

ROYAL BRITISH COLUMBIA MUSEUM

OPTIONS ANALYSIS

**CLASS 'D' MINUS ESTIMATE REPORT (Revision 1)
(OPINION OF PROBABLE COST)**

October 1, 2018



SSA QUANTITY SURVEYORS LTD

COST PLANNING | VALUE MANAGEMENT | PROJECT CONTROLS

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1. INTRODUCTION

The Royal British Columbia Museum (RBCM) is preparing a Concept Plan with options for the upgrading/renovation or replacement of the RBCM in Victoria.

The RBCM is being assisted by Partnerships BC (PBC) in developing this Concept Plan. SSA Quantity Surveyors Ltd. (SSAQS) has been hired by PBC to assist with the capital budgeting for the various options for the Concept Plan.

There are 5 Options that have been prepared for analysis:

- a) **Option 1: Status Quo.** Value separately identified.
- b) **Option 2: Replace.** All New on New Site (3½ Year build starting July 2021).
- c) **Option 3: Replace.** All New on Existing Site (4 Year build starting July 2021).
- d) **Option 4: Revitalise.** Renovate and New on Existing Site (6 Year build starting July 2021).
- e) **Option 5: Repair.** Renovate on Existing Site (7 Year build starting January 2021).

SSAQS has prepared estimates for Options 2, 3, 4 and 5, at a Class “D minus” level, with an accuracy of ±30% to support the Options Analysis.

2. OPTIONS:

Option 1: Status Quo. Separately Identified.

- **Option 2: Replace on New Site.**
 - Seismically Upgrade the following facilities on the **existing site** in accordance with the Structural Seismic Assessment Report dated March 20, 2018 prepared by WSP and the Non-Structural Seismic Assessment Report dated March 8, 2018 prepared by VFA Canada Corporation and renovate to bring up to current code.
 - Carillon Tower
 - Mungo Martin House
 - Helmcken House
 - St. Ann's School
 - Totem Poles
 - Build the following in a new building(s) on a new site:
 - Public Spaces
 - Exhibits, Collections, Access & Programs

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- Executive Museum Operations
 - Visitor Engagement and Experience
 - Archives, Collections and Knowledge
 - Research and Collections
 - Building Services
 - Demolish all buildings on the existing site EXCEPT:
 - Carillon Tower
 - Mungo Martin House
 - Helmcken House
 - St. Ann's School
 - Totem Poles
 - Preserve and relocate existing natural garden to the new site.
-
- **Option 3: Replace on Existing Site.**
 - Seismically Upgrade the following facilities on the existing site in accordance with the Structural Seismic Assessment Report dated March 20, 2018 prepared by WSP and the Non-Structural Seismic Assessment Report dated March 8, 2018 prepared by VFA Canada Corporation and renovate to bring up to current code.
 - Carillon Tower
 - Mungo Martin House
 - Helmcken House
 - St. Ann's School
 - Totem Poles
 - Demolish the existing structures and build the following new:
 - Public Spaces
 - Exhibits, Collections, Access & Programs
 - Executive Museum Operations
 - Visitor Engagement and Experience
 - Archives, Collections and Knowledge
 - Research and Collections
 - Building Services
 - Preserve and protect existing natural garden.
-
- **OPTION 4: Revitalise.**
 - Seismically Upgrade all facilities on site, except for the Fannin and Archives Buildings, in accordance with the Structural Seismic Assessment Report dated March 20, 2018 prepared by WSP.
 - Seismically upgrade all facilities on site, except for the Fannin and Archives Buildings, in accordance with the Non-Structural Seismic Assessment Report dated March 8, 2018 prepared by VFA Canada Corporation.
 - Renovations to the following structures to bring them up to current code.

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- Carillon Tower
- Mungo Martin House
- Helmcken House
- St. Ann's School
- Totem Poles
- Glazed Lobby
- Imax Theatre
- Exhibition Hall
- Rebuild the Fannin Building and the Archives Building with an additional 20% more space than the existing.
- Preserve and protect existing natural garden.

