



RESPONSE TO REQUEST FOR EXPRESSIONS OF INTEREST FOR THE DELIVERY OF AN INITIAL OPERATING SEGMENT

RFEI HSR#15-02



ACS INFRASTRUCTURE DEVELOPMENT, INC. | DRAGADOS USA, INC. | COBRA INDUSTRIAL SERVICES, INC

Submitted to California High Speed Rail Authority
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Notice

The information and any analyses contained in this response to the Request for Expressions of Interest ("RFEI") are taken from, or based upon, information contained in the RFEI for the delivery of an Initial Operating Segment ("IOS") (the "Project") or otherwise received from the California High-Speed Rail Authority (the "Authority") or from publicly available sources. Neither ACS Infrastructure Development, Inc. ("ACS"), Dragados USA, Inc. ("DUSA") nor Cobra Industrial Services, Inc. ("Cobra") (ACS, DUSA and Cobra together, the "Respondents") have independently verified or investigated the completeness or accuracy of any such information, unless otherwise explicitly stated herein. The information and any analyses in these materials reflect prevailing conditions and our views as of the date hereof, all of which are subject to change. Should the Respondents participate in subsequent stages of the procurement process of the Project, further investigations and due diligence analyses will be required in order to more precisely define the overall approach to the Project. Additionally, the information contained herein, in particular, our ability to finance the Project, assumes a standard allocation of risk reflective of recent market precedents (including, without limitation, customary provisions regarding appropriations and funding, environmental permitting, geotechnical risks, right of way acquisition, maintenance, etc.).

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11.3 Firm Experience and Team Structure

ACS Infrastructure Development, Inc. (“ACS”), Dragados USA, Inc. (“DUSA”) and Cobra Industrial Services, Inc. (“Cobra”) are pleased to submit this response to the Request for Expressions of Interest (“RFEI”) for the delivery of an Initial Operating Segment (“IOS”) of the California High-Speed Rail System (the “System”). Our team members are part of ACS Actividades de Construccion y Servicios, S.A. (“ACS Group”), a leading international infrastructure development and construction group, and have extensive experience in partnering with public authorities like the California High Speed Rail Authority (the “Authority”) in developing some of the largest and most complex transportation projects in North America. We recognize the significant value of the Authority’s vision in providing the state of California with the first true high speed rail (“HSR”) system in the US, and appreciate the tremendous challenges of achieving this vision.

In the following response, we have provided specific recommendations based on our experience gained in North America and globally in developing, financing, constructing and operating and maintaining transportation P3 projects. Our long resume includes rail projects similar in nature to the IOS delivery approach envisioned by the Authority. While there are certainly obstacles, we believe there are options that will allow the Authority to advance development of the System,

and achieve its goal of providing a dependable IOS, and ultimately the entire Phase I and Phase II elements of the System, as soon as possible and with the most efficient transfer of risk between the Authority and its private partner(s).

ACS and DUSA partner on all P3 pursuits in North America. In the last seven years, we have been awarded nine projects with a total investment value of over \$16 billion in the US and Canada. (*Note: value based on average USD-CAD exchange rate for 2015*). ACS invests equity into its projects, which include both availability based and revenue risk concessions, and leads the concessionaire from bid to the long term operations and maintenance of the project. DUSA participates as a lead member of the design-build joint venture, managing the design and construction activities.

Together, we bring unparalleled experience and capacity in transportation P3 and design-build projects, and as part of the ACS Group of companies, we can draw on the significant capacity of the group to deliver the scope of work required for this project. Additionally, we will seek to partner with other contractors and engineering firms—both local and international in scale—to ensure that we form the most knowledgeable and capable team to partner with the Authority for this project. A summary of our experience, which highlights the strength that each company brings to our team, is provided below.

ACS Infrastructure Development, Inc. is an experienced developer and financier of

MEMBER	NAME	ROLE
	ACS Infrastructure Development, Inc. (“ACS”)	Equity Provider and Project Lead
	Dragados USA, Inc. (“DUSA”)	Lead Contractor / Member of the of the Design-Build Joint Venture
	Cobra Industrial Services, Inc. (“Cobra”)	Member of the of the Design-Build Joint Venture

infrastructure projects in the US and Canada, and is the North American subsidiary ACS Group. ACS Group is one of the largest P3 developers in the world and has over 45 years of experience in the concession industry, reaching financial close on over 80 P3 projects worldwide. Our extensive track record of developing transportation infrastructure projects in North American and globally provides us with the requisite experience to find innovative and pragmatic solutions to successfully planning, structuring and implementing large and complex infrastructure projects over decades long concession periods, including highways, bridges, tunnels and rail. Over the last seven years, this success is demonstrated here in North America by the nine P3 projects that ACS and our Canadian sister company, ACS Infrastructure Canada Inc. (“ACSIC”), were awarded and brought to financial close. These represent an aggregate investment value in excess of \$16 billion, including recent high-profile rail P3 projects such as the Eglinton LRT (\$4.2 billion, close in July 2015) and the Confederation Line (\$1.5 billion, closed in February 2013).

We can also rely on the extensive experience of our parent company, Iridium Concesiones de Infraestructuras, developing P3s worldwide, including high-speed train lines and more specifically the Perpignan-Figueras HSR project between Spain and France. Iridium is leading this \$1.5 billion project which achieved financial close in 2004, reached construction completion in December 2013 and has been in operations since that time. Of similar relevance is our \$4.2 billion Lima Subway Line 2 project which achieved financial close earlier in 2015.

This directly relevant and recent experience has enabled ACS to develop strong working relationships with financial institutions and lenders in the North American market including banks, bond underwriters, and rating agencies, and bring unparalleled experience in providing competitive financing solutions to highly complex, long term P3 projects. Additionally, ACS, drawing on over 45 years of managing concessions around the world

and its projects currently under operation in North America, has significant experience in developing long term operations and maintenance strategies and pricing for transportation infrastructure project, as discussed in further detail below. Should we have the opportunity, ACS will apply its North American and global experience in raising financing and investing equity capital in P3 projects to deliver a competitive financing structure for the Project in collaboration with the Authority. In Section 11.7, we provide a more detailed discussion of this experience and opine on the current funding sources contemplated by the Authority for the IOS. Our success in developing and closing innovative financial structures, which has enabled the company to expand into one of the preeminent infrastructure developers in the world, has been recognized by various international publications specializing in infrastructure project financing, as demonstrated in Table 11.1.1

Dragados USA, Inc. and **Dragados S.A.** (“Dragados”) have experience delivering more than 690 miles of HSR for 42 projects since 1988.

Table 11.1.1

Project	Award
Confederation Line (LRT)	2013 Project Finance Magazine “Deal of the Year”
Northeast Anthony Henday Drive	2013 Canadian Council for Public Private Partnerships “Silver Award for Project Financing”
South Fraser Perimeter Road	2010 Canadian Council for Public Private Partnerships “Award of Merit for Project Financing”
I-595 Corridor Improvements	2009 ARTBA “Project of the Year” Project Finance Magazine “North American Transport Deal of the Year”
A-30	2008 Project Finance Magazine “North American PPP Deal of the Year”
A-30	2008 Canadian Council for Public Private Partnerships “Project Finance Gold Award”

DUSA is the Authority's design-builder for the \$1.23 billion California High Speed Rail Construction Package 2-3 (CP 2-3), and is currently preparing its proposal for the estimated \$400-\$500 million Construction Package 4 (CP 4). Other relevant large-scale HSR experience includes several projects with individual contract values in excess of \$1 billion that required full integration into larger HSR systems, similar to the work that is required for completing the IOS segments. Examples include the \$1.5 billion Figueres to Perpignan-Figueras HSR project between Spain and France (for which Cobra also participated in by delivering all of the power supply and systems for the project), the \$1.3 billion Madrid-Segovia-Valladolid project in Spain, and the \$2.3 billion Poceirao-Caia project in Portugal. Dragados' other relevant construction experience comprises over 1,243 miles of rail transit, 857 miles of tunnels through all varieties of geological conditions, more than 1,500 bridges with combined lengths in excess of 930 miles, and more than 8,390 miles of roads and highways.

