



Rough Order of Magnitude Estimator

SEC PMO, in partnership with Robbins-Gioia

2006



Agenda

- **Introduction & Purpose**
- **Data Flow**
- **Project Attributes**
- **ROM Cost Estimate – What it looks like**
- **Calculating a ROM Cost Estimate**
- **ROM Breakdown**
- **Cost Breakdown**
- **Contact Information**
- **Q&A**



Introduction & Purpose

Introduction

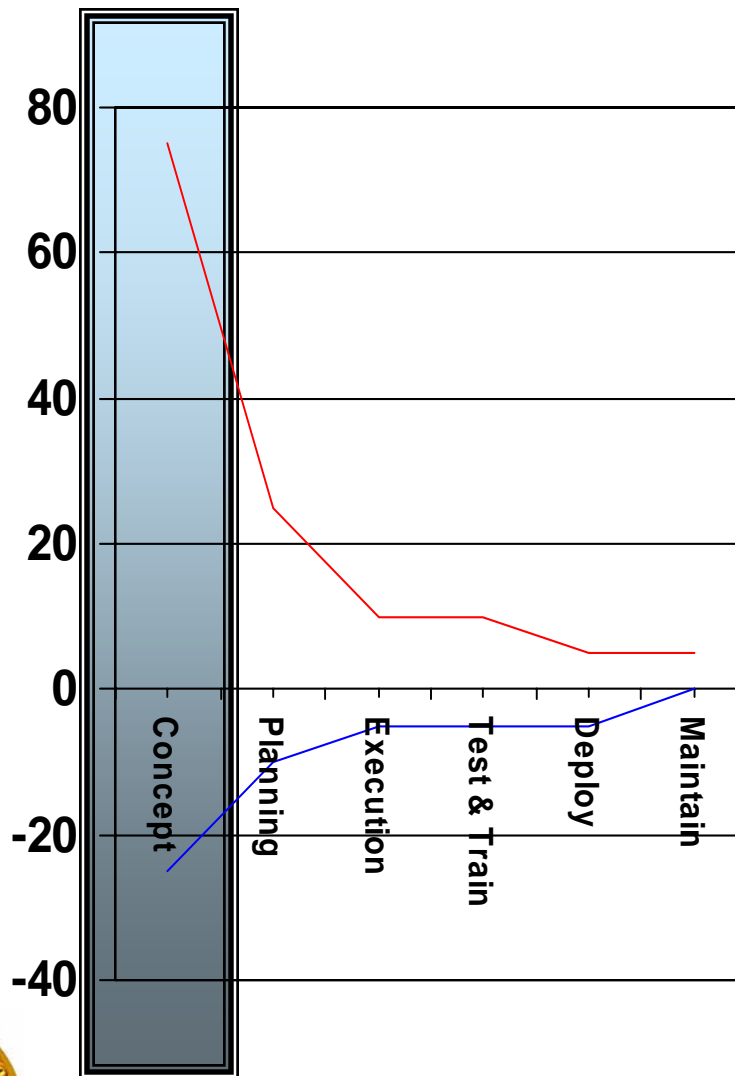
- Project teams need the capability to generate a Rough Order of Magnitude (ROM) during the initiation phase of a project.
- The ROM allows for the Capitol Planning Committee (CPC) to gain a broad sense of a project's cost
- The buffer or margin for error for a ROM estimate is -25% to +75% of the estimated value.

Purpose

- A Rough Order of magnitude (ROM) is calculated at the initiation (conceptual) stage of a project for budgetary planning purposes.
- While conducting ROM estimates, the estimator is gaining an understanding of the project needs.
- Also used in the Close Out Report. A ROM is generated for all existing projects and compared to actuals at the completion of the project.



