



Homework Assignment 4: Risk Assessment for a Non-tolled Project Assessing Risk

Thank you for participating in the P3-VALUE P3 Project Risk Assessment webinar. To practice lessons learned from the webinar and to prepare for the upcoming P3-VALUE webinar on Value for Money, please follow the instructions below to complete a risk assessment for a hypothetical project.

Conducting a risk assessment is an important component of evaluating a project for P3 procurement. To conduct a risk assessment for the purpose of evaluating a project for P3 procurement using the P3-VALUE Tool, the user must take the following broad steps:

1. Determine project scope and delivery options for the public sector comparator (PSC) and P3 delivery option.
2. Identify project risks during the design-build phase.
3. Determine the value of design-build-risks for the PSC.
 - a. Assess the probability and consequences of design-build risks if they were to be managed as they would be under the project delivery approach proposed for the PSC.
 - b. Determine retained and “transferrable” risks. That is, the allocation of risks under the P3 Delivery Option.
 - c. Simulate those risks to determine their value for the PSC at the P10, P70 and P90 probability levels.
4. Determine the value of design-build phase risks for the proposed P3 delivery approach.
 - a. Assess the probability and consequences of the design-build phase risks if they were to be managed as they would be under the project delivery approach proposed for the P3 delivery option.
 - b. Use the same allocation of retained and “transferrable risks” as in step 3b.
 - c. Simulate those risks to determine their value for the P3 delivery approach at the P10, P70 and P90 probability levels.
5. Identify project risks during the operations phase.
6. Determine the value of operation phase risks for the PSC.
 - a. Assess the probability and consequences of operations risks if they were to be managed as they would be under the project delivery approach proposed for the PSC.
 - b. Determine retained and “transferrable” risks. That is, the allocation of risks under the P3 Delivery Option.
 - c. Simulate those risks to determine their value for the PSC at the P10, P70 and P90 probability levels.
7. Determine the value of operations phase risks for the proposed P3 delivery approach.

- a. Assess the probability and consequences of the operations phase risks if they were to be managed as they would be under the project delivery approach proposed for the P3 delivery option.
- b. Use the same allocation of retained and “transferrable risks” as in step 6b.
- c. Simulate those risks to determine their value for the P3 delivery approach at the P10, P70 and P90 probability levels.

Please use the P3-VALUE Risk Assessment Tool (Version 1.2), which is available for download at the P3 Project Risk Assessment webinar, to complete the assignment. The set of basic assumptions are provided below to assist you in conducting a risk assessment hypothetical, traditional procurement project. The assumptions are highlighted in the call-out boxes in the instructions below. You may find it useful to reference the Risk Assessment Tool User Manual, accessible at http://www.fhwa.dot.gov/ipd/pdfs/p3/p3_value_riskassessment_manual_v1.pdf. Additionally, if you have any questions about the assignment, please send them to P3-VALUE@dot.gov.

Risk Assessment Tool Instructions & Assumptions

1. Accessing the Risk Assessment Tool

- A. Open the Risk Assessment Tool.
- B. Click “Enable Editing” and/or “Enable Content” on yellow bar across top of screen.
- C. Read the disclaimer and click “I accept.”

2. Determine Project Scope

- A. Navigate to the “Table 1 – Model Assumptions” tab.
 - a. Estimate project costs
 - i. Input estimated costs (in dollars) for construction, operation, maintenance and delays.
Note: Only the assumptions regarding delay costs (cells C10 and C11) affect the outputs.

Use the following assumptions to estimate project costs:

- Construction base cost: \$100,000,000
- Annual Operating Cost: \$5,000,000
- Routine Maintenance Cost: \$5,000,000
- Periodic Maintenance Costs: \$0
- Daily Delay Cost – Construction: \$140,000
- Daily Delay Cost – Operations: \$28,000

- b. Define project schedule
 - i. Input estimated length (in months) of each phase.

Note: The total length for the Design-Build phase will automatically calculate in cell C15 after you enter your assumptions for the relevant phases (planning to turn-over).

Use the following assumptions to define the project schedule:

- Planning: 6
- Design: 6
- Construction: 24
- Commissioning: 0
- Turn-Over: 0
- Operations: 336

c. Leave the revenue assumptions table blank

Note: Since the hypothetical scenario does not involve a toll-based project, there is no need to estimate toll rates, revenues, or traffic volumes at this time.

d. Check that your assumptions match those in Figure 1 (all figures are at the end of the text for these instructions).

