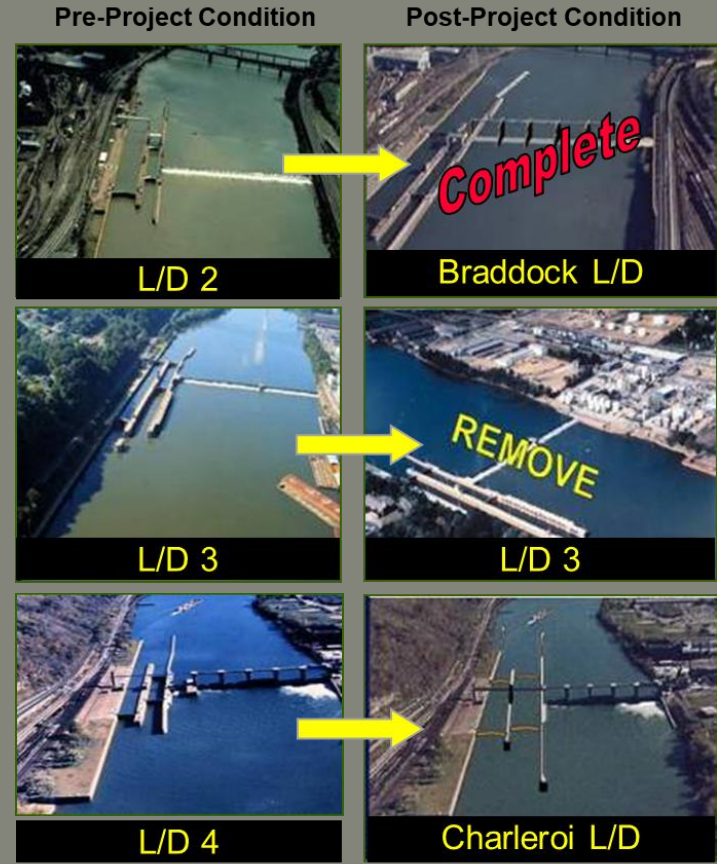


Lower Monongahela River 2-3-4 Project Update Inland Waterways Users Board Meeting No. 91

FOR Mr. Steve Fritz
MEGA Program Manager
Pittsburgh District
Great Lakes and Ohio River Division
23 May 2019



"The views, opinions and findings contained in this report are those of the authors(s) and should not be construed as an official Department of the Army position, policy or decision, unless so designated by other official documentation."

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Lower Mon Bottom Line Up Front

✓ Current Schedule: **On Schedule**

- ▶ **June 2023** (Early Project Operational, 90% benefits)
- ▶ **January 2024** (Early Project Complete)

✓ Current Cost: **On Budget**

- ▶ TEP – Total Estimated Price, assuming efficient funding, at **\$1.09 Billion**, **\$1.23 Billion** including all contingencies.

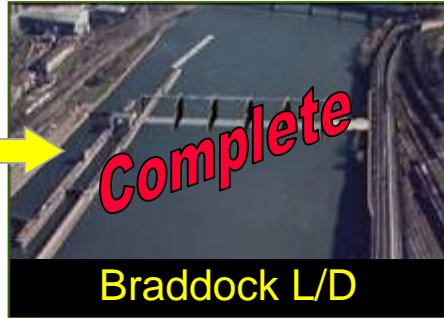
✓ Keys:

1. **FY 2020 President's Budget for \$111 Million (50%/50% with IWTF).**
2. **River Chamber Completion Options 4 & 5 Award FY 2019**
3. Charleroi Stilling Basin awarded 30 Oct 2018 (FY 2019).
4. Continue to investigate alternatives to reduce the project's critical path.

Lower Mon - Project Overview

Pre-Project Condition

Post-Project Condition



Major Project Features

- New Dam at Braddock
- New Locks at Charleroi
- Dredging
- Removal of Locks and Dam 3
- Relocations

Financial

- 902 Limit: \$1.76 Billion
- Current Estimate at Completion \$1.09 Billion, including reasonable contingencies *1

