ADMINISTRATIVE REPORT

Meeting Date: December 8, 2010

APPROVED BY: _____
Larry A. Patterson, Public Works Dir.

TO: PUBLIC WORKS COMMISSION

DATE: December 3, 2010

SUBMITTED BY: Susanna Chan, Deputy Director (650) 522-7308

SUBJECT: ***TRAIN HORN UPDATE***

RECOMMENDATION: That the Public Works Commission review the information related to train horn noise and provide staff direction on next steps.

BACKGROUND: In summer of 2009, Caltrain relocated train horns from underneath the train to the top of the train to comply with federal safety regulations. The move increased the volume and the range of the sound which generated many complaints from residents along the train corridor. In response to residents' complaints, Caltrain initiated a project to restore the horns to underneath the trains. The project, completed in November 2009, restored the ambient noise level of the horns to prior levels and the horns were in full compliance with all federal regulations.

Complaints about elevated horn noise began again in San Mateo around April of this year and have continued to date. Most of the complaints were attributed to Union Pacific Railroad (UP)'s trains, and a small amount were aimed at Caltrain's trains. Upon receipt of the complaints, the City contacted Caltrain and UP to inquire about any changes in operation. Both have confirmed that there have not been any operational changes that would generate increased horn volumes.

Railroad operation is regulated by the Federal Railroad Administration (FRA) and California Public Utilities Commission (CPUC). Although the City has no direct jurisdiction over the operation of Caltrain and UP, we are committed to facilitate the communication between our residents and railroad operators. We discussed the train horn issue at the May 12th Public Works Commission meeting, at which time the public had an opportunity to have a direct conversation with a representative from Caltrain. Unfortunately, a representative from UP was unable to attend that meeting. To continue the dialogue with the railroad operators, we rescheduled this item to the December 8 meeting. UP representatives, including Ms. Liisa Stark, Director of Public Affairs, Mr. John Valdez, Director of Terminal Operation, and Mr. Michael Iden, General Director of Cars and Locomotives Engineering, will attend the meeting. Ms. LeeAnn Dickson with the FRA will also attend the meeting and provide a short presentation regarding FRA train horn regulations. Mr. Seamus Murphy with Caltrain will participate in the meeting as well.

The City recently received a series of emails from concerned citizens which raised many questions related to train horn operation. Staff conducted research and requested assistance from UP and Caltrain in responding to citizen concerns. Our responses to the major questions are summarized below.

UP Horn Volume Reduction and Horn Relocation

It is our understanding that UP train horns are located on top of the train and volumes are set at the upper levels of the range stipulated by federal regulation (96 to 110 decibels). We requested that UP lower the horn volume to the minimum federal standard and reposition the horns from the top of the trains to a location underneath the trains (Exhibit A). UP has indicated that they cannot accommodate our request and provided an explanation in a response letter to the City (Exhibit B). UP also provided additional explanations in Exhibit C.

One of the reasons for the denial is that the company does not use a dedicated fleet of locomotives on the Peninsula. Residents will have an opportunity to better understand UP's operation on the Peninsula at the December 8th meeting as Mr. Valdez, Director of Terminal Operation, is responsible for the operation of this area.

Implementation of Quiet Zone

This topic was discussed extensively at the previous meeting and in the follow up memo to the commissioners. The most direct way to establish a "quiet zone" is to implement FRA pre-approved Supplementary Safety Measures (SSM). Pre-approved SSM are: 1) installing a four-quadrant gate system; 2) installing gates with medians or channelization devices so that cars can't access other lanes to cross the track; 3) installing gates on one-way streets to block all approaching lanes to the track; 4) temporary closure of a crossing to traffic during designated quiet periods; or 5) permanently closing the crossing to traffic (including grade separation). Typically the safety improvements are funded by the local communities that request the quiet zone.