Dragados is one of the largest P3 contractors in the world and has performed the design-build portion of more than 65 P3 projects worldwide. In North America alone, Dragados, through DUSA and its Canadian sister company, Dragados Canada, has experience on 9 major P3 transportation projects with combined construction values of nearly \$12 billion. Notably, in partnership with ACS, Dragados is constructing two highly complex P3 rail transit projects in Canada, including the \$3.8 billion (construction value) Eglinton Light Rail Transit in Toronto and the \$1.4 billion (construction value)

Confederation Line in Ottawa. Throughout the U.S., DUSA has experience delivering some of the largest and most complex P3 projects ever undertaken by state agencies. Examples include the \$1.2 billion I-595 Corridor Improvements Project in Florida, which was the largest transportation project for the Florida Department of Transportation at time of construction, and the \$850 million US 181 Harbor Bridge Replacement Project in Corpus Christi, Texas, which will be the longest cable-stayed bridge in the United States once completed.

DUSA is eager to build on the firm's existing relationship with the Authority that began nearly four years ago during the pursuit of Construction Package 1 (CP 1) and carries into the current delivery of CP 2-3 and bidding process for CP 4. Through these ongoing efforts, Dragados has shared its findings with the Authority regarding design or construction preferences of local agencies, stakeholders, and third parties. Our team can call upon the past and present coordination efforts in support of the continued development of the California HSR System.

We have provided a brief summary below of the key relevant rail projects undertaken by the ACS Group in North America to date. In each case, our partnership has resulted in significant innovations in delivering some of the largest, and most technically complex from a design, construction, integration and long term operations and management perspective, rail projects in North America.

Project:	Confederation Line (Ottawa Light Rail Transit Project, or "OLRT") (ACS and Dragados)
Project Description:	The OLRT is a state-of-the-art light rail transit system and Ottawa's largest transportation infrastructure project since the building of the Rideau Canal. The OLRT will be a significant part of OC Transpo's integrated transit network. The 7.8 mile alignment will connect to the existing Bus Rapid Transit ("BRT") system to critical transportation systems for the city, including the O-Train. The project's scope includes construction of 13 stations (3 of which are underground stations), upgrading existing BRT stations to accommodate the requirements of the OLRT as well as the construction of new stations, construction of a 1.6 mile long tunnel in Ottawa's downtown core and widening of Highway 417.
Project Value:	\$1.5 billion total investment (\$1.4 billion construction cost) <i>(Note: USD to CAD based on exchange rate as of September 2015 for all figures hereafter)</i>
Sponsor:	City of Ottawa
Project Status:	Financial close was achieved in February 2013. Construction is scheduled to be completed by May 2018 followed by a 30-year operation period.
Key Technical and Financial Challenges:	<ul style="list-style-type: none"> ▪ The project included significant tunnelling works under the down core of the city of Ottawa. This necessitate close coordination with governing authorities and community stakeholders to mitigate the impact (and prevent settlement and vibrational issues) along the project's corridor. ▪ ACSIC was able to deliver a competitive financing structure for a complex project by drawing on its strong relationships with credit-worthy and experienced financial institutions. The private financing includes a \$170 million long-term fixed rate private placement and a \$162 million short-term revolving loan credit facility involving four lenders, which will be repaid with the proceeds of the Milestone Payments during construction. The short-term facility is hedged by interest rate swaps placed with the short-term lenders. The equity will be injected at the end of construction and is guaranteed by letters of credit posted by the Equity Members.
Benefit to HSR and Authority:	<ul style="list-style-type: none"> ▪ The project included comprehensive delivery of the LRT extension in an urban area under an availability payment structure. Our experience gained under this project, particularly as it relates to technical interface for construction and operations, will be valuable in developing and ultimately delivering sections of the HSR project.



Project: Eglinton Crosstown LRT ("ELRT") (ACS and Dragados)	
Project Description	ELRT, which reached Financial Close in July 2015, is a significant component of Metrolinx's \$50-billion regional transportation plan known as "The Big Move". The new 20 km line will include 15 underground stations and 10 at-grade stops, and is due for completion in September 2021. The project is an availability payment P3 that includes a 30-year maintenance term following the completion of the works.
Project Value:	\$4.2 billion total investment (\$3.8 billion construction cost)
Sponsor:	Infrastructure Ontario and Metrolinx
Project Status:	Financial close was achieved in July 2015. ELRT is due for completion in September 2021.
Key Technical and Financial Challenges	<ul style="list-style-type: none"> ▪ The project's vehicle provider was selected by the owner before the procurement process began. The team worked with detailed technical specifications provided by the owner and interfaced with the vehicle provider through a transparent Q&A process. Our team was successful in working under this approach and identifying the key technical interface issues that are significant to the overall cost and schedule for the short and long term. ▪ ACSIC participated as developer, investor and financier on the largest P3 project to close in North America to date. ACSIC led the financing for this project that utilized a combination of short term bank financing (\$410 million) and long term (\$552 million) bond financing and committing 25% of the equity capital (\$75 million).
Benefit to HSR and Authority	<ul style="list-style-type: none"> ▪ The successful award and financial close of this massive project—the largest greenfield P3 in North America—illustrates our team's ability to develop competitive technical and financial approaches under accelerated procurement and construction timeframes. This knowledge and experience will be a significant benefit to the Authority as we work in partnership to raise financing and develop technical solutions to challenges that are similar to those that will be present in the IOS sections.

Project: California High Speed Rail Construction Package 2-3 (CP 2-3) (Dragados)	
Project Description	CP 2-3 is a 60-mile route located within the counties of Fresno, Tulare, and Kings and the cities of Hanford, Corcoran and Allensworth. The Project calls for construction of at-grade, aerial, and below grade sections of high speed train, relocation of existing BNSF tracks for approximately 5.5 miles, possible crossing of existing BNSF railroad tracks, construction of waterway and wildlife crossings, and roadway reconstructions, relocations, and closures.
Project Value:	\$1.23 billion (construction cost)
Sponsor:	California High Speed Rail Authority
Project Status:	Currently in design phase with full construction operations set to begin in 2016
Key Technical Challenges	<ul style="list-style-type: none"> ▪ Dragados' team saved the Authority approximately \$500 million from the original estimates of CP 2-3 through development of innovative alternative technical concepts (ATCs) and other design enhancements during the proposal phase.
Benefit to HSR and Authority	<ul style="list-style-type: none"> ▪ Dragados has demonstrated their ability to bring savings to the Authority compared to the Authority's initial cost estimates for the project. Additionally, Dragados has developed a working partnership with the Authority, and will continue to foster this partnership, ensuring the best opportunity for the full benefit of public and private sector collaboration is recognized.

Cobra Industrial Services, Inc. is part of Grupo COBRA. Founded in 1944, Cobra has become a world leader for its ability and determination to develop, build and operate industrial infrastructures requiring a high level of service and excellence in integration, technological innovation and financial strength. Cobra has more than 30,000 employees in over 45 countries and offers a wide range of services through more than 300 branches and subsidiaries, providing significant value to a range of customers, from individuals to large corporations.

Cobra, by itself, is able to develop and perform Overhead Contact System and Substations, and

has the requisite in house experience and knowledge through its expert engineers and technicians. Cobra has a long history of working within the sectors relevant to the project and has successfully worked on high speed rail projects around the world to the satisfaction of our customers who endorse our work and our ability. Additionally, Cobra has developed and performed work (in partnership with key industry experts) several projects that include Signaling, Communications, Auxiliary Systems and Control Centers. Through such work, as highlighted in the following page, Cobra has become one of the main integrators for railways systems all around the work

Project:	High Speed Line Makka – Madinah (Saudi Arabia) (Cobra)
Project Description	Construction of 444Km High Speed Line from Makkah to Madinah. Design, supply, installation and maintenance of Catenary, Substations, Medium and Low Power Supply, Object Fall Detection, Hot Box Detection. Crosswind Detection. Cobra belongs to a Spanish Consortia of 12 companies including ADIF (Spanish Railway Association) and RENFE (Spanish Railway Operator) providing a turn-key project.
Project Value:	Cobra Share: \$582 million
Sponsor:	SRO (Saudi Railway Organization).
Project Status:	Completion anticipated in April 2018
Key Technical Challenges	<ul style="list-style-type: none"> ▪ The project will carry up to 160K passengers per day across dessert areas with high temperatures, sand and electrical storms. To ensure safety and reliability of the systems under these extreme conditions, Cobra is implementing of the last generation of electronic equipment supporting temperatures over 120 degrees.
Benefit to HSR and Authority	<ul style="list-style-type: none"> ▪ Cobra's involvement in the first turnkey HSR project in the world that includes equipment (as well as rolling stock) will bring significant insight into how to best structure the delivery of the systems for the project under a DBFM approach.

