <p>Resistance is expected to tolling any existing facilities, with less opposition to tolling new facilities.</p> <p>Primary opponents are expected to be anti-tax organizations, local interests, and advocacy groups.</p> <p>Those that do not understand the funding challenge and modern tolling will be predisposed to oppose.</p>
<i>Tolling Is Acceptable If</i>	<p>Tolling is a part of a menu of financial tools, including public financing.</p> <p>There are non-tolled roadway options.</p> <p>Tolling is user-friendly, travel times improve and there continue to be free lanes (that are well-maintained).</p> <p>Tolls are reasonable.</p> <p>Tolls are discontinued as soon as the facility is paid for.</p> <p>Local resident discounts are considered.</p> <p>Time savings are demonstrated to the trucking community.</p>
<i>Overcoming Opposition</i>	<p>The common message is public education, public education, and public education.</p> <p>Grassroots organizing with business and community groups is seen as essential to building a base of public understanding about the issues at hand.</p> <p>Messages need to focus on the advantages to businesses, individuals, and the broader community.</p> <p>The success of tolling in relieving traffic congestion elsewhere needs to be demonstrated.</p>
<i>Project Is Well Known</i>	<p>The Sunrise Project is well known to most interviewees.</p> <p>There is a general impatience to get the Sunrise Project constructed, given its long history.</p> <p>The I-205 South and Sunrise projects are seen as interrelated.</p>

4.2 Assessment of Public Attitudes

Public attitudes and potential behaviours of Portland area and Sunrise corridor residents and drivers regarding transportation issues were assessed by Lawrence Research using two approaches: qualitative focus groups and a quantitative survey. The following is a summary of that assessment:

4.2.1 Regional Overview

Observation	Comment
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Observation	Comment
<i>Context</i>	<p>Transportation projects must compete for resources in a context where people are substantially more concerned about education and economic problems.</p> <p>The mental picture people have of transportation is predominantly one of cars, traffic and congestion.</p>
<i>Funding</i>	<p>People have a fairly good understanding of how their transportation infrastructure is paid for.</p> <p>People generally agree on the fairness of the gas tax system and gas tax rate.</p> <p>People are split as to whether the present system of raising funds for transportation projects is adequate or not.</p> <p>A majority believes the gas tax would be adequate if government would use the money efficiently.</p>
<i>Tolling</i>	<p>The philosophy of “user pays” is quite pervasive but does not necessarily translate directly into support for toll roads.</p> <p>People hold an outdated mental picture of tolling systems</p> <p>People are generally familiar with the concept of both toll roads and electronic toll collection.</p> <p>In the focus groups, there was strong sentiment both for and against toll roads.</p> <p>In the surveys, the first reaction to tolls was negative, but half will consider tolls for special, project-by-project situations.</p> <p>People need a better picture of current technology for the tolling idea to progress.</p> <p>Privacy was not a major concern.</p>
<i>Electronic Toll Collection (ETC)</i>	<p>Modern, non-stop Electronic Toll Collection (ETC) is a powerful tool in gaining acceptance of tolling.</p> <p>Commercial drivers had mixed attitudes about tolls.</p>
<i>Public Private Partnerships</i>	<p>Attitudes toward Public Private Partnerships are mixed but improve as the public learns about them.</p>
<i>Toll Prices</i>	<p>If tolls are not enough to pay for a project, people would favor increasing the tolls and the gasoline tax.</p>
<i>Public Support</i>	<p>Toll roads relieve anxiety about congestion, and that provides a benefit that, for some, exceeds the value of time saved.</p> <p>Toll roads grow on people.</p> <p>The promise to stop collecting a toll once a toll project is paid for is the single best condition to win public support.</p>

4.3 Opportunities and Obstacles to Public Acceptance

The Sunrise Project has a long history and generally enjoys strong political and community support. The opportunities to gain public acceptance outweigh the obstacles, as long as the project moves forward in an expeditious manner.

OIPP and OTIG have initiated the process of engaging local officials and key stakeholders in a conversation about Public Private Partnerships and tolling as a potential financing mechanism. There is a high level of interest in the project and outreach and education efforts should continue through and after Milestone Zero.

Public acceptance opportunities and obstacles differ somewhat between the western and eastern ends of the corridor. There is more agreement about needed improvements for the western portion than there is for the eastern portion.

Public acceptance opportunities include:
Well understood and strongly supported need for improvements at both ends of the corridor.
Perception that a Public Private Partnership will help get the project built sooner rather than later and therefore provide traffic congestion relief sooner than later.
Recognition, albeit reluctant in some quarters, that tolling is needed in order to finance timely improvements.
Ability to capitalize on the history and momentum of the NEPA process for the Sunrise Corridor project, and apply that to the eastern portion.
An informed constituency.
Active and engaged partners at all levels of government.
Policy and planning direction in the Regional Transportation Plan and in Damascus comprehensive planning.

Primary obstacles to public acceptance include:
Frustration about how long it takes to get projects built.
Skepticism that the project will ever get built.
Perception that the OIPP/OTIG approach is delaying completion of the Sunrise Corridor project rather than facilitating it.
Uncertainty about an out-of-state company investing in the project.
Fear of and misconceptions about tolling.
Business community (especially freight industry) concerns about the equity of tolls.
Confusion about the nature of proposed improvements and the relationship to I-205 improvements.
Lack of agreement about the specific improvements needed.
In the western portion, concerns about effects to existing businesses, especially access in the industrial area.

In the eastern portion, concerns about induced growth and effects on rural areas.
An uninformed business leadership.
The prospect that tolling cannot fund the entire project, especially the first segment and that other scarce funds will have to be found.

4.4 Proposed Approach to Gaining Public Acceptance

Early, thorough and responsive public involvement is a closely held value in Oregon. Goal 1 of the state's land use planning program reflects this value. Relevant to the OIPP process, it states that citizen involvement programs shall be appropriate to the scale of the planning effort, and that processes shall provide for continuity of citizen participation and information that enables citizens to identify and comprehend the issues. All federal, state, regional agencies and special purpose districts are required to coordinate their planning efforts with the affected governing bodies and to make use of existing local citizen involvement programs established by counties and cities.

This goal is to keep with the communications protocol that has been adopted by OIPP and OTIG for this project. Therefore, it is recommended that OIPP, in conjunction with OTIG, initiate a grassroots information, education and participation program with residents and businesses in the Sunrise corridor, media, local leaders and elected officials about:

- Potential funding gaps.
- The OTIG/OIPP partnership.
- Options for funding the project.
- The potential use of tolling.
- The mechanics of tolling.
- Examples of similar public/private partnerships and toll roads elsewhere.

It is also recommended that the project continues to follow the principles of Context-Sensitive and Sustainable Solutions, including:

- Solidify agreement on the project scope, purpose and need with a broad range of elected and appointed officials, community leaders, community members, property owners and other stakeholders.
- Develop a safe facility for users and the community.
- To the extent feasible, develop a project that is in harmony with the community and preserves environmental, scenic, aesthetic, historic, and natural resource values of the area, i.e., exhibits context-sensitive design.
- Achieve a level of excellence in design that exceeds expectations.
- Implement the process making efficient and effective uses of resources among all parties.
- To the extent feasible, construct the project in a way that minimizes disruption to the local community, commuters and freight.
- Build a project that adds lasting value to the community and to the region.

The table below defines the proposed approach:

Proposed Approach	Process
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Proposed Approach	Process
<i>Objectives</i>	<p>Develop and implement an information and education plan in an open, honest and continuous manner, providing positive, straightforward information about the project.</p> <p>Provide a local point of contact that will continually seek out and respond to and/or report the needs, issues and concerns of public officials, residents, businesses, motorists and other stakeholders.</p> <p>Provide a means for continued public participation in project development.</p> <p>Integrate the communications and outreach program with the ongoing planning process for the project.</p>
<i>Desired Outcomes</i>	<p>Increased credibility for the project, OIPP in general, and the Public Private Partnership specifically.</p> <p>Greater public understanding and support for innovative financing solutions such as tolling.</p> <p>Greater public understanding and support for the Sunrise Project.</p> <p>Understanding and response to the needs and concerns of key stakeholders and future users of the project.</p>
<i>Key Audiences</i>	<p>The OIPP Communications Plan identifies several tiers of key audiences. The same approach is applied to this plan and includes the following key audiences:</p> <p>State Policy Level – Governor’s Office, Legislature, Oregon Transportation Commission, ODOT Executive Management Team, Land Conservation and Development Commission, etc.</p> <p>Statewide and Regional Public Organizations – League of Oregon Cities, Association of Oregon Counties, Joint Policy Advisory Committee on Transportation (Metro), Department of Land Conservation Development, Area Commissions on Transportation, etc.</p> <p>Local Groups – Local elected officials; planning commissions; neighborhood organizations; business associations; environmental, community, transportation and land use advocacy groups, and other interest groups; etc.</p> <p>General Public, including Sunrise corridor residents, businesses, commuters and visitors, as well as the news media.</p> <p>Internal ODOT – Regional employees and project staff.</p>

4.4.1 Information, Education and Participation

The approach proposed in this plan incorporates four elements:

- disseminating information to the public;
- providing adequate opportunity for public comment,
- establishing a local point of contact for the project, and
- integrating the project with the NEPA process.

It is imperative to establish a two-way communications system for this project that provides useful and timely information to the public, but also provides meaningful and sufficient opportunity for the public to contribute thoughts and ideas. A proposed two-way communication system is described in detail in Appendix A.

4.4.2 Timing

It is important for ODOT/OTIG to implement an outreach plan that addresses some of the immediate information needs in the corridor (e.g., media and local officials briefings; general information dissemination to the public) as well as develop and implement a longer-range plan that can be adapted as information needs change and as the project reaches new milestones.

Timing	Suggestion
Short Range.	Tasks listed in the Public Outreach Plan should be completed as soon as possible to assist ODOT in meeting immediate outreach needs between now and release of the next milestone. This “Pre-Decisional Public Outreach Plan” describes suggested strategies and estimated cost associated with consultant implementation of outreach activities for this immediate period.
Long Range: Milestone One through Milestone Three	This Public Outreach Plan is intended to define tools and strategies that may be applied immediately and on-going beginning with Milestone One: Commercial and Financial Viability Assessment and ending with completion of Milestone Three: Closing.

As decisions are made to proceed to succeeding milestones, this plan should be updated based upon the experience/success of efforts during the preceding milestone. It is anticipated that changes to the outreach plan will be necessary as additional information needs and resources are identified.

4.5 Conclusions

Sunrise area leaders are highly informed about the need for transportation improvements in the area and, based on the assessment of stakeholder and public attitudes, seem generally supportive of and interested in the project as a solution. Perceptions of the Public Private Partnership and use of tolls to finance the project are still being formed, yet most people seem to think that this approach is a step in the right direction. There is a definite need for further education of the residential and business community about the partnership, tolls, and what it means for individual users as well as the general community.

As a result, the implementation of an active information and outreach program is recommended to engage the public and build support for the project. The following observations were made to support the proposed plan:

PDA Reference Document:

Recommended Implementation Plan	
Public Education Is Key to Success	There is a direct and obvious correlation between the level of awareness/education and the support for innovative funding solutions, tolling, and the specific projects. The general support exhibited by the opinion leaders interviewed demonstrates the power of education.
The Funding Challenge Isn't the Focus	The skepticism about a lack of adequate transportation funding is unlikely to vanish or significantly diminish irrespective of the education efforts associated with these projects. Relatively few parties are expected to oppose tolling primarily because they believe that there is inadequate state funding. Rather, the opposition can be expected to revolve more around perceptions about the mechanics of tolling.
Opinion Leaders Need to Be Kept Fully in the Loop	Local and opinion leaders are both the first line of support for these projects and the de facto champions. It is essential that the information they share with their constituencies is accurate and current. There is considerable confusion among the interviewees about the nature of the proposed project (e.g., the relationship between the western and eastern portions) and the tolling need. This confusion needs to be alleviated through ongoing opinion leader outreach/education efforts. Furthermore, a means should be developed to engage them in the ongoing planning and shaping of this project.
Outreach Has Just Started	The interviews have been invaluable in establishing contact with key opinion leaders. By necessity, the number of leaders interviewed was limited and the list of other recommended parties to contact is extensive. Outreach to additional leaders is needed in both the short and long terms. Ongoing efforts are needed to ensure that OIPP outreach is coordinated with other ODOT and related outreach.

5. ENVIRONMENTAL CLASSIFICATION ASSESSMENT

This assessment provides a preliminary input and overview from OTIG regarding potential approaches, considerations and options for securing NEPA compliance. The primary responsibility for the selection of the appropriate NEPA process, managing this task and obtaining all required environmental approvals remains with ODOT.

5.1 Approach

The analysis presented in this section is based on information collected from published reports as well as interviews with transportation planners and planners with the county, Metro, and City of Damascus; geographic information system (GIS) data from Metro; and professional knowledge of the NEPA environmental review process as it relates to transportation improvements. Most of the information related to existing environmental constraints for the project has been summarized from two reports:

- Environmental Baseline Report: Sunrise Project, I-205 to Rock Creek Junction, Clackamas County, ODOT Region 1, OR 212/224 (DEA 2004)
- Environmental Baseline Report: Highway 212 Corridor Improvement, Damascus Boring Concept Plan, Rock Creek Junction to US 26, ODOT Region 1, Highway Number 212 (Clackamas County et al. 2004).

5.2 Environmental Issues

The following categories were examined in order to establish the environmental impact of the project:

Categories Examined:		
Air	Hazardous Materials	Recreation
Archaeological and Cultural Resources	Historic Resources	Section 4(f) Resources
Biology: Wildlife, Fish, Plants, and Threatened and Endangered Species	Land Use/Planning	Socioeconomics and Environmental Justice
Farmlands	Noise	Visual Quality
Floodplains	Property Acquisition and Relocation of Individuals, Farms, and Businesses	Waterways/Water Quality
Geology	Public Services and Utilities	Wetlands and Other Waters of the United States and the State

Evaluation of the existing conditions followed by the resulting design constraints and the project implications is included in Appendix B.

