City Council Rail Committee

8:00 AM
Special Meeting
Thursday, June 23, 2011
Council Conference Room
Palo Alto City Hall
250 Hamilton Avenue
Palo Alto, CA

Call to Order

1. Public Comment

2. Approval of Minutes April 4, April 13, and April 28, 2011

   Approval of Minutes from April 4, April 13, and April 28, 2011

3. Economic and Planning Systems (EPS) Presentation of Economic Impacts of Caltrain Electrification and High Speed Rail in Palo Alto

   Economic & Planning Systems Report – Caltrain Only

   Economic & Planning Systems Report – Caltrain & High Speed Rail

4. Consideration of City Comments and Position on Caltrain Electrification EIR (Planning & Community Environment, PCE)

5. Review of Palo Alto May 17, 2010 High Speed Rail Guiding Principles

6. Reports on Meetings
   a. High Speed Rail (HSR)
   b. Peninsula Cities Consortium (PCC)
   c. Caltrain Stakeholders from June 13

7. Legislative Update

8. Future Meetings and Agendas
   -July 1 or July 8, 2011- Peninsula Cities Consortium (Atherton)

- July 7, 2011- California High Speed Rail Authority (CHSRA)

- July 28, 2011- City Council Rail Committee

9. Adjournment

AMERICANS WITH DISABILITY ACT (ADA)

Persons with disabilities who require auxiliary aids or services in using City facilities, services or programs or who would like information on the City's compliance with the Americans with Disabilities Act (ADA) of 1990, may contact (650) 329-2550 (Voice) 24 hours in advance.

PUBLIC COMMENT

Members of the Public are entitled to directly address the City Council/Committee concerning any item that is described in the notice of this meeting, before or during consideration of that item. If you wish to address the Council/Committee on any issue that is on this agenda, please complete a speaker request card located on the table at the entrance to the Council Chambers, and deliver it to the City Clerk prior to discussion of the item. You are not required to give your name on the speaker card in order to speak to the Council/Committee, but it is very helpful.

CITY OF PALO ALTO OFFICE OF THE CITY CLERK

June 23, 2011

The Honorable City Council
Palo Alto, California

Approval of Minutes from April 4, April 13, and April 28, 2011

The attached minutes are submitted to the Rail Committee for approval.

ATTACHMENTS:

- -a: April 4, 2011 Rail Committee Minutes (DOC)
- -b: April 13, 2011 Rail Committee Minutes (DOC)
- -c: April 28, 2011 Rail Committee Minutes (DOC)

Department Head: Donna Grider, City Clerk

CITY COUNCIL RAIL COMMITTEE

Special Meeting
April 4, 2011

Call to Order

Council Member Klein called the meeting to order at 8:09 a.m. in the Council Conference Room, 250 Hamilton Avenue, Palo Alto, California.

Present: Burt, Klein, Shepherd, Price (left at 9:27 a.m.)

Absent: none

1. Public Comment

None

2. Approval of Minutes March 17, 2011

Council Member Price said the following changes needed to be made to the minutes. The meeting adjourned at 10:19 a.m. and not 10:19 p.m. Page 10, bullet number 3 should read "Council Member Price and Chair Klein asked for presentations on electrification by an engineer".

Council Member Burt referred to page four and said his title was incorrectly listed as "chair", and the first sentence of that same paragraph should read "Council Member Burt said this was not what the PCC was intended to do."

Herb Borock spoke regarding the report on the minutes incorrectly listing the City Clerk as a Department Head when she is a Council Appointed Officer.

MOTION: Council Member Price moved, seconded by Chair Klein, that the City Council Rail Committee (CCRC) approve the Minutes from March 17, 2011.

MOTION PASSED: 4-0.

MOTION: Council Member Price moved seconded by Council Member XXX to pull Agenda Item Numbers 5, 7, and 8 to become Agenda Item Numbers 3a, 3b, and 3c.

Chair Klein said he would not support the Motion because he wanted to hear the updates first.

MOTION FAILED FOR LACK OF A SECOND

3. Meeting Updates

- Office Hours, Policy & Technical Working Group (PWG, TWG) Update.

Assistant Director Administrative Services, Rob Braulik said a Technical Working Group (TWG) meeting was tentatively scheduled for the end of this week or during the week of April 11, 2011. No meeting was scheduled at this time for a Policy Working Group (PWG)

- Peninsula Cities Consortium (PCC)

Chair Klein said he attended the Peninsula Cities Consortium (PCC) meeting during Council Member Burt's absence on April 4, 2011. He gave an update of that meeting and said the meeting focused on the new proposed San Mateo cities and PCC members had raised concerns on what was going on. City of Belmont said they would not be joining but would monitor the group. The High Speed Rail (HSR) was considering a 4-track system, 3-tracks wide and one tunneled, or a system that would not require shoefly tracks. Kathy Hamilton from the City of Menlo Park reported on the California High Speed Rail Authority (CHSRA) meeting of March 31, 2011. Quentin Kopp no longer was on the Board and had been replaced with a union person who participated in the meeting. The CHSRA finances were discussed and a member addressed the fact that CHSRA did not have enough monies to do what they had set out to do. Minority groups were threatening to sue CHSRA regarding environmental injustice. He said the next CHSRA meeting was scheduled for May 5, 2011 in San Jose, CA.

Council Member Burt said he was invited to attend the next San Mateo Partnership meeting. Terry Nagel, Central County Representative for the San Mateo County Transportation Authority had invited the San Mateo Public Works Director to attend and confirmed they would be there. He said there was the issue of the Brown Act being triggered if a majority of the PCC members attended.

Chair Klein said the item was on the agenda for Friday and would be continued due to disagreements among the city attorneys.

Council Member Burt said he had spoken to the Palo Alto City Attorney to verify if the PCC was a Brown Acted organization and secondly if the Rail Partnership was also a Brown Acted organization. The PCC did not have a formal membership and was structured to invite all County cities to attend the meeting and those that attended would have a voice at the meetings. There was a political issue of whether to attend or not. He said if all PCC cities and sympathetic cities attended there was a perception that countered to theirs and would not prevail in that organization. He felt it should not be in the interest of all cities to participate and raised concerns that the HSR or Caltrain would be inclined to assume that the Rail Group was being represented by the entire County.

Chair Klein said concerns were raised at the PCC meeting regarding if the Rail Partnership Meeting was a public meeting.

Council Member Burt said he hesitated to accept an invitation to a non-public meeting and was waiting for the City Attorney's advice regarding the legal aspects and a decision from the policy side. He did not know if the CCRC wanted to weigh in on the pros and cons of attending the meeting. He said Chief Executive Officer (CEO) Roelof van Ark of CHSRA would be at the next Rail Partnership Meeting.

Council Member Shepherd asked if Council Member Burt would be attending the San Mateo Rail Partnership meeting that was not open to the public.

Council Member Burt said previous meetings were not open to the public but the upcoming meeting had yet to be determined. He felt the meeting would be used to imply a consensus between San Mateo County and the HSRA even though it was only a selected perspective of the cities that shared a viewpoint. He said he needed direction from the CCRC whether he should or should not attend.

Chair Klein said the issue should be agendized for the next meeting. He said he had expressed at the PCC meeting his disapproval of a letter that was sent out by the partnering cities. Palo Alto was not mentioned as a recipient and there was no mention of the PCC's existence. Ms. Nagel defended the letter and understood her as citing Council Member Burt's quasi-acceptance of the invitation with implications of questioning the validity of the partnership but would attend.

Council Member Burt said four cities had signed the letter and felt that only those cities should assume the content of the letter.

Council Member Price agreed that the item should be agendized for the next meeting since some of the Committee members were unfamiliar with the issues.

Chair Klein asked if the next meeting was scheduled for April 20th.

Mr. Braulik said that was correct.

Chair Klein said the issue would be added to the discussion.

Council Member Burt spoke regarding the CHSRA meeting. He said the Board had overruled the Chief Executive Officer's (CEO) recommendation regarding the reduced allocated portion of Prop 1A monies for the next Federal fund application. There was much discussion regarding the money used to get Federal funds and Prop 1A dollars being depleted long before building a $43 billion system. He said it was the first time for this major issue to be aired publicly.

Chair Klein said a member of the public had testified that Board Director Crain was the most critical regarding the issue.

Council Member Burt said Mr. Crain was the most vocal but other board members concurred and voted to amend the application. He said either branch of Congress could nullify the funds allocated to California.

MOTION: Council Member Klein moved, seconded by Council Member Shepherd to pull Agenda Item Number 8 to become Agenda Item Number 3a.

MOTION PASSED: 4-0

3a. (Formerly Agenda Item Number 8) Setting of Regular Committee Meeting Schedule

Chair Klein asked if it was still acceptable to hold the regular City Council Rail Committee (CCRC) Meetings on Thursday mornings.

Council Member Price said she had Board meetings on the second Thursday of the month.

Council Member Shepherd said she had City/School Committee meetings on the third Thursdays of the month.

Chair Klein suggested holding the meetings on the fourth Thursday.

Mr. Braulik said the next CCRC meeting was scheduled for Thursday, April 28, 2011.

Council Member Price said she might be conflicted for the months of May and June as vacation days.

Chair Klein asked if all were in agreement of having regular Committee meetings on the fourth Thursday of the month.

Council Member Price asked if there was an interest for the first Thursday of the month.

Council Member Shepherd said the CHSRA held their meetings on that day.

Chair Klein confirmed the CCRC would meet on the fourth Thursday of the month.

MOTION: Chair Klein moved to pull Agenda Item Numbers 4 and 5 to be heard together as item number 3b

3b. (Formerly Agenda Item Number 4) Status Reports and (formerly Agenda Item Number 5) Consideration of Advocacy Position Relative to Proposed Caltrain Service Reductions.

Status Report

- High Speed Rail (HSR)

Chair Klein announced there was no additional information to be added to the HSR Report

- Caltrain

2010 Caltrain Annual Passenger Counts

- Caltrain Stations Proposed for Closure Transit Oriented Development (TOD)

- Summary

Assistant Director Administrative Services, Rob Braulik said Caltrain had indicated the latest annual passenger count would be out within a few weeks. All cities, except for one, had responded to the proposed station closures and the Transit Oriented Development (TOD) summary in order to balance the budget.

Council Member Shepherd said she understood there was a major development planned for the Lawrence/Sunnyvale Station which was different from the information provided in the Staff Report.

Mr. Braulik said Staff had gathered the information directly from the cities that were polled.

Council Member Price asked if the project was in the process of being approved.

Mr. Braulik said a plan to move forward with the project may already have started.

Council Member Price confirmed discretionary approval had been made on the plans.

Mr. Braulik agreed.

Council Member Shepherd said the Lawrence Station was not yet approved, but a major development was planned for that site. She asked if there were other cities in the same situation.

Deputy City Manager, Steven Emslie said the Cities of San Bruno and Belmont were in the same situation. He asked Staff to see if the cities had had pending projects.

Council Member Burt said the San Antonio Station was the 18th of 29 stations with the highest number of ridership and was being considered for closure. He asked if Staff knew what the cutoff point was to determine closing a station.

Mr. Braulik said the proposed stations for closure were listed in the TOD list of the packet.

Council Member Klein noted there were on-going issues with the page numbering in the new agenda packet process and asked that the Clerk's office be notified to fix the problem.

Council Member Burt said the list lacked ridership ranking on the proposed stations for closure and felt the information should be added to the report.

Council Member Shepherd recommended the cities be separated and ridership totals provided for both the remaining and proposed closure stations.

Council Member Price wanted to know what the criteria were for closing a station.

Council Member Klein said the intent for Agenda Item No. 5 was whether the CCRC should take a position at Thursday's meeting relative to the proposed service reduction. He said it would be appropriate to not take a position if there was insufficient information.

Council Member Burt said it was his understanding that Caltrain staff would be presenting the revised intentions according to the new Metropolitan Transportation Commission (MTC) budget and would vote at the same time during Thursday's meeting. He said that was a fundamental processing issue. The decision should not be made at the same time since the public and member cities would not have the opportunity to respond. He felt the process was a breech in responsibilities. He advised Palo Alto to not take a position since the recommendation was unknown at this time. It was up to Caltrain's staff to proceed in this matter and the Caltrain Board should be the primary audience for the City of Palo Alto's comments. Caltrain's staff appeared to continue to operate in a way to circumvent participation of member cities and the public. He said recent newspaper articles noted that the Caltrain Board had not made one dissenting vote in several years and that the Board Representatives should be challenged to do a better job in representing Palo Alto.

Council Member Price said the statements should be sent to both the Chair of the Board and key staff. She said she did not know the extent of outreach on proposals and felt it was important to get the communities' input. The San Antonio Station had a TOD development in the immediate area and should be researched to see if it had reached its potential capacity in ridership. The California Avenue and Mountain View stations could benefit on the ridership numbers if San Antonio Station should close. She agreed with Council Member Burt that Palo Alto should not take a strong position at this time.

Mr. Braulik said Caltrain had three public meetings on closure proposals. He contacted the MTC several times since the last CCRC meeting regarding closure proposals but was unable to get the information. He said the item consisted of one page and no report was provided for Thursday's agenda. MTC said the presentation would be verbal. He suggested bringing these issues to the

attention of Supervisor Liz Kniss.

Council Member Price asked if the Board could be asked to not act on the recommendation until more work is done on these issues.

Mr. Braulik said that could be done.

Council Member Shepherd said in terms of station ranking, it was her understanding that Caltrain would be stopping at the Diridon Station and not continuing to Gilroy which would eliminate several stations. She felt the report was not accurate since Gilroy was in the process of getting funds from Valley Transit Authority (VTA) to determine a location for an HSR train station. Regarding an advocacy position, she encouraged asking Caltrain to put more time in to this prior to the Board voting and to develop a methodology on long-term strategy to bring issues back when the TOD begins to materialize. There was no incentive for a developer and a city to organize around a train station if it should close. Developments were starting to get approved when the stations were closing. It did not take into consideration ongoing issues with SB375. These issues need to be brought to the Caltrain Board in a specific manner to create some type of advocacy towards a strategy. She asked how the Committee could proceed in getting clarity on an advocacy position.

Nadia Naik asked what the radius was on the TOD. She said Assemblywoman Fiona Ma had a bill to extend the TOD radius that could result in getting more people based on a new wider number. She said the Friends of Caltrain, which Californians Advocating Responsible Rail Design (CARRD) was part of, sent an action alert to their entire membership stating Caltrain said all the information would be available at the meeting which was found to be unacceptable. She said she had sent a message to Supervisor Kniss to help delay the vote. She urged Palo Alto to make a strong statement regarding the process and needed clarification on the station situation south of the Diridon Station. She said there were two stations being looked at in the Gilroy area but were outside of Caltrain station area.

Council Member Price stated the station question was irrelevant if the system doesn't operate.

MOTION: Council Member Price moved, seconded by Council Member Burt, that Palo Alto issue a strong statement to the Peninsula Corridor Joint Powers Board (PCJPB) urging deferral of the discussion and vote until there is additional, clear information available to the public to allow an informed discussion.

Chair Klein supported the Motion.

Council Member Burt said there were three public meetings on the original cuts that were less, but it was unclear on how much less. He raised concerns regarding the meetings and felt they were designed to be political in nature to rally opposition to the cuts and to make substantial decisions with minimal public input. It was a pattern that seemed to not value the participation of member cities and stakeholders. It appeared the meetings were to further their own predetermined political purpose and not have a genuine participation.

Council Member Price said there was the need to look at both the elected officials and Staff members. The elected officials needed to be held accountable. She said Caltain Staff should not operate as independent agents. The entire PCJPB needed to receive a copy of the process.

INCORPORATED INTO THE MOTION WITH THE CONSENT OF THE MAKER AND SECONDER for the letter to specify the information that should be disclosed would include the process of methodology, an explanation regarding the planned and pending TOD by the City Stations involved, and a clear and open meeting process allowing stakeholders to understand the discussion and respond.

Council Member Price agreed.

Council Member Burt agreed. He wanted to ensure the Motion was sent directly to each Board Member. He clarified that Caltrain Staff should not work independently He said any communication that was taking place between the Board Members and Staff and not made public was an outrageous procedure.

Chair Klein was not in favor of making references to the TOD recommendations as they could detract from taking a strong position. The message should stay on track.

Council Member Price agreed with Chair Klein comments and suggested to include them in the methodology discussion.

Council Member Shepherd was in agreement.

Chair Klein said there could be a push back from Caltrain Staff stating they were out of time and the excuse of having to make a decision on April 7, 2011. He did not think all PCJPB members were elected officials.

Council Member Price confirmed that several of the members were elected

officials.

Council Member Shepherd said she was trying to capture this in her Amendment to remove the issue out of the political process and to have a clear methodology for the stakeholders to follow and interpret. She did not mind using specific words.

Council Member Burt said any proposal made to the Motion would be a proposed amendment.

Council Member Shepherd asked if the CCRC wanted Caltrain to acknowledge their process and that it was political in nature.

Council Member Burt said no and to only state the minimum necessity.

AMENDMENT TO MOTION: Council Member Klein moved, seconded by Council Member Shepherd, to direct Staff to write the letter, the Rail Committee Chair to edit the letter, and that the letter to be sent the following day.

MOTION PASSED AS AMENDED: 4-0

Council Member Shepherd said 24 stations were listed in the ridership information. She said the five stations south of the Diridon station were not included and she assumed they would be closed.

Mr. Braulik said the focus was on the peninsula stations and Caltrain's list did not include the five stations.

MOTION: Council Member Klein moved, seconded by Council Member Shepherd to pull Agenda Item Number 7 to become Agenda Item Number 3c.

MOTION PASSED: 4-0

~~4. Status Reports~~

~~High Speed Rail (HSR)~~

~~Caltrain~~

~~2010 Caltrain Annual Passenger Counts~~

~~Caltrain Stations Proposed for Closure Transit Oriented Development (TOD) Summary~~

~~5. Consideration of Advocacy Position Relative to Proposed Caltrain Service Reductions.~~

3c. (Formally Agenda Item #7) Matters for the Agenda for the Special Committee Meeting of April 13, 2011

Chair Klein suggested Supervisor Kniss' part of the program would cover Caltrain's financial picture both short- and long-term, with more detailed input regarding the Metropolitan Transportation Commission (MTC), and the organization's transparency procedures. Item 2 would be a discussion Caltrain's long-term plans including a description of electrification. For example, how electrification would work independently or in conjunction with High Speed Rail (HSR) and grade separations. Item 3 would be the alternate visions of Caltrain's future. He hoped the meeting would open discussions regarding Caltrain. He said nothing needed to be decided by the City Council Rail Committee (CCRC) that day, but they would have to in the future determine a stand regarding the existing Environmental Impact Report (EIR), certification and to discuss other potential issues.

Council Member Shepherd said she viewed Supervisor Kniss as a Board representative with a political voice for the organization.

Chair Klein said he viewed Supervisor Kniss as a new Board member but not the spokesperson for the organization. He said she could have critical views and wanted to invite her personal views and knowledge.

Council Member Shepherd said the financial picture had been in the Press and discussion could move quickly. She wanted clarity on the current status of the HSR Memorandum of Understanding (MOU) and was not sure if that would be covered by Supervisor Kniss or by a staff member. She wanted to get an update on the electrification EIR.

Chair Klein said he would not include that in the Agenda.

Council Member Shepherd said she wanted to know Caltrain's interpretation of how they were moving forward with High Speed Rail (HSR). She asked if the purpose of the meeting was to help Palo Alto develop an understanding on how to advocate moving forward with both Caltrain and HSR. She wanted to know if the meeting would start with an explanation regarding the purpose of the meeting or how to go about obtaining an update on the EIR.

Chair Klein said that was under the long-term plans.

Council Member Shepherd asked that the requested information be brought forward in a clear manner. She hoped it would be a PowerPoint presentation with visuals containing specific information that would apply not only to Palo Alto but to the entire peninsula.

Assistant Director Administrative Services, Rob Braulik said Staff conveyed to Caltrain what the CCRC had requested from the previous meeting. Caltrain would provide a draft of the PowerPoint by mid-week. He said any recommendations made at this morning's meeting would be incorporated into the presentation.

Council Member Shepherd suggested that Supervisor Kniss make comments after the information was presented.

Council Member Burt said the purpose of the meeting would be to have a substantive informational meeting and to have a second meeting at the end of the month for the CCRC to discuss positions the Committee wanted to take. He said there would be broader participation at the end of the month since he along with some of the public will be on Spring Break.

Chair Klein agreed with Council Member Burt's comment that the meeting should be informational and expressed the need to be brought up to speed on Caltrain issues. The CCRC could take the information from the April 13th meeting and use the April 28th meeting to determine positions the Committee would take.

Council Member Shepherd agreed. She asked if a report was going to be provided regarding their MOU with HSR's and wanted it to be part of the meeting.

Mr. Braulik said the CCRC indicated at the last meeting that the April 13th meeting would be about Caltrain and not HSR. This was conveyed to the Caltrain Staff who would be coming to the meeting to discuss Caltrain. The CCRC could make a directional change if they desired.

Chair Klein added that the MOU with HSR was a Board decision and used as their Staff direction.

Council Member Shepherd asked whether Supervisor Kniss should be asked to be prepared to address the MoU issue.

Chair Klein said the Committee could give her a heads-up that she might be asked that question.

Council Member Shepherd asked if Caltrain staff were being asked to bring forward specific information and update the consideration of their own EIR, and whether that would be part of the presentation.

Mr. Braulik asked if the Committee wanted the current status of the MOU.

Chair Klein said he did not want that to be included.

Council Member Shepherd said she wanted to secure the fact they will be asked to present the status of the EIR.

Mr. Braulik said that would be added along with the electrification on the EIR and the question for Supervisor Kniss in regards to Caltrain's relationship with HSR going forward.

Council Member Price said it needed to be clear that the electrification EIR data was old and not certified. She was in agreement with the agenda. She said the alternatives examined in the EIR needed to be reviewed and wanted to know who would address alternative visions of the future or technologies in an expert manner.

Mr. Braulik said he was working with an individual who previously worked for Caltrain and another who was referred through the Californians Advocating Responsible Rail Design (CARRD).

Council Member Price asked if these were individuals with high expertise to bring to the table for informational purpose.

Mr. Braulik said Staff was working on getting these individuals for the meeting.

Council Member Burt said the Committee needed to discuss the City's procedure on how to proceed with the EIR. The impact on grade crossings was severe for Palo Alto. He suggested two agenda items for the April 28 meeting: 1) whether the EIR adequately looked at alternatives. He said one of the problems of electrification was the capacity increase during peak hours and the ability to make bigger or smaller trains throughout the day were both an efficiency issue and could increase capacity without increasing the number of trains per hour. 2) Caltrain, an imminent issue. He said a few years back there was a lack of open substantive discussion between stakeholders and others regarding the agreement. Palo Alto had two major disagreements with the language: 1) Caltrain agreed it would be a 4-track system. Palo Alto prevailed and convinced them to change the proposal. They forcefully resisted right up to the Board

meeting. 2) they had language to strongly protect the interest of Caltrain. He said the present agreement was to look after the interest of the communities along the peninsula. They do not align those interests equally. Their unwillingness to adopt Palo Alto's positions factored into the Council's decision to join the challenge to the EIR certification. He said it was time to revisit that issue with their Board in a transparent substantive manner.

Council Member Shepherd suggested placing Supervisor Kniss second on the agenda in order to see the entire picture.

Chair Klein said elected officials should be heard first as a matter of courtesy.

A member of the public spoke regarding the MoU and the electrification being explored and the EIR as it was prepared by Caltrain.

Chair Klein advised the speaker that the Committee was focused on agenda items for the meetings and not the substance.

Council Member Shepherd suggested the entire City Council should be invited to attend.

Chair Klein said a member of the City Council could attend the meeting but not speak.

Council Member Shepherd said they could notice the meeting for the full Council, or to ensure Staff invite them so they could hear what was going on first hand.

Council Member Burt advocated that the full Council should understand what the meeting was about and should be invited, but the policy that constrained participation should be made clear.

Chair Klein said he would comment on that at the next City Council meeting.

No Motion Required.

6. Reconsideration of Previously Approved HSR Letter regarding the Peer Review Group

   Revised CHSRA Ridership Peer Review Group Letter

Chair Klein spoke regarding the letter and felt it was an improvement from the previous letter. He proposed striking paragraphs that were personally critical of

Chief Executive Officer (CEO) Roelof van Ark and to make the letter more of a statement of facts. The letter contained two facts in the last two paragraphs on the first page. He suggested editing the first paragraph, striking the second and third paragraphs, retaining the fourth paragraph, heavily editing the fifth paragraph, retaining the sixth paragraph, and editing the final paragraph.