The City has conducted research on the costs of implementing SSM. Item 3 does not apply to the City of San Mateo as it involves installation of gates on one-way streets. Items 4 and 5 which require temporary or permanent closure of crossings are not feasible for the City, especially in the downtown area. Grade separations in general are beyond the capability of the City to fund. As a result, our research has been focused on Item 1, four-quadrant gates and Item 2, gates with medians or channelization devices. The following table summarizes the findings:

	Implementation Cost	**Annual Maintenance Cost**	**Pros**	**Cons**
Four quadrant gates	$150,000 - $500,000	$5,000 - $10,000	Most adaptable	High implementation and maintenance cost
Automatic gates with non-mountable curb	$10,000 - $50,000	Minimal	Low implementation and maintenance cost	May impact access to adjacent properties

The automatic gates with non-mountable curb option appears to be the least expensive solution. According to the federal requirement, the median must extend at least 100 feet from the gate arm, or if an intersection is within 100 feet of the gate, at least 60 feet from the gate arm. Some of the at-grade crossings in the City are equipped with gates and medians; the following table summarizes the existing conditions at these crossings:

	West Side of Rail Road Track			East Side of Rail Road Track		
Crossing	**Median?**	**Mountable?**	**Length**	**Median?**	**Mountable?**	**Length**
Villa Terrace	Yes	Yes	44'	Yes	No	32'
Bellevue	Yes	No	41'	Yes	Yes	50'
1st Avenue	No			No		
2nd Avenue	No			No		
3rd Avenue	No			No		
4th Avenue	No			Yes	No	43'
5th Avenue	No			Yes	No	42'
9th Avenue	Yes	No	20'	Yes	No	20'
25th Avenue	No			Yes	No	86'

Based on the evaluation of the existing conditions, there is no crossing within San Mateo that meets federal SSM requirements. Extending the existing medians or installing new medians will affect driveway access or restrict turning movements on streets adjacent to the railroad and may potentially have significant impacts to the traffic circulation in these areas.

Although there is no federal requirement for a city to assume liability for accidents which may occur in a quiet zone, some railroad operators require that cities indemnify them against any claims which arise as the result of quiet zone implementation. It should also be noted that federal regulations do not prevent a lawsuit against the City as the originator of the quiet zone. Currently there is no quiet zone along the Caltrain corridor.

Implementation of Wayside Horns

Wayside horn is a stationary horn system activated by the railroad-street grade warning system, mounted at the crossing, rather than the locomotive, to deliver an audible warning to motorists and pedestrians. Wayside horn is not a SSM, however, it is an acceptable way to reduce train horn noise, as there would no longer be a need for manual sounding of the horn by train operators.

According to our research, the cost to install a wayside horn system ranges from $60,000 to $100,000 at each grade crossing. It may also be necessary to upgrade the signal system to accommodate the wayside horn which will require additional cost. The annual maintenance cost for a wayside horn system is approximately $500 to $1,000.

The federally required volume level for wayside horns ranges from 92 decibels to 110 decibels. Although the minimum level is lower than those equipped on the trains, the areas immediately adjacent to the wayside horns will experience more prolonged sounding.

Ownership of Right of Way, Caltrain's Authority over UP's Operation, and Regulatory Compliance

The train right of way is owned by the Joint Powers Board (JPB), a three-agency partnership (SamTrans, Muni, and Valley Transportation Authority) formed to own and operate Caltrain. Despite owning the right of way, the JPB only has the authority to restrict UP's access to the railroad within specific times for the purpose of operating freight under a condition of the purchase of the right of way from Southern Pacific Railroad in 1992. Governance of issues such as the usage of horns, the decibel levels, and the

manner in which the horns are deployed are the sole province of the FRA. Both Caltrain and UP are subject to the same federal requirements enforced by FRA.

Federal regulations allow a range of decibel level for horn sounding. The regulations do not restrict the location of the horns so long as the minimum sound level and the distinct sound pattern are maintained. It is our understanding that both Caltrain and UP operate the horns within the federally required range.