- **OPTION 5: Repair.**
 - Seismically Upgrade all facilities on site in accordance with the Structural Seismic Assessment Report dated March 20, 2018 prepared by WSP.
 - Seismically upgrade all facilities on site in accordance with the Non-Structural Seismic Assessment Report dated March 8, 2018 prepared by VFA Canada Corporation.
 - Renovations to the following structures to bring them up to current code.
 - Carillon Tower
 - Mungo Martin House
 - Helmcken House
 - St. Ann's School
 - Totem Poles
 - Fannin Building
 - Archives Building
 - Glazed Lobby
 - Imax Theatre
 - Exhibition Hall
 - Preserve and protect existing natural garden

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3. EXECUTIVE SUMMARY:

OPTION	Estimated September 2018 \$	Escalation to Mid-Point of Construction	Irrecoverable GST	General Project Reserve	Total Estimated \$
Option 1: Status Quo	SEPARATELY IDENTIFIED				
Option 2 Replace: All New on New Site (3½ Year build starting July 2021)					\$409,863,000
Option 3 Replace: All New on Existing Site (4 Year build starting July 2021)					\$432,518,000
Option 4 Revitalise: Renovate and New on Existing Site (6 Year build starting July 2021)					\$499,345,000
Option 5 Repair: Renovate on Existing Site (7 Year build starting January 2021)					\$592,874,000

4. DOCUMENTATION:

The following documentation forms the basis of this report:

- Structural Seismic Assessment Report dated March 20, 2018 prepared by WSP.
- Non-Structural Seismic Assessment Report dated March 8, 2018 prepared by VFA Canada Corporation.
- Facility Condition Assessment Report dated March 8, 2018 prepared by VFA Canada Corporation.
- Class D Estimate RBCM Site Replacement Costing, dated March 29, 2018 prepared by Advicas. Note that we have relied on the Advicas Estimate for the purposes of this report.
- Functional Program dated March 31, 2013 prepared by Praxis Architects Inc. in association with Walt Crimm Associates.

5. NOTES:

The Class 'D Minus' Estimates (Opinions of Probable Cost) are based on the information described above. Our knowledge of the project is limited to the information provided to us.

Pricing is based upon current **3rd Quarter 2018** unit rates that we consider reasonable, but competitive, for the size, type and complexity of projects, and its location in the Greater Victoria area.

The estimated construction costs reflect our opinion of the current construction industry market conditions for the size and type of project. It has been assumed that the Work will be tendered on a Design Bid Build (DBB) basis, competitively tendered to a minimum of 3 contractors, where each trade contract is bid on a competitive stipulated price basis. The pricing in this estimate is predicated upon a minimum of three qualified trade contractors for each significant trade, bidding for the work on a competitive basis and there will be no sole source non-competitive trade contracts. It is also predicated upon the assumption that the project will be bid with normal and reasonable market conditions and that any unforeseen, aberrant or

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abnormal market conditions are not contemplated in the estimate.

Provincial Sales Tax is included.

The Goods and Services Tax (GST) has been included at the rebated value of 1.75%.

The estimates are our opinion of fair market value for the construction of the project, and do not attempt to predict a low bid value.

Explanation of Items included:

	Option 2	Option 3	Option 4	Option 5
Escalation on Structural Seismic Costs.	■ added to Advicas Estimate to cover the March 2018 to September 2018 time period.	■ added to Advicas Estimate to cover the March 2018 to September 2018 time period.	■ added to Advicas Estimate to cover the March 2018 to September 2018 time period.	■ added to Advicas Estimate to cover the March 2018 to September 2018 time period.
Soft Costs. Differential between Reno and New is due to the length of the project time period as well as the greater complexity of a Reno project.	■ allowed for Soft Costs including fees, permits, DCC's, Insurance etc. for Renovation and New and includes for loose office type Furniture, Furnishings and Equipment.	■ allowed for Soft Costs including fees, permits, DCC's, Insurance etc. for Renovation and New and includes for loose office type Furniture, Furnishings and Equipment.	■ allowed for Soft Costs including fees, permits, DCC's, Insurance etc. for Renovation and New and includes for loose office type Furniture, Furnishings and Equipment.	■ allowed for Soft Costs including fees, permits, DCC's, Insurance etc. for Renovation and New and includes for loose office type Furniture, Furnishings and Equipment.