3. Identify Project Design-Build Risks

A. Navigate to the “Table 4 – Risk Register” tab.

B. Complete the “Risk Identification” section.

Note: Review the steps below to familiarize yourself with the mechanics, verify that your risk identification assumptions match those in Figure 2, and then proceed.

a. Enter the risk number in Column B.

b. Enter the risk category in Column C.

Note: See the “Definitions” tab for descriptions of risk categories.

c. Select the impact phase from the drop-down menu in Column D.

Note: This column is significant because the tool calculates the potential risk cost impacts by project phase. If a risk event has the potential to impact multiple project phases, users must enter that risk for each phase separately.

d. Select the risk type (opportunity or threat) from the drop-down menu in Column E.

Note: This column is also significant because it affects whether a risk’s potential impacts are treated as negative or positive costs.

e. For this exercise leave the risk description (Column F) blank.

f. For this exercise leave the description of potential consequences (Column G) blank.

Use the following assumptions to describe the *design-build* risks:

- **Risk 1:**
 - Risk Category: Design; Impact Phase: Design; Risk Type: Threat
 - Risk Description and Consequence: Leave Blank
- **Risk 2:**
 - Risk Category: Engineering & Construction; Impact Phase: Construction; Risk Type: Threat
 - Risk Description and Consequence: Leave Blank
- **Risk 3:**
 - Risk Category: Right of Way Utilities; Impact Phase: Design; Risk Type: Threat
 - Risk Description and Consequence: Leave Blank
- **Risk 4:**
 - Risk Category: Engineering & Construction; Impact Phase: Construction; Risk Type: Threat
 - Risk Description and Consequence: Leave Blank

4. Assess Design-Build Risks for the Public Sector Comparator

- A. Complete the “Qualitative Risk Assessment” section (Columns H through L).
- Note:** See the “Risk Assessment Matrix” tab for guidance in determining probabilities and consequences for this section. The colors of the cells in columns J and L will change based on your selections below. It is important to note that only those risks labeled “medium,” “high,” or “very high” require quantification in step 4B and affect the tool outputs.
- a. Select the probability rating from 1 (very low) to 5 (very high) from the drop-down menu in Column H.
 - b. Select the cost consequence of the risk occurring from 1 (very low) to 5 (severe) from the drop-down menu in Column I.
 - c. Select the schedule consequence of the risk occurring from 1 (very low) to 5 (severe) from the drop-down menu in Column K.
 - d. Check your register against Figure 3 to make sure your inputs match the screenshot.

Use the following assumptions to qualify the *design-build* risks:

- Risk 1: Probability: 5; Cost Consequence: 4; Schedule Consequence: 3
- Risk 2: Probability: 4; Cost Consequence: 3; Schedule Consequence: 3
- Risk 3: Probability: 3; Cost Consequence: 3; Schedule Consequence: 1
- Risk 4: Probability: 4; Cost Consequence: 1; Schedule Consequence: 3

B. Complete the “Quantitative Risk Assessment” section (Columns M through U).

Note: Risk quantification is only necessary for those risks with “medium,” “high,” or “very high” risk ratings from step 4A.

a. Input the probability of the risk occurring as a percentage (0% - 100%).

Use the following assumptions to quantify the *design-build* risks’ probability percentages:

- Risk 1: Probability: 90%
- Risk 2: Probability: 50%
- Risk 3: Probability: 35%
- Risk 4: Probability: 45%

b. Select the appropriate probability distribution (triangular or uniform) for the risk’s schedule impact from the drop-down menu.

Note: See the “Definitions” tab for an explanation of the distributions.

c. Input minimum and maximum schedule impacts (in days) for uniform distribution, or minimum, most likely, and maximum schedule impacts for triangular distribution.

Note: Depending on your selection of distribution in Column N for schedule impacts (or in Column R for cost impacts), the color of the available input cells for minimum, most likely, and maximum values change from blue to gray (or vice versa). Note that even though the cell in the “most likely” column turns gray, it may still contain a value and therefore it may be necessary to click that cell and use the “delete” key to clear the value.

Use the following assumptions to quantify the *design-build* risks’ schedule impacts:

- Risk 1: Distribution: Triangular; Min: 15; Most Likely: 30; Max: 45
- Risk 2: Distribution: Uniform; Min 10; Max 30
- Risk 3: No schedule impact.
- Risk 4: Distribution: Triangular; Min: 30; Most Likely: 50; Max: 120

d. Select the appropriate probability distribution (triangular or uniform) for the risk’s cost impact from the drop-down menu.