Ranges of Estimates – in Context



PMBok assumes range estimates at various points in SDLC

Budgeting process

- Does not recognize ranges

- Runs 1-2 years ahead of reality

Conflicting interests:

- Pad to avoid failure

- Understate to avoid project disapproval

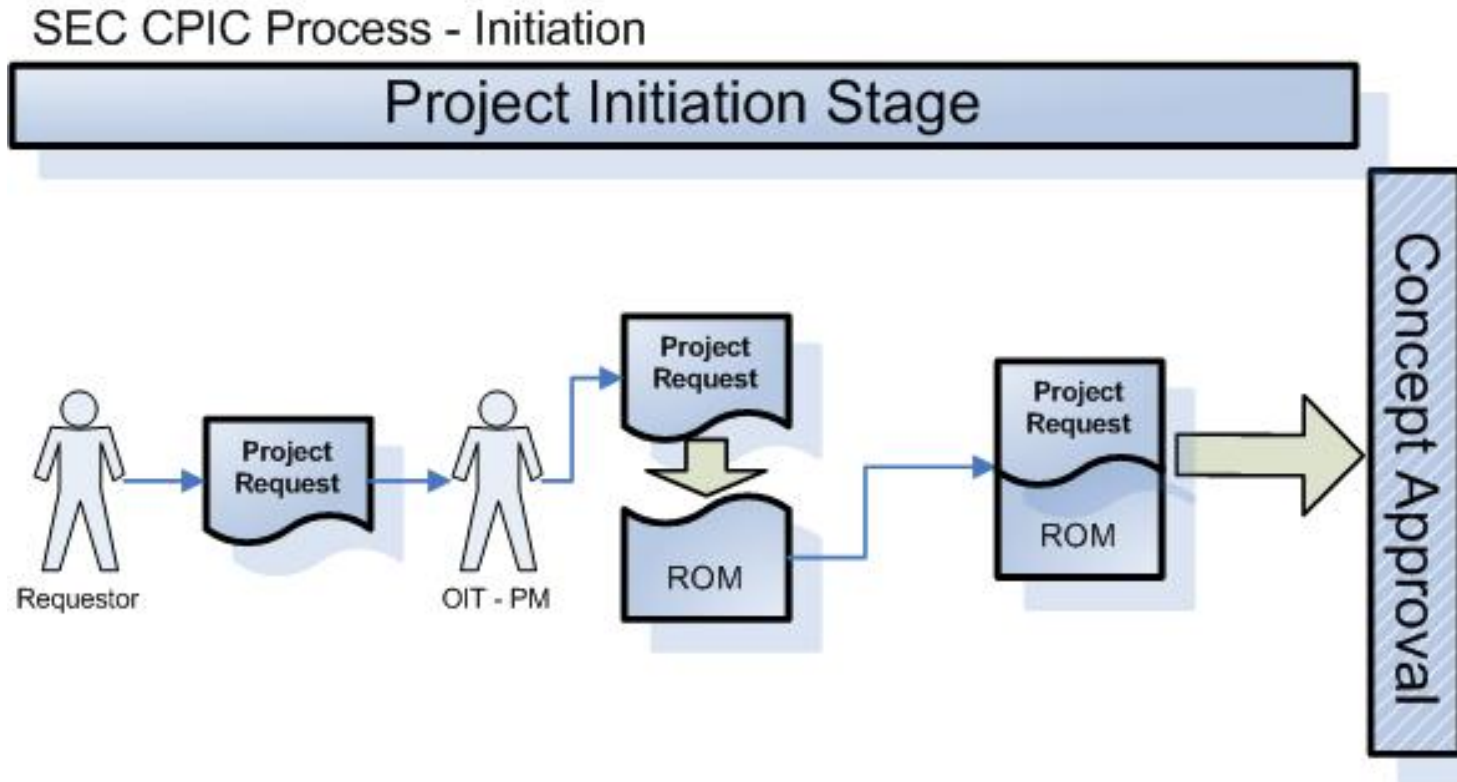
Uncertainty = risk. Recognition is 90% of the battle