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	Option 2	Option 3	Option 4	Option 5
Phasing. Options 1 and 2 are highly complex projects that will require significant phasing to allow the buildings to remain functional during construction. Options 3A and 3B are less complex.	■ Phasing Allowance on New Costs. 3½ Year construction period that allows for partial occupancy of portion of the building between 50% and 60% construction completion.	■ Phasing Allowance on New Costs. 4 Year construction period that allows for partial occupancy of portion of the building between 50% and 60% construction completion.	■ Phasing Allowance on Renovation and New Costs. 6 Year construction period with multiple complex phases and the addition of new structures onto existing.	■ Phasing Allowance on Renovation and New Costs. 7 Year construction period with multiple complex phases
Site and Civil	This includes for services to the site, new and upgraded services as required, on site sub-grade development, on site hard and soft landscaping etc. and off site costs that may be required by utility companies and the City of Victoria.	This includes for replacement of aging services to the site, new and upgraded services as required, on site sub-grade development, on site hard and soft landscaping etc. and off site costs that may be required by utility companies and the City of Victoria.	This includes for replacement of aging services to the existing buildings, new and upgraded services as required, on site sub-grade development, on site hard and soft landscaping etc. and off site costs that may be required by utility companies and the City of Victoria.	This includes for replacement of aging services to the existing buildings, new and upgraded services as required, on site sub-grade development, on site hard and soft landscaping etc. and off site costs that may be required by utility companies and the City of Victoria.
General Project Contingency. This is an overall project Risk Reserve.	■ Allowance.	■ Allowance.	■ Allowance.	■ Allowance.

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6. LEVEL OF RISK

It is our opinion that the risk associated with this Opinion of Probable Costs is $\pm 30\%$.

7. ESCALATION ALLOWANCES

Escalation to the mid-point of construction has been included as follows:

- a) **OPTION 1:** Separately Identified.
- b) **OPTION 2:** 3½ Year build starting July 2021.
- c) **OPTION 3:** 4 Year build starting July 2021.
- d) **OPTION 4:** 6 Year build starting July 2021.
- e) **OPTION 5:** 7 Year build starting January 2021.

8. BASIS OF THE ESTIMATE

8.1. Cost Base

Pricing shown reflects our opinion of probable construction costs obtainable in the 3rd Quarter of 2018 on the effective date of this report.

8.2. Contingencies

8.2.1. Design Contingency – An allowance of 20% has included. This allowance, when included, is a reserve of funds included in the estimate and which is allocated to cover pricing adjustments resulting from incomplete design information and design detailing that is not currently available.

8.2.2. Escalation Contingency – Allowance have been included. See Section 7 above. This allowance, when included, is a reserve of funds to cover possible price increases from the time that the estimate is prepared to the time that the project is tendered.

8.2.3. Phasing Allowance – Allowance have been included. This allowance, when included, is for any work required to maintain the operation of the facility while construction proceeds.

8.2.4. Construction Contingency – An Allowance of 5% has been included. The construction contingency is a reserve of funds which is allocated to cover change orders that are required during the course of construction, and is not intended to be a scope change contingency.

8.2.5. General Project Contingency – An allowance of 5% has been included. This is a general project

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reserve.

9. EXCLUSIONS

The following items are specifically excluded from this estimate:

- 9.1. Removal and decanting of exhibits and other archival material transport to storage facility, upgrade of storage facility to accommodate artifacts, rental of storage facility for the duration of the renovation period, transport back to renovated facility and rehabilitation of rented facility etc.
- 9.2. Unknown adverse environmental conditions.
- 9.3. Unknown adverse archaeological conditions.
- 9.4. Adverse soil and/or subsoil conditions.
- 9.5. Project Procurement costs and Compliance Team costs.
- 9.6. Land Acquisition costs.
- 9.7. Project Financing Costs.
- 9.8. Utility Upgrades.

