Conveyance Option Risk Assessment

Presented to:

BDCP Steering Committee

February 11, 2010

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Risk Assessment Process: Outline

- **Risk Assessment Process Overview**
  - **Purpose, Outcome**
  - **Process Steps**
- **Risk Register and Risk Analysis**
    - **Cost Risk**
    - **Schedule Risk**
    - **Qualitative Risks Identified**
- **Conveyance Options: 40-year NPV Cost**

Risk Assessment Purpose and Outcome

- **Purpose: Quantify the differences in risk between the various proposed conveyance options.**
- **Outcome: Quantify risks in terms of cost and/or schedule**
  - **Compare the relative risk profile differences between the proposed conveyance options.**

Risk Assessment Process Overview

- **Risk Assessment Workshop Outline:**
  - Identify and Describe the Risks in Six Different Categories
  - Quantify the Risks for each Alternative
  - Review the Risk Register Results and Reconcile
  - Analyze Risk for the Alternatives using Risk Register Results (In Progress)

Risk Assessment Process: Identification & Definition

- **Risk Identification:**
  - **Planning & Permitting**
  - **Engineering and O&M**
  - **Procurement & Construction**
  - **Public Perception**
  - **Management and Oversight**
  - **Land Use Changes**

Risk Assessment Process: Quantification

- **Risk Quantification**
  - **Identified Risk Items in Tiers III, II, I (in that order) quantified in terms of applicable Schedule and/or Cost Risk.**
    - **This data is an important input to the risk assessment process.**

Schedule

Probability Percent	0%	
Impact	Units	Value
High (Change from ML):	Month	0
Most Likely (ML):	Month	0
Low (Change from ML):	Month	0

Cost

Probability Percent	0%	
Impact	Units	Value
High (Change from ML):	Percent	0
Most Likely (ML):	$ (million)	0
Low (Change from ML):	Percent	0

Schedule Risk Analysis

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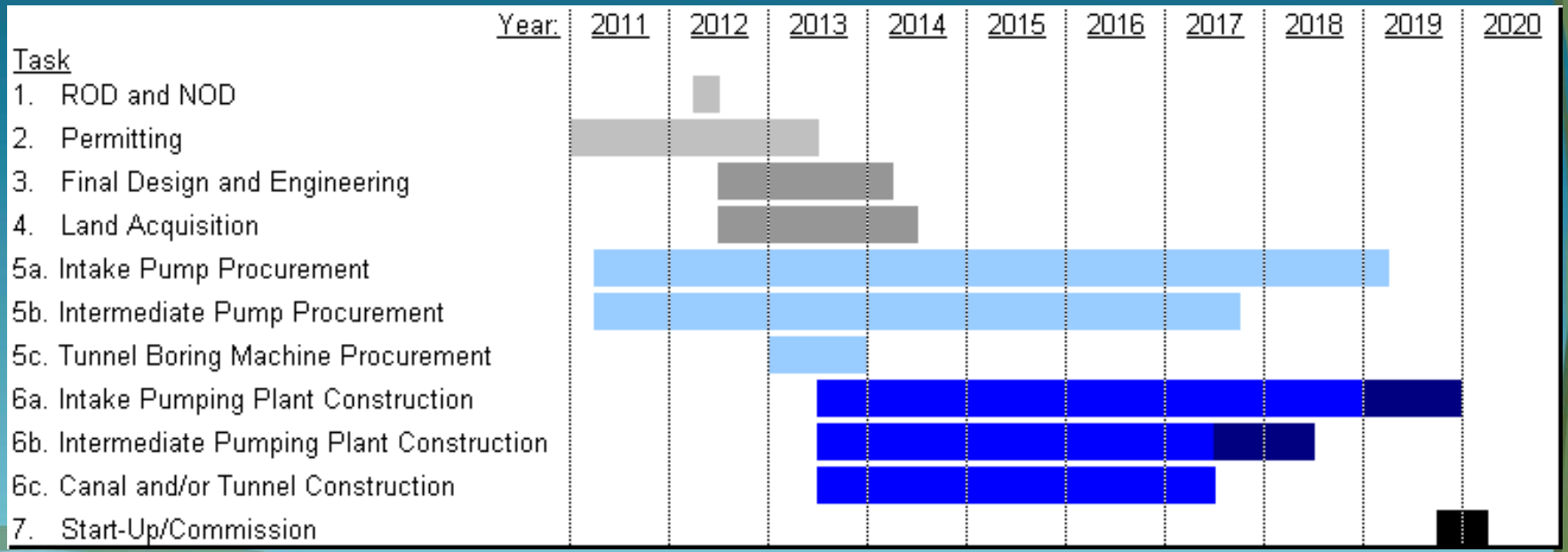
Base Schedule Estimate