Possibility of Implementation of Window Replacement Program Similar to the Airport

Staff has investigated the Airport Residential Sound Insulation Program. The program pays for window replacement for qualified homes and is funded through a combination of Federal Aviation Administration (FAA) and airport funds. According to our research, some of the airport funds were allocated for this program as part of the mitigation measures for the airport expansion. In exchange for receiving the funds, homeowners were required to dedicate a navigation easement to the airport. Our research reveals that currently there is no similar program for the railroad.

UP Horn Testing, Horn Specifications, Configuration Details, and Maintenance Inspection Criteria

UP has provided answers to these questions and their responses are included as Exhibit C. The public will have an opportunity to ask questions related to UP operation at the meeting. In addition to Mr. Valdez who is knowledgeable about local freight operation, Mr. Iden, General Director of Cars and Locomotives Engineering, who will be joining the meeting from Chicago, has extensive experience with horn operation.

NEXT STEPS: Public Works staff has devoted a significant amount of resources to the train horn issue. We have thoroughly investigated issues brought to our attention by the community and have been very diligent in facilitating the communication between our residents and the railroad operators. The December 8th meeting will provide residents an opportunity to have a direct conversation with the railroad operators and regulator and establish direct contacts with them. We do not recommend any further action for this issue. If the Commission wishes to request that the City implement wayside horns or the quiet zone, the item can be forwarded to the City Council for further consideration.

NOTICING: A copy of this administrative report was sent to all homeowner associations, in addition to all individuals on the "Concerned Parties" list maintained in the Public Works Department.

EXHIBIT:

- **A.** Letter from City to UP
- **B.** UP Response Letter
- **C.** UP Responses to Train Horn Questions.

c: All Homeowners Associations
"Concerned Parties" list
Project File
Public Works A.R. Binder

Exhibit A

Department of Public Works
Larry A. Patterson, P. E., Director

330 West 20th Avenue
San Mateo, California 94403-1388
Telephone (650) 522-7300
FAX: (650) 522-7301
www.cityofsanmateo.org

July 8, 2010

Mr. Andy Perez
Director Port Affairs/Corporate Relations
Union Pacific Railroad
2401 E. Sepulveda Blvd
Long Beach, CA 90810

Re: ***Request for Train Horn Modifications on Union Pacific Trains***

Dear Mr. Perez:

The City of San Mateo is located in San Mateo County along the San Francisco Peninsula, and is home to three Caltrain stations (Downtown San Mateo, Hayward Park, and Hillsdale Station) and numerous at-grade roadway/rail crossings. There are several areas in San Mateo where the train tracks run in close proximity to densely populated residential neighborhoods. Over the course of the last year, citizens who reside near the train tracks have increasingly complained of loud train horns being sounded very late at night. This letter is meant to initiate discussions between the City of San Mateo and representatives from Union Pacific (UP) with hopes that we can reach a mutually agreeable solution so as to minimally impact UP operations, while providing some relief to our impacted residents.

City staff has researched UP operations and has found that UP provides two train services along the peninsula; one operates from Sunday to Friday and the other from Monday to Friday. Depending on the service needs of a particular day, southbound UP trains begin service as early as 7:30 p.m. and as late as 12:00 a.m. After servicing the peninsula stops, these trains return to the yard in South San Francisco between the hours of 11:00 p.m. to 4:00 a.m.

The City acknowledges that UP train operators are functioning within the applicable federal regulations with respect to use of the horn, and have confirmed with the FRA that current UP horn noise volume is within the permitted range. However, in the interest of providing some relief to residents located in the vicinity of the rail corridor, we request UP consider implementing two changes for trains which serve the peninsula:

1. Lower the horn volume to the minimum federal standard. It is our understanding that UP train horns are currently at the upper levels of the range stipulated by federal regulation; and

2. Reposition the horns from the top of the trains to a location underneath the trains. Caltrain made a similar modification to their locomotives at the request of local cities and impacted residents. This change has resulted in ambient noise levels which are more acceptable to nearby residents, while still being in full compliance with all federal regulations. The peninsula corridor is not a sparsely populated rural area, but rather a dense urban-suburban region; it is unnecessary to position the horn atop the train to provide the needed range of sound.