Buffers

Program-level unallocated funds



Data Flow



Project Attributes

- **Size** - Defined as the part of the project that identifies the number of offices and the size of offices affected by the investment. [Our latest modification is splitting this into 2 concepts – scope and complexity].
- **Enterprise Storage Impact** - Defined as the part of the project that dictates the amount of storage space required, in terabytes.
- **Hardware** - Defined as a project that includes information technology equipment.
- **Software** – Defined as a project that includes the use of software development, Commercial Off the Shelf (COTS) products, licenses, and interfaces.
- **Services** – Defined as a project that includes support by human capital or Full Time Equivalents (FTE's).
- **Area / Data Center** - Defined as the part of the project that dictates if new or additional physical space is required.



ROM Cost Estimate – What it looks like

Update the cells highlighted in green. All sub-totals will be automatically calculated in the grey cells. The Rough Order of Magnitude total will be calculated in the purple cell.

Rough Order of Magnitude (ROM) Cost Estimate

Investment: Test Project As of: 2/2/2005
 Prepared By: SEC PM

Select One
 This project affects only one small Program Office: No
 This project affects a large Program Office, but only one: No
 This project affects multiple Program Offices: No
 This project affects Regional/District Offices as well as the SEC HQ: No
 This project affects the SEC Enterprise (all users, all locations): No
 This project affects the SEC Enterprise and calls for Public Access: No

Enterprise Storage Impact	No	Hardware	No	Software	No	Services	No
Amount of Storage	N/A	Complexity	N/A	Complexity	N/A	Complexity	N/A

Area / Data Center	Size Required
	N/A

Hardware ROM Cost	
Hardware ROM	\$0
ROM + Complexity Factor	\$0
Hardware Buffer	0%
+ Buffer	\$0
Hardware ROM Total	\$0

Software ROM Cost	
Software ROM + Complexity Factor	\$0
Software Buffer	0%
+ Buffer	\$0
Software ROM Total	\$0

Services ROM Cost	
Services ROM	\$0
ROM + Complexity Factor	\$0
Services Buffer	0%
+ Buffer	\$0
Services ROM Total	\$0

Security - Hardware	10%
Security - Software	20%
Steady State - Maintenance	25%
Steady State - Operations	50%

ROM Breakdown	Category	Cost
	Hardware	\$0
	Software	\$0
	Services	\$0
	Enterprise Storage Impact	\$0
	Area / Data Center	\$0
	Security - Hardware	\$0
	Security - Software	\$0
	Steady State - Maintenance	\$0
	Steady State - Operations	\$0
	ROM Cost Estimate	\$0

Project Cost Breakdown (w/o Buffer & Steady State Costs)	
Project Category	Cost
Hardware	\$0
Software	\$0
Services	\$0
Storage Impact	\$0
Facility	\$0
Total	\$0

Buffer Total: \$0

Lifecycle Breakdown			
Phase	%	Cost	Buffer
Planning	0%	\$0	\$0
Analysis	25%	\$0	\$0
Solution	45%	\$0	\$0
Test/Training	10%	\$0	\$0
Deployment	20%	\$0	\$0
ROM Cost Est.	100%	\$0	\$0

Total Cost through Deployment by Lifecycle Phase (Cost + Buffer)		
Phase	Total	Cumulative
Planning	\$0	\$0
Analysis	\$0	\$0
Solution	\$0	\$0
Test/Training	\$0	\$0
Deployment	\$0	\$0

