

Center for Transportation Public-Private Partnership Policy

NEW MODELS FOR P3 TRANSIT DELIVERY: The Honolulu Rail Transit Project

**Mike Schneider
InfraStrategies LLC**

**George Mason University
April 23, 2019**

The Honolulu Rail Transit Project



Public-Private Partnership Development Program Program Structure

Discussion Outline

- H RTP Project Status and Remaining Work
- Comprehensive Analysis: P3 Feasibility Assessment
- Funding and Financing Overview
- Recommended Project Delivery Method
- Risk Allocation and Assessment: DB vs. DBF/OM
- Summary

Can Alternative Models for P3 Transit Delivery be Successful?

Status: H RTP Capital Program Development

City Center Guideway & Stations; Pearl Highlands Garage & Transit Center



Comprehensive Project Delivery Assessment

- Conducted commercial feasibility evaluation
- Reviewed comparable projects and relevant case studies
- Designed and assessed alternative P3 structures specific to H RTP status
- Conducted comprehensive risk assessment with staff and outside experts
- Created new concept: *DBF/OM (Design-Build-Finance/Operate-Maintain)*
- Developed and distributed RFQ
- Received qualifications submittals from P3 proposers on April 12, 2019
- Initiated review of proposer qualifications/capabilities

Objectives of Project Delivery Assessment

To define a project delivery structure that...



Reduces the possibility of cost increases through enhanced fiscal discipline



Promotes schedule certainty by financially based performance requirements



Provides a “life-cycle” approach linking construction with operations



Improves risk management by optimally allocating risks and responsibilities



Encourages robust global competition by bundling construction and O&M



Promotes incorporation of technical innovation and best practices



Integrates the mutual goals of HART and the City for improved mobility and long-term sustainability



Increases Fiscal Discipline and Reduces Cost Increases

- DBF/OM reduces the potential for cost increase and/or change orders
- DBF/OM places financial incentives and performance requirements on the P3 partner to meet pre-established budget, scope, and schedule
- DBF/OM is projected to provide modest cost reductions when compared conservatively to DB over the 30-year term, primarily due to more competitive pricing and increased efficiency
 - Projected City savings of over **\$310M** in operating costs over the 30-year term, primarily forecast for the years 2031-2050 subsequent to termination of existing CSC
 - Projected HART savings of **\$46M** in construction costs for CCGS and PHGTC



Promotes Schedule Certainty

- DBF/OM confirms adherence to the schedule and provides substantial contractual requirements and associated financial penalties to the developer if delays occur
 - The P3 development agreement will include fundamental schedule incentives including private financing and robust performance metrics for O&M
- DBF/OM is projected to result in a slightly earlier Revenue Service Date
 - Schedule acceleration is due to construction innovation and efficiency and parallel testing and commissioning, enhanced by financial incentives for early completion
 - These schedule accelerators compensate for a longer procurement period for P3



Provides a “Life-Cycle” Approach

- DBF/OM recognizes that major infrastructure endeavors are long-term community assets and should be constructed, operated, and maintained accordingly
- DBF/OM combines construction and long-term O&M into a joint procurement by HART and the City, which creates a full life-cycle approach by linking design, construction, operations, and maintenance



Optimizes Risk Management

- DBF/OM allocates risk to the parties best equipped to accept the respective risks and responsibilities
- DBF/OM procurement increases likelihood of attracting bidders who have world-class experience and the capabilities to accept allocation of risks
- DBF/OM transfers key construction and O&M interface risks from HART and the City to P3 partner
 - Reduces level of HART-required staffing for management & construction oversight
 - Eliminates the requirement for both HART and the City to serve as the integrator and interface manager for numerous contracts and transfers that risk to the P3 partner



Encourages Competition

- DBF/OM encourages increased and robust competition from among US-based and international contractors with positive performance records in developing and operating major transit and infrastructure projects, many of whom are unlikely to propose for only a design-build program



Promotes Technical Innovation

- DBF/OM promotes incorporation by the developer of technical innovation and best practices by optimizing the developer's opportunities to connect design and construction with long-term O&M