5.3 Sunrise Project

A Supplemental Draft Environmental Impact Statement (SDEIS) has already been initiated for the Sunrise Project.

The Sunrise Project EIS team recently completed the Statement of Purpose and Need and the description of alternatives to be considered in the SDEIS, and both items have been approved by the Collaborative Environmental and Transportation Agreement for Streamlining (CETAS) group. The scope of the SDEIS does not include toll-road alternatives. It was determined that in case the tolling needed to be addressed, it could be done at a later stage or in a supplemental EIS addressing a larger project. The Sunrise Project SDEIS team presented the evaluation/selection criteria for the preferred alternative at the CETAS group meeting in September 2006; no issues are anticipated in gaining CETAS concurrence on these criteria.

OTIG has reviewed the approved Statement of Purpose and Need, the scope of work of the environmental consultant, and the evaluation/selection criteria to ensure that any specific needs related to the potential imposition of tolls or other objectives of OTIG have been addressed or not precluded.

A draft EIS is expected to be published in early 2007. The EIS process is expected to be completed in early 2008. The acquisition of Right-of-Way and preliminary engineering activities have been initiated and, if sufficient revenues are identified, are expected to be completed by the end of 2008, with construction beginning in 2008 and ending in 2011.

5.4 Sunrise Parkway

The 2004 regional transportation plan included a portion of the Sunrise Project, between I-205 and SE 122nd Avenue (Metro 2004). However, if the Sunrise Parkway is to move forward in the near future, it would be necessary to include the Sunrise Project, from I-205 to the Rock Creek junction, in the next update of the Regional Transportation Plan, scheduled for approval by March 2008. At this time, it is expected that the Sunrise Project will be included in this update. Clackamas County will also be required to incorporate the Sunrise Project and the Sunrise Parkway into its transportation plan. Because the proposed project involves a new alignment, the jurisdiction over OR 212/224 would likely be transferred to Clackamas County, and OR 212/224 would continue to be operated as a local arterial serving existing and future businesses. This change in jurisdiction would need to be reflected in regional transportation plans. Numerous other improvements would be required to adequately accommodate the changes on OR 212/224 and the new Sunrise Parkway alignment.

An EIS is prepared for any action that will significantly affect the environment. The FHWA implementing regulations (23 CFR 771.115(a)) provide the following examples of actions that normally require an EIS:

- A new controlled access freeway
- A highway project of four or more lanes at a new location
- New construction or extension of fixed rail transit facilities (e.g., rapid rail, light rail, commuter rail, automated guideway transit)
- New construction or extension of a separate roadway for buses or high-occupancy vehicles not located within an existing highway facility

Based on the implementing regulations, the Sunrise Parkway will require the preparation of a NEPA EIS because it is proposing a new transportation corridor in a rural setting. An EIS was also identified as the recommended process in the Damascus/Boring implementation plan (Clackamas County et al. 2006).

Options to the NEPA EIS process for the project are not available because it clearly falls under specific FHWA implementing regulations related to NEPA. The Sunrise Parkway is in its infancy, and several milestones must be reached before the initiation of the NEPA process. These milestones involve local land use planning; updates to state, regional, and local transportation plans; refinement of the transportation corridor and access points; and potential exceptions to land use planning goals.

The environmental resources in the Sunrise Parkway corridor that would have the greatest influence on the project design, cost, and schedule are expected to be generally the same as those for the Sunrise Project, with an additional concern related to the extent of property acquisition and the number of potential relocations required to accommodate a new transportation corridor.

OTIG has estimated the cost to complete the EIS for the Sunrise Parkway at \$2 to 4 million but would be best determined by ODOT.

5.4.1 Associated Planning and Related Processes

Prior to the initiation of the NEPA process for the Sunrise Parkway, several milestones must be reached, the details of which are provided below:

- Implementation of the Damascus/Boring concept plan, including completion of the service provision phase and development of the local comprehensive plan and zoning code and rezoning of land uses
- Consideration of the recommendations for corridor preservation and Right-of-Way acquisition strategies identified in the Damascus/Boring concept plan to ensure that the final recommendations are not precluded by land use decisions within the project corridor
- Updates to the Metro regional transportation plan
- An exceptions finding for Goal 3 agricultural lands outside the urban growth boundary
- Development of design standards for a “parkway” lane configuration and adoption of those standards by Metro, ODOT, and local counties and cities
- Refinement of the project corridor (to narrow the broad area south of OR 212 between Richardson Creek and Noyer Creek and evaluate the proposed access locations)
- Definition of the purpose and need and transportation alternatives to be analyzed in the Sunrise Parkway NEPA EIS.

5.4.2 Interchange Area Management Plan

Interchange Area Management Plans (IAMPs) are a distinctive feature in Oregon's meld of transportation and land use planning. They are required for new interchanges or major changes to existing interchanges, and so would apply in particular to the Sunrise Parkway. Through the IAMP process, which is collaboration between ODOT, local governments, and the local community, land use and transportation decisions are made that protect the long-term functioning of an interchange. The main elements of an IAMP are:

- Interchange design
- Access management
- Land use planning
- Coordination with NEPA and parallel land use actions
- Development of agreements with local governments

The IAMP process may occur in parallel with the NEPA process, but will need to be concluded prior to the conclusion of the NEPA process so that the outcome of the IAMP process can be reflected in the final NEPA documentation. The IAMP process can be lengthy with extensive public and agency involvement, and therefore can be one of the major determinants of the overall project environmental schedule. Through coordinated scheduling of the NEPA and IAMP processes including their respective public involvement components and design decision milestones, schedule efficiencies can be achieved.

5.5 Addressing the Potential Imposition of Tolls in the Project Purpose and Need and Alternatives

The following considerations related to the possible imposition of tolls and the participation of private investors should be addressed during the development of a project's purpose and need and the selection of alternatives to be evaluated (AASHTO 2006).

- The elements necessary for a financially feasible project should be considered in the development of the project purpose and need, scope, logical termini, and range of alternatives to be considered.
- The project purpose and need may be neutral in terms of the imposition of tolls so that both toll-road alternatives and non-toll-road alternatives are considered. Another approach would be to incorporate the imposition of tolls directly into the purpose and need for the project.
- It may be appropriate to include timing and project acceleration as selection criteria for the alternatives. For example, if the purpose of considering toll-road alternatives is to accelerate the construction of the project, it may be appropriate to include the timing of construction and the acceleration of project benefits as evaluation criteria.

5.6 Opportunities to Accelerate the Sunrise Parkway Schedule

Several milestones are required prior to preparing the NEPA documentation for the project. However, the requirements of NEPA should be considered throughout the planning process in order to streamline the development of the purpose and need, alternatives, and analysis of project impacts on environmental resources.

The City of Damascus is required to develop a comprehensive plan and zoning code and initiate the rezoning process. This process will require the completion of a Goal 5 resource study. Goal 5 resources include open space, scenic and historic areas, and natural resources within a community that are identified for protection in the comprehensive plans and would require avoidance by the proposed Sunrise Parkway. The data gathered in support of this effort may be used to support the analysis of biological resources and historic resources for the NEPA documentation. If Goal 5 resources are identified within the Sunrise Parkway corridor, they could be addressed now through the economic, social, environmental, and energy (ESEE) analysis required to support the process. The comprehensive plan may include the proposed corridor as a conflicting use that was considered in analysing ESEE impacts. The ESEE analysis is considered adequate if it enables a jurisdiction to explain why it has granted or denied a conflicting use or why its solution is a reasonable balance between the two uses. Addressing the project corridor as a potential conflicting use in the designation of Goal 5 resources near the proposed corridor and interchange areas will ensure that no exceptions or re-evaluations are required for the NEPA process.

Additionally, the development of the comprehensive plan provides an opportunity to ensure compatible land uses are proposed for parcels in the project corridor and at proposed interchanges. This process may facilitate the acquisition of Right-of-Way and documentation for the interchange area management plan, which is required by ODOT for all new interchanges. (The interchange area management plan requires extensive public outreach and land use planning related to newly proposed interchanges to ensure lasting value in the transportation modifications.)

Initiating the NEPA process prior to the completion of the City of Damascus comprehensive plan would require an assumption of land use and zoning for the project corridor. Waiting until the comprehensive plan is nearly completed would ensure that the NEPA document accurately analyzes the impacts on land use in the project corridor.

Before the NEPA process is initiated, the project corridor and locations of access to the roadway must be refined. The refinement process provides an opportunity to include the Sunrise Parkway in the projects reviewed by the CETAS group or to include representatives of the resource agencies on the refinement planning committee to obtain their concurrence regarding the project corridor and the alternatives to be evaluated in the EIS.

Additional studies will likely be required to support the selection of alternatives to be evaluated in the EIS. All of these studies will contribute to the identification of design constraints and potential significant impacts that can be addressed through project design. Early identification of these issues and resolution of these issues through project design will ultimately facilitate the analysis of project effects and securing of permits. Completion of these studies in support of the selection of project alternatives will shorten the time period required to complete the technical studies and documentation for the EIS.

5.7 Milestones to be achieved before initiation of the NEPA process

Milestone	Elements	Duration	Outstanding Issues
Damascus/Boring concept plan (concept plan)		October 2003– February 2006	Completed.

Milestone	Elements	Duration	Outstanding Issues
Damascus/Boring concept plan – implementation (three components)	Service provision Local plans and codes Metro amendments and ODOT/federal decision	January 2006– March 2009	
Service provision	Requires the City of Damascus to establish agreements, contracts, or departments to provide city services, including fire, police, water, sewer, etc.	January 2006– August 2006 (estimated)	City of Damascus says this is underway. A timeline for completion was not provided, but based on its current status, it is estimated to require 3 to 6 months.
Local plans and codes	Development of the Damascus comprehensive plan and rezoning	March 2006– March 2009 (3+ years to complete)	Timeline provided by City of Damascus. Indicated that concept plan is the starting point and more public outreach is needed. Additional changes or recommendations could result from the planning process. ODOT and Clackamas County noted that they are in transition, with major staffing issues at this point.
Comprehensive plan and code	Development of the comprehensive plan and associated zoning regulations	March 2006– March 2008 (2+ years to complete)	Public outreach is first phase, which was initiated in March 2006 Depending on public sentiments, comprehensive plan could significantly diverge from concept plan
Rezoning	After the comprehensive plan is adopted, the rezoning process will begin	March 2008– March 2009 (expected to require up to 12 months)	

Milestone	Elements	Duration	Outstanding Issues
Metro amendments and ODOT/federal decision	Project included in RTP updates Sunrise Parkway exception findings Refinement plan Parkway design guidelines Sunrise Parkway EIS	January 2006– March 2009 (minimum)	
Regional transportation plan updates	Amending the RTP	Next Metro RTP to be approved in March 2008 (Note: Metro RTP is updated every 4 years)	Various phases of a project are included in the Metro RTP (corridor plan, NEPA document, Right-of-Way phase), but only if it is funded. Air quality analysis completed only for list of financially constrained projects. Clackamas County and Metro are awaiting interpretation from Federal Highway Administration that if the project is included for Right-of-Way purchase, it can be included for air quality analysis. This would accelerate the process so they would not have to wait for next Metro RTP update. Otherwise Sunrise Parkway may not be covered fully until the next update in 2012.

Milestone	Elements	Duration	Outstanding Issues
Sunrise Parkway corridor exception findings	Need to determine whether exceptions are possible for the portion of the alignment outside the urban growth boundary that affects agricultural lands.	March 2006–September 2007 (estimated; not yet initiated) Could be initiated any time, but has not been initiated yet. Duration is likely 12 to 18 months, additional 3 to 6 months if appealed. (Note. Newburg-Dundee project exceptions process was completed in 9 months but that is not expected for this project [Owens and Greene 2006])	Timing on this is likely to be concurrent with a refinement plan for the corridor. Metro indicated that timing is up to the project partners. Ultimately, the exception has to be included in the City of Damascus and Clackamas County transportation plans and Metro RTP. Need some indication of likelihood of approval of land use exceptions before the corridor can be fully defined.
Refinement plan	This plan would narrow the proposed corridor and refine the interchange alternatives identified in the concept plan.	Not yet initiated. Will likely take 12 to 18 months to complete.	This plan is not on ODOT's, Metro's, or Clackamas County's work list, and a lead agency has not stepped forward. There is reportedly a \$1 million federal earmark available for this phase of the project. Lead agency would likely be ODOT if federal funding used.
Design guidelines for parkway road configuration	There are currently no design guidelines for a "parkway" road classification among any of the agencies.	March 2006–March 2008. These will be included in the Metro RTP update.	Metro is said to be spearheading this effort, but ODOT would have to decide to adopt the guidelines or develop its own. Could affect recommendations identified in the concept plan. Additional traffic modeling will be required to ensure compatibility with transition areas in the Sunrise Project corridor

Milestone	Elements	Duration	Outstanding Issues
Sunrise Parkway EIS		<p>March 2007– March 2010.</p> <p>Initiation at least 1+ years away</p>	<p>ODOT thinks there needs to be more land use planning completed before the EIS can move forward, which puts the process out at least a 1+ years. Metro concurs.</p> <p>Should have some indication by March 2007 whether comprehensive plan will diverge from concept plan. If it does, initiation of NEPA process may be further delayed.</p>

EIS = environmental impact statement, NEPA = National Environmental Policy Act, ODOT = Oregon Department of Transportation, RTP = regional transportation plan

6. DELIVERY SCHEDULE & RISK ANALYSIS

6.1 Project Alternatives Review

In the Project Alternatives Definition, OTIG defined a total of six alternatives for review:

Scenario	Description	Lanes in Each Direction
Option 0	No Build	0
Option 1a	Sunrise Project with Interchange Distance Tolling	2
Option 1b	Sunrise Project without Interchange Distance Tolling	2
Option 1c	Sunrise Project with Interchange Corridor Tolling	2
Option 2a	Sunrise Corridor with Interchange Corridor Tolling	2
Option 2b	Sunrise Corridor without Interchange Distance Tolling	2
Option 2c	Sunrise Corridor with Interchange Corridor Tolling	2

6.2 Project Schedule

The project schedule for each project contains the same basic key milestones. The durations of most activities are dependent on scope and length of the NEPA/EIS process. A key aspect of the schedule for the selected project will be to identify and implement any and all environmental streamlining opportunities to complete the construction and open the road to traffic on the earliest feasible date.