10. STATEMENT OF PROBABLE COSTS

Estimates of construction costs prepared by SSA Quantity Surveyors Ltd. represent our best judgement as Professional Cost Consultants/Quantity Surveyors familiar with the construction industry. It is recognised, however, that we do not have control over the cost of labour, materials or equipment, over architect/engineering design, over a contractor's method of determining prices, or over market or negotiating conditions. Accordingly, we cannot and do not warrant or represent that bids or negotiated prices will not vary from this nor any subsequent estimate of design/construction cost or evaluation prepared by or agreed to by us.

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11. OPTION 2 REPLACE ON NEW SITE.

Building	BGSMS per Advicas Report	BGSMS from RBCM Functional Program March 2013 Scheme 0 (excludes off site leased space)	Seismic Upgrade Costs (March 2018) Advicas Report	Non Structural Seismic Upgrade Costs (March 2018)	Escalation on Seismic Costs March 2018 to September 2018	Seismic Upgrade Costs (September 2018)	Renovation Costs to bring retained structures up to code including Hazmat Removal (September 2018)		New Build Costs (September 2018)		Soft Costs for New (includes for loose office type Furniture, Furnishings and Equipment)	New Costs (September 2018)	Site and Civil Development associated with New, Off Site and On Site Services Changes and Relocations	Phasing Allowance - 2 Phases (September 2018)	Escalation to Mid-Point of Construction assuming a 3% year build starting in July 2021	General Project Contingency	ESTIMATED TOTAL ESCALATED DOLLARS (±30% RISK FACTOR)		
							Unit Rate	\$	Unit Rate	\$									
Carillon Tower (retain on existing site)	m ²	m ²	\$	\$	\$		Unit Rate	\$	Unit Rate	\$	\$	\$	\$	\$	\$	\$	\$	\$	
Mungo Martin House (retain on existing site)																			
Helmcken House (retain on existing site)																			
St. Ann's School (retain on existing site)																			
Totem Poles (retain on existing site)																			
Public Spaces																			
Exhibits, Collections, Access & Programs																			
Executive Museum Operations																			
Visitor Engagement and Experience																			
Archives, Collections and Knowledge																			
Research and Collections																			
Building Services																			
Building Crossing																			
Preserve and relocate existing natural garden																			
Off site, Site and Civil																			
Demolish existing structures on existing site including pre-demolition hazmat removal																			
Post demolition existing site reclamation																			
Removal and decanting of exhibits and other archival material to storage facility (See Note 1 below)																			
Irrecoverable GST (1.75%)																			
TOTALS																			\$409,863,000

Note:

¹ Removal and decanting of exhibits and other archival material transport to storage facility, upgrade of storage facility to accommodate artifacts, rental of storage facility for the duration of the renovation period, transport back to renovated facility and rehabilitation of rented facility etc.

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12. OPTION 3 REPLACE ON EXISTING SITE.

Building	BGSM per Advicas Report	BGSM from RBCM Functional Program March 2013 Scheme 0 (excludes off site leased space)	Seismic Upgrade Costs (March 2018) Advicas Report	Non Structural Seismic Upgrade Costs (March 2018)	Escalation on Seismic Costs March 2018 to September 2018	Seismic Upgrade Costs (September 2018)	Renovation Costs to bring retained structures up to code including Hazmat Removal (September 2018)	New Build Costs (September 2018)		Soft Costs for Renovation and New (includes for loose office type Furniture, Furnishings and Equipment)	New and Renovation Costs (September 2018)	Site and Civil Development associated with New and Renovations, Off Site and On Site Services Changes and Relocations	Phasing Allowance - 2 Phases (September 2018)	Escalation to Mid-Point of Construction assuming a 4 year build starting in July 2021	General Project Contingency	ESTIMATED TOTAL ESCALATED DOLLARS (±30% RISK FACTOR)
	m ²	m ²	\$	\$	\$		Unit Rate	\$	Unit Rate	\$	\$	\$	\$	\$	\$	\$
Carillon Tower (retain on site)																
Mungo Martin House (retain on site)																
Helmcken House (retain on site)																
St. Ann's School (retain on site)																
Totem Poles (retain on site)																
Public Spaces																
Exhibits, Collections, Access & Programs																
Executive Museum Operations																
Visitor Engagement and Experience																
Archives, Collections and Knowledge																
Research and Collections																
Building Services																
Building Grossing																
Preserve and protect existing natural garden																
Site and Civil																
Demolish existing structures including pre-demolition hazmat removal																
Post demolition site preparation																
Removal and decanting of exhibits and other archival material to storage facility (See Note 1 below)																
Irrecoverable GST (1.75%)																
TOTALS																\$432,518,000

