COMMUNITY OUTREACH AND EDUCATION PROGRAM
SOUTHERN CALIFORNIA ENVIRONMENTAL HEALTH SCIENCES CENTER
KECK SCHOOL OF MEDICINE, USC

NATURAL RESOURCES DEFENSE COUNCIL

PACIFIC INSTITUTE

EAST YARD COMMUNITIES FOR ENVIRONMETNAL JUSTICE

CENTER FOR COMMUNITY ACTION AND ENVIRONMENTAL JUSTICE

SAN PEDRO & PENINSULA HOMEOWNERS COALITION

WEST OAKLAND ENVIRONMENTAL INDICATORS PROJECT

ENVIRONMENTAL HEALTH COALITION

COALITION FOR A SAFE ENVIRONMENT

Via U.S. Mail and E-Mail

February 28, 2006

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California Labor and Workforce Development Agency
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Kim Belshé, Secretary
California Health and Human Services Agency
1600 Ninth Street, Room 460,
Sacramento, CA 95814

Re: Need for the State of California to Evaluate 1) Community Health and Safety Impacts; 2) Contribution to Greenhouse Gas Emissions; and 3) External Costs Associated with Health Care That Will Result from the State's Promotion of Expanded International Trade and Goods Movement; Need to Analyze the Costs of Mitigation and Develop Control Plans and Funding Strategies to Address These Impacts in the Goods Movement Action Plan

Dear Secretaries McPeak and Lloyd, Secretary Bradshaw, Secretary Belshe, ARB Chair Sawyer and ARB Executive Director Witherspoon:

On behalf of the undersigned organizations and individuals who are all members of the state's Goods Movement Action Plan's Integrating Work Group, we provide comments on the need for the State of California to fully evaluate community health and safety impacts – beyond air pollution – that will result from its promotion of expanded international trade and goods movement. We also provide comments on external costs of these impacts and the potential costs of mitigation, which should not be the burden of the individual impacted communities or residents. Finally, we provide comments on the need for the state to develop control plans to reduce the health and economic impacts of these impacts. Please note that we are sending via mail CDs containing full articles with the most relevant research findings; the files are too large to send by email.

The need for such an evaluation of Community Health and Safety Impacts is made clear by reading Appendix A of the California Air Resources Board's Emission Reduction Plan (ERP) for Ports and International Goods Movement, which states: *"The Phase I [Goods Movement Action Plan] Report provided a general discussion of the extent of environmental and community impacts of goods movement based on preliminary reports and CARB estimates of port emissions in the South Coast Air Basin (SoCAB). One goal of this report is to provide a more detailed assessment of these environmental impacts, including health impacts, to properly identify potential mitigation strategies. This health impact assessment focuses on the health and attendant economic impacts of air pollution resulting from port-related goods movement throughout the state. Other environmental impacts discussed in Phase I, such as noise and light pollution, traffic-safety concerns, or blight are not within the scope of this analysis [emphasis added]."*

Since the Air Resources Board has concluded that noise and other community impacts are outside its scope of analysis, at least for its emission reduction plan, we respectfully request that the state immediately appoint an agency or commission to conduct this important evaluation and issue a report. The report would evaluate the full range of external costs – health, community and economic impacts, as well as mitigation costs and funding strategies and develop control plans to reduce the impacts.

As background, it is important to understand what we mean by "external costs" of promoting goods movement. We believe Professor David Forkenbrock, director of both the Transportation Research Center and the Public Policy Center at the University of Iowa, sums it up well:

"Though important to the economy, freight transportation creates certain adverse impacts. These impacts are referred to as external costs because they are not borne by those who generate these costs. Placing an appropriate dollar value on external costs is vital to internalizing them; that is, requiring those who generate these costs to compensate society in an amount equal to the external costs. Internalizing external costs makes it possible to return to society an amount equal to the costs one imposes; it also gives a clear signal of the actual full cost of an activity, so that consumption decisions can be made on the basis of this cost.[1]"

We have addressed this letter to the California Secretaries of CalEPA and BTH, who are overseeing development of the Goods Movement Action Plan (GMAP), as well as to ARB leadership, at whose doorstep the requirement to address community noise impacts may land. In addition, we address these comments to the Secretary of the California Labor and Workforce Development Agency, under which is CalOSHA, because there are likely to be serious impacts on workers' health that result from a tripling of trade and goods movement in California, and these impacts must be addressed through appropriate noise controls and hearing conservation programs. The California Economic Strategy Panel is also part of this agency and would likely need to be involved. Finally, we address these comments to the Secretary of Health and Human Services Agency to look at broader health implications of the potential tripling of trade and goods movement through the state, including the state burden of increasing the number of drayage truck drivers and warehouse workers, many of whom do not have health insurance coverage.

Before continuing, we again reiterate our viewpoint that the governor's environmental protection goals – including abatement of community impacts –

[1] Forkenbrock D. External costs of intercity freight truck transportation. Transportation Research Part A 33 (1999) 505-526.

must be finalized *before* a specific plan for goods movement infrastructure expansion is put in place.

Below please find our overall recommendations, with a list of impacts to be addressed. Each impact area is described further below in our letter.

Overall Recommendations:

I. We respectfully request that the State Cabinet Secretaries appoint a commission or agency to conduct a full evaluation of the community health and safety impacts and external costs (non-air pollution) of the state's promotion of international trade and goods movement expansion. (See detailed topics in Section IV below). This would also include reviewing tapes and transcripts of Goods Movement meetings to detail the concerns that have been raised by IWG members and members of the impacted communities.

II. The report (perhaps entitled "Community and Other Impacts of Ports and Goods Movement Impact Reduction Plan") should evaluate health and safety impacts of promoting goods movement expansion (i.e, developing infrastructure to encourage and accommodate a tripling of international trade), evaluate the external costs associated with these impacts, evaluate mitigation or abatement costs, and discuss funding strategies that do not put the mitigation burden on impacted communities. This analysis would include a full review of the current literature on noise health impacts and psychosocial impacts, in the manner as the ARB's Emission Reduction Plan does. It may require having the State take noise/sound level measurements to document problems. The analysis should cover port and rail facilities, such as marine terminals, yards and ICTF's, as well as communities through which freight trains pass. It should include other community impacts that have health outcomes, such as injuries and fatalities (highway and rail).

III. The commission or agency should turn to expert consultants in public health for advice on evaluating noise and other health impacts and to engineering consultants for effective control methods. We suggest that state agencies review the literature and methodologies for calculating external costs to California taxpayers of tripling trade and goods movement in the state and consult public policy expert consultants for advice. With regard to workers, we suggest that CalOSHA be charged with evaluating the impacts of increased international trade and goods movement on the overall health and safety of California's workforce and with developing a Worker Health and Safety Ports and Goods Movement Plan as a section of the larger Community Impacts Plan.

IV. The report should evaluate at least the following impacts and their social costs (externalities), described in greater detail on pages 6-19.

1. **Noise and vibration**
2. **Heavy duty truck and rail accidents**
3. **Pavement deterioration by big-rig trucks**
4. **Congestion from induced traffic (new or expanded freeways)**
5. **Freight trains "bumping" commuter rail trains, delaying commuters**
6. **Worker safety issues (port, truck, rail)**
7. **Hazardous materials incidents and derailments**
8. **Costs of grade crossings**
9. **Stadium lighting**
10. **Contributions of ships, yard equipment, rail and truck transport of freight to greenhouse gas emissions**
11. **External costs of increased health care adding a burden to state's taxpayers**

V. We also request that a series of electronic maps be posted to the CalEPA/ARB/BTH Web sites containing:

- Noise contour maps constructed using GIS, to detail the current and anticipated increase in sound levels resulting from the tripling of trade (Port, freeway, rail, warehouse noise). Many European cities have such noise contour maps.
- Intersections where cities are considering constructing "quiet zones" under Federal Railroad Administration rules.
- A set of electronic maps showing the highways/freeways and other infrastructure expected to be expanded to accommodate increased cargo from the Ports, with notations on the current number of trucks and the anticipated number of trucks in 5/10/20 years.

VI. We request that the State of California conduct research on innovative technologies to reduce noise and vibration levels from goods movement activities, including pavement noise, truck and rail noise and that the findings be included in the impact reduction plan.