Note: See the “Definitions” tab for an explanation of the distributions.

- e. Input minimum and maximum cost impacts (in real dollars) for uniform distribution, or minimum, most likely, and maximum cost impacts for triangular distribution.

Use the following assumptions to quantify the *design-build* risks' cost impacts:

- Risk 1: Distribution: Triangular; Min: \$5,000,000; Most Likely: \$10,000,000; Max: \$20,000,000
- Risk 2: Distribution: Uniform; Min: \$1,000,000; Max: \$10,000,000
- Risk 3: Distribution: Triangular; Min: \$2,000,000; Most Likely: \$3,000,000; Max: \$5,000,000
- Risk 4: No Cost Impact

- f. Compare your risk register to Figure 3 and make sure your assumptions match the screenshot.

C. Complete the "Allocation & Mitigation" section (Columns AA through AB).

- a. Input the allocation of risk between the public and private sectors as a percentage (0% - 100%). The sum of those two cells must equal 100 percent for each risk.
- b. You can leave potential mitigation strategies (Column AC) blank.

Note: The proposed mitigation strategies do not factor into the outputs.

Use the following assumptions to allocate risks:

- Risk 1: Public: 0%; Private: 100%
- Risk 2: Public: 50%; Private: 50%
- Risk 3: Public: 0%; Private: 100%
- Risk 4: Public: 100%; Private: 0%

- c. Compare your risk register to Figure 3.

D. Review the outputs.

- a. Navigate to the "Table 5 – Cost Impact Outputs" tab.
- b. Enter "1000" in the blue box in cell F8 (i.e., number of iterations).
- c. Click "Run Simulation."

Note: It may take up to 1 minute for the simulation to generate results.

- d. Review the cost impacts and compare your results to those in Figure 4.

Note: This sheet displays the total cost impacts generated from a random simulation of the risk variables; the results of each simulation may differ slightly from the Figure 4 results shown. Review the risk impacts in the table at various percentiles (i.e., P10, P70, P90), across project phases, and the cumulative allocation between public and private.

- e. Navigate to the "Table 7 – Schedule Impact Output" tab and compare your results to those in Figure 5.

Note: This sheet displays the total schedule impacts generated from a random simulation of the risk variables; the results of each simulation may be different. Note the risk impacts at various percentiles, across project phases, and the cumulative allocation between public and private.

- E. Save a local copy of the tool as “p3_value_riskassessment_tool_PSC_DBRisks”

5. Adjust Design-Build Risks for the P3 Delivery Option

This exercise will help you determine the value of design-build phase risks for the proposed P3 delivery approach.

- A. Navigate to the “Table 4 – Risk Register” tab.
- Repeat step 4, adjusting risks in the risk register section based on assumed differences in the private sector’s ability to manage risks that are transferred to them under a P3 deliver option.

Adjust the following assumptions to adjust design-build risk values for the P3 Delivery option:

- Risk 1:
 - Probability: 90%;
 - Schedule Impact: Min: 10; Most Likely: 20; Max: 30
 - Cost Impact: Min: \$4,000,000; Most Likely: \$8,000,000; Max: \$16,000,000
- Risk 2:
 - Probability: 40%
 - Schedule Impact: Min: 10; Max 25
 - Cost Impact: Min: \$750,000; Most Likely: Clear (hit delete); Max: \$7,500,000
- Risk 3:
 - Probability: 30%;
 - Cost Impact: Min: \$1,000,000; Most Likely: \$2,000,000; Max: \$4,000,000
- Risk 4:
 - Do not adjust, since 100% is allocated to the public sector.

- Compare your risk register to Figure 6.
- B. Review the outputs.
- Navigate to the “Table 5 – Cost Impact Outputs” tab.
 - Enter “1000” in the blue box in cell F8.
 - Click “Run Simulation.”
Note: This may take up to a minute to calculate depending upon your computer.
 - Review the cost impacts and compare your results to those in Figure 7.
 - Navigate to the “Table 7 – Schedule Impact Output” tab and compare your results to those in Figure 8.
 - Compare your results to the results for the PSC design-build risk simulation outcomes from Step 4.

- g. Save a local copy of the tool as “p3_value_riskassessment_tool_P3_DBRisks”

6. Identify Project Operations Risks

In this exercise, you will see how to identify project risks during the operations phase.

A. Navigate to the “Table 4 – Risk Register” tab.

B. Clear the rows 9-12.

Note: If you try to delete an entire row at once you will get an error message.