Council Member Shepherd agreed the letter should not be about Mr. van Ark.

Council Member Burt said it was principally about the composition but felt it was not necessary to use a blunt hammer to convey that there was a secondary issue which was the CEO of HSR had made misrepresentations to the Legislature. The Legislature needed to understand that they were not getting the correct information from an important position. It appeared the letter still retained the substance regarding misrepresentation.

Bill Warren suggested the letter should also be sent it to Senators Lowenthal and Simitian as they were on the HSR Selection Committee operating in parallel with these committees. He encouraged adding a comment stating The Peer Review Committee was authorized under AB3034 and reported to the Legislature. This was a body inside the HSR. It was not a Peer Review Committee but rather a team formed by the CEO which was not independent. The subtlety would be missed by the Senators.

Chair Klein said that was an excellent point.

Nadia Naik said two out of the five Peer Review Members, placed on the team by Mr. van Ark were involved with the creation of the model. They said it would take two years for them to complete the work and would use the same data but would adjust the model. There were data problems in the model to begin with. She suggested pointing out in the letter that the job would be of no use if it took two years to complete. She suggested sending the letter to the California Governor, Congresswomen Anna Eshoo and Jackie Speier to make them aware of the situation.

Council Member Burt felt recipients of the letter should be much broader and include the Caltrain's JPA Board, all regional State Legislatures, to the Chair and all committee members of the Legislator. He said the letter should be concise and still have the key points. The timeframe rendered very little value and was unnecessary.

Chair Klein said he needed to see it in print.

Council Member Burt said the CAHSRA documents were available on the Californians Advocating Responsible Rail Design (CARRD) website. He confirmed there were currently no CCRC recommendations. He said one key recommendation should be that the Peer Review Committee reconstitute and report directly to the Legislature and their scope and time frame of its task be re-determined. One of the alternatives that could be suggested was that the Ridership Peer Review Committee could report to the Independent Peer Review Committee on HSR to simplify the process of the Legislature. They empowered the Review Committee created by AB3034 that was in existence. He volunteered to help the Chair finalize the letter to avoid an extended delay.

MOTION: Council Member Burt moved, seconded by Council Member Shepherd that the Rail Committee finalizes the letter and rewrites to incorporate the changes as discussed.

MOTION PASSED: 4-0

~~8. Setting of Regular Committee Meeting Schedule~~

9. Contracts Update

- Capitol Advocates, Inc. (CAI)

Assistant Director Administrative Services, Rob Braulik said the contract would go to the Council on April 11th. The City Council Rail Committee (CCRC) recommended that a new revised Amendment #3 be approved with the following conditions. To include a monthly retainer of $5,000, reimbursable expenses up to $500, a $5,000 contingency fund that would cover expenses incurred during the Washington DC trip in March 2011. The prior contract expired in February 2011 and included a $5,000 monthly retainer fee. The contract was a tri-county agreement with the City of Menlo Park and the Town of Atherton. Both cities paid the $5,000 per month with reimbursable expenses. Amendment #2 did not include reimbursable expenses and the consultant requested that be included since his expenses were divided between the three cities. The latest invoice reflected a $30,000 balance for the past six months which was for the $5,000 per month fee. The $5,000 contingency would cover unexpected expenses.

Chair Klein asked if the $5,000 per month fee was being addressed.

Mr. Braulik said yes and it was a flat monthly fee.

Council Member Shepherd said the contract that expired in February was "not-to-exceed" and her understanding was that the consultant would be billing hourly. She asked if that was correct.

Mr. Braulik said the consultant was billing the City a monthly retainer of $5,000 a month.

Council Member Shepherd confirmed the contract stated a monthly retainer fee of $5,000. She asked if the City would be paying the monthly retainer as well as expenses not-to-exceed $500 and no backfill during the timeframe when the consultant did not incur expenses.

Deputy City Manager, Steven Emslie agreed.

Council Member Shepherd said she did not vote to send the consultant to Washington, DC and asked if under the new contract, the Committee would need to make that action before the $5,000 was spent.

Mr. Emslie said anything beyond the $5,000 monthly retainer would need to come back for approval.

Council Member Shepherd asked if the Washington, DC trip in March would go into the extra $5000 since this contract did not go into effect until March.

Mr. Braulik clarified Amendment #2 expired in February. The consultant took the trip and incurred expenses in Washington, DC in March 2011. There was not a contract in place during that time.

Council Member Shepherd asked how the consultant would get paid for March.

Mr. Braulik said the consultant would get paid when the new contract was in place.

Council Member Shepherd asked when the new contract would go into effect.

Mr. Braulik said March 1st and would be for six months.

Council Member Shepherd asked if the $5,000 contingency would cover the trip to Washington DC.

Mr. Braulik said no. What was being proposed was that the new contract have a $5,000 contingency, plus additional funding to pay for the Washington, DC trip. The consultant's time and expense was approximately $5,000. $1,000

was for expenses and the remainder was for time. The same was charged for the City of Menlo Park and the Town of Atherton. Amendment #2 included a monthly fee of $5,000, plus any additional services requested by the City. Amendment #3 would include a monthly fee of $5,000 plus reimbursement of expenses of a maximum of $500 per month, plus fees for any additional services requested by the City Manager or designee.

Council Member Shepherd asked if the March trip to Washington DC was approved by the City Manager.

Mr. Emslie said technically it was and was requesting the expense be backfilled.

Council Member Burt asked about the frequency of when the Committee would be having the Council High Speed Rail update meetings.

Mr. Emslie said a meeting was scheduled for either the last week in April or first week in May.

Council Member Burt was concerned that the Council had not changed the policy regarding the frequency of updates. He did not want to wait until May for an update meeting that was owed to the Council several months ago.

Council Member Shepherd asked if they could be included in the next Monday's Council Meeting agenda along with the explanation of April 13th

Chair Klein clarified the meeting on April 13th was not about High Speed Rail (HSR).

Council Member Burt said the prior commitment to the Council was on HSR rather than all rail matters.

Mr. Emslie agreed that it was supposed to be a monthly update to Council.

Council Member Klein said to agendize the update when it would fit, it did not necessarily have to be on the April 11th.

Council Member Burt said the contract was already on the agenda for April 11th and could also include the update item.

Mr. Emslie said Staff could try to include it on the April 11th agenda, but it could be pushed out to May 2nd.

Council Member Shepherd asked if the update could go on the Consent Calendar.

Herb Borock raised concerns regarding Agenda Item No. 9. He said he was concerned about the processing of the contract. It was being presented in a way where the Rail Committee and City Council were unable to participate in making decisions. There was a discussion in the September meeting about how the contractor was being paid. The Committee and the Council were given the opportunity to decide in an open process whether to continue the contractor's engagement. At that time, Staff said after that Amendment expired, it would be given the opportunity to do so, but instead of having an Amendment that ended in December, it went into February 1st. The Washington, DC trip cost $5,000. He said Mr. Emslie repeatedly referred to a cap and a $5,000 cap was discussed in the September 7th meeting. He said a cap was a limit and not a floor. He felt more time was required if there was going to be coordination with two other cities.

Council Member Shepherd said she assumed the contract would be on Consent Calendar and could be removed from the Consent if two Council Members so desired. She requested that the former contracts be included in the Staff Report in order to see the changes.

Mr. Braulik agreed.

10. Legislative Update

Assistant Director Administrative Services, Rob Braulik said a hearing was scheduled for AB952 on April 11, 2011 at 1:30 pm. A hearing for AB953 was scheduled for April 25, 2011. They were Palo Alto bills regarding ridership (AB953) and ethics and transparency (AB952) co-sponsored with the City of Menlo Park and the Town of Atheron. Capitol Advocates recommended one or more Council Members attend the hearings.

Council Member Shepherd said both dates might conflict with City Council Meetings.

Chair Klein said the 25th should be fine unless a Special Meeting was scheduled. The April 11th hearing should be an easy and would try to find someone to attend.

Mr. Braulik said Senator Lowenthal's Bill, SB517, was scheduled to be heard on April 26th which would put High Speed Rail under the management of the California Department of Transportation.

Council Member Burt said the prior letter with proposals regarding ridership peer review could not be acted on without legislation and could not direct the California High Speed Rail Authority (CAHSRA) to take certain actions. He asked if the Committee wanted to modify the bills. Bills could be amended to fold in the recommendation for the ridership peer review to be reportable to AB953 while being processed through the system.

Chair Klein said the item could be discussed with Capitol Advocate.

Council Member Shepherd said she would try and make the April 11th meeting.

Mr. Emslie said a Staff Member should attend as a backup in the event Council Member Shepherd needed to leave.

Chair Klein said he would try and make the April 25th meeting.

Council Member Burt said he might be able to attend the meeting on the 25th.

11. Future Meetings and Agendas

NOT DISCUSSED

ADJOURNMENT: Meeting adjourned at 10:08 a.m.

CITY COUNCIL RAIL COMMITTEE

Special Meeting
April 13, 2011

1. Roll Call

Council Member Klein called the meeting to order at 8:01 a.m. in the Council Conference Room, 250 Hamilton Avenue, Palo Alto, California.

Present: Klein, Shepherd, Price

Absent: Burt

2. Public Comment

Edmond Petersen expressed concern over High Speed Rail (HSR) in three areas: 1) the unattractive nature of High Speed Rail, the elevations, 2) expropriation of properties and 3) noise issues. He stated that cost issues were separate from the other issues and should be considered separately.

Hinda Sack spoke regarding the Charleston Meadows Association meeting the previous night. Association Members had concerns over the upgrades on the gates in this area. She noted the swinging gates in this area were actually an impediment versus an improvement. Full, four-quadrant crossings at the gates were not achieved. It was hoped a noise abatement program would be looked into for this area as well. The members were also concerned about the reported costs of $1.5 million per crossing. She was looking for further information on how these crossings could be used more safely.

3. Caltrain Information Discussion with Supervisor Liz Kniss, Santa Clara County Representative to the Peninsula Corridor Joint Powers Board (PCJPB), CalTrain Technical Staff and others

3A. Caltrain Financial Picture Update, Short-term and Long-term; Caltrain

Short and Long-term Planned Capital Improvements; Current Status of Memorandum of Understanding between the California High Speed Rail Authority and the Peninsula Corridor Joint Powers Board.

Supervisor Liz Kniss polled those present about their public transportation usage, and then went over the statistics and history of Caltrain. She reviewed Caltran's history beginning in 1863, its current governing bodies and Board of Directors, representative cities and counties, districts and authorities, directors and managers. She gave a summary of ridership including bicycle, car and shuttle runs to offices. She discussed the fare box revenue dollars versus BART (Bay Area Rapid Transit) dollars. She detailed the self-sustaining nature of MUNI (San Francisco Municipal Railway), which was three times higher than that of SamTrans, and four times higher than VTA (Santa Clara Valley Transportation Authority). She cited the main reasons for Caltrain usage included traffic avoidance, dollar savings, and lack of car ownership. She also cited Staff's determination that riding Caltrain netted the rider a savings of approximately $9,000 per year versus automobile commuting. She discussed the deficit situation with Caltrain, noting it was the only Bay Area Transit system with no permanent dedicated source of funding. Caltrain had funding shortfalls for the last several years but balanced their budget using short-term solutions. She spoke to the JPB (Peninsula Corridor Joint Powers Board) partnership of SamTrans, VTA, and MUNI discussing various proposals. She said the VTA had worked to find solutions, at their last meeting and developed five proposals for stopgaps. An additional meeting was planned for April 7, 2011. A revised proposal for weekend service was also reviewed as well as the Caltrain operating deficit and additional funding sources. In closing, her position remained that train service and ridership were of vital importance to the Bay Area.

Council Member Klein thanked Supervisor Kniss for the presentation and gave and an overview of the High Speed Rail Committee purpose and function. He noted the City of Palo Alto had taken a number of positions on High Speed Rail but it had taken almost no position on Caltrain except to say Caltrain was crucial to maintaining transportation in the area. However, the City had never, for example, taken a position on any specific Caltrain proposals or any long-term financial solutions. Many meetings were planned in the future before recommendations reached the City Council phase.

Council Member Shepherd stated she was a regular Caltrain Commuter. She noted she did see the vision for better connections throughout the Bay Area. She encouraged MTC (Metropolitan Transportation Commission) and everyone involved to support the creation of these connections so there were succinct and intelligent connections for users. She asked if there was any further

information on the consideration of the MOU (Memorandum of Understanding) with the High Speed Train Authority, or if this was scheduled to be covered in the meeting.

Supervisor Kniss stated she would be available after the meeting for information on this.

Council Member Shepherd realized this was not the exact focus of the meeting, but she also wanted to stay current with what as going on. She stated she was also very appreciative of the GO Passes and the way Stanford University has stepped up. She noted a summit with the transit managers throughout the Valley may also be beneficial since there is a shortage of information about the GO Passes practice.

Supervisor Kniss stated Stanford University cutting back on their "no new net trips" made the GO Pass all the more important.

Council Member Price addressed the slide presentation section regarding the operating deficits and other potential sources of funding. She asked Ms. Kniss to clarify, by order of magnitude, some of the various cited options. Also, she stated she did not feel this was a funding issue but that it was a governance issue. In this mix of discussions, she hoped they revisited or reintroduced the capital quarter funding model as it applied, or not, to the peninsula rail corridor. She asked about the amount of money attached to preventative maintenance.

Supervisor Kniss stated MTC had substantial resources, but also had a great number of transit systems looking to use these resources. Negotiations were going well; however, Caltrain was run by SamTrans which prioritiezed bus transportation. They had tried to attach strings to these funds, but had not been successful. She understood she did not answer the question directly, but she hoped to give a sense about where they were. She reiterated there were resources within MTC.

Council Member Price asked if there was range for preventative maintenance.

Supervisor Kniss stated it was a fair amount of funds. This was not the issue, however. It was the short-term funding they were discussing. The intercity trains were funded by the State whereas the commuter trains were not funded. So this was a potential source of funding if Caltrain was recategorized as an intercity train. 3B Caltrain Technical Staff Regarding Caltrain Long-term Plans; Staff and Technical Support; Description of Electrification Proposal; Status of Electrification Environmental Impact Report; Discussion of Long Term Plans for Grade Separation; How would Electrification Work with and without the

Construction of High Speed Rail; Alternative Views of Caltrain Regarding Long-Term Plans.

Marian Lee, Executive Officer CalTrain Planning and Development, spoke on three key topics including the electrification project, EMU (electric multiple unit) versus DMU (diesel multiple unit), and HSR and Caltrain MOU. She continued with information on the Caltrain Modernization Program, the upgraded signal system, Positive Train Control (PTC), the electrification project and expanding services. The guiding principles were addressed as well as structural deficits, and provision of more services and environmental improvements. She discussed the electrification project stating that her presentation was consistent with information and documentation which had been released to the public. This included project distance, service, trains, peak hours, directions, key structural elements and traction power facilities. She reviewed ridership forecasts. Funding was discussed with details of operations, diesel fuel costs versus electric service costs. Mitigation of negative environmental impacts were discussed, as well as aesthetics and biological resources. She moved on to discuss the key milestones and the timeline of rail from 1999 to 2004, including electrification and EIR (Environmental Impact Report) certification. She addressed local issues raised over electrification, which delayed the project, as these concerns needed to be addressed. She noted the various steps Caltrain Staff had taken in communicating with the Community Coalition on HSR to determine guiding principles and a tiered environmental clearance. CalTrain Staff worked on clarifying the language and hoped to return to the Board for certification. She discussed the electrification project schedule. She stated in 2015 they would have a revenue service. If this were just an electrification project the final design could be in 18 months, with three years construction, and one year of testing. She spoke on Caltrain and High Speed Rail coordination. She spoke regarding the Peninsula Rail Program (PRP) run by Bob Doty who was tasked with running both CalTrain and HSR. Mr. Doty left the PRP in December 2010. She clarified she was not Mr. Doty's replacement and represented Caltrain only. There were two projects being coordinated by CalTrain regarding HSR. One was the PTC/CBOSS (Positive Train Control/Communication Based Overlay Signal System). They had released a Request for Proposal (RFP), and were currently reviewing the submissions. They attempted to access HSR funds to benefit both Caltrain and HSR. The second coordinated project was the electrification project. They had given input to the HSR design and to the HSR regarding the EIS/EIR Analysis. The next one- to two-year planning focus was an update of the strategic plan and ridership forecast. The HSR EIS/EIR interface included a review of their alternatives and design. The supplemental efforts promoted by Caltrain included a Caltrain system and station area impact analysis, station area planning, and a local economic analysis at a micro level and venue capture. She discussed the

revised HSR Schedule, the San Francisco to San Jose Environmental Impact Survey/Environmental Impact Report public release which was scheduled for fall 2012 with completion in the summer of 2013. The San Jose to Merced EIS/EIR public release was scheduled for early 2012, with completion in the fall of 2012. The construction/revenue service for HSR was yet to be determined.

Council Member Shepherd asked if the 51 miles of electrification included Gilroy, and if not, why.

Ms. Lee stated the initial project included the Gilroy station. During fund analysis, factoring in the Gilroy section made the overall project not as cost effective because there was lesser ridership in that segment of the Caltrain system. When the Gilroy segment was removed, the overall project was more cost effective.

Council Member Shepherd asked what the rail speeds were in the Caltrain system.

Ms. Lee said 79 MPH max, at electrification, which is the same speed the trains run at currently.

Council Member Shepherd asked what percentage of the engineering studies were complete.

Ms. Lee stated 35 percent of the engineering studies were complete.

Council Member Shepherd asked when the Committee might see this information.

Ms. Lee stated it was scheduled for the next meeting.

Council Member Shepherd stated a substation was proposed in Palo Alto very close to neighborhoods which was concerning. She also noted speeds of trains could not go over 79 mph unless they did grade separations.

Ms. Lee said the speed could be increased but there was a cap that triggered grade separation.

Council Member Price asked when the Committee could expect an update on the strategic plan.

Ms. Lee stated it was in their work plan for summer 2011, it was scheduled out for about eight months. She stated this was a long period of time but required

a planning process with local participation.

Council Member Price noted if they were at 35 percent, she assumed they were at conceptual engineering. She stated they must have some station area impacts and station area planning associated with some of the engineering work that was done at this point for the electrification. She said a critical issue was the environmental clearance. She asked if CalTrain had an assessment of NEQA (National Environmental Quality Act) versus CEQA (California Environmental Quality Act). She discussed the baseline of environmental data becoming outdated.

Ms. Lee stated the average shelf life was approximately three years. She stated there was a second draft, between the draft and the final. It took longer than anticipated due to the struggles to fund the project. Staff worked with the Federal Transit Administration (FTA) to reassess some of their technical analysis in order to see what required updating. Updates were to deal with the shelf life issue. In addition, typical tiered environmental processes amendments and addendums happen at the conceptual design phase at about 10-15 percent. Another assessment occurred at about 35 percent and again at 65 percent. The discussion occurs to make sure what is being cleared is the design at 35 percent. Moving forward they anticipate more changes which triggers the need to see if a supplement or amendment is needed.

Council Member Price likened Federal funding to that of a moving target and something that needed to be watched closely. She stated the public-private partnership was a great concept with some real potential but was difficult to pull stakeholders together.

Council Member Klein suggested they were comparing apples to oranges when comparing diesel fueling to electrification. He asked what the numbers looked like in 2035 for diesel since that was the relevant comparison, and not 2008.

Ms. Lee said she did not have those numbers with her but had been asked those questions before. Further questions and cost comparisons between the systems were planned for future meetings.

Council Member Klein clarified there would be a separate meeting specifically on how Caltrain decided to do electrification rather than DMU or any of the other alternatives.

Ms Lee stated that was part of the current discussion as well.

Council Member Klein stated he had questions which he classified as Plan B and

Plan C. Plan B was whether or not there was a plan if High Speed Rail disappeared today. Plan C involved what would happen if the funding was cut as stated by the Administration of the Federal Governments not footing the bill for HSR in California. In that case, he asked what Plan C would be with regard to California HSR continuing.

Ms. Lee said they did not have those alternate plans. That was one reason to update the strategic plan. She stated a scenario with no High Speed Rail was the key reason they wanted the environmental documents certified. This cleared the electrification project and helped them to advance the project. Without High Speed Rail their biggest challenge would be to come up with a new funding strategy. She stated this was typical of large capital projects. She understood the Joint Powers Board and the General Manager intended to come out of the economic dip with a short-term fix. There was a long-term vision to get a dedicated revenue source as well as a modernized system. She noted there remained a commitment to provide more service to all the local entities along the corridor.

Council Member Klein asked what date the EIR was published, the EIR they were currently considering.

Ms. Lee stated this EIR was published in July 2009.

Council Member Klein stated he had read there were many concerns that this was out-of-date and stale. He asked if she shared this concern.

Ms. Lee said Staff was concerned at one point; however, they felt more comfortable on their reassessment of this, prior to the FTA approving the document. They reviewed these studies and updated the document. The project was aided by the fact that there was an existing right-of-way.

Council Member Klein, speaking to the electrification as the subject of the EIR, assumed that the work was done prior to the passage of the High Speed Rail Bond Measure in 2008. He asked if the electrification planned under the EIR was the same as that electrification that would occur if High Speed Rail came up the Caltrain right-of-way.

Ms. Lee stated this was not the case.

Council Member Klein asked how these two issues worked in tandem.

Ms. Lee explained the project within the EIR was the electrification without High Speed Rail. It spoke to the Caltrain project within this document. The way this

was coordinated with High Speed Rail gave those documents the 35 percent design and also the environmental impact analysis. They knew as they developed the design they had to enable Caltrain to have the types of services they had envisioned for their electrification project. The document was self-contained with the independent utility. This was also used to coordinate with the High Speed Rail project.

Council Member Klein returned to his discussion of Plan C. If one were an advocate for High Speed Rail, with the assumption that it would eventually arrive, he asked if there were discussions underway at Caltrain on what can be done short-term during these delays.

Ms. Lee stated there were two major discussion items at present. Short of any answer or resolution, she stated there was concern about the whole program disappearing and what happen then. There was also the thought of High Speed Rail building up in the Central Valley, and what would happen if they built up there and then run out of funds. There was also the announcement recently by High Speed Rail in January or February where they discussed a phased implementation with less encroachment into local communities, which provided a lower level of high-speed rail service. This was another reason Caltrain considered engaging stakeholders in the dialogue over Caltrain strategic planning.

Council Member Klein revisited the discussion of alternatives to electrification. He noted further speakers were present in this regard. He mentioned a study out of Toronto on this, and asked if Caltrain had a similar study.

Ms. Lee noted the Toronto study was in their packets. She stated Caltrain had completed a similar study but it was short of what the stakeholders wanted to see. Within their environmental document, the board wished to include an environmental-friendly technology. They looked at technologies which were supported by electricity. Light rail was looked at well as third rail, EMUs, and the like. Diesel options were not looked at. Electric based alternatives were looked at, and this was how they landed at their EMU recommendation. Further EMU/DMU discussions will be helpful in the future.

Council Member Klein noted BART selected a non-electrification option for its extension.

Ms. Lee stated this was beyond her scope of knowledge. She stated EMU/DMU technical experts and could speak to this at the next meeting. Another layer of discussion included applying those technologies to existing corridors. This brings with it further challenges which were different than creating a new

extension. Existing infrastructure issues came into play.

Council Member Shepherd expressed concern about a lack of due diligence on the analysis that High Speed Rail has produced regarding ridership. She stressed the importance that these numbers be accurate. She reiterated the importance of the Board setting up procedures for the stakeholders to follow going forward. She was interested in seeing Caltrain run at high speed for commuter service, but repeated the need for a due diligence which she had not seen up to this to this point. She also discussed peer reviews and her further expectations for the Joint Powers Boards in their representation of the peninsula corridor.

Anthony Waller, a former SamTrans Caltrain Planner, stated Staff contacted him to speak. He discussed a need he had identified for Caltrain, which he felt had been previously overlooked by Staff. He noted when the Transbay Terminal Development began its ramp-up Caltrain was excluded from the railway space by High Speed Rail who appeared to have higher ridership needs. Because of this, he noted Caltrain was not rerouted through the Transbay Terminal. While Caltrain was a successful commuter railway, he noted it was the least successful commuter railway in terms of attracting downtown ridership. He stated it was the most successful commuter railway in terms of reverse commuter ridership, however. He stressed the Committee and the Council urge Caltrain to get the train routed to the Transbay terminal, and that the train was capable of larger ridership load. He also urged Supervisor Kniss in her role on the Caltrain Board to have their Staff renegotiate CalTrain's space in the Transbay terminal.