Integrates HART and City Goals

- DBF/OM integrates the mutual goals of HART and the City to build, operate, and maintain one of the most significant sustainable infrastructure assets undertaken on behalf of the citizens and visitors to Hawaii

Funding and Financing Overview

- HART's principal sources of capital funding are from GET, TAT, and the federal FFGA
 - HART has received approximately **\$3.2B** total from inception through June 30, 2018
- Approximately **\$6.1B** is anticipated in local and FFGA revenues from July 1, 2018 to 2030, which covers all remaining construction, contingency, and financing costs
- About **\$1.9B** is available for the capital components of the P3 agreement after reserving for non-P3 project costs, debt service/financing charges, and required contingency (this number is referred to as the “affordability ceiling”)
- The City will fund O&M of systems and rolling stock and non-systems elements of the project including facilities and stations

DBF/OM Attributes

- The P3 procurement will be a joint procurement between HART and the City
- To assure maximum transparency, bidders will be required to provide separate pricing for capital construction and financing funded by HART and O&M funded by the City
- The concession term will be 30 years: 2020-2050
- The P3 structure is based on a design-build-finance (DBF) model for the civil works combined with a 30-year O&M agreement, linked through a single procurement designed to obtain strong global competition, favorable pricing, cost and schedule certainty, and optimal risk transfer

Major Components of the Project Structure

Components Remaining Under HART	Key P3 Components
• Ongoing and completed capital construction, including guideway, stations, and systems installation for West Side and Airport Guideway and Stations (AGS) • Rolling stock acquisition, testing and commissioning	• Civil and systems design and construction for the City Center Guideway and Stations (CCGS) and Pearl Highlands Garage and Transit Center (PHGTC) • Full systems integration and long-term O&M of all system elements

Ongoing and Completed Construction Including Guideway, Stations, and Systems

- Completion of AGS, finalization of West Side contracts and related systems installation, and rolling stock acquisition, testing and commissioning will not be included in the P3 partner contract
- Funding and financing by HART will continue as at present
- The current civil and systems contractors will continue accordingly
- Under its current contract, the Core Systems Contractor is expected to complete installation of AGS segment systems in mid-2022 and complete its testing and commissioning for this segment in 2023

Civil and Systems Construction for City Center and Pearl Highlands Facilities

- CCGS design, construction, and systems work will be the civil construction element of the P3 partner's contract
- This work will be funded through GET, TAT, and FFGA
- CCGS construction will occur between 2020 and 2025
- Revenue Service Date expected by December 2025 or earlier

Civil and Systems Construction for City Center and Pearl Highlands Facilities

- The P3 partner will:
 - Undertake design and construction of CCGS and PHGTC
 - Finance construction works privately
 - Receive milestone payments during construction between 2020-2025
 - Receive capital availability payments post-construction between 2026-2030
- 2026-2030 is a five year “tail” where HART retains fiscal control to assure satisfactory performance
- CCGS systems installation being performed by Ansaldo Honolulu Joint Venture (AHJV) will likely become part of the P3 partner’s scope
 - Transfers interface risk and likely accelerates completion

Operations and Maintenance

- Core Systems Contract (AHJV) scope includes interim and full operations
- Since the project schedule has changed, the AHJV contract will need to be renegotiated to reflect the current schedule
- HART and the City will jointly negotiate a “term sheet” with AHJV
 - Will incorporate all relevant scope and contractual conditions
- The new O&M aspects of the Core Systems Contract constituting the term sheet will be transferred to the P3 partner
- AHJV will perform its O&M responsibilities under the redefined contract as a subcontractor to (or member of) the P3 partner’s consortium

Operations and Maintenance

- The City will provide availability payments to the P3 partner for the initial O&M period (assumed to be 10 years) inclusive of AHJV's participation
- This approach will provide cost certainty to the City over the initial years of system operation through rigorous performance requirements
- When the interim O&M term undertaken by AHJV under the P3 partner concludes, the P3 partner can:
 - Negotiate with AHJV to continue serving as the system operator for all or part of the remainder of the development agreement term
 - Change its organization to facilitate increased O&M efficiency beyond 2030