To prevent this error you need to take a step by step approach to deleting the existing risk information. First, delete the Risk Identification cells for Technical Risks information (Columns A through G; Rows 9 through 16); then, delete the remaining Quantitative Risk Assessment (Columns M through U), Repeat steps 3 and 4, identifying and assessing operations phase risks for the public sector comparator. Do this by entering in the values from below into Table 4.

C. Compare your risk register to Figures 9 and 10.

Enter the following assumptions for operations phase risks in the Conventional Delivery (PSC) option:

- **Risk 1:**
 - Risk Category: Availability; Impact Phase: Operations; Risk Type: Threat
 - Risk Description and Consequence: Leave Blank
 - Probability Rating: 4
 - Cost Consequence Rating: 3
 - Schedule Consequence Rating: 1
 - Probability: 65%
 - Schedule Impact: No changes
 - Cost Impact: Distribution: Triangular; Min: \$2,000,000; Most Likely: \$4,000,000; Max: \$5,000,000
 - Risk Allocation: Public: 0%; Private: 100%
 - Risk Mitigation: Leave Blank
- **Risk 2:**
 - Risk Category: Operations; Impact Phase: Operations; Risk Type: Threat
 - Risk Description and Consequence: Leave Blank
 - Probability Rating: 5
 - Cost Consequence Rating: 2
 - Schedule Consequence Rating: 1
 - Probability: 75%
 - Schedule Impact: No changes
 - Cost Impact: Distribution: Triangular; Min: \$1,000,000; Most Likely: \$2,000,000; Max: \$3,000,000
 - Risk Allocation: Public: 0%; Private: 100%
 - Risk Mitigation: Leave Blank
- **Risk 3:**
 - Risk Category: Tolling; Impact Phase: Operations; Risk Type: Threat
 - Risk Description and Consequence: Leave Blank
 - Probability Rating: 2
 - Cost Consequence Rating: 4
 - Schedule Consequence Rating: 1
 - Probability: 15%
 - Cost Impact: Distribution: Uniform; Min: \$10,000,000; Max \$20,000,000
 - Risk Allocation: Public: 0%; Private: 100%
 - Risk Mitigation: Leave Blank

D. Review the Outputs

- a. Navigate to the “Table 5 – Cost Impact Outputs” tab.
- b. Enter “1000” in the blue box in cell F8.
- c. Click “Run Simulation.”
- d. Review the cost impacts and compare your results to those in Figure 11.
- e. Save a local copy of the tool as “p3_value_riskassessment_tool_PSC_OpsRisks”

7. Adjust Operations Phase Risks for the P3 Delivery Option

In this section, you will determine the value of operations phase risks for the proposed P3 delivery approach. For this, you will:

- Assess the probability and consequences of the operations phase risks if they were to be managed as they would be under the project delivery approach proposed for the P3 delivery option.
 - Use the same allocation of retained and “transferrable risks” as in step 6b.
 - Simulate those risks to determine their value for the P3 delivery approach at the P10, P70 and P90 probability levels.
- A. Navigate to the “Table 4 – Risk Register” tab.
- a. Repeat step 5, adjusting risks in the risk register section based on assumed differences in the private sector’s ability to manage risks that are transferred to them under a P3 deliver option.

Adjust the following assumptions to adjust operations phase risk values for the P3 Delivery option:

- Risk 1:
 - Probability: 50%;
 - Cost Impact: Distribution: Triangular; Min: \$1,500,000; Most Likely: \$2,000,000; Max: \$2,500,000
- Risk 2:
 - Probability: 70%;
 - Cost Impact: Distribution: Triangular; Min: \$800,000; Most Likely: \$1,600,000; Max: \$2,400,000
- Risk 3:
 - Probability: 10%;
 - Cost Impact: Distribution: Uniform; Min: \$8,000,000; Max: \$16,000,000 (You may need to clear the Most Likely value in cell T11 by hitting the delete key in the greyed cell).

- b. Compare your risk register to Figure 12.