Council Member Price said in the last 10-15 years there was an extension project for the Caltrain station into downtown. She asked for an update on the status of this project.

Mr. Waller said when the Transbay project began the original impetus was for much space to be given to various bus agencies. The final design of the rail station building was office and retail, which resulted in a tiny six-track terminal. High Speed Rail, and their ridership estimates, stated they needed all that space for themselves. Nothing further was left for Caltrain.

Dan McNamara, San Carlos, representing FNCF (French National Railway Corporation) commented on diesel fuel versus electrification. He noted General Electric had a new hybrid locomotive, battery and diesel, and also had natural gas options to be looked at in the future. He stated this was a step forward and reasonable price-wise, but ultimately an electrified railway made more sense. He noted France took the opposite approach where the environment came first.

He noted the City of Palo Alto had a backwards approach by comparison. He stated the peninsula needed to focus on what works for the environment first.

Public Comment

Hinda Sack said the presentation was a repeat of the same Caltrain information she had heard in years prior. She stated the EIR stressed this was an urban community dominated by the right-of-way. She disagreed and felt this was a suburban community which was trying to avoid domination by the CalTrain's right-of-way. She attended the long-term planning meeting for the Friends of Caltrain. She stated there was no consensus on the vision moving forward. She said if there was enough frequency and speed, speeds would increase, requiring grade separations. She also did not see viable funding options. She felt EMUs were an interim solution.

Dan McNamara stated the capital costs for electrification were $785 million. He asked if there were any other capital improvements, or if that was the power stations and the overhead catenary system cost estimates.

Ms. Lee stated there were estimates for improvements to stations. Modifications were slated for maintenance facilities. These were all included in the totals. The primary cost factors were in the poles, wiring, and power stations.

Council Member Price asked for additional information regarding General Electric's hybrid locomotive.

Mr. McNamara stated this was a significant step forward. General Electric was designing a hybrid freight locomotive. This was not a passenger locomotive but could be used for passenger service. All acceleration was done by battery power, just as in a hybrid car, recharged as it moved down the tracks and under dynamic braking. Another significant advantage included that it was silent on acceleration out of the station. Ultimately, he stated an electrified railway was obviously the way to go because it mitigates the air pollution factor. Diesel, by comparison, runs dirty. He stressed there was a way to use electrification, blend it into the peninsula and save all the trees, preserving the environment.

Jerry Carlsen stressed the importance of beginning a dialogue on the subject. He was pleased that there would be future discussions on electrification versus other methods. The corporate governance issue was also of importance as dialogue between the Board of Directors, the Joint Powers Board and the constituents. He suggested thinking out of the box when looking at the

strategic plan. He was concerned that Caltrain was overlooking the European positive control system. He stated other capital purchases, rail cars, scheduling of rail lines and many other benefits could be obtained by looking at an intercity regional transportation rail approach.

Roland Lebrun, stated that High Speed Rail did not belong in the Caltrain alignment. A speed of 79 mph did not need grade separation. He did not understand why SamTrans was spending money on grade separation either. He suggested Caltrain fix their tracks including turnouts and crossovers, which also need redesigning for higher speeds. As far as the environmental concerns, he noted the Caltrain track in front of his home was a third-rail track which was good up to 108 mph. He asked if they were looking at speeds of 79 mph why they were looking at overhead wires. He noted, as well, if Caltrain fixed their infrastructure, they would not need capital for new trains.

Jack Ringham, from Atherton, recapped several points, and noted that the existing EIR was a repeat version of the 2004 EIR, which had been developed with 2002-3 data and covered electrification without High Speed Rail, including no specific plans to integrate electrification with High Speed Rail if it came later. Non-electric alternatives were also not included. Caltrain High Speed Rail cannot be electrified without being completely torn down and rebuilt. Funds were not available for electrification as outlined in the EIR, but funds were available to move ahead with a diesel alternative.

Terry Nagel, Mayor of Burlingame, San Mateo Transportation Authority, spoke on whether or not the phased implementation was really going to help or not. She noted there was a great deal pinned on whether it was a good idea to electrify Caltrain. She stressed the importance of figuring out as quickly as possible if this was feasible or not, and if not to move on to a better plan.

Edmond Petersen agreed with those who were worried about the loss of trees in the peninsula area. He did not understand why trees had to be lost where the rails now were. He did not see this as a problem with electrification. He felt the structural issues with Caltrain were the focus. He stated they could not move forward without a permanent source of funding, and this would not happen with the buses controlling the funds. For electric trains, he noted that top speeds were not as important as acceleration in which electric trains accelerate far faster. He also questioned who was a technical person or engineer, on all of the involved boards, since this input was needed.

William Warren, Palo Alto, had hoped there would be discussion or some type of passenger survey. He felt what was missing was some definition of what the volume was for passengers. He did not feel this could be known until there was

some understanding why people do or do not use trains today and what could be done to increase ridership. Once this baseline was understood, any forecasting was irrelevant.

3. San Mateo Rail corridor Partnership April 20th meeting discussion.

Council Member Klein noted Council Member Burt had been invited to attend this meeting. However, he was unclear if he would attend if this meeting was not open to the public.

Terry Nagel said it was not open to the public. Once the Mayor makes the appointment the meeting had to be noticed and opened. She asked what the mechanism was to make some type of appointment so there would be Palo Alto presence at the meeting.

Council Member Klein noted they are not a member of this group, and Council Member Burt was merely invited.

Ms. Nagel noted then, if he attends the meeting then this breaks up the meeting.

Council Member Klein felt it was important to have Council Member Burt there as someone who can report back to the Committee as well as someone who can make it clear that they are not endorsing any particular position.

4. Discussion of Proposed CalTrain Fiscal Year 2012 Service Impacts
Council Member Klein

Stephen Emslie, Deputy City Manager, noted Staff had provided the Committee with a summary of the proposed service cuts discussed at the last Board meeting. Discussions were continued for two weeks, allowing Staff the time to consult with the other funding agencies in order to come up with funding to eliminate any cuts in service. These discussions continue and outcomes are not known as of yet. These may be reported at or shortly before the meeting on April 21, 2011.

Council Member Klein asked if Staff felt they had enough guidance in that there was no need to take up any specific proposals.

Mr. Emslie stated the Committee had enough information and guidance in that the primary impacts were the loss of weekend services at California Avenue. Other service impacts were relatively minor for California Avenue and University for weekday service. Some of the services actually increased since California

Avenue services reduced with the Baby Bullet, and California Avenue during the week has more train service. The weekend impact is very significant, however.

MOTION: Council Member Klein moved, seconded by Council Member Price to request the Mayor of Palo Alto send a letter to CalTrain regarding the service cuts.

Mr. Emslie stated Staff would circulate a draft of the letter.

MOTION APPROVED: 4-0

Council Member Klein stated the next meeting was scheduled for April 28, 2011. Regular meetings are the third Thursday of each month, unless otherwise rescheduled.

ADJOURNMENT: Meeting adjourned at 10:21 a.m.

CITY COUNCIL RAIL COMMITTEE

Special Meeting
April 28, 2011

Roll Call

Council Member Klein called the meeting to order at 8:00 a.m. in the Council Conference Room, 250 Hamilton Avenue, Palo Alto, California.

Present: Burt, Klein, Shepherd, Price

Absent: none

1. Oral Communications

Jerry Carlson, Atherton Town Council Member, noted he had recently attended the Assembly and Senate Transportation Committee Hearings. He noted hearings on SB-22 were also coming up shortly. He noted the importance on speaking up on the issues of High-Speed Rail (HSR) and expressing personal views to the Senators.

2. Continuation of Discussion of Caltrain Informational Matters

Presentation by Paul Dyson, President, Rail Passenger Association of California (RailPAC)

Paul Dyson, President, Rail Passenger Association of California (RailPAC), spoke regarding RailPAC. He stated it was an all volunteer organization. Their goal was to advocate for rail access. He gave an overview of RailPAC's history and rail work. Their mantra was value for the taxpayer when it came to successful rail projects. He noted he was also the Chairman for the City of Burbank Transportation Commission, which was on the route for High-Speed Rail. He stressed the key issues for High-Speed Rail were incremental growth and value for the money. He noted the public demanded something to show along the

way or their support and funding would be lost. Management staging must contribute to the long-term outlook. He outlined a synergistic system with daily service gradually connecting everyone in the end.

Council Member Price discussed potentially consolidating the various rail services which lead to the question of what works best while making use of what was already there, or should the entire rail system be revamped.

Mr. Dyson stated initially one makes due with what they have. The first issue was to put an inventory together and decide what to do. The business was of common standards, to do something at the State level, with later Federal standards for compatibility. He stated there might also be trades later for equipment and there may be secondary markets with other cities. He reiterated an organizational plan is the first step, followed by the plan for what will ultimately work best for the next generation of rail travelers.

Council Member Price asked if he was talking in terms of a dedicated fixed rail agency in the future.

Mr. Dyson stated, in an ideal situation, all transit would go under one umbrella. He said they tried this in Britain many years back, where the British Transport Agency tried to cover every base, but the organization became so complex it was difficult to remain effective across all boards. He stated too many small organizations are also difficult to manage. So there has to be a happy medium.

Council Member Price asked if he had any idea how many of these organizational conversations had taken place.

Mr. Dyson said as an all-volunteer group they were not able to keep up with all the legislation.

Council Member Burt spoke to Plan B, then asked if RailPAC had reviewed the ridership projections for Plan A.

Mr. Dyson said RailPAC had reviewed the reports. They did not have the resources to do their own study. The original projections were extraordinarily high and not credible in his opinion.

Council Member Burt asked how they reviewed the ridership numbers and what their baseline was.

Mr. Dyson stated they used a formula for electrification. The upgrades included a faster journey time. Typical conversions increased ridership by 20-25%

immediately. Another key factor was punctuality. More reliable services brought in more people.

Council Member Burt asked if the ridership studies RailPAC had worked on used transparent data.

Mr. Dyson said they only had access to information that was on the public record.

Council Member Burt said he asked because Palo Alto had a subsequent ridership revision report by Mr. Van Ark which included confidential paperwork with some data not on the public record. He asked if Mr. Dyson knew of any public interest reason why that information should be kept from the public.

Mr. Dyson said he could not think of a reason, even if they were trying for a contract with a private operator or some other entrepreneurial offering.

Council Member Shepherd said she agreed with statements regarding the difficulties with public transportation in the Bay Area. She agreed that a Northern California Rail Association was necessary. She asked Mr. Dyson if he considered BART among the rail services in the area.

Mr. Dyson stated BART was also a rail service, though more specialized and more like a subway or domestic commuter train.

Council Member Klein asked about Caltrain and electrification. He asked if it was necessary, or if there were other options.

Mr. Dyson said the advantage of electrification was performance. He stated business plan for Caltrain was to receive funds for electrification so they can reduce operating funds. He added public funds had to be used carefully. He discussed some of the rolling stop issues as well. He noted the overhead support masts on the electric trains do have an environmental visual impact on cities that some people feel is a negative impact.

Council Member Klein asked if there were diesel multiple unit (DMU) systems that meet Federal Railway Administration (FRA) standards.

Mr. Dyson stated there had been some prototypes, but he did not believe any had met the standards. He said there were some noncompliant nonsegregated lines running. He said it was possible to build noncompliant DMUs, but they are heavy and do not perform as well.

Council Member Klein stated the budget for electrification was approximately $1.5 million. He asked what it was if they used DMU and tried to meet the Federal standards.

Mr. Dyson said it would be considerably less, although he did not know it offhand. He stated he was talking about the rolling stock without the related infrastructure and it would be 25-30% less the cost of electrification.

Council Member Burt asked about the Federal Standard. If they do not have a waiver they could not have a lighter weight stock. It was his understanding that the High Speed Rail negotiations included the freight use from the passenger rail use. If that occurred, then did they have a barrier to hybrid DMUs.

Mr. Dyson stated there were no barriers. This came down to the FRA and the signaling system.

Council Member Burt stated there was also the positive train control implementation on the horizon, which would add to safety in the future.

Mr. Dyson agreed this added to track safety.

Council Member Burt asked, with the addition of this and track safety, was there discussion on liberalizing the compatibility standards.

Mr. Dyson said this was under review but no decisions had been made.

Council Member Price asked about the freight and commuter train system in Britain, she wanted to know if there were a lot of grade separations.

Mr. Dyson stated for sections immediately outside London there is grade separation, but further out in the country there are grade crossings. He stated this is a big issue in the US with a number of grade crossings. He noted it was always a battle between city, rail and highway departments as to who was responsible for this.

Council Member Klein discussed DMUs and hybrids. He asked if RailPAC had information on the technological advances in these areas.

Mr. Dyson stated there was a lot of information in the public domain today he kept in touch with colleagues to stay knowledgeable about current issues. He recently visited the Siemens factory in Sacramento. Many organizations of made their information public.

Council Member Klein asked if there were a location where the most up-to-date hybrids are being used.

Mr. Dyson stated Europe was currently using the most up-to-date hybrids.

Jack Ringham spoke as a commuter train expert. He stated that he had been riding trains all his life, as well as studying Caltrain and electrification. He felt it was impractical to electrify Caltrain at this time. He gave some suggestions and alternatives to High-Speed Rail. He noted the Environmental Impact Report (EIR) was stale and based on old data. He discussed the EIR Electrification Plan and its proposals. He continued his presentation with the two Non-Electric Alternatives and discussed both. He spoke on the Passenger Demand Patterns Required for Varying Train Sizes, which he said for weekday passengers per train in varied in capacities and time periods. He looked at the Capital Cost categories from the EIR comparing the DMU and EMUs (electric multiple unit). He went over what Caltrain should consider for the future in that there was a lack of funding and no hope to make up any gaps. He suggested an evaluation of the DMU versus EMU issue. He further stated they should not make a commitment with out dedicated operations funding.

Council Member Shepherd asked if DMUs had a similar reduction in operational costs as electrification would.

Mr. Ringham stated most of the same savings claimed by the proponents of electrification could be achieved with DMUs. He stated that BART, which is already electrified along its whole system, has planned on investigating more based on the DMUs because they found electrification costs too much.

Council Member Price stated, typically, alternatives were examined, including technical alternatives. She asked if the current electrification EIR examined such things as DMUs.

Mr. Ringham stated Caltrain analyzed and made several comparisons of liquid natural gas and clean diesel. They analyzed and rejected these alternatives although they provided the public with no details of the analysis. They analyzed electrified locomotives with unelectrified cars as well and concluded it was less effective than EMUs. They did not evaluate DMUs. Their comparisons were to diesel power based on their present diesel system, which was based on old technology. This was not considered an updated DMU comparison.

Council Member Price she had heard of two-level rail cars. She asked if there were cars with a taller vertical approach reach than the two-level cars.

Mr. Ringham said the overpasses would have to be raised, so to his knowledge there was no consideration of increasing the height of the cars at this time. He stated most EMU and DMU cars were single or bi-level. He thought Caltrain's plan was to use bi-level cars.

Council Member Burt said the break-even point was 4-6 cars per train with the DMU. He asked if there were any constraints or operating cost impacts of going up to a higher train length.

Mr. Ringham stated higher train lengths meant longer boarding platforms.

Council Member Burt stated they were at 4-6 cars per train now, as a break-even. He asked if they were constrained against going higher with the DMUs.

Mr. Ringham said the current range was five, they fell below that. Presumably, the increase in passenger volume was covered by more trains per day rather than more cars per train.

Lauria Lorono, Caltrain Engineer, brought the 35% drawings of the electrification project and left them with the group. The materials could be shared with the public. She gave a brief slide presentation, which included items, which the committee had previously requested including information on the Electrification Project (04/13/11), Electrification 35% Design (04/28/11), EMU versus DMU (05/26/11) and HSR and Caltrain Memorandum of Understanding (MOU). A second slide covered the Key Components of PTC/CBOSS (Positive Train Control/Communication Based Overlay Signal System), the electrification project and the service expansion as well as the Guiding Principles of addressing structural deficits, providing more services and improving the environment.

Marian Lee, Chief Planning Official, gave the highlights of the 35% design in her slide presentation. She noted the Electrification Project would electrify the tracks for a distance of 51 miles from San Francisco to Tamien, servicing six trains over peak hours and directions with electric powered vehicles. The main components of electrification were the traction power supply (TPS), the over head catenary system (OCS) and the communication system. The traction power supply system supplies 25kV with two main substations at South San Francisco and San Jose, which transforms 115 kV utility supply down to 25kV, using seven paralleling stations and one switching station. She went over a table of the power traction sites, and the cities where they were located with the main substations. She summarized the TPS sectionializing plan with the main substations and the midline switching stations and paralleling stations.

She showed an example photo of what a TPS substation would look like as well as a TPS paralleling station. She discussed the overhead catenary system. This would be a system of overhead wires supplying power to the electrified vehicles. Poles would support the overhead wires. Poles would be 30-40 feet high and 150-200 feet apart, located outside the tracks but within the right-of-way. Cantilever arrangement for two-track areas and headspan arrangement for multi-track areas are planned. She showed a photo of an example of the cantilever support wires as well in a rural and station setting as well as a headspan arrangement at a station. She discussed the communication system, which will provide a link for operations of the electrified system. She also discussed the fiber optic components. She noted the communications system provides a support network for existing and future control and information systems. The schematics of the integrated supervisory control and data acquisition (SCADA) control center and its field devices. The Rolling Stock Preferred Unit was an EMU, self-propelled unit. Performance was not affected by train length and unaffected by gradients greater than 2% Electrification progress was discussed. The TPS study and electrification simulations were completed as well as OCS conceptual drawings and standards, operations and maintenance analyses, reporting and estimates. Preliminary safety and construction reports and estimates were complete. The PG&E feasibility study and the 35% design of TPS, OCS, signals and communications plans and specifics were also complete.

Council Member Price asked what had been done, or not done, from an alternatives perspective with respect to the EIR.

Ms. Lee stated the Guiding Principles included a note on the purposes of the project, which were identified in the EIR. One was to reduce emissions and be environmentally friendly. Based on that anchor, they looked at the preference of EMUs, and what was actually true. They did not look at diesel, but more of the green technologies and four or five alternatives including BART-like and other light rail technologies. This is how they landed on electrification as a viable option.

Council Member Price asked for additional information on the PG&E Feasibility Study.

Ms. Lee stated they looked at the determination of power usage versus power draw. They wanted to look at the draw on the current PG&E system.

Council Member Price asked if there were any other options other than the overhead catenary system for electrification wires. She stated there were some elegantly designed catenary systems they could consider.

Ms. Lee stated, given the current infrastructure variables, it was the best choice.

Council Member Burt stated during the evaluation of alternatives an overriding objective had been to reduce emissions. Other modes also had reduced emissions and yet electrification still was selected. He noted that the mode of producing this electricity may not be the greenest choice.

Ms. Lee stated the fair way to put things was that the technologies that reduce diesel dependency were still the best green choice. This was not the framework used when the EIR was set up.

Council Member Burt asked how they track a specific objective when it is both the premise and the conclusion.

Ms. Lee stated in the purpose of the project was to improve regional air quality.

Council Member Burt asked if DMUs might not also improve this air quality.

Ms. Lee agreed it would.

Council Member Burt asked when the technical alternatives were evaluated in the EIR.

Ms. Lee stated they were evaluated in 2004. The way the project was defined in the EIR was that the primary purpose was to improve train performance, reduce noise, improve regional air quality and modernize Caltrain. She also gave an overview of the specific alternatives they looked at.

Council Member Burt stated various fuel forms were looked at as far as air quality and environmental factors. It did not sound like a variety of other alternatives were included. He also spoke to electrification funding concerns. He asked what existed as alternatives if they could not electrify the system.

Ms. Lee stated the policy and the vision was to electrify the system. She stated their alternative remains how to retain service while still trying to find the funding for electrification.

Council Member Burt asked if there had been any intention to bring in a wider variety of policy members.

Ms. Lee noted these were discussions within Caltrain. They are also reviewing

opportunities for public process to engage local and City partners to develop strategic planning. The work program was under consideration with the board.

Council Member Burt suggested input from experts as well and noted there were a number of them in the region. He asked where the train stopped at Tamien and the Baby Bullet Service.

Ms. Lee stated the goal was full electrification but there would be transition up to that point.

Stacy Cooke Senior Planner, Caltrain stated diesel service would operate underneath the electrified system.

Council Member Burt discussed potentially having to switch trains mid trip with this dual usage.

Ms. Cooke stated if there was no electrified system they would have to provide diesel.

Council Member Burt asked what the peak number was for proposed trains per hour.

Ms. Lee stated the peak number was six trains per hour, where they were now running five trains per hour carrying 70,000 riders, where they were currently at 40,000+.

Council Member Burt noted it sounded as if predictions for increased ridership were expected during the shorter periods.

Ms. Lee stated ridership was demand and looked out to 2035 as the horizon year and was based on the population and job growth numbers if this type of service was provided.

Council Burt asked if the constraint was the foremost demand at peak hours. He said if they reach capacity at peak hours, how could they expect to go up to really high numbers just by adding one additional train.

Ms. Cooke stated another way to look at it, out to 2035, was that there was only a 10 percent increase from what they called the no project, or keeping the service the same. That made it an apples-to-apples comparison.

Ms. Lee stated the peak ridership is definitely higher.

Council Member Burt stated they were looking at 70 percent rise in ridership.

Ms. Cooke said they would demonstrate spread of what they can fit on the train at a future meeting.

Council Member Burt said it was important to show how so many people were fitting on trains that required a great amount of funding.

Ms. Lee repeated they would provide additional information on this at the next meeting.

Council Member Klein said he questioned some information presented on the substation on the Palo Alto/Mountain View City line during the slide presentation and wanted to be sure that his substation still existed.

Ms. Cooke looked this station up in the materials and pointed it out its exact location as he continued with his questions.

Council Member Klein continued with a question about what grade separations, if any, were required in the proposed project.

Ms. Lee stated none were proposed.

Council Member Klein stated he had heard the opposite.

Ms. Lee was not clear on why he would have heard otherwise. She stated the grade separations were in discussion for the High-Speed Rail project but not specifically for the electrification project, alone.

Council Member Shepherd stated it was her understanding that once you go over 79 MPH, you were required to have grade separations.

Ms. Lee stated this was not her understanding. The trigger speed was 125 MPH.

Council Member Shepherd stated on the FRA it was different versus Caltrain's trigger of 125 MPH.

Ms. Lee stated it was her understanding that ranges of speed triggered different interest levels from the FRA. She stated their regulations addressed these increments. She stated she would provide the information they have from the FRA.

Council Member Shepherd said there would be one train every five minutes. So every time there was a signal, there would be four minutes for traffic to flow. Without grade separations, she said this will cause traffic concerns. She asked if there were any plan to look at grade separations in the EIR.

Ms. Lorono stated it was a prototypical schedule so far, so this is not written in stone. It was based on the assumption that the train was running at 79 MPH. The train running every five minutes was a visionary statement laid out by Caltrain. The electrification project was up to six trains each direction. Today, they were at five trains, peak hours, in peak directions.

Council Member Burt said they are talking about what translates to a train every five minutes.

Ms. Cooke said there will be 12 total, with one additional train.

Mr. Seamus stated this was an additional train per hour, and this was a train every five minutes.

Council Member Shepherd stated her concern was the bogging down of the intersection.

Mr. Seamus stated they were going from a train every six minutes, to a train every five minutes.

Council Member Shepherd stated this brought with it the resynchronization of the lights every four minutes and the bogging down of traffic at the intersections.

Council Member Klein returned to the issue of the EIR and why they did not consider DMUs. He questioned whether this was a lifecycle analysis or not.

Ms. Lorono stated they will find this out.

Council Member Klein questioned whether the EIR considered DMUs. This should be studied as well a lifecycle analysis.

Ms. Lee stated she would find information on this and bring it to the next meeting.

Council Member Klein asked if they considered the very extensive range of environmental impacts. He also discussed operating efficiencies. He desired a quote on how efficient the electrification system was with the same number of

riders. He asked if there were cost per mile figures, for car travel under the electrified system compared to what they had now, and compared to the other alternatives.

Ms. Lee noted his comments and concerns and stated information on these would come back at the next meeting.

Ms. Cooke took the time to update Council Member Klein on the previous substation he had asked about on the Mountain View and Palo Alto border. She stated she could followup with a better slide of this substation at a later date. The dimensions of this station were 40x80 feet with a height of 30-40 feet. A slide was also on the screen for a time as they discussed the profile of such a substation.

Council Member Shepherd spoke to the photos of the planned stations.

