

**SM 101
EXPRESS
LANES
PROJECT**

Express Lanes Financial Projections

US 101

Caltrans

San Mateo County Transportation Authority

C/CAG

SMCTA Board Meeting, March 05, 2020

The slide features a dark grey background with a yellow diagonal stripe on the right side. The title 'SM 101 EXPRESS LANES PROJECT' is prominently displayed in white and yellow text. Below the title, the subtitle 'Express Lanes Financial Projections' is shown. The right side of the slide contains logos for Caltrans, San Mateo County Transportation Authority, and C/CAG, along with a shield-shaped logo for US 101. At the bottom, the text 'SMCTA Board Meeting, March 05, 2020' is centered.

**SM 101
EXPRESS LANES PROJECT**

US 101

Caltrans

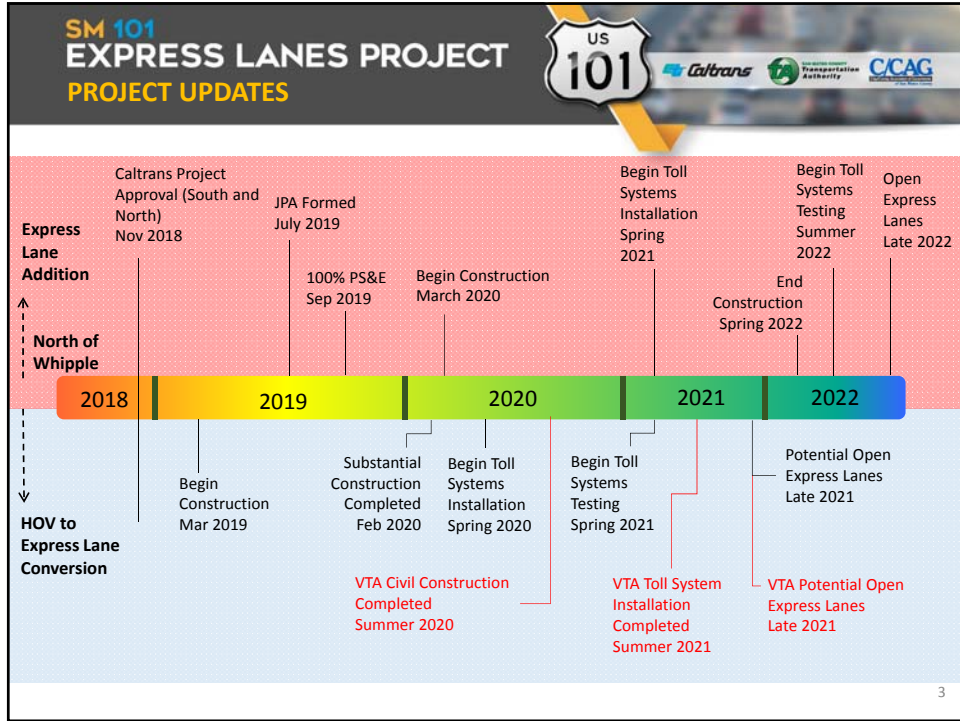
San Mateo County Transportation Authority

C/CAG


- Overall Project Schedule
- San Mateo County Express Lanes Joint Powers Authority's (SMCEL JPA) Decision on Single or Dual Opening
- Financial Projections
- Next Steps




2

The slide has a dark grey header with the project title and logos for Caltrans, San Mateo County Transportation Authority, and C/CAG. The main content area is white and contains a bulleted list of four items. The slide number '2' is located in the bottom right corner.



SM 101
EXPRESS LANES PROJECT
SINGLE OR DUAL OPENING



WHY CONSIDER AN EARLY OPENING?


- Proof of concept
- Timed with the opening of VTA's 101 Express Lanes Project
- Early identification of issues




WHY DECIDE NOW?