VII. The impacts, mitigation costs, and funding strategies should be described in the Goods Movement Action Plan Phase II and the full "Community and Other Impacts of Ports and Goods Movement Impact Reduction Plan") report should be attached as an Appendix to the Goods Movement Action Plan, following the ARB's Emission Reduction Plan.

COMMENTS

Part I. Evaluation of External Costs

Numerous evaluations have been conducted on the external costs of freight transportation. For example:

1) An American professor has looked at accidents, noise, greenhouse gases and air pollution from trucks and rail.[2] [3]
2) Belgian researchers have investigated effects on health, vegetation, greenhouses gases, "wear and tear on roads" and accidents. [4]
3) Lawrence Berkeley Laboratory researchers in Berkeley, CA have looked at energy use and carbon emissions from freight transport.[5]

Part II. Description of the Community and Other Impacts and Why the Goods Movement Action Plan Must Address Each of Them

1. NOISE (AND ACCOMPANYING VIBRATION)

Concerns about noise and vibration have come up at every IWG meeting and every meeting of the Community Impacts & Environmental/Public Health working groups. Although residents describe current impacts as serious (without even considering future freight capacity expansion), the response from the Cabinet secretaries has been that noise issues are to be handled at the local level, through noise ordinances or noise elements in city or county general plans. At a time when the Administration is promoting expanded international trade and goods movement as an economic strategy for California, these community impacts can neither be ignored nor dealt with solely at the local level through city or county general plans, or solely through an individual case-by-case CEQA analysis. They must be recognized at the state level as a statewide issue and a strategy must be developed to reduce their impacts, in the same manner as a state strategy is being developed to deal with air pollution impacts.

a. Studies on the Impacts of Noise Show that Noise Exposure Causes Health and Psychosocial Impacts

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[2] Forkenbrock, 1999.
[3] Forkenbrock D. Comparison of external costs of rail and truck freight transportation. Transportation Research Part A 35 (2001) 321-337.
[4] Beuthe M. et al. External costs of the Belgian interurban freight traffic: a network analysis of their internalization. Transportation Research Part D 7 (2002) 285–301
[5] Schipper L. Energy use and carbon emissions from freight in 10 industrialized countries: an analysis of trends from 1973 to 1992. Transportation Research Part D. Vol. 2, No. 1, pp. 57-76, 1997

Community and occupational health studies show that noise levels from goods movement activities can impact health and quality of life. For example, workers in the rail industry are at risk of noise-induced hearing loss; excessive noise disturbs restorative sleep; elevated noise levels affect children's mental health and classroom behavior, especially if children have an "early biological risk" (such as having been born prematurely); and chronic noise exposure may contribute to the progression of cardiovascular disease.

Several months ago, we sent a CD to the ARB with studies relating to air pollution health impacts, as well as noise and other impacts. As attachments to this letter, we include selected references that demonstrate the impacts of noise, including community and worker impacts. Portions of abstracts from several selected studies are reprinted below to illustrate the causes for concern:

> **a1.** "Noise exposures of rail workers at a North American chemical facility," by P. Landon et al. Am J Ind Med. 2005 Apr;47(4):364-9.
>
> ABSTRACT. "This study found that peak impact sound levels exceeded 140 dB in 17 of 18 samples (94%) with a mean peak sound level of 143.9 dB. Maximum continuous sound levels were greater than 115 dBA in 4 of 18 samples (22%) with a mean maximum sound level of 113.1 dBA. *The study concludes that rail workers are at risk of noise induced hearing loss from high impact noise exposures".* [Emphasis added]
>
> **a2.** "Disturbed Sleep Patterns and Limitation of Noise" by B. Griefahn et al. Noise and Health, Volume 6, Number 22, Jan - Mar 2004, pp. 27-33(7).
>
> ABSTRACT. "Due to the undisputable restorative function of sleep, noise-induced sleep disturbances are regarded as the most deleterious effects of noise. They comprise alterations during bedtimes such as awakenings, sleep stage changes, body movements and after-effects such as subjectively felt decrease of sleep quality, impairment of mood and performance. The extents of these reactions depend on the information content of noise, on its acoustical parameters and are modified by individual influences and by situational conditions. *Intermittent noise that is produced by air traffic, rail traffic and by road traffic during the night is particularly disturbing and needs to be reduced.* Suitable limits are suggested." [Emphasis added]
>
> **a3.** "Ambient neighbourhood noise and children's mental health" by P. Lercher et al. Occup Environ Med. 2002 Jun;59(6):380-6.
>
> "OBJECTIVES: To investigate the relation between typical ambient noise levels (highway, rail, road) and multiple mental health indices of

school children considering psychosocial and biological risk factors as potential moderators. CONCLUSIONS: Exposure to ambient noise was associated with small decrements in children's mental health and poorer classroom behaviour. The correlation between mental health and ambient noise is larger in children with early biological risk".

a4. "Noise burden and the risk of myocardial infarction" by SN Willich et al. Eur Heart J. 2006 Feb;27(3):276-82. Epub 2005 Nov 24.

"AIMS: Chronic noise exposure is associated with adverse pathophysiological effects and may contribute to the progression of cardiovascular disease. We, therefore, determined the risk of noise for the incidence of myocardial infarction. METHODS AND RESULTS: In a case-control study, 4115 patients (3054 men, 56+/-9 years; 1061 women, 58+/-9 years) consecutively admitted to all 32 major hospitals in Berlin with confirmed diagnosis of acute myocardial infarction were enrolled from 1998 to 2001 in the Noise and Risk of Myocardial Infarction (NaRoMI) study. Controls were matched for gender, age, and hospital. In standardized interviews, information was obtained on environmental and work noise annoyance. The sound levels of environmental and work noise were assessed using traffic noise maps as proxy and international standards for workplaces, respectively. In multivariate logistic regression models, the adjusted odds ratios of noise variables were determined. … Environmental sound levels were associated with increased risk in men and women (odds ratios 1.46, 1.02-2.09, P=0.040 and 3.36, 1.40-8.06, P=0.007) … CONCLUSION: Chronic noise burden is associated with the risk of myocardial infarction. The risk increase appears more closely associated with sound levels than with subjective annoyance".

a5. "Neighbourhood inequalities in physical inactivity: the role of neighbourhood attractiveness, proximity to local facilities and safety in the Netherlands" by FJ van Lenthe et al. Soc Sci Med. 2005 Feb;60(4):763-75.

In a study in the Netherlands, residents who lived in neighborhoods with the most traffic-related noise pollution seldom walked or cycled to shops or work. This study is relevant to residents in noise and traffic-related goods movement communities, especially at a time when obesity is becoming such a serious problem. (Odds ratio 0.80, 95% confidence interval 0.66–0.97).[6]

[6] van Lenthe FJ et al. Neighbourhood inequalities in physical inactivity: the role of neighbourhood attractiveness, proximity to local facilities and safety in the Netherlands. Soc Sci Med. 2005 Feb;60(4):763-75.

b. Government Agencies Acknowledge that Transportation Noise is a Problem and They Require Regional Transportation Plans to Address Transport Noise Issues

Studies indicate that: "Community resistance to noise begins somewhere between 55 and 65 dB DNL, with the higher level being the current definition for noise-affected populations applied by both the FAA and the Department of Housing and Urban Development and the lower level suggested by the EPA". *See*: http://books.nap.edu/html/greener_skies/ch4.html Regional Transportation Plans created throughout the state of California are required to address noise issues, and Appendix A has excerpts from the SCAG 2004 Draft RTP PEIR, Section 3.5 on Noise, showing that the noise levels near port, railroad, freight and road operations often exceed the levels cited above.

It is also appropriate for the Goods Movement Action Plan to address noise impacts and their abatement, especially in light of the fact that the Federal Highway Administration and the Federal Railway Administration both address noise issues as part of their mandates (*See* **"**Noise Abatement and Control: An Overview of Federal Standards and Regulations, A CRS Report for Congress" at: http://ncseonline.org/NLE/CRSreports/Risk/rsk-52.cfm?&CFID=10640900&CFTOKEN=91619829

c. Noise Impacts from Goods Movement Activities are More Frequently a Problem in Low-Income, Minority Communities Where Residents Live Close to Ports, Freeways, Rail Yards and Distribution Centers

The state of California has a responsibility to ensure environmental justice. Evidence shows that more low-income, minority residents live near busy roads and that goods movement activities at Ports, on freeways and at rail yards disproportionately impact low income communities (*See* e.g., ARB Emission Reduction Plan statements: *"Neighborhoods near ports, intermodal rail yards and high-traffic corridors suffer disproportionate air pollution impacts as compared to other locations."… "Communities surrounding many goods movement-related facilities where there may be a disproportionate exposure to air pollutants are often economically disadvantaged or ethnically or culturally diverse."*

As examples, the residents along the I-710 Long Beach Freeway and near the East L.A./City of Commerce Rail Yards are predominantly Latino; residents near the Port of Oakland are predominantly African-American.