Project	Length (Miles)	Contract Scope	Start / Completion
HSR, Madrid-Lleida. Signaling	286	Supply, installation and maintenance of Signaling Project (Interlocking, track circuits, signals, ASFA system, cables, power supply system for Signaling, ERTMS levels 1 & 2, RBCs).	10/2001-10/2008
HSR, Figueras-Perpignan. Railway Equipment	28	Supply, installation and commissioning of all railway equipment. Signaling, Power Supply, Catenary 2x25kV, Substation, Autotransformers, Electronic Interlocking, Auxiliary Detection Systems, Telecom Fix and Mobile systems, Power distribution and Tunnel Equipment (fire detection & extinction, ventilation, lighting)	02/2005-12/2010
HSR, Madrid-Levante. Power Supply	261	Low voltage power supply system, technical buildings and auxiliary detection systems	12/2008-12/2010
HSR, Madrid-Lleida. Low Voltage Power Supply	286	Low voltage power supply system	10/2001-10/2008
HSR, Madrid-Lleida. Catenary	286	Supply, installation, commissioning and maintenance of Catenary, Low voltage distribution, point heaters & transformer station.	12/2001-04/2008
HSR, Madrid-Levante. Catenary	137	Supply, installation, commissioning and maintenance of Catenary, Low voltage distribution, point heaters & transformer station.	10/2008 – 11/2010
HSR, Albacete - Alicante. Catenary	109	Supply, installation, commissioning and maintenance of Catenary, Low voltage distribution, point heaters & transformer station.	09/2010 – 01/2012
HSR, Córdoba - Málaga. Catenary	96	Supply, installation, commissioning and maintenance of Catenary, Low voltage distribution, point heaters & transformer station.	05/2005 – 11/2008
HSR, Lérida - Barcelona. Catenary	115	Supply, installation, commissioning and maintenance of Catenary, Low voltage distribution, point heaters & transformer station.	09/2003 – 02/2008

ACS and DUSA, alongside their Canadian sister companies ACSIC and Dragados Canada, respectively, have partnered successfully as members of the ACS Group to become industry leaders in the North American P3 market. Importantly, ACS and DUSA have built a significant portfolio of national and international experience of some of the largest financed P3 projects in North



America. Together with Cobra, who bring substantial North American and international experience in provide railway systems and integration, our team has the technical knowledge and capabilities to work with the Authority to structure a successful solution and procurement to meet the Authority’s goal of delivering a full IOS for the System. Our experience with highly complex civil infrastructure projects, including rail projects, in the P3 market has given rise to our interest in partnering with the Authority to deliver an IOS. Our discussions and recommendations herein are tailored to provide recent and relevant feedback on the Project and the Authority’s ability to generate a competitive approach to procuring this significant and historic undertaking.

11.4 Project Approach

Our team is dedicated to the success of the Authority's goals in delivering the IOS-South and IOS-North projects. We are interested in both scopes, and intend to continue our support to the Authority in developing a viable solution to advancing the System that may include the IOS-South, IOS-North, or a combination of the two, and ultimately the delivery of both to reach completion of Phase I of the System.

Our responses to this RFEI, and recommendations to project approach herein, are a result of significant consideration of the key challenges related to delivery of a project of this scale and complexity under a P3 model. These are summarized as:

- Availability of Funding and Ability to Finance the Project
- Scope of Construction Segments and Contractor Capacity
- Effective Transfer of Risk between Authority and Developer
- Integration of Project Elements, including Future Operators

These factors are each discussed below, and our recommendation for the advancement of the System is outlined thereafter, taking into account these challenges, with the intent of advancing a feasible approach to secure a P3 delivery method for the IOS sections.

11.4.1 Project Costs

Our review of project costs available from the Authority, including the 2014 Business Plan, the March 2015 Project Update Report to the California State Legislature and the August 2014 response to frequently asked questions to the RFEI ("FAQs Response") has provided valuable insight into the scope of design, construction and long term costs of the various segments along IOS-South and IOS-North.

Because of the limited information available to date, it is not possible to provide a full review of these costs. Under a competitive bidding process and by leveraging the technical innovation of our team (and other major contractors and designers who would participate in this project) will bring to the project, the project costs may be reduced. This potential is illustrated by Dragados' bid for the CP2-3 packages that was over \$500 million less than the next highest proposal. We note that certain segments, such as Palmdale to Burbank, contain significant technical challenges. An efficient risk transfer and the innovations that the private sector can bring to these segments (as summarized in our responses to Section 11.8 below) may similarly help to reduce project costs, which will help to combine additional segments and/or provide more flexibility in the approach to delivering segments of the IOS.

We have advanced our response based on the cost figures provided in the FAQs Response as they are the most recently updated cost information. Table 11.2.1.1 organizes the project costs by segment and between a future developer and the Authority, based on certain assumptions provided therein. Based on costs provided in the 2014 Business Plan, and FAQ response to the RFEI, we understand the total remaining project cost for the planned IOS-South and IOS-North is \$28.7 billion and \$27.3 billion, respectively.

As further detailed in our responses below, the delivery of an entire IOS is extremely challenging in light of such significant capital costs. Implementing an approach that strategically manages the development of the IOS segments into manageable contracts is core to our response, and necessary in our view to solicit the most interest and, ultimately, generate the greatest value for money for the Authority and the most benefit to future riders of the country's first truly high-speed rail system

Table 11.2.1.1

IOS South	DEVELOPER COST (1)		AUTHORITY'S COST (2)		TOTAL PROJECT COST (3)	
	Cost (\$ million)		Cost (\$ million)		Cost (\$ million)	
	2013\$	YOES\$	2013\$	YOES\$	2013\$	YOES\$
Merced Extension	1,365	1,593	152	171	1,516	1,764
First Construction Segment (FCS)*	2,160	2,445	634	672	2,795	3,117
FCS to Bakersfield	972	1,113	108	119	1,080	1,232
Bakersfield to Palmdale	7,796	8,982	866	962	8,662	9,943
Palmdale to Burbank	8,593	9,822	955	1,052	9,547	10,874
CONSTRUCTION TOTAL	20,885	23,955	2,715	2,975	23,600	26,930
	Fixed Segment Costs (4)		1,530	1,770	1,530	1,770
PROJECT TOTAL			4,245	4,745	25,130	28,700

IOS North	DEVELOPER COST (1)		AUTHORITY'S COST (2)		TOTAL PROJECT COST (3)	
	Total Cost (\$million)		Total Cost (\$million)		Total Cost (\$million)	
	2013\$	YOES\$	2013\$	YOES\$	2013\$	YOES\$
San Jose to Gilroy	5,438	7,070	940	1,129	6,378	8,199
Gilroy to Carlucci Rd.	7,143	9,224	1,235	1,511	8,378	10,734
Carlucci Rd. to FCS	310	398	54	65	364	463
Merced Extension	1,365	1,593	152	171	1,516	1,764
First Construction Segment (FCS)*	2,160	2,445	634	672	2,795	3,117
FCS to Bakersfield	972	1,113	108	119	1,080	1,232
CONSTRUCTION TOTAL	17,388	21,843	3,123	3,666	20,510	25,509
	Fixed Segment Costs (4)		1,530	1,770	1,530	1,770
PROJECT TOTAL			4,653	5,436	22,040	27,279

*Less Authority estimate for completion of Civil Work on FCS

(1) Assumes that ROW, Stations, Rolling Stock and Heavy Maintenance Facility are procured separately by the Authority. Professional Services (for final design) are assumed to be 75% of value provided in the FAQ Response, prorated across segments. Note that any prorated costs for IOS North are held constant from IOS South (i.e. Final Design amount assumed for IOS South are applied to the same segment in IOS North, regardless of percentage share of total IOS cost) to ensure consistency of segment costs between the two sections.

(2) Authority's costs include Professional Services (25% of value included in FAQ Response), ROW and Stations, each prorated across each segment.

