



Independent Cost and Schedule Validation

LOS ANGELES CONVENTION CENTER EXPANSION PROJECT

June 17, 2016

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SECTION ONE
EXECUTIVE SUMMARY

SECTION

1.

EXECUTIVE SUMMARY



The City of Los Angeles is considering two alternative procurement approaches to the expansion, operation, and long-term maintenance of the Los Angeles Convention Center (LACC). One approach involves a traditional Construction Manager/General Contractor (CM/GC) delivery method with the design work performed by Populous, the construction competitively bid and awarded to a general contractor at risk, with all the work being funded through the City. The alternative approach is to award the project to a developer who would design, build, finance, operate and maintain (DBFOM) the facility. The City has engaged HOK/Arup to develop the design concept which would be delivered via DBFOM. The City is to evaluate these two options for value for money to determine which provides the greatest benefit.

MGAC was retained to provide an independent review of both schemes to provide input to the business case/value for money analysis being developed for the expansion.

Our analysis is based on assessing the Total Life Costs for the two schemes. Total Life Costs are derived from assessing the condition of an asset to determine its needs over the near, intermediate, and long term. Total Life Costs, also referred to as the Costs of Ownership, include the capital cost (i.e. hard and soft costs of construction) of a chosen capital improvement plan as well as the asset’s “lifecycle costs”, which are estimated future capital investment requirements to refurbish, refresh, and/or replace an asset’s building elements and components as they reach the end of their design or useful life.

Accordingly, we have:

- reviewed the capital cost projections provided by both Populous and HOK/Arup for their respective schemes and from these projections we have developed our own capital cost opinion, and a comparison between the two schemes;
- reviewed and provided our opinion on the life-cycle cost analysis provided by HOK/Arup for the DBFOM scheme, developed our own analysis for the CM/GC scheme and provided a comparison between the two;
- reviewed the timelines for development of the two schemes and provided our own opinion on the likely schedule for these projects.

In summary we have developed the following cost projections for the two schemes:

	DBFOM Scheme	CM/GC Scheme
Capital Cost	\$1,128 million	\$720 million
Life Cycle Cost	\$490 million	\$780 million
Total Life Cost (40 years)	\$1,618 million	\$1,500 million

Our approach and findings are summarized below.

In order to develop our opinions on cost and schedule we have reviewed various reports provided to us, spoken with the design teams and the operations team at the Convention Center, and toured the Convention Center buildings.

Both design teams have indicated that the design concepts are preliminary in nature and as a result, the estimates of cost should be considered so too. We present them as orders of magnitude of cost. We recommend that the budget be re-visited once the design has moved on to a concept level when the scope will be more clearly defined and the phasing of the works considered in detail. That said, we have provided our best professional opinion as to the cost to develop each scheme as defined to date, and compared our projections to those developed by both the Populous and

EXECUTIVE SUMMARY



The result of our study for the DBFOM scheme is an estimate of construction cost (escalated to a start date of December 2017) of \$890 million, which with the addition of indirect costs (design fees, project administration etc.) rises to a total of \$1.128 billion. This total is approximately 15% higher than the figures provided to us by Arup for that scheme.

For the CM/GC option we have estimated the construction cost (escalated to a start date of July 2018) at \$515 million, which with the addition of indirect costs calculates to a \$720 million project cost. The estimated construction cost represents a significantly higher cost (50% higher) than the estimate provided by Populous, at \$350 million. We assume that this difference in cost can be equally divided between scope differences and pricing differences in the estimates. In the scope category we have included building areas from the Facility Program which are greater than those in the Populous estimate, plus we have included code, seismic and other required upgrades to the existing buildings which were not included in the Populous estimate. (We have included the same building upgrade factors to the estimate for the DBFOM scheme.) We expect the pricing differences to be in unit price and quantity allowances in addition to the contingency budgets, general conditions and escalation allowance differences we have been able to specifically identify.

The second aspect of our review is an assessment of the lifecycle/refurbishment requirements of the two different schemes presented to us. In an effort to provide an “apples to apples” comparison, a common 40 year investment horizon has been determined for the assessment. However, the approach and design schemes are fundamentally different and are reflected in significant differences in initial capital investment.

For purposes of the review, lifecycle costs include the future anticipated capital investment requirements to refurbish, refresh and/or replace building elements and components as they reach the end of their design or useful life. This includes such items as carpeting, interior finishes, heating, ventilation and air-conditioning systems (HVAC), roof coverings, life safety & security systems, windows, exterior building elements, electrical components, etc. Lifecycle costs do not include, nor are they intended to replace, normal ongoing and day-to-day operations, maintenance, repair and energy expenditures.

Both of the schemes include reuse of existing space and systems and as such, there has to be a reconciliation of the lifecycle costs associated with each scheme. To support this, a model has been developed that calculates a current replacement value (CRV) of the elemental components of the facility based on the proposed total space (new and existing) multiplied by a commonly-applied unit cost of construction/replacement. Different factors have been developed for the South and West Halls to recognize their age difference and the impending heritage status of the West Hall. Using the methodology noted above, a formula-driven indicative lifecycle estimate has been determined for 40 years and added to the overall total for each approach. Typically, cost projections fall into an expected high to low range. For purposes of this analysis, the mid-point has been utilized in all calculations.

There is no current comprehensive condition assessment of the existing buildings and the review has relied on project briefs and other background information provided by the Bureau of Engineering, among others.

In the absence of a detailed condition assessment, particularly with respect to the West Hall, it is assumed that the facility and its elements are generally at the end of its normal service life and will require a significant refurbishment and modernization in the short term in order to be consistent with the new and renovated portions of the Convention Center and provide the required functional program space. Following the upgrades, the West Hall would then be subject to normal lifecycle re-investment levels for a building of its age and historical status. An amount of \$105 million has been included in the lifecycle requirements of the CM/GC model to address upgrades to mechanical, electrical and architectural elements of the building. This has been calculated on the basis of \$125 per square foot which represents approximately 25% of the unit cost for new construction. Work of this nature may trigger additional requirements related to code standards and this provision should be considered a conservative minimum threshold of investment.

EXECUTIVE SUMMARY



Based on the design proposals and background information provided by the key stakeholders, 40 year lifecycle profiles have been developed for each scheme that include projected future costs for both the new and existing areas that will comprise the expanded and renovated Los Angeles Convention Center at the end of the construction period. The projections are subject to change resulting from modifications to the project scope during the detailed design development stage. The summarized recommended lifecycle estimates at net present value are approximately \$490 million for the DBFOM approach and \$780 million for the CM/GC approach over a 40 year period.

Finally, we have reviewed the schedule information provided for the alternative schemes.

The schedule for the DBFOM approach assumes a start to the CEQA/EIR/Planning and Council approval process in March 2016. We are already beyond this date. Within the schedule the design process is projected to be of 10 months duration and we believe that this is somewhat aggressive and would project a 12-15 month duration for design. The schedule projects overall completion of the project in January 2021. Given the delayed start to the process and our recommendation for a longer design period, we would suggest completion by mid 2021 assuming that the approval to proceed would be imminent.

The CM/GC approach projects an overall timespan of 52 months. Based upon a project commencement in June 2016, the project would be completed in October 2020. We agree with this assessment.

It should be noted that the schedule duration is directly affected by Populous' indication that the design and construction phases would overlap by 5 months. Construction is projected to commence 5 months before the design is complete and in this approach bids would be sought with incomplete documents. While this can be advantageous from a time perspective, it typically adds to the risk of prices increasing after initial contract award. We have attempted to capture this in our price risk assessment within the capital cost projection.

SECTION TWO
CAPITAL COST ESTIMATE

SECTION

2.



CAPITAL COST

We have reviewed, for reasonableness, the estimates provided by the consultant teams for both the CM/C and DBFOM schemes and have developed our own opinion of capital cost from this review. Our review focused on the cost allowances for each component/system within the buildings (new and renovated space) and from this, we developed a comparison of capital cost between the two schemes. The estimates provided were at a Unifomat Level II level of detail and are based on program/concept level information. Given the preliminary nature of the information provided, the cost review should be treated as an order of magnitude cost review with a predicted accuracy of +/- 15%.

For each of the system cost allowances we have developed a cost projection based upon the program, concept layouts and our walk-throughs of the existing facility. We have developed cost data for each building system and site component based upon the requirements of the project, referencing current market conditions in the Los Angeles area in order to apply appropriate labor and material cost factors.

In addition, MGAC has evaluated appropriate contingencies for the two schemes as currently conceptualized and in consideration of the different delivery models as follows:

1. Design development

The first contingency relates to development of the design, covering items that estimators simply cannot anticipate at this early stage of project definition. It is customary for this contingency to be in the range of 10-15% of base construction cost at this stage of the project. We have applied this at 10% for both schemes.

2. Phasing

The second contingency we have applied relates to the phasing of the work. The Convention Center has stated that the facility needs to be fully operational throughout the construction phase and while we have not developed a detailed plan for how the construction work would be performed, we do believe that construction will need to be phased such that the convention center is minimally impacted throughout. This would require temporary works to be constructed and then removed, we also anticipate a premium cost with off hours working and the potential sub-optimal use of labor and equipment at times. We have applied a phasing contingency to both schemes, since the requirement for a fully functional Convention Center applies to both.

3. Escalation

A third contingency covers the escalation of costs in this market place. The escalation forecast for Los Angeles Convention Center project has been developed using both a quantitative analysis and qualitative assessment. Location specific construction cost indices, the ENR Building Cost Index and RS Means Construction Cost Index are used to formulate our baseline forecast; broader macroeconomic indicators are screened to check the baseline forecast and to form insights for the future construction industry outlook. Project specific conditions such as the bidding environment are evaluated in order to arrive at a recommended construction escalation rate specifically for the Los Angeles Convention Center project.

Based on our analysis, we recommend an annual escalation rate of 4% for the Los Angeles Convention Center project to the projected construction start dates. The main reasons are summarized below:

- Our baseline forecast using location-specific five-year historical indexes from the ENR Building Cost Index and RS Means Cost Index yields an annual escalation rate of roughly 2%. The forecast is in line with the broader market indicators such as the Consumer Price Index (CPI) and Producer Price Index (PPI). However, it should be noted that both the ENR index and RS Means index are calculated based on a combination of common construction materials and labor costs with fixed weights on each cost composite, thus only represent the average building construction costs across the Los Angeles region at best. Therefore, the baseline forecast should be treated as a lower bound estimate and should be adjusted based on the analysis of other factors specifically for the Los Angeles Convention Center project.