- Initiate and issue the necessary design and construction contract change orders (Civil and Transcore) to keep project on schedule
- Help to determine when the SM 101 EL Equity Study needs to be completed
- Begin timely public outreach

5

SM 101
EXPRESS LANES PROJECT
SINGLE OR DUAL OPENING











Benefits From Early Opening

- Potential for first year excess net revenue
- Ability to manage the lane more efficiently with increased person throughput
- Encourage travel mode shift earlier
- Test revenue projections with actual operation
- Goodwill with private sector partners
- Early market penetration of FasTrak® in the corridor
- Early issue identification for more cost-effective resolution
- Early mitigation of risks
- Early driver adoption
- Timed with opening with VTA's Express Lanes

6

SM 101 EXPRESS LANES PROJECT
SINGLE OR DUAL OPENING



Possible Delays that Prevent Early Opening





- Contingent on VTA being able to open late 2021
- TransCore’s ability to meet the schedule requirement
- MTC’s ability to staff back office operations
- Required O&M agreements with Caltrans & BAIFA/Transcore not executed in time

Risks From Early Opening

- Potential for first year loss
- Congestion reduction in the general purpose lanes may not be obvious
- Adverse early reaction to the conversion from 2+ HOV to 3+ HOV
- Potential for extended warranty cost

7


SM 101 EXPRESS LANES PROJECT



Financial Projections

8

SM 101 EXPRESS LANES PROJECT FINANCIAL INVESTIGATIONS




DEFINITIONS

Gross Revenue	Projected total revenue from the express lanes
Post-Processing Adjustments	Adjustments to the gross revenue projections that reflect violators using the lane, unknown toll policies, and other factors
Operation and Maintenance (O&M) Costs	Estimate of costs to operate and maintain an express lane
Excess Net Revenue	Amount of money remaining after accounting for post-processing adjustments, debt service, O&M costs, and rehabilitation
Shear Speed	The speed differentials that exist between the express lanes and the adjacent general purpose lane

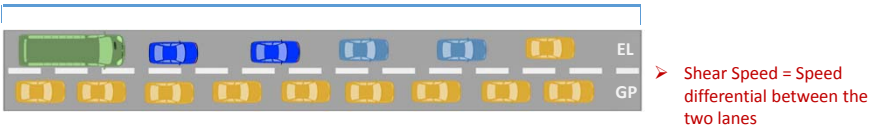
9

SM 101 EXPRESS LANES PROJECT FINANCIAL INVESTIGATIONS



Shear Speed Considerations

1/4 Mile of Express Lane



➤ Shear Speed = Speed differential between the two lanes

Why Shear Speed is a consideration:


- A lower speed differential between the EL and GP lanes may factor into a motorists unwillingness to utilize the express lane which could impact the forecasted annual gross revenue
- The toll algorithm will adjust toll rates to account for volumes, density, and speed in between the EL and GP Lanes, but the motorists behavior is a factor that cannot be explicitly determined
- Revenue for 10, 20, and 30 MPH shear speed constraints were investigated to better understand the range of potential revenue




Notes:

- The shear speeds are applied as a post-processing adjustment to the revenue projections

10

SM 101
EXPRESS LANES PROJECT
FINANCIAL INVESTIGATIONS



ANNUAL GROSS REVENUE ESTIMATE – RECAP
Full Corridor (costs presented at Nov. 2018 Board Meeting)


	Total (Nov. 2018)*	Total (without SCL Segment)*
Estimate of gross revenue with maximum throughput (Makes optimum use of the lane)	\$41.2 M	\$38.1 M
Estimate of gross revenue with revenue maximization (Emphasizes the value of time in the pricing choices)	\$49.2 M	\$45.5 M
Assumed gross revenue = average of high and low values	\$45.2 M	\$41.8 M




Revenue Assumptions

- HOV 3+ vehicles will use the lane for free.
- HOV 2 and Clean Air Vehicles (CAVs) will be half-priced.
- The facility will operate from 5am to 8pm.
- The maximum toll rate will be set at \$3/mile.
- Includes an operating segment located within Santa Clara (SCL) County
- *Assumed 10 mph shear speed differential (post-processed)

11

SM 101
EXPRESS LANES PROJECT
FINANCIAL INVESTIGATIONS



Post-Processing Adjustments


The Toll Optimization Model (TOM) cannot model all driver behavior, so the gross revenue is adjusted to account for the following:




Post-Processing Adjustments	Gross Revenue Adjustments	
	Low end	High end
Anticipated cheaters of the system	-5%	-10%
Revenue loss due to HOV-only mode time periods	-5%	-20%
Toll zone based tolling inefficiencies*	-15%	-20%

* Post-processing adjustments for toll zone based tolling inefficiencies presented at the Nov. 2018 Board meeting varied from -3% to -5%. The increased thresholds account for toll zone modeling inefficiencies and the potential unforeseen economic conditions.