We understand that UP operates an extensive network and that trains could potentially be dispatched anywhere in the country; however, this probably does not occur on a daily basis. There is likely a core group of trains dedicated to serving the peninsula, and these are the trains we are requesting be modified.

We feel these minor changes will make a noticeable difference in the quality of life for our residents, while still preserving safety in the rail corridor. Please feel free to contact me at any time to at (650) 522-7308 or schan@cityofsanmateo.org. We look forward to discussing this further and thank you in advance for your assistance.

Sincerely,

Susanna Chan
Deputy Director of Public Works

c: San Mateo City Council
Susan M. Loftus, City Manager
Larry Patterson, Director of Public Works
LeeAnn Dickson, Crossing and Trespassing Regional Manager, FRA
Chron/File

Exhibit B
Scan, Chron, File Misc Train Issues

August 6, 2010

Ms. Susanna Chan
Deputy Director of Public Works
City of San Mateo
330 West 20th Avenue
San Mateo, CA 94403-1388

Re: Request for Train Horn Modifications on Union Pacific Locomotives

Dear Ms. Chan:

I appreciated the opportunity to speak with you on the telephone in detail about your request and our operations in the Bay Area.

This letter is in response to your letter of July 8, 2010 requesting that Union Pacific lower the horn volume and move the horn on locomotives used during freight operations on the San Francisco Peninsula.

As you stated in your letter, Federal law governs the volume of train horns. The company acknowledges the appeal of calibrating the horns for the lower end of the range of required decibels, but it would not be feasible to do this because of an increased risk that the horns could drop below the minimum volume between inspections and because a lower volume, although still compliant, would provide less warning of an approaching train. And as a practical matter, the railroad cannot ensure that only locomotives with lower horn calibrations would be used in this area because the company does not use a dedicated fleet of locomotives on the Peninsula.

This last point is also the reason why moving the horns to the bottom of locomotives is not an option. Although locomotives may spend some period of time in one area, they are not dedicated to specific routes and all locomotives are subject to relocation at any time to be used anywhere throughout the 23 states in which we operate. We must maintain consistency within our locomotive fleet and cannot move the horn.

Public and employee safety is a core value at Union Pacific, and we are adhering to the Federal standards on sounding the horn at all crossings. To address your concerns, I recommend that the city consider investigating the feasibility of establishing a Quiet Zone to eliminate the use of horns at crossings. In the meantime, I have also attached a copy of "Horn Signals: A Proven Safety Precaution" as additional information.

Please feel free to contact me at any time at (562) 490-7051 or aperez4@up.com

Sincerely,

Andy Perez

cc: LeeAnn Dickson, Crossing & Trespassing Regional Manager (FRA)

Andy Perez
Director Port Affairs

UNION PACIFIC RAILROAD COMPANY
2401 E. Sepulveda Blvd., Long Beach, CA 90810
Ph. (562) 490-7051 Fx. (562) 490-7119

Horn Signals: A Proven Safety Precaution

Our 16th President Abraham Lincoln signed the Pacific Railway Act in 1862. With the stroke of a pen he made the dream of a railroad spanning the nation a reality. President Lincoln knew that moving goods and people by train would help unite our nation. That dream is very much alive today.

In the 21st Century, moving freight by train is one of the most environmentally friendly and safest ways to get products and goods from one location to another. The average freight train takes approximately 300 semi-trucks off the road. And, operating a safe and efficient railroad is the core value of Union Pacific. Assuring safety for the public, our customers and our employees, is something we do 24/7.

Part of that safety is sounding the train horn for every highway-rail grade crossing. This train borne warning device is used to warn the public that a train is approaching.

