THIS STAFF REPORT COVERS CALENDAR ITEM NO.: 9
FOR THE MEETING OF: April 19, 2007

TRANSBAY JOINT POWERS AUTHORITY

BRIEF DESCRIPTION:

Requesting that the Board: (1) adopt a Second Addendum to the Transbay Terminal/Caltrain Downtown Extension/Redevelopment Project FEIS/EIR; (2) approve the Caltrain Downtown Extension (DTX) Project Refined Locally Preferred Alternative (RLPA) as the baseline project configuration, and (3) express its support for planning and feasibility studies of a future expansion of the DTX by means of a Townsend Street/The Embarcadero/Main Street loop track.

SUMMARY:

Value Management (VM) studies conducted on the DTX Project have identified the opportunity to realize significant cost savings and operational efficiencies for the project, which have culminated in the proposal for a Refined Locally Preferred Alternative (RLPA) configuration. The proposed DTX RLPA provides a functional operating segment involving the construction of the environmentally cleared component of DTX on Townsend and Second Streets to the Transit Center. To meet initial operating requirements, all three of the previously approved tracks, analyzed in the certified Final Environmental Impact Statement/Environmental Impact Report (FEIS/EIR), would be constructed within Second Street. It is possible that only two of the approved tracks ultimately will be built, subject to further findings in preliminary engineering and other studies. The approved and environmentally cleared tail tracks would not be built in the first phase of the DTX project. To meet future system demands, additional DTX operating capacity could be provided through the construction of a Townsend Street/Embarcadero/Main Street loop track, accessing the Transit Center from the east end, or through construction of the tail tracks for which environmental clearance was provided in the FEIS/EIR. That decision will be made following additional planning and environmental studies.

Staff requests that the Board adopt a second addendum to the FEIS/EIR describing the refinements that make up the DTX RLPA, as described below and attached as Exhibit A to the accompanying resolution, and approve the DTX RLPA as the baseline project configuration. Staff also requests that the Board express its support for continued planning and feasibility studies for future expansion of the DTX by means of a loop track.

VALUE MANAGEMENT (VM):

In late 2005 the DTX Project Team initiated the development of a revised cost estimate for the DTX Project. This effort represents the first cost estimate prepared for the project since the publication of the FEIS/EIR document in March 2004. This comprehensive update of the FEIS/EIR estimate was designated as the Developed Locally Preferred Alternative (DLPA) estimate. The DLPA estimate resulted in a DTX program cost of approximately $2.149 Billion, some $882 Million more expensive than the estimate published in the FEIS/EIR escalated to the same year, January 2006.

The DTX Project Team initiated a VM strategy to identify potential reductions in the DTX Project cost in late January 2006. The study was twofold. The Program Management/Program Controls Team and the DTX Design Consultant, through the course of the design development and through the preparation of the DLPA estimate, identified several cost reduction opportunities. In addition, a

formal VM Workshop was conducted on March 30 and 31, 2006. These efforts collectively resulted in approximately 43 recommendations for DTX cost reduction.

The VM recommendations included configuration changes, refinements, and revisions to design and construction assumptions, and methods for contracting and managing the construction of the DTX work. The most significant recommendations in terms of potential cost savings and operational impacts are presented below:

- Deletion of the underground train storage box within the Caltrain Yard, and replacement with at-grade storage
- Deferral or deletion of the tail tracks
- Reduction in clearances within the mined tunnel and cut and cover tunnel sections
- Refinements to existing cost estimates for conservatively assessed items, including hazardous materials and communications systems, based upon engineering development
- Revising design assumptions for the mined tunnel, including elimination of waterproofing, a review of settlement estimate and ground support measures, and altered drift sequence within Second Street
- Revising design assumptions and construction methods for the cut and cover tunnels, including the use of up/down construction for the cut and cover tunnel on Townsend Street, integrating support of excavation walls into the permanent tunnel structure, use of steel framing for both support of excavation and finished structure on Second Street and Main Street, reducing the fill above the cut-and-cover sections, and elimination of waterproofing

The most significant VM recommendation put forth, in terms of both potential cost savings and improved rail operations performance, is the proposed implementation of an operational loop that would be introduced by the inclusion of an additional tunnel segment along Townsend Street, The Embarcadero and Main Street, entering the Transbay Transit Center by means of the LPA tail track location. The loop recommendation suggested that efficiency of cost could be achieved through the maximized use of a tunnel boring machine, reduced tunnel diameter, and that operational performance and capacity of the Transit Center would be significantly improved. The operational benefits of the loop concept were recognized by the proposed rail operators, Caltrain and California High Speed Rail.

The TJPA Board approved a pre-feasibility study of the loop in May of 2006. The study concluded, in July of 2006, that the loop construction was feasible in terms of alignment criteria and tunneling technology. A more detailed study of the loop concept was initiated in October 2006.

The study has involved the comparison of three distinct loop alternatives:

- Alt. No. 1: Single Loop - A single loop track on Townsend Street, The Embarcadero, and Main Street, entering the Transbay Transit Center from the east and exiting to the west with a single LPA track on Second Street.
- Alt. No. 2: 2+1 Loop - A single loop track on Townsend Street, The Embarcadero, and Main Street, entering the Transbay Transit Center from the east and exiting to the west with two LPA tracks on Second Street.