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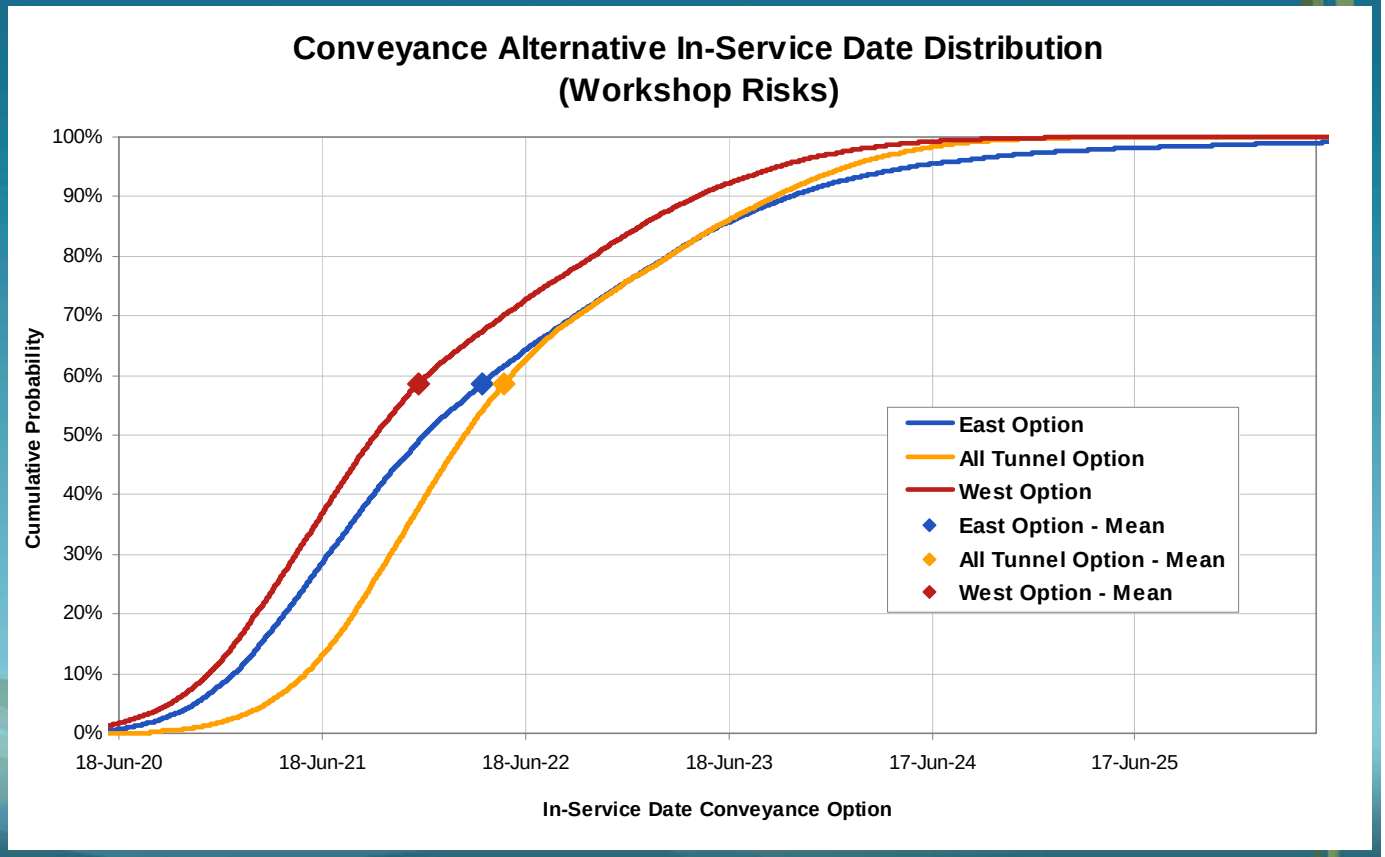
Draft Risk Analysis Results – Schedule Risk