In addition to air pollution, residents of these communities also experience greater noise exposure, a problem that is certainly not new. For example, in 1999, the Los Angeles *Times* reported on complaints by residents of Commerce and Vernon

about noise from the adjacent rail yards.[7] Noise levels at homes and schools near railyards and other noisy goods movement operations need to evaluated and noise control plans developed.

d. Noise Abatement Measures are Feasible, But The Cost of Abating Noise from Goods Movement Activities is Significant and Must be Considered as a Cost of Promoting Goods Movement in the State

Noise impacting communities near goods movement facilities must be adequately addressed and abated to protect residents. In addition, the full costs of abating these noise impacts must be included in the costs of infrastructure project development as part of the Goods Movement Action Plan.

There are multiple programs underway in Europe and elsewhere to abate the elevated levels of noise from goods movement activities in European communities. We suggest that these be reviewed and that suggested mitigation methods for abating noise – and the costs of implementing them – be included in the State's Goods Movement Action Plan. These include:

- Sound walls;
- window/wall insulation;
- programs to reduce the sound levels produced by locomotives and trains by changing the design and materials used in tracks; and
- pavement changes that can reduce sound levels from highway traffic.

In addition, the State Goods Movement Action Plan must consider as a cost of promoting the expansion of international trade:

- the loss of value of housing from excessive noise (and visual blight) that is created from increased goods movement activities;
- the potential costs of purchasing land in noisy areas to protect residents from excessive sound levels; and
- the costs to cities to create "quiet zones" to allow sleep, which has become a more serious problem recently with a new Federal Railroad Administration rule on sounding train horns.

We request that the State of California work with the Federal Railroad Administration to identify the cities that are considering constructing "quiet zones" under new FRA rules and that a list of these cities – and the costs of the quiet zones – be in the report that is produced.

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[7] Martin, H. and M. Gold. Railing at Noisy Railroads; In Commerce, Vernon and elsewhere, residents say increased train traffic is creating unbearable noise. Some inconvenience is to be expected, rail officials say. Los Angeles Times. November 10, 1999. Page 1.

Below we provide some additional details on concerns, abatement costs and feasibility of controls.

Sound walls

Noise barriers are somewhat effective for reducing highway and rail traffic noise, although questions are often raised about who has responsibility for building these barriers. They should be installed for any highway or rail project that will be expanding goods movement capacity but also increasing local sound levels. "Highway noise barriers typically cost approximately $1 million per linear mile." *See*: http://gulliver.trb.org/publications/millennium/00134.pdf

In 1998 a consultant was hired to analyze impacts of additional train traffic on tracks near homes in Wichita, Kansas. He estimated a cost of between $12-26,000 per home to install noise barriers along the Union Pacific train track where the number of trains passing daily was going to increase. *See*: http://gis.esri.com/library/userconf/proc98/proceed/TO750/PAP708/P708.HTM

Insulation and acoustical windows

The same consulting firm analysis estimated that "acoustical windows or modifications to existing windows can provide up to 10 dBA increased noise reduction. Nominal sound insulation treatment costs are on the order of $10,000-$20,000 per dwelling unit, depending on air-conditioning costs." *See*: http://gis.esri.com/library/userconf/proc98/proceed/TO750/PAP708/P708.HTM

Airports have experience in this area, both with abating noise and finding unique funding strategies: "The Federal Aviation Administration has significant experience with noise abatement programs to reduce exposure to noise, primarily by soundproofing buildings located near airports and by purchasing land to extend airport property (allowing residents and businesses to relocate elsewhere). Federal noise abatement activities are funded by the Airport Improvement Program and Passenger Facility Charge Program, using money collected from fees and taxes on passenger airline tickets". … Through 2001, $408 million had been spent on sound insulation for residential and school buildings around Chicago's O'Hare International Airport." *See*: http://books.nap.edu/html/greener_skies/ch2.html
We suggest that the state evaluate this funding strategy, which is perhaps similar to the concept of a "container fee" in the goods movement world.

Reducing locomotive noise and tire pavement noise

Again, significant research is being conducted in Europe. We refer the state agencies, as a start, to the following Web site for information about European research activities in this area, including research projects called, Silent Freight and Silent Track, funded by the European Union. Their aim was to demonstrate reductions of about 10dB(A) in the noise from a freight train on ballasted track. http://www.isvr.soton.ac.uk/DG/RailwayandVibrationResearch.htm.

See other European research activities:
http://europa.eu.int/comm/research/growth/gcc/projects/in-action-rail.html and
http://europa.eu.int/comm/research/growth/gcc/projects/in-action-rail.html#01

An additional resource on workshops held in Europe in October 2005 is: "Rail Freight Noise Abatement in Europe."
http://www.cer.be/files/Noise%20workshop-160716A.pdf

See also: B. Schulter-Werning. Journal of Sound and Vibration. Research on noise and vibration reduction at DB to improve the environmental friendliness of railway traffic

We also refer the state agencies to the following document on U.S. research on transportation noise: http://gulliver.trb.org/publications/millennium/00134.pdf

Depreciation/loss of value of housing from excessive noise

Several studies have demonstrated that excessive noise lessens the value of housing near the transportation noise sources. The state agencies should incorporate these analyses into their externalities report. *See*, for example:

- "Impact analysis for highways suggests a decrease from 8 to 10% of property values due to noise emissions by road transportation." *See*: http://people.hofstra.edu/geotrans/eng/ch8en/conc8en/ch8c3en.html
- "Existing research has investigated the economic consequences of noise exposure in communities empirically. Several studies have examined the impact of noise on property value, concluding that home prices drop about 0.6 percent per dB of DNL exposure." *See*: http://books.nap.edu/html/greener_skies/ch4.html
- A recent study (2004) evaluated the impact of freight railroad tracks on housing markets. It found an average loss of 5-7% for houses less than 1250 square feet located within 750 feet of a railroad track. The study said that publicity about an anticipated increase in freight train traffic negatively impacted sales price of small homes.[8]

Purchasing land in noisy areas to protect residents from noise

Airports have experience with purchasing land near airports to protect residents from noise exposures. Such purchases and cost estimates could be obtained from airport authorities. *See*, for example: http://www.eltoroairport.org/issues/relocated-town.html

Constructing "quiet zones" to allow sleep in communities with train horn noise

[8] Simons RA and El Jaouhari A. The effect of freight railroad tracks and train activity on residential property values. The Appraisal Journal. Summer 2004: vol 72, Issue 3, pp. 223-234.

Train noise has always been a problem, but apparently a recent Federal Railroad Administration rule has resulted in more sounding of train horns, angering some residents. *See*, for example, a news article called "Sleepless in Bakersfield" at:

http://bakersfield.typepad.com/fired_up/2005/12/sleepless_in_ba.html. The article claims that: "The new rules require locomotive horns to be sounded at all public grade crossings 15 to 20 seconds before entering a crossing, but not more than one-quarter mile in advance. The pattern for blowing the horn must be two long, one short and one long to be repeated until the train clears the crossing. The minimum volume is 96 decibels and the maximum is 110. But some cities that monitor the noise have measured horns blaring at 144 decibels. A typical car stereo is 100 decibels, a rock concert is 120 and a gunshot is 130… Cities can create "quiet zones" along tracks, but it requires years of study and justification, as well investing about $400,000 per intersection to add safety equipment. Further discouraging the creation of quiet zones is the requirement that cities assume liability for accidents at railroad crossings."