Responsibility/Risk Allocation

- The DBF/OM structure will transfer certain risks and responsibilities to the P3 partner from the City and HART
- A comparison was made between DBF/OM and Design-Build to examine:
 - How these responsibilities and risks would be allocated
 - How this would affect cost and schedule

	2018	2019	2020	2021-2025	2026-2030	2031 - 2050
Manufacture and Delivery of Rolling Stock	HART / Ansaldo					
Civil Construction for West Side Segments	HART					
Systems Installation for West Side Segments	HART / Ansaldo					
Design/Build for Center City Guideway and Stations				HART / DB Contractor 1		
Systems Installation for Center City Guideway and Stations				HART / Ansaldo		
Design/Build for Pearl Highlands Transit Center and Garage				HART / DB Contractor 2		
Interim Operations and Maintenance for Systems and Vehicles				CITY / Ansaldo		
Interim Operations and Maintenance for Non-Systems Elements				CITY		
Full Operations and Maintenance for Systems and Vehicles					CITY / Ansaldo	CITY
Full Operations and Maintenance for Non-Systems Elements					CITY	CITY
Capital Asset Replacement					CITY / (with Ansaldo)	CITY

	2018	2019	2020	2021-2025	2026-2030	2031 - 2050
Manufacture and Delivery of Rolling Stock	HART / Ansaldo					
Civil Construction for West Side Segments	HART					
Systems Installation for West Side Segments	HART / Ansaldo					
Design/Build for Center City Guideway and Stations				P3 Partner		
Systems Installation for Center City Guideway and Stations				P3 Partner / Ansaldo		
Design/Build for Pearl Highlands Transit Center and Garage				P3 Partner		
Interim Operations and Maintenance for Systems and Vehicles				P3 Partner / Ansaldo		
Interim Operations and Maintenance for Non-Systems Elements				CITY / P3 Partner		
Full Operations and Maintenance for Systems and Vehicles					P3 Partner / Ansaldo	P3 Partner
Full Operations and Maintenance for Non-Systems Elements					CITY / P3 Partner	
Capital Asset Replacement					P3 Partner	

Comparative Risk Assessment: DB and DBF/OM

- A Risk Assessment Workshop was conducted June 19–21, 2018 with representatives from HART, the City, and financial and project delivery experts
- Purposes of the workshop:
 - Define and quantify risks, with focus on risks that differed between the delivery methods
 - Assess which delivery method would provide greater cost and schedule certainty
- “Base” costs were defined as starting point to reflect the longer procurement period and additional advisory fees for DBF/OM:
 - DB Base Cost: \$1.61B
 - DBF/OM Base Cost: \$1.64B

Key Risk Differentiators for DB and DBF/OM

- Procurement
- Right-of-Way
- Design and construction
- Administrative oversight
- Competition and Pricing

Comparison of Risk Differentiators for Design-Build (DB) and Design-Build-Finance-Operate-Maintain, (DBF/OM or P3)			Key Risk Differentiators Design-Build Procurement			Design-Build-Finance-Operate-Maintain (DBF/OM or P3)		
Project Element	Threat / Opportunity Events	Description	Probability of Occurring	Potential Schedule Impact	Potential Cost Impact	Probability of Occurring	Potential Schedule Impact	Potential Cost Impact
Procurement	Risk of joint procurement with City resulting in schedule delay to P3 procurement	The base schedule for P3 incorporates the risk of delay owing to the requirement for concurrence between HART and the City regarding key decisions that affect procurement of both construction and operations of the project. This risk considers additional delay beyond the base schedule. <i>Risk ID: P3 CTR 10.01</i>	0%	NA	NA	25%	1-2 Month Delay	NA
Procurement	Risk of delay in notice-to-proceed due to potential bid protest	With DB and P3 delivery there is a risk of bid protest to unsuccessful bidder(s), but the likelihood of cost and schedule impacts is greater with a P3 delivery because there is much more at stake for the proposing firms. This risk is based on previous experience. There is consideration of a schedule impact for P3. There is no cost impact assumed other than a monetized schedule delay. <i>Risk ID: DB CTR 10.02, and P3 CTR 10.02</i>	12% total (Allocated)	1 month-5% to 14 months—2%	NA	23% total (Allocated)	1 month—10% to 14 months—3%	NA