(3) Total Project Cost combines Developer Cost and Authority Cost for a true representation of IOS segment costs

(4) Fixed Segment Costs include rolling stock and the maintenance facility, assumed to be required for any combination of segments for an operations IOS section

11.4.2 Availability of Funding and Ability to Finance the Project

A significant factor to meeting the Authority's goals for delivery of an IOS section is the ability to leverage public funds and private financing for the capital costs of the System. Our views of funding and financing elements for the project are discussed in further detail in Section 11.7 below, however, we note that with \$4.1 billion in available Prop 1A and \$3.5 billion from cap and trade ("C&T") proceeds (based on funds received to date and an assumed \$500 million per annum between

now and the anticipated end of construction of 2022 for an IOS section), we understand there is currently an estimated total public funding amount of approximately \$7.6 billion by 2022. It is important to note in the context of our recommendation for the delivery of an IOS section that there is a significant shortfall in available public funds for payment(s) during construction. This results in an apparent funding gap for the construction of \$14 to \$16 billion for delivery of a complete IOS (figures based on Total Project Cost (Construction Total), year of expenditure), which we anticipate will be partially funded through maximizing private financing. The FAQ Response has requested that Respondents assume that the

Authority will receive at least \$500 million per annum through 2050 in C&T and funds. Referencing again our views outlined in Section 11.7, while there are significant challenges to leveraging financing against these future revenues, we have assumed that this source of future funds would potentially yield financing (in the aggregate) of approximately \$7 to \$8 billion, leaving a significant shortfall (over \$7 billion) in the Authority and future developers' ability to deliver an IOS Segment under a single DBFM contract.

11.4.3 Scope of Construction Segments and Contractor Capacity

As a team of some of the largest developers and contractors in the world, ACS, Dragados and Cobra have participated in design-build projects of over \$4 billion in capital cost. There are several key considerations with regard to the maximum size, as well as the appropriate size, for a P3 project such as the one envisioned by the Authority. Our discussion of this limitation is expanded in the response to Section 11.6, Question 5 below. In summary, the anticipated scope under IOS-South and IOS-North is far too large for a developer (including a consortium of developers), single contractor, or a joint venture to undertake under a

single contract. Accordingly, our recommendations below are based on an approach to phase the delivery of an IOS into manageable, and financeable, segments from a cost and risk perspective.

11.4.4 Effective Transfer of Risk between Authority and Developer

The scale and inherent complexity of the IOS sections, as envisioned by the Authority, necessitate a carefully allocation of risks including project costs, environmental and governmental approvals, and availability of funding (short-, medium-, and long-term) in order to optimize the benefit of a long term private partnership for a portion or all of the IOS segments and help to drive costs down. We believe there are extremely valuable opportunities for the Authority to procure elements of the System under a P3 approach, but note that the value of such procurement method is optimized under an approach that allocates project risks to the party best positioned to manage such risks. While this is a classic characteristic of an optimal P3 arrangement, we have outlined in our proposed approach, where relevant, certain limitations to traditional project delivery methods on this project given the size and scope of the IOS-South and IOS-North segments.



11.4.5 Integration of Project Elements, including Future Operators

The Authority is considering pursuing a delivery strategy that combines highly technical elements of high-speed rail delivery into a large, single contract to be performed by one or more private sector entities. Of the additional elements that are being considered under separate agreements (which include rolling stock, stations and train operations), integration and coordination of the technical and operational elements of these components between private sector partners is a crucial consideration of the overall delivery strategy. Our recommendations regarding this approach are outlined further in our response to Section 11.6, Question 3 below, but note here that the proposed approach currently considered by the Authority (as outlined in the RFEI) is reasonable from a commercial and technical view, and that our team has significant experience in integrating with operators along rail projects and managing the coordination and technical interface issues under long term operations, maintenance and rehabilitation concessions. The private sector, as noted by the Authority, and specifically members of our team, are indeed experienced in performing this role and well positioned to manage this risk under the right contractual arrangement.

11.4.6 Recommendations for Delivery Strategy

After careful consideration of various options, based on information available from the Authority, and extensive research of similar mega-projects, in the US and worldwide (including Acela, HSR1 in the UK, the Madrid-Barcelona HSR in Spain, the Channel Tunnel project between France and the UK, etc.), we have developed a delivery approach that, in our view and based on extensive experience in delivery large scale transportation P3s across North America and globally, will allow the Authority to achieve its goals of minimizing the whole-life cost of the System, securing private sector investment, accelerating System

completion, and transferring key delivery and long-term maintenance risk to the private sector as outlined in the RFEI. Our recommendation is built on our goal in our main objective of helping the Authority maximize the benefits of the P3 approach while providing the longest operational segment of the IOS by the targeted date of 2022 and providing a path to develop an entire IOS, and ultimately the entire system, as early as possible.

11.4.7 Segmenting of Project

Based on our analysis of upfront and long term costs of the System as provided by the Authority and the ability to leverage financing against available public funds for portions of the IOS, we understand that the Authority may decide to undertake first and foremost a "Stage 1" P3 contract that builds on the extensive civil and structural work underway in the Central Valley on CPs 1 through 4, and extends this to provide a fully constructed and maintained operational segment from Merced to Bakersfield.

Future segments that provide an extension of the System to the north and south of this initial operational segment could be similarly sized and procured under manageable contract sizes, ensuring adequate competition and efficient project sizing from the perspective of execution risk and project financing. We note that the Authority's desire to have an IOS section to be capable of operating without subsidy, and its continued efforts to reexamine costs and funding, may result in other segments being pursued prior to or simultaneously with this Stage 1 / Merced to Bakersfield segment.

For example if the preliminary engineering or ridership studies for San Jose to Gilroy, Gilroy to Merced, or Palmdale to Burbank result in findings that suggest these sections may be able to be funded through a P3 approach as Stage 1, our team would be ready to pursue these.

We welcome further conversations on the optimal development of the corridor, including what segments be considered under a Stage 1 DBFM.

As noted, were an operator to be included at an early stage, our team is prepared, and has the experience, to work with this party to ensure the success of the selected IOS.

Stage 1 – Merced to Bakersfield Operational Segment

The Authority has made significant process in developing the “backbone” of the System by undertaking the series of design-build contracts through the Central Valley. The completion of CPs 1 through 4 (or the “First Construction Segment”, including the work currently underway by Dragados and its construction partners) will provide an important stepping stone to completing Stage 1 and providing an operational segment from Merced to Bakersfield.

If the Authority elects to build on this foundation we recommend that this first segment include completion of north and south segments from the termini of the First Construction Segment required to reach Merced (30 miles) and Bakersfield (25 miles). Based on the cost assumptions outlined above, civil works for the north and south extensions and infrastructure along the entire 170 mile corridor (including rail, power and systems) will have an estimated construction value of \$5.1 billion, and a total cost of \$6.1 billion (this figure includes design and construction costs for the developer and Authority).

Based on the assumed available public funds of \$7.85 billion (through 2022) and a total cost to the developer and Authority of \$6.1 billion, the cost to construct and start operations on this segment is feasible through utilization of available public funds alone (based on the assumed \$1.77 billion for the cost of rolling stock, stations and the maintenance facility). However, to garner the benefits of a P3 approach and the innovation and whole-life cycle considerations that the Authority are seeking, and to continue advancing other segments with the continue goal of delivering the entire system as early as possible, we recommend that a portion of

funds for this segment include private financing in the amount of \$1 to \$2 billion (see Section 11.7 for a more detailed discussion on the necessity and benefits of private financing to allow for an efficient risk transfer for the Authority).

The benefit of advancing this Stage 1 is that the Authority is positioned to procure the longest possible operational section based on available funds and market contract size limitations. Additionally, this section of the IOS benefits from the necessary primary environmental approvals already being obtained, limiting procurement delays and risk. Our team views this approach as the Authority’s best opportunity to an operational segment by 2022 through procurement of the scope outlined above under a long term P3 concession, and the remaining elements through an operator contract. The remaining public funds not allocated to this Stage 1 (due to the leverage of private financing) in the range of \$1 to \$2 billion can be utilized by the Authority to advance other critical elements of the project, including additional construction segments and ancillary costs (right of way, preliminary design, permitting, etc.) and, as discussed below, any costs and expenses necessary to further develop the procurement of additional segments in the future.

While uncertainty with respect to future funds required for availability payments remains, these concerns must be addressed in the context of any development strategy by the Authority and are thus discussed in further detail in subsequent responses.