B. Review the outputs.

- a. Navigate to the “Table 5 – Cost Impact Outputs” tab.
 - b. Enter “1000” in the blue box in cell F8.
 - c. Click “Run Simulation.”
 - d. Review the cost impacts and compare your results to those in Figure 13
 - e. Compare your results to the results from Step 6.
- C. Save a local copy of the tool as
“p3_value_riskassessment_tool_v1_P3_OpsRisk”

Figure 1: Model Assumptions

Table 1: Model Assumptions

The assumptions are provided to support users in assessing the cost impact of each risk

COST ASSUMPTIONS	
Assumption	\$
Construction Base Cost	\$100,000,000
Annual Operating Cost	\$5,000,000
Routine Maintenance Cost	\$5,000,000
Periodic Maintenance Cost (per period)	\$0
Daily Delay Cost - Construction (used to calculate schedule risk impact)	\$140,000
Daily Delay Cost - Operations (used to calculate schedule risk impact)	\$28,000
SCHEDULE ASSUMPTIONS	
Phase	Duration (months)
Design Build Phase	36
<i>Planning</i>	6
<i>Design</i>	6
<i>Construction</i>	24
<i>Commissioning</i>	0
<i>Turn-Over</i>	0
Operations	336
REVENUE ASSUMPTIONS (not required for the Example Scenario)	
Assumption	\$ / No. Vehicles
Toll rate	
Annual Average Daily Traffic	
Toll Revenue per Day	
Cost of Finance per Day	
Total Revenue per Day	

Figure 2: Risk Identification and Qualification Assumptions (PSC Design-Build Risks)

Risk Number	Risk Category	Impact Phase	Risk Type	Description	Consequence of Risk	Probability Rating	Cost		Schedule	
							Consequence	Risk Rating	Consequence	Risk Rating
Technical Risks										
1	Design	Design	Threat			5	4	High	3	High
2	Engineering & Construction	Construction	Threat			4	3	Medium	3	Medium
3	Right of Way / Utilities	Design	Threat			3	3	Medium	1	Low
4	Engineering & Construction	Construction	Threat			4	1	Low	3	Medium

Figure 3: Risk Quantification and Allocation Assumptions (PSC Design-Build Risks)

Probability Percentage	Schedule Impact (days)			Cost Impact (\$)			Risk Allocation (%)		Risk Mitigation		
	Distribution	Min	Most Likely	Max	Distribution	Min	Most Likely	Max		Public	Private
90%	Triangular	15	30	45	Triangular	\$ 5,000,000	\$ 10,000,000	\$ 20,000,000	0%	100%	
50%	Uniform	10		30	Uniform	\$ 1,000,000		\$ 10,000,000	50%	50%	
35%					Triangular	\$ 2,000,000	\$ 3,000,000	\$ 5,000,000	0%	100%	
45%	Triangular	30	50	120					100%	0%	

Figure 4: Table 5 Cost Impact Outputs (PSC Design-Build Risks)

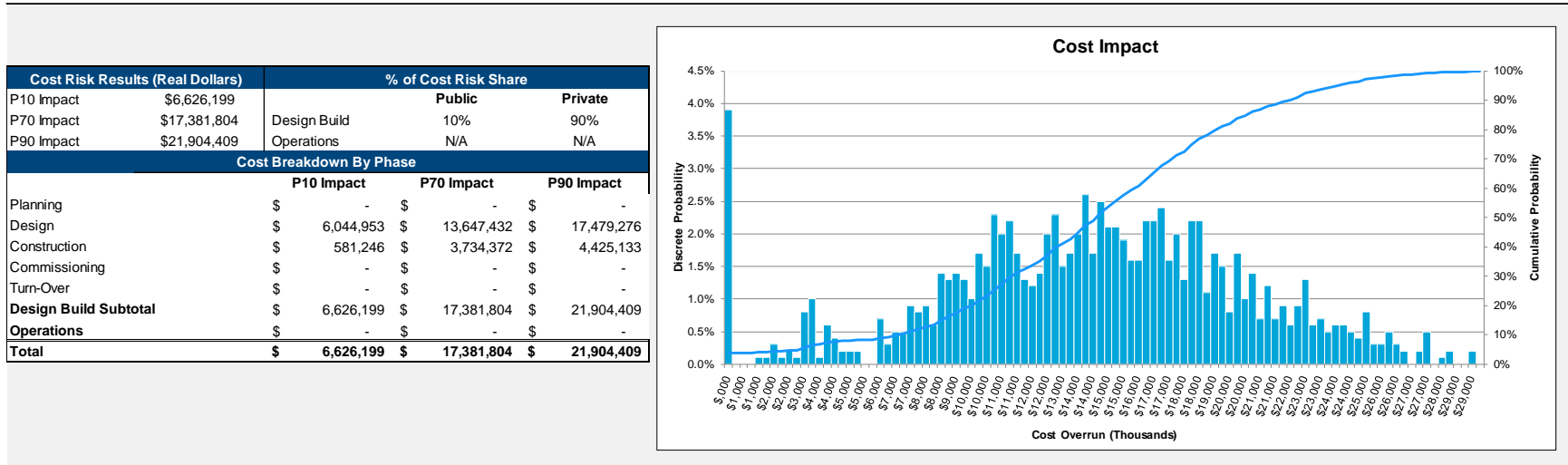


Figure 5: Schedule Impact Outputs (PSC Design-Build Risks)