Clearly, this situation with regard to "quiet zones" is heightened in communities that have a steady stream of freight trains through them. For example, Congressman Gary Miller's Web site states: *"July 21, 2005 - Making Trains Better Neighbors. More than 50 freight trains a day, some a mile long, pass through Los Angeles, Orange, Riverside and San Bernardino Counties to deliver goods between the rest of the nation and seaports in Los Angeles and Long Beach. By 2020, 135 trains a day are expected to travel through this already-congested region. Although this influx of trade is great for the local economy, it can cause problems for residents, including increased traffic, noise and accidents." See*: http://www.house.gov/garymiller/TrainMitigation.html

We refer the state agencies to the following article: R. Raub et al. "Improving the Quality-of-Life for Residents Living Near Highway-Rail Crossings." Transportation Quarterly Vol. 57 No. 4 Fall 2003 for additional information.

2. HEAVY DUTY TRUCK ACCIDENTS AND RAIL ACCIDENTS

Residents near railyards, Ports and freeways complain of other community impacts besides noise which must be investigated. We detail some of these concerns below.

Truck accidents: The preponderance of heavy duty trucks carrying cargo on many California freeways is a cause for concern for several reasons, including diesel emissions, noise, pavement deterioration, road dust and collisions causing injuries and fatalities. According to CalTrans: *"Large trucks are involved in a disproportional percentage of fatal collisions*." Appendix II has statistics. *See:* http://www.dot.ca.gov/hq/traffops/trucks/trucksize/fs-lcvs.htm

The Long Beach Freeway is often described as having one of the highest volumes of big-rig trucks on the nation's highways. A study by UCLA researchers found

that the freeway traffic consists of 25% big-rig trucks carrying cargo containers to and from the Ports. According to the California Highway Patrol, "50,000 trucks are using I-710 each day and, of these, about 25,000 are port-related. I-710 averages 660 truck-involved accidents a year between Ocean Boulevard and I-5. The CHP further notes that about 6000 accidents take place each year, countywide, which means that I-710 represents about 10% of these accidents".[9]

Rail accidents: A Los Angeles *Times* analysis of census data shows that about half a million people in California live within 1,000 feet of active freight railroad tracks, their numbers growing as new rail-adjacent neighborhoods are added. Those figures do not include light-rail commuter tracks such as the Blue Line[10].

A significant number of accidents happen every year with freight operations, resulting in fatalities. Appendix II has figures on the number of fatalities and injuries in California for both BNSF and Union Pacific (UP) in 2003 and has detailed charts for 2005. These are the figures for 2003: (*See:* http://www.bts.gov/publications/state_transportation_profiles/state_transportation_statistics_2004/html/table_02_10.html

	Incidents	Fatalities	Injuries
California	964	116	664

Freight accidents are expensive in terms of costs to railroad personnel and the public. Professor Fordenbrock at University of Iowa has studied the external costs of freight transportation accidents and concludes: *"In total there were 951 fatalities and 9669 personal injury casualties in 1994 arising from the operations of Class I freight railroads… In summary, Class I freight railroads were involved in accidents that cost society a total of $3,323,980,000 in 1994, and they paid a total of $1,263,000,000 in various kinds of compensation for accidents. The net uncompensated accident cost of freight rail operations in 1994 was therefore $2,060,980,000".*[11] If California were just 10% of this national total, in 1994 costs, the cost to society in uncompensated accident costs of freight rail operations would have been $206,098,000.

3. PAVEMENT DETERIORATION BY BIG-RIG TRUCKS

[9] *See*: Workshop on Highway Safety, I-710 Oversight Policy Committee Minutes. October 29, 2003. Presentation on the Interstate 710 Truck Corridor Safety Project by California Highway Patrol Assistant Chief Art Acevdeo. http://www.gatewaycog.org/I710/20031029opcm.pdf

[10] Liu C and Smith D. Near the Rails, on the Edge; Southland residents near train tracks live with noise, dirt and danger -- and wonder why homes are allowed to be built so close. Los Angeles Times, April 6, 2005. p. B1.

[11] Forkenbrock, 2001.

A document on the CalTrans Web site states that: *"Heavier trucks deteriorate the pavement structure at an accelerated rate. A study at University of Texas found that one big rig pass causes the damage equivalent to 2,000 to 3,000 cars." See* http://www.dot.ca.gov/hq/traffops/trucks/trucksize/fs-lcvs.htm The damage from heavier trucks creates a huge cost to taxpayers that the public needs to understand. The state's analysis should offer predictions of what the cost for repairing pavement deterioration from heavy duty trucks transporting containers will be to California taxpayers over the next 5, 10, and 20 years as the number of big-rig trucks doubles or triples.

4. CONGESTION FROM INDUCED TRAFFIC FROM NEW OR EXPANDED FREEWAYS.

Although BTH, CalEPA, and ARB leaders and staff argue that expanding freeways, building more truck lanes, and building more HOV lanes, etc. will reduce congestion (and thereby emissions), recent published transportation studies are not so definitive and they actually state that it is now accepted that transportation projects typically induce demand for travel and often within a year of the transportation facility expansion. See, for example, these paragraphs from a 2005 report commissioned and published by the widely-respected Transportation Research Board;[12] lengthier sections from the report are reprinted in Appendix III.

> "Within the past decade, transportation professionals have reluctantly accepted that many of the transportation projects that are implemented affect the level of travel demand. Most importantly, following a landmark court case in the San Francisco Bay Area, the existence of induced demand for travel has been recognized and must be dealt with in planning transportation facilities." [Emphasis added]
>
> "Traffic-flow improvements, by definition, improve overall vehicle operating speeds and reduce congestion. Reduced congestion means fewer and less extreme vehicle acceleration and deceleration events for the facility. …
> However, there are second-order effects as well. The higher speeds mean lower travel times. Lower travel times may encourage vehicle drivers to make more trips, make longer trips, and change their mode, route, and time of day for making their trips. These second-order effects usually occur fairly soon (within a year) of the facility improvement. [Emphasis added]
>
> **2.7 CONCLUSION**

[12] See, for example: National Cooperative Highway Research Program, NCHRP Report 535. Predicting Air Quality Effects of Traffic-Flow Improvements: Final Report and User's Guide. Transportation Research Board of the National Academies. 2005. Submitted as a .pdf file. Excerpts in Appendix III.

> This chapter reviewed some of the attempts that have been made to measure induced travel and ideas for measuring induced travel in the future. First, induced and diverted traffic occur as a result of transportation system facility changes. There appears to be no dispute in the profession at this point on this issue; rather, it seems to be widely accepted that such changes occur and need to be estimated. [Emphasis added]

We also believe (from years of collective personal experience in California, from reading historical newspaper accounts, and from reading the transportation literature) that adding additional freeway capacity will induce additional travel demand and that any congestion relief from building new or expanding existing freeways will be short-lived. We urge the state agency leaders and staff to review the latest transportation studies and research and use currently accepted information about congestion relief (or the lack thereof) from transportation improvements in the debates.

5. FREIGHT TRAINS BUMPING COMMUTER TRAINS

Commuter rail lines in some communities, including Los Angeles, share their lines with the Class I railroads. In Los Angeles, a major commuter rail line from Union Station to Riverside runs on a track owned by Union Pacific. Although the railroad is supposed to allow Metrolink trains to have priority during rush hour, delays routinely happen when freight trains are in the way. In May 2005, commuters had to wait two hours for Union Pacific trains to clear the tracks.[13] In 2006, the delays were becoming more regular[14]. The Los Angeles *Times* reports that mass transit ridership on the line has decreased as a result of the conflicts and delays. This inconveniences commuters and, of course, increases emissions, both from idling of trains and also from commuters resorting to driving to work in individual automobiles.

6. WORKER NOISE AND SAFETY ISSUES

Noise is a serious occupational health hazard, affecting port, trucking, warehouse, and rail workers. A recent study of rail workers measured high impact noise that the authors concluded could result in noise-induced hearing loss. (*See* study quoted in the Noise section on the impacts of noise on rail workers)**.**

We also refer to Appendix II which documents the accidents and fatalities occurring in California involving heavy duty trucks and rail operations. We were unable to locate figures on longshore/dock workers fatalities and injuries and

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[13] Weikel D. Freight vs. Folks on Lone Rail Line; Metrolink riders seethe as Union Pacific trains cause delays on the single track from Union Station to Riverside. Los Angeles Times. May 15, 2005. p. B1.

