Annual Program Evaluation Follow-Up

(Staff to report back in 60 days with its first Action Plan)

1. *Establish specific measures to ensure project scope growth is being managed and controlled during all phases of project delivery, not just Program Management.*
2. *Develop a breakdown of specific third party and utility requirements that contribute the most to growing project costs and the steps being taken to amend or alter these requirements.*
3. *Detail the steps being taken to both evaluate and revise Metro Rail System Design Criteria to adequately balance system safety with project cost efficiency.*

Metro

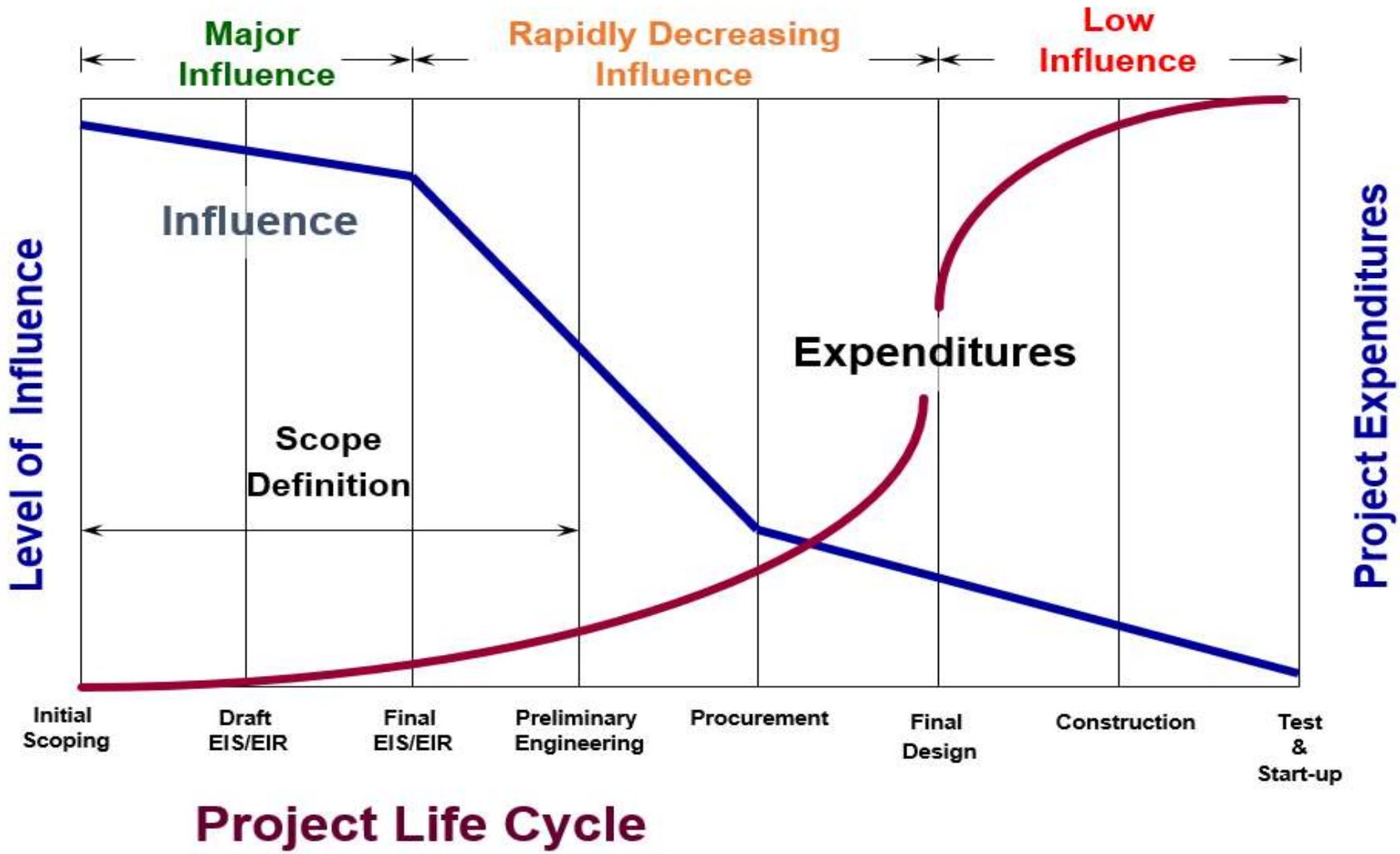
Life Cycle Overview

- Three key departments engaged with participation level changing by phase (i.e., Planning, Program Management, Operations)
- Department collaboration on scope, cost, schedule and risk is essential throughout the project life cycle
- Program-wide processes, procedures and project phase appropriate data informs stage gate decisions
- Approach entails commitment of Metro resources and knowledge
- Success also requires engagement from Metro Board and local stakeholders
- Pre-determined stage gates support reporting and cost and schedule mitigation efforts prior to next stage
- Decision-making at all stages of project development should consider full life cycle implications, with understanding that estimates (cost, schedule, etc.) become more accurate as design progresses
- Continuous configuration management over full project lifecycle improves consistency of reporting and decision making at key stages

ITEM 1

Establish specific measures to ensure project scope growth is being managed and controlled during all phases of project delivery, not just Program Management

Opportunity to Influence Project Cost Outcomes



Capital Project Lifecycle – Typical Stage Gate Review Process *

Countywide Planning and Development

Program Management

Operations

INITIATE	PRELIMINARY ENGINEERING & ENVIRONMENTAL APPROVAL		EARLY WORKS	PROCUREMENT	DESIGN & BUILD	OPERATE
STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5	STAGE 6	STAGE 7
Project Initiation	**Identify Preferred Alternative & Begin Preliminary Design**	**Environmental Clearance, Prepare for Construction**	**Early Works and Right-of-Way Acquisition**	**Procurement for Construction**	**Final Design, Construction, Testing and Commissioning**	**Operations & Project Closeout**