- Alt. No. 3: 2+2 Loop - Two loop tracks on Townsend Street, The Embarcadero, and Main Street, entering the Transbay Transit Center from the east and exiting to the west with two LPA tracks on Second Street.

The loop alternatives have been compared on the basis of rail operations performance and construction cost, including the ability to phase construction and further reduce the costs of an initial DTX operating segment. It was determined that the construction cost efficiencies anticipated were not sufficient to offset the additional tunnel length, and all of the loop alternatives had higher initial construction costs than the LPA. It has been concluded, based upon operations performance, the ability to stage construction to minimize initial capital investment, and the ultimate ability to significantly enhance Transbay Transit Center train capacity, that the Alt. No. 2: 2+1 Loop offers the optimal configuration of the three loop alternatives. The single loop alternative (Alt. No. 1) had significant operational and ultimate system capacity deficiencies and did not perform as well as the LPA. Accordingly, it was concluded that the single loop alternative should not be given further consideration.

The evaluation of the VM recommendations, including the evaluation of three loop alternatives, has led to recommended refinements of the adopted LPA. The proposed RLPA, the components of which are described in the Second Addendum to the FEIS/EIR, as set forth below and attached as Exhibit A to the accompanying resolution, will minimize initial construction costs, provide conformance with initial operating requirements, and offer flexibility to cost effectively expand the DTX system to meet future rail transit needs.

The RLPA provides a functional operating segment involving the construction of the environmentally cleared component of DTX on Townsend and Second Streets to the Transit Center. Rail operations simulations have been developed to demonstrate that DTX can meet initial operating requirements with two FEIS/EIR approved tracks in Second Street. However, until such time as all technical unknowns that may affect operational performance are quantified (e.g., Caltrain and High Speed Rail (HSR) equipment types, signaling equipment type, HSR schedule and expected changes to the Federal Railroad Administration (FRA) regulations), it is considered prudent to retain three FEIS/EIR approved tracks in Second Street. As the simulations also demonstrate, neither tail tracks nor loop tracks in Main Street, The Embarcadero and Townsend Street are required to meet initial operating requirements.

As required by future system demands, additional DTX capacity can be provided through the construction of the Townsend Street/Embarcadero/Main Street loop tunnel, accessing the Transit Center from the east end. This expansion would require subsequent environmental analysis and clearance.

SECOND ADDENDUM TO THE FEIS/EIR:

In April 2004, the Transbay Terminal/Caltrain Downtown Extension/Redevelopment Project FEIS/EIR (SCH #95063004) was certified by the City and County of San Francisco, the Peninsula Corridor Joint Powers Board, and the San Francisco Redevelopment Agency. A first addendum to the FEIS/EIR (dated May 25, 2006) was adopted by the TJPA Board on June 2, 2006 pursuant to the Section 15164 of the Guidelines implementing the California Environmental Quality Act (CEQA), Public Resources Code sections 21000 *et seq.*[1]

[1] The CEQA Guidelines are found at California Code of Regulations, title 14, sections 15000 *et seq.*

The proposed Refined LPA (RLPA) for the Caltrain Downtown Extension (DTX) Project (hereinafter, "DTX RLPA") (shown in Figure 1 attached hereto) consists of the following changes to the LPA:

- Two track lead on the surface and below ground leading to the DTX tunnel system to just before the Fourth and Townsend Streets underground station;
- Three tracks beginning at the Fourth and Townsend Streets underground station and continuing to the throat section approaching the Transbay Transit Center where the three track system splays out to six tracks to accommodate the six platform berthing locations within the station;
- At-grade rail car storage within the existing Caltrain rail storage yard rather than underground storage, which would reduce the amount of underground construction associated with the project and would not significantly change the existing use of the rail storage area;
- Design provisions to allow for a future connection to the cut and cover tunnel on Townsend Street that will facilitate construction of future system capacity for both Caltrain and High Speed Rail (HSR), and will be capable of accommodating the construction of a future Townsend Street/Embarcadero/Main Street loop with minimal disruption to ongoing rail service; and
- Delay in construction of the tail tracks, pending the outcome of future planning studies related to accommodating HSR and optimizing concurrent Caltrain and HSR operations, which would reduce the amount of underground construction within the project footprint analyzed in the FEIS/EIR at this time.

All of the changes proposed in the DTX RLPA would consist of a reduction in the size of various elements of the DTX project or rearrangement of uses within the project area previously analyzed in the FEIS/EIR, and would not change the magnitude of the environmental impacts disclosed in the FEIS/EIR. As described in the FEIR/EIS, Table 5.20-3, Pg 5-163, the approved LPA includes cut and cover construction along Townsend Street between Fourth and Fifth Streets up to Second Street.

Therefore, the DTX RLPA would not require major revisions to the FEIS/EIR due to new or substantially increased significant environmental effects. Furthermore, there have been no substantial changes with respect to the circumstances under which the DTX RLPA would be undertaken that would require major revisions of the FEIS/EIR due to new or substantially increased significant environmental effects; and there has been no discovery of new information of substantial importance that would trigger or require major revisions to the FEIS/EIR due to new or substantially increased significant environmental effects. Therefore, no subsequent or supplemental environmental impact report is required prior to approval of the DTX RLPA.