[14] Liu C and Cvarrubias A. Gov's plan is a boon to area rail. Los Angeles Times. Feb. 26, 2006, p. B1.

request that CalOSHA make these statistics readily available to the public. Access to these statistics is particularly important because the volume of containerized cargo in and out of the California ports has necessitated the hiring of thousands of new longshore workers. This means that a large portion of today's shipping terminal workforce is inexperienced and, historically, inexperienced workers have a higher rate of on-the-job injuries than more experienced workers.

In addition, we suggest that CalOSHA be charged with evaluating the impacts of increased international trade and goods movement on the overall health and safety of California's workforce and with developing a Worker Health and Safety Ports and Goods Movement Plan as a section of the larger Community Impacts Plan.

7. HAZARDOUS MATERIALS INCIDENTS AND DERAILMENTS

The following chart describes hazardous materials incidents on highway and rail in the state of California in 2003, illustrating potential risks for workers and residents that need to be evaluated in the state's Community Impacts Report.

Hazardous Materials Incidents by Mode: 2003

	Mode				
State	Highway	Rail	Air	Water[2]	Total
California	1,058	94	43	2	1,197

See: http://www.bts.gov/publications/state_transportation_profiles/state_transportation_statistics_2004/

In addition, derailments are an ongoing and serious problem in California. See, for example, a letter dated March 12, 2005, from California lawmakers asking the U.S. Department of Transportation for implementation of a rail safety plan in Southern California: http://www.senate.gov/~feinstein/05releases/r-railsafety.htm The costs to California residents from train derailments (which seldom are fully compensated by the railroads) must be evaluated as "external costs" of promoting a tripling of goods movement activities in the state.

8. MAPS OF GRADE CROSSINGS AND ESTIMATES OF COSTS

We are concerned about the enormous number of grade crossings that need to be built to accommodate the increasing number of freight trains in California – and who will pay for them. We request a set of electronic maps showing the rail routes in California, the current number of freight trains per day, and also showing on which routes freight traffic is expected to increase and by how much in increments of time such as 5 years/10 years/20 years and which intersections are slated to have grade separations. We request that these maps be posted to the BTH and ARB Web sites' "goods movement pages" so that the public has access to them. We also request that the full costs of grade separations be spelled out.

We have requested such a map showing key intersections and where grade crossings are planned, but have not received one.

9. STADIUM LIGHTING

Residents near railyards and Ports complain of difficulty sleeping because of constant "stadium lighting," intense lights that stay on all night and light up an entire work area – and adjacent neighborhoods – so that 24-7 work can occur. There are no known studies on the effects of this type of lighting, which residents say interrupts normal sleep patterns. Several recent studies, however, are relevant. One found that levels of melatonin in shift workers who had irregular light exposure were high upon rising from sleep and that the levels were normal or abnormally low during sleep.[15] Results from another recent study in laboratory mice show that nighttime exposure to artificial light stimulated the growth of human breast tumors by suppressing the levels of a key hormone called melatonin. The study also showed that extended periods of nighttime darkness greatly slowed the growth of these tumors.[16]

10. CONTRIBUTIONS OF EMISSIONS FROM SHIPS, YARD EQUIPMENT, RAIL AND TRUCK TRANSPORT TO GREENHOUSE GAS EMISSIONS

We urge the Administration's Climate Change Team to ensure that the full greenhouse gas emissions relating to international trade with Asia be accounted for in its California inventory. It is our contention that the emissions from cargo container ships – whose destination is California – should be counted as a California "charge" for the emissions on their entire voyage from Asia to California. If California chooses to encourage trade with Asia, dramatically increasing the number of ships, then the impacts of these ship emissions (which are considerable) must be considered in the inventory and in the Governor's goals and strategies for reducing greenhouse gases.

11. EXTERNAL COSTS OF INCREASED HEALTH CARE COSTS

Promoting goods movement as an economic strategy will increase the number of jobs in trucking, warehousing and other logistics operations. We request that the state do an evaluation of the level of health insurance coverage in these sectors. For example, at the February 24, 2006, Integrating Work Group meeting, Miguel

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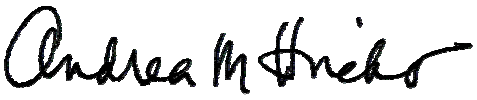
[15] Borugian MJ et al. Twenty-four-hour light exposure and melatonin levels among shift workers. J Occup Environ Med. 2005 Dec;47(12):1268-75.

[16] Blask DE. Melatonin-depleted blood from premenopausal women exposed to light at night stimulates growth of human breast cancer xenografts in nude rats. Cancer Res. 2005 Dec 1;65(23):11174-84.

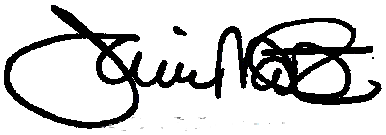
Lopez of the Teamsters Union stated that virtually none of the 10,000 drayage truck drivers going back and forth to the ports have health insurance. If his figures are correct, this lack of health insurance clearly creates an added burden to the state's taxpayers when these workers or their families require health care.

Thank you for the opportunity to submit these comments. We recognize that we are asking for a significant amount of work by State agencies with regard to evaluating impacts and developing suggested mitigation and abatement methods. These are issues that have been raised by community members for several years now, however, and they demand significant attention and solutions. We appreciate your consideration of our recommendations.

Sincerely,

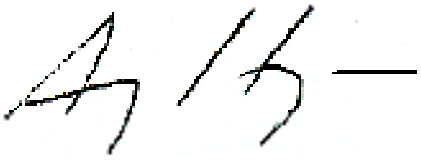


Andrea M. Hricko
Director, Community Outreach and Education Program
Southern California Environmental Health Sciences Center
Keck School of Medicine, USC



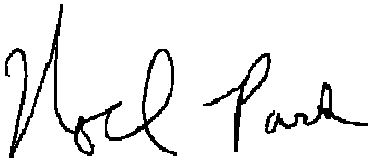
Julie Masters
Senior Attorney
Natural Resources Defense Council

Andrea Samulon
Research Associate
Pacific Institute

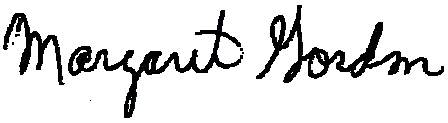


Angelo Logan
Director
East Yard Communities for Environmental Justice

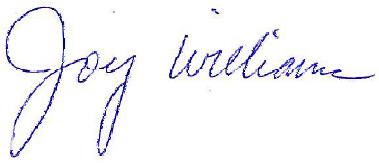
Penny J. Newman
Executive Director
Center for Community Action and Environmental Justice



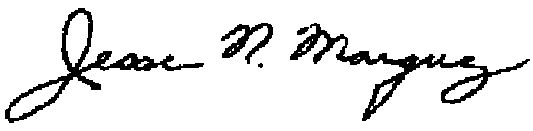
Noel Park
President
San Pedro & Peninsula Homeowners Coalition



Margaret Gordon
Co-Chair
West Oakland Environmental Indicators Project



Joy Williams
Research & Community Assistance Director
Environmental Health Coalition



Jesse Marquez
Executive Director
Coalition for a Safe Environment

APPENDIX I.

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APPENDIX II.

EXCERPTS FROM REPORTS CITED IN COMMUNITY IMPACTS LETTER FROM IWG MEMBERS

Appendix IIA. Noise levels in port, rail, and road operations.

Source: Draft 2004 RTP PEIR of the Southern California Association of Governments December 2003. *See:* http://www.scag.ca.gov/rtpPEIR2004/draft/2004/pdf/3_5_Noise.pdf [Note: Other geographic areas of the state clearly experience similar problems with goods movement related noise].

"Railroad Operations: Railroad operations generate high, relatively brief, intermittent noise events. These noise events are an environmental concern for sensitive uses located along rail lines and in the vicinities of switching yards. Locomotive engines and the interaction of steel wheels and rails primarily generate rail noise. The latter source creates three types of noise: 1) rolling noise due to continuous rolling contact, 2) impact noise when a wheel encounters a rail joint, turnout or crossover, and 3) squeal generated by friction on tight curves. … In addition, use of air horns and crossing bell gates contribute to noise levels in the vicinity of grade crossings."