Define initial scope, cost and schedule Initial scope evaluated in programmatic environmental impact statement Service planning **Risk Assessment** **Scope, cost, schedule**	15% Preliminary Engineering Draft Environmental Impact Report (EIR/EIS Evaluate Range of Alternatives **Model operational scenarios** Identify Preferred Alternative **Risk Assessment** **Scope, cost, schedule**	Final (EIR/EIS) Record of Decision - Environmental Clearance Up to 30% Preliminary Engineering **Risk Assessment** Develop Procurement/Delivery Plan Right of Way Mapping Identify Utility Relocations **Scope, cost, schedule**	Right-of-Way Acquisition Third party agreements - railroads, local jurisdictions, utilities Environmental permits - federal agencies **Risk Assessment** **Scope, cost, schedule**	Request for Qualifications/Proposals Select contractor/award contract Issue Notice to Proceed Finalize right-of-way, third party agreements, permits, and environmental mitigation **Risk Assessment** **Scope, cost, schedule**	Contractor completes final design Construction initiated Change order management **Risk Assessment** Construction completed Project tested and commissioned Substantial completion milestone Ready for track & systems **Scope, cost, schedule**	Transfer completed project from contractor to Agency Operate and maintain in-service asset Detailed project documentation complete

*Process shown correlates to a design-build project delivery model. Recommendations that follow would also apply to other delivery methods.

High Level Recommendations (Life Cycle Approach)

Establish specific measures to ensure project scope growth is being managed and controlled during all phases of project delivery, not just program management.

- Identify current best practices and new strategies to embed staff for planning, program management and operations in all stages of project delivery
- Acknowledge that estimates of project schedule and cost become more accurate as project development advances. Report cost estimates in ranges, especially in early phases of project development when uncertainty is greatest
- Extend project readiness review procedures across all lifecycle phases, including at various planning, engineering, and operational milestones
- Assure configuration management process extends to cost and schedule variances from initial baseline plans
- Partner with jurisdictions and third parties to build consensus and buy-in on scope requirements, to freeze project designs earlier
- Conduct routine board workshops to assure transparency and full understanding of scope alterations and cost implications
- Allocate staff and consultant resources to provide support