RECOMMENDATION:

The Staff recommends that the Board: (1) adopt the Second Addendum to the FEIS/FEIR, attached as Exhibit A to the accompanying resolution; (2) approve the DTX RLPA as the baseline project configuration; and (3) express its support for planning and feasibility studies of a future expansion of the DTX by means of a Townsend Street/The Embarcadero/Main Street loop track.

ENCLOSURES:

1. Resolution

Figure 1: Refined Locally Preferred Alternative (RLPA)

TRANSBAY JOINT POWERS AUTHORITY
BOARD OF DIRECTORS

Resolution No. _____

WHEREAS, In January 2006 the Transbay Joint Powers Authority (TJPA) began a Value Management (VM) process for the Caltrain Downtown Extension (DTX) Project; and

WHEREAS, The VM process resulted in 43 recommendations for reducing the cost of the DTX; and

WHEREAS, 42 of the 43 recommendations consist of changes that are within the scope of the significant environmental impacts of the Locally Preferred Project (LPA) approved in April 2004 and analyzed in the certified Transbay Terminal/Caltrain Downtown Extension/Redevelopment Project Final Environmental Impact Statement/Environmental Impact Report (FEIS/EIR) (SCH # 95063004), as updated by the Addendum to the FEIS/EIR adopted by the Board of Directors of the Transbay Joint Powers Authority (Board) on June 2, 2006; and

WHEREAS, From these 42 recommendations, a Refined LPA for the DTX Project (DTX RLPA), consisting of: a tunnel along Townsend and Second Streets consisting of 2, 3, and 6 tracks with 6 platform track berthing locations within the Transbay Transit Center Station; a Fourth and Townsend Streets underground station; at-grade rail car storage within the existing Caltrain rail storage yard at Fourth and King Streets; provisions for a future connection to the cut-cover structure on Townsend Street; and a change in the timing of constructing the approved tail tracks such that the tail tracks will not be constructed until completion of planning studies for accommodating future high speed rail, all described in more detail in the Staff Report accompanying this resolution, has been developed and presented to the Board; and

WHEREAS, The Board has reviewed the information in the staff report for the DTX RLPA accompanying this resolution, and the Second Addendum to the FEIS/EIR, a copy of which is attached hereto as Exhibit A, which concludes that no further environmental review is required for the DTX RLPA; and

WHEREAS, Construction of a loop track, which was shown by the VM study to have significant operational advantages, requires further planning and feasibility studies and has not been funded at this time; and

WHEREAS, The DTX RLPA is less expensive than the estimated Developed LPA based on the LPA DTX Project approved in 2004 and will reduce the cost of the approved LPA by approximately $633 million, meets all current DTX operating requirements, is capable of accommodating future system expansion through a loop configuration, and can be constructed within the currently environmentally cleared project area; now, therefore, be it

RESOLVED, That the TJPA Board:

1. Determines that the Second Addendum to the FEIS/EIR for the DTX RLPA, Exhibit A hereto, reflects the independent judgment of the TJPA; and

2. Adopts the Second Addendum to the FEIS/EIR for the DTX RLPA; and

3. Approves the DTX RLPA as the baseline project configuration; and

4. Expresses its support for planning and feasibility studies of a future expansion of the DTX by means of a Townsend Street/The Embarcadero/Main Street loop track.

I hereby certify that the foregoing resolution was adopted by the Transbay Joint Powers Authority Board of Directors at its meeting of April 19, 2007.

_____
Secretary, Transbay Joint Powers Authority

EXHIBIT A

Second Addendum to the
Transbay Terminal/Caltrain Downtown Extension/Redevelopment Project
Final Environmental Impact Statement/Environmental Impact Report
(SCH #95063004)

In April 2004, the Transbay Terminal/Caltrain Downtown Extension/Redevelopment Project FEIS/EIR (SCH #95063004) was certified by the City and County of San Francisco, the Peninsula Corridor Joint Powers Board, and the San Francisco Redevelopment Agency. A first addendum to the FEIS/EIR (dated May 25, 2006) was adopted by the TJPA Board on June 2, 2006 pursuant to the Section 15164 of the Guidelines implementing the California Environmental Quality Act (CEQA), Public Resources Code sections 21000 *et seq.*[2] This document constitutes the second addendum to the FEIS/EIR pursuant to the Guidelines, Section 15164.