- The construction labor shortage, especially the skilled labor shortage, is a major construction cost driver currently in the Los Angeles area. The construction unemployment rate is lower than that at the national level, and the construction wage is increasing faster than the national average. Given the complexity of the project, the skilled labor shortage would be felt more strongly and thus an additional 1% cost increase is added to the baseline forecast.
- Considering the scale and complexity of the project, the bidding environment is expected to be less competitive as the qualified firms are limited. Based on academic research and our evaluation of potential bidder environment for the Convention Center project, a 1% bidder environment markup has been applied on top of the baseline forecast.

4. Risk

Finally there is a general risk contingency, or “construction contingency”. The differences between the delivery methods consider risk allocation and this needs to be factored. Issues to be considered include the likelihood of design errors and omissions, change order risk and probability, level of owner input required during design and construction as well as market and procurement risk.

With the traditional CM/GC project delivery, all risk lies with the Owner in respect of design errors, omissions, and potential change orders for missed scope and differing conditions. Resultant cost overruns on largescale public projects delivered via a CM/GC approach in this market place have been well documented. These may have been minimized by better planning, oversight and more stringent change order control, nonetheless history shows that final costs on largescale public projects have exceeded budgets and often by significant amounts. It is challenging to develop a reliable analysis of cost variances on these projects. Where projects appear to be on budget, they may be delivering significantly less program, performance or scope than was originally intended. Others may have received budget augmentation along the way. So there is no consistent record of project costs which includes the initial budget and scope requirement lined up against final cost and scope delivered. However there is extensive data and anecdotal evidence speaking to the greater risk transfer with CM/GC projects and we have attempted to capture this with our statistical analysis.

Conversely, with DBFOM procurement, most design and construction risk is borne by the DBFOM entity. We say most, because it is absolutely critical that the Owner provides a Basis of Design document that effectively and completely defines and describes every element of the project. If this is not provided, the DBFOM entity will use its discretion on the quality and suitability of elements not defined. Typically, the measure of these items is what has the least cost to the Design-Builder.

The result of our analysis on risk is to add an 8% risk factor to the DBFOM scheme and a 14% factor to the CM/GC for the reasons stated above.

Project Cost Mark-Up

Finally, we have added budgets for soft costs on top of the recommended construction budgets in order to provide an estimate of the overall project budget. Such items include design fees, furniture, fixtures and equipment, environmental costs (EIR/CEQA), project administration fees and IT systems. A number of the budgets are calculated as percentages of construction cost as is customary at the budget stage of projects.

In the paper Investigation of Bid Price Competition Measured through Prebid Project Estimates, Actual Bid Prices, and Number of Bidders, Paul G. Carr quantitatively analyzed a data set of 243 construction project bids and discovered that when the bidding environment is less competitive (number of bidders ranges from 1 to 4), the low bid deviates from the estimate by 1% to as large as 15%.

CAPITAL COST ESTIMATE

CM/GC OPTION



BASIS OF ESTIMATE/REFERENCES

- Site visit to review existing conditions
- Discussions with the Architect, City representatives and Operations staff at the Convention Center Facility Program, for Los Angeles Convention Center Expansion and Renovation (October 21, 2015)
- LACC Expansion & Renovation – Concept Validation, Volume Two – Drawings dated June 8, 2016
- LACC Expansion & Renovation – Concept Validation, Volume Three - Narratives and Reports, June 8, 2016

ASSUMPTIONS

General

- The project will be procured under a single construction contract
- The project will be competitively bid for all sub-contract works
- The phasing and sequencing of the work will be determined by the General Contractor in order to meet the proposed / required schedule - premium for phasing requirements is included in the cost plan based on a percentage factor of trade costs
- The facilities are required to be in full operation during construction
- Contractor staging and parking will be made available on or adjacent to the site

Existing West Hall and Concourse Hall

- The existing link bridge connecting the South and West Halls will be demolished
- The existing building adjacent to the West Hall will be demolished
- Minor roof upgrades to the existing West Hall are included
- Allowances are included for seismic upgrade work to the West Hall, including seismic upgrades relating to MEP equipment
- Seismic joint covers included between the West Hall and the new expansion
- Signage upgrades are included – to match the new building

Existing South Hall

- Demolition of the existing curved back wall, loading dock ramps and canopies is included
- Exterior façade improvements to the existing building are required to provide an aesthetic connection the new expansion
- Minor roof upgrades are require to match the new expansion
- Allowances are included for seismic upgrade, including to the atrium
- Seismic upgrade allowances in connection with MEP equipment
- Seismic joint covers included between the South Hall, Concourse Hall and the new expansion

CAPITAL COST ESTIMATE

CM/GC OPTION



ASSUMPTIONS

New construction assumptions

- Normal ground conditions assumed - rock excavation and soil mitigation are excluded
- The building will be founded on conventional spread footings and continuous wall footings
- The new addition will be structurally separated from the existing building - seismic joint covers are provided between new and existing structure
- The structural framing system is assumed to be similar to the existing structure - reinforced concrete flat slab on the lower floor with reinforced concrete shear walls for the lateral load resisting system at level +250', structures above level 250' will be framed with structural steel for both gravity and lateral framed resisting systems. Steel framing is based on an average structural steel weight of 28 pounds per square foot. All steel will be fireproofed.
- Structural support to curtain walls, new air walls and catwalks is included
- Structural modifications to the existing deck at El+250' to suit new loading capacity is included
- Exterior façade treatment assumes a combination of composite metal panel system, glazed curtain walls (to approximately 20% of the exterior walls) and plastered CMU walls at the back of house areas
- Roofing includes single ply membrane roofing and precast concrete pavers to plaza and terraces - an allowance is also provided for green roof construction
- Interior construction includes all fixed walls and operable partitions to exhibit halls, ballroom and meeting rooms. It also includes new doors and interior glazing. Acoustical doors are provided to function spaces
- The allowance for interior finishes is based on the following:
 - Exhibit hall - sealed concrete floor, paint to walls and exposed ceiling with allowance for acoustical ceiling panels
 - Ballroom - carpet, a combination of upholstered acoustical wall panels and wall covering to walls, stretch fabric ceilings
 - Meeting rooms - carpet to floors, a combination of upholstered acoustical wall panels, wall covering and painted gypsum board to walls, acoustical ceiling panels
 - Public toilets - ceramic floor and wall tiles, and painted gypsum board ceilings
 - Pre-function areas - carpet to floors, a combination of veneered plastered walls and wall covering, architectural grade gypsum board ceilings
 - Back-of house areas - sealed concrete floors, painted gypsum board with wall protection panel up to 4' high, exposed ceilings
 - Plating Kitchen/ Pantries/Kitchen - quarry floor tiling, FRP wall panels and washable ceiling tiles
 - Building support spaces - linoleum flooring/sealed concrete, painted walls and acoustical ceiling tiles
- Interior fittings and specialties are provided based on cost/sf allowances
- Fixed furniture to support spaces are included
- Fifteen (15) passenger elevators, two (2) freight elevators and two (2) service elevators are included
- Twenty-one (21) escalators are included
- Plumbing includes sanitary fixtures, waste, vent, domestic water pipework systems, floor and roof drainage, natural gas, compressed air and industrial cold water to exhibition hall floor boxes, kitchen service connections and grease waste - fuel/oil separation systems

CAPITAL COST ESTIMATE

CM/GC OPTION



ASSUMPTIONS

- HVAC includes hi-efficiency central heating and chilling, thermal ice storage, distribution pipework, roof-mounted air handlers/vehicle exhaust at exhibition halls, 24/7 cooling, terminal reheat, stair pressurization, kitchen exhaust, pollution control units, air distribution and controls
- Electrical includes normal, emergency, machine, equipment and user convenience power, floor box power and data, lighting, telephone/data, A/V (conduit only), fire alarm and security. (A/V equipment and cabling allowances included in our project costs – not construction)
- Fire protection includes automatic wet sprinklers, fire department hose valve connection points at stairwells and fire water booster systems

Site Work

- Site improvements to the existing Gilbert Lindsey Plaza
- Surfacing, landscaping and furnishings to proposed deck terraces – waterproofing to the deck is included with the building construction budget
- An allowance is included to upgrade the entire finished site (except areas allocated for future development)
- An allowance to cover sidewalk and street improvement that will be impacted by demolition / renovation is included in the cost plan
- Modifications to Pico Boulevard between Figueroa Street and LA Live Way
- Reconfiguration of the loading dock ramp and Convention Center Drive
- Screen walls between the new construction and the freeway
- Upgrades to exterior signage
- Site utilities include domestic and fire water, water realignment, sewer, storm drainage, site lighting, natural gas, CHW/HHW pipework distribution across Pico Blvd., 35/4.16 kV normal power equipment and cabling, telecommunications and signals connections to existing infrastructure.