ITEM 2-A

Develop a breakdown of specific third party and utility requirements that contribute the most to growing project costs and the steps being taken to amend or alter these requirements → **Third Party and Utilities**

Introduction and Background

Average Cost of Utilities:
10% of the LOP

Cost of Third Party Work:
Between 7-12% of the LOP
(depending on project type)

Cost Drivers for Utilities and Third Parties include:

- Need authority for self-permitting
- Need Master Cooperative Agreement (MCA) that drives accountability
- Need approved standards prior to bid issuance
- Enforce betterment policies
- Resource challenges and minimal work hours

Third party and Utilities – Cost Drivers and Mitigation Measures

Third Party/Utilities Cost Divers	Third Party/Utilities Mitigation Measures

• Execution of agreements later in life cycle
• Current agreements do not drive desired performance and accountability as follows:
  • Changing standards
  • Lack of adherence to timelines
  • Late design change requests
• Imposition of unexpected work hour restrictions by third parties
	• During project environmental clearance
	  • Engage third parties / utilities early and often
	  • Finalize third party / utility agreements
	  • Confirm applicable standards
	  • Implement design freeze
	  • Agree upon streamlined / expedited processes
	  • Initiate subsurface exploration
	• Beginning with project early works
	  • Expand subsurface exploration
	  • Minimize changes relative to design freeze and enforce betterment policies
	  • Adhere to agreed upon review and approval processes

ITEM 2-B

Identify largest construction cost drivers that contribute the most to increased project costs and the steps being taken to mitigate → **Differing Site Conditions – Geotechnical and Environmental**

Environmental and Geotechnical Cost Drivers - Introduction and Background

Cost of Environmental and Geotechnical Work:
Approximately 10 - 13% of the LOP
(inclusive of permitting, construction compliance, and differing site condition changes and claims)

- Differing Site Conditions (DSC) are the primary cost driver for construction contract changes.
- Geotechnical investigations occur during Environmental Planning and Preliminary Engineering project phases with some detailed geotechnical investigations deferred to the Final Design and Construction Phase.
- Environmental issues are well known to impact construction costs, and to be relatively unanticipated. In some cases, this is due to California's position on the leading edge of rapidly evolving environmental regulations. In other cases, the impacts are due to a lack of awareness (on the part of planners, designers, and contractors) of the degree to which environmental compliance and mitigation requirements can extend beyond the specific issues encountered, and their cascading effects on cost and schedule.

Environmental/Geotechnical Cost Drivers and Mitigation Measures

Environmental/Geotechnical – Cost Drivers	Environmental/Geotechnical – Mitigation Measures
• Unforeseen/undefined below ground conditions • Unknown underground obstructions including abandoned oil wells along with buried structures for piles, building foundations, utilities, concrete drainage structures • Environmental conditions such as hazardous/contaminated materials, and presence of cultural or paleontological resources • Waste and wastewater management • Subsurface conditions and their flow for groundwater and gases • Demolition and abatement of structures • Schedule impacts from regulatory agency involvement	• Perform initial environmental and geotechnical investigations for all projects and property acquisitions (Stage 2 Preliminary Engineering) • Expand investigations during early works stage (Early Works - Stage 4) • Perform additional investigation, early remediation, mitigation, and abatement activities ahead of construction where feasible (Early Works - Stage 4) • Early engagement with various oversight agencies to secure necessary permits and agreements (Early Works - Stage 4) • Provide detailed guidance to Contractors and assist with logistical efficiency with respect to environmental and geotechnical concerns (Design & Build - Stage 5)

ITEM 3

Detail the steps being taken to both evaluate and revise Metro Rail System Design Criteria to adequately balance system safety with project cost efficiency.

