AGENDA

1. Introduction
2. Affordability analysis
3. Next steps
4. Q&A
PFAL ROLE & SCOPE

• Financial and policy resource expertise for the SR 37 Policy Committee and Transportation Authorities of Marin, Napa, Solano and Sonoma Counties

• Scope included:
  – Deriving lessons learned from case studies (6) for similar facilities
  – Creating a decision making roadmap for project delivery alternatives
    • Traditional design-bid-build
    • Public Private Partnership (P3)
    • Bay Area Toll Authority Model (public-public)
    • Privatization
  – Sampling investor and developer market interest and feedback for a new project of this size and type
  – Developing high-level revenue forecasts for different tolling concepts
  – Defining financial affordability thresholds to define a project “feasibility envelope”
FEASIBILITY ENVELOPE

Project Feasibility

Market appetite (users, investors, funders)

Institutional Funding

Public perception

Engineering Env. context

Demand
Traditional Public Finance Option Timeline:
Under Ideal Traditional Funding Circumstances, Construction Initiation will not like begin until **2088**

**Assumptions:**
1. SR 37 Segment B Cost $1.2 Billion (Starting Point)
2. All STIP from all 4 N. Bay Counties committed
3. ITIP Population Share of 4 N. Bay Counties also committed
4. Cost assumptions for each phase is noted above
GETTING TO THIS POINT

May 2016
• Education & Background

• Six Case Studies

January 2017
• Key Revenue & Affordability Concepts

March 2017
• Revenue & Affordability Analysis

April 2017
• Industry/Market Outreach & Feedback

May 2017
• Summary Findings & Next Steps
PROCESS OVERVIEW

Project Affordability
**TOLLING CONCEPTS**

"Toll Road"

**Three toll locations**
Toll charge per mile travelled

<table>
<thead>
<tr>
<th>Segment</th>
<th>Toll</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>$1.70</td>
</tr>
<tr>
<td>B</td>
<td>$2.25</td>
</tr>
<tr>
<td>C</td>
<td>$1.05</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$5.00</strong></td>
</tr>
</tbody>
</table>

"Toll Bridge"

**One toll location**
Toll charge per “crossing”

<table>
<thead>
<tr>
<th>Segment</th>
<th>Toll</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>-</td>
</tr>
<tr>
<td>B</td>
<td>$5.00</td>
</tr>
<tr>
<td>C</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$5.00</strong></td>
</tr>
</tbody>
</table>
# Alternative Toll Revenue Generation Scenarios Tested

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Toll Rate</th>
<th>Toll Option</th>
<th>Total Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Four lanes tolled</td>
<td>$5 ⇨</td>
<td>Toll Road (3 locations)</td>
<td>$12.5 b</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Toll Bridge (1 location)</td>
<td>$9.3 b</td>
</tr>
<tr>
<td>Two lanes tolled one direction</td>
<td>$7 →</td>
<td>Toll Road (3 locations)</td>
<td>$9.4 b</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Toll Bridge (1 location)</td>
<td>$7.5 b</td>
</tr>
<tr>
<td>One reversible lane tolled</td>
<td>$5 ⇨</td>
<td>Toll Bridge (1 location) AM – westbound PM - eastbound</td>
<td>$0.3 b</td>
</tr>
</tbody>
</table>

* Total revenue generated over 50 years of tolling. Toll rate escalated over this period.

Order-of-magnitude comparison, for illustrative purposes only.

e/w = each way; o/w = one way
TOLL REVENUE CONCLUSIONS

**Tolling**

**Necessary to Accelerate Project Delivery**
- Tolling is required to fund a replacement project.
- There are scenarios that generate enough toll revenue to fund a major replacement project.

**Revenue Potential**

**Preliminary Analysis Supports Business Case**
- Toll revenue generated is $300 million to $12.5 billion over 50 years depending on tolling strategy (i.e. toll road vs. toll bridge), toll rates and number of tolled lanes.

**Tolling Two Lanes**

**Necessary to Support Project Costs**
- Tolling at least two lanes in one direction is necessary to fund a viable project.
- Tolling only one reversible lane (i.e. leaving at least one lane free in each direction) is insufficient to fund the lowest cost $1 billion solution.

**Additional Cash**

**Surplus Expected in the Long Term**
- Potential for “additional cash” beyond initial investment scope, which could be used for other project improvements in the corridor.