Table 3.5-3: Reference Noise Levels for Various Rail Operations

Source / Type		Reference Conditions	Reference Noise Level (SEL)*
Commuter Rail, At-Grade	Locomotives	Diesel-Electric, 3,000 horsepower, throttle 5	92
		Electric	90
	Cars	Ballast, welded rail	82
Rail Transit		At-grade, ballast, welded rail	82
Automated Guideway Transit	Steel wheel	Aerial, concrete, welded rail	80
	Rubber tire	Aerial, concrete guideway	78
Monorail		Aerial straddle beam	82
Maglev		Aerial, open guideway	72

Notes: * Measured at 50 feet from track centerline with trains operating at 50 miles per hour. For the sake of comparison, an automobile passby event generates approximately SEL 73 dB, and a city bus generates approximately SEL 84 dB. SEL = Sound Exposure Level

Source: United States Department of Transportation, Federal Aviation Administration. (1995, April). *Transit noise and vibration impact assessment.* Washington, DC: Author.

"Freight Trains: Noise levels generated by freight train passby events reflect locomotive engine noise and rail car wheel rail interaction. The former depends upon track grade conditions (i.e., uphill versus downhill) and is largely independent of speed whereas the latter is highly speed dependent, increasing approximately 6 dB for each doubling of train velocity.5 In addition to noise, freight trains also generate substantial amounts of ground-borne noise and vibration in the vicinity of the tracks. Ground-borne noise and vibration is a function of both the quality of the track and the operating speed of the vehicles. The SCAG region has an extensive network of railroad lines belonging primarily to two major "Class I" railroads: Union Pacific Railroad (Union Pacific) and Burlington Northern Santa Fe Railway (BNSF). A rail line supporting 40 freight trains per day generates approximately DNL 75 dB at 200 feet from the tracks. BNSF rail lines extend south from switching yards in eastern Los Angeles to the Los Angeles and Long Beach ports complex and east to Arizona and points beyond via San Bernardino County. BNSF generates approximately DNL 75 dB at a distance of 200 feet from the tracks."

"Port Operations: The Ports of Long Beach, Los Angeles and Hueneme are major regional economic development centers. Noise is generated from four sources: ships using the port facilities, equipment associated with cargo activity within the port, and truck and rail traffic moving cargo to and from the ports. All sources affect the ambient noise levels in the port areas."

"Freeways and arterial roadways: The 2004 RTP contains a detailed inventory of the current freeway system, currently comprising over 1,000 centerline miles of interconnected freeways throughout the six-county SCAG region. The magnitude of noise generated by a given roadway depends upon the overall traffic volume, the percentage of trucks (particularly "heavy trucks"), and average vehicle speed. Table 3.5-2 provides noise level measurements (in DNL at 200 feet from the roadway) for a sampling of road segments that generate some of the highest traffic noise levels in the SCAG region based on data on daily traffic volumes. The extent to which traffic noise levels along these roads affect sensitive land uses depends upon a number of factors. These include whether the roadway itself is elevated above grade or depressed below grade, whether there are intervening structures or terrain between the roadway and the sensitive uses, and the distance between the roadway and such uses. For example, measurements show that depressing a freeway by approximately 12 feet yields a reduction in traffic noise relative to an at-grade freeway of 7 to 10 dB at all distances from the freeway. Traffic noise from an elevated freeway is typically 2 to 10 dB less than the noise from an equivalent at-grade facility within 300 feet of the freeway, but beyond 300 feet, the noise radiated by an elevated and at-grade freeway (assuming equal traffic volumes, fleet mix, and vehicle speed) is the same. Additionally, the region has an enormous number of arterial roadways. Typical arterial roadways have one or two lanes of traffic in each direction, with some containing as many as four lanes in each direction. Noise from these sources can be a significant environmental concern where buffers (e.g., buildings, landscaping, etc.) are inadequate or where the distance from centerline to sensitive uses is relatively small. Given typical daily traffic volumes of 10,000 to 40,000 vehicle trips, noise levels along arterial roadways typically range from DNL 65 to 70 dB at a distance of 50 feet from the roadway centerlines."

Table 3.5-2: Noise Levels Along Selected Freeways and Arterials in the SCAG Region

County	Freeway	Noise Monitoring Location	Annual Average Daily Traffic*	Noise Level at 200 feet (Lav)	Maximum Noise Level at 200 feet (Lmax)
Los Angeles	Interstate 5	12775 Encinitas Avenue, Sylmar	201,000	67.2	74.4
	Interstate 605	Pioneer Ave. & Strong Ave., Whittier	210,000	71.8	83.4
	Interstate 10	Walavista Road, Los Angeles	262,000	62.8	65.5
	Interstate 10	Dalewood Street, Baldwin Park	262,000	72	76.6
	Interstate 101	Oakdale Ave., Woodland Hills	233,000	63.2	71
	State Route 60	Garo Street & Pontenova Ave., Hacienda Heights	218,000	66.9	82.1
Orange	Interstate 405	Claremont St., Irvine	249,000	64.7	65.9
	Interstate 5	2441 Michelle Drive, Tustin	197,000	61.8	66.1
	State Route 57	8507 Whitewater Dr., Anaheim	198,000	69.1	77
	State Route 91	Tafolla St., & Kansas Ave., Placentia	214,000	65.6	71.2
San Bernardino	Interstate 10	Meadows Lane & Old Ranch Road, Colton	183,000	56.3	61.5
	Interstate 10	Rosewood & Spade, Loma Linda	183,000	64.4	76.2
	Interstate 10	10170 Cypress Ave., Fontana	183,000	61.9	78.1
Ventura	State Route 118	2315 Kuehner, Simi Valley	93,000	66.3	73.2
	U.S. Route 101	Willow & Skyline Dr., Thousand Oaks	124,000	66.3	73.2
Riverside	State Route 91	200 S. Washburn Ave., Corona	186,000	62.7	67.9
	Interstate 60	University Ave., Riverside	109,000	63.3	76.3
	Interstate 10	632 Wellwood Ave., Beaumont	59,000	66.2	71.9

All noise measurements were taken for a 15-minute interval during peak hours from 4 p.m. to 6 p.m.

*Annual average daily traffic volumes represent average values for each given segment based on data contained in California Department of Transportation's 1998 Traffic Volumes on California State Highways (June 1999).

Source: Southern California Association of Governments. (2001, February 1). *2004 RTP EIR*

Appendix IIB. Heavy duty truck accidents.

State	Total occupant fatalities in all motor vehicle crashes	Total vehicles involved in fatal motor vehicle crashes	Large trucks			
			Occupant fatalities		Involved in fatal crashes	
			Number	Percent of total	Number	Percent of total
California	3,381	5,725	41	1.2	332	5.8

SOURCE: U.S. Department of Transportation, National Highway Traffic Safety Administration, *Traffic Safety Facts 2003: Overview*, Washington, DC: 2004, available at http://www-nrd.nhtsa.dot.gov/pdf/nrd-30/NCSA/TSF2003/809767.pdf as of Sep. 30, 2004; U.S. Department of Transportation, National Highway Traffic Safety Administration, *Traffic Safety Facts 2003 Early Edition*, Washington, DC: 2004, available at http://www-nrd.nhtsa.dot.gov/pdf/nrd-30/NCSA/TSFAnn/ TSF2003EarlyEdition.pdf as of Oct. 27, 2004.

Additional statistics on California truck collisions are found below:

TABLE 6A Fatal and Injury Truck Collisions by Month, 1999-2003

Year	1999		2000		2001		2002		2003	
	Fatal	Injury	Fatal	Injury	Fatal	Injury	Fatal	Injury	Fatal	Injury
Month										
January	29	669	27	620	30	710	25	621	24	610
February	17	587	21	633	27	647	16	575	25	606
March	27	711	27	651	29	683	30	650	24	617
April	28	677	28	746	28	736	32	651	30	662
May	23	642	33	678	28	730	28	703	19	653
June	27	694	37	760	30	723	30	675	33	692
July	28	720	33	729	32	743	35	684	34	742
August	38	787	47	864	41	853	27	696	19	785
September	31	774	30	773	39	734	32	749	37	733
October	34	788	36	852	23	773	31	765	27	790
November	30	838	22	675	22	729	28	742	31	703
December	22	736	25	714	33	668	31	719	36	648
TOTAL	334	8,623	366	8,695	362	8,729	345	8,230	339	8,241

Appendix IIC. Freight railroad accidents.

a. Nationwide. "In summary, Class I freight railroads were involved in accidents that cost society a total of $3,323,980,000 in 1994, and they paid a total of $1,263,000,000 in various kinds of

compensation for accidents. The net uncompensated accident cost of freight rail operations in 1994 was therefore $2,060,980,000". [1] Forkenbrock, 2001

If California were just 10% of this total, in 1994 costs, the cost to society in uncompensated accident costs of freight rail operations) would have been $206,098,000.

b. Tables below: California Accident Data, January through November, 2005, by month, type of injury and county. BNSF and Union Pacific. From Bureau of Transportation Statistics. (BNSF immediately below. Scroll down to page A-9 for Union Pacific statistics.