Ms. Lee stated the examples they had shown had four tracks.

Seamus Murphy, Manager of Government Affairs, Caltrain stated the graphic they had used for an example was Bayshore.

Ms. Cooke stated the plan was to electrify the current system and current stations.

Council Member Shepherd asked how complete their plans for electrification were.

Ms. Lorono stated the project that they could least afford was the electrification project. The $1.2 billion would not include grade separations, but if the City had concerns over traffic impacts, they would work to determine where best to make improvements.

Mr. Murphy added the total project cost was $1.2 billion for electrification plus the rolling stock, but they need to consider the cost of the positive train project in the cost of modernizing the train corridor.

Council Member Shepherd stated they had not talked about the Action on the EIR that they have had since 2004. She asked if Caltrain considered this an active or stale EIR.

Ms. Lee stated they did an assessment of technical studies in 2008 with a clean update. She stated right now they feel they have an updated document. She stated they would like to certify it though there was the threat of a lawsuit,

which they hope to avoid that time-consuming process. They hope to take this back to the board in the summer. A key decision is pending the discussions regarding the lawsuit.

Council Member Shepherd asked what happened with their MOU with High-Speed Rail if they certified.

Ms. Lee stated there was no conflict. The certification helps them reach an administrative milestone. This allows them to advance a project. The MOU is another topic, which they could address at another meeting.

Council Member Burt noted there were several areas he would like to hear information back on for the next meeting. These included information on the train crossing capacity and quad gate changes. He wanted to hear more about the trains per hour, per crossing and the street clogging traffic concerns. He wanted additional information on the updated areas of the EIR between 2004 and 2008, even though a number of technical alternatives were not researched over electrification as the viable alternative. He also wanted to hear about what Caltrain planned to do if the electrification dollars were not available, and how they would modernize the existing system.

Rita Wespi, Co-Founder of Citizens for Responsible Rail Design (CARRD) discussed the location of the Mountain View substation, which was directly across from Green Meadows. She asked how this was integrated with the High-Speed Rail system. She stated this area has narrow right-of-ways and she is worried about the fit for the neighborhood. She addressed the same concerns about the visual impacts about the poles and overheads.

Paul Jones cautioned everyone on their comparisons. He stated both forms of trains, diesel and electric, were very different. He stated it was very important to compare the modern trains with other modern trains of the same weights to prevent dangerous bias.

Mr. Conlin stated he hoped the quad gates get the proper attention. He addressed concerns over the grade separations as well. He stated the benefits of the gates was great and noted two intersections where they have already had fatalities. He asked whether sensing devices on the tracks can also notify a train well ahead of a crossing if there is a train on the tracks, even with the gates are down.

3. Reports on Meetings

Caltrain, including April 21, 2011 Peninsula Corridor Joint Powers Board (PCJPB)

Rob Braulik spoke regarding the board's meeting. They secured interim funding for existing service with fare box increases. Parking charges were also increased effective in July. The fiscal crisis facing Caltrain still exists and these solutions only addressed the immediate crisis.

Council Member Shepherd asked if they could review the questions with the Chair to see if anything was pertinent for comment.

Council Member Klein stated the Staff report was excellent, and they should see how that is received.

Council Member Burt noted two other items they should raise: 1) Questions about the secrecy of the independent peer review committee on ridership reporting only to Mr. Van Ark. 2) The letter sent months ago regarding Capital costs.

Council Member Shepherd stated they should make a position statement as well about the secrecy over the ridership report.

Council Member Price asked if there were other letters or issues out there that also required responses.

Council Member Burt stated Mr. Van Ark had made offers to meet with Peninsula Cities, but this never reached fruition. He stated there was unwillingness for his meeting with public agencies in a public forum.

Mr. Braulik stated they were planning to circulate the draft EIR for the fall of 2012. They were looking at a phased implementation of nine peak hour trains, with six Caltrain and three HSR trains at peak hours. They were also working on plans for the future Peninsula Rail Programs and a covered trench review, and set a meeting with Staff to discuss this.

Council Member Burt said the Peninsula Cities Consortium (PCC) was in early April and the next one was May 5, 1011.

Council Member Klein gave information on the San Mateo Rail Partnership Meeting with CHSRA CEO Roelof Van Ark, which was held April 20, 2011. He spoke on the Silicon Valley Leadership Group Palo Alto Caltrain Town Hall Held April 26, 2011, and noted numbers were down on these meetings.

4. Future Meetings and Agendas

ADJOURNMENT: Meeting adjourned at 10:09 p.m.

City of Palo Alto (ID # 1833)

City Council Rail Committee Staff Report

Report Type: Meeting Date: 6/23/2011

Summary Title: Economic & Planning Systems Report – Caltrain Only

Title: Economic & Planning Systems Report – Caltrain Only

From: City Manager

Lead Department: City Manager

Executive Summary

Economic & Planning Systems, Inc. (EPS) was retained by the City of Palo Alto to evaluate the possible economic and property value impacts of the proposed Caltrain Electrification Program and the high-speed rail (HSR) line currently being planned by the California High Speed Rail Authority (CHSRA).

This memorandum pertains to the Caltrain electrification as a stand-alone project, to reflect the possibility that the HSR project will not go forward as currently envisioned.

Attachments:

- -a: Caltrain Electrification in Palo Alto June 7, 2011 (PDF)

Prepared By: Richard Hackmann,

Department Head: James Keene, City Manager

City Manager Approval:

James Keene, City Manager

MEMORANDUM

To: Steve Emslie and Rob Braulik, City of Palo Alto

From: Darin Smith, Catherine Meresak, and Tepa Banda

Subject: The Economic Impacts of Caltrain Electrification in Palo Alto; EPS #20119

Date: June 7, 2011

The Economics of Land Use

Economic & Planning Systems, Inc. (EPS) has been retained by the City of Palo Alto to evaluate the possible economic and property value impacts of the proposed Caltrain Electrification Program and the high-speed rail (HSR) line currently proposed by the California High-Speed Rail Authority (CHSRA). This memorandum pertains to the Caltrain electrification as a stand-alone project, to reflect the possibility that the HSR project will not go forward as currently envisioned.

Summary of Findings

1. The Caltrain electrification project will increase the current number of trains from 98 to 114 per day and will require the installation of overhead electrical wires and one electrical paralleling station in Palo Alto.

2. The Electrification Program is expected to yield benefits such as reduced vibrations, improved air quality, and reduced travel times for commuters, but it may also add to traffic delays and detract from the values of selected properties from which the paralleling station will be visible.

3. In aggregate, EPS estimates that the Electrification Program will have a positive economic impact of roughly $35.2 million, the vast majority of which is associated with the capitalization of reduced commuting times into Palo Alto property values.

4. The fiscal benefits to the City will be fairly modest, with the increased property values adding only $41,500 to annual property tax receipts, and a negligible amount of new sales tax from worker expenditures.

5. The project is not expected to affect the City's jobs/housing balance or the school district's student enrollment.

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Project Description

The Federal Transit Administration's Caltrain Electrification Program: San Francisco to San Jose EA/Final EIR ("the Caltrain EIR") published in 2009 provides a description of the Caltrain project and several of its anticipated impacts.[1] Caltrain intends to upgrade its trains from diesel to electric-powered in 2015 when its current trains reach the end of their 30-year design life. The electrified trains will run on the existing tracks within the existing at-grade Caltrain right-of-way through Palo Alto, and Caltrain does not expect to acquire any new property for permanent right-of-way in the City. Caltrain also is not anticipating any changes to the current at-grade crossings in Palo Alto, beyond the safety enhancements that are already being installed at the crossings. The San Antonio Avenue bridge at a current grade separation would be enhanced to install two new barriers (mesh or similarly permeable material) to prevent people or objects from interfering with the rail or related equipment.

The electrification will require the installation of new equipment. Throughout the rail corridor, an "overhead contact system" (OCS) will be installed that provides electrical power to the trains. The OCS consists of poles and wires, with the poles typically being between 30 and 50 feet in height and spaced roughly 180 to 200 feet apart, but on straight tracks (as in most of Palo Alto) the poles may be spaced as many as 230 feet apart.[2]

In addition to the OCS, an auto-transformer power feed system must be installed to transmit electricity to the OCS. The power feed system is expected to consist of two supply substations, one switching station, and seven "paralleling stations" along the entire 51-mile corridor. One of the paralleling stations is shown in the EIR as being located within the Caltrain right-of-way near Greenmeadow Way in southern Palo Alto, but its precise location is not final. The paralleling station is expected to require an area roughly 40 feet wide by 80 feet long and appears to consist of equipment similar to typical urban electrical transformers that are not more than 20 to 30 feet in height.[3]

Caltrain also plans to increase the frequency of trains passing through Palo Alto. The EIR indicates that Caltrain currently operates 98 daily trains[4] through the corridor and hopes to have 114 trains running after electrification in 2015. This service increase includes a total of 11 additional trains during the morning commute time (6:00 to 9:00 a.m.), plus another five trains at other times of day. No additional Caltrain service increases are expected through the year 2035.[5]

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[1] As of May 2011, the Caltrain EIR has not been certified or adopted by Caltrain but represents the most complete description available of the planned service and facilities. EPS has been informed by City of Palo Alto staff that the ultimate project may vary from that described in the EIR, but such variations have not been described in sufficient detail to be evaluated in this study.

[2] Caltrain Electrification Program EA/EIR, July 2009, page 2-10.

[3] See Figure 2.3-19 of the Caltrain Electrification Program EA/EIR, July 2009.

[4] Current Caltrain operations have recently been reduced to 86 trains per day due to financial constraints. In order to remain consistent with the estimated impacts given in the Electrification EIR, EPS uses the original 98-train schedule as the baseline condition for our analysis.

[5] Caltrain Electrification Program EA/EIR, July 2009, page 2-41.

The expected increase in the frequency of trains, combined with new train infrastructure, creates the potential for impacts on the community that differ from those already experienced in the corridor, where trains have operated for decades. Potential effects include noise, vibration, visual impacts, and circulation conflicts.

Long-Term Impacts

Train service has operated along the Caltrain corridor in Palo Alto for decades, and the existing service already has affected the noise, vibration, aesthetic, and circulation attributes of the Palo Alto community. However, the expected increase in the frequency of trains combined with new train infrastructure creates the potential for impacts on the community that differ from those already experienced in the corridor.

Below, EPS aims to characterize those changes to the physical and operational impacts as well as the economic impacts on the community that may attend such changes. Please note that the EIR includes extensive and publicly vetted analysis of the expected impacts of the electrification project, and EPS has generally deferred to that document's conclusions regarding the quantity and quality of such impacts. EPS has supplemented those findings where the EIR did not include certain factors, or where EPS sought to assess a "worst case scenario" by providing a more conservative approach than was included in the EIR.

The EIR does not translate the physical or operational impacts into monetary terms, so this EPS study aims to provide that information. Numerous studies have explored the influence of infrastructure investments and environmental conditions on property values and have aimed to differentiate the characteristics of those influences on dimensions such as noise, vibrations, air quality, etc. Such studies have represented a wide variety of situations, including areas similar to Palo Alto in various ways as well as areas where transit is being introduced (as opposed to being increased) and areas with very different demographic or physical conditions. In addition, many factors outside those evaluated in this analysis (noise, air quality, views, etc.) go into the decision to purchase a home. The positive recognition Palo Alto has in school district quality, proximity to employment centers, and community safety may outweigh some or all of the impacts associated with changes in Caltrain operations.

EPS has aimed to apply findings from the most relevant reports and case studies, many of which are cited below. Because there is a potential to "double count" the impacts (say, by assuming that noise and vibrations are separate and unrelated influences), EPS has erred toward the application of more conservative assumptions, with the result being that negative impacts may be exaggerated and positive impacts may be under-represented.

Where EPS has determined that a positive or negative economic effect is likely to occur, we have applied an economic factor to the existing assessed value within the physical area that we believe is most likely to be impacted. While we recognize that the existing assessed value does not fully represent the true market value of properties within Palo Alto because of constraints of Proposition 13, we believe the current assessed value represents a reasonable and readily available proxy for such values. An alternative approach would require EPS to estimate the current market values of literally thousands of properties within Palo Alto and to also estimate the times at which those many properties would be sold and thus be subject to reassessment. EPS's approach should be viewed as representing a comparison of what current assessed values might be if the Caltrain electrification project were currently in place, compared to the existing condition in which the electrification has not yet occurred.

Noise

At present, 98 Caltrain trains travel through Palo Alto each weekday.[6] After electrification, the EIR indicates that this number will increase to 114 per day. Each train that passes through Palo Alto generates noise in a variety of ways. The trains themselves generate noise from the engine, the contact with the tracks, and vibrations created as well as aerodynamic effects. In addition, any train that crosses a vehicular road without a grade separation must blow its horn as a warning and also activates crossing gates with bells that also warn and stop vehicles and pedestrians.

Numerous studies since 1967 have yielded a general consensus that the average noise depreciation index (NDI) value, measured as a percentage of property value decrease per decibel (dB), is roughly between 0.6 and 0.7 percent of residential property value. A 1996 study called "The Full Cost of High-Speed Rail" contained a literature review of studies since 1967 that averaged an NDI of 0.62.[7] EPS's research of additional studies since 1996 corroborates this finding. In 2007, researchers in the United Kingdom found an average NDI of 0.67 for rail traffic noise,[8] and in 2009, researchers in Sweden estimated a 0.7 percent value decrease per decibel for rail traffic noise over 55 dB.[9] If the Caltrain electrification project were to result in either increased or decreased noise levels, this literature review suggests that EPS should apply a factor of roughly 0.65 percent per decibel change to the property values within the impacted area.

The Caltrain EIR indicates that the upgrading and electrification of vehicles will produce less noise than is currently produced by the existing vehicles and operations. The switch from diesel-powered vehicles to electrified vehicles is expected to reduce the number of residences impacted by noise compared to the existing condition. The Caltrain EIR does not specify the precise amount (number of decibels) by which noise levels from train operations will be reduced at any given location. The corridor studied for the EIR is 51 miles long, and extraordinary resources would have been required to catalogue existing conditions and project specific impacts at tens of thousands of potentially impacted locations. Instead, the EIR relies on modeling and selected noise sampling, and applies the general results to the specific environments along the corridor.

According to the EIR estimates for the Palo Alto segment (from Redwood City to Mountain View), the Electrification Program will reduce the number of homes experiencing "moderate" impact by 3.6 percent and those with "severe" impact by 5.5 percent. This positive conclusion is characterized as a "worst-case scenario," because the noise assumptions used were applicable to

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[6] This analysis does not account for any changes to Caltrain service that have been discussed in response to the current funding shortfalls faced by Caltrain.

[7] Levinson, David, Jean Michel Mathieu, David Gillen, and Adib Kanafani, "The full cost of high-speed rail: an engineering approach," *The Annals of Regional Science,* 31, (1997): 189-215.

[8] Day, Brett, Ian Bateman, and Iain Lake, "Beyond implicit prices: recovering theoretically consistent and transferrable values for noise avoidance from a hedonic property price model," *Environmental & Resource Economics*, 37, (2007): 211-232.

[9] Andersson, Henrik, Lina Jonsson, and Mikael Ogren, "Property Prices and Exposure to Multiple Noise Sources: Hedonic Regression with Road and Railway Noise," *Environmental & Resource Economics,* 45, (2010): 73-89.

electric locomotive and diesel multiple unit rolling stock that are implied to have higher noise levels than the electric multiple unit (EMU) stock likely to be utilized in the Caltrain electrification scenario. [10] Though the EIR does not specify the precise number of decibels reduced at a given location, the document does indicate that the difference between a "moderate impact" level and a "severe impact" level can be as few as two to three decibels in places that have existing noise exposure similar to those measured in Palo Alto in the EIR. As such, EPS infers that the electrification will reduce the average daily noise exposure by two decibels.

However, the EIR does indicate that the positive noise impact results presented above account only for the noise generated by the train itself, not the noise associated with horns and bells required for at-grade crossings. By increasing the number of trains per day from 98 to 114 without altering the grade crossing situation, it is clear that more train horns and more crossing bells will be activated each day than under the current situation. Simply applying a pro rata factor, the occurrence of these particular noises will increase in number by 16 percent. The EIR indicates that each at-grade crossing is likely to be shorter in length than is currently the case, but does not specify how much shorter each crossing will be.[11] Because of this lack of information, EPS has not assumed any aggregate reduction in crossing times.

Still, the noises associated with horns and bells are heard for only a fraction of the time that a given train is passing through Palo Alto. According to the current Caltrain operating schedule, a typical train takes eight minutes to travel from the Palo Alto station just south of the Palo Alto/Menlo Park border to the San Antonio station just south of the Palo Alto/Mountain View border. In field surveys of each of the four Palo Alto grade crossings conducted by EPS on Monday, April 4, 2011 between 9:00 am and 2:00 pm, the average amount of time for crossing bells to be activated was roughly 45 seconds per crossing, or an aggregate total of three minutes for each train to clear all four crossings. The trains are required to sound their horns as they approach any grade crossing, and in EPS's observation each train's horn sounded for about seven seconds at each crossing, or less than 30 aggregate seconds to clear all four crossings. Using this field survey information, EPS has attempted to estimate the additional time during which the horn and bell noise would be experienced by Palo Alto residents. It should be noted that EPS is not an acoustical or environmental engineering firm, and thus is making a "layman's" effort to estimate these particular impacts.

The electrification is expected to increase the number of trains per weekday from 98 to 114, or 16 additional trains. If each location in the impact area can hear the bells at only one of the four grade crossings—which was consistent with EPS's field observations—then each such location will hear the bells for an additional 12 minutes per day (at 45 seconds per crossings times 16 additional trains). This translates into an average of 30 additional seconds per hour each day, above the time already experienced with the bells. The increase will be most pronounced during the three-hour morning peak (6:00 to 9:00 a.m.), when the electrification process will increase

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[10] Caltrain EIR page 3-128.

[11] Caltrain EIR page 3-144 states: "During project operations, the frequency of down crossing gates at grade crossings along the existing railroad alignment would be increased because of the increase in level of service; however, crossing gate down times would be slightly shorter than under the No-Electrification Alternative, since electric trains accelerate and decelerate faster than diesel trains, even with longer train consists." The Caltrain EIR did not provide detail on the duration of current or future gate closures or the number of vehicles delayed (for the circulation impact analysis, discussed below), and the City of Palo Alto also did not have such data available.

the number of trains from the current 27 to 38. These 11 additional trains will add an average of 165 seconds of crossing bell time per hour during the three-hour peak. Even using this peak-hour impact, the crossing bell noise levels would be increased during less than three out of 60 minutes, or less than 5 percent of that peak hour. While an imperfect comparison to be sure, it is worth noting again that the Caltrain EIR indicates the electrification will result in a 5.5 percent reduction in the number of homes currently experiencing "severe" noise impacts from Caltrain operation.

The train horns, which sound for only a few seconds at each crossing, are estimated to be audible for only an additional eight minutes per day (16 more trains times 30 seconds each) even if every sounding of every train is audible at a given location in Palo Alto's impact area. These horn soundings translate to an additional 20 seconds per hour throughout the day, or just under two additional minutes per morning peak hour. Again, this increased horn time represents roughly 3 percent of every hour, even at the peak hours of morning operations.

Translating these additional horn and bell noise impacts into an estimate of net noise impacts in Palo Alto requires several steps. First, the baseline condition must be understood. According to the Caltrain EIR, a sound reading at 4237 Park Boulevard in Palo Alto—a single-family residential property with a backyard that abuts the Caltrain right-of-way—yielded 72.5 decibels average (dBA) over the course of a 24-hour period.[12] It is worth noting that average "day-night" (Ldn) noise levels of 70 dB is considered typical of "urban ambient" noise levels, while 75 dB represents HUD's maximum standards for an acceptable housing environment.[13] Next, the sound levels from the added train horns and bells must be inserted into the equation. The Caltrain horns are estimated to produce 98 dB of sound at a distance of 100 feet directly in front of the trains.[14] Though the train is traveling at speeds that cause the horn to be at its most audible at a given distance for only a moment—at 60 miles per hour, a train moves 88 feet per second, and thus the horn is exactly 100 feet from a given location for only 1/88th of a second—and the horn is louder in front of the train (within the Caltrain right-of-way) than to the sides where impacted properties are located, EPS assumes that the full 98 dB sound is experienced by nearby properties for the entire seven seconds that the horn is blown at each grade crossing. EPS further assumes that the crossing bell generates noise at 83 dB for 45 seconds at 100 feet from each grade crossing.[15] Finally, EPS conservatively assumes that the train's horn at the *previous* grade crossing and the *next* grade crossing will generate roughly 83 dB of noise for seven seconds at a given grade crossing. For instance, EPS assumes that the train horn at the Meadow Drive crossing generates 83 dB of noise at the Charleston Road and the Churchill Avenue crossings.

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[12] Table 3.11-3 of the Caltrain EIR.

[13] "Rail Transit Noise and Vibration" presentation by David A. Towers, P.E., Harris Miller Miller & Hanson, Inc., https://www.commentmgr.com/projects/swne/docs/RailTransitNoiseVibration.pdf

[14] Caltrain "Caltrain Horns Frequently Asked Questions"

[15] Data on the actual noise emitted by crossing bells has not been found. This 83 dB figure is based on EPS's field observation that the crossing bell is roughly twice as loud as the ambient noise level, Decibels are represented as a logarithmic scale, with 10 extra decibels representing a doubling of the perceived noise level. We believe this figure is highly conservative, as VTA crossing bells in Campbell have been set to 75 decibels, the minimum allowed by the California Public Utilities Commission (http://groups.yahoo.com/group/BATN/message/30068).

In each respect, EPS believes these assumptions are conservative, based on our field observations and review of video taken at the study area. Applying these conservative assumptions to a noise estimation formula,[16] EPS has estimated that the train horns and crossing bells required for the 16 additional trains per day would increase the existing noise level by 1.96 decibels, averaged over a 24-hour period. This figure does not account for the reduced noise anticipated in the EIR under the electrification project, compared to the existing condition. As stated earlier, EPS infers from the EIR that the electrification was estimated to reduce overall noise by roughly two decibels excluding the horn and crossing bells. As such, EPS believes it is reasonable to conclude that there will be no significant net impact to noise levels, either positive or negative, as a result of the electrification project and increased service levels. EPS reaches this conservative conclusion despite the EIR's conclusion that the "Electrification Program represents a real reduction in corridor noise."[17] Based on our conclusion, EPS has not estimated any changes to property values or other economic impacts associated with noise level changes.

> ***EPS Conclusion:*** **Noise levels will not be significantly altered after electrification, so no change to property values has been estimated.**

Vibrations

The impacts from train vibrations are more complicated than sound to forecast accurately. Unlike sound, vibrations must travel through soil, rock, and building structures before they reach the receiver. The geological and construction qualities of each of these transmitters diffract vibrations in different ways making effects difficult to predict from place to place or building to building. In addition, impacts from vibrations are typically only felt indoors where people are more likely to notice shaking walls, vibrating floors, and moving objects. Studies of property value impacts have indicated that the effects of vibrations are similar to and related to those of noise, although it is noted that science-oriented operations (e.g., manufacturing or R&D facilities) tend to be more sensitive than other properties to the impacts of vibrations because of the precision and controlled environments required for their activities.[18]

According to Caltrain's EIR for the Electrification Program, the new infrastructure will decrease vibrations from current levels. For the Palo Alto segment (from Redwood City to Mountain View), Caltrain expects 487 fewer single-family residences and 98 fewer multifamily residences to be impacted by vibrations after Electrification; these changes represent a nearly 80 percent

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[16] Average noise level estimation formula accounts for the time at which noise is at various levels, divided by the total time in the sample. In this example, EPS has assumed the "control" noise level is 72.5 decibels, and has increased the overall average by accounting for the time in which additional horns and bell crossings would be heard because of the increase in the number of trains per day. Noise level formula can be viewed at http://personal.cityu.edu.hk/~bsapplec/manipula.htm

[17] Caltrain EIR page 3-133.

[18] Federal Railroad Administration, 2005. *High-Speed Ground Transportation Noise and Vibration Impact Assessment*.

reduction in properties currently impacted by vibrations.[19] By comparison, these vibration improvements are much more significant than the fairly modest noise reductions associated with the trains.

The EIR does not indicate the specific amount of reductions in vibrations at any given location. However, the EIR does indicate that the threshold for experiencing a vibration impact is 72 vibration decibels (VdB), and that 12 locations measured within 150 feet of the rail line along the entire corridor all had vibration readings of 77 VdB or higher. Given the EIR's conclusion that over 80 percent of all currently impacted properties along the corridor and in Palo Alto will be relieved of those vibration impacts through the Electrification Program, EPS believes it is reasonable to assume that the average vibration reduction will be 5 VdB.