Excluded from the scope of the project and/or our budget

- Operational equipment
- Moving and relocation expenses during construction and on completion
- Parking space replacement
- Upgrades to existing main kitchen food service equipment
- Existing South Hall mechanical and electrical system replacement/upgrades (except seismic upgrades to existing systems, Pico Passage ventilation, fire alarm code upgrades and minor lighting replacement and re-lamping)
- Water recycling systems
- Underground diesel/fuel oil storage systems
- Specialty gaseous fire suppression systems
- Emergency fire water storage systems
- Photovoltaic renewable energy systems (provision for future installation only)

CAPITAL COST ESTIMATE

CM/GC OPTION



Excluded from the scope of the project and/or our budget

- Show lighting and controls
- Telephone/data "active" equipment – including hubs, routers, servers, switches, LAN, UPS and the like
- Included in our project cost mark-up
- Independent 3rd party MEP commissioning systems
- Audio-visual equipment and cabling
- Utility connection charges and fees

Included in our project cost mark-up

- Independent 3rd party MEP commissioning systems
- Audio-visual equipment and cabling
- Utility connection charges and fees



Project Cost Summary Comparison - CM/GC Option

		MGAC			Populous		
		SF	\$/SF	TOTAL \$x 1,000	SF	\$/SF	TOTAL \$x 1,000
I.	Renovation / Demolition	2,491,396	11.03	27,478	2,491,396	7.37	18,362
II.	New Construction	693,961	519.60	360,580	550,953	421.51	232,231
TOTAL BUILDING CONSTRUCTION				388,058			250,593
III.	Sitework	615,229	55.71	34,273	360,146	52.80	19,016
TOTAL SITEWORK				34,273			19,016
TOTAL BUILDING AND SITEWORK				422,331			269,609
Z21	General Conditions	6.00%		25,340	8.50%		22,917
Z22	Bonds & Insurance	3.00%		13,430	2.10%		6,143
Z23	Contractor's Overhead, Profit & Fee	3.00%		13,833	4.00%		11,947
BUILDING CONSTRUCTION COST BEFORE ESCALATION				474,934			310,615
Z30	Escalation to Start Date (Jul 2018)	8.51%		40,436	10.50%		33,262
RECOMMENDED BUDGET FOR CONSTRUCTION				515,370			343,877 ¹
Project Soft Costs (Additional to Construction Budget)							
	Local and Government Fees / Permits and Testing Fees	4.00%		20,615	4.00%		13,988 ²
	Furnishings, Fixtures & Equipment (FF&E)			4,169			2,389 ³
	IT / Communicationns / Audio-Visual System			5,837			
	Special Mock-ups			100			100
	Artwork (Including Installation)	1.00%		5,154	1.00%		3,497
	Federal, State and Local Agency Costs (Legal)			3,000			3,000
	Environmental (EIR/CEQA)			1,500			1,500
	BCA Inspection Fees	4.00%		20,615	4.00%		13,988
	Professional (Design / Services) Fees	10.00%		51,537	10.00%		34,970
	Project Administration	4.00%		20,615	4.00%		13,755
TOTAL PROJECT SOFT COSTS				133,141			87,187
	Project Contingency	14.00%		72,152	8.80%		37,984
RECOMMENDED PROJECT BUDGET				720,663			469,049 ⁴

Note:

1. For comparison purposes - Populous cost estimate is reformatted to match the ICE (FF&E and Permit & Testing Fees are shown as part of project soft costs)
2. The BOE's percentage factor of 4% for local government fees/ permits and testing fees is applied to Populous estimate (in lieu of 1.4% noted in Populous cost model)
3. FF&E value is shown as part of Soft Costs to line up with ICE
4. Project soft costs shown in BOE's project budget soft costs are applied in Populous Cost Model - for comparison with ICE

Component Cost Summary Comparison (CM/GC Option)

	MGAC		Populous		Difference '+/'-)
	\$/SF	Total \$ x 1,000	\$/SF	Total \$ x 1,000	
	693,961 SF		623,268 SF		
A10 Foundations	15.56	10,801	15.42	9,611	1,190
A20 Basement Construction	0.00	0	0.00	0	-
A Substructure	15.56	10,801	15.42	9,611	1,190
B10 Superstructure	136.37	94,639	96.90	60,393	34,246
B20 Exterior Enclosure	63.47	44,045	48.65	30,324	13,721
B30 Roofing	27.11	18,810	23.42	14,594	4,216
B Shell	226.95	157,494	168.97	105,311	52,183
C10 Interior Construction	33.41	23,187	21.63	13,483	9,704
C20 Stairways	5.39	3,740	0.00	0	3,740
C30 Interior Finishes	35.07	24,338	27.21	16,957	7,381
C Interiors	73.87	51,264	48.84	30,440	20,824
D10 Conveying Systems	15.24	10,577	11.35	7,072	3,505
D20 Plumbing Systems	13.76	9,550	9.82	6,122	3,428
D30 Heating, Ventilation & Air Conditioning	56.84	39,443	50.24	31,313 #	8,130
D40 Fire Protection	6.28	4,355	4.66	2,903	1,452
D50 Electrical Lighting, Power & Communications	55.02	38,184	43.82	27,309 #	10,875
D Services	147.14	102,109	119.88	74,719	27,390
E10 Equipment	3.19	2,214	6.59	4,106	(1,892)
E20 Furnishings	0.78	540	0.00	0	540
E Equipment & Furnishings	3.97	2,754	6.59	4,106	(1,352)
F10 Special Construction	0.00	0	0.00	0	-
F20 Selective Demolition	2.56	1,774	0.00	0	1,774
F Special Construction & Demolition	2.56	1,774	0.00	0	1,774
G10 Site Preparation	1.41	978	10.44	6,504	(5,526)
G20 Site Improvements	29.90	20,750	14.44	9,003	11,747
G30 Site Mechanical Utilities	5.71	3,962	8.67	5,402	(1,440)
G40 Site Electrical Utilities	4.49	3,119	0.00	0	3,119
G90 Other Site Construction	0.00	0	0.00	0	-
G Building Sitework	41.51	28,809	33.55	20,909	7,900
ELEMENTAL COST BEFORE CONTINGENCIES	511.56	355,004	393.24	245,096	109,908
Z10 Design Contingency	51.16	35,500	45.89	28,601	6,899
Z11 General Requirements	16.88	11,715	0.00	0	11,715
Z12 Phasing Requirements	28.98	20,111	0.00	0	20,111
ELEMENTAL COST INCLUDING CONTINGENCIES	608.58	422,331	439.13	273,697	148,634
Z21 General Conditions	36.51	25,340	33.43	20,833	4,507
Z22 Bonds & Insurance	19.35	13,430	9.07	5,656	7,774
Z23 Contractor's Overhead, Profit & Fee	19.93	13,833	17.65	10,999	2,834
Z24 Construction Contingency	0.00	0	0.00	0	-
CONSTRUCTION COST BEFORE ESCALATION	684.38	474,934	499.28	311,185	163,749
Z30 Escalation From Overall Summary	58.27	40,436	53.00	33,035	7,401
RECOMMENDED BUDGET	742.65	515,370	552.28	344,220 #	171,150

Note:

- 1.. LEED and Green building program cost from Populous Cost Model is included under HVAC(D30)
2. Solar Ready Cost is included under Electrical (D50)
3. FF&E costs and Permits and Inspection Fees are shown as part of Project Soft Costs

Component Cost Breakdown (CM/GC Option)

Detailed Cost Summary

	1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16		
	Existing South Hall		Existing West Hall		Existing Concourse Hall		Sub-Total (Existing Buildings)		Exhibit Halls		Meeting Rooms		Ballroom		Pre-function / Circulation		BOH / Loading Dock / F&B / Kitchen		Central Utility Plant		Sub-total (New Construction)		Outdoor Event Space		Gilbert Lindsay Plaza		Sitework		Street Improvement (B-permit)		TOTAL		
	\$/SF	\$ X 1,000	\$/SF	\$ X 1,000	\$/SF	\$ X 1,000	\$/SF	\$ X 1,000	\$/SF	\$ X 1,000	\$/SF	\$ X 1,000	\$/SF	\$ X 1,000	\$/SF	\$ X 1,000	\$/SF	\$ X 1,000	\$/SF	\$ X 1,000	\$/SF	\$ X 1,000	\$/SF	\$ X 1,000	\$/SF	\$ X 1,000	\$/SF	\$ X 1,000	\$/SF	\$ X 1,000	\$/SF	\$ X 1,000	
	1,184,049 SF		975,000 SF		332,347 SF		2,491,396 SF		181,625 SF		99,000 SF		70,000 SF		144,716 SF		117,918 SF		10,000 SF		693,961 SF		40,419 SF		90,000 SF		302,980 SF		181,830 SF				
A10 Foundations	0.00	0	0.00	0	0.00	0	0.00	0	17.33	3,148	17.33	1,716	17.33	1,213	17.33	2,508	17.33	2,044	17.33	173	15.56	10,801											10,801
A20 Basement Construction	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0											0
A Substructure	0.00	0	0.00	0	0.00	0	0.00	0	17.33	3,148	17.33	1,716	17.33	1,213	17.33	2,508	17.33	2,044	17.33	173	15.56	10,801											10,801
B10 Superstructure	2.79	3,308	3.85	3,750	4.07	1,353	3.38	8,411	138.35	25,128	138.35	13,697	138.35	9,685	138.35	20,021	138.35	16,314	138.35	1,384	124.25	86,228											94,639
B20 Exterior Enclosure	2.46	2,910	0.00	0	0.00	0	1.17	2,910	66.00	11,987	66.00	6,534	66.00	4,620	66.00	9,551	66.00	7,783	66.00	660	59.28	41,135											44,045
B30 Roofing	0.00	0	0.00	0	0.00	0	0.00	0	30.18	5,481	30.18	2,988	30.18	2,113	30.18	4,368	30.18	3,559	30.18	302	27.11	18,810											18,810
B Shell	5.25	6,217	3.85	3,750	4.07	1,353	4.54	11,321	17.33	42,597	234.53	23,218	234.53	16,417	234.53	33,940	234.53	27,655	234.53	2,345	210.64	146,173										157,494	
C10 Interior Construction	0.50	592	0.50	488	0.50	166	0.50	1,246	36.73	6,672	45.58	4,512	41.54	2,908	32.00	4,631	24.50	2,889	33.00	330	31.62	21,941											23,187
C20 Stairways	0.00	0	0.00	0	0.00	0	0.00	0	6.00	1,090	6.00	594	6.00	420	6.00	868	6.00	708	6.00	60	5.39	3,740											3,740
C30 Interior Finishes	0.00	0	0.00	0	0.00	0	0.00	0	18.00	3,269	22.90	2,267	77.00	5,390	11,650	14.73	1,737	2.50	25	35.07	24,338												24,338
C Interiors	0.50	592	0.50	488	0.50	166	0.50	1,246	234.53	11,031	74.48	7,373	124.54	8,718	118.50	17,149	45.23	5,333	41.50	415	72.08	50,018										51,264	
D10 Conveying Systems	0.00	0	0.00	0	0.00	0	0.00	0	16.97	3,082	16.97	1,880	16.97	1,188	16.97	2,456	16.97	2,001	16.97	170	15.24	10,577											10,577
D20 Plumbing Systems	0.25	296	0.25	244	0.26	85	0.25	625	19.37	3,519	11.10	1,099	0.00	0	15.06	2,179	16.95	1,998	13.00	130	12.86	8,925											9,550
D30 Heating, Ventilation & Air Conditioning	1.96	2,322	1.75	1,706	1.75	582	1.85	4,610	47.80	8,681	44.55	4,411	44.61	3,123	35.13	5,083	41.12	4,849	868.70	8,687	50.19	34,833											39,443
D40 Fire Protection	0.21	250	0.26	250	0.26	88	0.24	588	6.00	1,090	6.00	594	6.00	420	5.00	724	5.74	677	26.30	263	5.43	3,767											4,355
D50 Electrical Lighting, Power & Communications	1.06	1,250	1.28	1,250	1.31	435	1.18	2,935	68.91	12,516	62.72	6,210	60.65	4,246	36.10	5,224	42.32	4,990	206.25	2,063	50.79	35,249											38,184
D Services	3.48	4,118	3.54	3,450	3.58	1,189	3.51	8,757	60.73	28,888	141.35	13,994	128.23	8,976	108.25	15,666	123.10	14,516	1,131.22	11,312	134.52	93,351										102,109	
E10 Equipment	0.00	0	0.00	0	0.00	0	0.00	0	5.50	999	0.00	0	4.50	315	0.00	0	7.63	900	0.00	0	3.19	2,214											2,214
E20 Furnishings	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	1.50	105	2.19	317	1.00	118	0.00	0	0.78	540											540
E Equipment & Furnishings	0.00	0	0.00	0	0.00	0	0.00	0	159.05	999	0.00	0	6.00	420	2.19	317	8.63	1,018	0.00	0	3.97	2,754										2,754	
F10 Special Construction	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0										0	
F20 Selective Demolition	0.41	480	1.33	1,294	0.00	0	0.71	1,774	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0											1,774
F Special Construction & Demolition	0.41	480	1.33	1,294	0.00	0	0.71	1,774	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0										1,774	
G10 Site Preparation							0.00	0													0.00	0	0.00	0	2.25	203	2.56	776	0.00	0			978
G20 Site Improvements							0.00	0													0.00	0	48.00	1,940	37.00	3,330	39.80	12,060	18.81	3,420			20,750
G30 Site Mechanical Utilities							0.00	0													0.00	0	2.00	81	1.00	90	12.21	3,701	0.50	91			3,962
G40 Site Electrical Utilities							0.00	0													0.00	0	9.00	364	5.00	450	7.01	2,125	0.99	180			3,119
G90 Other Site Construction							0.00	0													0.00	0	0.00	0	0.00	0	0.00	0	0.00	0			0
G Building Sitework							0.00	0													0.00	0	59	2,385	45.25	4,073	62	18,661	20.30	3,691			28,809
ELEMENTAL COST BEFORE CONTINGENCIES	9.63	11,408	9.21	8,981	8.15	2,709	9.27	23,098	477.15	86,662	467.68	46,301	510.62	35,744	480.80	69,580	428.82	50,566	1,424.58	14,246	436.76	303,098	59.00	2,385	45.25	4,073	61.59	18,661	20.30	3,691			355,004
Z10 Design Contingency	0.96	1,141	0.92	898	0.82	271	0.93	2,310	47.71	8,666	46.77	4,630	19.90	3,574	48.08	6,958	42.88	5,057	142.46	1,425	43.68	30,310	5.90	238	4.53	407	6.16	1,866	2.03	369			35,500
Z11 General Requirements	0.32	376	0.30	296	0.27	89	0.31	762	15.75	2,860	15.43	1,528	0.00	1,180	15.87	2,296	14.15	1,669	47.01	470	14.41	10,002	1.95	79	1.49	134	2.03	616	0.67	122			11,715
Z12 Phasing Requirements	0.55	646	0.52	509	0.46	153	0.53	1,308	27.03	4,909	26.49	2,623	28.93	2,025	27.24	3,942	24.29	2,865	80.70	807	24.74	17,170	3.34	135	2.56	231	3.49	1,057	1.15	209			20,111
ELEMENTAL COST INCLUDING CONTINGENCIES	11.46	13,571	10.96	10,685	9.70	3,222	11.03	27,478	567.64	103,097	556.38	55,082	607.46	42,523	571.99	82,776	510.15	60,156	1,694.75	16,948	519.60	360,580	70.19	2,837	53.83	4,845	73.27	22,200	24.15	4,391			422,331
Z21 General Conditions	0.69	814	0.66	641	0.58	193	0.66	1,649	34.06	6,186	33.38	3,305																					