6.2.1 Preliminary Schedule

The preliminary schedules included under Appendix C outline two approaches, one a traditional conservative and sequential approach - the ODOT Suggested Schedule; and a second approach that proposes more of an overlap of activities to optimize resources and coordination and reduce the overall program implementation duration - the OTIG Proposed Schedule. The key schedule driver for both schedules is the NEPA/EIS process.

The schedules are for the Sunrise Corridor comprising the Sunrise Parkway and the Sunrise Project. The schedules for 1a through 1c are the same as 2a through 2c.

The ODOT Suggested Schedule indicates a projected commencement of construction for the Sunrise Project in early 2010 and for the Sunrise Parkway in early 2012, given the sufficient funding is available for Right-of-Way, final design, and construction. At this time, a source of funds outside of a Public Private Partnership arrangement has not been identified. . The OTIG Proposed Schedule endeavours to identify activities that can occur concurrently and assumes an accelerated NEPA process utilizing the corridor study process as part of the alternatives analyses required for

the NEPA/EIS/EA documentation. By combining the corridor study required for the City of Damascus’s Transportation Plan update with the NEPA process and using the study to as an alternatives analysis for the NEPA process, it may be possible to cut as much as 12 months of the total process duration.

While it may be possible to aggressively pursue the NEPA/EIS process and reduce the estimated duration, other items such as ROW procurement are also on the critical path, and this activity will be driven by availability of funds as well as approvals to proceed with early procurement from the stakeholders and regulatory agencies like the FHWA.

The OTIG Proposed Schedule assumes an aggressive pursuit of approvals to proceed with Right-of-Way procurements and to perform as many of the NEPA process activities concurrently and at the same time as the transportation plan development and corridor refinement studies. This schedule indicates a potential early construction start for the Sunrise Project in mid 2008 and for the Sunrise Parkway in late 2009.

6.2.2 OTIG Proposed Sunrise Schedule Assumptions

- OTIG/OIPP project phases continue to successive milestone work without interruption.
- Preliminary design can occur concurrently with the NEPA process.
- Regional Transportation Planning will include both Sunrise projects under the Financially Constrained category.
- NEPA/EIS/EA process for the Sunrise Project remains on schedule for completion no later than June 2008 and that the NEPA/EIS process for the Sunrise Parkway can be completed in 32 months.
- ROW procurement can occur prior to ROD with FHWA concurrence or outstanding ROW requirements will be small enough at commencement of construction to not delay construction and all outstanding ROW can be procured when needed for construction access.
- Construction for the Parkway segment can commence about 15 months after the start of the Sunrise Project segment.
- A key aspect of the schedule for the selected project will be to identify and implement any and all streamlining opportunities to complete the construction and open the road to traffic on the earliest feasible date.
- Funds will be available when required to enable NEPA process to commence and be pursued with diligence.

Schedule	NEPA Processing Time	ROW Procurement	Design-Build Documents Preparation	Construction Start
Sunrise Project ODOT	Jan 2006 – Dec 2008	Jan 2006 – Jan 2010	Mar 2009 – Sep 2009	Feb 2010
Sunrise Parkway ODOT	Jan 2008 – Jan 2011	Nov 2010 – Nov 2011	Feb 2011 – Aug 2011	Jan 2012
Sunrise Project OTIG	Jan 2006 – Jun 2008	Jan 2006 – Dec 2008	Aug 2007 – Feb 2008	Jun 2008
Sunrise Parkway OTIG	Mar 2007 – Oct	Jan 2008 – Apr	Dec 2008 –	Oct 2009

2009

2010

Jun 2009

Please see Appendix C for complete schedules.

6.3 Major Milestone Risk Elements

The proposed project potentially has several risks that need to be addressed for the project as a whole, as well as risks associated with individual major milestones. Risks to the project include the level of public acceptance for tolling in general, and corridor tolling specifically; economic conditions; material and labor prices and available funding for tasks that need to be undertaken by ODOT and/or Metro such as the required I-205 Corridor study.

6.3.1 Milestone Specific Risks

Milestone specific risks include:

Milestone	Risk
OTIG Phase Milestones	While the process is designed to progressively develop the project and project acceptance based on financial viability, any major swing in one or more baseline assumptions due to economic or other changes outside the control of project stakeholders can pose a risk of delay to the project if major portions of the work have to be revised and/or redone.
Metro/City Transportation Planning	The development and acceptance of the City of Damascus's transportation plan could potentially delay the ability to start the NEPA process. While it is possible for these activities to occur simultaneously, this also increases the risk of having to redo portions of the work if basic assumptions were to change in the planning and acceptance process.
NEPA/EIS	<p>A delay in completing the NEPA/EIS process for the Sunrise Project would likely delay the start of construction.</p> <p>A delay in starting Parkway NEPA/EIS will have a direct impact on the start of construction and therefore the ability to open as one completed facility.</p> <p>While initial research has identified the most likely locations and potential for hazardous material and/or other environmental elements that may require additional effort to mitigate, any unanticipated hazardous material and/or archaeological discovery can result in delays in completion of the NEPA/EIS with consequential delays to commencement of construction.</p>
Record of Decision (ROD)	Delays in review of submitted NEPA documentation and issuing of ROD can potentially delay the commencement of construction.
Public Acceptance of PPPs and Tolling	<p>While little public opposition to Public Private Partnerships is anticipated there appears to be less general acceptance of tolling.</p> <p>Strong opposition to tolling can influence political support for the project resulting in potential implementation delays.</p> <p>It is important to implement an outreach and public education plan to address tolling concerns as well as develop and implement a longer-range plan that can be adapted as information needs change and as the project reaches new milestones.</p>

Milestone	Risk
Right-of-Way (ROW) Procurement	While the ROW procurement for the Sunrise Project has started, it is essential for it to proceed to the point of full access to all ROW at the commencement of construction. A further potential impact is ROW procurement for the Sunrise Parkway where much more ROW will be required. This procurement can be further impacted by the time it takes for the selection of the final Parkway alignment options. Close coordination will be required to reduce the time delay between alignment selection and ROW procurement to avoid delays to Parkway construction.
Advertisement and Bid of Design-Build Contract	With major transportation improvements underway in Washington, Idaho and Oregon, the level of interest from the construction community in this project may not be as strong as hoped. A strong outreach effort to the construction community will be required to generate enough interest to assure competitive bidding.

7. FUNDING AND ALTERNATIVE FINANCING OPTIONS

7.1 Funding Options

The term Funding Options is used to describe the various sources of funds available to support the project. There are multiple sources of funds and OTIG has looked at the options most commonly used to finance transportation projects in Oregon as well as the use of tolling. The following major funding options have been identified for the project and will be discussed below:

- Government Earmarks
- Gas Taxes
- Vehicle Registration Fees
- Regional Property Taxes
- Land Value Capture
- Cross-Subsidization
- Tolling

A key source used in this analysis is a paper prepared by an ad hoc committee (the Committee) comprised of staff from the ODOT, Oregon's six MPOs, the FHWA and the Oregon DEQ entitled "*Financial Assumptions for the Development of Metropolitan Transport Plans 2005 – 2030*" (December 2004).

7.1.1 Government Earmarks

ODOT's current funding for the project includes:

- \$19million from SAFETEA-LU earmarks
- \$20million from OTIA III bonds
- \$11.8million from local funds

There is extremely limited potential to expand these sources of Federal and Oregon State funding in the short to medium term. There are almost no federal discretionary transportation funds left for the Federal Highway Administration to distribute as grants, and any federal funding will need to be secured as an earmark through the annual congressional appropriations process.

Although funding may be requested through future appropriation bills, the total amount of funding provided is likely to be insignificant in relation to total project costs. Other means of securing federal funding are through the surface transportation act reauthorization (SAFETEA-LU) which is scheduled for 2009 although this is not a certain source of funding.

7.1.2 Gas Taxes

Gas tax revenues have traditionally played a large part in funding infrastructure expenditures, particularly roadways. A state-wide gas tax increase could theoretically spread the costs of the project evenly over the State.

The Oregon State Gas Tax was last raised in 1991 and subsequent attempts to seek an increase have been unsuccessful. An additional gas tax levy requires legislation which introduces uncertainty regarding political will and timeliness.

Despite this, the Committee suggests that a 1 cent per gallon increase per year in state fuel taxes for each year through 2030 – to be earmarked for operations, maintenance and preservation – is feasible. This would generate significant additional revenues, some of which could flow to the project. While some future increases are probable, it is unlikely such sustained increases as those suggested by the Committee would be politically feasible. Furthermore, it is not clear that a state-wide increase would be granted to fund a project in a specific location. It is therefore difficult to borrow against these potential revenues given their legislative uncertainty.

It should also be noted that state gas taxes flow to the state Highway Fund. Distributions from this fund are legislatively established and are currently as follows: 60.05 percent to state highway programs, 24.38 to county road programs, and 15.57 percent to city street programs. The Committee estimates that the distribution of incremental funds to the state, counties and cities will be on a “50-30-20 percent” basis. In other words, all else equal, as a state highway, the project would receive a smaller proportion of new tax revenues than it does of current revenues.

Similar problems confront plans to increase regional gas taxes. While there is a greater likelihood such taxes would be directed toward the project, they provide insufficient security to lenders.

7.1.3 Vehicle Registration Fees

Another potential funding source is an increase in vehicle registration fees. The Committee assumes a \$15 per biennium state registration fee increase every eight years beginning in SFY 2010 will be enacted to be used for modernization. Assuming a 50-30-20 percent split, this would raise an estimated \$377 million for the state, \$226 million for the counties, and \$151 million for the cities between 2005 and 2030.

As with gas taxes, while increased registration fees may be a source of additional funding, there is considerable uncertainty surrounding the political will for such increases as well as the allocation of any increases that would be available to the project.

7.1.4 Regional Property Tax Increases

Another potential funding source would be to increase property taxes in Clackamas County. This would mean that local residents would be paying for the benefits of the project, while some of these benefits would accrue to highway users from other counties.

Property tax revenues are unlikely to be a sufficient source of funds given the magnitude of the project. Property tax eligible to be collected in Clackamas County for fiscal year 2005 was \$453 million, to be allocated to all uses. Funding the project through property taxes would require a significant re-allocation of property tax receipts and/or increase in property tax rates. As the voting trend in Oregon has been to reduce property taxes whenever possible, this source appears to be an unlikely funding source for the project.

7.1.5 Land Value Capture

Land Value Capture refers to methods of capturing the likely increases in property values that may be driven by the expansion of the Corridor and using this as a funding source for the project. As increases in property value may only occur after the project has been completed (and several years after completion in many instances), it can be challenging to use this as a revenue stream which can be used to fund construction of the project.

Typically Land Value Capture is achieved through targeted rezoning or development levies applied directly to areas which increase in value as a result of the project, for example, to property within a

one half square mile radius of the intersections. Other methods could include the grant of existing State or County land to the project for development.

Neither of these opportunities for Land Value Capture appears to be very relevant or appropriate for the Sunrise Project as the land surrounding the Sunrise Project is already highly developed and it is unlikely the Sunrise Project would result in significant re-zoning or redevelopment. For the Sunrise Parkway, however, there could be some opportunity to utilize this source of funding. With the incorporation of the newly formed City of Damascus, the rezoning of real estate along the Parkway offers an opportunity to implement Land Value Capture as a funding mechanism. The challenge will be to assure that the funds are applied specifically to the Parkway and are not diverted to other infrastructure projects as the city develops.

7.1.6 Cross-Subsidization

Preliminary estimates indicate that certain tolling scenarios on the I-205 Project could result in a surplus available to support the Sunrise Project and/or the Sunrise Corridor. However, this is a significant policy issue that would require substantial political and general public acceptance activities.

7.1.7 Tolling

Both the Sunrise Project and the use of tolls as a funding mechanism enjoy strong local support. In addition, this approach is likely to have greater public acceptance than increases in property or gas taxes, and offers more certainty than Federal or State funding sources.

There are many advantages to using tolls as a source of funding for this project.

- With increasing awareness of the highway funding shortage, the construction of new toll facilities is gaining support among politicians and their constituents.
- Tolls are the most direct user fee for highway transportation.
- Electronic toll collection systems allow for non-stop toll collection, eliminating the need for toll barriers that impede the flow of traffic.

Some of the potential challenges that come with tolling are:

- The revenues derived from tolling may not be adequate to cover 100% of operating and capital costs.
- Concerns about diversion of traffic and failure to meet the purpose of the project.
- Acceptance of optimal toll levels.
- When federal funds are involved, certain approvals are necessary from the Federal Highway Administration.

7.2 Alternative Financing Options

There are a number of financing instruments which offer preferred terms to the purely commercial financing instruments and can be used to support the project. Traditionally these instruments were available in the United States only to public sector borrowers. Increasingly however, these instruments are also being made available to private sector borrowers in PPP transactions in order to combine the best features of public and private financing.