Schedule Results (Days Delay)		% of Schedule Risk Share		
P10 Impact	24		Public	Private
P70 Impact	90	Design Build	49%	51%
P90 Impact	119	Operations	N/A	N/A
Schedule Breakdown By Phase (Days)				
	P10 Impact	P70 Impact	P90 Impact	
Planning	0	0	0	
Design	10	41	44	
Construction	14	49	75	
Commissioning	0	0	0	
Turn-Over	0	0	0	
Design Build Subtotal	24	90	119	
Operations	0	0	0	
Total	24	90	119	
Schedule Breakdown By Phase (Real Dollars)				
	P10 Impact (\$)	P70 Impact (\$)	P90 Impact (\$)	
Planning	\$ -	\$ -	\$ -	
Design	\$ 1,417,500	\$ 5,717,647	\$ 6,161,918	
Construction	\$ 1,942,500	\$ 6,882,353	\$ 10,498,082	
Commissioning	\$ -	\$ -	\$ -	
Turn-Over	\$ -	\$ -	\$ -	
Design Build Subtotal	\$ 3,360,000	\$ 12,600,000	\$ 16,660,000	
Operations	\$ -	\$ -	\$ -	
Total	\$ 3,360,000	\$ 12,600,000	\$ 16,660,000	

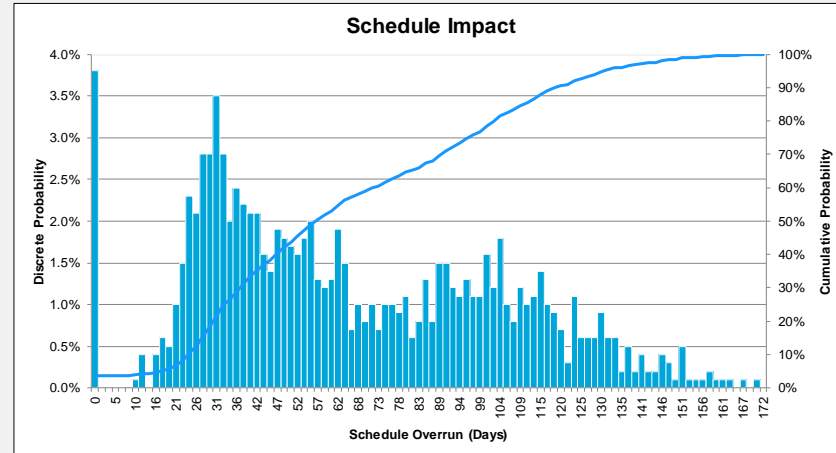


Figure 6: Risk Quantification and Allocation Assumptions (P3 Option Design-Build Risks)

3.Quantitative Risk Assessment									4.Allocation & Mitigation		
Probability Percentage	Schedule Impact (days)			Cost Impact (\$)				Risk Allocation (%)		Risk Mitigation	
	Distribution	Min	Most Likely	Max	Distribution	Min	Most Likely	Max	Public		Private
90%	Triangular	10	20	30	Triangular	\$ 4,000,000	\$ 8,000,000	\$ 16,000,000	0%	100%	
40%	Uniform	10		25	Uniform	\$ 750,000		\$ 7,500,000	50%	50%	
30%					Triangular	\$ 1,000,000	\$ 2,000,000	\$ 4,000,000	0%	100%	
45%	Triangular	30	50	120					100%	0%	

Figure 7: Table 5 Cost Impact Outputs (P3 Option Design-Build Risks)