CAPITAL COST ESTIMATE

CM/GC OPTION



Major Differences between our Cost Opinion and the Populous Estimate

Below we have listed the major differences that we believe exist between our estimate of construction cost and the estimate provided by Populous for the CM/GC option. Given the level of cost detail being developed at this stage of the project it is not possible to provide a completely accurate picture of cost difference and the scope of this study did not include for a reconciliation between our estimated costs and those developed by Populous. The list and the associated numbers below should be treated as a guide to the difference in scope and price differential based upon our understanding of scope coverage in the two estimates. All the costs represent higher amounts in the MGAC estimate:

CM/GC Major Differences between our Cost Opinion and the Populous Estimate	
Area Differences - the gross areas shown in the Populous Concept Validation, Volume 2 drawings (page 35) is not consistent with the areas used in the Populous Cost Estimate:	
New construction difference + 10,109 square feet	\$4,114,000
Renovation difference	\$13,685,000
Program requirements not appearing to be covered in the Populous estimate:	
Front of House exterior plaza	\$2,752,000
Seismic upgrade of existing South Hall	\$2,960,000
Seismic bracing of existing MEP	\$2,618,000
Signage upgrades to South Hall to match new expansion	\$592,000
Integration of BMS to new system	\$250,000
Code-driven fire alarm upgrades to West Hall	\$250,000
Pico Boulevard passage ventilation	\$250,000
Lighting - re-lamping, seismic and minor upgrades to West Hall	\$1,000,000
Seismic upgrade of existing West Hall	\$3,413,000
Seismic bracing of existing MEP equipment at West Hall	\$1,950,000
Signage upgrades to West Hall to match new expansion	\$488,000
Code-driven fire alarm upgrades to South Hall	\$250,000
Lighting - re-lamping, seismic and minor upgrades to South Hall	\$1,000,000
Atrium architectural and seismic upgrades	\$2,910,000
Seismic upgrade of existing Concourse Hall	\$831,000
Seismic bracing of existing MEP equipment at Concourse Hall	\$754,000
Signage upgrades to Concourse to match new expansion	\$166,000
Lighting - re-lamping, seismic and minor upgrades to Concourse	\$350,000
Code-driven fire alarm upgrades to Concourse	\$85,000
Exterior facade improvements to match new expansion	\$6,688,000
Perimeter street improvement	\$3,691,000
Gilbert Lindsey Plaza improvement	\$4,073,000
Freeway screen walls	\$2,500,000

CAPITAL COST ESTIMATE

CM/GC OPTION



Modification to existing deck to achieve similar grade level	\$3,927,000
Cost plan allowances (unit prices or quantities)	
Structural Steel - MGAC's estimate is based upon 28lbs of steel per square foot. We understand the Populous estimate is based upon 21 lbs per square foot. The Populous technical report references steel weights between 22 and 40 pounds per square foot.	\$12,396,000
Meeting rooms facade assumed to be similar to east facade of Ballroom	\$3,465,000
Allowance for skylights to achieve daylighting at Exhibit Hall (per narrative)	\$2,250,000
Exhibit Halls - air walls	\$2,675,000
Stairs, elevators and escalator pricing	\$7,244,000
Site work allowance	\$1,483,000
Interior finishes - allowances per the Technical Report	\$7,381,000
Phasing requirements allowance	\$20,111,000
General Conditions/General Requirements	\$12,624,000
Escalation extended to revised start date of July 2018 (Populous estimate based on a June 2017 start date)	\$12,660,000
Mark-up variance driven by trade cost differences	\$17,195,000

CAPITAL COST ESTIMATE

DESIGN-BUILD-FINANCE-OPERATE-MAINTAIN



BASIS OF ESTIMATE/REFERENCES

- Site visit to review existing conditions
- Discussions with the HOK/Arup representatives, City representatives and Operations staff at the Convention Center
- Concept floor plans for Scheme B2 prepared by HOK/Arup dated June 1, 2016
- Building area tabulation prepared by Arup
- Preliminary seismic review of LACC dated May 27, 2016
- Draft mechanical design narrative dated May 27, 2016

ASSUMPTIONS

General

- The project will be procured under a single construction contract
- The project will be competitively bid for all sub-contract works
- The phasing and sequencing of the work will be determined by the General Contractor in order to meet the proposed / required schedule - premium for phasing requirements is included in the cost plan based on a percentage factor of trade costs
- The facilities are required to be in full operation during construction
- Contractor staging and parking will be made available on or adjacent to the site
- Existing West Hall and Concourse Hall
- Demolition of existing West Hall and Concourse Hall is assumed to be carried out in Phase 1B
- Modifications to the existing South Hall façade (connecting to the Concourse Hall) after demolition of Concourse Hall is included in the project scope

Existing South Hall

- Demolition of the existing curved back wall, loading dock ramps and canopies is included
- Demolition of the existing link bridge connecting South and West Halls is included
- Exterior façade improvements to the existing building are required to provide an aesthetic connection to the new expansion
- Minor roof upgrades are required to match the new expansion
- Allowances are included for seismic upgrade, including to the atrium
- Seismic upgrade allowances in connection with MEP equipment