This analysis identifies and evaluates the opportunities for alternative financing in addition to or complementary to all funding options discussed above (section 8.1). The description of the following alternatives follows:

- TIFIA
- Private Activity Bonds
- State Infrastructure Banks
- GARVEEs

7.2.1 TIFIA

The Transportation Infrastructure Finance and Innovation Act of 1998 (TIFIA), enacted as part of the Transportation Equity Act for the 21st Century (TEA-21), established a new Federal program under which the U.S. Department of Transportation (USDOT) provides credit assistance to major surface transportation projects of national or regional significance. TEA-21 authorized up to \$10.6 billion in TIFIA credit assistance over the FY 1999-2003 period. This was continued at a rate of \$2.4 billion per year prior to the passage of SAFETEA-LU in August 2005.

SAFETEA-LU continues the TIFIA credit program established under TEA-21. The TIFIA program provides Federal credit assistance to nationally or regionally significant surface transportation projects, including highway, transit, and rail. The program is designed to fill market gaps and leverage substantial private co-investment by providing projects with supplemental or subordinate debt. A total of \$610 million is authorized through 2009 to pay the subsidy cost of supporting Federal credit under TIFIA. As of January 2006, USDOT has approved over \$3.2 billion in credit assistance in the forms of direct loans, lines of credit, and guarantees for 12 projects with a combined construction value of over \$12.7 billion. The TIFIA assistance has played a critical role in the financing of these projects and without it their implementation would be delayed. As of January 2006, the TIFIA program has four active commitments, nine current credit agreements, and two credits that have been repaid to the program in full.

TIFIA is provided to large surface transportation projects (\$50M and up, \$15M for intelligent transportation systems), and is limited to 33% of project cost. Senior project debt must be rated investment grade and the dedicated revenues must be pledged to repay the TIFIA sub-debt. Federal requirements (Civil Rights, NEPA, Uniform Relocation, Titles 23/49) of the appropriate USDOT grant program apply to the use of TIFIA loan proceeds. Project must also be supported in whole or part by user charges or other non-Federal dedicated funding sources and included in the state's Transportation Plan. Qualified projects meeting the initial eligibility criteria are evaluated and selected based on eight statutory criteria, which include the extent to which they generate economic benefits, leverage private capital, promote innovative technologies, and meet other program objectives. Before the USDOT can commit TIFIA assistance or fund a credit instrument, the project must receive an investment grade rating on its senior debt obligations and have a Record of Decision, FONSI, or Categorical Exclusion, as appropriate.

TIFIA has plenty of funding at its disposal, and the project could be eligible for the program. In 2003, the South Bay Expressway in San Diego was the first private sector toll road to be selected for TIFIA funding.

TIFIA is not a new grant or revenue source. It represents a different form of debt. Creative use of TIFIA Program can enhance financing flexibility and reduce debt service costs. The program requires a state funding application, followed by extensive negotiations that may last up to, and in

some cases, over one year. Unlike Private Activity Bonds, TIFIA funding requires the approval of the TIFIA Credit Council at USDOT. However, funding the project through TIFIA appears to be a viable alternative which may be further explored with regards to alternatives that incur funding gaps.

7.2.2 Private Activity Bonds

Tax-exempt bonds may be issued in the U.S. at favourable rates but, generally, they must be issued by public entities. They may not benefit a private entity as they would be classified as “private activity bonds” and lose their tax-exempt status. However, certain exemptions have been allowed where allowable Private Activity Bonds (PABs) can retain this tax-exempt status if they are used for public purposes. Such Exempt Facility Bonds are PABs issued to finance various types of facilities owned or used by private entities, including airports, docks and certain other transportation-related facilities. PABs provide private developers and operators with access to tax-exempt interest rates, significantly lowering the cost of capital and enhancing project financial feasibility.

Eligible projects include any surface transportation project which receives U.S. Title 23 assistance (Highway facilities and surface freight transfer facilities are now eligible). PABs can also be paired with TIFIA assistance. TIFIA applicants who previously might have had to consider senior-lien taxable financing are now able to combine the benefits of senior-lien tax-exempt financing with subordinate TIFIA debt. USDOT is accepting applications from sponsors interested in receiving authority to use a portion of the \$15 billion in exempt facility. PABs are not subject to state volume caps for private activity bonds for State agencies and other issuers, but subject to a separate National cap of \$15 billion.

USDOT is particularly concerned that once it makes an allocation, tax-exempt facility bonds are issued in timely fashion. Hence, if the schedules agreed upon in the final allocation action are not met, the allocation may be withdrawn.

The first approval for this tax-exempt financing was received in October 2006 by Texas transportation officials for \$1.86 billion to improve mobility in the Dallas area by accelerating development of State Highway 121. The Sunrise Project and Parkway would be considered eligible for PABs, and would likely require a joint application from ODOT – OTIG. The negotiating process is substantially shorter than that of TIFIA as it does not require USDOT Credit Counsel approval. In addition, the PAB process is separate from the TIFIA program and may run in parallel with it.

Private Activity Bonds are an attractive alternative for the project with a potential funding gap. The tax-free senior facility would facilitate closing of the funding gap and the relatively short process might be essential if the project will depend on additional financing.

7.2.3 TIFIA vs. PABs

Other Debt Sources		
TIFIA	Repayment flexibility, including long deferrals	All debt senior to TIFIA must be investment grade
	Competitive cost of funding - Better than AAA funding costs	Lengthy application process
	Low coverage ratios	May seek a sweep of excess project revenues
	Higher debt service coverage for	

Other Debt Sources		
	senior bonds Structuring benefits of backloaded debt structures, subordination and coverage as low as 1.10x No-cost rate lock	Tight definition for eligibility Maximum final maturity is 35 years after the date of substantial completion of the project Equity return must be deferred until principal and interest is being paid on the TIFIA loan
Private Activity Bonds (Tax Exempt)	Most competitive cost of funding: Allows a layer of equity to be combined with the efficiency of tax-exempt debt. Tax-exempt investors will accept lower yields. Strong investor demand: funds, property and casualty insurance companies, transportation sector is very attractive asset class in the tax-exempt market (retail investors, bank trust departments) Structural benefits: longer duration (40 years), multiple tiers and 10-year par call	Application process Requires allocation from a limited pool High cost of issuing bonds, making them impractical for small transactions

7.2.4 State Infrastructure Banks (SIBS)

State Infrastructure Banks are revolving infrastructure investment funds for surface transportation that are established and administered by states. SIBs may be capitalized with regular Federal-aid highway apportionments and state funds and can offer a range of flexible financial assistance, including loans and various forms of credit enhancement.

Eligible transportation projects include any highway project eligible for Federal assistance under Title 23 of the U.S. Code and any transit capital project eligible for Federal assistance under Title 49 of the U.S. Code. SIBs can provide financial support to both public and private sponsors of eligible transportation projects, and can assist in financing any stage of the project’s development. There are no Federal share restrictions on the cost of projects eligible to receive SIB assistance.

SIBs can provide two principal forms of credit assistance: loans and credit enhancement products.

The primary benefit of a loan is that loan repayments are recycled for future generations of projects. Each SIB has flexibility to structure loans specifically to meet an individual project’s needs by offering below market interest rates and favorable repayment terms. Types of loans include subordinate, short-term construction and interest-only loans during construction periods. Alternative forms of loans, such as grant anticipation notes (GANs) and similar short-term debt instruments, can be issued in anticipation of future revenues, including Federal reimbursement of state transportation expenditures and state appropriations. For example, the SIB could issue GARVEEs or GANs in the private capital markets on behalf of project sponsors or as a method of capitalizing the SIB.

Credit enhancement products offered through a SIB can provide additional security or credit support to transportation projects that are funded primarily through other means, such as the municipal bond market or private participation. This additional security can result in higher investor confidence which in turn creates lower interest rates, improved marketability of bonds, and lower overall project financing costs.

The SIBs are currently most active in South Carolina, Florida and Arizona. As of June 30, 2005, Oregon has entered into 19 loan agreements with a total dollar value of \$34 million and \$25 million in disbursements to date.

Although the short-term nature of SIBs loans may not be suitable for the long term nature of the project, these loans may be suitable in addressing any funding gaps under the list of alternatives.

7.2.5 GARVEEs

A GARVEE is a debt financing instrument whose repayments are serviced through a pledge of future Federal aid. The instrument generates up-front capital for major highway projects that the state may be unable to construct in the near term using traditional pay-as-you-go funding approaches. GARVEEs are typically used in conjunction with advance construction, to enable using Federal-aid funds for future debt service payments. GARVEE bond issuances enable a state to accelerate construction timelines and spread the cost of a transportation facility over its useful life rather than just the construction period. The use of GARVEEs serves to expand access to capital markets and serves as an alternative or in addition to potential general obligation or revenue bonding capabilities.

Sample GARVEE Transactions

State	Colorado
Number of Issue	May-00, Apr-01, Jun-02, Aug-03, May-04
Issues (\$ millions)	\$537.0, \$506.4, \$208.3, \$100.0, \$135.00
Rating – Moody’s/S&P/Fitch	Aa3/AA/AA, Aa3/AA/AA, Aa3/AA/AA, Aa3/AA/AA
Projects Financed	Any project financed wholly or in part by Federal funds
Backstop	Federal highway funds as allocated annually by CDOT; Other state funds.
Total	\$1,486.7
Transaction Description	On May 17, 2004 Colorado issued \$134.6 million in Transportation Revenue Anticipation Notes (TRANS). This is the culmination of the states’ multi-billion dollar GARVEE program and will be used to support the reconstruction and widening of I-25 in Colorado Springs, pending environmental approvals.

State	North Dakota
Number of Issue	Jun-05
Issues (\$ millions)	\$51.40
Rating - Moody’s/S&P/Fitch	AA1/AA/na
Projects Financed	Highway and bridge projects
Backstop	Bond insurance obtained
Total	\$51.4
Transaction Description	In August 2005, North Dakota issued \$51.4 million in GARVEE bonds to finance the replacement of a bridge across the Missouri River at Bismarck, and for continued four-lane construction on U.S. 2. The issuance, the first for the state, received underlying ratings of Aa1/AA by Moody’s and Fitch respectively, and is insured by FSA.

As of November 2005, GARVEE bond transactions have been issued in 14 states and 2 U.S. territories, totaling \$4.8 billion. There are currently no GARVEE issues in Oregon; however, GARVEE bonding authority has been authorized.

The project’s eligibility for this type of funding could be further explored, mainly to identify all available Federal or State highway funding that could be pledged to GARVEEs. However, the existing OTIA III bonding program has used a considerable portion of the available State funds and makes it unlikely that a GARVEE bond transaction would be a viable solution for filling any significant funding gaps.

8. CONSTRUCTION COST ESTIMATES

8.1 Overview

Conventional procurement of a highway would usually involve a Design-Bid-Build approach, in which ODOT would manage consultants to produce a design in accordance with State standards. This completed design would then be tendered into the marketplace to select the lowest cost construction contractor(s) to build the road. Under this method, ODOT takes the risk of the constructability of the design. In other words, if there are (as there usually are) amendments to the design as the work progresses, these are expressed as variations to the contract and ODOT is exposed to the risk of increased costs. Typically ODOT is also exposed to schedule risk (i.e., completion of the highway on time).

The major alternative approach is Design-Build, under which the same contractor is responsible for both the design and the construction of the road. This approach is currently being used by ODOT for its bridge replacement program. Under a Design-Build contract, ODOT is responsible only for conceptual design. The contractor prices when design is 30-40% complete, and then finishes the design work in conjunction with construction.

Key features typically associated with Design-Build include:

- Acceleration of the overall delivery schedule, because the project is tendered and priced at a lower level of design completion and because final design proceeds in parallel with construction.
- “Fixed Price and Date Certain”. The contractor bears the risk of cost overruns and schedule delays.
- Design risk transfer. If the contractor’s design solution does not work in practice, it is their responsibility to amend, at their cost, until specifications are met.
- Greater flexibility for the contractor to shorten schedule and reduce costs by efficient design

PPP projects are based on Design-Build contracting. This is because equity investors in the project and their lenders take the risk of completion on schedule and on budget and so typically require a single point of responsibility for delivery. PPP delivery tends to enhance the usual benefits of Design-Build because greater financial risks are passed down to the contractor through performance securities for completion and quality.

Under PPP delivery the State can take a more limited role in specifying design and monitoring construction delivery than in a Design-Build contract. This is because the PPP partner is taking responsibility not just for completing the road on time and on budget but also for the performance and maintenance of the road for a lengthy period of time following completion.

Under PPP delivery therefore the State generally focuses on establishing output specifications or performance criteria and minimum engineering standards. The private sector partner and their Design-Build Contractor are given flexibility to innovate the most cost effective long term solutions to meeting those standards.

It is this flexibility which typically allows PPP projects to achieve significant costs savings relative to conventional government procurement. Because of the integration of Design, Construction and Operation, PPPs typically achieve further cost savings of 15-20% in maintenance costs over the life

of the infrastructure. The United Kingdom has completed over \$26 billion in PPPs over the past 15 years. A survey by the United Kingdom National Audit Office confirmed the cost savings described above and found that 75% of PPPs were on time and 78% were on budget. This compared with 30% of traditional government projects completed on time, and 27% on budget. When PPPs were delayed or over budget, it was invariably because the public partner had changed project specifications during the construction period requiring the private sector to make substantial changes mid-stream. The construction cost estimates used in this Scoping Study are generally based on the PPP Design-Build approach described above.

However, ODOT and OTIG have yet to define detailed performance standards and output specifications for this project. This would occur in Milestone Two of the development schedule assuming the project proceeds. ODOT and Clackamas County have done preliminary design work to a level sufficient to provide a range of alternatives, design options, and alignment alternatives, to allow for NEPA design level ROD. Because traffic impacts are still being investigated, the alignments are concepts only. Accordingly, the construction cost estimates used as the basis for this report are at a high level, based primarily on ODOT standards and do not necessarily fully reflect the potential for further cost savings possible through PPP delivery. It is therefore useful to look at the construction cost sensitivity analysis to assess what potential improvements in overall financial feasibility may be possible as the project proceeds.