Comparison of Risk Differentiators for Design-Build (DB) and Design-Build-Finance-Operate-Maintain, (DBF/OM or P3)			Key Risk Differentiators Design-Build Procurement			Design-Build-Finance-Operate-Maintain (DBF/OM or P3)		
Project Element	Threat / Opportunity Events	Description	Probability of Occurring	Potential Schedule Impact	Potential Cost Impact	Probability of Occurring	Potential Schedule Impact	Potential Cost Impact
ROW	Risk of late delivery of ROW necessary for on time completion of CCGS	Risk of not having necessary ROW acquisitions in time for sequencing of CCGS construction and systems installation. During the CCGS procurement, it will be necessary for a last addendum to the RFP, prior to contract-signing, to report on full resolution of remaining ROW acquisition necessary for the P3 or DB to rely on for CCGS project construction. The costs recorded represent a financing charge of \$1.062M per month of delay. This cost represents the additional financing costs a P3 developer would experience above and beyond a design-build procured project. <i>Risk ID: DB ROW 10.01, and P3 ROW 10.01</i>	25%	1-6 Month Delay	NA	25%	1-6 Month Delay	\$1.06 - \$6.37 M Cost Increase
CCGS Design & Construction	Opportunity for P3 to present a cost and schedule reduction for construction of CCGS	Opportunity risk that P3 delivery for CCGS would offer innovation and an economy in design and construction costs or schedule compared to DB delivery. This savings would be realized in lower bid prices due to increased competition for a much larger contract. Consider a 95% probability of a 3% to 5% capital cost savings, and a 4 to 6-month schedule reduction for a P3 compared to a DB. <i>Risk ID: P3 CNS 10.01</i>	0%	NA	NA	95%	4-6 Month Savings	\$30-50 M Cost Savings

Key Risk Differentiators for DB and DBF/OM

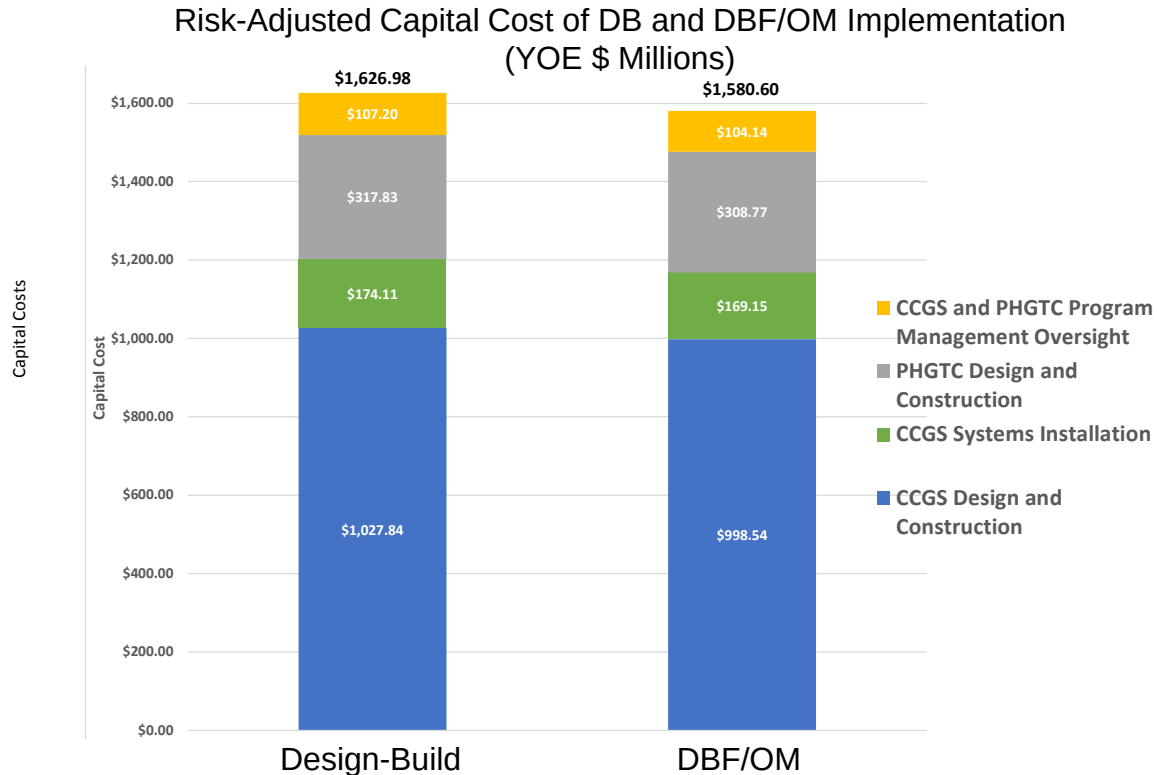
- Procurement
 - Risk of joint procurement with City resulting in schedule delay to P3 procurement
 - Risk of delay in notice-to-proceed due to potential bid protest
- Right of Way
 - Risk of late delivery of ROW necessary for on-time completion of CCGS
 - Potential for a delay to incur higher financing costs under P3
- Design and construction
 - Opportunity for P3 to present a cost and schedule reduction for construction of CCGS
 - Opportunity for P3 to present a cost and schedule reduction for construction of PHGTC
 - Opportunity for DB and P3 to present a schedule reduction during commissioning and testing of the overall rail system