**Traffic Diversion**

**Next Phase of Study**
- Further analysis required to assess the impact of increased traffic diversion to “free” alternatives, if a toll is imposed on the SR 37 facility.
Q1: What financing strategy(ies) should we pursue?

The strategy will determine what project size we can afford using a combination of tolling and financing options.
## TECHNICAL ALTERNATIVES

### 1. Levee/Embankment

<table>
<thead>
<tr>
<th>Segment</th>
<th>Construction Cost in 2030</th>
<th>Construction Cost in 2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>$0.5 b</td>
<td>$0.4 b</td>
</tr>
<tr>
<td>B</td>
<td>$0.7 b</td>
<td>$0.5 b</td>
</tr>
<tr>
<td>C</td>
<td>$0.1 b</td>
<td>$0.1 b</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$1.3 b</strong></td>
<td><strong>$1.0 b</strong></td>
</tr>
</tbody>
</table>

Source: UC Davis Study, 2016

### 2. Slab Bridge Causeway

<table>
<thead>
<tr>
<th>Segment</th>
<th>Construction Cost in 2030</th>
<th>Construction Cost in 2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>$1.3 b</td>
<td>$1.0 b</td>
</tr>
<tr>
<td>B</td>
<td>$2.2 b</td>
<td>$1.7 b</td>
</tr>
<tr>
<td>C</td>
<td>$0.3 b</td>
<td>$0.3 b</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$3.8 b</strong></td>
<td><strong>$3.0 b</strong></td>
</tr>
</tbody>
</table>

### 3. Box Girder Causeway

<table>
<thead>
<tr>
<th>Segment</th>
<th>Construction Cost in 2030</th>
<th>Construction Cost in 2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>$1.4 b</td>
<td>$1.1 b</td>
</tr>
<tr>
<td>B</td>
<td>$2.5 b</td>
<td>$2.0 b</td>
</tr>
<tr>
<td>C</td>
<td>$0.4 b</td>
<td>$0.3 b</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$4.3 b</strong></td>
<td><strong>$3.4 b</strong></td>
</tr>
</tbody>
</table>

Source: UC Davis Study, 2016
**DELIVERY OPTIONS**

1. **Traditional**
   - **Revenue:** non-tolled facility
   - **Facility Ownership:** public
   - **Contract:** traditional inter-agency agreements
   - **Funding:** only public funds (local/state/fed grants)
   - **Delivery Method:** Design-Bid-Build (DBB)

2. **Public-private partnership (P3)**
   - **Revenue:** tolls, sales tax
   - **Facility Ownership:** public
   - **Contract:** long term lease with private partner (e.g. 30 to 50 years)
   - **Funding:** mix of public funds (local/state/fed grants) and private funds (equity & debt)
   - **Delivery Method:** Design-Build-Finance-Operate-Maintain (DBFOM), DBFM and DBF

3. **Public-Public**
   - **Revenue:** tolls, sales tax
   - **Facility Ownership:** public
   - **Contract:** Cooperative Agreement e.g. Bay Area Toll Authority (BATA)
   - **Funding:** publicly financed (e.g. revenue bonds), grants
   - **Delivery Method:** DBB, DB

4. **Privatization**
   - **Revenue:** tolls
   - **Facility Ownership:** private
   - **Contract:** Acquisition & Development Agreement
   - **Funding:** 100% privately financed (equity & debt)
   - **Delivery Method:** full private responsibility for asset

**Goals/Objectives:**
- Roles & Responsibilities

**Determine “Best Value” approach via Value-for-Money Assessment**

**Industry/Market Feedback**
**Minimum Toll Rate**

- Toll Road: $6 one-way or $3 each-way funds $1 billion solution for Segment A, B & C.
- Toll Bridge: $4 one-way or $2 each-way funds $500 million solution for Segment B.

**Upper End Toll Rate**

Comparable to other Bay Area toll facilities

- Toll Road: $7 each-way funds $2.6 billion project.
- Toll Bridge: $7 each-way funds $1.9 billion project.

**Responsibilities & Transfer of Risk**

Opportunities to create efficiencies in delivery

- Identify acceptance and transfer of risk.
- Desire for risk transfer needs to be balanced with a potential to have a higher or lower investment return.

*Note: affordability assessment includes funding design, construction, O&M, full lifecycle and financing costs for years 1-50*
Q1: What risks and responsibilities can the public sector transfer to the private sector?

Q2: How will the public sector fund the risks and responsibilities it chooses to retain?