Because the impacts of vibrations are related to and difficult to separate from the impacts of noise, EPS has suggested two different methods of estimating the economic impacts of vibration reductions. The first is more conservative, and posits that since there is expected to be no net impact from the noise associated with the electrification, there will be no net impact associated with vibration improvements either. This approach would result in no property value changes associated with the electrification.

The second approach acknowledges that the electrification will yield a particularly positive change in vibrations (more so than noise changes), and aims to capture some of the value of such improvements. As noted earlier, numerous studies have suggested that a 1.0 dB change in noise levels result in roughly a 0.65 percent change in property values. Noise and vibration levels are positively correlated, as the source of one is frequently the source of the other. Applying this 0.65 percent factor to the estimated 5 VdB vibration improvements associated with electrification, EPS estimates that currently impacted property values may be increased by roughly 3 percent.

The total assessed value of 211 residential properties within 100 feet of the rail right-of-way in Palo Alto is $119,742,149.[20] With very few exceptions, the properties within this narrow corridor either back onto the Caltrain right-of-way on the west side, or lie directly across Alma Street to the east. If the residential properties in this narrow Palo Alto corridor realize property value increases of 3 percent as a result of vibration reductions, the aggregate assessed value for the properties will increase by $3,592,294.

Given the uncertainty of the potential outcomes from vibration reductions, EPS believes an appropriately conservative estimation would fall between the two preceding calculations. EPS has therefore assumed that the residential properties within 100 feet of the tracks will gain 1.0 percent in value, or $1.2 million in aggregate property value in Palo Alto. This approach would acknowledge that vibration levels do affect property values (even if they often do so in tandem with noise levels), that significant vibration reductions are expected as a result of electrification, and that the properties most likely to benefit are those that are most immediately proximate to the tracks. As further justification for using something other than the most conservative

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[19] Federal Transit Administration, 2009. *Caltrain Electrification Program: San Francisco to San Jose (MP 0.0 to 52.0) Environmental Assessment/Final Environmental Impact Review.*

[20] These figures are based on the City's property database, from which EPS has calculated the average values per square foot for properties within the impact area transacted within the last five years and applied such values to the average sized home or building within the impact area.

approach, it is worth noting that the EIR has not addressed the vibration changes among commercial or industrial properties, and that such properties may become more marketable to science-oriented tenants who are particularly sensitive to vibrations—a real possibility in the Stanford/Silicon Valley market area.

> ***EPS Conclusion:*** **Significantly reduced vibrations can enhance the assessed values of residences within 100 feet by $1.2 million.**

Circulation

The electrification of Caltrain, if conducted as a stand-alone project separate from High Speed Rail, is not expected to involve any new grade separations or at-grade crossings. Rather, the trains will continue to operate on the existing right-of-way, and the four current at-grade crossings in Palo Alto will continue to operate. As noted earlier, EPS observed that each train that passes causes the crossing gates to close for an average of 45 seconds. The timing appears to be slightly different from one crossing location to another, depending on the speed at which the train is moving. The "baby bullet" trains also appear to involve shorter gate closures, because the trains are moving more quickly through the intersection.

The interruption or re-routing of existing circulation patterns can have economic implications. If vehicles spend more time idling at gate closures, the drivers experience losses of productivity that can be estimated as a function of wage levels plus added costs for fuel. An annual study of national congestion indicates that travel delays in the South Bay in 2009 measured at $18.28 per driver hour, including $16.01 for the value of drivers' time plus $2.27 for excess fuel consumption per hour of delay.[21] EPS believes this $18.28 per-driver-hour cost represents an appropriate factor for estimating the impacts of travel delays and circulation changes, rather than applying a factor to property values, since no properties are expected to be acquired or have their access altered by the Caltrain Electrification Program. Also, these travel delays will affect Palo Alto residents as well as workers and visitors from other communities who are using the Palo Alto streets. As such, EPS believes the travel delay cost approach captures the impacts more holistically, not just for Palo Alto residents or property owners.

The addition of 16 trains per day will mean 16 more times per day that each at-grade crossing will be closed. The EIR acknowledges the concern of increased gate down times impacting vehicular traffic (including emergency vehicle response times), and indicates that Caltrain is pursuing technology that would replace the current "Constant Warning Time" systems with a "Positive Train Control" (PTC) system allowing each gate closure to be shorter in length. At the time the EIR was published, the specific details of the new PTC grade crossing system had not been determined. However, the EIR indicates:

> Overall, it is anticipated that there would be a negligible effect due to project operations on emergency response. There would be no new extensions of railroad right-of-way that would interfere with police, fire, or ambulance response times. During project operations, the frequency of down crossing gates at grade crossings along the existing railroad alignment would be increased due to the increase in level of service, however, crossing

[21] The Texas Transportation Institute at Texas A&M University's "2010 Annual Mobility Report" provides data for metro areas nationwide, including the San Jose area. http://mobility.tamu.edu/ums/congestion_data/tables/sanfr.pdf

gate down times would be slightly shorter than under the No-Electrification Alternative, since electric trains accelerate and decelerate faster than diesel trains, even with longer train consists.

Again in the Air Quality section of the EIR, the document indicates that "there would be no substantial increase in local [pollutant] concentrations [because] vehicle idling times at train crossings can be expected to decrease marginally because electric trains will accelerate and decelerate slightly faster than diesel trains."[22]

Despite this EIR conclusion that circulation impacts from the electrification will be negligible, EPS has endeavored to estimate the maximum potential costs to Palo Alto. EPS has assumed conservatively that each of the 16 added trains per weekday results in 45 seconds of additional gate down time at each of the four at-grade crossings, or a total of 48 additional minutes per day. In EPS's field surveys, we noted that roughly 15 vehicles are delayed at each gate closing. Some of those vehicles are delayed the entire time of the gate closing because they were approaching the gate just as it closed. Other vehicles joined the queue just as the gate was lifting, and thus were delayed only a few seconds. To be conservative, EPS has assumed all 15 vehicles were delayed for the entire 45 second period. The aggregate result is that the 16 added trains each weekday would result in 720 minutes of driver delays each weekday. If these added delays occurred every day of the year—another conservative assumption given that the trains are expected to be increased most on weekdays—the added gate closures would add an aggregate of 4,380 hours of driver delays at the four Palo Alto grade crossings each year. Multiplying this figure by $18.28 per hour of driver delay, the total cost of driver delays is estimated at a maximum of $80,060 per year.

Again, EPS believes this calculation is highly conservative, as it does not reflect Caltrain's intentions to keep aggregate gate down time constant, and it assumes all drivers are affected for the entire length of a gate closure. We also accounted for all vehicles that were stopped at a gate closure, though at several of the grade crossings at least some of the vehicles stopped because of routine traffic lights and thus not all stopped vehicles should be attributed to the train activity.

> ***EPS Conclusion:*** **Added crossing gate closures may cost Palo Alto drivers a maximum of $80,060 in inefficient time and added fuel costs per year.**

Air Quality

Air quality does impact property values, and high income households have a higher willingness to pay to avoid air pollution. A study performed in 1978 titled "Hedonic Housing Prices and the Demand for Clean Air" finds that households are willing to pay more for homes that have better air quality. The results of this study show that, on average, property values increased 0.35 percent for each 1 percent reduction of Nitrogen Oxides, measured in parts per hundred million.[23] However, this value strictly applies to the average. The study also determined willingness to pay for marginal reductions is greater as pollution and income levels increase;

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[22] Caltrain EIR page 3-31.

[23] Harrison, David, Rubinfeld, Daniel L. (1978) "Hedonic Housing Prices and the Demand for Clean Air", Journal of Environmental Economics and Management, 81 – 102.

areas already experiencing high levels of air pollution will pay more to avoid an increase than areas experiencing low levels, and high income households will place a higher premium on good air quality than low income households.

According to the Caltrain EIR, the Electrification Program will decrease air pollutants emitted from the trains by 90 percent, when compared to the emissions that would come from continuing operation of diesel trains. This result is expected despite the fact that more trains are assumed in the Electrification Program than without the project (114 vs. 98 trains per weekday). The significant improvement is due to the fact that the electric locomotives are classified as "zero emission vehicles," and the primary emissions associated with their operation comes from the generation of electrical power at its source (assumed to be within the Bay Area Air Basin) rather than the operation of the train itself.[24]

This reduction in emissions will have a positive impact on the value of properties surrounding the right-of-way. Unfortunately, the data provided in the EIR uses different metrics than are available as applicable factors through EPS's literature review (emission tons per year vs. pollutant parts per hundred million), and EPS has not found a reliable method to convert one metric to the other. Moreover, the major reduction of pollutants associated with the Caltrain operations cannot be assumed to represent the net reduction in the overall air supply, as Caltrain is but one of many contributors to overall air pollution. For these reasons, EPS has been unable to link the air quality improvements to specific property value improvements.

Instead, we offer our professional judgment that (a) properties nearest the Caltrain right-of-way will realize the largest benefit from improved air quality and (b) air quality is only one of several attributes considered in property selection, and is unlikely to alter total housing value by more than a few total percentage points. Indeed, the air quality/property value study cited earlier suggested that even a five-fold increase in Nitrogen Oxides resulted in home price reductions that were only about 20 percent of a family's annual income.[25] For example, a family earning $15,000 per year in 1970 would pay $3,000 less for a home with five times the air pollution (though still within the range of habitability, of course). Applying a simple multiplier that assumes the household could afford to purchase a home costing four times their gross income, this would imply that the household would pay $57,000 for the home with more air pollution versus $60,000 for the home with much less pollution—roughly a 5 percent difference.

Based on these factors, EPS believes it is appropriately conservative to assume that the improved air quality will cause residential properties within 100 feet of the rail right-of-way to increase in value by 0.5 percent (from the current assessed value of $119,743,149). These slight improvements are estimated in addition to the value improvements associated with the reduced vibrations, for which the same homes within 100 feet of the right-of-way were assumed to have a slight value increase. Applying these factors to the City's property database, the aggregate property value increase associated with the air quality improvements is estimated at $598,716.

> ***EPS Conclusion:*** **Improved air quality may enhance the assessed values of residences within 100 feet by an aggregate of $598,716.**

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[24] Caltrain EIR page 3-29.

[25] Harrison, David, Rubinfeld, Daniel L. (1978) "Hedonic Housing Prices and the Demand for Clean Air", Journal of Environmental Economics and Management, 81 – 102.

Aesthetics

Through the electrification project, the OCS wires and poles will be constructed throughout the corridor, some safety barriers will be installed at overpasses, some vegetation will be trimmed to avoid contact with the OCS, and a paralleling station for electrical power will be built near Greenmeadow Way.

The Caltrain EIR indicates that "in general, the introduction of OCS poles and wires within an existing railroad corridor would not constitute a substantial adverse visual change; these types of facilities are consistent with the existing visual quality of the active commuter and freight rail corridor."[26] Furthermore, "the introduction of OCS poles and wires in station areas are not expected to significantly alter the visual experience of station users, and therefore would not have an adverse visual effect to historic and non-historic stations." In addition, the safety barriers "would be added to existing highway infrastructure that dominates the surrounding views and would therefore not constitute a substantially adverse effect on views of the roadway facilities." However, the paralleling station near Greenmeadow Way is acknowledged in the EIR to generate adverse visual impacts, and landscaping is recommended to reduce those impacts as possible.

The aesthetic impacts of the Caltrain project are the most subjective of any factor that EPS is considering in this analysis. Few studies have been completed that exclusively measure the aesthetic impacts of an infrastructure facility on a neighborhood. Also, many of the initial impacts may be temporary as the neighborhood adjusts to new infrastructure and the changing visual environment.

EPS's field surveys of the impact area indicated that the rail corridor already has an industrial quality, with visible utility poles throughout and an electrical substation (roughly nine times the size of the proposed paralleling station) adjacent to the tracks in one location. Moreover, vegetation is prevalent (though not continuous) on both the east and west sides of the right-of-way, providing visual buffers for much of the corridor. The east side of the right-of-way is adjacent to Alma Street for its entire length through Palo Alto, thus providing distances of 75 to 100 feet from the tracks to the nearest private property lines to the east. Finally, the OCS poles are expected to be placed every 180 to 230 feet, and thus will not represent a presence in every backyard or perspective along the right-of-way.

In EPS's opinion, these factors mitigate against the likelihood that the OCS will represent an aesthetic liability that will be capitalized into reduced property values. However, we do believe that the paralleling station at Greenmeadow Way—as proposed, an area of 40 feet by 80 feet with equipment up to 30 to 40 feet tall—will be unattractive and difficult to mitigate, and thus may represent a factor that reduces the values of residential properties in its immediate area. In essence, we agree with the conclusions of the EIR regarding the aesthetic impacts of the electrification project.

Because of their inherently subjective nature, it is difficult to estimate the extent to which an aesthetic change will be reflected in property values. Moreover, the view from a property is only one of many factors that a potential buyer will consider, with issues such as school district quality, proximity to employment centers, building quality and amenities, community safety, and others typically being more important. Finally, the paralleling station will be across several

[26] Caltrain EIR page 3-3.

traffic lanes on Alma Street from any properties that will regularly view the facility, rather than immediately adjacent. For these reasons, EPS believes it is highly conservative to assume that the paralleling station would result in a 5 percent reduction in values for the 11 properties fronting Alma Street within 500 feet of Greenmeadow Way (essentially, between Ely Place and St. Andrew's United Methodist Church), and another eight Palo Alto properties west of the Caltrain right-of-way on Park Boulevard and Whitclem Drive from which the paralleling station *may* be visible. The City's property database indicates that these 19 properties have an aggregate assessed value of $9,501,054, so a 5 percent reduction to these properties' values would decrease their assessed value by $475,000.

> ***EPS Conclusion:*** **The 19 Palo Alto properties from which the paralleling station may be visible from front or back yards may have their properties decrease in assessed value by $475,000.**

Property Acquisition

The Caltrain EIR indicates that no property acquisition will be required in Palo Alto for the electrification project, as the trains will operate on existing tracks and all other facilities and equipment required will be located within Caltrain's existing right-of-way. For this reason, EPS has not estimated any costs associated with displacement caused by property acquisition.

> ***EPS Conclusion:*** **No property acquisition is expected within Palo Alto, so no economic impacts are projected.**

Travel Time Improvements

The EIR indicates that Caltrain commute times will be decreased by as much as eight minutes per trip as a result of electrification, because of faster and more frequent trips. This figure would apply to the longest possible trips, so EPS believes it is fair to assume the average trip length will be reduced by four minutes. For perspective, a local train (not a "limited stop" or "Baby Bullet") from Palo Alto Station to San Francisco takes 60 minutes.

Transit system improvements that result in commuter travel time savings have a positive effect on the value of homes near transit stations. A 2010 study used hedonic price modeling to measure the impact on nearby home values from transit improvement projects on the NJ TRANSIT rail system in 1996, 2002, and 2003 that reduced average commuter travel times. [27] As is expected in Palo Alto, the New Jersey case study train service already existed but service enhancements including speed and frequency had the effect of reducing traveler's commute time. The study found that the average increase in home sales price, for a 12 minute average reduction in travel time to midtown Manhattan, was approximately $23,000 for all homes within two miles of stations. Homes nearest their local station had the highest gains in value. The following table summarizes the value increase per minute reduction in travel time:

[27] Michaelson, Juliette, Zupan, Jeff, Turco, Andrew, and Hebbert, Frank, "The Arc Effect: How Better Transit Boosts Home Values & Local Economies", a July 2010 report by the Regional Plan Association.

Distance from the station	Average increase in home value per minute reduction in trip times	Average increase as a % of median home sale price
0 to 0.5 miles	$2,902	0.6%
0.5 to 1 mile	$1,931	0.4%
1 to 1.5 miles	$1,310	0.3%
1.5 to 2 miles	$882	0.2%
Average (0 to 2 miles)	**$1,959**	**0.4%**

It is worth noting that these results reflect the value of all homes in each area, not just those occupied by transit riders whose commutes are shortened. These value improvements occur because people can and do pay more for a home if they can pay less (in both time and actual dollars) for their commute. And even if the buyer of a Palo Alto home will not take advantage of the travel time savings by actually riding Caltrain, that buyer will compete with others for whom those savings are financially material, thus driving the value of the property higher. Numerous studies of development pricing around the country have proven that transit-served and more commute-accessible locations achieve value premiums, but it is also observable from the simple fact that properties in Palo Alto or other inner-Bay Area communities near job centers have far greater values than physically similar properties (same size, number of bedrooms, etc.) in Brentwood, Tracy, Hollister, etc.

At 0.6 percent increases per minute saved, multiplied by EPS's estimated average of four minutes saved per trip, the study cited would suggest that residential properties within 0.5 miles of a Caltrain station will increase in value by 2.4 percent after electrification. To be conservative, EPS has assumed only a 1.0 percent value increase for those 3,978 Palo Alto residential properties within 0.5 miles, and has not assumed that homes farther from the stations will realize value benefits though the study cited clearly indicates such an assumption could be justified. EPS also has not estimated any improvements for nonresidential property values, though these are likely as well. In aggregate, the residential properties within 0.5 miles of a Palo Alto Caltrain station have a current assessed value of $3.4 billion, and are estimated to increase in value by $34 million as a result of the Electrification Program's improved travel times.

EPS Conclusion: The improved transit travel times from electrification will increase residential property assessed values by $34 million.

Summary of Long-Term Impacts

Applying the findings of relevant academic literature and case studies with adjustments for the specific conditions in Palo Alto, EPS's estimates of impacts associated with various aspects of the Electrification Program are summarized as follows:

Impact Category	Description of Impact	Estimated Economic Impact
Noise	Quieter trains are expected to be offset by more frequent horns and crossing bells.	No net change in assessed values.
Vibrations	Significant reduction in vibrations will improve values for residential properties within 100 feet of the tracks by an estimated 1.0%.	$1.2 million increase in assessed property value.
Air Quality	Property values within 100 feet of the right-of-way increase by 0.5% as train emissions are reduced significantly.	$599,000 increase in assessed property value.
Aesthetics	Properties with front or back yard views of the planned electrical paralleling station at Greenmeadow Way are assumed to have 5.0% value reductions.	$475,000 reduction in assessed property value.
Property Acquisition	No properties will be acquired in Palo Alto.	No net change in assessed values.
Travel Time	Reduced commute times because of faster and more frequent trains will increase property values within ½ mile of a station by 1.0%.	$34 million increase in assessed property value.
Subtotal: Impact on Property Values		***$35.3 million of positive economic impact on Palo Alto property values***
Circulation	More train crossings may be offset by shorter crossing times, but EPS has estimated the maximum possible cost of driver delays as if all new trains add net time.	$80,060 annual cost of driver delay time and excess fuel consumption.

More detail regarding these calculations is provided on **Table 1**. Please note that these estimates are intended to be conservative, meaning that EPS has endeavored to err on the side of greater negative impacts and lesser positive impacts. In each possible case, EPS has assumed a positive impact that is below what was suggested by the literature review and case study findings.

> ***EPS Conclusion: The aggregate assessed value of homes in Palo Alto will increase by over $35 million while delays at grade crossings may create a negative economic impact of $80,000 per year for affected drivers.***

Construction Period Impacts

The Caltrain EIR indicates that the construction period for the entirety of the San Francisco to San Jose line will be approximately three years but would occur at different parts of the track during different periods. Workers will focus on 1- to 2-mile stretches at a time, and installation of infrastructure would require several "passes." An estimated 70 to 80 percent of the installation work requires on-track equipment, and will be performed in the off-peak hours of 9:00 a.m. to 2:30 p.m. Monday through Friday and 5:00 a.m. to 5:00 p.m. Saturday and Sunday.

Circulation

Temporary traffic detours or street closures might be necessary for the installation of OCS poles. Caltrain has agreed to coordinate with local traffic departments as well as home owner associations to mitigate the traffic disruptions as much as possible. Caltrain will also give advance notice to residents, schools, and business owners of construction. Collecting the input of all of these stakeholders will help Caltrain to schedule its work within windows of time that create the least disruption to local businesses and communities.

The presence of construction workers should not require increased demand on local parking facilities. Workers are expected to park on site or on the rail right-of-way, and provisions will be included in contracts to ensure no burdens are placed on local neighborhoods or businesses.

Rail service will be disrupted from time-to-time in order to complete construction. The Caltrain EIR states that these disruptions will be limited to off-peak periods and weekends. Bicycle and pedestrian traffic should not be affected at all as nonmotorized paths are located outside the Caltrain right-of-way.

While interruptions to traffic patterns during construction will certainly be a nuisance, these impacts are not expected to have long-term effects on the community. EPS assumes these short-term impacts will not be capitalized into property values, and therefore no economic effects associated with construction on circulation in Palo Alto have been estimated.

Physical

According to the Caltrain EIR, the installation of OCS facilities does not require the acquisition of any additional properties. Some properties throughout the corridor may be required to construct traction power substations and to connect the substations to the Caltrain line, but none of these sites would be located within the City of Palo Alto. One electrical paralleling station will be built near the Palo Alto/Mountain View border, and EPS has accounted for the aesthetic effects of this facility on nearby residences in the long-term impacts discussion above.

During construction, there will be noticeable aesthetic changes. The installation of the OCS poles will create visual impacts on nearby residences from the presence of a variety of construction equipment, piles of materials, lights, etc. Mitigation efforts, such as focusing lights to limit the amount of spillover light experienced by residents, will be incorporated into the project as much as possible. While the added visual clutter will be an inconvenience for nearby residents and business owners, effects will only be short-term and therefore were not included in estimates of property value impacts.

Job/Expenditure Impacts

The construction period will have positive impacts on communities along the line in the form of new jobs and local spending. According to the Caltrain EIR, the Electrification Program will create 2,200 new construction jobs (person-year equivalents) for the entire San Francisco to San Jose segment. To estimate the impacts on the City of Palo Alto, EPS has converted the total construction jobs into jobs per mile (2,200 job years/51 miles = 43 job years/mile). Applying this factor to the 4.28 miles of the line that are located within Palo Alto City Limit, EPS estimates that the Palo Alto segment will support 184 job years. Assuming workers spend $5 a day locally on food, general merchandise, etc., and that they work for approximately 250 days a year, the net benefit to the City will be $230,000 in added spending.

Fiscal Impacts

A typical fiscal impact analysis for a development project would account for numerous revenue sources as well as numerous costs for municipal services. Revenues typically would include property and sales tax receipts, plus property transfer fees, franchise fees, utility taxes, etc. Costs typically would include staffing and operational expenses for public safety (police and fire), parks and recreation, public works, general administration, etc.

As stated earlier in this document, no net change is expected in the amount or type of development or the demographic composition within the City of Palo Alto as a result of the Caltrain electrification project. Also, the EIR indicates that no impacts are expected to affect the ability of public safety or other municipal workers to provide their services. The physical changes and operational changes are expected to be limited to Caltrain's right-of-way and operations, and will be funded and maintained by Caltrain. As such, the fiscal revenues and costs typically associated with new development are not as relevant for this project.

Property Tax

The preceding analysis does indicate that net improvements to property values are expected as a result of the Caltrain Electrification Program. EPS has estimated that Palo Alto's current property tax base (totaling $22.0 billion in assessed value in 2011[28]) will increase by $35.2 million as a result of the electrification. This figure—which resulted from a series of intentionally conservative assumption—represents only a 0.16 percent increase in total assessed property values in the City. The City General Fund currently receives $25.9 million in property taxes,[29] which represents 0.12 percent of the total assessed value of $22.0 billion. Applying this 0.12 percent share to the $35.2 million value increase, the City can expect to realize $41,500 in additional property tax revenue annually as a result of the Electrification Program.

Sales Tax

The Electrification Program is not expected to affect sales tax receipts at local businesses over the long term, because it is not expected to induce or deter any development that would occur without the electrification. However, during the construction period, there will be workers installing the Caltrain improvements in Palo Alto, and these workers are expected to spend some amount of money in local businesses. As noted above, EPS estimates that Palo Alto businesses will receive a total of $230,000 in local spending from these workers, and that this spending would not occur but for the Caltrain project. Applying the City's share of sales taxes (1.0 percent of total taxable sales),[30] the City would receive $2,300 in added sales tax as a result of the Caltrain Electrification Program. These added revenues would be a temporary gain during the period in which workers were located in Palo Alto, not a long-term adjustment to sales tax receipts.

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[28] County Assessor Annual Report 2010-11.

[29] City of Palo Alto Fiscal Year 2011 Adopted Operating Budget, page 15.