Steady State Total (Security / Operations / Maintenance): \$0

ROM Cost Estimate			
Project Category	Buffer	Steady State	Total
\$0	\$0	\$0	\$0

Decide how much you can accomplish and/or afford in this FY

ROM Cost Estimate / Breakout / Maintenance

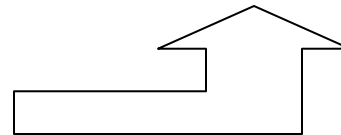
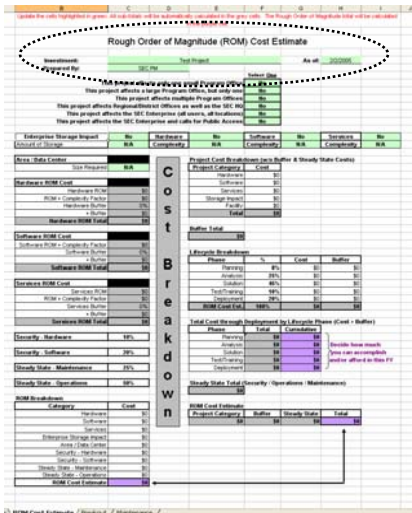


Calculating a ROM Cost Estimate (cont.)

STEP 1 – ROM Cost Estimate Tab: *General Information*

- Complete “Investment Name”, “As Of” date and “Prepared By”

Rough Order of Magnitude (ROM) Cost Estimate			
Investment:	RG		As of: 2/2/2005
Prepared By:	SEC PM	Select <u>One</u>	

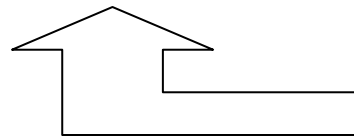


Calculating a ROM Cost Estimate (cont.)

STEP 2 – ROM Cost Estimate Tab: *Project Size/Impact*

- The number of offices and the size of offices affected by the investment should be used to answer the question
- Only **one** response should be selected as “Yes”

	Select <u>One</u>
This project affects only one small Program Office	Yes
This project affects a large Program Office, but only one	No
This project affects multiple Program Offices	No
This project affects Regional/District Offices as well as the SEC HQ	No
This project affects the SEC Enterprise (all users, all locations)	No
This project affects the SEC Enterprise and calls for Public Access	No



Calculating a ROM Cost Estimate (cont.)

STEP 2 (cont.)–Project Size/Impact Definitions

Size	Definition
Small Program Office	A small program office is any Office within SEC such as the Office of Information Technology or the Office of the Secretary.
Large Program Office	A large program office is any Division within SEC such as the Division of Enforcement or the Division of Market Regulation.
Multiple Program Offices	The project affects multiple program offices only (regardless of size) but not headquarters' offices.
Headquarters and multiple Regional/District Offices	The project includes headquarters and multiple program offices (but not necessary ALL).
SEC Enterprise	The project affects ALL users and locations internal to SEC.
SEC Enterprise & Public Access	The project affects all internal SEC users as well as regulated entities and the public.

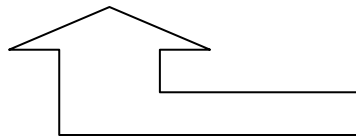


Calculating a ROM Cost Estimate (cont.)

STEP 3 – ROM Cost Estimate Tab: *Enterprise Storage Impact*

- Enterprise storage impact refers to the number of terabytes of data that the project will require.
- This storage is utilized in addition to the storage that is acquired through the purchase of standard hardware servers.

15	Enterprise Storage Impact	Yes
16	Amount of Storage	N/A



Calculating a ROM Cost Estimate (cont.)

STEP 3 (cont.) – *Enterprise Storage Impact Definitions*

Enterprise Storage Impact	Threshold
N/A	No storage impact.
Small	Less than 1 TB
Medium	Between 1 TB and 4 TB
Large	More than 4 TB



Calculating a ROM Cost Estimate (cont.)

STEP 4 – ROM Cost Estimate Tab: *Hardware, Software & Services*

- Hardware - Considered any IT equipment needed for the project.
- Software - Considered computer programs or encoded information needed for the project.
 - If the software attribute is deemed to be difficult a Build vs. Buy analysis may need to be performed to verify if building the software is more cost effective than buying a COTS package that may or may not cover the required functionality.
- Services - Considered human capital or FTE's (labor) associated with a project to provide continued support or produce a given deliverable/product.