CAPITAL COST ESTIMATE

DESIGN-BUILD-FINANCE-OPERATE-MAINTAIN



ASSUMPTIONS

New construction assumptions

- Normal ground conditions assumed - rock excavation and soil mitigation are excluded
- The building will be founded on conventional spread footings and continuous wall footings
- The new addition will be structurally separated from the existing building - seismic joint covers are provided between new and existing structure
- The structural framing system is assumed to be similar to the existing structure - reinforced concrete flat slab on the lower floor with reinforced concrete shear walls for the lateral load resisting system at level +250', structures above level 250' will be framed with structural steel for both gravity and lateral framed resisting systems. Steel framing is based on an average structural steel weight of 28 pounds per square foot. All steel will be fireproofed.
- Structural support to curtain walls, new air walls and catwalks is included
- Structural modifications to the existing deck at El+250' to suit new loading capacity is included
- Exterior façade treatment assumes a combination of composite metal panel system, glazed curtain walls (to approximately 20% of the exterior walls) and plastered CMU walls at the back of house areas
- Roofing includes single ply membrane roofing and precast concrete pavers to plaza and terraces - an allowance is also provided for green roof construction
- Interior construction includes all fixed walls and operable partitions to exhibit halls, ballroom and meeting rooms. It also includes new doors and interior glazing. Acoustical doors are provided to function spaces
- The allowance for interior finishes is based on the following:
 - Exhibit hall - sealed concrete floor, paint to walls and exposed ceiling with allowance for acoustical ceiling panels
 - Ballroom - carpet, a combination of upholstered acoustical wall panels and wall covering to walls, stretch fabric ceilings
 - Meeting rooms - carpet to floors, a combination of upholstered acoustical wall panels, wall covering and painted gypsum board to walls, acoustical ceiling panels
 - Public toilets - ceramic floor and wall tiles, and painted gypsum board ceilings
 - Pre-function areas - carpet to floors, a combination of veneered plastered walls and wall covering, architectural grade gypsum board ceilings
 - Back-of house areas - sealed concrete floors, painted gypsum board with wall protection panel up to 4' high, exposed ceilings
 - Plating Kitchen/ Pantries/Kitchen - quarry floor tiling, FRP wall panels and washable ceiling tiles
 - Building support spaces - linoleum flooring/sealed concrete, painted walls and acoustical ceiling tiles
- Interior fittings and specialties are provided based on cost/sf allowances
- Fixed furniture to support spaces are included
- Nine (9) passenger elevators, two (2) freight elevators and two (2) service elevators are included
- Forty (40) escalators are included
- Plumbing includes sanitary fixtures, waste, vent, domestic water pipework systems, floor and roof drainage, natural gas, compressed air and industrial cold water to exhibition hall floor boxes, kitchen service connections and grease waste - fuel/oil separation systems

CAPITAL COST ESTIMATE

DESIGN-BUILD-FINANCE-OPERATE-MAINTAIN



ASSUMPTIONS

- HVAC includes hi-efficiency central heating and chilling, thermal ice storage, distribution pipework, roof-mounted air handlers/vehicle exhaust at exhibition halls, 24/7 cooling, terminal reheat, stair pressurization, kitchen exhaust, pollution control units, air distribution and controls
- Electrical includes normal, emergency, machine, equipment and user convenience power, floor box power and data, lighting, telephone/data, A/V (conduit only), fire alarm and security. (A/V equipment and cabling allowances included in our project costs – not construction)
- Fire protection includes automatic wet sprinklers, fire department hose valve connection points at stairwells and fire water booster systems

Site Work

- Site improvements to the existing Gilbert Lindsey Plaza
- Surfacing, landscaping and furnishings to proposed deck terraces – waterproofing to the deck is included with the building construction budget
- An allowance is included to upgrade the entire finished site (except areas allocated for future development)
- An allowance to cover sidewalk and street improvement that will be impacted by demolition / renovation is included in the cost plan
- Modifications to Pico Boulevard between Figueroa Street and LA Live Way
- Surface parking is included to an area of 180,000 square feet - assumed to be temporarily located in the future development
- Reconfiguration of the loading dock ramp and Convention Center Drive
- Screen walls between the new construction and the freeway
- Upgrades to exterior signage
- Site utilities include domestic and fire water, water realignment, sewer, storm drainage, site lighting, natural gas, CHW/HHW pipework distribution across Pico Blvd., 35/4.16 kV normal power equipment and cabling, telecommunications and signals connections to existing infrastructure.

Excluded from the scope of the project and/or our budget

- Operational equipment
- New FF+E for relocated program areas
- Moving and relocation expenses during construction and on completion
- Existing South Hall mechanical and electrical system replacement/upgrades (except seismic upgrades to existing systems, Pico Passage ventilation, fire alarm code upgrades and minor lighting replacement and re-lamping)
- Water recycling systems
- Underground diesel/fuel oil storage systems
- Specialty gaseous fire suppression systems
- Emergency fire water storage systems
- Photovoltaic renewable energy systems (provision for future installation only)
- Show lighting and controls
- Telephone/data “active” equipment – including hubs, routers, servers, switches, LAN, UPS and the like

CAPITAL COST ESTIMATE

DESIGN-BUILD-FINANCE-OPERATE-MAINTAIN



Included in our project cost mark-up

- Independent 3rd party MEP commissioning systems
- Audio-visual equipment and cabling
- Utility connection charges and fees



Project Cost Summary Comparison - DBFOM Option

		MGAC			Arup		
		SF	\$/SF	TOTAL \$x 1,000	SF	\$/SF	TOTAL \$x 1,000
I.	Renovation / Demolition	2,523,098	11.83	29,848	2,634,479	10.27	27,047
II.	New Construction	1,800,465	377.69	680,012	1,800,645	302.31	544,361
TOTAL BUILDING CONSTRUCTION				709,860			571,408
III.	Sitework	455,080	64.43	29,319	180,000	101.88	18,338
TOTAL SITEWORK				29,319			18,338
TOTAL BUILDING AND SITEWORK				739,179			589,746
Z21	General Conditions	6.00%		44,351	10.00%		58,975
Z22	Bonds & Insurance	3.00%		23,506	2.30%		12,918
Z23	Contractor's Overhead, Profit & Fee	4.00%		32,281	4.50%		29,774
BUILDING CONSTRUCTION COST BEFORE ESCALATION				839,318			691,413
Z30	Escalation to Start Date (Dec 2017)	6.06%		50,859	10.50%		72,669
RECOMMENDED CONSTRUCTION BUDGET				890,177			764,082 ¹
Project Soft Costs (Additional to Construction Budget)							
	Local and Government Fees/ Permit and Testing Fees	4.00%		35,607	1.40%		10,706
	Furnishings, Fixtures & Equipment (FF&E)			7,226			1,700 ²
	IT / Communications / Audio-Visual System			9,790			
	Special Mock-ups			100			100
	Artwork (Including Installation)	1.00%		8,902	1.00%		7,641
	Federal, State and Local Agency Costs (Legal)			3,000			3,000
	Environmental (EIR/CEQA)			1,500			1,500
	BCA Inspection Fees	1.00%		8,902	1.00%		7,641
	Professional Fees	7.00%		62,312	7.00%		53,533
	Project Administration	2.00%		17,804	2.00%		15,295
TOTAL PROJECT SOFT COSTS				155,143			101,116
	Project Contingency	8.00%		83,626	14.00%		119,487
RECOMMENDED PROJECT BUDGET				1,128,945			984,684

Note:

1. For comparison purposes - ARUP cost estimate is reformatted to match the ICE (FF&E and Permit & Testing Fees are shown as part of project soft costs)

2. .FF&E value is shown as part of Soft Costs to line up with ICE



Component Cost Summary Comparison

		MGAC		Arup		Difference '+ / (-)
		\$/SF	Total \$ x 1,000	\$/SF	Total \$ x 1,000	\$ x 1,000
		1,800,465 SF		1,800,465 SF		
A10	Foundations	15.01	27,025	11.98	21,565	5,460
A20	Basement Construction	0.00	0	0.00	0	-
A	Substructure	15.01	27,025	11.98	21,565	5,460
B10	Superstructure	78.64	141,581	81.77	147,219	(5,638)
B20	Exterior Enclosure	33.64	60,572	26.90	48,430	12,142
B30	Roofing	10.62	19,127	11.65	20,968	(1,841)
B	Shell	122.90	221,280	120.31	216,617	4,663
C10	Interior Construction	29.34	52,822	20.44	36,800	16,022
C20	Stairways	6.00	10,803	2.22	4,000	6,803
C30	Interior Finishes	31.85	57,344	30.90	55,638	1,706
C	Interiors	67.19	120,968	53.56	96,438	24,530
D10	Conveying Systems	8.91	16,042	7.71	13,890	2,152
D20	Plumbing Systems	13.88	24,985	10.14	18,260	6,725
D30	Heating, Ventilation & Air Conditioning	49.17	88,520	32.90	59,236	29,284
D40	Fire Protection	5.52	9,934	4.50	8,100	1,834
D50	Electrical Lighting, Power & Communications	47.97	86,376	48.55	87,406	(1,030)
D	Services	125.44	225,857	103.80	186,892	38,965
E10	Equipment	1.90	3,420	4.72	8,500	(5,080)
E20	Furnishings	0.76	1,365	1.78	3,200	(1,835)
E	Equipment & Furnishings	2.66	4,785	6.50	11,700	(6,915)
F10	Special Construction	0.00	0	0.19	350	(350)
F20	Selective Demolition	7.96	14,331	5.91	10,634	3,697
F	Special Construction & Demolition	7.96	14,331	6.10	10,984	3,347
G10	Site Preparation	0.54	965	0.00	0	965
G20	Site Improvements	9.85	17,727	8.84	15,915	1,812
G30	Site Mechanical Utilities	2.16	3,892	0.86	1,550	2,342
G40	Site Electrical Utilities	1.55	2,786	0.00	0	2,786
G90	Other Site Construction	0.00	0	0.00	0	-
G	Building Sitework	14.09	25,370	9.70	17,465	7,905
ELEMENTAL COST BEFORE CONTINGENCIES		355.25	639,617	311.95	561,661	77,956
Z10	Design Contingency	35.53	63,962	18.30	32,956	31,006
Z11	General Requirements	11.72	21,107	0.00	0	21,107
Z12	Phasing Requirements	8.05	14,494	0.00	0	14,494
ELEMENTAL COST INCLUDING CONTINGENCIES		410.55	739,179	330.26	594,617	144,562
Z21	General Conditions	24.63	44,351	31.20	56,166	(11,815)
Z22	Bonds & Insurance	13.06	23,506	7.17	12,918	10,588
Z23	Contractor's Overhead, Profit & Fee	17.93	32,281	15.76	28,384	3,897
Z24	Construction Contingency	0.00	0	0.00	0	-
CONSTRUCTION COST BEFORE ESCALATION		466.17	839,318	384.39	692,085	147,233
Z30	Escalation From Overall Summary	28.25	50,859	40.36	72,669	(21,810)
RECOMMENDED BUDGET		494.42	890,177	424.75	764,754	125,423

Component Cost Breakdown (DBFOM Option)