[30] City of Palo Alto sales Tax Digest Summary, Second Quarter Sales (April – June 2010); dated November 8, 2010.

Other Impacts in Palo Alto

In addition to the impacts for property owners and the City's budget, EPS has explored the potential for the Electrification Program to affect the City's jobs/housing balance and student enrollment.

Jobs/Housing Balance

The City of Palo Alto is a "jobs rich" community, in that there are many more jobs located in the City than there are employed residents. According to ABAG's Projections 2009, the City had 97,300 jobs versus 33,510 employed residents, for a ratio of 2.90. If the electrification project were expected to induce new development of either employment uses or residences, the City's jobs/housing balance might be altered. This could occur, for instance, if a new station were being created in an area with large supplies of developable property. Similarly, the jobs/housing balance could be affected if the electrification were to displace existing properties.

The Caltrain EIR indicates that the Palo Alto station has some physical opportunities for both residential development and office development, despite being in a generally built-out urban area.[31] The EIR acknowledges that the electrification project will "improve the environment for more intensive development" throughout the corridor because of air quality and noise improvements, as well as the increased frequency of transit service. Still, the EIR concludes that "these changes are not expected to produce changes in population or housing distribution,"[32] and that "the proposed transportation improvements would have virtually no effect on corridor growth."[33]

EPS agrees with this basic conclusion of the EIR. In EPS's opinion, the electrification project will not *cause* more development to occur in Palo Alto because (a) development approvals are controlled by the local jurisdiction, (b) development intensification is already planned and likely to occur during the project horizon (2035) with or without the electrification, and (c) market values and demand for housing and offices in Palo Alto is sufficiently strong that a marginal improvement associated with Caltrain service is unlikely to fundamentally shift development activity over the long term. The electrification project also will not be acquiring or displacing any Palo Alto properties. EPS concludes that the Caltrain electrification project is unlikely to have a measurable impact on the City's jobs/housing balance.

School District Enrollment

For the reasons described above, EPS does not believe that the electrification project will yield fundamentally different population counts or demographic characteristics in Palo Alto than would occur without the project. As such, EPS does not envision that enrollment in the Palo Alto Unified School District will be affected by the Caltrain electrification project.

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[31] Caltrain EIR page 3-108.

[32] Caltrain EIR page 3-138.

[33] Caltrain EIR page 3-142.

Conclusion

This analysis has aimed to quantify the economic impacts that the Caltrain electrification will have on properties, people, and public services in Palo Alto. The electrification project represents an incremental change in Palo Alto's form and function, as the train service has already existed for many years and the railroad facilities required (right-of-way, tracks, grade crossings, stations, etc.) are largely in place. The study finds that the electrification will have a net positive impact on the community, primarily because the transit service will improve as a result of electrification. More frequent trains and faster travel times to destinations are desirable outcomes of the Electrification Program, and have been shown in studies from comparable areas to enhance property values throughout the community, not just for those residents who actually ride the train. Other desirable outcomes from electrification include quieter trains with lower vibrations and pollution emissions, but the economic impacts of these improvements are modest in comparison to the positive impacts of improved train service. Similarly, the negative externalities of the Electrification Program—visual impacts for properties facing one substantial electrical facility and potentially more travel delays for drivers at grade crossings—are expected to produce modest and marginal economic impacts that are greatly outweighed by the positive impacts of the improved train service. The impacts during the construction period are expected to be modest and temporary, including both the positive impacts of jobs and local spending and the negative impacts of construction noise and disruptions. And EPS concludes that the City's fiscal position, public service operations, jobs/housing balance, and school enrollment will be essentially unaffected by the Caltrain Electrification Program.

In sum, EPS concludes that the Caltrain electrification project will produce net positive but still modest economic impacts in Palo Alto. Numerous other factors—such as school quality and proximity to jobs, academic and cultural resources—will continue to be the primary drivers of Palo Alto's high property values and quality of life, but the Caltrain electrification project and its improvements to local and regional transit service will contribute on balance to a positive economic impact on the Palo Alto community.

City of Palo Alto (ID # 1834)

City Council Rail Committee Staff Report

Report Type: Meeting Date: 6/23/2011

Summary Title: EPS Report - Caltrain & HSR

Title: Economic & Planning Systems Report – Caltrain & High Speed Rail

From: City Manager

Lead Department: City Manager

Executive Summary

Economic & Planning Systems, Inc. (EPS) was retained by the City of Palo Alto to evaluate the possible economic and property value impacts of the proposed Caltrain Electrification Program and the high-speed rail (HSR) line currently being planned by the California High Speed Rail Authority (CHSRA).

This memorandum pertains to the current CHSRA plan to operate HSR along with an electrified Caltrain operation on the Peninsula between San Francisco and San Jose/Gilroy.

Attachments:

- -a: High Speed Rail and Caltrain Electrification in Palo Alto June 7, 2011 (PDF)

Prepared By: Richard Hackmann,

Department Head: James Keene, City Manager

City Manager Approval:

James Keene, City Manager

MEMORANDUM

To: Steve Emslie and Rob Braulik, City of Palo Alto

From: Darin Smith, Catherine Meresak, and Tepa Banda

Subject: The Economic Impacts of High Speed Rail and Caltrain Electrification in Palo Alto; EPS #20119

Date: June 7, 2011

The Economics of Land Use

Economic & Planning Systems, Inc. (EPS) has been retained by the City of Palo Alto to evaluate the possible economic and property value impacts of the proposed Caltrain Electrification Program and the high-speed rail (HSR) line currently being planned by the California High-Speed Rail Authority (CHSRA). An earlier draft memorandum, dated April 12, 2011, addressed the Caltrain Electrification as a stand-alone project, to reflect the possibility that the HSR project will not go forward as currently envisioned. This memorandum pertains to the current CHSRA plan to operate HSR along with an electrified Caltrain operation on the Peninsula between San Francisco and San Jose/Gilroy.

The HSR project is still being planned and its operational and physical characteristics are subject to continuing study and refinement. The Environmental Impact Report for the HSR project is not expected to be released until at least 2012, so detailed calculations or assessments of its impacts are not available at this time. EPS has endeavored to evaluate the project's impacts based on the most current publicly available information, with a limited amount of speculation only where critical information has not been published. In cases where only qualitative information is available, EPS has aimed to describe and differentiate among alternatives in an appropriately qualitative manner.

Summary of Findings

1. The HSR project is being designed to operate as many as 228 trains per day in the Peninsula Corridor. These trains would be in addition to the 114 trains per day planned as part of the Caltrain Electrification Program, bringing the total to as many as 342 trains per day. At present, the Caltrain schedule operates fewer than 100 trains per day, so the future project represents a major increase in train traffic capacity through Palo Alto. Only Caltrain trains would stop in Palo Alto; HSR trains would not have any Palo Alto stops.

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2. The CHSRA has been prioritizing the study of three different vertical alignments for long-term ("permanent") operations, each including different mixes of sub-grade, at-grade and elevated tracks. In addition, an Initial Operating Phase (IOP) alternative is now being considered, in which the HSR vehicles would operate on the existing tracks along with Caltrain for an unspecified period of time, before the ultimate grade-separated alignment is constructed. The key physical characteristics assumed for each alignment alternative in Palo Alto are summarized below:

Scenario	**Alignment Characteristics**
Option A (permanent)	From north to south: At-grade to Palo Alto Caltrain Station, transition to aerial by Homer Avenue, return to at-grade at California Ave Caltrain Station, transition to aerial near Ventura Avenue.
Option B (permanent)	From north to south: Open trench at Palo Alto Ave and Palo Alto Caltrain Station, transition to at-grade between Churchill Ave and California Ave, transition to aerial near Ventura Avenue.
Option B1 (permanent)	HSR and Caltrain operate in a sub-grade but uncovered trench throughout Palo Alto.
Initial Operating Phase	HSR would operate on existing at-grade Caltrain tracks, with no change to current grade crossings or separations.

3. While the specific design and operating attributes of each option surely make a difference in their impact on the Palo Alto community, studies suggest that the enhanced transit service and reduced commuting travel time that can result from the HSR/Caltrain project can significantly enhance property values throughout the City and, in aggregate, may even outweigh any negative externalities affecting properties most proximate to the rail right-of-way.

4. As shown below, Option B1 is expected to have the most positive impacts on Palo Alto, as its noise, vibrations, and aesthetic impacts would be the lowest among the permanent alternatives. This option has the most potential to *increase* local property values compared to existing conditions.

5. Of the permanent options, Option A is expected to have the least positive impacts on Palo Alto, as it will yield the highest noise, vibrations, and aesthetic impacts, each of which may adversely affect local property values. Still, it is possible that, in aggregate, the economic impacts from the Option A project would be positive, as property value reductions would be experienced within close proximity to the rail while value increases associated with improved transit service may be experienced more widely.

6. In EPS's estimation, the "IOP" alternative also would have certain negative impacts on Palo Alto because of the high noise, vibrations, and frequency of traffic closures it would create. Again, however, it is possible that the improved transit service and its effects on property values broadly may outweigh the negative impacts felt at locations close to the tracks.

Impact Category	Description of Impact	Best Impact	Worst Impact
Noise	Increase in number and speed of trains may be offset by quieter trains and elimination of horns and bells at grade crossings.	Option B1	IOP
Vibrations	Vibrations are lowest for open-trench tracks, highest for at-grade.	Option B1	IOP
Circulation	Grade separations for "permanent" alignments should improve existing conditions. IOP would increase train traffic but maintain existing grade crossings.	Options A, B, or B1	IOP
Air Quality	Conversion to electrified trains should reduce emissions vs. current conditions, even with many more trains per day. IOP would increase vehicle idling emissions at grade crossings.	Options A, B, or B1	IOP
Aesthetics	Residential properties with front or back yard views of the aerial track portions are assumed to have 10% value reductions, while commercial properties would have 5% reductions.	Option B1	Option A
Property Acquisition	No private properties are expected to be acquired in Palo Alto, but Option A may affect access to a limited number of properties.	Options B, B1, or IOP	Option A
Travel Time	Reduced commute times because of faster and more frequent trains are assumed to increase property values within ½ mile of a station by 1%.	Any Option	N/A
Overall		***Option B1***	***Option A or IOP***

7. Option B1 is the most expensive alignment alternative, and is likely to take the longest time to construct (with construction noise, aesthetic, and circulation nuisances lasting the longest time), but also should generate the most local spending from construction workers. The IOP would be fastest and least disruptive to implement, but also would generate the least local spending.

8. The HSR project is not expected to have major impacts on the City's fiscal budget or operations. Even the most favorable alignment (Option B1) is expected to increase actual property tax revenues to the City by only about $80,000 per year, and sales tax revenues associated with HSR construction workers are expected to sum to less than $30,000 total over the entire construction period.

9. The HSR project is not expected to affect the City's jobs/housing balance or student enrollment. While major public transit stations have been shown to induce growth in some areas by raising property values and achievable densities, the fact that Palo Alto will not actually serve as a "stop" for HSR trains will eliminate this effect as linked to HSR, and the marginal increase in Caltrain trains that *will* stop at Palo Alto Stations through the electrification project should not in itself lead to major new development in Palo Alto.

10. The design and operating plans for High Speed Rail through Palo Alto may continue to evolve over time. This analysis suggests that the optimal economic outcomes in Palo Alto would be achieved if the system offers the following features:

    a. More frequent train service at higher speeds to reduce travel times for Palo Alto residents and workers, thereby enhancing property values throughout the community

    b. A maximum amount of subgrade tracks (covered, if feasible) to minimize negative noise, vibrations, and aesthetic impacts and potentially improve upon existing conditions

    c. Grade separations at every potential crossing for enhanced safety, vehicular circulation, and reduced noise from horns and crossing bells

Project Documentation and EPS Approach

The CHSRA released a Preliminary Alternatives Analysis Report (PAAR) in April 2010, and a Supplemental Alternatives Analysis Report (SAAR) in August 2010. These documents represent the most complete, but still preliminary, description of the HSR project and its impacts that is currently available. The PAAR and SAAR are focused on the HSR project, but the planned train service through Palo Alto will be a combination of the HSR service and the Caltrain service incorporating the Caltrain electrification improvements. For this reason, EPS has referred to the Federal Transit Administration's Caltrain Electrification Program: San Francisco to San Jose EA/Final EIR (the Caltrain EIR) published in 2009 for a description of the Caltrain project and several of its anticipated impacts.[1] In addition, EPS has referred to other materials available through CHSRA's website, and that of Californians Advocating Responsible Rail Design (CARRD). For the IOP, no material has been published by CHSRA so EPS has relied on an article published in the San Jose Mercury News on May 2, 2011—the most complete written description EPS has seen, but still highly schematic and preliminary.[2] As possible, we have also endeavored to communicate directly with consultants and project managers for the HSR project to ensure that we have the most recent information that is publicly available, or that our speculation regarding project components are reasonable given the level of planning that has occurred to date.

[1] As of May 2011, the Caltrain EIR has not been certified or adopted by Caltrain but represents the most complete description available of the planned service and facilities. EPS has been informed by City of Palo Alto staff that the ultimate project may vary somewhat from that described in the EIR, but such variations have not been described in sufficient detail to be evaluated in this study.

[2] "High-speed rail: Two-track alternative picks up steam in the Bay Area" by Mike Rosenberg, posted 5/2/11 at http://www.mercurynews.com/peninsula/ci_17970647?nclick_check=1

The project is still early in its planning and subject to refinement through continued technical analysis as well as stakeholder input. EPS acknowledges that this analysis would be much improved if information typically contained within an EIR were available, but we have aimed to conduct a credible analysis in the absence of such detailed information. In some respects, EPS has attempted to characterize impacts that are outside of our traditional professional qualifications, such as noise level calculations. Also, the HSR project coordinators have indicated that mitigations are likely to be required (such as for noise impacts), but at this early juncture the nature and effectiveness of those mitigations are unknown. ***EPS believes the information provided herein should be considered as early indicators of the potential project impacts in Palo Alto, and potentially instructive for conversations with CHSRA and project planners, but not definitive of the nature or magnitude of the various impacts identified and explored.***

Project Description

At its full operating capacity, the CHSRA documents indicate that as many as 228 high speed trains will be able to travel between San Francisco and Southern California each day, along a route that includes the existing rail right-of-way through Palo Alto.[3] These trains will be powered by electricity provided through an "overhead contact system" of wires and poles that will also be utilized by Caltrain vehicles. While a "Mid-Peninsula" station location is desired by the CHSRA, the Palo Alto City Council has indicated that they do not support the creation of an HSR station in Palo Alto, so it is expected that these HSR vehicles will not stop in Palo Alto.

Under three "permanent" alignment scenarios, the existing rail right-of-way, which is all at-grade, is expected to be modified so that all existing local roads will be grade separated from the HSR and Caltrain tracks and vehicles. As noted in the summary of findings above, Option A involves at-grade and aerial tracks, with existing local roads diverted as necessary beneath those tracks. Option B transitions from sub-grade, open-trench tracks at Palo Alto's northern end to at-grade and aerial tracks toward the south. Option B1 would involve sub-grade, open-trench tracks through the entire length of Palo Alto's rail right-of-way, with all existing roads passing over the rail line.[4]

A fourth alternative, the IOP, would allow the CHSRA to initiate high-speed train service without the major capital improvements required under Options A, B, and B1. In the IOP scenario, the trains would operate on the existing tracks in the at-grade right-of-way, and the current at-grade crossings would remain in place. The HSR vehicles would share tracks with Caltrain vehicles—both as electrified vehicles—and the two operators could jointly operate a maximum of 12 trains per hour (six in each direction), though the total number of trains per day and the split between HSR and Caltrain trains have not yet been estimated. The purposes of this approach would be

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[3] California High-Speed Rail Authority *Preliminary Alternative Analysis*. "Appendix K. Train Operations" 08, April 2010

[4] As of May, 2011, EPS understands that yet another scenario, "Option B2," has been introduced recently under which sub-grade tracks through Palo Alto (similar to B1) would be covered in certain places. More specific details on this concept have not been published nor presented to EPS, so it is not carried forward for analysis in this study, but is mentioned here as evidence of the continuing evolution of the HSR concepts.

to allow HSR vehicles to reach San Francisco with a minimal capital expense, and to allow growth in travel demand to determine if and when service was expanded and "permanent" realignment occurred.[5]

For any of these scenarios, some new equipment will be installed. The Caltrain EIR indicates that an overhead contact system (OCS) will be installed throughout the rail corridor to provide electrical power to the trains. The OCS consists of poles and wires, with the poles typically being between 30 and 50 feet in height and spaced roughly 180 to 200 feet apart, but on straight tracks (as in most of Palo Alto) the poles may be spaced as many as 230 feet apart.[6] The OCS would be required under any of the four HSR scenarios, but its location and visible scale would vary among the alternatives.

In addition to the OCS, an auto-transformer power feed system must be installed to transmit electricity to the OCS. One of the "paralleling" power stations is shown in the Caltrain EIR as being located within the Caltrain right-of-way near Greenmeadow Way in southern Palo Alto, but its precise location is not final. The paralleling station is expected to require an area roughly 40 feet wide by 80 feet long, and appears to consist of equipment similar to typical urban electrical transformers that are not more than 20 to 30 feet in height.[7] It is not clear how the location or configuration of this paralleling station would be affected under the various HSR alternatives.

Long-Term Impacts

Train service has operated along the Caltrain corridor in Palo Alto for decades, and the existing service already has affected the noise, vibration, aesthetic, and circulation attributes of the Palo Alto community. However, the expected increase in the frequency of trains combined with new train infrastructure creates the potential for impacts on the community that differ from those already experienced in the corridor from existing rail operations.

Below, EPS aims to characterize those changes to the physical and operational impacts as well as the economic impacts on the community that may attend such changes. The HSR project documentation available does not translate the physical or operational impacts into monetary terms, so this EPS study aims to provide relevant information and projections. Numerous studies have explored the influence of infrastructure investments and environmental conditions on property values, and have aimed to differentiate the characteristics of those influences on dimensions such as noise, aesthetics, air quality, etc. Such studies have represented a wide variety of situations, including areas similar to Palo Alto in various ways as well as areas where transit is being introduced (as opposed to being increased) and areas with very different demographic or physical conditions. EPS has aimed to apply findings from the most relevant reports and case studies, many of which are cited below. Where EPS has determined that a positive or negative economic effect is likely to occur, we have aimed to characterize the general magnitude of those effects within the physical area we believe is most likely to be impacted.

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[5] The IOP description is based on discussions with HNTB Corporation project engineers and the San Jose Mercury News article from 5/2/11, available at: http://www.mercurynews.com/peninsula/ci_17970647?nclick_check=1

[6] Caltrain Electrification Program EA/EIR, July 2009, page 2-10

[7] See Figure 2.3-19 of the Caltrain Electrification Program EA/EIR. July 2009.

Noise

In recent years, 98 Caltrain trains have travelled through Palo Alto each weekday.[8] After electrification, the Caltrain EIR indicates that this number will increase to 114 per day, and the HSR documentation indicates that as many as 228 HSR trains will also pass through Palo Alto each weekday. In sum, the number of trains will effectively increase from 98 to 342, an increase of nearly 250 percent.

Each train that passes through Palo Alto generates noise in a variety of ways. The trains themselves generate noise from the engine, the contact with the tracks and vibrations created as well as aerodynamic effects. In addition, any train that crosses a vehicular road without a grade separation must blow its horn as a warning, and also activates crossing gates with bells that also warn and stop vehicles and pedestrians.

Noise for an Individual Train

The PAAR indicates that a train's noise levels will be lowest if the tracks are in an open trench (as in Option B1 and part of Option B), and highest if the tracks are on an aerial structure (as in parts of Options A and B). This conclusion is corroborated by the CHSRA Sound Fact Sheet, which shows that an aerial configuration can add two decibels (dB) compared to an at-grade configuration, while an open trench can subtract five to seven dBs, depending on the train's speed.[9] Finally, the Caltrain EIR indicates that the electrified trains will produce less noise than do the existing diesel trains. Based on this information, the following table shows EPS's comparison of the noise produced *by a given train* as it passes through Palo Alto under the four alignment alternatives:

Scenario	**Alignment and Noise Characteristics per Train**
Option A (permanent)	Aerial tracks for ~60%, and at-grade for ~40%. Among permanent options, noise will be HIGHEST for this option, unless mitigated.
Option B (permanent)	Open trench tracks for ~50%, at-grade for ~25%, and aerial for ~25%. Unmitigated noise will be higher than Option B1, lower than Option A.
Option B1 (permanent)	Open trench for entire length means that noise will be LOWEST for this option.
Initial Operating Phase	HSR would operate on existing at-grade Caltrain tracks, with no change to current grade crossings or separations. Noise would be similar to but slightly less than under existing conditions, due to quieter power cars.

[8] This analysis does not account for any changes to Caltrain service that have been implemented or discussed in response to the current funding shortfalls faced by Caltrain.

[9] Source: CHSRA "Sound Fact Sheet" published 2010. Note that these figures are conservative; the Federal Railroad Administration's 2005 report *High-Speed Ground Transportation Noise and Vibration Impact Assessment* indicates that open-trench tracks may reduce noise levels by 10 to 15 decibels.

Noise from Overall Operations

It is important to estimate the overall noise impacts from future operations in addition to the noise from a given train, because the HSR/Caltrain project would have a total of 342 trains per day compared to only 98 under the recent conditions. EPS is not an engineering firm with established expertise in noise impact estimation, but we have endeavored to conduct a "layman's" analysis of this issue.

Noise dB measure the energy required to produce a certain amount of noise, and also reflect the perception of that noise. Decibels are measured on a logarithmic scale, and an increase of 10 dB equates to a doubling of the perceived noise level (e.g., 90 dB seems twice as loud as 80 dB). One typical measure of noise levels is the 24-hour average (Ldn), accounting for the frequency, duration, and intensity of different noise conditions throughout the day. To estimate the overall noise level under various operating scenarios, it is necessary to make assumptions about the noise levels produced by each train, the length of time of that noise, the number of times per day that noise is produced, and the baseline noise levels when the train is not present.

The Caltrain EIR indicates that the existing noise level at a specific location in Palo Alto—4237 Park Boulevard, a single-family residential property with a backyard that abuts the Caltrain right-of-way—yielded 72.5 decibels average (dBA) over the course of a 24-hour period.[10] As shown on **Table 1**, EPS has reverse-engineered this figure and estimated that when a train goes by, it produces a noise level averaging 90 dB for a period of 15 seconds.[11] When a train is *not* present, EPS estimates the average baseline noise level is 60 dB, a figure typical of a "quiet urban residential" area.[12] These figures thus represent the "existing condition" in EPS's assessment.

[10] Table 3.11-3 of the Caltrain EIR.

[11] According to a noise modeling user guide created for the Federal Railroad Administration, a commuter train diesel locomotive as currently used by Caltrain produces 92 decibels of noise at 50 feet, while the passenger cars in that train produce noise at 82 decibels. "CREATE Railroad Noise Model User Guide" by Harris Miller Miller & Hanson, Inc., 2006; available at http://www.fra.dot.gov/downloads/rrdev/020806%20CREATE%20noise%20model%20user%20guide.pdf

[12] CHSRA "Sound Fact Sheet" published October 2010.

Table 1
Estimated Day-Night Noise Levels under Existing and Potential Conditions
Palo Alto HSR/Caltrain Economic Impact Study; EPS #20119

	Events/Day	Duration/Event (seconds)	Total Time/Day (seconds)	Decibels
Existing Tracks, Diesel Train [1]	98	15	1,470	90.00
Baseline (no train) [2]	Remainder of Day		84,930	60.00
Day-Night Average [3]			*86,400*	***72.55***
At-Grade Tracks, Electric Train [4]	342	15	5,130	85.00
Baseline (no train) [2]	Remainder of Day		81,270	60.00
Day-Night Average [3]			*86,400*	***72.95***
Aerial Tracks, Electric Train [5]	342	15	5,130	87.00
Baseline (no train) [2]	Remainder of Day		81,270	60.00
Day-Night Average [3]			*86,400*	***74.87***
Open Trench Tracks, Electric Train [6]	342	15	5,130	80.00
Baseline (no train) [2]	Remainder of Day		81,270	60.00
Day-Night Average [3]			*86,400*	***68.37***
Initial Operating Phase [7]	240	45	10,800	85.00
Baseline (no train) [2]	Remainder of Day		75,600	60.00
Day-Night Average [3]			*86,400*	***76.06***

[1] EPS estimate based on "reverse-engineering" of existing noise level reading from Caltrain EIR.
[2] 60 decibels represents a standard baseline for "quiet urban residential" areas
[3] Day-Night Average sound is calculated as a logarithmic function of the time per day under various noise conditions.
[4] Caltrain EIR assumes new electric trains will generate 85 decibels of noise in at-grade condition.
[5] Aerial tracks are estimated to add 1-2 decibels vs. at-grade tracks.
[6] Open trench tracks are estimated to subtract 5-7 decibels vs. at-grade tracks.
[7] EPS assumes the IOP would operate 240 trains per day, each of which would produce 85 decibels for 45 seconds, including the attenuated noise from train horns and crossing bells.