12

SM 101
EXPRESS LANES PROJECT
FINANCIAL INVESTIGATIONS




ANNUAL EXCESS NET REVENUE ESTIMATES RECAP
Full Corridor (costs presented at Nov. 2018 Board Meeting)




	Low Level Loss (In \$M)	High Level Loss (In \$M)
Average Gross Revenue of TOM runs	\$45.2	\$45.2
Post-processing adjustment range		
Anticipated cheaters of the system	(\$2.3)	(\$4.5)
Revenue loss due to HOV-only mode time periods	(\$2.3)	(\$9.0)
Toll zone based tolling inefficiencies	(\$1.2)	(\$2.3)
Subtotal	\$39.4	\$29.4
Operations and Maintenance Costs	(\$18.7)	(\$19.8)
Approximate Annual Excess Net Revenue	\$20.4	\$9.6

Note: The shear speed is treated as a post-processing adjustment to the average gross revenue projections.

13

SM 101
EXPRESS LANES PROJECT
FINANCIAL INVESTIGATIONS




Basis for Early Opening (South Segment) Forecast




What has been done to evaluate the forecasted annual toll revenue for an early opening?

- No new demand estimates and no new run of the model
- TOM results split into respective south and north contract limits
- No explicit treatment of access/egress constraints for start and finish at Whipple
- Updated speed differentials and post processing adjustments
- Refinements to the TOM operating segments

14

SM 101
EXPRESS LANES PROJECT
FINANCIAL INVESTIGATIONS



Shear Speed Influence on Revenue

Further evaluation of the forecasted annual gross revenue considering shear speed constraints


- Post-processing adjustments were applied to the TOM results to further evaluate shear speed impacts.
- Two distinct shear speeds were evaluated: 10 mph and 20 mph




	10 mph Shear Speed Constraint*	20 mph Shear Speed Constraint*
Second Opening (Full Corridor)		
Estimate of gross revenue with maximum throughput	\$38.1 M	\$53.4 M
Estimate of gross revenue with revenue maximization	\$45.5 M	\$71.1 M
Early Opening (South of Whipple)		
Estimate of gross revenue with maximum throughput	\$14.9 M	\$22.1 M
Estimate of gross revenue with revenue maximization	\$18.3 M	\$28.9 M

* No longer includes SCL segment

15

SM 101
EXPRESS LANES PROJECT
FINANCIAL INVESTIGATIONS



Early Opening (South Segment) Gross Revenue Estimate

	10 mph Shear Speed Constraint	20 mph Shear Speed Constraint
Estimate of gross revenue with maximum throughput (Makes optimum use of the lane)	\$14.9 M	\$22.1 M
Estimate of gross revenue with revenue maximization (Emphasizes the value of time in the pricing choices)	\$18.3 M	\$28.9 M
Assumed gross revenue = average of high and low values	\$16.6 M	\$25.5 M

Revenue Assumptions

HOV 3+ vehicles will use the lane for free.






HOV 2 and Clean Air Vehicles (CAVs) will be half-priced.

The facility will operate from 5am to 8pm.

The maximum toll rate will be set at \$3/mile.