The proposed Refined LPA (RLPA) for the Caltrain Downtown Extension (DTX) Project (hereinafter, "DTX RLPA") (shown in Figure 1 attached hereto) consists of the following changes to the LPA:

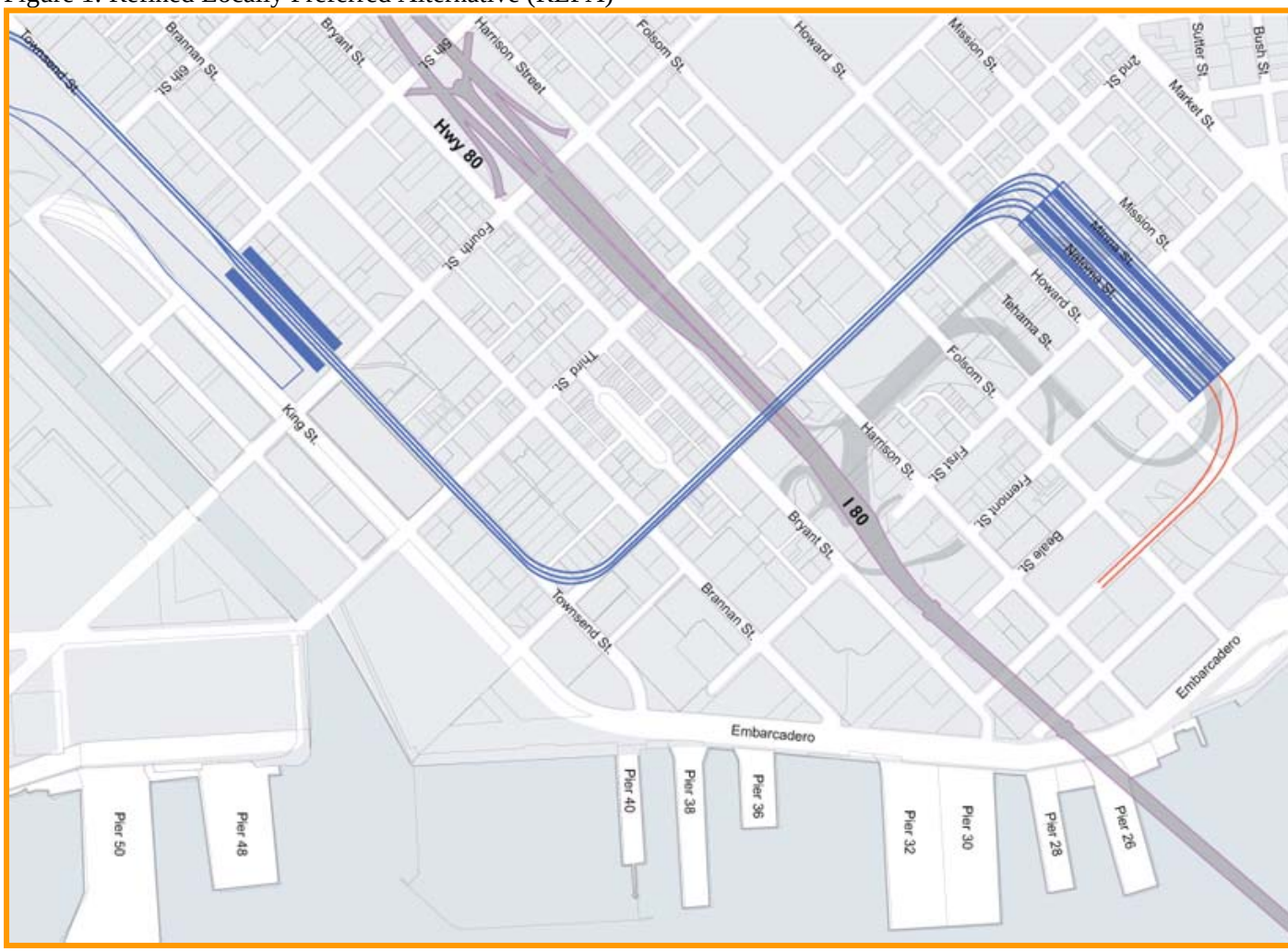
- Two track lead on the surface and below ground leading to the DTX tunnel system to just before the Fourth and Townsend Streets underground station;
- Three tracks beginning at the Fourth and Townsend Streets underground station and continuing to the throat section approaching the Transbay Transit Center where the three track system splays out to six tracks to accommodate the six platform berthing locations within the station;
- At-grade rail car storage within the existing Caltrain rail storage yard rather than underground storage, which would reduce the amount of underground construction associated with the project and would not significantly change the existing use of the rail storage area;
- Design provisions to allow for a future connection to the cut and cover tunnel on Townsend Street that will facilitate construction of future system capacity for both Caltrain and High Speed Rail (HSR), and will be capable of accommodating the construction of a future Townsend Street/Embarcadero/Main Street loop with minimal disruption to ongoing rail service; and
- Delay in construction of the tail tracks, pending the outcome of future planning studies related to accommodating HSR and optimizing concurrent Caltrain and HSR operations, which would reduce the amount of underground construction within the project footprint analyzed in the FEIS/EIR at this time.