Sources: CHSRA Sound Fact Sheet Oct. 2010; Caltrain EIR; EPS

According to the Caltrain EIR, an electric locomotive or a diesel multi unit (DMU) power car produces 85 dB of noise.[13] Caltrain used this figure to represent the noise of a future electrified Caltrain train in an at-grade configuration, and EPS has used it for both HSR and Caltrain trains at-grade. As shown on **Table 1**, even with many more trains per day traveling through Palo Alto, EPS estimates that it is *possible* that overall noise levels will be only very slightly higher than under existing conditions (72.95 vs. 72.55 dB on EPS's chart), even if they are all at-grade (but assuming grade separations for local traffic).

[13] Caltrain EIR page 3-128 suggests that the actual power cars for the electrified trains are likely to be Electric Multiple Units (EMUs) that produce lower noise levels than 85 decibels, but that analysis assumed the 85 dB level because more accurate estimates of EMU noise levels were not available.

Then, adding or subtracting the dB associated with aerial and open-trench configurations, respectively, EPS has estimated the overall noise impacts of those alternatives. As shown, the aerial configuration, combined with the significant increase in the number of trains per day, *may increase* overall noise levels to roughly 75 dBA over a 24-hour period. This level would roughly equal the U.S. Department of Housing and Urban Development's (HUD) maximum standards for an acceptable housing environment (75 dBA).[14] On the other hand, the open-trench configuration *may reduce* noise levels substantially compared to the existing condition, despite the addition of so many trains. The estimated result of 68.4 dBA would be perceived as reducing existing noise levels by roughly 20 percent.

Finally, EPS has attempted to estimate the noise associated with the IOP. In this scenario, the electrified trains would be at-grade throughout Palo Alto, and EPS assumes that the existing four grade crossings would continue to operate. As will be discussed in the "Circulation" section below, EPS assumes that 240 trains per day will be able to operate under the IOP. If each of these 240 trains blows its horn and triggers gate closure bells at each of the four grade crossings in Palo Alto, EPS assumes that the total noise from the train will remain at 85 average dB for 45 seconds at each crossing. **Table 1** indicates that under these assumptions, the IOP would result in an average noise level of roughly 76 dB over a 24-hour period. Because of the longer noise duration associated with horns and bells, this figure is higher than under the three "permanent" alignments which have grade separations and thus eliminate horns and bells.

It is worth noting that noise levels associated with rail operations tend to be fairly localized. According to a Federal Railroad Administration report, the noise level experienced within 29 feet of a railroad track is roughly double that at 60 feet, and four times that at 240 feet.[15] EPS noted this same dynamic during field surveys in Palo Alto—the train noise was significant within 100 feet of the tracks, but barely noticeable at 500 feet. For this reason, EPS expects that the economic impacts—positive or negative—associated with the change in noise levels would be limited to areas within 500 feet of the right-of-way.

Potential Economic Impacts

Numerous studies since 1967 have yielded a general consensus that the average noise depreciation index (NDI) value, measured as a percentage of property value decrease per dB (dB), is roughly between .6 and .7 percent of residential property value. A 1996 study called *The Full Cost of High-Speed Rail* contained a literature review of studies since 1967 that averaged an NDI of .62.[16] EPS's research of additional studies since 1996 corroborates this finding. In 2007, researchers in the United Kingdom found an average NDI of .67 for rail traffic noise,[17] and in 2009, researchers in Sweden estimated a .7 percent value decrease per dB for

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[14] "Rail Transit Noise and Vibration" presentation by David A. Towers, P.E., Harris Miller Miller & Hanson, Inc., https://www.commentmgr.com/projects/swne/docs/RailTransitNoiseVibration.pdf

[15] Federal Railroad Administration, 2005. *High-Speed Ground Transportation Noise and Vibration Impact Assessment*. Table 4-6

[16] Levinson, David, Jean Michel Mathieu, David Gillen, and Adib Kanafani. "The full cost of high-speed rail: an engineering approach." *The Annals of Regional Science*. 31. (1997): 189-215.

[17] Day, Brett, Ian Bateman, and Iain Lake. "Beyond implicit prices: recovering theoretically consistent and transferrable values for noise avoidance from a hedonic property price model." *Environmental & Resource Economics*. 37. (2007): 211-232

rail traffic noise over 55 dB.[18] Given the results of these studies, EPS believes a factor of roughly 0.65 percent per dB change to the property values would be appropriate within the impacted area.

If EPS's overall noise level estimates shown on **Table 1** are indeed indicative of the changes that may occur, it would be reasonable to conclude that those properties near an at-grade segment of the HSR/Caltrain line would have virtually no impact on their property values, while those near an aerial track segment may have their values diminished by roughly 1.5 percent, and those near an open-trench segment may have their values *increased* by roughly 2.7 percent. Under the IOP, the noise impacts and their associated property value impacts may be the worst, with property value reductions of nearly 2.3 percent. Applying these factors to the current assessed values of residential properties within 500 feet of the current tracks would yield the following results[19]:

Table 2
Estimated Property Value Impacts from Noise Impacts
Palo Alto HSR/Caltrain Economic Impact Study; EPS #20119

Option	Alignment	Assessed Value [1]	% Change due to Noise	Result
A	At-Grade	$337,110,455	0.0%	$0
	Aerial	$795,078,225	-1.5%	-$11,926,173
	Total, Option A	$1,132,188,680	-1.1%	**-$11,926,173**
B	Sub-Grade	$606,405,720	2.7%	$16,372,954
	At-Grade	$202,976,521	0.0%	$0
	Aerial	$322,806,439	-1.5%	-$4,842,097
	Total, Option B	$1,132,188,680	1.0%	**$11,530,858**
B1	Sub-Grade	$1,132,188,680	2.7%	**$30,569,094**
IOP	At-Grade	$1,132,188,680	-2.3%	**-$26,040,340**

[1] Current assessed value of residential properties within 500 feet perpendicular to the tracks.

Sources: Santa Clara County Assessor's Data; EPS

Given the uncertainty regarding this analysis, EPS is reluctant to place too great an emphasis on the calculated net property value effects in dollar amounts. However, these findings suggest that Option B1 (all open-trench tracks) would represent the most beneficial noise-related

[18] Andersson, Henrik, Lina Jonsson, and Mikael Ogren. "Property Prices and Exposure to Multiple Noise Sources: Hedonic Regression with Road and Railway Noise." *Environmental & Resource Economics*. 45. (2010): 73-89.

[19] This approach reflects the idea that noise impacts will diminish with distance from the structure, and that commercial properties are less sensitive to environmental conditions such as noise than are residential properties. Debrezion, Ghebreegziabiher, Eric Pels, and Piet Rietveld. "The Impact of Railway Stations on Residential and Commercial Property Value: A Meta-analysis." *The Journal of Real Estate Finance and Economics* (2007) 35:161–180. 19 June 2007

economic result for Palo Alto, while Option A (primarily aerial tracks) would have the most negative noise-related economic impacts among the "permanent" alignment options and the IOP would have the worst noise-related impacts overall due to the added horns and bells.

> ***EPS Conclusion:*** **Option B1 will be the preferred alternative vis-à-vis noise impacts, and may improve upon existing conditions through reduced train noise and elimination of train horns and crossing bells. The IOP may result in the most negative noise-related impacts, and a worsening of noise levels compared to existing conditions.**

Vibrations

The impacts from train vibrations are more complicated than sound to forecast accurately. Unlike sound, vibrations must travel through soil, rock, and building structures before they reach the receiver. The geological and construction qualities of each of these transmitters diffract vibrations in different ways making effects difficult to predict from place to place or building to building. In addition, impacts from vibrations are typically only felt indoors where people are more likely to notice shaking walls, vibrating floors, and moving objects.[20]

According to Caltrain's EIR for the Electrification Program, the new infrastructure will decrease vibrations from current levels. For the Palo Alto segment (from Redwood City to Mountain View), Caltrain expects 487 fewer single-family residences and 98 fewer multifamily residences to be impacted by vibrations after Electrification; these changes represent a nearly 80 percent reduction in properties currently impacted by vibrations.[21] By comparison, these vibration improvements are much more significant than the fairly modest noise reductions associated with the electrified trains.

The HSR SAAR indicates that vibration impacts will be greatest where the tracks are at-grade, while the aerial tracks produce fewer vibrations and the open-trench tracks produce fewer still.[22] EPS has based the following table upon that information:

Scenario	Alignment and Vibration Characteristics per Train
Option A (permanent)	Aerial tracks for ~60%, and at-grade for ~40%. Among "permanent" alignments, vibrations will be highest in this configuration.
Option B (permanent)	Open trench tracks for ~50%, at-grade for ~25%, and aerial for ~25%. Vibrations will be higher than under Option B1, but lower than under Option A or IOP.
Option B1 (permanent)	Open trench for entire length means that vibrations will be LOWEST for this option.

[20] Federal Railroad Administration, 2005. *High-Speed Ground Transportation Noise and Vibration Impact Assessment*. Chapter 6

[21] Federal Transit Administration, 2009. *Caltrain Electrification Program: San Francisco to San Jose (MP 0.0 to 52.0) Environmental Assessment/Final Environmental Impact Review.*

[22] HSR Supplemental Alternatives Analysis Report, August 2010, Table 4-6.

Scenario	Alignment and Vibration Characteristics per Train
Initial Operating Phase	HSR would operate on existing at-grade Caltrain tracks, with no change to current grade crossings or separations. Vibrations for an individual train would be HIGHEST in this scenario, but less than what current trains produce.

Beyond these general conclusions, there is insufficient information available for EPS to determine the extent to which vibrations may be increased or decreased from existing conditions. For example, without knowing *how many* more or fewer vibration dB are generated under one alignment versus another, it is not possible to estimate the net increase or decrease from the overall operations versus existing conditions.

In the absence of this information, EPS cannot estimate the property value impacts associated with changes in vibration levels. However, it is worth noting that studies of property value impacts have indicated that the effects of vibrations are similar to and related to those of noise, although it is noted that science-oriented operations (e.g., manufacturing or R&D facilities) tend to be more sensitive than other properties to the impacts of vibrations because of the precision and controlled environments required for their activities.[23]

> ***EPS Conclusion:*** **Option B1 will be the preferred "permanent" alignment alternative vis-à-vis vibration impacts, and *may* also yield improvements versus existing conditions.**

Circulation

Any of the three "permanent" alignment alternatives for the combined HSR/Caltrain service will eliminate existing at-grade crossings for vehicles and pedestrians. This is important from a safety perspective and for the maintenance of speed for the trains themselves, and also should enhance the circulation within Palo Alto by eliminating the gate closures that in recent years have occurred 98 times per day on four different local streets (Alma Street/Palo Alto Avenue, Churchill Avenue, East Meadow Drive, and Charleston Road).

In each of these three "permanent" alternatives (but not under the IOP), the elimination of grade crossings should allow local traffic to move more quickly and with fewer interruptions. This effect should save drivers on these four streets both time and aggravation or uncertainty. Positive impacts may also be experienced on the other local streets that *already have* grade separations (University Avenue, Embarcadero Road, and Oregon Expressway), as some drivers currently may be using these streets despite the fact that they may not represent the most direct routes, in the interest of avoiding gate closures and delays.

The interruption or re-routing of existing circulation patterns can have negative economic implications, and conversely, the improvement of circulation patterns can have positive economic implications. If vehicles spend more time idling at gate closures, the drivers experience losses of productivity that can be estimated as a function of wage levels plus added costs for fuel. An

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[23] Federal Railroad Administration, 2005. *High-Speed Ground Transportation Noise and Vibration Impact Assessment*.

annual study of national congestion indicates that travel delays in the South Bay in 2009 measured at $18.28 per driver hour, including $16.01 for the value of drivers' time plus $2.27 for excess fuel consumption per hour of delay.[24] EPS believes this $18.28 per-driver-hour cost represents an appropriate factor for estimating the impacts of travel delays and circulation changes, rather than applying a factor to property values. Also, these travel delays will affect Palo Alto residents as well as workers and visitors from other communities who are using the Palo Alto streets. As such, EPS believes the travel delay cost approach captures the impacts more holistically, not just for Palo Alto residents or property owners.

During a field survey on April 4, 2011, EPS observed that each train that passes one of the four grade crossings in Palo Alto causes the crossing gates to close for an average of 45 seconds.[25] The timing appears to be slightly different from one crossing location to another, depending on the speed at which the train is moving. The "baby bullet" trains also appear to involve shorter gate closures, because the trains are moving more quickly through the intersection. EPS further observed that, on average, 15 cars were stopped at the gate closures.

Under current conditions, if 15 cars stop for 45 seconds at each of four gate closures 98 times per day, the drivers of those cars are losing an aggregate of 73.5 hours per day to delay time. If these delays occurred every weekday of the year—a conservative assumption given that the trains also run on weekends, but on a reduced schedule—the gate closures would be responsible for an aggregate of 19,110 hours of driver delays at the four Palo Alto grade crossings each year. Multiplying this figure by $18.28 per hour of driver delay, the total cost of driver delays at current gate closures is estimated at a maximum of $349,305 per year.

The elimination of the gate closures, as envisioned under Options A, B, and B1, would therefore yield a positive benefit of roughly $350,000 to the drivers of Palo Alto. Pedestrian and bicycle circulation would also be enhanced, though insufficient data is available to attempt to quantify the value of those gains. EPS has no basis on which to differentiate further the circulation impacts of the three "permanent" rail alignments.

Under the IOP, the results may be very different. Using the same approach as described above, an increase from 98 trains to some higher number using at-grade crossings would *add* delay costs to Palo Alto drivers. As noted earlier, the total number of trains that would operate under the IOP has not been determined, but EPS understands from the Mercury News article that the project would enable as many as 12 total trains per hour to travel through Palo Alto. At present, Caltrain operates train service through Palo Alto for 20 hours per weekday; the first train through Palo Alto (the 101 Northbound) arrives at California Avenue station at 4:57 AM, and the last train of the day (the 198 Southbound) arrives at California Avenue at 1:01 AM.[26] If the IOP were to

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[24] The Texas Transportation Institute at Texas A&M University's "2010 Annual Mobility Report" provides data for metro areas nationwide, including the San Jose area. http://mobility.tamu.edu/ums/congestion_data/tables/sanfr.pdf

[25] Specific traffic data for Palo Alto was not provided in the HSR SAAR, and EPS has been told by the City that traffic data used in the Caltrain EIR dated from 2004. To check current conditions, EPS observed and recorded video of train and vehicular traffic patterns from roughly 9:00 AM to 2:00 PM on a Monday, with clear skies and no notable events occurring in Palo Alto. EPS acknowledges that this field survey did not capture peak traffic hours, and thus the impacts of current gate closures may be underestimated.

[26] Caltrain's current operating schedule is available at www.caltrain.schedule/weekdaytimetable.html

operate at maximum capacity during those 20 hours, 240 trains per day would utilize the tracks through Palo Alto—not nearly as many as the 342 enabled under the grade-separated scenarios.[27] Such a schedule would result in 240 gate closures per grade crossing per day under the IOP.

Using this schedule assumption and the driver delay time and cost assumptions noted above, the IOP would cause aggregate driver delays of 180 hours per weekday and 31,200 hours per year, at an annual cost of $855,441. This result would represent an addition of roughly $500,000 in annual driver delay costs compared to the existing condition, a 144 percent increase. Note that this analysis, and others in this document regarding the IOP alternative, assumes that the existing grade crossings would remain open. If the increased frequency of gate closures causes those four streets with grade crossings to be closed permanently and traffic is re-routed, the economic impacts to the drivers and properties of Palo Alto could be substantially greater.

> ***EPS Conclusion:*** **Any of the three "permanent" alignment alternatives should have a comparably positive impact on local circulation patterns and efficiency, while the IOP would have a negative impact compared to existing conditions.**

Aesthetics

Under the IOP

According to the Caltrain EIR, the Electrification Program will require that OCS wires and poles be constructed throughout the corridor, some safety barriers be installed at overpasses, some vegetation be trimmed to avoid contact with the OCS, and a paralleling station for electrical power be built near Greenmeadow Way. EPS anticipates that similar results will occur under the IOP scenario for the combined HSR/Caltrain project.

The Caltrain EIR indicates that "in general, the introduction of OCS poles and wires within an existing railroad corridor would not constitute a substantial adverse visual change; these types of facilities are consistent with the existing visual quality of the active commuter and freight rail corridor."[28] Furthermore, "the introduction of OCS poles and wires in station areas are not expected to significantly alter the visual experience of station users, and therefore would not have an adverse visual effect to historic and non-historic stations." In addition, the safety barriers "would be added to existing highway infrastructure that dominates the surrounding views and would therefore not constitute a substantially adverse effect on views of the roadway facilities." However, the paralleling station near Greenmeadow Way is acknowledged in the EIR to generate adverse visual impacts, and landscaping is recommended to reduce those impacts as possible.

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[27] This 240-train schedule assumes that Caltrain/HSR would operate at full capacity throughout the day under the IOP. While this may seem somewhat unlikely, given that Caltrain currently operates many more trains per hour during peak hours than off-peak hours, EPS believes this assumption is consistent with the analysis provided for the other "permanent" alignments. In each of those cases, EPS has assumed the system operates at its full schedule based on its design capacity as mandated under Proposition 1A (speeds, headways, etc.), though demand for 228 trains per day may not materialize and the system may operate well below capacity for many years.

[28] Caltrain EIR page 3-3.

The aesthetic impacts of the Caltrain project are the most subjective of any factor EPS is considering in this analysis. EPS's field surveys of the impact area indicated that the rail corridor already has an industrial quality, with visible utility poles throughout and an electrical substation (roughly nine times the size of the proposed paralleling station) adjacent to the tracks in one location. Moreover, vegetation is prevalent (though not continuous) on both the east and west sides of the right-of-way, providing visual buffers for much of the corridor. The east side of the right-of-way is adjacent to Alma Street for its entire length through Palo Alto, thus providing distances of 75 to 100 feet from the tracks to the nearest private property lines to the east. Finally, the OCS poles are expected to be placed every 180 to 230 feet, and thus will not represent a presence in every backyard or perspective along the right-of-way.

In EPS's opinion, these factors mitigate against the likelihood that the OCS will represent an aesthetic liability that will be capitalized into reduced property values. However, we do believe that the paralleling station at Greenmeadow Way will be unattractive and difficult to mitigate, and thus may represent a factor that reduces the values of residential properties in its immediate area. In essence, we agree with the conclusions of the Caltrain EIR regarding the aesthetic impacts of the Electrification Program.

Because of their inherently subjective nature, it is difficult to estimate the extent to which an aesthetic change will be reflected in property values. Moreover, the view from a property is only one of many factors that a potential buyer will consider, with issues such as school district quality, proximity to employment centers, building quality and amenities, community safety, and others typically being more important. Finally, the paralleling station will be across several traffic lanes on Alma Street from any properties that will regularly view the facility, rather than immediately adjacent. For these reasons, EPS believes it is highly conservative to assume that the paralleling station would result in a 5 percent reduction in values for the 11 properties fronting Alma Street within 500 feet of Greenmeadow Way (essentially, between Ely Place and St. Andrew's United Methodist Church), and another eight Palo Alto properties west of the Caltrain right-of-way on Park Boulevard and Whitclem Drive from which the paralleling station *may* be visible. The City's property database indicates that these 19 properties have an aggregate assessed value of $9,501,054, so a 5 percent reduction to these properties' values would decrease their aggregate assessed value by $475,000.

> ***EPS Conclusion:*** **Under the IOP, the 19 Palo Alto properties from which the paralleling station may be visible from front or back yards may have their properties decrease in aggregate assessed value by $475,000.**

Under the "Permanent" Alignments

Under Options A, B and B1, the aesthetic impacts and their resultant property value impacts are likely to be very different. Each of these "permanent" alignment alternatives will require the installation of OCS equipment, and the addition of two more rail tracks within the corridor. But the vertical alignment alternatives will yield dramatically different perceptions of the train

infrastructure. During this assignment, EPS viewed an animated visualization of the trains as they may be seen from Alma Street in Palo Alto, and reached the following conclusions:[29]

- **Option A** – Under Option A, roughly 60 percent of the tracks through Palo Alto would be on an aerial structure, while the other 40 percent would be at-grade. The at-grade portion would be only marginally different from the existing condition (as noted in the Caltrain EIR), but the aerial configuration would require a major structure running along Alma Street through much of Palo Alto. Most visual representations reviewed by EPS have shown these aerial tracks as an elevated structure held up by large columns, similar to the appearance of BART's elevated tracks in many parts of its service area. While the tracks would be sloping up and down as they transition from at-grade to aerial, in their full aerial configuration they would be roughly 25 to 30 feet above ground, with the trains and OCS equipment located above those levels. The aerial tracks will have the most significant visual impact and will be visible from a distance (unlike the open trench). Because Option A has the largest amount of aerial tracks and no open-trench segments, EPS concludes that this alternative will have the most negative aesthetic impact.

  Several studies have shown that elevated transportation infrastructure can depress property values, and/or that the removal of such elevated infrastructure can enhance property values.[30] However, at least one study has suggested that, contrary to the researchers' expectations, there was no systematic disamenity effect on home prices associated with living near a BART transit line for homes located within a 300-meter corridor along the BART route. [31] That is, there was no significant difference in property value impacts for areas where the BART tracks are on aerial viaducts versus areas where the tracks are completely underground, out of site, and nearly inaudible. This surprising result suggests that, at least in the case of BART, other factors such as demographics, school district quality, etc., play a larger role in setting the value of properties than does the visible presence of transit infrastructure. It is worth noting that in many (but not all) areas, BART's visible infrastructure is incorporated into highway rights-of-way or otherwise physically and visually removed from sensitive receptors.

  While this finding is interesting, it seems inarguable to EPS that rail infrastructure that is less

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[29] The animated visualization had been available through the CHSRA website, but the video had been removed from the website at the time of this writing. The same video remains available on the City of Palo Alto's HSR website, but disclaims that it is "a conceptual model and may not be accurate." (see http://www.cityofpaloalto.org/depts/pln/transportation/high_speed_rail/get_more_information/videos.asp)

[30] Examples include Cervero, Robert, Kang, Junhee and Shively, Kevin (2009) "From Elevated Freeways to Surface Boulevards: Neighborhood and Housing Price Impacts in San Francisco", Journal of Urbanism: International Research on Placemaking and Urban Sustainability, Vol. 2 No. 1, 33 – 50. A review of other such case studies can be found at http://www.seattle.gov/transportation/docs/ump/06%20SEATTLE%20Case%20studies%20in%20urban%20freeway%20removal.pdf

[31] Landis, John, Subhrajit Guhathakurts, and Ming Zhang. "Capitalization of Transit Investments into Single-Family Home Prices: A Comparative Analysis of Five California Rail Transit Systems." *University of California Transportation Center*. 246. (1994)

visible and yields less noise—as in the open trench configuration—would have less negative impact on adjacent property values than an aerial configuration that is both highly visible and produces more noise. As a sensitivity test, EPS has estimated the property value impacts if residential properties that have either front yards (east of the tracks) or back yards (west of the tracks) directly facing the aerial portions of the tracks suffer a 10 percent value reduction, and commercial properties facing the aerial structures are reduced by 5 percent. This approach reflects the idea that aesthetics impacts will diminish with distance from the structure, and that commercial properties are less sensitive to environmental conditions such as noise and aesthetics than are residential properties.[32] It also reflects the fact that property values in Palo Alto are based on numerous factors (school district quality, proximity to jobs, etc.) that are not likely to be affected by the construction of aerial train tracks in parts of the City. Finally, it assumes that the proportionate impact of looking at an aerial track structure will be double that of looking at an electrical paralleling station (10 percent vs. 5 percent), as discussed under the IOP option analysis above. As shown below, these assumptions would result in an aggregate property value reduction of roughly $27 million.