Stages 2 A / B – North Extensions and South Extensions

As additional public funds become available, through C&T funds (those not utilized to fund availability payments) and other sources including bond issuances and federal grants, the following segments are proposed to deliver additional critical portions of the IOS under a P3 approach based on manageable and financeable scopes. We are

presenting options at this stage and continuous discussions with the Authority would enable narrowing them down and make a decision.

- ▶ Stage 2A includes the approximately 90 mile extension of Stage 1 through Bakersfield to Palmdale. With an estimated cost of \$9.9 billion in total (developer and Authority costs), of which a construction value of \$9 billion, a total design and built cost that is potentially too large under a single P3 structure. However, this segment provides a critical link to Stage 2B below, and ultimately serve as a critical link to Desert Express if this project advances.
- ▶ Stage 2B includes the completion of the 30 mile segment from Palmdale to Burbank with an estimated cost of \$10.9 billion in total (developer and Authority costs) and a construction value of \$9.8 billion. This stage represents one of the most technically complex segments due to the extensive tunneling work that must be undertaken. However, similar to Stage 2A above, it would provide a potential system connection to XpressWest and Desert Express (to Victorville and on to Las Vegas) should this project advance in step with the IOS and could be highly beneficial for ridership and revenue. While theoretically there may be opportunities to phase the tunneling work along this segment (twin bores) and procure using more reasonable contract sizes, due to safety (and potential requirements by the FRA), we do not believe that the twin bores of this segment may need to be undertaken in full.
- ▶ Stage 2C includes the 95 mile extension of Phase 1 through Merced/Carlucci Rd and to Gilroy. Civil works and infrastructure along this segment are approximately \$11.2 billion in total (developer and Authority costs) and a construction value of \$9.6 billion. There is

significant potential to creating a full system link from Stage I to San Jose and San Francisco if the Authority, developer and operator could enter into an agreement with UPRR to utilize the existing line between Gilroy and San Jose. Ultimately, this could provide a one or two seat ride from Bakersfield (and contingent upon timing of advancement of the stages outlined above, from Palmdale or Burbank) to San Francisco. The use of the existing line between Gilroy and San Jose does, however, present a challenge as this line is not currently electrified. Similar to the approach that the Authority, in coordination with Caltrain, has taken for the San Jose to San Francisco segment, this segment could either be upgraded for systems and power (which we estimate in the range of \$500 million) or the Authority (or future operator) would need to procure high speed locomotives that are capable of running on diesel alone. It may be interesting to seek feedback from rolling stock suppliers to assess the feasibility and additional cost to procure dual-power locomotives.

Completion of Initial Operating Segments and Phase I of System

Completion of the segments outlined above will require the Authority and its private partners to overcome significant technical and financial challenges. However, based on our proposed procurements strategy, and the contractual arrangement to undertake this work outlined below, we believe that the project will build the necessary momentum for continued support of the project. Completion of the system from Burbank to Los Angeles, and further to Anaheim, as well as the full construction of the Gilroy to San Jose segment, will complete Phase 1 of the HSR project. While we have focused our discussion on completion of Gilroy to Burbank, the completion of these final segments are just as integral to the

success of Phase I. The technical and finance considerations that have driven our approach above apply similarly to these final segments.

11.4.8 Contractual Structure for Delivery of Initial Operating Segments

We recommend that the delivery of Stage 1 be procured using a traditional P3 DBFM approach based on the size of this Stage. Given that the Authority is seeking to partner with a private developer to manage the larger scale issues of integration, management of the IOS development, and long term maintenance and rehabilitation responsibilities and risks, our proposed delivery strategy for the Authority is to prioritize the delivery of Stage 1 for the numerous benefits (and limitations) outlined herein, and enter into a longer term pre-development agreement (“PDA”) with the selected developer to advance additional stages of the IOS, to which a right of first negotiations would be attached for the next Stage to be developed (negotiated on an open-book basis, so as to protect the interests of the Authority is securing the most competitive and efficient contract, while achieving its goal of advancing and integrating the system).

A key element to advancement of the IOS segments is the identification of construction and long-term funds required to maintain reasonable level of private financing in project scopes that reach well over \$5 billion in design and construction costs. However, given the Authority’s, and the State of California’s commitment to advancing the System, the following recommendations assume that additional levels of funding are identified on a rolling basis in order to advance the IOS-South and IOS-North within the timeframe set by the Authority.

Selection of a private partner to enter into a PDA would be primarily based on the qualification and award of a developer for Stage 1 of the project. While Stage 1 design and construction is being advanced, the Authority’s PDA private partner

would work in close coordination with the Authority with the Authority to help guide the overall project development to define subsequent scope and construction / P3 packages. This represents a significant benefit to the Authority given the integration of the project segments along all or a significant portion of the System. The direct involvement of a private developer will bring significant experience and knowledge of procurement approach and project risks (both from past P3 projects and through the work undertaken in Stage 1) to build and maintain the system.

As the developer and partner to the Authority under this arrangement, and in order to advance subsequent segments. The developer would be granted a first right of negotiation on the next Stages(s) to be built and maintained. This would be undertaken using an open book policy to ensure value to the Authority and constructive dialogue on optimal design and construction considerations of subsequent segments. The developer would also undertake the maintenance and rehabilitation scope over the long term in order to simplify the Authority’s structure with regard to fewer maintainers along the corridor to limit interface risk. Additionally, the ability to negotiate subsequent construction packages with the same developer would help to eliminate redundant costs such as mobilization and an overall economy of scale that will bring significant savings to the Authority.



11.6 Commercial Questions

1. *Is the delivery strategy (i.e., combining civil works, track, traction power, and infrastructure) likely to yield innovation that will minimize whole-life costs and accelerate schedule? If so, please describe how. If not, please recommend changes to the delivery strategy and describe how those changes will better maximize innovation and minimize whole-life costs and schedule.*

We view that the Authority's approach to combining civil works, track, traction power and infrastructure will provide certain benefits over separately procuring such elements. Separately procuring certain elements may allow for such elements, for example traction power or systems, to be undertaken along the entire alignment under a single contract. However, the integration of design, construction and ultimately the maintenance and replacement or rehabilitation of these elements may generate integration and coordination issues and the Authority can better optimize their P3 approach by procuring segments (as proposed in Section 11.4 above) that incorporate all elements of the proposed delivery strategy. Our proposed delivery strategy outlined above reflects these views.

We note that interface from a design and operational perspective with future developers and/or operators will require special consideration based on the ultimate approach for delivery of the rolling stock. Specifically, the integration of systems along the entire corridor, both from segment to segment and with the operator's onboard systems, may be more easily facilitated by prescribing certain requirements which are decided by the Authority, either in conjunction with the Stage 1 developer and/or operator or with the operator. This is achievable without procuring the systems for an entire IOS but will require significant involvement of the Authority to prescribed technical standards for future segments that allow for a smooth integration. Our suggested approach

using a pre development agreement for the subsequent Stages would help this effort as the private partner selected for Stage 1 would remain involved at assist the Authority in defining such standards.

2. *Does the delivery strategy adequately transfer the integration and interface risks associated with delivering and operating a high-speed rail system? What are the key risks that will be borne by the State if such risk transfer is not affected? What are the key risks that are most appropriate to transfer to the private sector?*

The Authority's delivery strategy as is relates to combining civil works, track, traction power and infrastructure will mitigate challenges of integration for the Authority. The coordination of these elements can be adequately managed by a private partner under a single contract along the segments outlined in our recommended approach. The Authority's role in facilitating the integration of these elements with a future operator will be integral to the ultimate interface of a developer and, separately, and operator. Examples of key interfaces between the developer and operator are (i) the systems that must communicate along the corridor with each train, and (ii) the interface between the rolling stock and the tracks (as it relates to maintenance concerns). These interfaces will benefit from certain prescriptive requirements, which can be defined in close cooperation with the developer, the Authority, the rolling stock provider and the future operator(s).

To maximize the risk transfer in what relates to the wheel-track interface, and the systems interface (train control systems and signals), we believe that it would be in the Authority's best interest to select a rolling stock supplier ahead of finalizing the procurement process for Stage 1 P3 DBFM. Alternatively, the Authority could run these selection processes in parallel but then an adjustment mechanism would be needed to allow for fine-tuning the integration parameters before entering into the P3 contract, or post-signature to allow for price revisions to account for changes due to the rolling stock technology that were not

forecasted when bidders for the Stage 1 P3 procurement submitted their proposals.