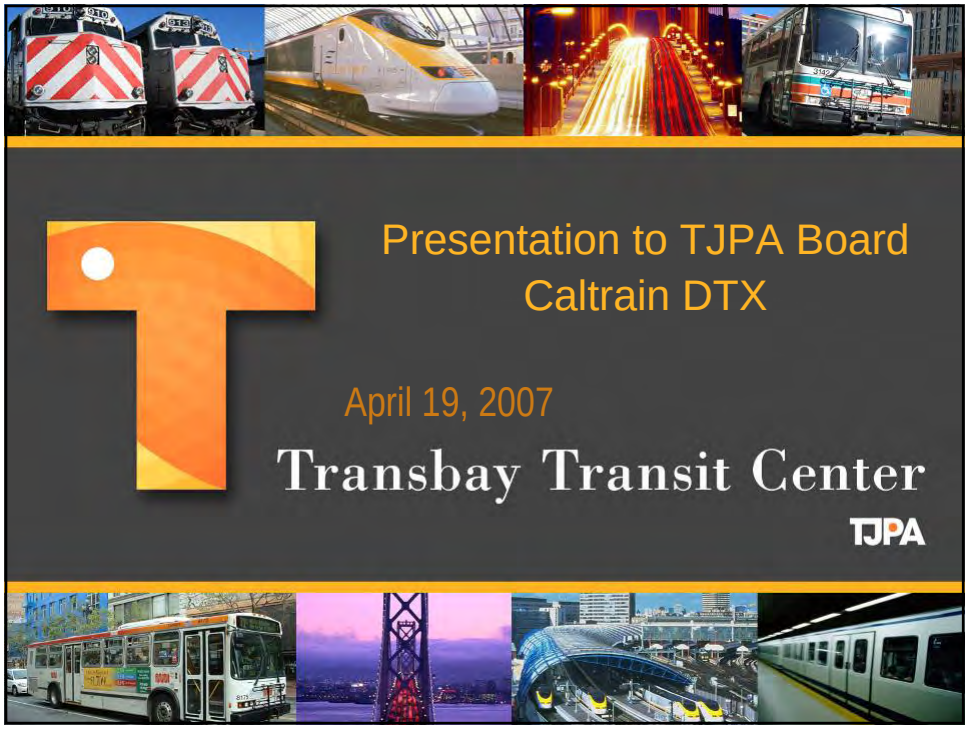
All of the changes proposed in the DTX RLPA would consist of a reduction in the size of various elements of the DTX project or rearrangement of uses within the project area previously analyzed in the FEIS/EIR, and would not change the magnitude of the environmental impacts disclosed in the FEIS/EIR. As described in the FEIR/EIS, Table 5.20-3, Pg 5-163, the approved LPA includes cut and cover construction along Townsend Street between Fourth and Fifth Streets up to Second Street.

[2] The CEQA Guidelines are found at California Code of Regulations, title 14, sections 15000 *et seq.*

Therefore, the DTX RLPA would not require major revisions to the FEIS/EIR due to new or substantially increased significant environmental effects. Furthermore, there have been no substantial changes with respect to the circumstances under which the DTX RLPA would be undertaken that would require major revisions of the FEIS/EIR due to new or substantially increased significant environmental effects; and there has been no discovery of new information of substantial importance that would trigger or require major revisions to the FEIS/EIR due to new or substantially increased significant environmental effects. Therefore, no subsequent or supplemental environmental impact report is required prior to approval of the DTX RLPA.

Figure 1: Refined Locally Preferred Alternative (RLPA)





Presentation to TJPA Board
Caltrain DTX

April 19, 2007

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TJPA

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Caltrain Downtown Extension Project (DTX)

Agenda:

- DTX Value Management
- Loop Analysis
- Refined LPA Recommendation
- Next Steps For DTX

Caltrain Downtown Extension Project (DTX)

- In December 2005 we presented an escalated estimate of the FEIS/EIR Estimate of $1.26 billion
- In May 2006 we presented the developed estimate which increased to $2.15 billion
- We implemented a Value Management Study to reduce costs
- We have identified savings which substantially offset the cost increases which resulted from the Developed Estimate

DTX Value Management

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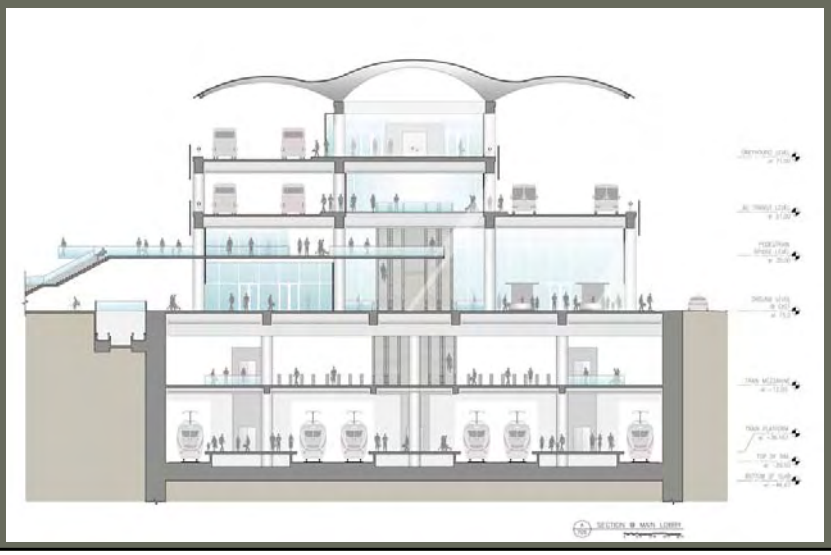
Recap of Value Management on Transit Center



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Recap of Value Management on Transit Center