Calculating a ROM Cost Estimate (cont.)

STEP 4 (cont.) – Hardware, Software & Services Definitions

Hardware Complexity	Definition
N/A	No hardware is required.
Easy	New hardware required that SEC has experience with or use of existing hardware. No data redundancy required.
Moderate	New hardware not presently in use or the need to set up specialized servers. No data redundancy required.
Difficult	Requires data redundancy, replication, server clustering and aggressive failover requirements in addition to daily back-ups for mission critical systems.

Software Complexity	Definition
N/A	No software is required.
Easy	COTS product installation that requires no modifications or integration with other applications.
Moderate	COTS product installation that requires some modifications or integration with one application or small application development.
Difficult	Requires data redundancy, replication, server clustering and aggressive failover requirements in addition to daily back-ups for mission critical systems.

Services Complexity	Definition
N/A	No human capital is required.
Easy	Carrying out an existing process or making incremental process improvements generally under SEC direction.
Moderate	Requires the development of a new process or the re-engineering of an existing process where best practices are available. Requires a specific range of skill sets.
Difficult	Requires the development of a new process or the re-engineering of an existing process where best practices are not available (i.e. a process that has not been done before) Requires broad and specific range of skill sets.

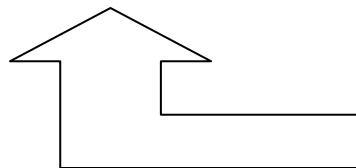


Calculating a ROM Cost Estimate (cont.)

STEP 5 – ROM Cost Estimate Tab: *Area / Data Center*

- An area is described as a distinct part or section of a building set aside for a specific function (training room, test lab, etc.).
- A data center is a facility used to house mission critical computer systems and associated components.

Area / Data Center	
Size Required	N/A



Rough Order of Magnitude (ROM) Cost Estimate

Needs/Programs: [Details]

Equipment: [Details]

Software: [Details]

Services: [Details]

Cost Breakdown

Summary: [Details]



Calculating a ROM Cost Estimate (cont.)

STEP 6 – *Area / Data Center Definitions*

Area / Data Center	Definition
N/A	No additional space is required.
Small	An additional area (approx. 400 sq. ft.) is required. Possible uses would be a training room, work area, development lab, large storage area, etc.
Medium	An additional area or building (between 400 sq. ft. and 1200 sq. ft.) is required.
Large	An additional area or building (more than 1200 sq. ft.) is required.



Calculating a ROM Cost Estimate (cont.)

STEP 7 – ROM Breakout Tab

- Defaults values entered into this tab based on the responses to questions on the Cost Estimate tab.
- If additional more specific investment information is known, then certain fields may be updated.
 - For hardware costs, quantities and associated installation costs can be updated (light green cells).
 - For software the costs for Buy / Build, Licensing and Interfaces can be updated (light green cells).

This is the cost breakout page for the ROM Cost Estimator. Update the cells highlighted in green. These values are used to generate the ROM.

ROM Cost Estimator Breakout Page									
Hardware		Quantity	Cost/Unit	Installation	Total				
Application Server	0	\$0	\$0	\$0	\$0				
Storage Server	0	\$0	\$0	\$0	\$0				
Desktop / Laptop	0	\$0	\$0	\$0	\$0				
Network Device	0	\$0	\$0	\$0	\$0				
Printer / Scanner / Fax	0	\$0	\$0	\$0	\$0				
Total Hardware Costs					\$0				
Software		Cost	Total	Size		Licensing - Easy	Licensing - Moderate	Buy / Build	
Buy / Build	\$0	\$0	\$0	This project affects only one small Program Office		\$0	\$0	\$0	\$0
Licensing	\$0	\$0	\$0	This project affects a large Program Office, but only one		\$0	\$0	\$0	\$0
Interface Required	\$0	\$0	\$0	This project affects multiple Program Offices		\$0	\$0	\$0	\$0
Total Software Costs			\$0	This project affects Regional/District Offices as well as the SEC HQ		\$0	\$0	\$0	\$0
				This project affects the SEC Enterprise (all users, all locations)		\$0	\$0	\$0	\$0
				This project affects the SEC Enterprise and calls for Public Access		\$0	\$0	\$0	\$0
Services Costs		Rate/Hour	Months	Hours	FTE's	Total			
SEC	\$0	0	0	0	3	\$0			
Vendor	\$100	0	0	0	3	\$0			
Total Services Costs						\$0			