Appropriate risks to be borne by the private sector for the delivery of the civil works, track, traction power and infrastructure are design and construction execution risk, long term maintenance and rehabilitation of these elements (as it relates to delays, cost overruns and price escalation, for example). Risks that are best managed by the Authority are those typical in a P3 arrangement, and include risks relates to force majeure events, unforeseen geological conditions, governmental approvals, and appropriation of funding for payments during construction and availability payments, to identify a few. Our team has significant experience in managing and operating projects with similar characteristics and risks that will be present for this project, and will leverage this experience in working with the Authority to continue developing a delivery approach and contract structure.

3. Are there any other components of a high-speed rail system that should be included in the scope of work for each project (e.g., rolling stock, train operations, stations)? If so, how will this help meet the Authority's objectives as stated in this RFEI?

Based on our proposed delivery strategy outline above, we believe that the Authority's current strategy of bifurcating the delivery of the rolling stock and train operations (as well as stations and maintenance facilities) through a separate operator is a reasonable approach. Inclusion of these elements will significantly impact the ability to deliver segments from a cost and risk perspective in the short and long term.

Because the rolling stock is the one element of the project that must be the same for the entire IOS (and entire System ultimately), the Authority's plan to separate its procurement from the construction of the HSR line itself makes the most sense.

Undertaking work related to stations and maintenance facilities could be incorporated as

part of the developer's overall scope of the IOS segments, as ACS and Dragados have done for the Ottawa Light Rail (Confederation Line) LRT project and the Eglinton LRT project. However, we note that if the Authority intends to enter into a contract with an operator that includes a complete or partial transfer of revenue risk to the operator, these elements have an impact on the revenue potential of the system (in individual segments and along an IOS section in general), and thus the operator will likely require more discretion and control over the design and operations and maintenance of these elements.

4. What is the appropriate contract term for the potential DBFM contract? Will extending or reducing the contract term allow for more appropriate sharing of risk with the private sector? If the Respondent recommends a different delivery model, what would be the appropriate term for that/those contract(s)?

Under a typical P3 concession, the optimal length of the contract term is based primarily on two factors: the anticipated design life and lifecycle obligations of the project and whether the concession is structured as an availability payment or revenue risk P3. Based on the 2014 Business Plan, the targeted design life for certain elements of the project is approximately 40 years, and 80 or more years for structures. Assuming that communications and systems are included in the scope of the developer, a typical life cycle for these elements is 15-20 years. The Authority will benefit the most from the DBFM approach if it allows for several rehabilitation cycles to occur during the term of the contract to fully transfer this risk, as it will give the private sector the ability to optimize the delivery of the system and to price the rehabilitation works in the most efficient way.

As an availability payment structure is contemplated, a contract term of 35-45 years therefore represents the ideal term to allow for a meaningful transfer of life cycle risk to the developer, which encourages innovation by requiring the private partner to plan and perform the design, construction and maintenance

activities under an integrated approach that is aimed at whole-life cost optimization and long-term efficiency.

Additionally, a term of this length will provide the Authority greater flexibility to with respect to its approach of bundling elements of the System by and between private sector partners, particularly as Stage 1, and ultimately the entire Phase I, are constructed and begin to build revenue streams through increased ridership. If the period is too long, the Authority will likely see diminishing value in the partnership as later cash flows are heavily discounted.

It may also be beneficial for the Authority to structure contract durations so that the rolling stock provider and/or operator contract(s) expire at the same time as the DBFM for the civil/structures/systems. At this stage, a more comprehensive operations and maintenance contract that combines the currently envisioned roles of a developer and an operator could be more feasible at that point, once the IOS-North or IOS-South (or significant portions of either) is built and under operations. At this time, the revenue potential of the System is better known and private

financing may be better leveraged based on these historical revenues. Under the Authority's current approach, the operator would enter into a contract for approximately 30 years, which aligns with this proposed approach.

5. What is the appropriate contract size for this type of contract? What are the advantages and disadvantages of procuring a contract of this size and magnitude? Do you think that both project scopes should be combined into a single DBFM contract?

Our team combines three of the largest developers and contractors in the world, ACS, Dragados and Cobra have participated in design-build projects that exceed \$4 billion in capital cost, or nearly \$4.2 billion in total investment. Even for our proposed Stage 1 (around \$5 billion, see Section 11.4), we will need to team up with other major contractors to deliver such a project. There are several key considerations with regard to the maximum size, as well as the appropriate size, for a P3 project such as the one envisioned by the Authority. We have summarized these in the following table, and discuss some in further detail below.

Advantages	Disadvantages
<ul style="list-style-type: none"> ▶ A larger contract size equates to a greater amount of integration of construction and O&M works by a single developer along the corridor, leading to certain efficiencies (as discussed elsewhere in our response) ▶ For the Authority, procuring a contract in the range of \$20+ billion will lead to fewer individual contracts along the System to procure the project. However, oversight will remain key to the Authority's responsibilities regardless. 	<ul style="list-style-type: none"> ▶ The market cannot absorb a single \$20 billion contract due to various factors, including concentration risk (e.g. assuming 4 major contractors at 25% each, a single firm would have an exposure of \$5 billion alone, in one single project, and represents a level of risk that is too high) ▶ Security package requirements for the contractor (including bonding capacity) exceed the practical capacity of even the largest contractors active in the US construction market teaming together ▶ Financial institutions would not invest into a project of such unprecedented scale and cost ▶ Potential to increase risk of project delivery given the allocation of significant shares of a developer and contractor teams' financial and technical capacity in case of challenges during construction (much greater exposure for the Authority in case of contractor default)

Of significant importance in sizing contracts is bonding capacity for contractors. From a contractor perspective, it is typical (and often necessary) in large infrastructure projects to undertake the work as part of a joint venture with between three and four joint venture partners. A joint venture of four to five contractors, which from a teaming perspective is the maximum efficient number of partners, would equate to a bonding requirement of between \$4 to \$6 billion for each joint venture member considering the range between both IOS-North or IOS-South. As this capacity is utilized for all construction undertakings for a given contractor, a single project that requires a bonding capacity in excess of what potentially five of the largest contractors in the market could achieve is neither practical nor feasible.

A similar limitation exists for the construction security package (required by the lenders to bring liquidity to the project in case of delay or default) as the size of letter of credit that would be required for a project that encompassed the IOS-North or IOS-South exceeds any contractor's capacity. A common requirement in P3 projects is a letter of credit in the order of 5% to 10%, or in the case of a full IOS section, \$1.1 billion to \$2.4 billion in total (again considering the range between both IOS-North or IOS-South), which far exceeds what is available for major contractors even as part of a four to five member JV.

ACS brings significant financial resources that, as necessary and subject to extensive due diligence and risk management measures, can be bolstered through access to its parent companies' balance sheet. However, as discussed above, the concentration of resources and risks into a single project exceeding \$20 billion, and over \$2 billion in required equity contributions (assuming a classic 90:10 gearing ratio), is unprecedented and unlikely to attract the participation and competition the Authority is seeking for the project.

The largest greenfield P3 in North America to date is ACS' Eglinton LRT project, with a capital cost for construction of \$4.2 billion. The investment value for this project exceeded \$4.2 billion. The feasibility

of projects far exceeding this value is highly questionable given the practicalities of teams of contractors and developers to undertake this amount of work in a single project, and we do not view a P3 project of the scale of IOS North or South to be financeable, (or even a DB project of this magnitude being feasible).

In conclusion, we believe that the maximum capital cost that is feasible under a single contract is around \$5 to \$6 billion. Thus, we do not recommend combining the project scopes into a single DBFM contract.

6. Does the scope of work for each project expand or limit the teaming capabilities? Does it increase or reduce competition?

Teaming in projects of significant scope and complexity provides material benefits related to technical capabilities, financial capacity and mitigation of challenges and risks related to each. ACS, DUSA and Cobra strategically team with partners that allow us to successfully undertake projects and provide increased benefits to owners. We view the envisioned approach of combining several elements of the project (e.g. civil works, communications and systems, traction power, rail) to be an opportunity for bringing these benefits to the Authority from a teaming perspective. However, as noted above and discussed elsewhere in this response, the size of the IOS-North and IOS-South scopes are too large for a competitive number of teams, including those that would include the most experience and technically capable design and construction firms and developers, to form and provide a financeable project proposal for the Authority.