The single largest positive impact to cost and schedule came from moving the Greyhound operations from the 4th level above ground to one level underground

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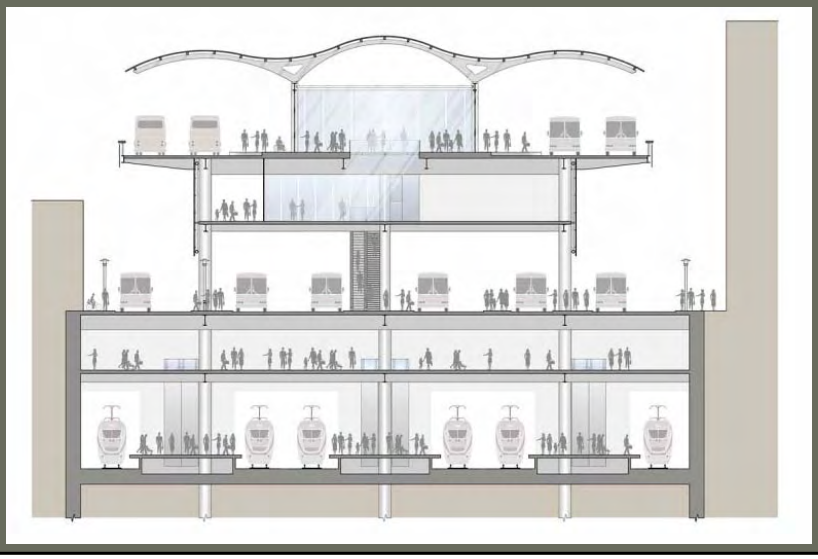
Recap of Value Management on Transit Center



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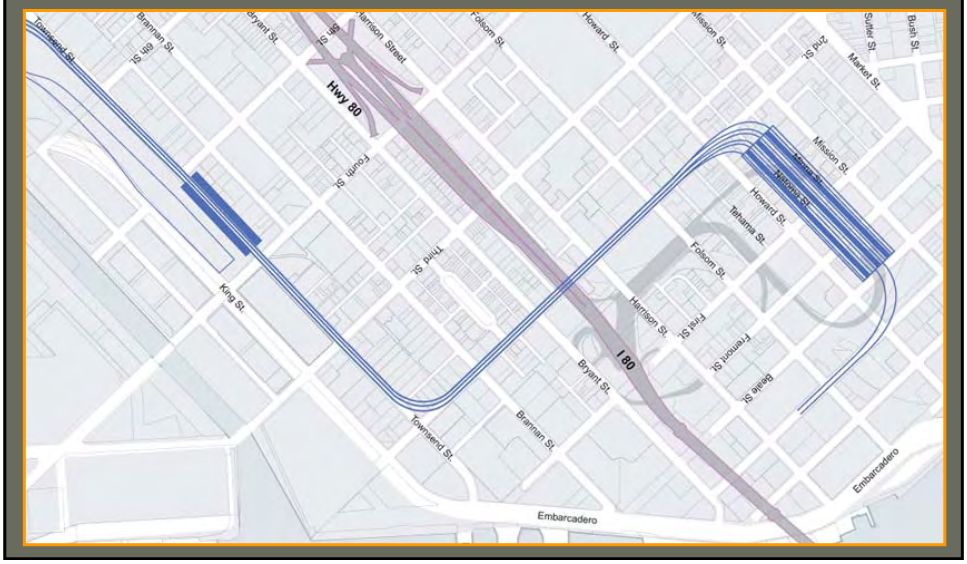
DTX Approved FEIS/EIR LPA Configuration



Value Management Process

- Confirm operational criteria with operators
- Develop alternative concepts for delivering equivalent system
- Determine viability of alternatives by analyzing
  - Operational performance
  - Constructability
  - Relative Construction Cost
  - Schedule

Value Management Outcome

- There were 43 recommendations proposed during the DTX VM process
- 42 recommendations related to the FEIS/EIR approved LPA configuration
- 1 recommendation for a loop alignment

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Value Management Areas of Significant Saving

Value Management Recommendation	Saving
Reconfiguration of rail storage	$100m
Revise hazmat assumptions	$75m
Revise communications systems	$50m
Revise mined tunnel clearances & construction methods	$17m
Revise cut & cover clearances & construction methods	$45m
Deferral of Tail Tracks for HSR Operations	$136m

(Cost savings are construction costs in 2006 dollars)

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Value Management Benefits Summary

Program Wide Costs	Escalated FEIS/EIR Cost	Developed Estimate	Initial VM Configuration
DTX	**$1.26**	**$2.15**	**$1.52**

(In billion dollars - 2006)

Value Management has resulted in a $633 million reduction against the Developed Estimate for Initial Operations

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Loop Analysis

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Loop Analysis

The recommendation of a loop was the result of a brainstorming session

It came in part from the idea that we could use Tunnel Boring Machine (TBM) technology cost effectively because of the smaller tunnel diameter and longer tunneling distances

This would theoretically bring down the costs of the entire project

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Loop Analysis
Alternative Evaluation Criteria

Criteria used to identify an optimal loop configuration:

- Construction Cost
- Operational Performance
- Initial capital investment
- Ultimate system capacity
- Regulatory requirements