8.2 Approach

Construction cost estimates were developed under the assumption that construction projects will be delivered under a Design-Build approach. Unit prices for the different construction elements were typically based on historical bid prices over the preceding 12 month period. Prices for construction elements subject to wide cost fluctuations, such as asphalt, were based on best estimate projections. Comparisons were also made with the pricing/estimating approach of other Departments of Transportation such as CalTrans, WSDOT, and UDOT.

8.2.1 Risk Transfer

The decision to pursue a Design-Build delivery approach raises the issue of risk transfer premiums which can affect the project cost estimates. The risk transfer premium is very much dependent on the risks that are fully transferred to the Design-Build Contractor and include items such as:

- Geotechnical risks – considered to be high due to the high level of groundwater which can adversely impact slope stability (landslides and steep stream embankments), settlement, and liquefaction (seismically induced ground failure with shallow groundwater conditions) and issues related to dewatering.
- Liquidated damages – typically the contractor's confidence level in meeting the milestone completion dates will determine the value of this item. A reasonable schedule can significantly reduce increased cost allowance for this risk.
- Errors and Omissions (E&O) – depending on the contract conditions the cost of the designers E&O premiums may need to be built in as a "risk transfer premium" as well as the cost of any potential claim deductibles should an E&O claim be filed.
- Inflation – the recent fluctuations in oil prices and costs of other materials such as concrete and steel has introduced a pricing risk that can have adverse effects on overall project cost. This risk can be mitigated through the inclusion of an escalation clause in the contract

documents. This shifts the risk to the owner, OTIG, and enables contractors to offer more realistic construction pricing.

At this early stage of the project it is somewhat difficult to provide an estimate for the risk transfer premiums since many of the contract conditions are still undefined. At this stage it is assumed that the risk transfer premium is included in the project contingency and can be addressed with specific contract clauses

8.3 Project Assumptions

The following general assumptions were made relative to the design and location of the alternatives outlined:

- All Sunrise Corridor travel lanes will be 12 feet wide with a 10 foot and a 6 foot wide shoulder.
- Interim transition section will narrow from Sunrise Project width to match existing highway 224.
- Schematics used at this stage of the review process have been prepared by ODOT/Clackamas County for the SDEIS work.

8.3.1 Sunrise Project (4.9 miles – 3.5 miles to Rock Creek Junction & 1.4 miles transition to Highway 212)

- Four lanes, two in each direction separated with a greenspace/open median for future widening.
- New two lane roadway width is 40 ft/direction
- Crossings over existing roads will be with new bridges
- No noise wall requirements identified. Specific locations will be defined in next milestone phase. Costs carried in project contingency
- Minimal utility relocations will be required
- Approximately 200,000 cu yd of borrow/fill
- Guardrail installed for approximately 20% of project length
- Sunrise/I-205 interchange estimated at \$100 Million
- Rock Creek Junction and the optional midpoint interchange at SE 122nd Avenue estimated at a construction cost of \$20 Million each
- Transition section from Rock Creek Junction to SE 172nd Ave (1.1 miles) will be replaced when the Sunrise Project is constructed
- Assume two electronic tolling locations with a third if the optional midpoint interchange is added

8.3.2 Sunrise Parkway (9.5 miles)

- Four lanes, two in each direction separated with a greenspace/open median for future widening.
- New two lane roadway width is 40 ft/direction
- Crossings over existing roads will be with new bridges.
- Total bridge estimate assumed as 25 bridges, 250 ft long, 80 ft wide.
- No noise wall requirements identified. Specific locations will be defined in next milestone phase. Costs carried in project contingency

- Minimal utility relocations will be required
- Approximately 200,000 cu yd of borrow accounts for 50% of total fill
- Guardrail installed for approximately 20% of project length
- Sunrise/US26 and other Parkway interchanges estimated at a construction cost of \$25 million each
- Transition section from Rock Creek Junction to SE 172nd Ave will be replaced when project is constructed
- Assume four electronic tolling locations

8.4 Cost Assumptions

Cost estimates have been developed for each of the six options defined in the Project Alternatives Definition (Section 3.4). These costs are summarized in Section 8.6 below.

The estimated costs are based on square footage, and/or linear foot costs, and/or unit prices from experience and by using recent ODOT bid tabulations as appropriate.

Information provided by ODOT, including schematics and unit costs, forms the basis of project estimates at this stage. Construction cost estimates are specific to each option; however, the following assumptions apply to all.

8.4.1 Roadways

To reduce costs and thereby increase the number of potentially financially feasible projects, OTIG has incorporated several cost reduction measures in the estimation of surfacing.

Estimates for both asphalt and concrete roadways are available. While concrete involves lower maintenance costs, asphalt involves significantly lower upfront costs. On a present value basis, at current market prices, asphalt is cheaper and has thus been used in our base case analyses.

8.4.2 Tolling Infrastructure

Costs for tolling infrastructure including toll plazas, gantries, and communications equipment were estimated by MIG and are discussed in more detail in Section 11.

8.4.3 Construction Engineering

Costs for Construction Engineering and Inspection, including ODOT Oversight, are estimated at 10% of construction, in accordance with ODOT and general engineering and estimating practice.

8.4.4 Contingency

A contingency of 25% has been applied to the above construction and engineering costs for Sunrise Project. The contingency has been reduced from the normal 40% following an extensive review and quantity takeoffs of the I-205/Sunrise interchange. This single element contributes almost 40% of the total project cost and it is felt that the higher estimate effort justifies the reduction in contingency for the project. For Sunrise Parkway, a 40% contingency has been applied. These contingencies are commensurate with the stages of development of the projects. As risks are mitigated through the development process, the required contingencies will decrease.

8.4.5 Design

Preliminary and Final Engineering design costs are estimated at 10% of total construction and engineering costs, including contingency, in accordance with ODOT and general engineering and estimating practice.

8.4.6 Quality Assurance/Control

Quality assurance/control of the construction and design components of the project will cost an estimated 3% of total construction and engineering costs, including contingency, in accordance with ODOT and general engineering and estimating practice.

8.4.7 Right-of-Way

Right-of-Way costs are currently estimated at \$60 million the Sunrise Project, and \$60 million for the Sunrise Parkway. These estimates are very preliminary, and may rise as real estate values in the area continue to climb.

A better assessment will be made in the next phase once the alternatives for future consideration have been selected.

8.4.8 Utility Relocation

Minimal utilities relocations are expected. Costs are estimated at 1% of construction costs.

8.5 ODOT Bid Tabulations

The sources of pricing for construction elements include the ODOT Bid Tabulations provided by ODOT on the following website:

http://www.oregon.gov/ODOT/HWY/ESTIMATING/bid_item_prices.shtml#Region_Weighted_Average_Prices

This information is typically historical based on the bid prices over a preceding 12 month period. Where concerns were encountered regarding the accuracy of this approach comparisons were made with the pricing/estimating approach of other Departments of Transportation such as CalTrans, California, WSDOT, Washington, and UDOT, Utah.

8.6 Project Cost Estimates

The capital cost analysis identified the Sunrise Project cost range of \$393 to \$431 million and the Sunrise Corridor cost range of \$884 to \$923 million.

9. LIFECYCLE COST ESTIMATES

The lifecycle costs were developed based on past experience on similar project. The lifecycle costs exclude any day-to-day operations and maintenance costs and capture the longer term repair and replacement costs of the more durable project elements such as pavement, bridge decking, expansion joints, bridge bearings and other items such as signage, lighting and fencing during the 50 years of the concession.

The sections below outline the anticipated cycles for replacement of the project elements over the lifetime of the facility. The replacement cycles may vary subject to actual usage and local conditions. Key elements of the highway will be addressed during the design to optimize material and construction quality thereby improving the facility and optimizing repairs and replacements over the life of the concession.

9.1 Pavement

A stone matrix asphalt pavement is proposed for all lanes, shoulders and on/off ramps. It is assumed that all lanes, shoulders and on/off ramps will be resurfaced/repared with inlays on a nine year cycle with a full reconstruction anticipated every third cycle or 27 years

9.2 Bridges

The lifecycle repair and replacement for bridges assume bridge bearing replacement every 25 years, expansion joint replacement every 18 years and waterproofing of bridge structures every pavement reconstruction cycle, every 27 years.

9.3 Tolling Infrastructure

Tolling infrastructure relates to the tolling equipment required to operate the toll road, particularly the use of gantries and video processing equipment. The road is assumed to offer both cash and ETC tolling options for the first 10 years of operations, before the cash option converts to video tolling. The tolling infrastructure installed at opening is assumed to be upgraded after 10 years, and then every 12 years until the end of the concession.

9.4 Other Elements

Other elements include lighting, road/traffic signs, boundary fencing and road striping/markings. Replacement of lighting columns and boundary fencing is assumed to occur every 30 years, road/traffic signs and physical tolling facilities every 15 years and road striping and remarking at every resurfacing cycle and once between resurfacing cycles (9 years).

9.5 Summary of Lifecycle Cost Estimates

The lifecycle costs range from \$14.5 - \$29.7 million for Sunrise Project and from \$31.7 to \$55.1 million for Sunrise Corridor, in present value terms .

10. OPERATION & MAINTENANCE COST ESTIMATES

Operating and Maintenance expenses are incurred on a regular basis and can be seen as the day-to-day costs of keeping the highway operational to ensure maximum benefits to all users.

Certain elements of operations are associated with the maintenance workforce and will not be affected by changes in the facility length and/or specific elements. Some maintenance work and requirements may vary subject to actual usage and local conditions. Key elements of the road will be addressed during the design to optimize material and construction quality thereby improving the facility and optimizing maintenance over the life of the concession.

These Operations and Maintenance expenses can be subdivided into seven categories, the highest of which include insurance and the cost of staff and equipment.

10.1 Insurance

The single largest cost of maintaining the facility is ensuring adequate insurance cover is in place to protect the road from insurable risks. Insurable risks include business interruption as well as damage or injury to motorists resulting from negligence on the part of the Concessionaire. In several PPP models, the Concessionaire is responsible for maintaining adequate insurance coverage however the cost is passed through to the Government given that increases in insurance premiums are relatively unpredictable, particularly in recent years. OTIG has assumed the cost of insurance in its operating and maintenance estimates.

10.2 Management, Office & Tolling Staff

A substantial number of personnel are required to ensure that the facility operates smoothly on a day-to-day basis. OTIG has also assumed that dedicated toll collection staff is required during the early years of the concession to operate toll booths, before motorists gradually migrate towards the use of transponders and fully electronic tolling.

10.3 Routine & Cyclic Works

This includes all the general day-to-day works such as road repairs, drainage and bridge maintenance, intermittent traffic sign replacement, fencing repairs, landscaping and weed control, lighting maintenance, sweeping and cleaning, and winter maintenance.

10.4 Personnel, Vehicles & Equipment

This estimate includes the cost of maintenance equipment and vehicles, small tools and consumables, maintenance and management staff wages and office facilities and associated equipment and services.

10.5 Policing

The responsibility of policing the road and providing other emergency services is typically allocated in the Concession Agreement. At this point, OTIG has assumed it will bear the responsibility and cost of policing although this responsibility may be transferred to ODOT. Note that costs for policing of the Bypass do not involve payment for a separate security force, but rather compensation for utilizing the resources of the official police force in whose jurisdiction the Bypass lies.

10.6 Inspection, Surveys & Testing

The costs of annual highway surveys, testing and structural inspections are included in this cost category.

10.7 Other Costs

Other costs cover a wide range of smaller items such as response to vehicular accidents, lighting and electrical, environmental services as well as fees related to legal, accounting and taxation services.

10.8 Summary of O&M Cost Estimates

Annual O&M costs for years 2013 and 2030 range from \$5.6 to \$9.7 million and \$7.1 to \$12.4 million respectively, all in nominal terms.

11. TOLLING COSTS

11.1 Overview

Tolls are widely used in the United States to finance new roads and bridges, upgrade existing facilities and manage traffic flow during heavily congested periods of the day. Tolls are often regarded as a fair way to build badly needed new roads and bridges because the cost is paid by the people who derive the most benefit from these facilities rather than by taxpayers in general.

11.2 Types of Tolls

Various toll schemes have been enacted in the United States and worldwide. In general, there are four basic types of tolling:

Type of Toll	Description
Distance	Each vehicle is charged a toll according to the distance traveled on the toll road. There may be multiple toll plazas along the route.
Exit	Each vehicle is charged a toll as the vehicle exits the route on an off-ramp. Typically a flat charge per exit.
Point	A single toll plaza is located at a point along the route and all vehicles crossing the point are charged a flat toll. Examples include the Golden Gate Bridge and proposed twinned Tacoma Narrows Bridge.
Period	A pre-paid amount that allows the user unlimited travel on the toll road within a designated period e.g. a week, month or time of day. This system is widely used in Central Europe

Through tolling is similar to point tolling except that a single toll plaza is located at the start of the toll road and all vehicles crossing the plaza are charged a flat toll.

11.3 Toll levels and categories

11.3.1 Benchmarking

Several comparable toll roads have been included below to provide a benchmark toll charge per vehicle and a truck toll factor. While these comparables provide valuable information, it is important to recognize that each toll facility is unique in terms of travel corridor demand characteristics, congestion levels and the availability of alternative routes. Note that examples of tolled bridges, tunnels and long distance toll roads have been purposefully omitted to improve the comparability of the data.