BNSF, January through November 2005:

TA=Type Accident/Incident: 1 = Train Accident (form 54), 2 = Highway-rail (from 57), 3 = Other (form 55a)

Obs	RR	Month	Day	TA	Incident Number	Type Person	Condition	Event	St	County	Age
1	BNSF	January	02	3	NC0105001	RR Emp on duty	Rupture/tear, knee	Slack action, draft, compressive buff/coupling	CA	MODOC	51
2	BNSF	January	07	3	CA0105002	RR Emp on duty	Sprain/strain, knee	Slipped, fell, stumbled, other	CA	SAN JOAQUIN	53
3	BNSF	January	07	3	NW0105106	RR Emp on duty	Sprain/strain, lower back	Ran into on-track equipment	CA	MODOC	47
4	BNSF	January	08	1	NW0105107	RR Emp on duty	Concussion	Collision - between on track equipment	CA	LASSEN	47
5	BNSF	January	08	1	NW0105107	RR Emp on duty	Concussion	Collision - between on track equipment	CA	LASSEN	50
6	BNSF	January	12	2	CA0105200	Nontrespasser	Unspecified injury, multiple	Highway-rail collision/impact	CA	ORANGE	21
7	BNSF	January	12	2	CA0105200	Nontrespasser	Unspecified injury, multiple	Highway-rail collision/impact	CA	ORANGE	25
8	BNSF	January	19	3	CA0105005	Contractor	Fracture, thumb/finger	Sudden, unexpected movement, other	CA	SAN JOAQUIN	22
9	BNSF	January	19	2	CA0105203	Employee off duty	Bruise/contusion, hand	Highway-rail collision/impact	CA	SAN BERNARDI	55
10	BNSF	January	20	1	CA0105116	RR Emp on duty	Sprain/strain, ankle	Collision - between on track equipment	CA	CONTRA COSTA	47
11	BNSF	January	20	1	CA0105116	RR Emp on duty	Sprain/strain, lower back	Collision - between on track equipment	CA	CONTRA COSTA	47
12	BNSF	January	21	2	CA0105202	Trespasser	Unspecified injury, multiple	Highway-rail collision/impact	CA	CONTRA COSTA	22
13	BNSF	January	23	3	CA0105007	RR Emp on duty	Sprain/strain, wrist	Ran into object/equipment	CA	KERN	42
14	BNSF	January	23	3	NW0105132	RR Emp on duty	One-time exposure to fumes, other	Collision - between on track equipment	CA	LASSEN	61
15	BNSF	January	23	3	NW0105132	RR Emp on duty	Sprain/strain, lower back	Other impacts - on track equipment	CA	LASSEN	43

[1] Forkenbrock, 2001.

Obs	RR	Month	Day	TA	Incident Number	Type Person	Condition	Event	St	County	Age
16	BNSF	January	30	3	CA0105009	Trespasser	Fatality	Struck by on-track equipment	CA	FRESNO	91
17	BNSF	February	02	3	CA0205402	Employee off duty	Bruise/contusion, knee	Sudden/unexpected movement of vehicle	CA	SAN BERNARDI	56
18	BNSF	February	06	3	CA0205003	Trespasser	Fatality	Struck by on-track equipment	CA	MERCED	44
19	BNSF	February	08	3	CA0205004	Trespasser	Fatality	Struck by on-track equipment	CA	STANISLAUS	53
20	BNSF	February	08	3	CA0205107	RR Emp on duty	Sprain/strain, shoulder	Collision - between on track equipment	CA	SAN JOAQUIN	48
21	BNSF	February	09	3	CA0205006	Trespasser	Unspecified injury, multiple	Struck by on-track equipment	CA	SAN BERNARDI	47
22	BNSF	February	11	3	CA0205007	RR Emp on duty	Sprain/strain, ankle	Slipped,fell,stumbled,etc. due to irregular surfac	CA	MERCED	41
23	BNSF	February	15	3	CA0205010	RR Emp on duty	Cut/abrasion, thumb/finger	Caught, crushed, pinched, other	CA	SAN BERNARDI	47
24	BNSF	February	21	3	CA0205013	RR Emp on duty	Cut/abrasion, lower leg	Defective/malfunctioning equipment	CA	SAN JOAQUIN	47
25	BNSF	February	21	3	CA0205014	Contractor	Bruise/contusion, knee	Sudden/unexpected movement of vehicle	CA	LOS ANGELES	36
26	BNSF	February	25	3	CA0205020	Trespasser	Fatality	Struck by on-track equipment	CA	CONTRA COSTA	26
27	BNSF	February	27	3	CA0205018	RR Emp on duty	Sprain/strain, ankle	Slipped,fell,stumbled,etc. due to object,ballast,	CA	SAN BERNARDI	42
28	BNSF	March	02	3	CA0305002	RR Emp on duty	Cut/abrasion, thumb/finger	Caught in/compressed by other machinery	CA	SAN BERNARDI	41
29	BNSF	March	02	3	CA0305005	RR Emp on duty	Bruise/contusion, shoulder	Bodily function/sudden movement, e.g.,sneezing,twi	CA	MERCED	30
30	BNSF	March	09	3	CA0305112	Nontrespasser	Unspecified injury, multiple	Struck by on-track equipment	CA	ALAMEDA	68
31	BNSF	March	15	3	CA0305012	Trespasser	Cut/abrasion, head/face	Struck by on-track equipment	CA	YUBA	64
32	BNSF	March	17	3	CA0305013	RR Emp on duty	Hernia, genitalia	Aggravated pre-existing condition	CA	KERN	33
33	BNSF	March	20	3	CA0305022	Nontrespasser	Sprain/strain, shoulder	Slipped, fell, stumbled, other	CA	KERN	55
34	BNSF	March	24	3	CA0305016	RR Emp on duty	Cut/abrasion, head/face	Slipped,fell,stumbled,etc. due to irregular surfac	CA	LOS ANGELES	45
35	BNSF	March	30	3	CA0305018	Contractor	Dislocation, knee	Sudden, unexpected movement, other	CA	CONTRA COSTA	45
36	BNSF	March	31	3	CA0305020	Nontrespasser	Fracture, thumb/finger	Sudden, unexpected movement, other	CA	LOS ANGELES	
37	BNSF	April	04	3	CA0405001	Trespasser	Unspecified injury, multiple	Struck by on-track equipment	CA	ORANGE	49
38	BNSF	April	07	3	CA0405004	Contractor	Sprain/strain, knee	Collision/impact - auto, truck, bus, van, etc.	CA	LOS ANGELES	21
39	BNSF	April	18	3	CA0405006	RR Emp on duty	Sprain/strain, ankle	Slipped,fell,stumbled,etc. due to object,ballast,	CA	CONTRA COSTA	35
40	BNSF	April	21	3	CA0405011	RR Emp on duty	Fracture, thumb/finger	Struck by object	CA	CONTRA COSTA	38
41	BNSF	April	24	3	CA0405012	Contractor	Fracture, lower arm	Struck by object	CA	SAN BERNARDI	66
42	BNSF	April	25	3	CA0405013	RR Emp on duty	Bruise/contusion, thumb/finger	Caught in/compressed by hand tools	CA	SAN BERNARDI	30
43	BNSF	April	27	3	CA0405015	Contractor	Fracture, wrist	Slipped, fell, stumbled,	CA	ALAMEDA	38