The Federal Railroad Administration (FRA) requires that the horn be sounded 15-20 seconds prior to the locomotive occupying the crossing. Also, locomotive engineers have authority to sound the horn whenever he or she feels there is a safety concern, such as someone walking along the tracks or disregarding safety signs and signals.

The volume of the horn is also regulated by the FRA. Each locomotive horn must be in compliance with Federal regulations.

If you would like more information on FRA's *Final Rule on the Use of Locomotive Horns at Highway/Rail Grade Crossings* which went into effect on June 24, 2005, please visit: http://www.fra.dot.gov/Pages/1318.shtml.

Exhibit C

UP Responses to Train Horn Questions

Horn Testing

UP horns are tested in accordance with standards set by the FRA. In order to provide meaningful results, the testing is done following very strict guidelines, is thorough and comprehensive. Specifically, testing measurements are taken 11 feet from the knuckle of the locomotive at a height of 15 feet from the rail as specified in 49 CFR 229.129. No physical obstructions or sound reflective surfaces can be present within a 200 foot radius of the locomotive during testing. The testing environment must be controlled and must utilize proven and reliable testing methods.

Train horns must be tested in both directions. This means that the front horns and rear horns are tested through separate tests at the same location. Because the horns rely on a common air supply system to function, when tested in the front direction, the measurement is higher than when tested in the rear direction. This means that UP must be certain that all horns are within the federal allowable decibel range. If forward horn volumes test only at near minimum sound levels, then rear horns will be under the volume required by the FRA and UP would not be in compliance.

All horn testing and inspection records are made available to the FRA upon request and are kept and maintained as required by federal law at our headquarters in Omaha, Nebraska.

Horn Specifications

UP utilizes horns provided by manufactures that will operate within the allowable volume range set by the FRA. Horn standards (which must meet a target of performance) are set by manufacturers in accordance with allowable federal regulations. Specifics of horn configuration include air flow at certain pressures, piping and the horn itself. The horn sound volumes are all set within allowable ranges when the railroad receives them from the manufacturer. The horns are pneumatically actuated to either an 'on' or 'off' position, there is no 'setting' of horns by Union Pacific. Hence, horns do not have any control mechanisms which would allow sound volume to be increased or decreased.

While UP acknowledges the appeal of calibrating horns to the extreme lower end of the range of required decibels, in addition to the sound volume noted above with forward and rear horns and the common air supply system, it would not be feasible to do this because of an increased risk that the horns could drop below the minimum volume between inspections and because a lower volume, although still compliant, would provide less warning of an approaching train.

Configuration Details

UP utilizes Nathan Air Chime horns. Specifically, the horns are 3-chime K Series, a horn type reflective of the railroad industry standard. In most cases, the horns are mounted on top of the locomotive cab, with the exception of horns being center mounted on UP's low-horsepower units. Neither of these locations affects horn volumes.

Relocating the horns to the bottom of locomotives is not an option. Although locomotives may spend some period of time in one area, they are not dedicated to specific routes and all locomotives are subject to relocation at any time to be used anywhere throughout the 23 states in which UP operates. We must maintain consistency within our locomotive fleet and cannot move the horn.

In addition, horns are not able to be relocated without large scale modifications and significant cost, which would also invalidate all horn testing approvals received from the FRA.

Maintenance Inspection Criteria

Train horns are inspected and maintained at a maximum of every three years. Each locomotive is also inspected through four scheduled maintenance services annually. During this inspection process, horns are one of many train parts checked for operational use and wear and tear.

UP employees also monitor horn volumes for sound consistencies and compliance with federal regulations and report any issues regarding sound volumes that appear too low or too high. These units are then inspected expeditiously to verify horn volume compliance.

During the maintenance cycle, horn rings are changed out, working horn parts are restored and horns are essentially refurbished to a new state to ensure compliance with federal regulations.