Schedule Risk Profiles

- All Options Average Approximate Early to Mid 2022 In-Service Date
- Insignificant difference in schedule uncertainty b/w options



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Cost Risk Analysis

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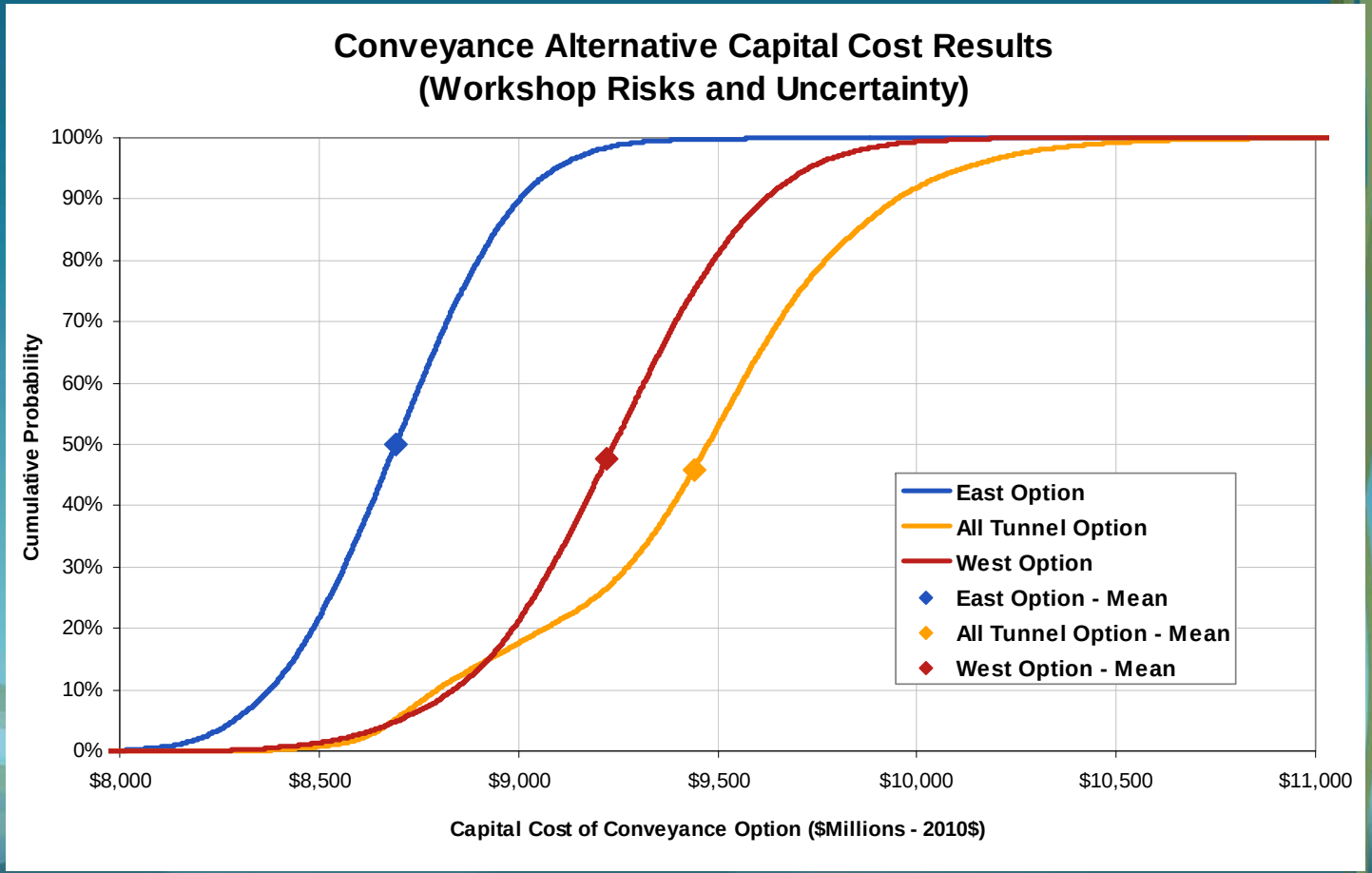
Draft Risk Analysis Results – Cost Risk