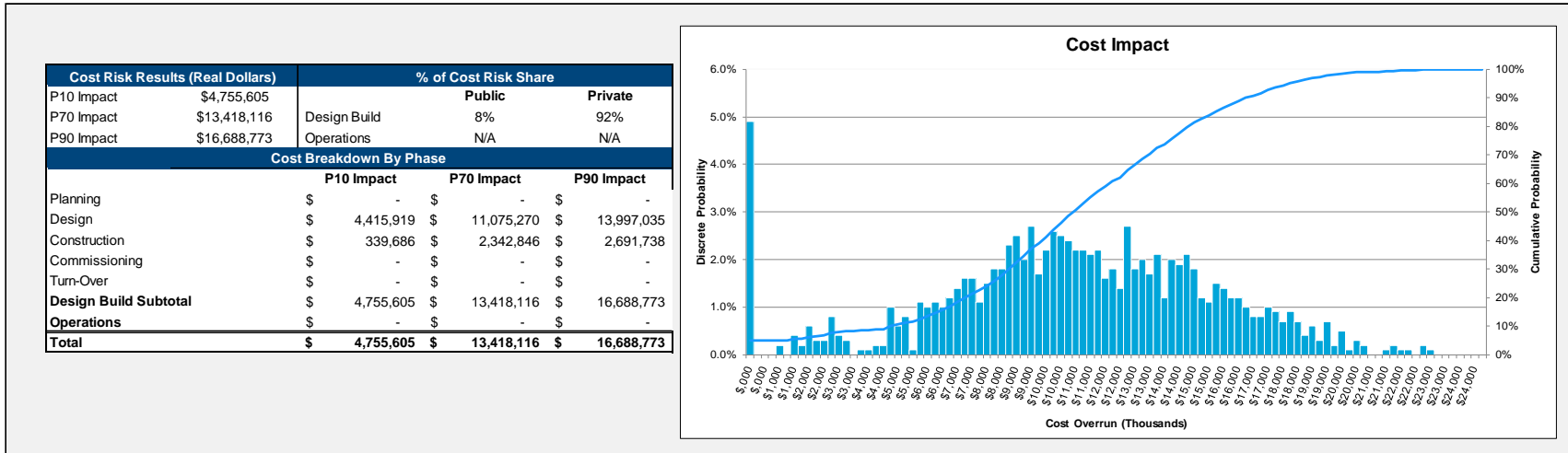


Figure 8: Table 7: Schedule Impact Outputs (P3 Option Design-Build Risks)

Schedule Results (Days Delay)		% of Schedule Risk Share		
P10 Impact	17		Public	Private
P70 Impact	80	Design Build	58%	42%
P90 Impact	108	Operations	N/A	N/A
Schedule Breakdown By Phase (Days)				
	P10 Impact	P70 Impact	P90 Impact	
Planning	0	0	0	
Design	6	30	32	
Construction	11	50	76	
Commissioning	0	0	0	
Turn-Over	0	0	0	
Design Build Subtotal	17	80	108	
Operations	0	0	0	
Total	17	80	108	
Schedule Breakdown By Phase (Real Dollars)				
	P10 Impact (\$)	P70 Impact (\$)	P90 Impact (\$)	
Planning	\$ -	\$ -	\$ -	
Design	\$ 808,302	\$ 4,244,211	\$ 4,486,154	
Construction	\$ 1,571,698	\$ 6,955,789	\$ 10,633,846	
Commissioning	\$ -	\$ -	\$ -	
Turn-Over	\$ -	\$ -	\$ -	
Design Build Subtotal	\$ 2,380,000	\$ 11,200,000	\$ 15,120,000	
Operations	\$ -	\$ -	\$ -	
Total	\$ 2,380,000	\$ 11,200,000	\$ 15,120,000	

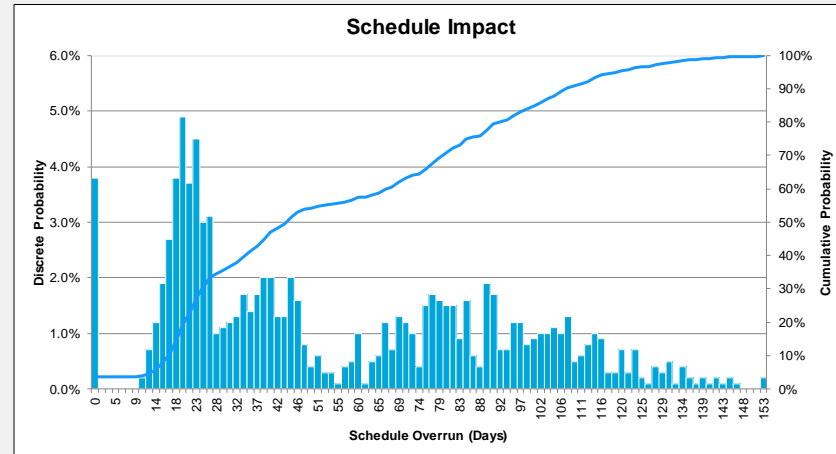


Figure 9: Risk Identification and Qualification Assumptions (PSC Operations Phase Risks)