Metro Rail Design Criteria - Introduction, History, Content

- Developed over the past 20+ years for design of light and heavy rail facilities
- All major Metro departments including, Safety and Risk Assessment, Quality, Planning, Operations and Engineering are signatory to content and requirements of MRDC
- All changes must be approved by the signatory departments before using these requirements
- Mainly uses/references the various requirements of national design codes for each discipline where available and applicable
- Aims to satisfy the pertaining national state and local mandates while using industry best practices to suit Metro's specific requirements. Not meeting these mandates would translate into a major liability for Metro.
- There are only handful of requirements that exceed code mandates to meet Metro's specific requirements
- MRDC prescribes the minimum requirements for the design of transit rail facilities that will provide for optimum life cycle costs
- Requirements are updated on a regular basis based on an internal identified need or code mandate
- Valid deviations to the MRDC requirements are entertained and approved on a project basis and agreed and signed off by all the signatory departments

Metro Rail Design Criteria –Mitigation Strategies

Two Primary Mitigation Strategies

- Perform an internal assessment of opportunities to adjust requirements
- Leverage alternative delivery contracts, specifically East San Fernando Valley, as an opportunity to further innovations that could result in cost reductions

- Overarching Assessment Assumptions:
  1. Revisions to MRDC would not compromise safety or adversely impact operations and maintenance or negatively impact customer experience.
  2. Fire Life Safety Design Criteria will be included in this review

Metro Rail Design Criteria - Plan for Cost Saving Measures

- Obtain input from the mega projects that are currently under construction as to which items related to Metro Rail Design Criteria for LRT and HRT may be a candidate for capital cost savings
- Secure funds and Engage the services of an outside consultant to review and benchmark
- Form a multidisciplinary team consisting of internal Metro Staff and outside consultant discipline experts
- Obtain the design criteria of three other transit rail peer agencies. Choose peer agencies that provide similar type of transit rail services as LA Metro
- Identify items that will provide capital cost savings without compromising safety or adversely impact operations and maintenance or increase life cycle costs.
- Coordinate with all the signatories to Metro Rail Design Criteria including Planning, Operations, Safety, and Quality and follow the Metro Systemwide Baseline Change Notice procedure to implement the identified changes

Metro Design Criteria – Using Alternative Project Delivery/Progressive Design Build to Analyze Cost

- Progressive Design Build (PDB) is a qualifications-based project delivery system that transparently builds up the project scope and cost with our selected contractor in a transparent, collaborative, and risk-informed manner
- During the cost build up process of a PDB project, the owner is afforded visibility and influence into all project costs, and is in position to analyze all project requirements in relation to tradeoffs between initial capital expenditures vs. lifecycle operational costs
- The East San Fernando Valley (ESFV) Light Rail Transit (LRT) project is Metro's first PDB contract for the Measure M rail expansion program and will give Metro true visibility into the relative cost of MRDC requirements. This process allows staff and the contractor team to analyze direct capital expenditure against the operational lifecycle cost, and will give us additional data in regard to the relative cost of the MRDC requirements, as described in the next slide
- This cost data can be used to further inform the MRDC studies described in the prior slide
- Metro's approach to PDB and transparent cost negotiation is generally consistent with other transit agencies engaged in alternative project delivery, such as DART, SANDAG, and VTA, as examples.

Metro Design Criteria – ESFV PDB Contract

SCOPE

The initial PDB Phase I scope for ESFV will contractually require an initial costing and open-books review of project estimates by the private sector contractor as follows:

1. Pricing the project as drawn in the contract documents and fully compliant with the MRDC; and

2. Bringing innovative ideas and technology solutions that result in cost and schedule reduction strategies that may include deviations from the MRDC

These tasks will be instrumental in our evaluation of MRDC cost vs. lifecycle operational cost, as we will know the relative up front and long term costs of price reduction ideas derived from deviations to the MRDC.

Conclusion and Next Steps

Initial Action Plan identified steps to help control project costs for the following:

1. Alleviate project scope growth
2. Minimize third-party and utility related cost increases
3. Reduce contract changed conditions for ground conditions and soils
4. Revise Metro Rail System Design Criteria

Short Term

- Continue alternative delivery roll-out including mitigation measures
- Deploy focused process area tiger teams
- Update processes / procedures / associated contract documents
- Assess staff and consultant resources required
- Report back to board within 90 days with detailed mitigation plan

Long Term

- Continue to monitor scope control opportunities
- Continue to increase focus on program and project cost/schedule risk