Caution - If default values are overwritten the values can not be reset without starting this process over.



Calculating a ROM Cost Estimate (cont.)

ROM Maintenance Tab

- The administrator sets the values used throughout the ROM in the maintenance tab

This is the maintenance page for the ROM Cost Estimator. Update the cells highlighted in green. These values are integrated throughout the ROM.

ROM Cost Estimator Maintenance Page											
Size		Months	FTE's	Dropdown Values							
This project affects only one small Program Office		3	3	Yes/No	Complexity	Amount					
This project affects a large Program Office, but only one		4	3	Yes	N/A	N/A					
This project affects multiple Program Offices		5	2	No	Easy	Small					
This project affects Regional/District Offices as well as the SEC HQ		9	4		Moderate	Medium					
This project affects the SEC Enterprise (all users, all locations)		12	10		Difficult	Large					
This project affects the SEC Enterprise and calls for Public Access		15	12								
Hardware - Complexity		Value	Enterprise Storage Impact		Cost	Value					
Easy		1	N/A	\$25,000	0						
Moderate		1.5	Small	\$25,000	1						
Difficult		3	Medium	\$70,000	4						
Difficult		3	Large	\$70,000	6.5						
Hardware - Buffer		%	Area / Data Center		Value						
N/A		0%	N/A		0						
Easy		10%	Small	800,000							
Moderate		15%	Medium	1,000,000							
Difficult		20%	Large	1,250,000							
Software - Complexity		Value	Steady State		%						
Easy		\$100	Security - HW	10%							
Moderate		\$1,000	Security - SW	20%							
Difficult		\$100,000	Maintenance (HW & FC)	25%							
Software - Buffer		%	Maintenance (SW)	20%							
N/A		0%	Operations	50%							
Easy		10%	System Life		Years						
Moderate		15%	Software	3							
Difficult		20%	Installation		%						
Services - Complexity		Value	Hardware Install	25%							
Easy		1	Rates		Rate/Hour						
Moderate		1.8	SEC	\$0							
Difficult		2	Vendor	\$100							
Services - Buffer		%									
N/A		0%									
Easy		20%									
Moderate		35%									
Difficult		45%									
Hardware Values											
Size		Application Server	Storage Server	Desktop/Laptop	Network Device	Printer / Scanner / Fax					
		Qty	Cost/Unit	Qty	Cost/Unit	Qty	Cost/Unit	Qty	Cost/Unit		
This project affects only one small Program Office		2	\$6,000	2	\$25,000	5	\$1,950	5	\$300	1	\$500
This project affects a large Program Office, but only one		4	\$10,000	4	\$50,000	20	\$1,950	20	\$400	10	\$1,500
This project affects multiple Program Offices		4	\$10,000	4	\$50,000	20	\$1,950	20	\$400	10	\$1,500
This project affects Regional/District Offices as well as the SEC HQ		4	\$10,000	4	\$50,000	20	\$1,950	20	\$400	10	\$1,500
This project affects the SEC Enterprise (all users, all locations)		6	\$12,000	6	\$70,000	50	\$1,950	50	\$500	25	\$2,500
This project affects the SEC Enterprise and calls for Public Access		12	\$12,000	12	\$70,000	100	\$1,950	100	\$750	50	\$2,500
Software Values											
Size		Buy / Build	Number of Users	Interface							
		Qty	Qty	Qty	Cost/Unit						
This project affects only one small Program Office		1	10	0	\$75,000						
This project affects a large Program Office, but only one		1	250	1	\$75,000						
This project affects multiple Program Offices		2	400	1	\$75,000						
This project affects Regional/District Offices as well as the SEC HQ		3	2500	3	\$75,000						
This project affects the SEC Enterprise (all users, all locations)		3	2500	5	\$75,000						
This project affects the SEC Enterprise and calls for Public Access		6	5000	10	\$75,000						