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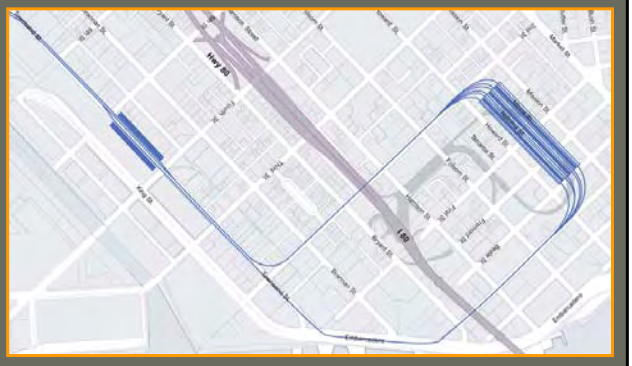
Loop Analysis
Rail Alternatives – Single Loop

- A single LPA track on Second Street
- A single loop track on Townsend Street, Embarcadero & Main Street



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Loop Analysis
Rail Alternatives – 2+1 Loop

- Two tracks on Second Street
- A single loop track on Townsend Street, Embarcadero & Main Street

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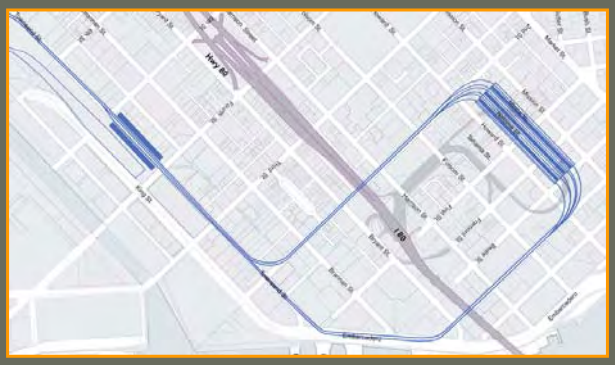
Loop Analysis
Rail Alternatives – 2+2 Loop

- Two tracks on Second Street
- Two loop tracks on Townsend Street, Embarcadero & Main Street



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Loop Analysis
Alternative Evaluation Matrix

Evaluation Criteria	Loop Alternative		
	Single Loop	2+1 Loop	2+2 Loop
Total Construction Cost	+	-	-
Rail Operations Performance	-	+	+
Initial Construction Cost based upon Flexibility to Stage Construction	-	+	+
Highest TTC Capacity	-	+	+
Regulatory Requirements	-	+	+
Ranking	-	+	+

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Loop Analysis
Construction Cost Comparison

	Loop Alternative		
	Single Loop	2+1 Loop	2+2 Loop
Construction Cost	$1,239m	$1,408m	$1,466m
Potential VM Savings	($224m)	($224m)	($224m)
Deferrals from Construction Staging	-	($299m)	($332m)
Initial Construction Cost	$1,015m	$885m	$910m

(All Costs in FY 2006 $s. Cost excludes escalation through construction)

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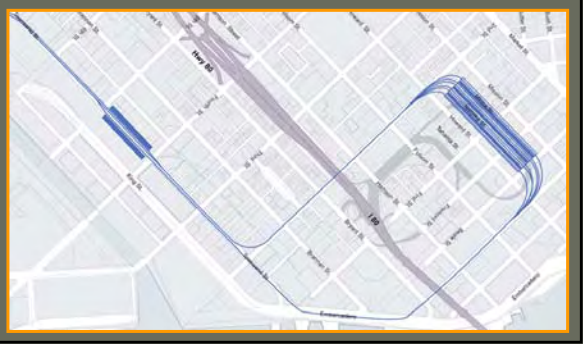
Loop Analysis
Single Loop Limitations

- Fails arrival & departure performance criteria
- Lower capacity than LPA & other Loop alternatives
- Unacceptable incident recovery capability
- Highest initial capital cost
- Fails to meet regulatory requirements



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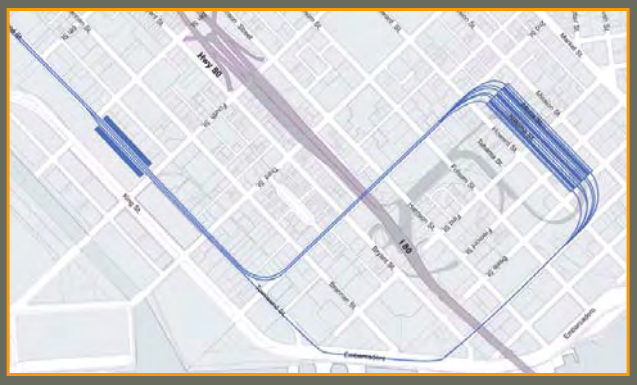
Loop Analysis
Operational Benefits
Second Street 2 Track Tunnel



- Optimal Operations & Recovery
- Allows Staged Construction Opportunity
- Initial Construction Stage Environmentally Cleared