Estimated Toll Charge Rates*

Facility	Length (miles)	Car Toll		Truck toll factor
		Full Length	Per Mile	
Foley Beach Express, AL	6.0	\$2.00	\$0.33	1.5 - 4.5
San Joaquin Hills, CA	15	\$3.50-\$4.25	\$0.23-\$0.28	2.0 - 4.0
E470, CO	46	\$9.75	\$0.21	1.5 - 6.0
Bee Line West, FL	8.4	\$0.75	\$0.09	2.0 - 5.0
Veterans Expressway, FL	16	\$1.75	\$0.11	2.0 - 5.0
Georgia 400 Extension, GA	6.2	\$0.50	\$0.08	3.0 – 10.0
Southern Connector, SC	16	\$2.00	\$0.13	1.8 – 3.6
Cross Island Parkway, SC	7.5	\$1.00	\$0.13	1.75 – 5.0
Dulles Greenway, VA	12.5	\$3.00 – \$3.20	\$0.24 - \$0.26	1.88 - 2.0

* Based on cash tolls, discounts available for ETC for certain facilities

The table shows the average toll per mile at \$0.18 ranging from \$0.33 for Foley Beach Express in Alabama to \$0.08 for the Georgia 400 extension.

11.3.2 Vehicle toll classifications

Typically on a toll road or bridge the users are tolled according to vehicle classification. Although there is no ‘standard’ classification of vehicles into tolling categories, it is usually determined by one or more key characteristics including weight, length, height, vehicle type or number of axles.

Vehicle Toll Classifications

Facility	Categories	Description
Foley Beach Express, AL	6	By number of axles: 2, 3, 4, 5, 6 and More than 6
San Joaquin Hills, CA	3	2 axles/3-4 axles/5 or more
E470, CO	8	By number of axles: 2, 3, 4, 5, 6, 7, 8, 9
Indiana Toll Road, IN	9	Ranging from 2 axle-4 tire to oversized vehicles
E407 Toronto, ON	3	Light vehicles (less 5,000kg), Heavy single unit (over 5,000kg) and Heavy multiple unit (over 5,000kg)
Cross Island Parkway, SC	By axle	Base toll rate + \$0.75 per additional axle

11.3.3 Truck toll factors

Trucks are typically tolled at a higher rate than passenger vehicles given that trucks usually have a higher value of time, and cause additional wear and tear on the road surface. Truck tolls are usually expressed in terms of a ‘truck toll factor’ which is simply a multiple of the passenger vehicle toll. There is a wide range of truck toll factors but the majority starts at around double the passenger vehicle toll rate. The higher truck toll factors for each facility are typically applicable to

vehicles with a high number of axles, and as such represent a very small proportion of the total traffic.

11.3.4 Differential tolling

Toll charges can be set to vary based on a fixed schedule (peak/off peak, weekday/weekend) or they can be dynamic where toll rates change depending on the levels of congestion that exist at a particular time. This ensures that motorists traveling at the most congested times of the day pay a greater toll than at less congested times. I-15 in San Diego is the most advanced example of differential tolling in the US, where tolls can vary by up to \$4 based on real time travel conditions with a maximum variation of \$8 during severe congestion. The development of electronic tolling now allows facilities to offer reduced toll rates for certain categories of electronic transponder users.

11.3.5 Exemptions

On-duty public service vehicles such as police, ambulances, fire trucks and official government vehicles are generally exempt from tolls. In this way, toll roads offer public benefits as emergency vehicles are able to travel faster during peak congestion periods.

11.3.6 Toll level changes over time

The concession agreement typically defines how often and how much toll rates are allowed to increase. In most cases, tolls are permitted to increase annually and are linked to an escalator such as inflation, nominal GDP/capita, average weekly earnings or specified fixed increments.

Toll levels at some of the older toll facilities in the US are set by toll agency boards or transportation commissions. Toll rates on some of these facilities have been frozen for many years (e.g., the I-87 section of the New York State Thruway last had a rate change in 1997). The result is that large increases are often applied when facilities are faced with mounting maintenance or capital expenditure costs.

In order to address changing economic conditions a toll adjustment mechanism is typically put in place to set a maximum toll that is periodically adjusted with quarterly, semi-annual or annual frequency. Note that the adjustment typically only sets the upper limit on the toll allowing the concessionaire to set the toll at a lower amount if the concessionaire believes it will increase total traffic volumes and therefore total traffic revenue albeit at a lower toll per vehicle.

The following is the mechanism that has been used in several toll road transactions, most notably Indiana Toll Road and Chicago Skyway:

$$\text{Annual Toll Increase} = \text{Max (2\%, CPI, Nominal GDP per capita)}$$

Consumer Price Index is a measure of inflation and reflects changes in overall prices in the economy. Annual CPI increases have ranged from 1.6 to 5.4% in the past 20 years, and 1.6 – 3.4% in the past 10 years. Nominal GDP per capita reflects the rise in the income levels, and, in the past 20 years, these increases have ranged from 1.96 to 6.71%. After a fixed schedule of toll increases during the early years of each concession, maximum tolls for both Indiana Toll Road and Chicago Skyway can be adjusted annually by the greater of the percentage increase in CPI, the percentage increase in Nominal GDP/capita, and 2%.

Excerpt from Indiana Toll Road Concession Agreement

On each Tolling Measurement Date starting June 30, 2011, the Concessionaire will be permitted to increase toll levels by the greater of (a) two percent (2%) or (b) the percentage increase of the Index or Per Capita Nominal GDP, whichever is greater, measured from January 1 to December 31 for the calendar year immediately preceding the Tolling Measurement Date. The following example is for illustrative purposes only:

Measurement Dates				
From	To	2.000%	CPI	GDP/Capita
1/1/2010	12/31/2010	2.000%	2.050%	1.950%
Implemented on 6/30/2011	2.05%			

11.4 Method of Payment

There are as many types of payment collection options as there are types of tolling. Tolls can be collected electronically or by using traditional toll plazas where the customer pays with cash. The popular public perception of tolling is one of stopping at toll booths and throwing coins into a basket. While this method of payment, called barrier toll collection, is still wide-spread in the United States, almost all new toll roads being developed make use of Electronic Toll Collections (ETC) which eliminates the need for drivers to stop and allows them to maintain their speed. This maximizes travel time savings for users. Modern electronic tolling systems allow users to set up a prepaid account, attach a transponder to their vehicle, and pay the toll electronically at highway speeds, without stopping.

11.4.1 Barrier

Barrier payment methods include a physical barrier that requires vehicles to stop and pay the toll, typically using a cash payment. Barrier systems provide a simple and effective enforcement method that guarantees immediate payment. The major costs associated with barrier tolling are toll collection staff and cash handling systems. There are relatively few back-office costs associated with this approach.

Cash payment methods include staffed tollbooths, coin machines or toll buckets (where you ‘throw in’ the toll payment). Proximity cards and credit cards can also be used to pay tolls.

Barrier collection limits traffic throughput due to the need for vehicles to either stop or slow down significantly in order to pay the toll. Maximum traffic throughput for a staffed tollbooth is approximately 300-400 vehicles per hour, which increases to 500-600 vehicles per hour for an automatic coin machine lane.

11.4.2 Open Road Tolling

In recent years, many toll road systems have enacted electronic toll collection (ETC) systems that allow the vehicles to pass the toll plaza without a reduction in speed. Under an ETC system, toll

road users are required to obtain a transponder and set up a method of payment. The vehicle's transponder is read via radio frequency by equipment situated at the roadside, overhead gantries, or other structures, which then proceed to charge the user the appropriate toll. Method of payment may include direct debit, credit card or prepaid account.

Enforcement of toll collection on those vehicles not utilizing a transponder may include cash collection lanes where traffic without transponders is diverted and required to pay. Under some ETC systems, vehicles without transponders that do not pay may have a picture taken of their license plate and subsequently mailed a bill.

ETC systems have become the preferred method of tolling as it allows for the free flow of traffic by eliminating queues for cash collection toll booths. Throughput for a free-flow ETC lane can be as high as 2200-2400 vehicles per hour. Examples of ETC systems include the Westpark in Houston, the SR91 in California, the 407 ETR in Toronto, the Cross Israel Toll Road, the Melbourne City Link as well as several urban toll roads in Santiago, Chile.

In addition, barrier and ETC systems can be used in conjunction with one another. In this scenario vehicles without a transponder would be diverted to off-ramp cash lane to make payment. This may be particularly effective where electronic tolling is a relatively new concept and transponder usage is not yet widespread. This is the case in a number of facilities throughout the US including the New Jersey Turnpike, North Texas Turnpike Authority and the Florida Turnpike. However, operating a multiplicity of systems simultaneously can significantly increase implementation and operating costs and thereby reduce the project's viability. The table below outlines compatibility between toll options and method of payment:

Type of Toll	Barrier	Open Road	Barrier + Open Road
Distance	Ticket issued upon entry and paid at exit Requires multiple stops Typically cash based	ETC system No stops Use of prepaid accounts, credit cards, debit cards	Possible to operate a barrier and open road system simultaneously
Exit	Payment required at exit Single stop Typically cash based	ETC system No stops Use of prepaid accounts, credit cards, debit cards	Possible to operate a barrier and open road system simultaneously
Point	Payment required in mid-trip Single stop Typically cash based	ETC system No stops Use of prepaid accounts, credit cards, debit cards	Possible to operate a barrier and open road system simultaneously
Period	Possible multiple checkpoints to check pass Cash or credit card based	Electronic monitoring system Cash or credit card based	Possible to operate a barrier and open road system simultaneously
Through	Payment required at entrance/exit Single stop	ETC system No stops Use of prepaid accounts,	Possible to operate a barrier and open road system simultaneously

Typically cash based	credit cards, debit cards
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11.5 Electronic Toll Collection

Electronic transponders and video tolling are the two key alternatives available for the implementation of ETC. ETC involves identifying a vehicle when it passes through a toll collection point followed by the customer payment via a pre-established account or by settling an invoice that is sent to them after using the facility.

11.5.1 Transponders

Electronic transponders are the most common form of collecting tolls electronically. Transponders vary in cost between \$10 and \$40 per unit depending on functionality and have an estimated useful life of 5-15 years.

A transponder is issued after the customer has set up an account linked to a payment source such as a credit card or bank account. The transponder can either be paid for by the transponder issuer, the customer or a combination of both, depending on commercial arrangements. Another alternative is for the customer to provide a refundable deposit for each transponder provided. The issuer can be a single toll facility, a consolidated enterprise covering a geographic area or specific number of facilities, a public agency or a regional authority. Where more than one transponder issuer operates in a particular market, it is important that interoperability agreements are in place to allow transponders from one issuer to travel on other facilities without any adverse impact on the customer.

A traditional transponder account is funded with an initial amount on opening and then is automatically replenished when it reaches a specified minimum account balance. The replenishment amount can either be specified by the customer or based on usage patterns. Merchant fees are generally payable on all credit card transactions associated with each account and can amount to 2% of the amount drawn.

11.5.2 Video Tolling

Video tolling is the term used to describe the identification of vehicles using licence plate recognition technology. The licence plate of each vehicle is recorded as it passes through the tolling point using front and / or rear cameras mounted on overhead gantries. The image is then processed to determine the licence number before being matched to a customer for billing purposes. Licence plate images are first reviewed by optical character software before passing to manual review if the image is not of sufficient quality to be successfully reviewed electronically.

Video tolling can be implemented on a pre-paid or post-paid basis. A pre-paid video account operates on a similar basis to a transponder account, where the customer lodges their licence plate details when setting up an account. For every video transaction, their account is debited for the amount of the toll. Various casual user products can be established for users that are infrequent customers or will only use the facility for a certain period. These customers can purchase the right to travel on the facility prior to travel for a specified amount and register their number plate when doing so. Post-paid video tolling requires the issuance of invoices to customers after traveling on the toll facility.

Generating revenue via video tolling depends on the ability to identify and locate users as well as enforce the collection of levied tolls. A percentage of video tolling users will not be identified due to issues capturing and reading images. Further, a comprehensive and effective enforcement regime is required in order to collect tolls and levy appropriate administrative charges. Reciprocal enforcement agreements with surrounding jurisdictions are also required in order to collect tolls from out-of-State users.

11.6 Key Tolling Policy Issues

Oregonians are recognizing tolling as a viable option to fund road and transportation projects in cases where the State is unable to provide sufficient funds. As the list of projects that are immediately supportable through tolls grows it is important to identify the key policy issues that need to be addressed to ensure the tolling system is efficient and accessible. Policy issues are also important when considering tolling policies enacted in neighboring states, such as Washington State, that will impact Oregonians.

11.6.1 Interoperability

Interoperability allows the extension of existing tolling arrangements to include any future toll road into the network. Although Oregon does not currently have a toll road network, any future system developed should be interoperable with neighboring states.. This is one of the main developments in other toll road networks in the US where Florida has moved to one interoperable system (Sun Pass), while in the northeast US E-Z pass operates as one system which continues to expand, with New Hampshire and Maine soon to join.

For any toll road in the greater Portland network, it is reasonable to expect a significant number of vehicles with non-Oregon license plates will use the facility, primarily from Washington State. It will be important that an efficient, cost effective approach is available to collect tolls from these vehicles. This is most likely to be in the form of a bilateral interstate interoperability agreement that will allow the facilities to access specific identification records for non-Oregon vehicles in order to send bills and collect tolls from these users.

11.6.2 Customer Service Centers

Customer service involves managing the customer interface as well as completing all back-office activities associated with toll collection and account management. Customer service includes:

- Establishing and maintaining customer communication channels such as a website, telephone contact line, service center shop front and offsite kiosks as appropriate to handle any enquiries or complaints
- Creating and maintaining customer accounts
- Issuing transponders and managing transponder inventory
- Reconciliation of toll transactions and payments as well as and reconciliation against customer accounts

These activities can be handled by individual facilities themselves but economies of scale are achievable by aggregating them across a number of facilities or a geographic region. Aggregation also provides direct customer benefits such as a single point of contact and consistent customer service levels across facilities.