Cost Risk Profiles

- Greater Uncertainty for All Tunnel than East and West
- Curves do not include Cost Escalation



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NPV Cost Analysis

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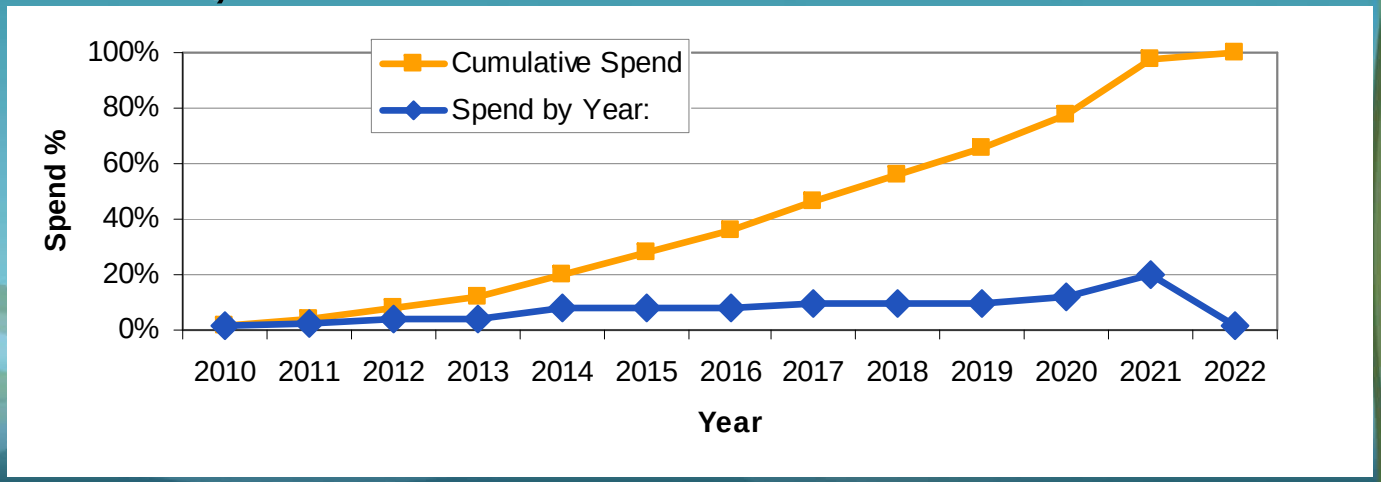
Assumptions for Net Present Value (NPV) Analysis

- **Approach - Capital Cost Assumptions**
  - Three Scenarios: Risk Assessment, Independent Cost Estimate, Average of Two
  - 40 year bonds, 5.5% interest rate, 1% issuance cost
  - Interest During Construction, 5%
  - Capital Escalation, 3%