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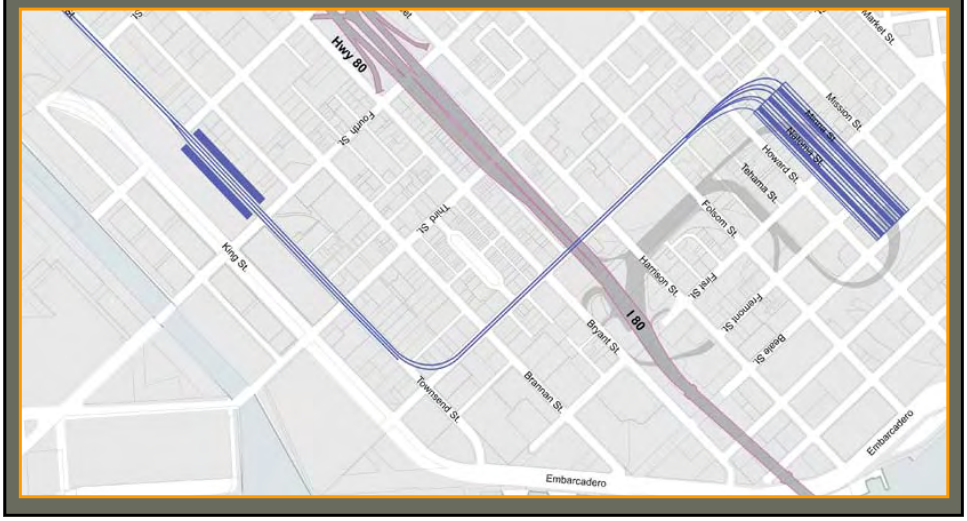
Loop Analysis
Stage I Construction



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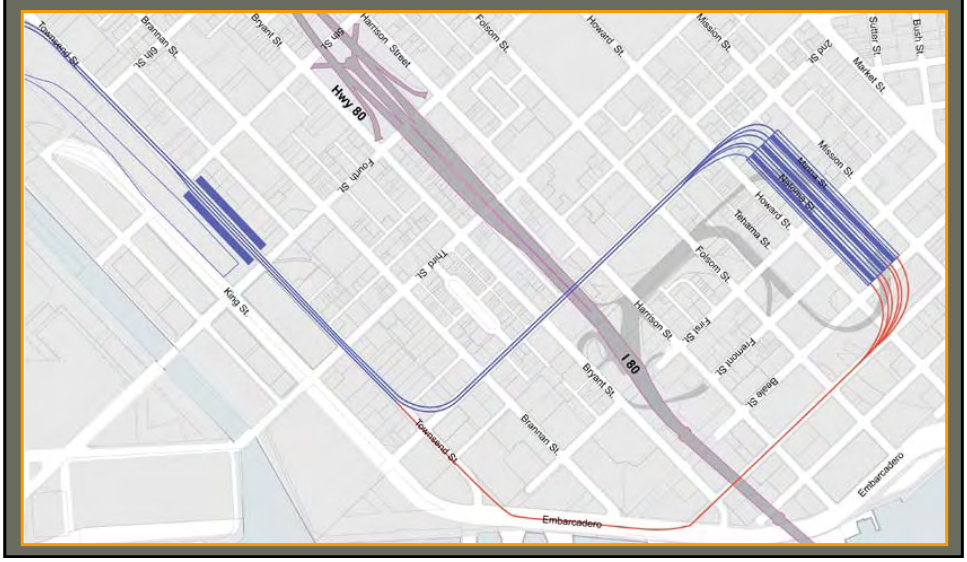
Loop Analysis
Stage 2 Construction



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Loop Analysis
Construction Staging Benefits

- Initial Stage Less expensive than the 3 Track LPA
- Meets all projected simulated DTX operating requirements
- Accommodates future system expansion through a loop configuration
- Loop System out-performs stub-end system
- Can be constructed within the current environmental clearance
- Can be constructed at a lower risk

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Refined LPA Recommendation

Refined LPA Recommendation

It is recommended that the TJPA Board adopt a Refined DTX LPA Configuration which includes:

- 2 Track lead to DTX tunnel system
  (until just before 4th & Townsend Underground Station)
- 3 Track Tunnel System on Townsend & 2nd St.
- 3 Platforms with 6 Tracks in TTC
- At-Grade Rail Car Storage within Caltrain yard
- A Fourth/Townsend Underground Station
- Defer Tail Tracks until operationally required by HSR

Refined LPA Recommendation

In addition to the refinements, it is also recommended that:

I. TJPA staff continue to evaluate the feasibility of a 2-track Mined Tunnel on Townsend and 2nd Street
II. TJPA Board supports the planning of a future expansion of a loop track system

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Operational Issues
Second Street 2 Track Tunnel

- 2 Track system has less recovery capacity than a 3 Track
- Delays are part of normal system operation which result in actual operation underperforming modeled projections
- Technical unknowns – equipment type, signal system, HSR schedule, FRA Regulatory changes
- Potential reconfiguration of 4th and King Street Station
- HSR Operations require addition of Tail Tracks

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Refined LPA

Next Steps For DTX

- Continue Rail Operational Simulations in Support of Cost Savings
- Continue VM/VE Cost Control Opportunities
- Finalize DTX Preliminary Engineering Phase 1
- Prepare Baseline Budget for DTX
- Prepare Program Financial Plan