11.7 Funding and Financing Questions

7. *Given the delivery approach and available funding sources, do you foresee any issues with raising the necessary financing to fund the IOS-South project scope? IOS-North project scope? Both? What are the limiting factors to the amount of financing that could be raised?*

A delivery approach that combines all, or a significant portion, of the IOS North or South scope is challenging as it relates to the capacity of experienced major contractors and developers in the P3 market, as outlined above. Further, the financing requirements for a project with capital costs between \$22 and \$24 billion are beyond the capacity of qualified infrastructure developers and investors.

The proposed funding sources for milestone or progress payments during construction will help to reduce the financing requirements for a DBFM for an entire IOS or a portion of an IOS, as anticipated by the Authority. However, as outlined in the RFEI and the supplemental FAQ Responses, the Authority currently has three main sources of funding for the capital costs of the Program: Federal grants (ARRA and Fiscal Year 10 grant funds), Proposition 1A bond proceeds, and proceeds from the Greenhouse Gas Reduction Fund (GGRF) via the Cap-and-Trade program. With \$4.1 billion in available Prop 1A and \$3.5 billion the C&T proceeds (based on funds received to date and an assumed \$500 million per annum between now and the anticipated end of construction of 2022 for a portion of an IOS section), a total public funding amount of approximately \$7.6 billion during construction would still equate to shortfall of \$14 to \$16 billion for delivery of an IOS (figures based on Total Project Cost, year of expenditure) , that we anticipate to be partially funded by maximizing third party funding sources for the project (both debt and equity).

The long term funding source that the Authority

anticipates will be generated by the C&T program could, as outlined in the FAQ Response, is anticipated to provide up to \$500 million annually to finance availability payments to a developer. Our understanding is that this amount could be greater, however, but even with the success of California's C&T program, such amounts are not significant enough to mitigate the issues related to funding shortfall and securitization.

Based on precedent transactions, \$500 million per annum could support up to \$7 to \$8 billion in financing assuming a 35 year contract term. Our discussion below includes challenges and risks associated with assuming the Authority's estimates regarding the steady source of C&T funds over a 30+ year period (through FY 2050), however, even accounting for the availability of these funds, they would fall significantly short of the overall financing requirements for the project as currently envisioned.

Generally, the limiting factors to the amount of financing that can be raised include a limited pool of investors willing to invest in a single project/asset of this magnitude, ability of developer teams to raise, or competitively invest, adequate equity amounts for financings of this size, and the ability to obtain investment grade ratings.

ACS reached financial close for the Eglinton LRT project in July 2015, which represented a total investment value of \$4.2 billion and is the largest P3 project to be undertaken in North America. The project benefited from over \$3 billion in public funds during construction, limiting the private investment requirement to around \$1 billion. Another data point is ACS' Champlain Bridge Replacement project, which included over \$2 billion of private financing and reached financial close in June 2015. The largest rail P3 is the Tours-Bordeaux high-speed rail, also known as the South Europe Atlantic High-Speed Rail (SEA HSR), is a massive railway project under development in France, which has a total investment value of approximately \$9 billion. A significant amount of the funding came from French and European governmental authorities, and a large portion of the

remaining financing secured for this project is guaranteed by the French government. We view these two examples as global examples of the upper limit for a feasible contract and financing size for a P3 project (while noting that the HSR project in France did not encounter the limitations found in the US around bonding capacity for contractors).

8. What changes, if any, would you recommend be made to the existing funding sources? What impact would these changes have on raising financing?

Our main recommendation to the Authority regarding funding sources is to seek to increase the quantum of the public funds for the project as it is clear that there exists a significant shortfall at this time that will prevent the delivery of an entire IOS. Furthermore, this will limit the financing requirements to the feasible range outlined above, whether under a single DBFM or through the partitioned approach outlined in our project approach Section 11.4, and ultimately increase the potential DBFM contract sizes that are financeable. Assuming a contract sum limited by the maximum capital cost of \$6 billion, and further assuming the available public funds available in our response to Question 7 above, the Authority has sufficient public funds available to undertake an initial DBFM contract for Stage 1 and retain some funds for the development of subsequent Stages. An additional benefit of inclusion of private financing in the order of \$1 to \$2 billion, which we see as necessary to enable an efficient risk transfer that provides value to the Authority, is that the project will have healthy breakevens that will act as a buffer for maintenance costs overruns. Rating agencies and investors will closely look at the long term risks, and the developer's ability to withstand cost overruns, and with too little financing, will either restrict the amount of risks that the developer can undertake, or provide for less favorable financing terms (lower credit ratings, higher bond spreads).

With respect to the Authority's request for Respondents to assume that the Authority receives \$500M through FY 2050 for the purposes

of this RFEI, the current and anticipated C&T funds, should they be specifically allocated and reserved to complete an IOS section under a DBFM, provide a critical source of funding for the construction milestone payments. However, the C&T auction system presents challenges in the ability to raise financing against this source of repayment:

- ▶ As with any government program such as California's C&T auction program, there exists an inherent degree of risk that the program could be modified, replaced or cancelled all together as the political, environmental and social agendas continuously adapt to the specific needs and priorities of the state. In particular, the future of the auction program (currently into law until 2020 only), and the \$500 million per annum in potential funding allocation, relies entirely on the continuance of the auction program as contemplated today, and at this moment only the 2020 emissions targets have been defined. The 2030 targets, and the 2040 are subject to legislative approval and will not be defined until some point in the future, potentially after the fund raising exercise is undertaken.
- ▶ The quantum of free allowances granted by the Air Resource Board under the current program provides a degree of uncertainty as to the actual amount of credits that will be auctioned and therefore as to the funding that can be extracted from the C&T auction system
- ▶ The speed at which industries will adapt and invest into cleaner technology to achieve carbon emission reduction goals, and therefore the potential for the C&T auction system to become irrelevant as an incentive
- ▶ The current pending lawsuit challenging the legality of the C&T auction system and the dedication of 25% of the proceeds to high speed train

While we believe that the C&T program can offer a consistent funding stream for the project for a period of time, the ability to leverage financing—in particular the quantum of financing anticipated to be required for this project—may be limited, and will require legislative and political certainty to maximize the funding raised.

A potential approach to mitigating this risk is to provide for an extension of the C&T auction system through 2050 as well as for a minimum amount of C&T funds per annum. A potential arrangement for the Authority would be for the program revenues to be subject to a “floor” whereby the Authority would receive the greater of a fixed dollar amount (e.g. \$500 million) or 25% of the C&T proceeds per year. This would provide more certainty for the Authority in the quantum of future revenues from the C&T program. While there remains significant uncertainty with regards to the amounts that the C&T auction system can yield in the long term, we believe that it may be possible to raise long term financing against this source of funding only, provided that a floor dollar amount is reserved for HSR (i.e. we believe that there is a possibility that the financial markets may be comfortable that an extended C&T auction system will provide at least \$500 million per year).

In an ideal scenario (but not necessarily required), as has been done in other jurisdictions, any anticipated funding sources that are intended to be used to repay financing should be isolated from the risk of whether such revenues (via C&T or revenue from operations) are ultimately realized. This is common in the US P3 market, whereby the funding required to pay the developer under availability payment concessions that are tolled (by the owner) are isolated from revenue risk. This can be achieved, as it was in Indiana for East End Crossing Project, by contractual requirements on the part of the owner to request, and for the state to appropriate, the full amount of funds needed to meet availability payments for any given budgetary period.

Finally, based on the 2014 Business Plan, and the Authority’s mandate for the development of the

IOS (North or South), we understand that that the anticipated revenues from operations will be available to pay for operating and maintenance costs and any remaining revenues will be available to repay financing. While this particular funding source is discussed in further depth below, a developer’s ability to service debt and maintain a portion of the System must be isolated from revenue risk of the project for developers to be able to provide equity for this project, for the cost of financing to remain low and for the project to be financeable generally.

9. Given the delivery approach and available funding sources, is an availability payment mechanism appropriate? Could financing be raised based on future revenue and ridership (i.e., a revenue concession)? Would a revenue concession delivery strategy better achieve the Authority’s objectives?