1.Risk Identification						2.Qualitative Risk Assessment				
Risk Number	Risk Category	Impact Phase	Risk Type	Description	Consequence of Risk	Probability Rating	Cost		Schedule	
							Consequence	Risk Rating	Consequence	Risk Rating
Technical Risks										
1	Availability	Operations	Threat			4	3	Medium	1	Low
2	Operations	Operations	Threat			5	2	Medium	1	Low
3	Tolling	Operations	Threat			2	4	Medium	1	Low

Figure 10: Risk Quantification and Allocation Assumptions (PSC Operations Phase Risks)

3.Quantitative Risk Assessment									4.Allocation & Mitigation		
Probability Percentage	Schedule Impact (days)				Cost Impact (\$)				Risk Allocation (%)		Risk Mitigation
	Distribution	Min	Most Likely	Max	Distribution	Min	Most Likely	Max	Public	Private	
65%					Triangular	\$ 2,000,000	\$ 4,000,000	\$ 5,000,000	0%	100%	
75%					Triangular	\$ 1,000,000	\$ 2,000,000	\$ 3,000,000	0%	100%	
15%					Uniform	\$ 10,000,000		\$ 20,000,000	0%	100%	

Figure 11: Table 5 Cost Impact Outputs (PSC Operations Phase Risks)

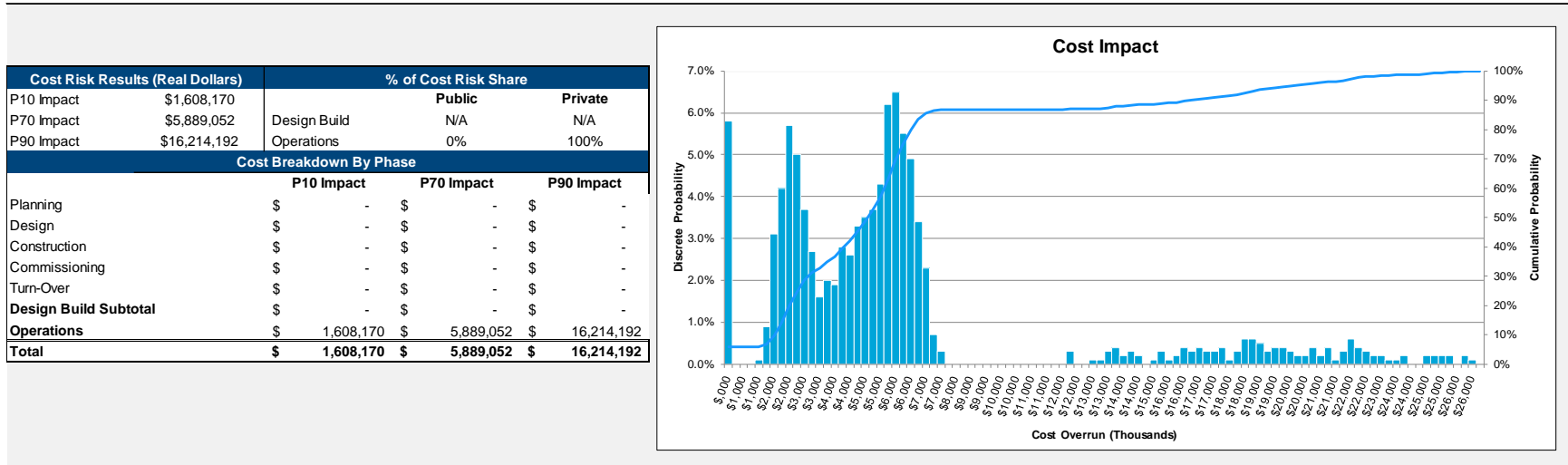


Figure 12: Risk Quantification and Allocation Assumptions (P3 Option Operations Phase Risks)

3.Quantitative Risk Assessment									4.Allocation & Mitigation		
Probability Percentage	Schedule Impact (days)				Cost Impact (\$)				Risk Allocation (%)		Risk Mitigation
	Distribution	Min	Most Likely	Max	Distribution	Min	Most Likely	Max	Public	Private	
50%					Triangular	\$ 1,500,000	\$ 2,000,000	\$ 2,500,000	0%	100%	
70%					Triangular	\$ 800,000	\$ 1,600,000	\$ 2,400,000	0%	100%	
10%					Uniform	\$ 8,000,000		\$ 16,000,000	0%	100%	

Figure 13: Table 5 Cost Impact Outputs (P3 Options Operations Phase Risks)