11.6.3 Violations Enforcement

Violations enforcement is a key issue for all non-cash forms of toll collection (particularly video tolling) and is required to ensure customer compliance. A typical enforcement process involves capturing an image of the license plate of all non-complying vehicles when passing through a tolling point and then having procedures for seeking payment from these customers. These procedures can include confirming whether the customer has a valid account, issuing demand notices, court action and denial of vehicle registration. Fines and administrative costs are levied on violators to recover the costs incurred in the enforcement process. Oregon will need appropriate violation enforcement legislation passed to allow automated violation enforcement procedures.

11.7 Tolling Costs

11.7.1 System Implementation Costs

Tolling implementation costs can vary significantly depending on the hardware and software specifications of the system to be installed. Hardware costs are a function of the number of tolling points along the facility, the distance between these points and the types of toll collection that will be offered.

Roadside implementation costs include the construction of tolling point infrastructure (plazas and overhead gantries), the installation of electronic imaging equipment (cameras and lighting) and communication systems between tolling points. The roadside implementation costs assumed in this report have been benchmarked against other toll facilities in the United States; however the ultimate cost of any system will depend on tolling strategy and the technical specifications that must be satisfied. Roadside tolling equipment is assumed to be periodically upgraded throughout the concession period.

Back office implementation costs include installing hardware and software for transaction processing, accounts management, traffic monitoring, billing, violations and information storage as well as office space for associated staff. Customer service channels will also have to be established including website design and kiosks as appropriate. A significant amount of these back office functions can be outsourced if this is considered to be cost-effective. Transponders will also have to be provided to potential users and it is likely that the facility will have to at least partially fund these costs.

The system implementation costs range from \$15 to \$24 million.

11.7.2 Operating Costs

Tolling operations during the concession term can either be maintained in-house or outsourced to suitably qualified external parties. Outsourcing is relatively common for other toll facilities globally, especially where establishment costs for these functions for an individual road are prohibitive or where economy of scale benefits can be achieved through aggregating with other facilities. This paper assumes that all tolling operations (except violations enforcement) are outsourced on a variable cost basis at \$0.16 / transaction. This unit cost has been benchmarked with other toll roads in the United States and internationally.

These unit costs cover toll collection, account management, transaction processing and customer service costs as well as the cost of transponder issuance and amortisation. These costs are net of any fees recoverable by the external provider directly from customers such as monthly account fees and low usage charges. Credit card merchant fees are levied in addition to these variable

costs, are assumed to constitute 1.8% of revenue and are deducted directly from the gross revenue.

Violations processing is considered to be a separate function due to its sensitive nature and direct customer interface. For the purposes of this report, it is assumed that any fines, administrative fees and recovered tolls are sufficient to offset all non-revenue transactions as well as the cost of violations enforcement.

The operating costs of tolling range from \$0.1 to \$1.9 million in 2013, and from \$1.5 to \$9.7 million in 2030.

12. REVENUE ANALYSIS

OTIG has prepared preliminary traffic and revenue forecasts based upon existing traffic data. While the forecasts are not exact, they do represent, in our view, a reasonable expectation for the future, based on the information available as of the date of this Review. The purpose of these forecasts is to provide an initial overview of issues relevant to traffic and revenue projections for the Sunrise Project and Sunrise Parkway. This Review does not provide investment grade analysis.

The estimates discussed in this Review rely on numerous assumptions and judgments and are influenced by external circumstances that are subject to change. Any changes in these circumstances may materially affect the conclusions drawn. In addition, the estimates rely on data collected by third parties. Steer Davies Gleave has conducted independent checks of this data where possible, but does not guarantee the accuracy of this data.

12.1 Data Review

12.1.1 Data Sources

No surveys were carried out for this preliminary analysis. A number of data sources have been used, including:

- Midday and PM peak 2005 Metro model outputs.
- Traffic count data provided by Clackamas County and David Evans and Associates.

12.1.2 Traffic Data

There are no ODOT permanent counters on Hwy 212/224. The count data provided shows the following pattern of traffic flows (note that flows estimated based on the two traffic count data sources).

Daily Traffic Flows - Hwy 212/224

Section	Direction	Midday	PM	ADT
East of 102 nd Street	EB	1,484	2,242	
	WB	1,541	1,650	
	TOTAL	3,025	3,892	54,891
West of 135 th Street	EB	1,206	1,858	
	WB	1,241	1,357	
	TOTAL	2,447	3,215	44,677
East of 135 th Street	EB	1,029	1,583	
	WB	1,069	1,346	
	TOTAL	2,098	2,929	32,799
Hwy 212 East of Rock Creek	EB	437	823	
	WB	412	511	

Section	Direction	Midday	PM	ADT
	TOTAL	849	1,334	16,366
Hwy 224 East of Rock Creek	EB	387	570	
	WB	374	394	
	TOTAL	761	964	13,744

The table above shows how traffic flows decrease as you move eastwards on Hwy 212/224 with ADT dropping by almost 15,000 trips by the Hwy 212/224 intersection at Rock Creek. The proportion of truck traffic is approximately 22% at the western end, reducing to approximately 18% on Hwy 212 and 224 after Rock Creek junction.

Travel time data in the PM peak suggest that the speed in the westbound direction is 27 mph whilst the speed in the eastbound direction is around 35 mph. These measurements were taken between I-205 and Rock Creek.

There is no traffic data available for the Sunrise Parkway section.

12.2 Preliminary Forecasting Methodology

The methodology to undertake this analysis was discussed at the TTWG and a memo drafted summarising the methodology proposed. The sections below provide more detail on the individual tasks carried out.

The approach used in this study examines the key features that determine traffic capture:

- Defining the traffic demand that could use the new toll road; the In-Scope Market or the traffic that would use the road if it were free.
- Estimating the proportion of 'in-scope' traffic that will use the new toll road; the Traffic Capture.
- Forecasting future year traffic growth and changes in behavior as external conditions change over time, in order to estimate demand and revenue during the life of the concession; Traffic Forecasting.

12.2.1 Network Development

A network model was developed to ease the analysis of the options required. This allows the model to account for travel time differentials between Hwy 212/224 and the Sunrise Project.

The base data was obtained from the existing Portland area Metro model (in the EMME2 software platform). The network was constrained to the Sunrise area with the main interchanges represented.

The network model was developed on the SATURN software platform. The model defines a series of parameters to represent the road network, including distance, lane configuration and speed-flow relationships. This enables the model to reproduce existing operational characteristics of the route.

12.2.2 Matrix Development

Cordoned 2005 matrices were provided by Metro from the Portland area transport model. This consisted of a cordon around the Sunrise Project, where the I-205, Rock Creek Junction and 82nd and 122nd junctions were represented.

The matrices obtained had the following characteristics:

- Midday and PM peak.
- Four user classes: medium trucks, heavy trucks, Single Occupancy Vehicles (SOV) and High Occupancy Vehicles (HOV).

Growth assumptions were obtained from the EIS model outputs for the Sunrise Project, which assumes full development assumptions for the Damascus area. These represent very high rates, albeit from a relatively low traffic base, with over 5% growth in ADT every year between 2005 and 2030 for sites east of Rock Creek Junction.

We consider a growth of over 5% compounded traffic growth over 25 years a risky proposition, reliant on all planned development at Damascus occurring within the proposed timescales and not considering the potential effect an economic recession or slow down will have on the development schedule. We have presented a lower traffic growth assumption with the sensitivity analysis considering the higher modeled growth case.

12.2.3 Model Calibration

The main calibration data focused on the Hwy 212/224 section between I-205 and Rock Creek Junction. Since the model in this case has been defined mainly as a tool to derive diversion rates, rather than the detailed demand on each link, it is very important to accurately represent the speeds relating to the alternatives.

The following table shows the speed comparisons between observed data and those in the model.

Speed Comparison (MPH)

Section	Direction	Observed	Modeled
AM	EB	37	--
	WB	27	--
MD	EB	--	31
	WB	--	31
PM	EB	36	34
	WB	26	27

12.2.4 Key Assumptions and Parameters

The main assumptions for the preliminary traffic and revenue forecasts are presented in the following table.

12.2.5 Tolling Assumptions

Assumption	Values	Comments
Base toll rate	\$0.15/mile	Results in \$0.53 for Sunrise Project and \$1.95 for Sunrise Corridor.
Toll charges	Distance	All scenarios have charges applied through distance tolling, i.e. a toll applied on each link according to the distance traveled on it.
Sunrise Max. Speed	55 mph	
Tolling operation	Assumed fully electronic (no delays).	
Trucks Truck factors	Medium and heavy trucks have their own matrices from the METRO Model. Heavy trucks pay 3x the toll, while medium trucks pay 2x the toll	
Growth	2.8 % p.a. 1% p.a.	Assumed for all years up to 2030 (based on half the EIS model output). Post 2030.
Ramp-up	0	Not accounted for.
Value of Time (VOT)	\$7-12/hr	Values from preliminary results from Newberg - Dundee SP exercises.
VOT growth	1.0%	Annual growth, reflecting the increase in wealth (proportional to GDP) from users over time.
Expansion factors	13hrs for MD & 4hrs for PM 300 days per year	Assumption based on an estimate of hours associated to each period on an average day.

No inflation has been assumed on revenues.

12.2.6 Preliminary Forecasts

The traffic and revenue forecasting model was developed based on the assumptions shown above and a SATURN assignment model built for the PM and midday periods for two scenario years (2013 and 2030). Time period results were then annualized to provide annual traffic and revenue forecasts. Values in-between the modeled years were interpolated while growth post 2030 was extrapolated as indicated in table above at 1% per year. In other words, as the concession period is 50 years, traffic analysis was based on a forecast to 2030, after which the remaining years are extrapolated. The revenue forecasts for all the alternatives range from \$1.05 to \$18.35 million in 2013, and from \$6.02 to \$47.3 million in 2030, both in nominal terms.

The highest revenues were identified for the corridor toll options (1c and 2c) where all traffic is tolled. There are no diversion effects considered here, except those implicit in the route choice between OR212-224 and Sunrise.

The options with interchange (Option 1a and 2a) show marginally higher revenues than options without the interchange. The interchange provides additional travel alternatives to users and therefore higher revenues.

12.2.7 Other Issues

The preliminary traffic and revenue forecasts presented are based on a number of assumptions. In addition it is important to consider a number of issues, namely:

- There are few details on the alignment and interchanges of the Sunrise Parkway.
- The analysis is based on modeled data and no Origin-Destination survey has been carried out on the Sunrise for a number of years.
- There is a component of risk in the forecasts as they assume certain development assumptions (in terms of the amount of development and the proposed timescales to reach these levels) by 2030 which may not be reached.

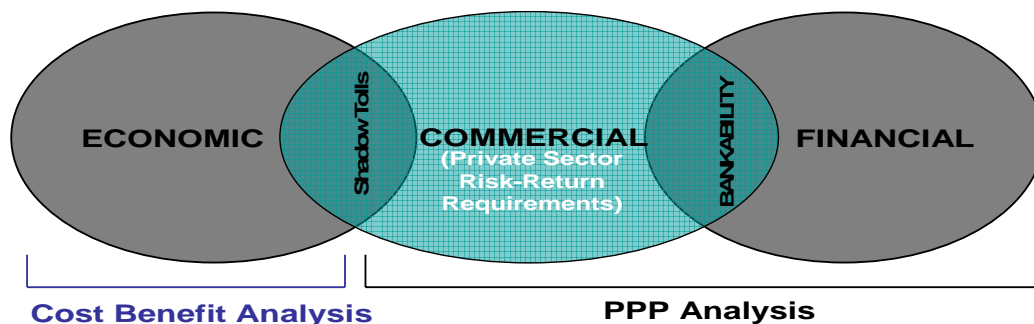
13. FINANCIAL FEASIBILITY ANALYSIS

Financial feasibility can be defined as the ability of the project to service principal and interest on debt finance as well as provide adequate yield and total return to equity investors over reasonable commercial time frames and with a reasonable degree of confidence.

For a project to be financially feasible, investors must have a high degree of confidence in the estimates of the revenues, operating costs, capital costs and other business factors including potential competitor reactions.

A financial feasibility analysis is different from an economic cost benefit analysis, or a commercial analysis. Economic analysis includes positive and negative economic externalities including environmental impacts, economic multiplier effects and economic viability. Commercial analysis determines the direct benefits of the project, taking into account time value of money, and the value of other developments the project can capture. This is different from financial feasibility, as although commercial analysis takes into account the time value of money, it does not take into account investor appetite for risk or the timing of cash flows.

As such, a project which is commercially feasible is not necessarily financially feasible. If a project has very secure revenue in twenty years time but revenue within the initial years is negligible, there may not be an equity investor who is willing to wait 20 years for a return. In the same scenario, debt financing could also not be used as debt service, the principal and interest on debt, could not be paid in the early years due to the lack of revenues in those years.



13.1 Approach

The financial feasibility analysis presented below is based upon estimates of traffic volumes and revenue generation, construction costs derived from high-level quantity take-offs and estimates of operating and maintenance costs, lifecycle costs and tolling operational costs based upon collective OTIG experience. The financial feasibility analysis presented below is OTIG’s best estimate at this time. Should ODOT and OTIG proceed to the next Milestone, investment grade traffic and revenue report will be finalized and further analysis of the costs will be undertaken.

The financial feasibility of the project may be impacted if OTIG is required to undertake ancillary services related to customer call centers, transponders, or policing. Financial feasibility may also be affected by changes in financial markets. While OTIG believes the financing structure assumed is appropriate, OTIG has not obtained market soundings with regards to credit terms and pricing nor has OTIG approached credit rating agencies for initial credit ratings. Changes in interest rate

market conditions and consensus inflation forecasts will also affect financial feasibility, particularly if the project experiences prolonged delays.