Note:

- 1 Removal and decanting of exhibits and other archival material transport to storage facility, upgrade of storage facility to accommodate artifacts, rental of storage facility for the duration of the renovation period, transport back to renovated facility and rehabilitation of rented facility etc.

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13. OPTION 4 REVITALISE.

Building	BGSM per Advicas Report	BGSM from RBCM Functional Program Section 2 (Fannin and Archives have additions of 20% of their existing floor space)	Seismic Upgrade Costs (March 2018) Advicas Report	Non Structural Seismic Upgrade Costs (March 2018)	Escalation on Seismic Costs March 2018 to September 2018	Seismic Upgrade Costs (September 2018)	Renovation Costs to bring the facility up to code and make it fully functional as a Museum including Hazmat Removal (September 2018)	New Build Costs as a fully functional Museum including hazmat removal and demolition as required (September 2018)	Soft Costs for Renovation and New (includes for loose office type Furniture, Furnishings and Equipment)	New and Renovation Costs (September 2018)	Site and Civil Development associated with New and Renovations, Off Site and On Site Services Changes and Relocations	Phasing Allowance on Renovation and New Costs (September 2018)	Escalation to Mid-Point of Construction assuming a 6 year build starting in July 2021	General Project Contingency	ESTIMATED TOTAL ESCALATED DOLLARS (±30% RISK FACTOR)	
	m ²	m ²	\$	\$	\$		Unit Rate	\$	Unit Rate	\$	\$	\$	\$	\$	\$	\$
Carillon Tower																
Mungo Martin House																
Helmcken House																
St. Ann's School																
Totem Poles																
Fannin Building																
Archives Building																
Glazed Lobby																
Imax Theatre																
Exhibition Hall																
Site and Civil																
Flood Mitigation																
Removal and decanting of exhibits and other archival material to storage facility (See Note 1 below)																
Irrecoverable GST (1.75%)																
TOTALS																\$499,345,000

Note:

- 1 Removal and decanting of exhibits and other archival material transport to storage facility, upgrade of storage facility to accommodate artifacts, rental of storage facility for the duration of the renovation period, transport back to renovated facility and rehabilitation of rented facility etc.

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14. OPTION 5 REPAIR.

Building	BGSM per Advicas Report	BGSM from RBCM Functional Program Section 2	Seismic Upgrade Costs (March 2018) Advicas Report	Non Structural Seismic Upgrade Costs (March 2018)	Escalation on Seismic Costs March 2018 to September 2018	Seismic Upgrade Costs (September 2018)	Renovation Costs to bring the facility up to code and make it fully functional as a Museum including Hazmat Removal (September 2018)	Soft Costs for Renovation (includes for loose office type Furniture, Furnishings and Equipment)	Renovation Costs (September 2018)	Site and Civil Development associated with Renovations, Off Site and On Site Services Changes and Relocations	Phasing Allowance on Renovation Costs (September 2018)	Escalation to Mid-Point of Construction assuming a 7 year build starting in January 2021	General Project Contingency	ESTIMATED TOTAL ESCALATED DOLLARS (±30% RISK FACTOR)
	m ²	m ²	\$	\$	\$		Unit Rate	\$	\$	\$	\$	\$	\$	\$
Carillon Tower														
Mungo Martin House														
Helmcken House														
St. Ann's School														
Totem Poles														
Fannin Building														
Archives Building														
Glazed Lobby														
Imax Theatre														
Exhibition Hall														
Site and Civil														
Flood Mitigation														
Removal and decanting of exhibits and other archival material to storage facility (See Note 1 below)														
Irrecoverable GST (1.75%)														
TOTALS														\$592,874,000

Note:

¹ Removal and decanting of exhibits and other archival material transport to storage facility, upgrade of storage facility to accommodate artifacts, rental of storage facility for the duration of the renovation period, transport back to renovated facility and rehabilitation of rented facility etc.