Does not include an operating segment located within Santa Clara County

16

    			
Early Opening (South Segment) Annual O&M Cost Estimate			
	10 mph Shear Speed Constraint (In \$M)	20 mph Shear Speed Constraint (In \$M)	
Annual Toll Processing and Violation Review Costs*	\$1.4 - \$2.3	\$1.6 - \$2.6	
Annual Financial Processing Costs	\$0.5 - \$0.6	\$0.5 - \$0.6	
Annual Toll System Contractor O&M Costs	\$2.9 - \$3.0	\$2.9 - \$3.0	
Annual Roadway Maintenance Costs	\$0.9 - \$1.6	\$0.9 - \$1.6	
Annual CHP Enforcement in Field	\$0.5	\$0.5	
Subtotal	\$6.2 - \$7.9	\$6.4 - \$8.2	
10% Contingency	\$0.6 - \$0.8	\$0.6 - \$0.8	
Total Estimated Annual Operating Costs	\$6.8 - \$8.7	\$7.0 - \$9.0	





* Transaction and violation costs are based on an estimated number of vehicles in the express lane.

17

    			
Early Opening (South Segment) Annual Excess Net Revenue Estimates			
	10 mph Shear Speed Constraint (In \$M)	20 mph Shear Speed Constraint (In \$M)	
Average Gross Revenue of TOM runs	\$16.6	\$25.5	
Post-processing adjustment range			
Anticipated cheaters of the system	\$0.8 - \$1.7	\$1.3 - \$2.6	
Revenue loss due to HOV-only mode time periods	\$0.8 - \$3.3	\$1.3 - \$5.1	
Toll zone based tolling inefficiencies	\$2.5 - \$3.3	\$3.8 - \$5.1	
Subtotal	\$4.1 - \$8.3	\$6.4 - \$12.8	
Operations and Maintenance Costs	\$6.8 - \$8.7	\$7.0 - \$9.0	
Revenue ramp-up loss	\$0.4 - \$0.5	\$0.6 - \$0.7	
Capital Costs For Early Opening Tasks	\$3.9	\$3.9	
Subtotal	\$11.1 - \$13.1	\$11.5 - \$13.6	
Approximate Annual Excess Net Revenue	\$1.4 - (\$4.8)	\$7.6 - (\$0.9)	

18





SM 101 EXPRESS LANES PROJECT FINANCIAL INVESTIGATIONS










Full Corridor Annual Excess Net Revenue Estimates (in \$M)

	10 mph Shear Speed Constraint (Nov. 2018)	20 mph Shear Speed Constraint (Jan. 2020)
Average Gross Revenue of TOM runs	\$45.2	\$62.3
Post-processing adjustment range		
Anticipated cheaters of the system	\$2.3 - \$4.5	\$3.1 - \$6.2
Revenue loss due to HOV-only mode time periods	\$2.3 - \$9.0	\$3.1 - \$12.5
Toll zone based tolling inefficiencies	\$1.2 - \$2.3	\$9.3 - \$12.5
Subtotal	\$5.8 / \$15.8	\$15.5 / \$31.2
Operations and Maintenance Costs	\$18.7 - \$19.8	\$9.8 - \$13.3
Revenue ramp-up loss	\$9.0	\$1.3 - \$1.8
Capital Costs For Opening Tasks	Wasn't Available	\$1.9
Subtotal	\$27.7 / \$28.8	\$13.0 / \$17.0
Approximate Annual Excess Net Revenue	\$11.7 / \$0.6	\$33.3 / \$14.1

19





- SM 101 EXPRESS LANES PROJECT**
- 
- 
- 
- 
- SUMMARY**
- Financial investigations for an early opening (south of Whipple in late 2021) indicate the potential for up to \$7.6 M in excess net revenue or an operating loss of up to (\$4.8 M)
 - SMCEL JPA considers whether qualitative benefits support an early opening even though there is a risk of an operating loss. Risk of loss is low compared to the opportunity for excess net revenue.
 - Proof of concept – early adoption of use
 - Early identification of issues
 - Timed with the opening of VTA’s express lanes
- 20

SM 101 EXPRESS LANES PROJECT    

NEXT STEPS

- SMCEL JPA decides whether to proceed with an early opening at its March 2020 meeting to make timely adjustments to the capital project schedule to accommodate the decision
- TA will take action on the capital loan transaction/financing vehicle, likely at the April or May 2020 Board Meeting

21

SM 101 EXPRESS LANES PROJECT    

Questions?

For more information on the project, visit 101express.com

22