	Properties Facing Future Aerial Tracks in Option A		
	Residential	***Commercial***	***Total***
Affected Properties	324	50	374
Assessed Value	$195,032,448	$151,983,593	$347,016,041
Reduction	10.0%	5.0%	7.8%
Net Change	$19,503,245	$7,599,180	$27,102,424

It is important to note that the construction of aerial tracks may provide certain benefits that cannot be offered with at-grade or open-trench tracks. For instance, areas under elevated BART tracks have been used for linear parks, segregated bikeways, parking resources, etc., and EPS has been informed that CHSRA's policy will encourage "active reuse" under any aerial tracks. Each of these outcomes may be their own assets to the community, functionally and perhaps aesthetically, but EPS has not accounted for any such mitigating factors in the calculations above.

- **Option B** – Option B combines open-trench tracks for roughly 50 percent of its length through Palo Alto, plus another 25 percent each of aerial and at-grade tracks. This alternative will have a more negative aesthetic impact than Option B1, but less negative than Option A. Using the same impact assumptions as for Option A, but applying them to the different geographic area that would be facing aerial structures, the resulting property value reduction is estimated at $10.5 million under Option B.

[32] Debrezion, Ghebreegziabiher, Eric Pels, and Piet Rietveld. "The Impact of Railway Stations on Residential and Commercial Property Value: A Meta-analysis." *The Journal of Real Estate Finance and Economics* (2007) 35:161–180. 19 June 2007

	Properties Facing Future Aerial Tracks in Option B		
	Residential	***Commercial***	***Total***
Affected Properties	195	16	211
Assessed Value	$98,913,023	$13,028,882	$111,941,905
Reduction	10.0%	5.0%	7.8%
Net Change	$9,891,302	$651,444	$10,542,746

- **Option B1** – Under Option B1, the train would operate in an open trench, and the trains and OCS equipment would be visible primarily to people immediately adjacent to the rail right-of-way and/or deliberately looking down into the trench. Option B1 is expected to have very little visual impact, and may be considered by some to be an improvement compared to existing conditions. EPS has assumed that property values will neither be enhanced nor reduced as a result of the aesthetic impacts under Option B1.

  EPS Conclusion: **Among the "permanent" alternatives, Option B1 (100 percent open-trench) should be preferred on aesthetic grounds and may actually improve property values compared to existing conditions, while Option A (60 percent aerial, 40 percent at-grade) will have the most deleterious aesthetic impacts and effects on property values.**

Property Acquisition

While the ultimate design is far from complete, the HSR SAAR provides preliminary indicators of the need to acquire properties for new right-of-way or grade separations, and the extent to which existing properties' access may be affected under each alignment alternative. In some cases, the SAAR (published in August 2010) indicates that traffic lanes on local streets may be reduced. EPS has conferred with the HSR project engineers regarding these indicators, and understands that in all cases, the current expectation is that any property required could be acquired from existing public right-of-way (e.g., along Alma Street) and that the existing functionality of those public streets could be maintained (i.e., no permanent loss of lanes or traffic capacity).[33]

Still, the SAAR suggests that under Option A, the need for a grade separation at Alma Street/Palo Alto Avenue may affect *access* to some unspecified local properties. EPS's inspection of preliminary engineering drawings from September 2010 suggests that the access impact may

[33] Based on multiple conversations with John Litzinger, PE of HNTB Corporation from January to May, 2011. While Californians Advocating Responsible Rail Design (CARRD) had produced some visualizations of potential property acquisitions or impacts associated with certain alignment options involving new roadway underpasses, EPS understands from HNTB that the alignment assumed for those visualizations are no longer under consideration. The CAARD analysis is available at: http://maps.google.com/maps/ms?ie=UTF8&hl=en&t=h&msa=0&msid=109551783740300563211.000488a179c7f7e6b0d2d&ll=37.428388,-122.125311&spn=0.046144,0.104628&z=14

be greatest for a condominium building at the corner of Alma Street and Palo Alto Avenue, for which the required change of grade may make certain turning movements difficult or unsafe. The property would still be accessible from other surface streets.

According to the SAAR, no such access or property impacts would occur under Options B or B1. EPS assumes that under the IOP, the existing right-of-way will be adequate (given that the HSR and Caltrain trains would use the two existing tracks), and thus no property acquisition would be required.

> ***EPS Conclusion:*** **No private property acquisition is expected within Palo Alto under any scenario, but Option A may have a negative access impact on a limited number of properties near the intersection of Alma Street and Palo Alto Avenue.**

Air Quality

Air quality does impact property values, and high income households have a higher willingness to pay to avoid air pollution. A study performed in 1978 titled "Hedonic Housing Prices and the Demand for Clean Air" finds that households are willing to pay more for homes that have better air quality.[34] The study also determined that willingness to pay for marginal reductions is greater as pollution and income levels increase; areas already experiencing high levels of air pollution will pay more to avoid an increase than areas experiencing low levels, and high income households will place a higher premium on good air quality than low income households.

According to the Caltrain EIR, the Electrification Program will decrease air pollutants emitted from the trains by 90 percent, when compared to the emissions that would come from continuing operation of diesel trains. This result is expected despite the fact that more trains are assumed in the Electrification Program than without the project (114 vs. 98 trains per weekday). The significant improvement is due to the fact that the electric locomotives are classified as "zero emission vehicles," and the primary emissions associated with their operation comes from the generation of electrical power at its source (assumed to be within the Bay Area Air Basin) rather than the operation of the train itself.[35]

Even with two or three times as many trains under the HSR/Caltrain operations as under the Caltrain Electrification Program (240 to 342 versus 114), it seems likely that air quality will be improved compared to existing conditions. If the Electrification Program alone reduces emissions to only 10 percent of their current levels, EPS estimates that the combined train service should reduce emissions to roughly 20 to 30 percent of their current levels.

This reduction in emissions will have a positive impact on the value of properties surrounding the right-of-way. Unfortunately, the data provided in the Caltrain EIR uses different metrics than are available as applicable factors through EPS's literature review (emission tons per year vs. pollutant parts per hundred million), and EPS has not found a reliable method to convert one metric to the other. Moreover, the major reduction of pollutants associated with the Caltrain

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[34] Harrison, David, Rubinfeld, Daniel L. (1978) "Hedonic Housing Prices and the Demand for Clean Air", Journal of Environmental Economics and Management, 81 – 102

[35] Caltrain EIR page 3-29.

operations cannot be assumed to represent the net reduction in the overall air supply, as Caltrain is but one of many contributors to overall air pollution. For these reasons, EPS has been unable to link the air quality improvements to specific property value improvements.

Instead, we offer our professional judgment that a) properties nearest the HSR/Caltrain right-of-way will realize the largest benefit from improved air quality and b) air quality is only one of several attributes considered in property selection, and is unlikely to alter total housing value by more than a few total percentage points. Indeed, the air quality/property value study cited earlier suggested that even a five-fold increase in Nitrogen Oxides resulted in home price reductions that were only about 20 percent of a family's annual income.[36] For example, a family earning $15,000 per year in 1970 would pay $3,000 less for a home with five times the air pollution (though still within the range of habitability, of course). Applying a simple multiplier that assumes the household could afford to purchase a home costing four times their gross income, this would imply that the household would pay $57,000 for the home with more air pollution versus $60,000 for the home with much less pollution—roughly a 5 percent difference.

Based on these factors, EPS believes it is appropriately conservative to assume that the improved air quality will cause residential properties within 100 feet of the rail right-of-way to increase in value by 0.5 percent (from the current assessed value of $119,743,149). These slight improvements are estimated in addition to the value improvements associated with the other changes (noise, vibrations, aesthetics, etc.). Applying these factors to the City's property database, the aggregate property value increase associated with the air quality improvements is estimated at $598,716.

EPS has discovered no published information available that can assist in differentiating the air quality impacts among the different alignment alternatives. EPS assumes that each of the three "permanent" alignment alternatives would yield similar air quality results, while the IOP may have some disadvantage due to the number and frequency of cars that would idle at the numerous grade crossings each day.

> ***EPS Conclusion:*** **Under any of the "permanent" alignment alternatives, improved air quality may enhance the assessed values of residences within 100 feet by an aggregate of $598,716.**

Travel Time Improvements

The Caltrain EIR indicates that Caltrain riders' commute times will be decreased by as much as eight minutes per trip as a result of electrification, because of faster and more frequent trips. This figure would apply to the longest possible trips, so EPS believes it is fair to assume the average trip length will be reduced by four minutes. For perspective, a local train (not a "limited stop" or "Baby Bullet") from Palo Alto Station to San Francisco takes 60 minutes.

Transit system improvements that result in commuter travel time savings have a positive effect on the value of homes near transit stations. A 2010 study used hedonic price modeling to measure the impact on nearby home values from transit improvement projects on the NJ

[36] Harrison, David, Rubinfeld, Daniel L. (1978) "Hedonic Housing Prices and the Demand for Clean Air", Journal of Environmental Economics and Management, 81 – 102

TRANSIT rail system in 1996, 2002, and 2003 that reduced average commuter travel times. [37] As is expected in Palo Alto, the New Jersey case study train service already existed but service enhancements including speed and frequency had the effect of reducing traveler's commute time. The study found that the average increase in home sales price, for a 12-minute average reduction in travel time to midtown Manhattan, was approximately $23,000 for all homes within two miles of stations. Homes nearest their local station had the highest gains in value. The following table summarizes the value increase per minute reduction in travel time:

Distance from the station	**Average increase in home value per minute reduction in trip times**	**Average increase as a % of median home sale price**
0 to 0.5 miles	$2,902	0.6%
0.5 to 1 mile	$1,931	0.4%
1 to 1.5 miles	$1,310	0.3%
1.5 to 2 miles	$882	0.2%
Average (0 to 2 miles)	**$1,959**	**0.4%**

It is worth noting that these results reflect the value of all homes in each area, not just those occupied by transit riders whose commutes are shortened. These value improvements occur because people can and do pay more for a home if they can pay less (in both time and actual dollars) for their commute. And even if the buyer of a Palo Alto home will not take advantage of the travel time savings by actually riding Caltrain, that buyer will compete with others for whom those savings are financially material, thus driving the value of the property higher. Numerous studies of development pricing around the country have proven that transit-served and more commute-accessible locations achieve value premiums, but it is also observable from the simple fact that properties in Palo Alto or other inner-Bay Area communities near job centers have far greater values than physically similar properties (same size, number of bedrooms, etc.) in Brentwood, Tracy, Hollister, etc.

At 0.6 percent increases per minute saved, multiplied by EPS's estimated average of four minutes saved per trip, the study cited would suggest that residential properties within 0.5 miles of a Caltrain station will increase in value by 2.4 percent after electrification and homes even two miles away may realize gains of 0.8 percent. To be conservative, EPS has assumed only a 1.0 percent value increase for those 3,978 Palo Alto residential properties within 0.5 miles, and has not assumed that homes farther from the stations will realize value benefits though the study cited clearly indicates such an assumption could be justified. EPS also has not estimated any improvements for nonresidential property values, though these are likely as well. In aggregate, the residential properties within 0.5 miles of a Palo Alto Caltrain station have a current assessed value of $3.4 billion, and are estimated to increase in value by $34 million as a result of the Electrification Program's improved travel times.

[37] Michaelson, Juliette, Zupan, Jeff, Turco, Andrew, and Hebbert, Frank, "The Arc Effect: How Better Transit Boosts Home Values & Local Economies", a July 2010 report by the Regional Plan Association.

EPS assumes that under any of the three "permanent" alignment alternatives and under the IOP, Caltrain commute times would be improved similarly, and thus the property value impacts would be comparable.[38] Please also note that these estimates do not account for any travel time improvements associated with HSR service, and therefore may be additionally conservative.

> ***EPS Conclusion:*** **Under any of the four options being considered, EPS estimates that improved transit travel times will increase residential property assessed values by at least $34 million.**

Summary of Long-Term Impacts

Applying the findings of relevant academic literature and case studies with adjustments for the specific conditions in Palo Alto, EPS's estimates of the comparative impacts associated with the HSR/Caltrain project alternatives are summarized as follows:

Impact Category	Description of Impact	Best Impact	Worst Impact
Noise	Increase in number and speed of trains may be offset by quieter trains and elimination of horns and bells at grade crossings.	Option B1	IOP
Vibrations	Vibrations are lowest for open-trench tracks, highest for at-grade.	Option B1	IOP
Circulation	Grade separations for "permanent" alignments should improve existing conditions. IOP would increase train traffic but maintain existing grade crossings.	Options A, B, or B1	IOP
Air Quality	Conversion to electrified trains should reduce emissions vs. current conditions, even with many more trains per day. IOP would increase vehicle idling emissions at grade crossings.	Options A, B, or B1	IOP
Aesthetics	Residential properties with front or back yard views of the aerial track portions are assumed to have 10% value reductions, while commercial properties would have 5% reductions.	Option B1	Option A

[38] Under the IOP, it is possible that certain Caltrain trains would be displaced by HSR trains due to their need to run on the same tracks. Under such conditions, the IOP may actually reduce the number of trains serving Palo Alto, as HSR trains are not expected to stop in Palo Alto. If this is so, the IOP would not yield the same level of property value benefits as a result of travel time savings, and thus would be a less preferable outcome for Palo Alto. In the absence of more information regarding the IOP and its potential operating schedule (and impacts on Caltrain service), EPS has not assumed such reductions in Caltrain service in Palo Alto.

Impact Category	Description of Impact	Best Impact	Worst Impact
Property Acquisition	No private properties are expected to be acquired in Palo Alto, but Option A may affect access to a limited number of properties.	Options B, B1, or IOP	Option A
Travel Time	Reduced commute times because of faster and more frequent trains are assumed to increase property values within ½ mile of a station by 1%.	Any Option	N/A
Overall		***Option B1***	***Option A or IOP***

Construction Period Impacts

The HSR SAAR has limited information about the construction period impacts for the HSR project. For instance, it does not indicate how long construction activity would occur within Palo Alto, or how many construction jobs would be created for the project overall that could then be pro-rated for the Palo Alto portion. EPS has been informed that such information will be developed as part of the EIR. From certain data within the SAAR and relevant information from the Caltrain EIR, however, EPS has attempted to characterize and compare the construction period impacts, as discussed below.

Job/Expenditure Impacts

The construction period will have some positive impacts on communities along the line in the form of new jobs and local spending. According to the Caltrain EIR, the Electrification Program will create 2,200 new construction jobs (person-year equivalents) for the entire San Francisco to San Jose segment. This figure corresponded to a capital cost of $785 million for the Caltrain Electrification Program (excluding rolling stock) over its entire 51-mile length.[39] To estimate the impacts on the City of Palo Alto, EPS converted the total construction jobs into jobs per mile (2,200 job years/51 miles = 43 job years/mile) and costs per job year ($785 million/2,200 job years = $356,818 costs/job year). Applying the jobs/mile factor to the 4.28 miles of the line that are located within Palo Alto City Limit, EPS estimates that the Palo Alto segment of the Caltrain Electrification Program will support 184 job years.

The HSR/Caltrain project is much more expensive than the Caltrain Electrification Program, and should produce more construction period jobs. The Caltrain Electrification Program will cost roughly $15.5 million per mile, or roughly $66 million in the Palo Alto segment. By contrast, the HSR SAAR indicates that the costs for Option A in Palo Alto will sum to $251 million, or roughly $59 million per mile, while Option B will be $497 million and Option B1 will be $765 million.[40] EPS assumes that the IOP project would have the same costs and construction benefits as the

[39] Caltrain EIR Table 2.3-5

[40] HSR SAAR Table 4-6

Caltrain Electrification Program. The following table estimates the total construction worker spending in Palo Alto, assuming that the HSR project will have the same relationship between construction costs and construction jobs as does the Caltrain project, and that workers spend $5 per workday (250 days per year) locally on food, general merchandise, etc.

	Construction Costs in Palo Alto	Job Years Generated	Worker Spending in Palo Alto
Option A	$251 million	703	$878,750
Option B	$497 million	1,393	$1,741,250
Option B1	$765 million	2,144	$2,678,750
IOP	$66 million	184	$230,000

Circulation

The HSR SAAR indicates that most of the construction activity will occur within the existing rail right-of-way, but that acquisition and reconfiguration of some other public right-of-way will also be required. According to project engineers, this will likely involve temporary disruptions to certain local streets, particularly Alma Street. EPS has no further information regarding the length of time of such disruptions, but given the character and expense of each alignment alternative, we would anticipate that the circulation patterns and infrastructure would be most disrupted under Option B1 (open-trench) and least disrupted under the IOP.

While interruptions to traffic patterns during construction certainly will be a nuisance, these impacts are not expected to have long-term effects on the community. EPS assumes these short-term impacts will not be capitalized into property values, and therefore no economic effects associated with construction on circulation in Palo Alto have been estimated.

Physical

According to the Caltrain EIR, the installation of OCS facilities does not require the acquisition of any additional properties. The HSR SAAR similarly indicates that the HSR project will have "low" needs for temporary construction easements under any of the alignment alternatives, and that such easements are most likely to be sought within the existing public right-of-way. The construction activity will create visual impacts on nearby residences from the presence of a variety of construction equipment, piles of materials, lights, etc. Mitigation efforts, such as focusing lights to limit the amount of spillover light experienced by residents, will be incorporated into the project as much as possible. While the added visual clutter will be an inconvenience for nearby residents and business owners, effects will only be short-term and therefore are not included in estimates of property value impacts.

Fiscal Impacts

A typical fiscal impact analysis for a development project would account for numerous revenue sources as well as numerous costs for municipal services. Revenues typically would include property and sales tax receipts, plus property transfer fees, franchise fees, utility taxes, etc. Costs typically would include staffing and operational expenses for public safety (police and fire), parks and recreation, public works, general administration, etc.

As explained later in this document, EPS does not anticipate that the HSR/Caltrain project itself will cause net changes in the amount or type of development or the demographic composition within the City of Palo Alto. Also, the Caltrain EIR indicates that no impacts are expected to affect the ability of public safety or other municipal workers to provide their services, and EPS believes circulation patterns within the City will actually be improved in the permanent HSR scenarios due to the elimination of grade crossings that can delay or re-route public safety vehicles. The physical changes within the rail right-of-way will be funded and maintained by Caltrain and/or CHSRA. As such, the fiscal revenues and costs typically associated with new development are not as relevant for this project.

Property Tax

The preceding analysis does indicate that net improvements to property values are *possible* as a result of the HSR/Caltrain program, but it is also possible that net reductions would occur under certain conditions. For each alignment, EPS has estimated roughly a $34.5 million gain in property values from the improved travel time and air quality. The noise and aesthetic impacts vary significantly among the alignments, with some alignments gaining still more property value while others are estimated to be reduced. The following table sums the various property value impacts that EPS has estimated:

	Summary of Estimated Property Value Impacts (rounded to nearest $0.5 million)				
	Noise	**Aesthetics**	**Air Quality**	**Travel Time**	**Total**
Option A	-$12.0 million	-$27.0 million	+$0.5 million	+$34.0 million	-$4.5 million
Option B	+$11.5 million	-$10.5 million	+$0.5 million	+$34.0 million	+$35.5 million
Option B1	+$30.5 million	$0	+$0.5 million	+$34.0 million	+$65.0 million
IOP	-$26.0 million	-$0.5 million	+$0.5 million	+$34.0 million	+$8.0 million

Because the City receives only a fraction of the property values collected, even a $65 million increase in property values as under Option B1 would generate only about $80,000 of additional property tax revenue to the City annually, whereas the City currently receives a total of

$25.9 million in property taxes annually.[41] As such, EPS believes the fiscal changes associated with property tax increases—or even potential decreases—associated with the HSR project will be fairly negligible.

Sales Tax

The HSR/Caltrain program is not expected to affect sales tax receipts at local businesses over the long term, because it is not expected to induce new development or deter any development that would occur without the project. However, during the construction period, there will be workers installing the rail improvements in Palo Alto, and these workers are expected to spend some amount of money in local businesses. As noted above, EPS estimates that Palo Alto businesses will receive a total of $230,000 to $2.68 million in local spending from these workers, and that this spending would not occur but for the HSR/Caltrain project. Applying the City's share of sales taxes (1.0 percent of total taxable sales),[42] the City would receive $2,300 to $26,800 in added sales tax as a result of the project, with the higher amount resulting from Option B1 and the lower amount from the IOP. These modest added revenues would be a temporary gain during the period in which workers were located in Palo Alto, not a long-term adjustment to sales tax receipts.

Other Impacts in Palo Alto

In addition to the impacts for property owners and the City's budget, EPS has explored the potential for the HSR/Caltrain program to affect the City's jobs/housing balance and student enrollment.

Jobs/Housing Balance

The City of Palo Alto is a "jobs rich" community, in that there are many more jobs located in the City than there are employed residents. According to ABAG's Projections 2009, the City had 97,300 jobs versus 33,510 employed residents, for a ratio of 2.90. If the HSR project were expected to induce new development of either employment uses or residences, the City's jobs/housing balance might be altered. This could occur, for instance, if a new station were being created in an area with large supplies of developable property. Similarly, the jobs/housing balance could be affected if the HSR project were to displace existing properties.

The Caltrain EIR indicates that the Palo Alto station has some physical opportunities for both residential development and office development, despite being in a generally built-out urban area.[43] The EIR acknowledges that the Electrification Program will "improve the environment for more intensive development" throughout the corridor because of air quality and noise

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[41] The Santa Clara County Assessor Annual Report 2010-11 indicates Palo Alto's current tax base in $22.0 billion, while the City's Fiscal Year 2011 Adopted Operating Budget indicates receipt of $25.9 million in property tax revenue. As such, EPS estimates that the City receives an average of 0.12% of assessed property value.

[42] City of Palo Alto sales Tax Digest Summary, Second Quarter Sales (April – June 2010); dated November 8, 2010

[43] Caltrain EIR page 3-108

improvements, as well as the increased frequency of transit service. Still, the EIR concludes that "these changes are not expected to produce changes in population or housing distribution,"[44] and that "the proposed transportation improvements would have virtually no effect on corridor growth."[45]

EPS agrees with this basic conclusion of the Caltrain EIR, and believes it is equally applicable to the HSR project. In EPS's opinion, the Electrification Program will not *cause* more development to occur in Palo Alto because a) development approvals are controlled by the local jurisdiction, b) development intensification is already planned and likely to occur during the project horizon (2035) with or without the HSR project, and c) market values and demand for housing and offices in Palo Alto is sufficiently strong that a marginal improvement associated with Caltrain service is unlikely to fundamentally shift development activity over the long term. The HSR project also will not be acquiring or displacing any Palo Alto properties, nor will HSR have a station in Palo Alto that might serve as a magnet for new development. EPS concludes that the HSR project is unlikely to have a measurable impact on the City's jobs/housing balance.

School District Enrollment

For the reasons described above, EPS does not believe that the HSR project will yield fundamentally different population counts or demographic characteristics in Palo Alto than would occur without the project. As such, EPS does not envision that enrollment in the Palo Alto Unified School District will be affected by the HSR/Caltrain project.

Conclusion

This analysis has aimed to quantify the economic impacts that the HSR/Caltrain project will have on properties, people, and public services in Palo Alto. The study finds that the project *can* have a net positive impact on the community, primarily because the transit service will improve as a result of electrification but also because certain alignments (specifically Options B and B1, featuring sub-grade tracks) can represent improvements to existing noise and aesthetic conditions. More frequent trains and faster travel times to destinations are desirable outcomes of the HSR/Caltrain project, and have been shown in studies from comparable areas to enhance property values throughout the community, not just for those residents who actually ride the train. By contrast, Options A and the IOP may have less net positive impact, or even negative impact, largely due to the noise levels and aesthetic impacts of aerial tracks (in the case of Option A). The impacts during the construction period are expected to be modest and temporary, including both the positive impacts of jobs and local spending and the negative impacts of construction noise and disruptions. And EPS concludes that the City's fiscal position, public service operations, jobs/housing balance, and school enrollment will be essentially unaffected by the HSR/Caltrain project.

[44] Caltrain EIR page 3-138

[45] Caltrain EIR page 3-142

In sum, EPS concludes that the HSR/Caltrain project can best benefit the Palo Alto community by incorporating the following features:

- **More frequent train service at higher speeds to reduce travel times for Palo Alto residents and workers, thereby enhancing property values throughout the community**
- **A maximum amount of subgrade tracks (covered, if feasible) to minimize negative noise, vibrations, and aesthetic impacts and potentially improve upon existing conditions**
- **Grade separations at every potential crossing for enhanced safety, vehicular circulation, and reduced noise from horns and crossing bells**

As the HSR/Caltrain project continues to evolve through design, political, and funding considerations, the study suggests that Palo Alto would be well-served to support a project that incorporates these features, and can result in improvements to existing economic conditions in the Palo Alto community.