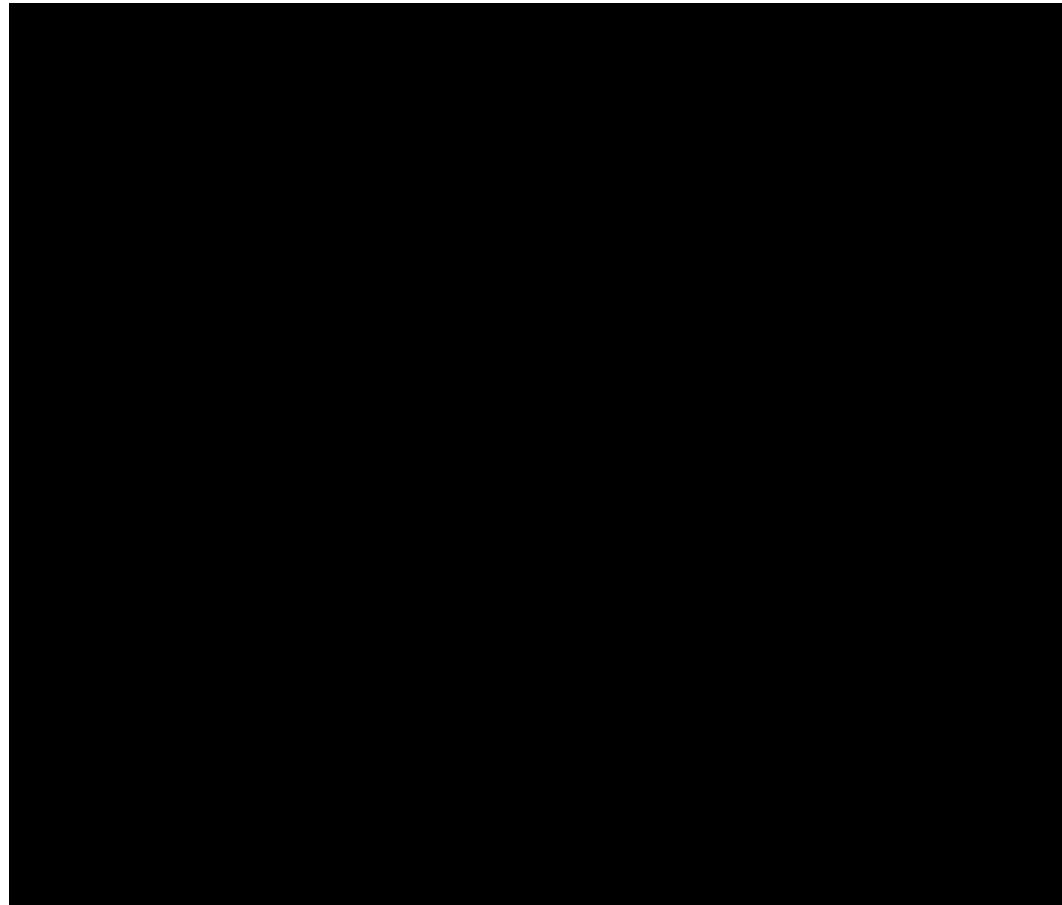
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15. ESCALATION PROJECTION.

Month	Monthly	Accumulated
Sep-18		
Oct-18		
Nov-18		
Dec-18		
Jan-19		
Feb-19		
Mar-19		
Apr-19		
May-19		
Jun-19		
Jul-19		
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Aug-25		
Sep-25		
Oct-25		
Nov-25		
Dec-25		

Accumulated Escalation

Projected Escalation



Months

◆ Projected Escalation

Annual Rates (Projected):	2018	2019	2020	2021	2022	2023	2024	2025 Cumulative
%	█	█	█	█	█	█	█	█