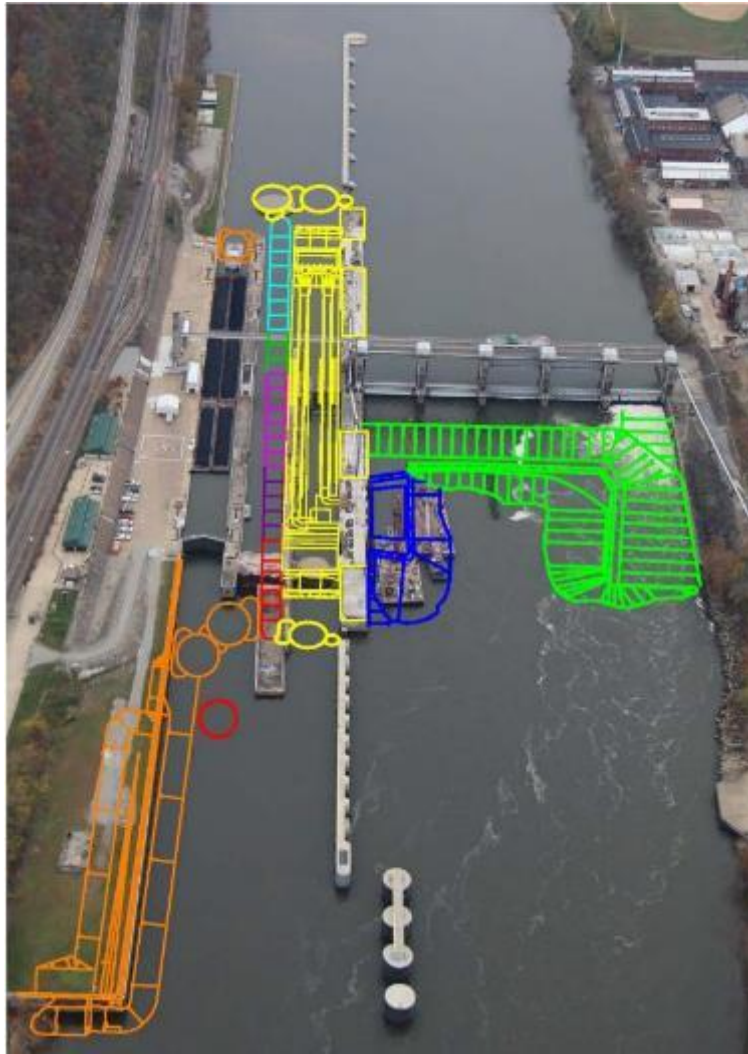
*1 does not include Land Chamber nor Port Perry Bridge

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Lower Mon - Project Schedule

Major Feature Construction	Last Reported Completion (Nov 2018)	Revised
Charleroi M22-M27	Jan 2020	Jun 2020
Charleroi Dam Stilling Basin	Nov 2022	
Charleroi River Chamber Completion (RCC)	May 2023	Oct 2023
Dredging Pool 3	TBD	
Relocations	Variable	
Lock and Dam 3 Removal	May 2023	Oct 2023

Lower Mon – Charleroi Ongoing / Pending Construction Plan



Description	Last Reported Completion	Current Completion (FY19 Work Plan)	Previously Planned Award	Current Planned Award	Option Expires	% Complete
M22-M27	2020	Jan 2020	Completed	Aug 14 A	NA	75%
RCC Base	2023	May 2023	Completed	Sep 15 A	NA	95%
RCC Opt 1	2023	May 2023	Completed	Aug 17 A	NA	24%
RCC Opt 2	2023	May 2023	Completed	Aug 17 A	NA	11%
RCC Opt 3	2023	May 2023	Completed	Sep 18 A	NA	1%
RCC Opt 4	2023	Nov 2022	Dec 18	Jun 19	31 Mar 20	NA
RCC Opt 5	2023	Oct 2023	Nov 20	Aug 19	31 Mar 21	NA
Stilling Basin	2021	Nov 2022	Sep 18	Oct 18 A	NA	5%

Notes:

- Risk informed RCC completion is 2027

- Remaining project features not shown on this slide:

- Dredging Award Task Order 2 Sept 2018
- Pool Clearing (FY21 planned award)
- Lock and Dam 3 Removal (FY21 planned award)
- Relocations
- Dredging Task Order 3