Trade-off analysis (considering cost, availability of funding, level of control and revenue sharing potential) will determine which delivery method is most appropriate.
Typical risk transfer and funding responsibility under alternative delivery methods. Trade-offs include availability of public funding, level of control and revenue sharing.

<table>
<thead>
<tr>
<th>Delivery Option</th>
<th>Project Definition</th>
<th>Environmental</th>
<th>Design</th>
<th>Construction</th>
<th>Operations &amp; Maintenance</th>
<th>Toll Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional (DBB)</td>
<td></td>
<td></td>
<td>Public</td>
<td></td>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td>P3 (DBFOM)</td>
<td></td>
<td></td>
<td></td>
<td>Private</td>
<td></td>
<td>Public or Private</td>
</tr>
<tr>
<td>Public (DBB or DB)</td>
<td></td>
<td></td>
<td></td>
<td>Private*</td>
<td>Public</td>
<td>Public</td>
</tr>
<tr>
<td>Privatization</td>
<td></td>
<td></td>
<td>Private</td>
<td></td>
<td></td>
<td>Private</td>
</tr>
</tbody>
</table>

* Private sector does not fund or finance but is compensated on a “pay-go” basis
PROJECT DEVELOPMENT INDICATIVE TIMELINES

Delivery models: Prvtz = Privatization, P3 = Public Private Partnership Design-Build-Finance-Operate-Maintain, DB = Design Build, O&M = Operate & Maintain, DBB = Design Bid Build

Private finance means private debt/equity e.g. developer/infrastructure funds, bank debt, private placement, PABs;
Public finance means municipal/federal debt e.g. revenue bonds, TIFIA loan;
Traditional funding means the highway is not tolled e.g. federal/state/local funding such as STIP/ITIP;
Q&A
## CASE STUDY: KEY DATA POINTS

<table>
<thead>
<tr>
<th>Theme</th>
<th>SBX</th>
<th>US-36</th>
<th>Presidio</th>
<th>I-4</th>
<th>S. Norfolk*</th>
<th>G. Bush</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Size</strong></td>
<td>• $635 million</td>
<td>• $497 million</td>
<td>• $1.1 billion</td>
<td>• $2.9 billion</td>
<td>• $142 million</td>
<td>• $1.2 billion</td>
</tr>
<tr>
<td><strong>Project Delivery Performance</strong></td>
<td>• 12 year delay</td>
<td>• On-time</td>
<td>• On-time</td>
<td>• Under construction</td>
<td>• 9 months after planned</td>
<td>• On-time</td>
</tr>
<tr>
<td><strong>Toll Rate Setting Control</strong></td>
<td>• Private sector sets toll up to 18.5% cap on equity return</td>
<td>• Private sector sets dynamic toll to achieve specified service requirement</td>
<td>• No tolls</td>
<td>• Public sector sets dynamic toll to achieve specific service level</td>
<td>• Private sector set toll rates with no defined limit</td>
<td>• Public sector</td>
</tr>
<tr>
<td><strong>Revenue Control</strong></td>
<td>• Shared with public sector beyond a defined limit</td>
<td>• Shared with public sector beyond a defined limit</td>
<td>• Not applicable</td>
<td>• Public sector</td>
<td>• Private sector</td>
<td>• Public sector</td>
</tr>
<tr>
<td><strong>Established Traffic History</strong></td>
<td>• No Greenfield</td>
<td>• Yes Expansion</td>
<td>• Yes Replacement</td>
<td>• Yes Expansion</td>
<td>• Yes Replacement</td>
<td>• No Greenfield</td>
</tr>
<tr>
<td><strong>Competitive Procurement Process</strong></td>
<td>• Partial (RFQ only)</td>
<td>• Yes</td>
<td>• Yes</td>
<td>• Yes</td>
<td>• No</td>
<td>• No</td>
</tr>
<tr>
<td><strong>Environmental Approval Process Responsibility</strong></td>
<td>• Private sector, initiated post award</td>
<td>• Public sector, substantially completed prior to procurement</td>
<td>• Public sector</td>
<td>• Public sector</td>
<td>• Private sector</td>
<td>• Public sector</td>
</tr>
</tbody>
</table>

*Note: some facts have been disputed by UBP*
P3: FULLY FUNDED PROGRAM

Availability Payments - Low CAPEX ($1 b*) / $5 ⇐

* Construction costs from the UC Davis Study, 2016. NPV means Net Present Value.