Capital Spend by Year



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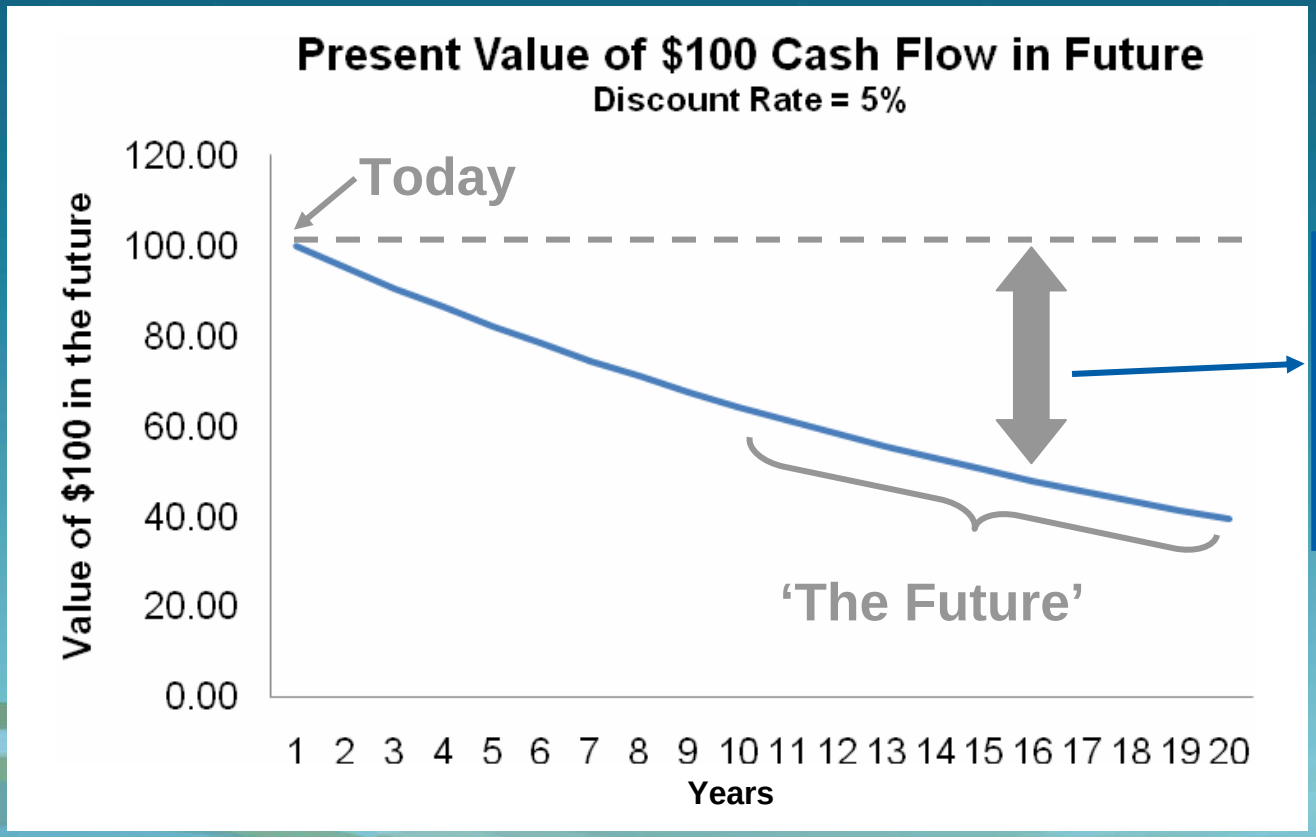
Assumptions for NPV Analysis

- **Operating Costs**
  - O&M, Energy, On-Going Mitigation
  - R&R Fund (1% of Capital Cost = Annual Expense)
- **2022 In-Service Year**
- **40 year NPV of All Costs: 2022 through 2061**
  - 5.5% discount rate

Net Present Value (NPV) calculates how much a stream of future cash flows are worth today.



Due to inflation, a dollar today is worth more than a dollar is worth in the future.