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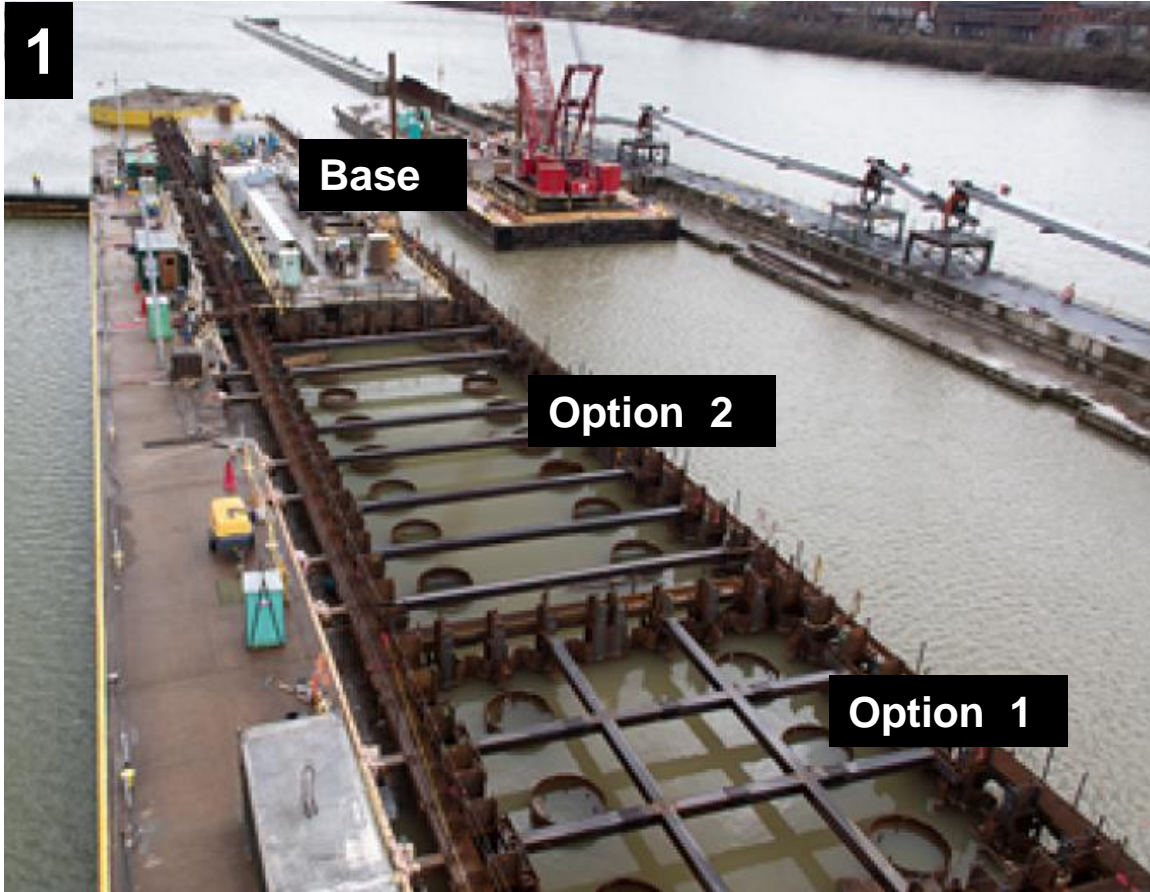
Charleroi Construction Images



1 –M22-M27 Contract, M27 Drilled Shaft Construction
2 –RCC Contract, Base, Cofferdam Planned Flooding

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Charleroi Construction Images



1 – RCC Contract, substantially completed Base and Drilled Shafts in Options 1 & 2
2 – M22-M27 Contract, M27 Drilled Shaft Construction

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Charleroi Overall Construction Footprint



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Locks and Dams 2, 3, and 4, Monongahela River, PA

Current Project Estimate *1: \$1.23B (\$2.76B)	ARRA	CG	IWTF	Total
Allocations through FY2014:	\$68,402,740	\$281,175,646	\$281,175,652	\$630,754,038
FY15 Allocation:	(\$141,537)	\$28,015,000	\$28,015,000	\$55,888,463
FY16 Allocation:	NA	\$29,450,000	29,450,000	\$58,900,000
FY17 Allocation:	NA	\$41,005,000	\$41,005,000	\$82,010,000
FY18 Allocation:	NA	\$48,150,000	\$48,150,000	\$96,300,000
FY19 Allocation:	NA	\$44,606,606	\$44,606,606	\$89,213,213
FY20 Budget:	NA			TBD
Total Allocations to Date:	\$68,261,203	\$472,402,253	\$472,402,259	\$1,013,065,714
Remaining Balance:		\$110,384,643	\$110,384,643	\$220,769,286
Remaining Balance Change From Last Meeting:				\$213,213

Changes: Emsworth and other reprogramming (\$213,213)