Detailed Cost Summary

	1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16	
	Existing South Hall		Existing West Hall & Councourse Hall		Sub-Total (Existing Buildings - Renovation/ Demolition)		Parking Replacement		Exhibit Halls		Meeting Rooms		Ballroom		Pre-function / Circulation		BOH / Loading Dock / F&B / Kitchen		Central Utility Plant		Sub-Total (New Construction)		Outdoor Event Space		Gilbert Lindsay Plaza		Sitework		Street Improvement (B-permit)		TOTAL	
	\$/SF	TOTAL \$ x 1,000	\$/SF	TOTAL \$ x 1,000	\$/SF	TOTAL \$ x 1,000	\$/SF	TOTAL \$ x 1,000	\$/SF	TOTAL \$ x 1,000	\$/SF	TOTAL \$ x 1,000	\$/SF	TOTAL \$ x 1,000	\$/SF	TOTAL \$ x 1,000	\$/SF	TOTAL \$ x 1,000	\$/SF	TOTAL \$ x 1,000	\$/SF	TOTAL \$ x 1,000	\$/SF	TOTAL \$ x 1,000	\$/SF	TOTAL \$ x 1,000	\$/SF	TOTAL \$ x 1,000	\$/SF	TOTAL \$ x 1,000	TOTAL \$ x 1,000	
	1,215,751 SF		1,307,347 SF		2,523,098 SF		200,465 SF		390,000 SF		212,000 SF		70,000 SF		389,900 SF		525,600 SF		12,500 SF		1,800,465 SF		20,000 SF		60,250 SF		193,000 SF		181,830 SF			
A10 Foundations	0.00	0	0.00	0	0.00	0	15.01	3,009	15.01	5,854	15.01	3,182	15.01	1,051	15.01	5,852	15.01	7,889	15.01	188	15.01	27,025									27,025	
A20 Basement Construction	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0									0	
A Substructure	0.00	0	0.00	0	0.00	0	15.01	3,009	15.01	5,854	15.01	3,182	15.01	1,051	15.01	5,852	15.01	7,889	15.01	188	15.01	27,025									27,025	
B10 Superstructure	3.17	3,852	0.00	0	1.53	3,852	40.95	8,209	80.95	31,571	80.95	17,161	80.95	5,667	80.95	31,562	80.95	42,547	80.95	1,012	76.50	137,729									141,581	
B20 Exterior Enclosure	2.39	2,910	0.00	0	1.15	2,910	23.14	4,639	33.14	12,925	33.14	7,026	33.14	2,320	33.14	12,921	33.14	17,418	33.14	414	32.03	57,663									60,572	
B30 Roofing	0.00	0	0.00	0	0.00	0	6.18	1,239	11.18	4,360	11.18	2,370	11.18	783	11.18	4,359	11.18	5,876	11.18	140	10.62	19,127									19,127	
B Shell	5.56	6,762	0.00	0	2.68	6,762	70.27	14,087	15.01	48,855	125.27	26,557	125.27	8,769	125.27	48,843	125.27	65,842	125.27	1,566	119.15	214,519									221,280	
C10 Interior Construction	0.50	608	0.00	0	0.24	608	1.00	200	35.35	13,785	45.08	9,556	41.54	2,908	32.00	12,477	24.50	12,877	32.90	411	29.00	52,214									52,822	
C20 Stairways	0.00	0	0.00	0	0.00	0	6.00	1,203	6.00	2,340	6.00	1,272	6.00	420	6.00	2,339	6.00	3,154	6.00	75	6.00	10,803									10,803	
C30 Interior Finishes	0.00	0	0.00	0	0.00	0	2.00	401	18.00	7,020	22.90	4,855	77.00	5,390	80.50	31,387	15.71	8,260	2.50	31	31.85	57,344									57,344	
C Interiors	0.50	608	0.00	0	0.24	608	9.00	1,804	125.27	23,145	73.98	15,683	124.54	8,718	118.50	46,203	46.21	24,290	41.40	518	66.85	120,361									120,968	
D10 Conveying Systems	0.00	0	0.00	0	0.00	0	8.91	1,786	8.91	3,475	8.91	1,889	8.91	624	8.91	3,474	8.91	4,683	8.91	111	8.91	16,042									16,042	
D20 Plumbing Systems	0.21	250	0.00	0	0.10	250	2.00	401	18.12	7,068	10.97	2,326	0.00	0	15.04	5,863	16.97	8,919	12.65	158	13.74	24,735									24,985	
D30 Heating, Ventilation & Air Conditioning	1.96	2,378	0.00	0	0.94	2,378	5.50	1,103	47.67	18,593	44.45	9,424	44.61	3,123	35.36	13,786	36.03	18,937	1,694.30	21,179	47.84	86,143									88,520	
D40 Fire Protection	0.21	250	0.00	0	0.10	250	3.50	702	6.00	2,340	6.00	1,272	6.00	420	5.00	1,950	5.17	2,716	22.79	285	5.38	9,684									9,934	
D50 Electrical Lighting, Power & Communications	1.03	1,250	0.00	0	0.50	1,250	4.50	902	64.87	25,299	64.78	13,734	62.84	4,399	37.31	14,546	43.85	23,048	255.80	3,198	47.28	85,126									86,376	
D Services	3.40	4,128	0.00	0	1.64	4,128	24.41	4,893	59.35	56,774	135.12	28,645	122.36	8,565	101.61	39,619	110.93	58,303	1,994.45	24,931	123.15	221,729									225,857	
E10 Equipment	0.00	0	0.00	0	0.00	0	0.05	10	5.50	2,145	0.00	0	4.50	315	0.00	0	1.81	950	0.00	0	1.90	3,420									3,420	
E20 Furnishings	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	1.50	105	1.88	735	1.00	526	0.00	0	0.76	1,365									1,365	
E Equipment & Furnishings	0.00	0	0.00	0	0.00	0	0.05	10	145.57	2,145	0.00	0	6.00	420	1.88	735	2.81	1,476	0.00	0	2.66	4,785									4,785	
F10 Special Construction	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0									0	
F20 Selective Demolition	0.93	1,136	10.09	13,195	5.68	14,331	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0									14,331	
F Special Construction & Demolition	0.93	1,136	10.09	13,195	5.68	14,331	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0									14,331	
G10 Site Preparation					0.00	0															0.00	0	0.00	0	2.25	136	4.30	830	0.00	0	965	
G20 Site Improvements					0.00	0															48.00	960	37.00	2,229	52.47	10,128	24.25	4,410	17,727			
G30 Site Mechanical Utilities					0.00	0															2.00	40	1.00	60	19.17	3,701	0.50	91	3,892			
G40 Site Electrical Utilities					0.00	0															9.00	180	5.00	301	11.01	2,125	0.99	180	2,786			
G90 Other Site Construction					0.00	0															0.00	0	0.00	0	0.00	0	0.00	0	0			
G Building Sitework					0.00	0															0.00	0	59	1,180	45.25	2,726	87	16,783	25.74	4,681	25,370	
ELEMENTAL COST BEFORE CONTINGENCIES	10.39	12,633	10.09	13,195	10.24	25,828	118.74	23,803	350.70	136,773	349.37	74,067	393.17	27,522	362.28	141,252	300.23	157,800	2,176.13	27,202	326.82	588,419	59.00	1,180	45.25	2,726	86.96	16,783	25.74	4,681	639,617	
Z10 Design Contingency	1.04	1,263	1.01	1,320	1.02	2,583	11.87	2,380	35.07	13,677	34.94	7,407	19.84	2,752	36.23	14,125	30.02	15,780	217.61	2,720	32.68	58,842	5.90	118	4.53	273	8.70	1,678	2.57	468	63,962	
Z11 General Requirements	0.34	417	0.33	435	0.34	852	3.92	785	11.57	4,514	11.53	2,444	0.00	908	11.96	4,661	9.91	5,207	71.81	898	10.78	19,418	1.95	39	1.49	90	2.87	554	0.85	154	21,107	
Z12 Phasing Requirements	0.24	286	0.23	299	0.23	585	2.69	539	7.95	3,099	7.92	1,678	8.91	624	8.21	3,201	6.80	3,576	49.31	616	7.41	13,334	1.34	27	1.03	62	1.97	380	0.58	106	14,494	
ELEMENTAL COST INCLUDING CONTINGENCIES	12.01	14,599	11.66	15,249	11.83	29,848	137.22	27,508	405.29	158,063	403.76	85,596	454.37	31,806	418.67	163,239	346.96	182,364	2,514.87	31,436	377.69	680,012	68.18	1,364	52.29	3,151	100.49	19,395	29.75	5,410	739,179	
Z21 General Conditions	0.72	876	0.70	915	0.71	1,791	8.23	1,650	24.32	9,484	24.23	5,136	27.26	1,908	25.12	9,794	20.82	10,942	150.89	1,886	22.66	40,801	4.09	82	3.14	189	6.03	1,164	1.79	325	44,351	
Z22 Bonds & Insurance	0.38	46																														

CAPITAL COST ESTIMATE

DESIGN-BUILD-FINANCE-OPERATE-MAINTAIN



Major Differences between our Cost Opinion and the Arup Estimate

Below we have listed the major differences that we believe exist between our estimate of construction cost and the estimate provided by Arup for the DBFOM option. Given the level of cost detail being developed at this stage of the project it is not possible to provide a completely accurate picture of cost difference and the scope of this study did not include for a reconciliation between our estimated costs and those developed by Arup. The list and the associated numbers below should be treated as a guide to the difference in scope and price differential based upon our understanding of scope coverage in the two estimates. All the costs represent higher amounts in the MGAC estimate other than the loading dock cost:

DBFOM - Major differences to Arup estimate:	
Program requirements not appearing to be covered in the Arup estimate:	
Seismic upgrade of existing South Hall	\$2,922,000
Seismic bracing of existing MEP equipment (South Hall)	\$2,046,000
Code-driven fire alarm upgrades	\$250,000
Lighting - re-lamping, seismic and minor upgrades	\$1,000,000
Exterior facade improvements to match new expansion	\$4,024,000
Perimeter street improvements	\$4,501,000
Gilbert Lindsey Plaza improvement	\$2,621,000
Freeway screen walls	\$2,404,000
Cost plan allowances (unit prices or quantities)	
Loading dock structure	-\$5,000,000
Allowance for skylights included to achieve daylighting at Exhibit Hall	\$4,500,000
Interior partitions - including demountable partitions/air walls	\$16,204,000
Stairs, elevators and escalator pricing	\$8,955,000
Plumbing pricing	\$7,700,000
Thermal Ice Storage	\$2,500,000
Chiller quantity (plus 1)	\$12,000,000
Air handling unit pricing	\$5,100,000
HVAC Controls	\$5,500,000
Fire Sprinkler pricing (+\$1/SF difference)	\$1,500,000
Phasing requirements	\$20,111,000
General Conditions/General Requirements	\$21,071,000

SECTION

3.