ROM Breakdown

The ROM Breakdown illustrates the ROM costs for hardware, software, and services based on the answers above

Hardware ROM Cost		
Hardware ROM		\$0
ROM + Complexity Factor		\$0
Hardware Buffer		0%
+ Buffer		\$0
Hardware ROM Total		\$0
Software ROM Cost		
Software ROM + Complexity Factor		\$0
Software Buffer		0%
+ Buffer		\$0
Software ROM Total		\$0
Services ROM Cost		
Services ROM		\$0
ROM + Complexity Factor		\$0
Services Buffer		0%
+ Buffer		\$0
Services ROM Total		\$0
Security - Hardware		10%
Security - Software		20%
Steady State - Maintenance		25%
Steady State - Operations		50%
ROM Breakdown		
Category	Cost	
Hardware	\$0	
Software	\$0	
Services	\$0	
Enterprise Storage Impact	\$0	
Area / Data Center	\$0	
Security - Hardware	\$0	
Security - Software	\$0	
Steady State - Maintenance	\$0	
Steady State - Operations	\$0	
ROM Cost Estimate	\$0	

Complexity for each component (hardware, software, and services) adds a complexity factor to the initially estimated ROM and determines a buffer. As the complexity increases, so does the complexity factor and buffer.

The percentage of Security – Hardware, Security – Software, Steady State - Maintenance, and Steady State – Operations are all pre-determined by the PMO

The ROM breakdown sums the total cost per category for the project and the total ROM Cost Estimate is highlighted in purple.



Cost Breakdown

C o s t B r e a k d o w n	Project Cost Breakdown (w/o Buffer & Steady State Costs)				} Project Cost Breakdown (w/o Buffer & Steady State Costs) sums up the Project Categories.
	Project Category	Cost			
	Hardware	\$0			
	Software	\$0			
	Services	\$0			
	Storage Impact	\$0			
	Facility	\$0			
	Total	\$0			
	Buffer Total	\$0	} Total buffer is calculated by adding all the buffers for hardware, software, and services costs.		
	Lifecycle Breakdown				} Lifecycle Breakdown breaks out the project costs by lifecycle phase based on a percentage of the total project cost and buffer as established by the PMO rule of thumb.
Phase	%	Cost	Buffer		
Planning	0%	\$0	\$0		
Analysis	25%	\$0	\$0		
Solution	45%	\$0	\$0		
Test/Training	10%	\$0	\$0		
Deployment	20%	\$0	\$0		
ROM Cost Est.	100%	\$0	\$0		
Total Cost through Deployment by Lifecycle Phase (Cost + Buffer)				} Total Cost (with buffer) through deployment and total accumulated costs as phases progress. <i>Decide how much you can accomplish and/or afford in this FY</i>	
Phase	Total	Cumulative			
Planning	\$0	\$0			
Analysis	\$0	\$0			
Solution	\$0	\$0			
Test/Training	\$0	\$0			
Deployment	\$0	\$0			
Steady State Total (Security / Operations / Maintenance)				} Steady state costs are calculated based on the percentage listed in the ROM Breakdown section.	
\$0					
ROM Cost Estimate				} The ROM Cost Estimate total cost of the project is tabulated by adding the project cost, buffer, and steady state costs.	
Project Category	Buffer	Steady State	Total		
\$0	\$0	\$0	\$0		



Q&A

?? Questions ??