Funding Overview

- Original Authorized Cost: \$556M
- 902 Limit: \$1.76B
- ARRA Funding (FY09-FY15): \$68.3M
- Engineering & Design Cost: \$694M*2
- Supervision & Admin Cost: \$183M*3
- Mitigation: \$12M
- Fully Funded Estimate: \$2.76B

Next Steps

- **Award RCC Option 4 and Option 5 – FY 19 (June/Aug respectively)**

Current Status of the Project

- **Charleroi M22 – M27 – Preparing to place the first mass lift in M23**
- **Charleroi RCC – Option 1 & 2 Drilled Shafts placed & preparing M11 for placement of tremie seal**
- **Pool 3 Dredging 37% complete**

*1. Total Project Cost update – May 2018. Cost for 90% of project benefits increased from \$1.22B to \$1.23B. Total project cost increased from \$2.73B to \$2.76B.

*2. \$694M includes all Engineering & Engineering During Construction, including \$473M for the Charleroi Land Chamber, \$378 million of which is inflation.

*3. \$183M includes all construction contract Supervision and Administration, including \$120M for the Charleroi Land Chamber, \$102 million of which is inflation.

Locks and Dams 2, 3, and 4, Monongahela River, PA

Schedule of Remaining Work	Design Initiated	Contract Award	Construction Complete *2	Project Benefits*3	Capitalized Cost Closeout*3
Charleroi River Wall	1-Oct-95	27-Sep-04	30-May-16	2023	2025
Charleroi Emptying Basin	1-Oct-95	30-Sep-13	11-Nov-15	2023	2025
Charleroi River Chamber (M22-M27)	1-Oct-95	15-Aug-14	FY 2020 S	2023	2025
Charleroi Dam Stilling Basin	1-Oct-95	30 Oct -18	FY 2022 S	2023	2025
Charleroi River Chamber Completion	1-Oct-95	16-Sep-15	FY 2023 S	2023	2025
L/D 3 Removal	2020 S	2021 S	FY 2024 S	2023	2025
Dredging	1-Oct-95	29-Sep-17	FY 2020 S	2023	2025
Municipal Relocations *1	1-Oct-95	Multiple	Multiple	NA	2025

- * 1: To complete all municipal relocations, multiple relocation agreements are required.
- * 2: Dates are achievable based on the most efficient funding profile (early schedule).
- * 3: Project benefit and close out dates are based on the most efficient funding profile & breaching of Dam 3. Early contract completion for Dam 3 removal extends into 2023.

Actual

"S"= Scheduled

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Lower Monongahela River Project Time and Cost Scorecard



Expenditures

	No Contingency	Contingency Included	31 Mar 19
Planned (BCWS)	\$819.5M	\$703.9M	
Earned (BCWP)	\$748.3M	\$810.4M	
Actual (ACWP)	\$762.1M	\$762.1M	
	CPI = 0.98	CPI 1.06	

BCWP: Reports the value (based on % complete) of the work performed to date.

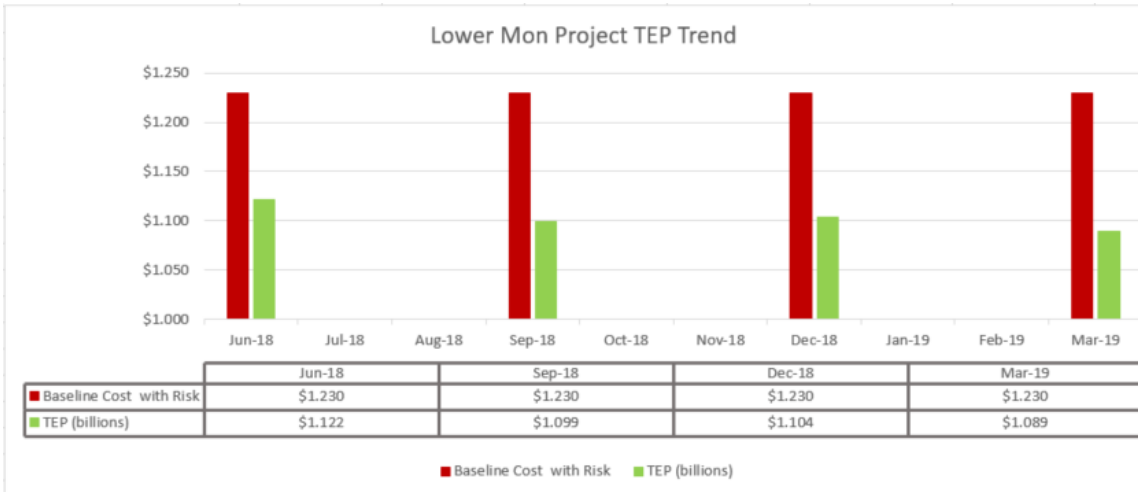
Target:

Actual as compared to Planned: (<1% = Green); (>1% and <3% = Yellow); and (>3% = Red)

Values shown reflect project sunk cost of \$550.6M thru FY 2014.