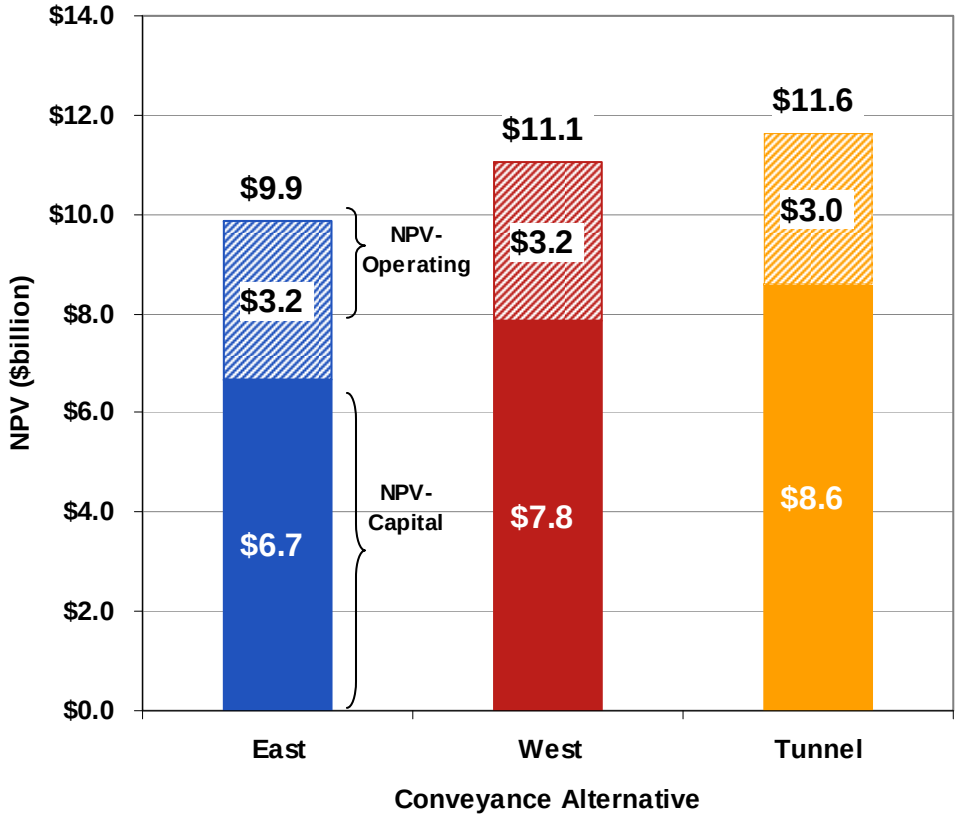
NPV Comparisons

- **Risk Assessment**
- **Independent Cost Estimate**
- **Average of Two**

Average of Risk and Independent Cost Est: Comparison of 40-yr NPV for Options

- **Capital Costs Assume Average of Risk Assessment Mean and Independent Cost Estimate**
- **Lower Operating Costs for All Tunnel vs. Canal Options**
  - **On-Going Mitigation Costs**
  - **Power Costs (Assumes Avg yr)**

	East	West	All Tunnel
Avg of Risk and Indep	$8,222	$9,657	$10,592



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Capital Cost

Capital Cost ($ in millions)

Description	East	All Tunnel	West
Environmental Planning & Permitting & Engineering (Prelim & Final) w/ PM/CM	$ 1,461.	$ 1,737.	$ 1,513.
Direct Construction Cost (w/o Contingency)	$ 5,191. to $ 5,350.	$ 6,308. to $ 7,508.	$ 5,544. to $6,646.
Construction Contingency	$ 1,425.	$ 2,000.	$ 1,523.
Conveyance Land Acquisition	$ 192. to $ 627.	$ 73 to $ 191.	$ 180. to $ 624.
Early Restoration Cost Associated with Conveyance	$ 407 to $ 582.	$ 133 to $ 192.	$ 405. to $ 582.
Total	**$8,676 to $ 9,445.**	**$10,251 to $ 11,628.**	**$ 9,165 to $10,889**

Values in 2010 $

Annual Cost

Annual Cost ($ in millions)

Description	East	All Tunnel	West
Conveyance Operations & Maintenance	$ 26.	$ 21.	$ 24.
Power for New Conveyance Facilities	$ 33.	$ 22.	$ 27.
Reliability & Replacement Fund	$ 51.	$ 62.	$ 53.
Conveyance Restoration Management & Monitoring	$ 17.	$ 7.	$ 18.
Financing Cost (Bond Debt Service & Other)	$ 340. to $381.	$414. to $ 514.	$ 404. to $442.
Total	**$ 442. to $ 555.**	**$ 484 to $686.**	**$ 483. to $ 615.**

Values in 2010 $