Key Risk Differentiators for DB and DBF/OM

- Administrative oversight
 - Opportunity to lower HART's costs for design and construction oversight
- Market opportunities: Competition and Pricing
 - Marketplace opportunity to increase number of qualified competing contractors for CCGS and PHGTC under DBF/OM

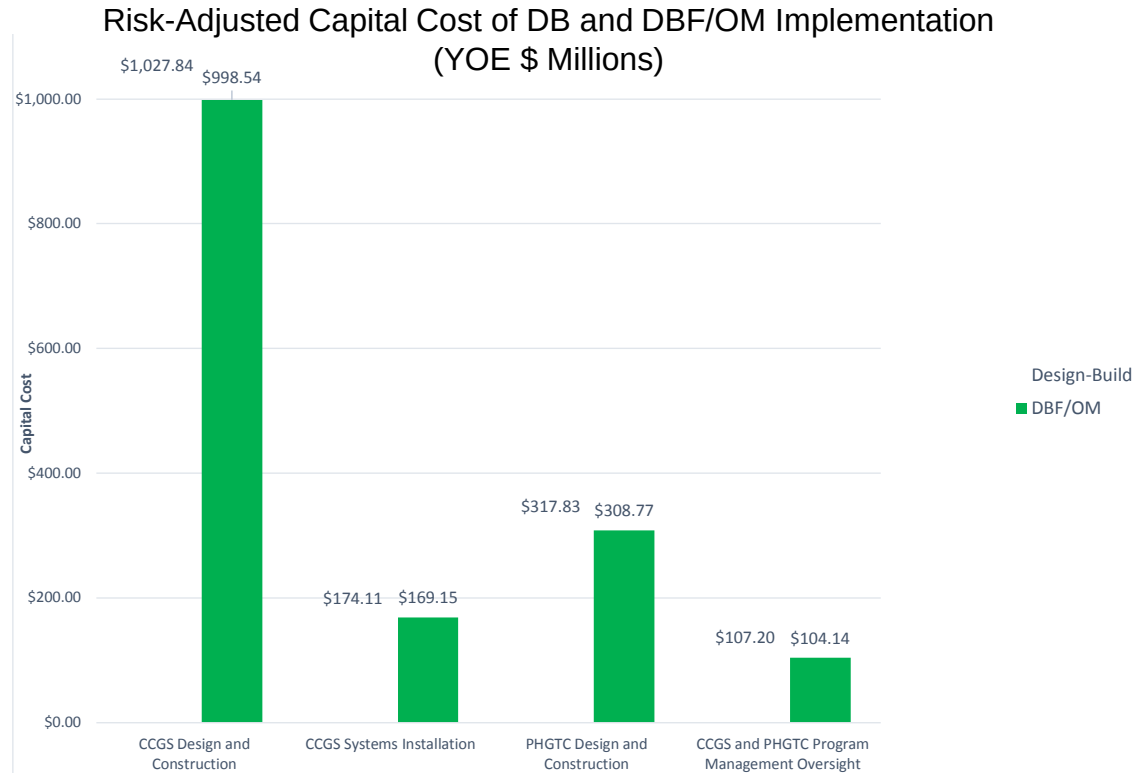
Risk-Adjusted Capital Cost

- Incorporating the risk assessment and modeling, risk-adjusted capital costs of DB and DBF/OM are:
 - DB: \$1.627B
 - DBF/OM: \$1.581B
- \$46M potential cost saving with DBF/OM



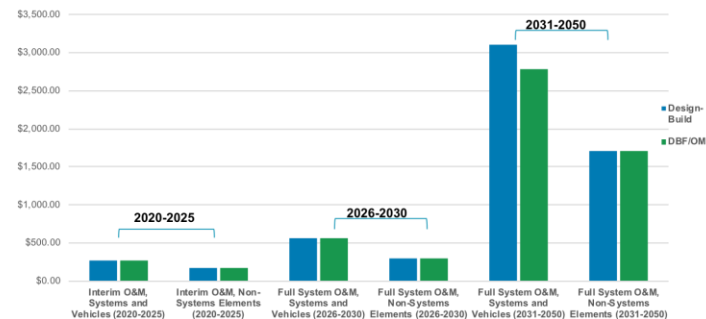
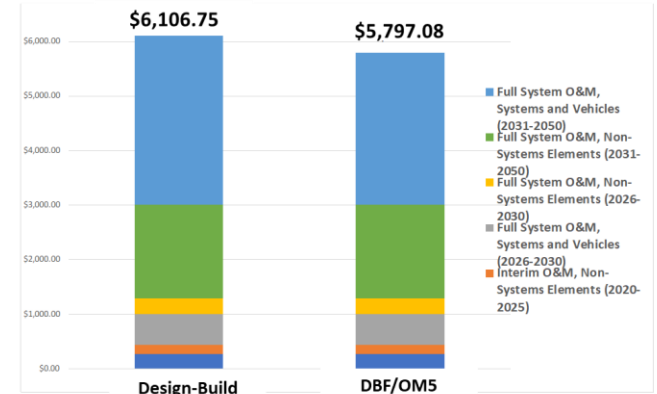
Risk-Adjusted Capital Cost

- Risk-adjusted capital costs reflect the potential to offset the higher base cost of DBF/OM through:
 - Opportunity for modest cost and schedule reduction for construction of CCGS and PHGTC
 - Opportunity to reduce total cost to HART for program management oversight



O&M Costs for DB and DBF/OM

- With DBF/OM, Systems-related O&M will be under the P3 Partner, beginning 2020 and continuing to 2050
- Anticipated cost savings with DBF/OM were assumed to accrue for Systems-related O&M over the 2031-2050 period
- O&M cost for DBF/OM is projected to be \$309.67M less than DB



Summary

-  DBF/OM will improve cost certainty and fiscal discipline as compared to DB, with cost savings over the 30-year concession period that conservatively exceed **\$350M**
-  DBF/OM will enhance schedule certainty, with Revenue Service Date projected to occur earlier than under DB delivery
-  DBF/OM will facilitate risk transfer from HART and the City to an experienced and capable P3 partner who will manage the interfaces between design, construction, and O&M over the life-cycle of the project
-  DBF/OM will encourage robust global competition, which in turn will promote competitive pricing for both construction and O&M
-  DBF/OM will use private financing for civil construction, reducing the need to issue public debt and creating fiscal incentives for on-time and on-budget performance

Mahalo!



HONOLULU RAIL TRANSIT

H O N O L U L U R A I L T R A N S I T P R O J E C T

www.HONOLULUTRANSIT.ORG

HART

HONOLULU AUTHORITY for RAPID TRANSPORTATION