The purpose and intent of this report is to assess the lifecycle requirements of the approach and design for the traditional (CM/GC) procurement model represented by the Populous proposal and the DBFOM model represented by the Arup proposal. In an effort to provide an “apples to apples” comparison, a common 40 year investment horizon has been determined for the assessment. However, the approach and design schemes are fundamentally different and are reflected in significant differences in initial capital investment and lifecycle/refurbishment costs over the period.

For purposes of the review, lifecycle costs include the future anticipated capital investment requirements to refurbish, refresh and/or replace building elements and components as they reach the end of their design or useful life. This includes such items as carpeting, interior finishes, heating, ventilation and air-conditioning systems (HVAC), roof coverings, life safety & security systems, windows, exterior building elements, electrical components, etc. Lifecycle costs do not include, nor are they intended to replace, normal ongoing and day-to-day operations, maintenance, repair and energy expenditures.

The Populous design is based on achieving the functional program requirements within an overall affordability/funding cap of \$350 million (our own capital cost assessment is a higher cost than this). In addition to the build out of new program space, this approach entails extensive reuse of the existing buildings and systems which will have a major impact on lifecycle costs. In addition, the proposed reuse of the West Hall will effectively result in the building being added to the historic register. This approach may result in increased operations, maintenance and energy expenditures over the study period; however, this has not been quantified as part of this report.

The Arup design contemplates the demolition of the West Hall and replacement of this facility along with new program space as part of their overall proposal which also includes renovations to the South Hall and development of a new central utility plant. This will result in a higher initial capital investment but will have lower lifecycle costs due to a greater percentage of new construction and associated building systems.

Both approaches include renovation of the South Hall which is entering the mid-point of its useful life. The degree to which elements in this building will be reused, refurbished and/or replaced is not completely clear in the design/technical briefs and both parties indicate that further determination and assessment will be required during the design development stage. This represents a significant cost risk and under-investment at the project construction stage due to value engineering and/or cost avoidance, will result in increased future lifecycle, maintenance and energy costs.

LIFE CYCLE COST

APPROACH AND METHODOLOGY



The initial analysis entailed the review of technical and financial documentation provided by the City along with various reports and estimates developed as part of the proposal development of the two approaches. The lifecycle costs for the new construction and renovations have been calculated following two methodologies. The first utilizes the adjusted base construction estimates in the Uniformat II (level 2) break-down extrapolated over 40 years using average design/service life benchmarks for the various building elements along with assumed replacement/refurbishment strategies based on good industry practice that would be employed by a prudent owner or P3 contractor to maximize useful life. The second calculates the expected lifecycle costs using formulae that have been derived from industry experience in the development of public and private sector long-term capital/lifecycle plans along with the outcome of multiple competitive P3 bids. The second approach is used as a reference point to validate the system level calculations. This captures the future costs against the initial capital construction expenditures.

Both the traditional and P3 approaches for this project include reuse of existing space and systems and as such, there has to be a reconciliation of the lifecycle costs associated with each scheme. To support this, a model has been developed that calculates a current replacement value (CRV) of the elemental components of the facility based on the proposed total space (new and existing) multiplied by a commonly-applied unit cost of construction/replacement. Different factors have been developed for the South and West Halls to recognize their age difference and the impending heritage status of the West Hall. Using the methodology noted above, a formula-driven indicative lifecycle estimate has been determined for 40 years and added to the overall total for each approach. Typically, cost projections fall into an expected high to low range. For purposes of this analysis, the mid-point has been utilized in all calculations.

Table 1: Factors

DBFOM

Category	Factor	Term (years)	Current Replacement Value (Elemental)	Area (SF)
New build and renovated	1.2% x CRV	40	N/A	1,600,000
Existing (S. Hall)	1.3% x CRV	40	\$350/sf	1,125,751

CM/GC

Category	Factor	Term (years)	Current Replacement Value (Elemental)	Area (SF)
New build and renovated	1.35%	40	N/A	693,000
Existing (S. Hall)	1.5%	40	\$350/sf	846,988
Existing (W. Hall)	2.0%	40	\$350sf	1,183,704

LIFE CYCLE COST

KEY ASSUMPTIONS



- The proposed renovation and expansion work is compliant with all codes and regulatory requirements (including the reuse of existing mechanical systems for heating, cooling, distribution, fire and life safety, etc.);
- Both design proposals meet the functional program requirements for the LA Convention Center;
- Levels of day-to-day and preventive maintenance are assumed to be the same under both scenarios with the services provided by a third party under the traditional model (funding provided by the City), FM and lifecycle work provided by the P3 partner under a performance-based P3 agreement;
- Replacement and/or refurbishment strategies are based on good industry practice designed to maximize the useful life of critical systems and buildings.
- System and building elements are based on a reasonable standard of performance, durability and service life;
- Reuse of the West Hall, as an integral key component of the Populous design, will result in the building being placed on the historic register and it is assumed to remain as a functional part of the Convention Centre for the full analysis period of 40 years; and
- Operations, maintenance and energy costs along with future redevelopment opportunities on the site have not been considered as part of this analysis.

Table 2: Space Summary

Existing LACC		
West Hall leasable space	SF	276,588
South Hall leasable space	SF	525,559
Concourse leasable space	SF	66,229
Total Leasable Area	SF	868,376
Non-leasable space	SF	1,199,236
Total Gross Enclosed Area (excl. parking)	SF	2,067,612
Net-to-gross ratio	%	42%

Completed LACC Expansion - Traditional		
Existing leasable (West, South, Concourse Halls) - no refurbish	SF	846,988
Existing non-leasable space (West, South, Concourse Halls) - no refurbish	SF	1,183,704
Sub-total Existing Gross Enclosed Area - not refurbished	SF	2,030,692
New leasable space	SF	350,000
New non-leasable space	SF	343,000
Sub-total New Gross Enclosed Area - new build	SF	693,000
Net-to-gross ratio of new space	%	51%
Total Gross Enclosed Area (excl. parking)	SF	2,723,692

Completed LACC Expansion - DBFOM		
Existing leasable (South Hall) - no refurbish	SF	525,559
Existing non-leasable space (South Hall) - no refurbish	SF	690,192
Sub-total Existing Gross Enclosed Area - not refurbished	SF	1,215,751
New leasable space	SF	672,000
New non-leasable space	SF	928,000
Sub-total New Gross Enclosed Area - new build	SF	1,600,000
Net-to-gross ratio of new space	%	42%
Total Gross Enclosed Area (excl. parking)	SF	2,815,751

LIFE CYCLE COST

OBSERVATIONS AND COMMENTS



There is no current comprehensive condition assessment of the existing buildings and the review has relied on project briefs and other background information provided by the Bureau of Engineering, Populous, Gensler, ARUP, AEG and Finance & Administration. Technical information and the condition assessments contained within the supplied documentation is inconsistent and in some cases conflicting. For example, in a request for current year funding, AEG Facilities indicates that the 8 cooling towers in the South and West Hall are well past their useful life. The MEPT section of Volume Three of the Populous Concept Validation report indicates that the West Hall chillers and associated cooling towers are to remain as part of their design and the ARUP existing conditions report indicates NIL remaining life (in accordance with ASHRAE standards).

In the absence of a detailed condition assessment, particularly with respect to the West Hall, it is assumed that the facility and its elements are generally at the end of its normal service life and will require a significant initial refurbishment and modernization in order to be consistent with the new and renovated portions of the Convention Center and provide the required functional program space. Following the upgrades, the West Hall would then be subject to normal lifecycle re-investment levels for a building of its age and historical status. An amount of \$105,873,480 has been added to the lifecycle requirements of the Traditional Model to address upgrades to mechanical, electrical and architectural elements of the building. This has been calculated on the basis of \$125 per square foot which represents approximately 25% of the unit cost for new construction. Work of this nature may trigger additional requirements related to code standards and this provision should be considered a conservative minimum threshold of investment.

LIFE CYCLE COST

OBSERVATIONS AND COMMENTS



Table 3: Life Cycle Worksheet - DBFOM (Arup)

Level 1 - Major Group Elements	Level 2 - Group Elements	Predicted Service Life (in years)	Initial Capital, Construction & Installation Cost (excl. design & soft costs) \$000	Replacement/Refurbishment Strategy, Key Assumptions and Comments	40 year Lifecycle Estimate (\$000)
A: SUBSTRUCTURE	A10: Foundations	50	\$27,025	Contingency allowance	\$1,351
B: SHELL	A20: Basement construction	50	\$0	Contingency allowance	\$0
	B10: Superstructure	50	\$141,581	Major refurbishment & upgrades	\$7,079
	B20: Exterior enclosures	20 to 50	\$60,572	Full & partial replacement	\$30,286
	B30: Roofing	20 to 50	\$19,127	partial phased replacement and/or refurbishment of various components	\$28,691
C: INTERIORS	C10: Interior construction	15 to 35	\$52,822	cyclical replacement of stair coverings plus contingency for structure	\$39,617
	C20 Stairs	15 to 40	\$10,803	cyclical replacement of carpeted floor finishes in high traffic areas, repainting, ceiling and wall coverings	\$1,620
	C30: Interior finishes	5 to 40	\$57,344	lifts, escalators and elevators - cyclical major refurbishment, upgrades & replacement	\$43,088
	C20: Stairs	10 to 25	\$16,042	cyclical replacement of fixtures plus replacement/ refurbishment of other system components	\$14,438
	C30: Interior finishes	10 to 40	\$24,985	cyclical upgrades to major components to extend life plus partial replacement of other system elements	\$7,496
D: SERVICES	D10: Conveying	10 to 30	\$88,520	system upgrades and refurbishment	\$44,260
	D20: Plumbing	15 to 25	\$9,934	upgrade and replacement of various components	\$1,490
	D30: HVAC	10 to 40	\$86,376	assume LC by owner under both scenarios	\$43,188
	D50: Electrical	N/A	\$0	assume LC by owner under both scenarios	\$0
E: EQUIPMENT A	E10: Equipment (excluded)	N/A	\$0		\$0
	E20: Furnishings (excluded)	N/A	\$0		\$0
F: SPECIAL	F10: Special construction	N/A	\$0		\$0
	F20: Demolition - N/A		\$0	not subject to LC	\$0
G: BUILDING	G10: Site preparation		\$0		\$0
	G20: Site improvements	8 to 30	\$17,727		\$5,318
	G30: Site mechanical utilities	40 to 50	\$3,892		\$389
	G40: Site electrical utilities	15 to 40	\$2,786		\$279
	G90: Other site construction	N/A	0		0
Total			\$619,536		\$268,509