EAC = \$1.09 B TPC = \$1.23 B

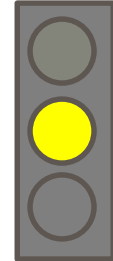
Budget



Schedule

(Baseline)/(Current Early) 31 Mar 19

Operational (Realize over 90% of project Benefits) 2027 / 2023
Project Complete 2029 / 2028



Major Activity Schedule

Activity	Baseline	Current
Stilling Basin Award	30 Sep 2018	30 Oct 2018 (A)
RCC Option 4 Award	31 July 2019	31 Jun 2019
RCC Option 5 Award	30 Sep 2019	30 Aug 2019
Dredging T.O.3	TBD	TBD

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Efficient Funding Profile

FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total
\$59.0M	\$15.0M	\$37.0M	\$0	\$0	\$111.0M *
\$46.8M	\$8.0M	\$30.4M	\$0	\$0	\$85.2M **

* \$111.0M represents the cost to complete with “reasonable” as opposed to “full” contingency.

** \$85.2M represents an additional contingency reduction plan that was being considered.

Profile Assumptions/Comments:

1. Efficient funding at these funding levels
2. Reasonable, but not all, contingency is included
3. Contingency
 - a. Contingency on the \$90% benefits: ~~ \$151M (FY 2014)
 - b. Used/Pending: **\$32.7M**
 - c. Remaining: **\$118.2M**
 - d. Expected/Reasonable Remaining: ~~\$45-\$55M

Discussion



Ariel view of Charleroi



Pool 3 Dredging



Aerial view of the Victory Hollow fill placement site

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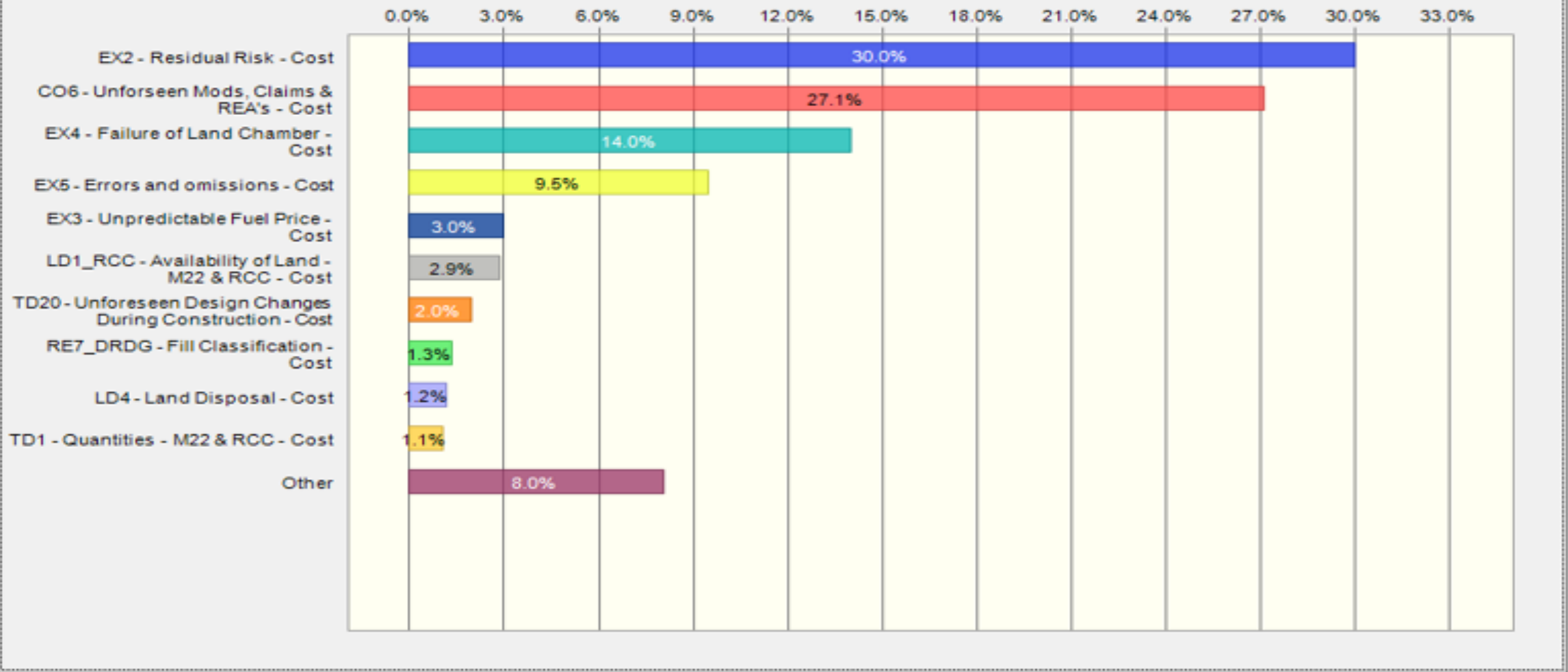
Lower Mon – Back Up Slides