13.2 Common Financial Parameters

13.2.1 Concession Length

The Concession Term is the length of time which OTIG would operate and maintain the road. The length of the Concession Term, from a financial viewpoint, should be long enough to allow for sufficient periods of revenue to satisfy debt and equity holder requirements. For example, if construction costs increase and the project requires a larger capital investment while at the same time traffic and revenue forecasts remain constant, a longer concession term would allow for more periods of revenue to repay the debt and equity holders. On the other hand, should construction costs decrease while traffic and revenue forecasts remain constant, the term of the concession would be reduced.

As a starting point, the Concession Term is assumed to be 50 years.

13.2.2 Target Equity IRR

Internal rate of return is the discount rate that makes the net present value of future equity distributions equal to zero, or more simply put, is the long term rate of return for equity holders. In its proposal to ODOT, MIG has committed that it will seek a base case target Internal Rate of Return of 12.50% to 15.00% based on US\$ Treasuries yields of 4.43%. Since that time long term US\$ Treasuries have increased to 4.95%, so that MIG's target returns have also increased commensurately to 13.0%-15.5%. The range reflects the varying levels of risk that could be transferred to MIG through the Implementation Agreement negotiations.

As these negotiations have not been entered into as yet, we have taken a conservative position of requiring a 15.00% IRR pending final negotiations. It is important to note that this required return assumes that each project risk is assigned to the party best able to manage it, which should result in a commercially reasonable level of risk transfer to the private sector.

13.2.3 Target Leverage

With respect to the financing structure, cost of debt is generally accepted to be less than the cost of equity, thus most projects attempt to maximize the level of debt utilized which in turn lowers the financing cost of the project and improves its feasibility. The amount of debt obtainable by a project, commonly defined as leverage, varies widely depending upon the amount of risk attached to the project. Based upon MIG's experience where road projects are typically able to make up 70% to 80% of their funding with senior debt, OTIG has included a target level of leverage of 70%. However, the proportion of equity to debt assumed in the structure is also adjusted such that minimum debt service coverage ratios are met.

13.2.4 Debt Service Coverage Ratio

The Debt Service Coverage Ratio (DSCR) is directly related to leverage and is generally defined as the cash flow available after paying operating costs divided by the debt service (principal and interest) due. A higher amount of leverage increases the debt service due and thus lowers the DSCR. Given our target level of leverage, we have calculated the DSCR which this generates. In cases where the resulting DSCR is below 1.25x, we have revised the level of leverage downwards.

We feel a DSCR of 1.25x is likely to be acceptable to lenders given the level of risk in this project and based upon our experience.

13.2.5 Electronic Toll Collection versus Cash Collection

Given that electronic tolling will be a new experience for most Oregonians, we have assumed that initially 30% of all tolls collected will be through ETC with the balance utilizing a traditional cash pay approach. We have assumed that over the course of 10 years, this ratio will be reversed with 70% of motorists electing to pay electronically rather than with cash. Note that a 1.8% fee has been calculated in accordance with typical merchant credit card fees.

13.2.6 Interest Margin over US Securities

The interest margin over a similar duration US government security is dependent upon a number of factors, including level of risk, level of leverage, certainty of cash flows and general credit conditions in the financial markets. Based upon our experience we expect a margin of 1.50% over a long-life US government security to be reasonable.

13.2.7 Inflation

Inflation affects construction and operating costs as well as revenues over time. Projects of a similar type as these often utilize long-term consensus inflation forecasts. We believe 2.50% to be a reasonable long term estimate of inflation given historical and projected inflation in Oregon. The figure is based on Macquarie Investment Banking Funds official estimate of US inflation as measured by CPI (Consumer Price Index).

13.2.8 Tax Rates

Toll road concessions are typically held by Special Purpose Vehicles (SPVs). The tax rates utilized are 35% and 6.6% for federal and state purposes, respectively. The final tax rates will be subject to legal and tax due diligence performed at a later stage.

13.2.9 Financial Advisory Fee

Financial advisory fees are calculated as 1% of the total debt and equity raised, plus the funding gap, if there is one.

13.2.10 Debt Arranging Fee

Debt arranging fees are calculated as 0.50% of the total debt raised.

13.2.11 Debt Underwriting Fees

Debt providers generally charge upfront fees of 0.50% to 1.00% for the debt they underwrite. A rate of 0.50% has been assumed for this analysis, such that debt underwriting and advisory fees total 1% of debt raised.

13.2.12 Debt Commitment Fees

Debt providers charge fees on the undrawn portion of debt facilities they have committed. A rate of 0.50% per annum has been assumed for this analysis.

Financial Parameter	Value
Concession Length	50 years from completion

Financial Parameter	Value
Target Equity IRR	15% per annum
Target Leverage	70% of debt plus equity
Minimum Debt Service Coverage Ratio (DSCR)	1.25x
Electronic Toll Collection Uptake	30% initially increasing to 70% in year 10
Interest Margin over US Treasuries	1.50% per annum
CPI – prior to and during construction	2.50% per annum
CPI – remainder of concession	2.50% per annum
Oregon Tax Rate	6.60%
Federal Tax Rate	35.00%
Financial Advisory Fee	1.00% of debt, equity and quasi equity
Debt Arranging Fee	0.50% of total debt
Debt Underwriting Fee	0.50% of total debt
Debt Commitment Fees	0.50% per annum on undrawn balances

13.3 Funding Gap Analysis for Selected Alternatives

OTIG’s preliminary financial feasibility analysis suggests that none of alternatives identified are financially feasible through the use of tolling given high construction costs and low estimated traffic volumes at this time. As population growth in the region continues, Sunrise will become more economically viable; however, analysis suggests that funding gaps are likely insurmountable unless alternative sources of revenues are used to subsidize Sunrise.

There are, however, several options to reduce the funding gaps.

13.3.1 Reduction in Construction Costs

The construction cost estimates used in this Scoping Study are generally based on the PPP and Design-Build Approach, but without definition of detailed performance standards and output specifications which may further reduce construction costs. Accordingly, the funding gap resulting from a 20% decrease in construction costs is presented in the section below.

13.3.2 Increase in Traffic Growth

The traffic and revenue figures used in this analysis are based on the assumption of 2.8% annual traffic growth in the Sunrise region. As an optimistic sensitivity, OTIG has assessed the financial feasibility of increasing traffic growth to 5.6% per annum. The likelihood of this level of growth occurring is largely subject to the pace of growth in the town of Damascus. While some 60,000 new homes are planned for the area, how quickly they will be built is uncertain.

13.3.3 Decrease in Funding Costs

In MIG’s experience, the financial feasibility of long term transportation projects is quite sensitive to interest rates where lower rates can in some cases make otherwise uneconomic projects feasible. OTIG has assumed the project can raise debt at a cost of 1.50% over similar duration US Treasury bonds. Reducing the cost of debt through the utilization of TIFIA, PABs, GARVEEs and/or a combination thereof is likely to significantly impact the feasibility of the project.

13.3.4 Increase in Toll Rates

The preliminary financial feasibility incorporates a toll rate of \$0.15 per mile which is below the national average of \$0.18 per mile. Increasing the toll rate generates additional revenue which could be used to close the funding gap. However, given the price elasticity of demand, increases in toll rates, although they increase the revenue per driver, will also increase the number of drivers electing to use alternate routes. Whether the net effect on revenue is positive or negative is the subject of further analysis, and hinges critically on whether distance or corridor tolling is used. Corridor tolling would greatly reduce the ability of drivers to switch to a free alternative, while under distance tolling of the Sunrise Project and/or Sunrise Parkway only, drivers would increasingly use the 212/224 as toll rates rise.

There are several methods of adjusting toll rates, the most typical being the setting of an initial toll and then escalating it in step with inflation or another similar index. Toll rates can also be escalated in real terms over time. That is, escalating the toll beyond inflation for any given year. This may be particularly effective in areas not accustomed to paying tolls but where support grows after the public recognizes the value of the time saved. There are also options such as variable time of day tolling where tolls are adjusted according to the level of congestion in either the managed lane or the general purpose lane. Variable time of day tolling can be effective when traffic flows are unstable e.g. a long peak period.

13.4 Case Study: Dulles Greenway

Dulles Greenway study below discusses the case of a roadway with similar characteristics to those of the Sunrise Corridor. The Greenway was built prematurely, with traffic projections not materializing until the later years.

Dulles Greenway	
Project	Dulles Greenway is a 14-mile extension of the Dulles Toll Road and connects Washington Dulles International Airport with Leesburg, Virginia. The road was one of the first U.S. projects embodying the basic concepts of project financing and was approved by the 1988 action of Virginia’s General Assembly, authorizing private development of toll roads.
Original Project Sponsor	Private Consortium – Toll Road Investors Partnership II (TRIP II) – Bryant/Crane family of Middleburg, Virginia, AIE, LLC and Kellogg Brown & Root, Inc. of Houston, Texas.
Timing	Plans for the Greenway started in 1988 and the road opened in 1995. In the first years of operations, the road struggled with low traffic volumes and battled bankruptcy. When the Greenway opened to traffic in September 1995, tolls were \$1.75 each way, but when traffic fell short of projected levels, the level was reduced to

Dulles Greenway	
	<p>\$1.00. This attracted more users but did not increase revenues. Greenway owners began to default in 1996. Tolls were increased again to \$1.15 in July 1997 and the Virginia General Assembly allowed the speed limit on the facility to be increased from 55 to 65 miles per hour. Still facing financial challenges, TRIP II restructured its debt in 1999 and agreed to an extension of the project. In 2001 the Virginia State Corporation Commission extended TRIP II's concession period for an additional 20 years to 2056. Tolls were most recently increased in September 2004 and feature varied peak and discounted off-peak point-to-point rates. Because of the lack of development in the area in the early years, the Greenway was labeled as "Toll Road to Nowhere", believed to be built prematurely.</p>
Developments	<p>The trend improved in 1999 when the ridership increased from less than 10,000 weekday commuters in 1995 to nearly 44,000 in 1999. TRIP II was purchased by MIG in October 2005. At this point, the area was rapidly developing, and even more significant housing and economic development is expected in the future.</p>

13.5 Summary

The Sunrise Corridor is a proposed new highway link that would provide a direct connection between I-205 and US 26 in Clackamas County. Two separate sections of the Corridor have been discussed over the years and are currently in different phases of planning. The Corridor is currently traversed by OR 212/224, a principal east-west highway and designated freight route.

The Sunrise Corridor Scoping Study examines whether the Sunrise Project and Sunrise Parkway are technically and financially viable transportation solutions for the State of Oregon.

The study also fulfils Milestone Zero of the Pre-Development Agreement between the Oregon Department of Transportation (ODOT) and Oregon Transportation Improvement Group (OTIG) and identifies major issues that must be addressed to reach an Implementation Agreement and Financial Close.

The construction, lifecycle and operations and maintenance cost estimates used in this Scoping Study are generally based on the PPP and Design-Build approach described herein. However, ODOT and OTIG have yet to define detailed performance standards and output specifications for this project. This would occur in Milestone Two of the development schedule assuming the project proceeds. Between 5 – 10% of preliminary design work has been done to a level sufficient to provide a range of alternatives, design options, and alignment alternatives, to allow for NEPA design level ROD. Because traffic impacts are still being investigated, the alignments are concepts only. Accordingly, the cost estimates used as the basis for this report are at a high level, based primarily on ODOT standards and do not necessarily fully reflect the potential for further cost savings possible through PPP delivery. It is therefore useful to look at the construction cost sensitivity analysis to assess what potential improvements in overall financial feasibility may be possible as the project proceeds.

Traffic and revenue analysis has been prepared for OTIG to provide an initial overview of issues relevant to traffic and revenue projections for the Sunrise Corridor. The analysis and projections of traffic and revenue contained within this document represent the best estimates of OTIG at this stage, based on the information available as of the date of this report. However, the estimates rely on numerous assumptions and judgments and are influenced by external circumstances that are subject to changes that may materially affect the conclusions drawn. In addition, the views and projections contained within this report rely on data collected by third parties. Steer Davies Gleave has conducted independent checks of this data where possible, but does not guarantee its accuracy.

OTIG's preliminary financial feasibility analysis suggests that, while corridor tolling provides greater revenues than distance tolling, none of the alternatives identified are financially feasible given high construction costs and low estimated traffic volumes at this time. As population growth in the region continues, Sunrise will become more economically viable; however, analysis suggests that funding gaps are likely insurmountable unless revenues from other projects are used to subsidize Sunrise. Alternative sources of revenues and/or funding are unlikely to be sufficient to fund the project given the magnitude of the funding gap and the uncertainty associated with these funding sources.

However, several options to reduce the funding gaps were identified, including reduction in construction costs, increase in traffic growth, decrease in funding costs and increase in toll rates.

While the Scoping Study results indicate that neither the Sunrise Project nor the Sunrise Corridor can generate enough tolls to be a viable self-sufficient project, it does not offer any opinions regarding the need for the project. It is clear that a highway facility such as the Sunrise Project or Corridor is an essential part of the traffic management plan in the Damascus area to handle the longer term population and traffic growth projections. While the results of this report conclude that the Sunrise Corridor cannot be funded through tolls on the new facility it remains viable should alternative supplemental sources of funding be identified or the projects be coupled with other potential toll projects in the greater Portland metropolitan region that can generate excess revenue.

13.6 Next Steps Assessment

The alternatives studied in this Scoping Study are technically feasible. However, none of the alternatives are likely to achieve financial feasibility at this time. OTIG believes there is no commercial basis on which to carry any of the alternatives studies forward in their current form as tolled facilities. OTIG recommends that ODOT and OTIG do not proceed into the next phase of the Pre-Development Work as outlined in Appendix C to the Pre-Development Agreement.