Based on our analysis of the project to date, we view an availability payment structure to be the most feasible and would ensure the benefits of a DBFM approach are recognized, including the most efficient transfer risks related to construction, maintenance and long term rehabilitation of the civil and infrastructure elements of the IOS. As discussed above in our project approach, this is the most feasible and attractive way for the Authority to procure the portions of the IOS- North and/or IOS-South projects at this time.

We note that in more traditional and relatively smaller scale P3s, a key benefit under a revenue risk concession is that the developer is more incentivized to maximize revenue potential of a facility, which spurs innovation and often drives a phased approach to development and ultimately operations that generates the most revenue soonest. However, as we have recommended above, a revenue risk concession would inherently require the developer to undertake procurement and operations of the rolling stock, stations, maintenance facilities and other elements of the scope that are currently anticipated to be procured under a separate contract, and could only work if the entire System was tendered at once, which we

have established in previous questions, is not feasible. Inclusion of these aspects into the scope of an IOS-North or IOS-South DBFM only decreases the feasibility from a construction and financing standpoint. Ultimately, a developer's decisions as they relate to the phasing of the project, the location of stations, the operating routes and frequency, fares, and other key factors that influence broadly the ridership and revenue potential for a part of all of the IOS may not align with the Authority's goals for the system when a developer is seeking to maximize revenue.

In general, a revenue concession delivery strategy, which would require the developer to raise financing based on expected future revenues for the System, would be not be feasible for this project. In addition to the limitations that exist with respect to market appetite and equity developer contribution requirements discussed previously, the critical challenge to leveraging financing in the context of a revenue risk concession is the availability of historical ridership and revenue data for developers or investors to evaluate the real revenue potential of the project, and the investment grade ratings that are necessary to successfully market debt instruments for a project of this scale are critical and in our view unattainable in this context.

The \$5.7 billion sale of the Indiana Toll Road earlier this year was unprecedented in scale for US infrastructure assets. Raising this quantum of capital against the mature asset was attributable to the extensive traffic and revenue data available for project (noting, importantly, that the previous concessionaire's purchase of the asset fell into bankruptcy due to unrealized revenues, despite such data available at the time), and the substantial funds looking to be deployed by pension funds, in the US and globally, for stable long-term assets. While certain P3 projects, including the SH 288 Toll Lanes project in Texas (awarded to ACS and Dragados), were successful in securing substantial levels of private investment without significant traffic and revenue data (as this project includes the construction of new managed lanes within an existing corridor), a greenfield project such as the IOS has no, or extremely limited data, on which to base projections on.

As the System continues to be developed over the coming years and decades, there certainly remains opportunity for a more fulsome transfer of the ridership and revenue risk to the private sector as the revenue capacity of the System becomes clearer once built and operated in its entirety.



11.8 Technical Questions

10. Based on the Authority's capital, operating, and lifecycle costs from its 2014 Business Plan, describe how the preferred delivery model could reduce costs, schedule, or both. Please provide examples, where possible, of analogous projects and their cost and/or schedule savings from such delivery models.

For the design and construction of the IOS segments, the preferred DBFM delivery model allows for the contractor to be integrated into and manage the design process that will facilitate innovations that will help to reduce costs and accelerate delivery of the project as a whole. Our team will capitalize on Dragados' experience on similar projects to refine conceptual designs in order to enhance constructability, optimize material selection, improve resource allocation, streamline efficiency, reduce safety risks, package the design deliverables to facilitate early construction activities, and improve resource utilization to engage small businesses, subcontractors, the local labor force, and material supply chain.

The design-build team will also work collaboratively to schedule the design and construction work in order to increase flexibility related to the right-of-way (ROW) acquisition schedule and known constraints. By including the design-build contractor early in the process (including through Stage 1 and the PDA approach outlined above), the team can work with the Authority to prioritize the ROW acquisition schedule to better match the needs of construction, which can significantly reduce the ROW acquisition risks and accelerate the schedule. Likewise, the design-builder can also package and schedule the design deliverables around ROW constraints in order to start construction in certain areas earlier, while still supporting the acquisition of parcels in other areas until they are ready for construction.

Our team used a similar approach to design and construct the highly successful \$1.5 billion Figueres-Perpignan High-Speed Rail Line between Spain and France that includes a 5.2-mile long twin-bore railway tunnel. Dragados organized the project into distinct segments and worked collaboratively with the design team to reduce construction costs and minimize the amount of time required to start running trains on this corridor. This unique P3 project addressed considerable environmental and geological challenges, integrated all trades, and complied with the high-speed standards for design, construction and operation for both Spain and France.

A key strategy for achieving cost and schedule savings during the contractor selection process is to allow submittal of alternative technical concepts (ATCs) to incorporate design optimizations into Proposers' technical and price proposals. This is consistent with the Authority's approach on the procurement processes for their recent design-build construction packages and can result in significant cost and schedule savings.

An example of the success possible through an ATC process ACS' and Dragados' \$1.2 billion I-595 Corridor Improvements Project in Florida. The project team presented numerous ATCs to the Florida Department of Transportation during the proposal process that preserved existing structures on the I-595 corridor that were originally planned to be replaced. FDOT's original design included an additional flyover at the most congested intersection of the project, which required demolishing the existing flyover due to geometric constraints. However, the team's innovation refined the alignment by placing the new express lanes in the former eastbound lanes, rather than in the I-595 median. Ultimately, this innovation alone saved approximately \$40 million.

11. How does this compare to separately procuring each high-speed rail component (i.e., separate contracts for civil works, rail, systems, power separately)? Please discuss design/construction costs, operating/maintenance/lifecycle costs, and schedule implications



Packaging several HSR components under a single DBFM contract can lead to significant benefits for the Authority, ultimately decreasing design/construction costs and reducing schedule risks as compared to separately procuring each high-speed rail component.

- ▶ Enables construction activities to start earlier by procuring a larger section of the System at the same time
- ▶ Provides for more efficient management with a single team undertaking a larger contract
- ▶ Reduces interface timeframes between the individual components by more efficient scheduling of activities and less interface and coordination issues between the Authority and multiple contractors
- ▶ Streamlines integration of the civil work with the HSR systems and rail elements and reduces risks typically associated with this work, where integration of key elements of design (e.g. track and structures, traction power along whole corridor) would mean significant coordination of interface between the two at the Authority's level (and risk). Packaging will allow the private partner to

deliver this effectively by managing these elements together and constructing them in the most efficient manner and not just by sequential timing of the contracts

- ▶ Provides more flexibility to optimize the overall schedule in order to begin the rail and systems work as soon as the civil work is completed in a particular area
- ▶ For maintenance and rehabilitation, a greater scope of elements to be managed means less redundancy in resources (lower fixed costs per mile) and a more efficient program management approach. Interfaces between elements can be managed through whole-lifecycle approach as well. For example, maintenance and rehab of civil/structural works as they tie into the rail by a single developer will limit interface and availability issues that may arise if delivered by different teams.

12. For each project, are there any technical changes to the respective scope of work that would yield cost savings and/or schedule acceleration while still achieving the Authority's objectives? If so, please describe.

Allowing Proposers to incorporate technical variations from the Authority's current preliminary design as well as other design enhancements will provide the greatest opportunity to achieve cost savings and reduce the overall schedule. This can be achieved by allowing flexibility in the design, coordination of ROW acquisition, and Environmental assessments, while still following the Authority's objectives and complying with applicable standards and sound engineering judgment. As mentioned above, including an ATC process during the procurements process allows for engagement of the design-build team earlier in the process to capitalize on these potential improvements, so they can be incorporated into a developer's technical and price proposals.

A few examples of technical changes that could yield cost savings and schedule acceleration include the following: refinement of horizontal and vertical geometry; selection of materials and construction means and methods; optimizing bridge foundation types and superstructure; exploring different tunneling methodologies based on sound geotechnical engineering; and reducing the amount of ROW to be acquired and overall construction footprint.

For each IOS section, delivering large but manageable and financeable segments as outlined above would generate economies of scale and encourage innovative construction methods. For example, the large amount of tunneling works anticipated along IOS South could benefit from a single construction package, and the same is true of packing structures along the corridor, and allowing sharing of key resources.

Closing

Thank you for your consideration of our responses to your RFEI. We appreciate the opportunity to share our thoughts and hope that our input will be beneficial to the Authority in advancing the Initial Operating Segment. Please contact us if you have any further questions or would like for clarification of any of the points we have raised in this response.

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