Risk Bar Charts

Project Cost Risk Factors

Contribution to Variance View

Sensitivity: All Risks - Single Forecast



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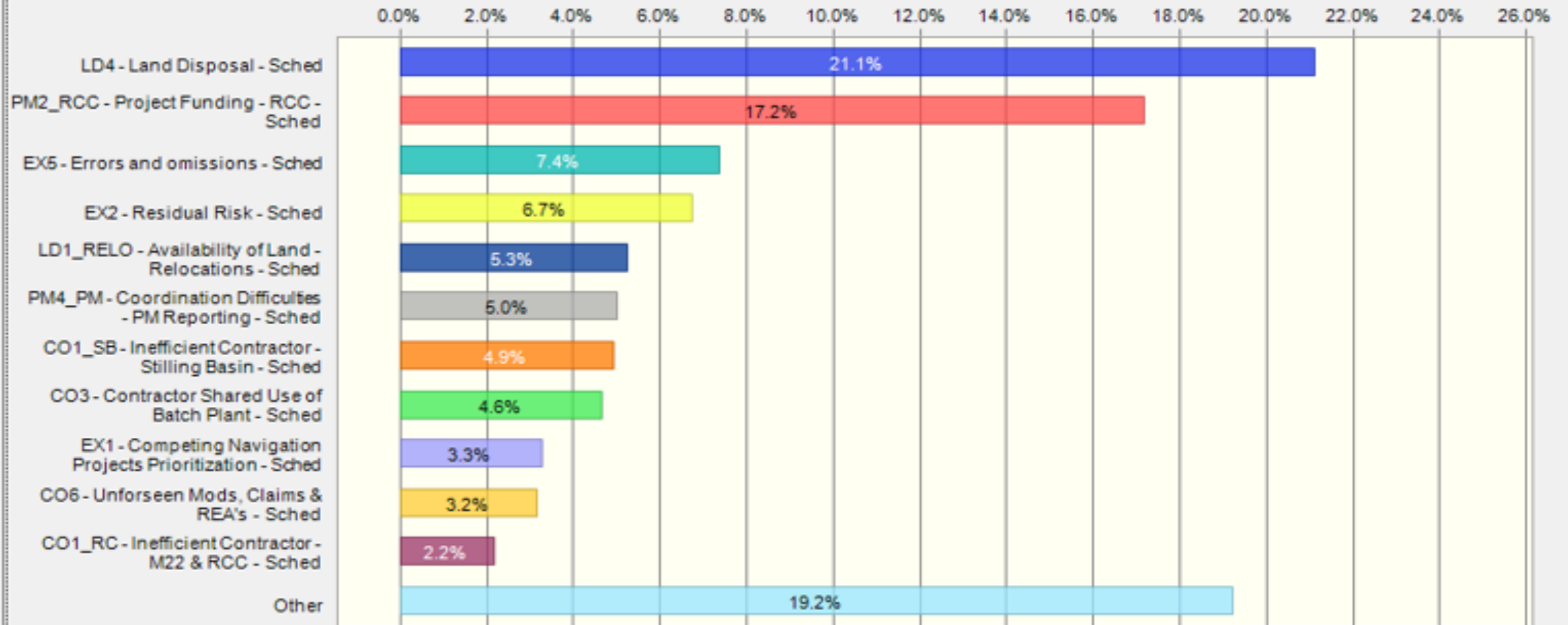
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Project Schedule Risk Factors

Contribution to Variance View

Sensitivity: All Risks - Single Forecast



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