LIFE CYCLE COST

OBSERVATIONS AND COMMENTS



Notes:

Unescalated - based on current estimated values

Calculated high-low lifecycle range based on competitive bids \$247,814,400 to \$297,377,280 based on 1,600,000 SF new build

New Build: Recommended budget for business case analysis: \$268,509,000

Existing Gross Enclosed Area (No Refurbish)

New Build: Recommended budget for business case analysis: \$268,509,000			
Existing Gross Enclosed Area (No Refurbish)			
Total Gross Area SF	Blended Construction Unit Cost (Elemental)	CRV (Elemental)	Calculated Total Lifecycle (1.3% CRV) x 40 yrs.
1,215,751	\$350	\$425,512,850	\$221,266,682

Summary Lifecycle (DBFOM)	
New Build	\$268,509,000
Existing	\$221,500,000
Total	\$490,009,000

LIFE CYCLE COST

OBSERVATIONS AND COMMENTS



Table 3: Life Cycle Worksheet - CM/GC (Populous)

Level 1 - Major Group Elements	Level 2 - Group Elements	Predicted Service Life (in years)	Initial Capital, Construction & Installation Cost (excl. design & soft costs) (\$000)	Replacement/Refurbishment Strategy, Key Assumptions and Comments	40 year Lifecycle Estimate (\$000)
A: SUBSTRUCTURE	A10: Foundations	50	\$10,801	Contingency allowance	\$675
	A20: Basement construction	50	\$0		0
B: SHELL	B10: Superstructure	50	\$94,639	Contingency allowance	\$5,915
	B20: Exterior enclosures	20 to 50	\$44,045	Major refurbishment & upgrades	\$27,528
	B30: Roofing	20 to 25	\$18,810	Full and partial replacement	\$35,269
C: INTERIORS	C10: Interior construction	15 to 35	\$23,187	Partial phased replacement of stair coverings plus contingency for structure	\$21,738
	C20 Stairs	15 to 40	\$3,740	Cyclical replacement of stair coverings plus contingency for structure	\$701
	C30: Interior finishes	5 to 40	\$24,338	Cyclical replacement of carpeted floor finishes in high traffic areas, repainting, ceiling and wall coverings	#22,817
D: SERVICES	D10: Conveying	10 to 25	\$10,577	Lifts, escalators and elevators - cyclical major refurbishment, upgrades & replacement	\$11,899
	D20: Plumbing	10 to 40	\$9,550	Cyclical replacement of fixtures plus replacement/refurbishment of other system components	\$3,581
	D30: HVAC	10 to 30	\$39,443	Cyclical upgrades to major components to extend life plus partial replacement of other system elements	\$24,652
	D40: Fire protection	15 to 25	\$4,355	System upgrades and refurbishment	\$817
	D50: Electrical	10 to 40	\$38,184	Upgrade and replacement of various components	\$23,865
E: EQUIPMENT &	E10: Equipment (excluded)	N/A	\$0	Assume LC by owner under both scenarios	\$0
	E20: Furnishings (excluded)	N/A	\$0	Assume LC by owner under both scenarios	\$0
F: SPECIAL	F10: Special construction	N/A	\$0		\$0
	F20: Demolition - N/A		\$0	Not subject to LC	\$0
G: BUILDING	G10: Site preparation		\$0		\$0
	G20: Site improvements	8 to 30	\$20,750		\$7,781
	G30: Site mechanical utilities	40 to 50	\$3,962		\$495
	G40: Site electrical utilities	15 to 40	\$3,119		\$390
	G90: Other site construction	N/A	\$0		\$0
TOTAL			\$349,500		\$188,123

LIFE CYCLE COST

OBSERVATIONS AND COMMENTS



Notes:

Unescalated - based on current estimated values

Calculated high-low lifecycle range based on competitive bids \$174,750,000 to \$202,710,000 based on 693,000 SF new build

New Build: Recommended budget for business case analysis: \$188,125,000

Existing Gross Enclosed Area (No Refurbish)

New Build: Recommended budget for business case analysis: \$188,125,000				
Existing Gross Enclosed Area (No Refurbish)				
Total Gross Area SF	Blended Construction Unit Cost (Elemental)	CRV (Elemental)	Calculated Total Lifecycle (1.3% CRV) x 40 yrs.	
846,988	\$350	\$296,445,800	\$237,156,800	West Hall
1,183,704	\$350	\$414,296,400	\$248,577,840	South Hall
2,030,692		\$710,742,200	\$485,734,480	Subtotal

West Hall Initial Refurbishment		
Total Gross Area SF	SF Construction Unit Cost (incl. Design & Contingencies)	Calculated Initial Refurbishment
846,988	\$125	\$105,873,500

Summary Lifecycle (Traditional)	
New Build	\$188,125,000
Existing	\$485,734,480
W. Hall Initial Refurbishment	\$105,873,500
Total	\$779,732,980

LIFE CYCLE COST

SUMMARY AND CONCLUSIONS



Based on the design proposals and background information provided by the key stakeholders, 40 year lifecycle profiles have been developed for each scheme that include projected future costs for both the new and existing areas that will comprise the expanded and renovated Los Angeles Convention Center at the end of the construction period. The projections are subject to change resulting from modifications to the project scope during the detailed design development stage. It is anticipated that the actual conditions of the existing building elements and the viability of their reuse will have an impact on both the initial capital construction and lifecycle costs.

The summarized recommended lifecycle estimates are:

- Traditional Model: \$779,732,980
- P3/DBFOM Model: \$490,009,000

SECTION

4.



DBFOM Schedule

The proposed Convention Center expansion and renovation approaches offer very different project delivery methods. Both result in upgraded and expanded convention facilities. The principal difference, other than the procurement, contract, cost, and risk characteristics, is the scope of demolition and construction proposed. The CM/GC approach modifies and expands the existing West and South Halls into a more unified complex of exhibition, meeting, and support spaces. THE DBFOM approach expands South Hall significantly, creating a larger overall building with the necessary exhibition, meeting, and support spaces, and then ultimately demolishes West Hall.

The question is whether the schedules presented by both approaches reasonable, realistic and all encompassing?

DBFOM Schedule

The fundamental elements of the DBFOM schedule are:

CEQA/EIR/Planning and Council Approval	3/1/16 to 10/2/17	19 months
P3 Procurement	10/3/16 to 11/30/17	15 months
Design	8/3/17 to 5/17/18	10 months
Phased Construction	12/1/17 to 4/30/20	29 months
Demolition	5/1/20 to 1/7/21	7 months
Remaining Exhibit Space and Close-out	5/29/20 to 1/7/21	6 months
Overall duration of all phases	3/1/16 to 1/7/21	57 months

The DBFOM submission raises the following issues:

- The start date needs to be adjusted to reflect the actual date of project initiation. It is currently almost 4 months behind.
- Other than CEQA and EIR, the regulatory and approval process is not reflected in the schedule. Anticipated Building Permit review and approval durations need to be included.
- We do not believe that the design duration includes sufficient time for design development and completion at 10 months. Investigation of City and user feedback, polling and interaction with show managers, design development, budgeting, cost reduction efforts, phasing drawings, permit reviews, development of early bid packages, and completion of the design will take considerably more time. The design duration is more likely a 12 to 15 month process.
- The overall construction duration appears adequate given the amount of phased work that has to be completed but key activities need to be overlain, particularly activities involving interaction with the City:
 - Exhibition dates and durations.
 - Action and approval dates for utility companies and other third party entities that impact the schedule.
 - Interaction with concessionaires and other food service providers.
 - Areas needing to be vacated by the City in anticipation of the start of specific construction phases.
 - FF&E review and assessment with the City.
 - Phase completion dates and dates on which the Authority will be expected to take over operations of completed phases.



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- FF&E review and assessment with the City.
- Phase completion dates and dates on which the Authority will be expected to take over operations of completed phases.
- While the activities mentioned in Item 4 above could be viewed as constituting too much detail for this level of schedule, it is concerning that they are not identified or described and their impact is not identified as critical. At a minimum, Arup needs to develop a management plan indicating how this process should be controlled to ensure that the impacts are properly assessed and scheduled. This, in combination with the schedule, would demonstrate a complete understanding of the process.

CM/GC Schedule

The fundamental elements of the schedule provided by Populous are:

1. CEQA and Council Approval	6/16 - 11/17	18 months
2. Design	9/16 - 12/18	16 months
3. Construction	07/18 - 10/20	28 months
Overall duration of all phases	6/16 - 10/20	52 months

Populous projects the overall duration of the CM/GC approach to be 52 months. This would present a 5 month time advantage over the DBFOM approach.

It should be noted that the schedule duration is directly affected by Populous’ indication that the design and construction phases would overlap by 5 months. Construction is projected to commence 5 months before the design is complete and in this approach bids would be sought with incomplete documents. While this can be advantageous from a time perspective, it typically adds to the risk of prices increasing after initial contract award. This can be managed, of course, with proper controls and risk assignment planning during the bid process, but it could place the City at the risk of change orders or incomplete scope once construction commences. Further, any mechanism in the bid process to require the proposers to quantify the risk or accept the risk of the incomplete documents will result in higher contingencies in the bids and thus neutralize the advantage of taking competitive bids on completed documents.

If that is a risk the City is unwilling to take, then the Populous schedule should be extended 5 months to ensure complete documents for bidding. If that is the case, there would be no time advantage to the Populous approach and no associated show revenue benefit.

In addition to the above, the Populous submission raises the same concerns as the Arup issues described previously. Since this is a less integrated development approach than the DBFOM method, the City must give serious consideration to how the CM/GC process will be managed and how the City’s operational issues will be addressed during the design and construction stage.