Obs	RR	Month	Day	TA	Incident Number	Type Person	Condition	Event	St	County	Age
							area	other			
44	BNSF	April	29	3	CA0405016	RR Emp on duty	Cut/abrasion, thumb/finger	Caught, crushed, pinched, other	CA	SAN BERNARDI	34
45	BNSF	April	30	3	CA0405017	RR Emp on duty	Amputation, thumb/finger	Caught, crushed, pinched, other	CA	SAN BERNARDI	38
46	BNSF	May	02	3	CA0505012	Contractor	Fracture, wrist area	Sudden/Unexpected Movement of tools	CA	SAN BERNARDI	33
47	BNSF	May	09	3	CA0505009	Trespasser	Unspecified injury, multiple	Struck by on-track equipment	CA	YUBA	
48	BNSF	May	12	3	CA0505007	Contractor	Fracture, nose	Struck by object	CA	LOS ANGELES	36
49	BNSF	May	13	3	CA0505008	Trespasser	Fatality	Struck by on-track equipment	CA	ORANGE	
50	BNSF	May	13	3	CA0505010	Trespasser	Fatality	Struck by on-track equipment	CA	ORANGE	24
51	BNSF	May	20	3	CA0505013	RR Emp on duty	Bruise/contusion, elbow	Sudden, unexpected movement, other	CA	KERN	41
52	BNSF	May	27	1	CA0505133	RR Emp on duty	Sprain/strain, lower back	Collision - between on track equipment	CA	KERN	57
53	BNSF	May	31	3	CA0505018	Trespasser	Fatality	Struck by on-track equipment	CA	SAN JOAQUIN	44
54	BNSF	May	31	3	CA0505019	Trespasser	Fatality	Struck by on-track equipment	CA	SAN JOAQUIN	56
55	BNSF	June	03	2	CA0605203	Trespasser	Bruise/contusion, rib/ribcage	Highway-rail collision/impact	CA	SUTTER	28
56	BNSF	June	11	3	CA0605006	RR Emp on duty	Heat exhaustion	Climatic condition, exposure to environmental heat	CA	SAN BERNARDI	49
57	BNSF	June	13	3	CA0605004	Contractor	Sprain/strain, ankle	Missed handhold, grabiron, step, etc.	CA	SAN BERNARDI	20
58	BNSF	June	20	3	CA0605009	Contractor	Amputation, toes	Stepped on object	CA	CONTRA COSTA	43
59	BNSF	June	20	3	CA0605011	Contractor	Amputation, thumb/finger	Struck against object	CA	SAN BERNARDI	25
60	BNSF	June	25	3	CA0605014	Trespasser	Fatality	Struck by on-track equipment	CA	ORANGE	54
61	BNSF	June	26	3	CA0605015	Trespasser	Cut/abrasion, elbow	Struck by on-track equipment	CA	FRESNO	44
62	BNSF	June	26	3	CA0605016	Contractor	Bruise/contusion, knee	Ran into object/equipment	CA	LOS ANGELES	
63	BNSF	June	28	2	CA0605202	Trespasser	Cut/abrasion, multiple	Highway-rail collision/impact	CA	STANISLAUS	
64	BNSF	July	03	2	CA0705200	Trespasser	Sprain/strain, neck	Highway-rail collision/impact	CA	CONTRA COSTA	47
65	BNSF	July	06	3	CA0705005	Contractor	Cut/abrasion, thumb/finger	Caught in/compressed by hand tools	CA	SAN BERNARDI	28
66	BNSF	July	08	3	CA0705007	RR Emp on duty	Cut/abrasion, thumb/finger	Caught in/compressed by powered hand tools	CA	SAN BERNARDI	61
67	BNSF	July	11	2	CA0705201	Trespasser	Cut/abrasion, lower leg	Highway-rail collision/impact	CA	SAN BERNARDI	50
68	BNSF	July	13	3	CA0705008	Contractor	Sprain/strain, lower back	Struck by falling object	CA	LOS ANGELES	26
69	BNSF	July	17	3	CA0705009	Contractor	Cut/abrasion, head/face	Ran into object/equipment	CA	LOS ANGELES	27
70	BNSF	July	20	3	CA0705012	Trespasser	Fatality	Struck by on-track equipment	CA	YOLO	34

Obs	RR	Month	Day	TA	Incident Number	Type Person	Condition	Event	St	County	Age
71	BNSF	July	26	3	CA0705015	Trespasser	Fatality	Struck by on-track equipment	CA	SAN BERNARDI	62
72	BNSF	July	29	3	CA0705017	Trespasser	Amputation, toes	Struck by on-track equipment	CA	KINGS	39
73	BNSF	August	03	2	CA0805200	Trespasser	Fatality	Highway-rail collision/impact	CA	RIVERSIDE	32
74	BNSF	August	05	3	CA0805009	Employee off duty	Fracture, toes	Struck by falling object	CA	SAN BERNARDI	47
75	BNSF	August	06	3	CA0805007	Trespasser	Fatality	Struck by on-track equipment	CA	FRESNO	18
76	BNSF	August	06	3	CA0805010	RR Emp on duty	Cut/abrasion, lower arm	Slipped,fell,stumbled,etc. due to object,ballast,	CA	SAN BERNARDI	63
77	BNSF	August	07	3	CA0805008	Trespasser	Unspecified injury, multiple	Struck by on-track equipment	CA	MADERA	
78	BNSF	August	07	3	CA0805011	RR Emp on duty	Cut/abrasion, lower arm	Sudden, unexpected movement, other	CA	SAN BERNARDI	45
79	BNSF	August	10	3	CA0805013	RR Emp on duty	Fracture, ankle area	Slipped,fell,stumbled,etc. due to irregular surfac	CA	SAN BERNARDI	32
80	BNSF	August	18	3	CA0805017	RR Emp on duty	Sprain/strain, ankle	Slipped,fell,stumbled,etc. due to irregular surfac	CA	FRESNO	44
81	BNSF	August	19	3	CA0805019	Trespasser	Fatality	Struck by on-track equipment	CA	STANISLAUS	43
82	BNSF	August	19	3	CA0805020	Contractor	Cut/abrasion, shoulder	Sudden/unexpected movement of vehicle	CA	SAN JOAQUIN	
83	BNSF	August	26	3	CA0805405	RR Emp on duty	Bruise/contusion, lower back	Collision/impact - auto, truck, bus, van, etc.	CA	KERN	45
84	BNSF	August	28	3	CA0805025	RR Emp on duty	Fracture, wrist area	Ran into object/equipment	CA	SAN BERNARDI	37
85	BNSF	August	29	3	CA0805026	RR Emp on duty	Sprain/strain, neck	Slipped, fell, stumbled, other	CA	SAN BERNARDI	35
86	BNSF	August	29	3	CA0805027	Contractor	Bruise/contusion, hips	Slipped, fell, stumbled, other	CA	SAN BERNARDI	56
87	BNSF	August	30	3	CA0805030	Nontrespasser	Sprain/strain, neck	Sudden/unexpected movement of vehicle	CA	LOS ANGELES	
88	BNSF	September	01	3	CA0905001	RR Emp on duty	Sprain/strain, upper arm	Slipped,fell,stumbled,etc. due to irregular surfac	CA	RIVERSIDE	37
89	BNSF	September	03	3	CA0905008	Trespasser	Fatality	Struck by on-track equipment	CA	SAN BERNARDI	50
90	BNSF	September	03	3	CA0905105	Trespasser	Fatality	Struck by on-track equipment	CA	SAN BERNARDI	18
91	BNSF	September	04	3	CA0905106	RR Emp on duty	Bruise/contusion, lower leg	Collision - between on track equipment	CA	LOS ANGELES	25
92	BNSF	September	06	1	CA0905107	RR Emp on duty	Cut/abrasion, upper leg	Collision - between on track equipment	CA	RIVERSIDE	42
93	BNSF	September	09	2	CA0905200	RR Emp on duty	Bruise/contusion, lower leg	Highway-rail collision/impact	CA	SAN BERNARDI	30
94	BNSF	September	09	2	CA0905200	Nontrespasser	Unspecified injury, multiple	Highway-rail collision/impact	CA	SAN BERNARDI	28
95	BNSF	September	17	3	CA0905121	Trespasser	Fatality	Struck by on-track equipment	CA	MERCED	26
96	BNSF	September	17	3	CA0905123	Trespasser	Fatality	Struck by on-track equipment	CA	SAN BERNARDI	14
97	BNSF	September	19	3	CA0905007	RR Emp on duty	Cut/abrasion, lower arm	Rubbed, abraded, etc.	CA	SAN BERNARDI	38
98	BNSF	September	19	2	CA0905203	Trespasser	Unspecified injury, abdomen	Highway-rail collision/impact	CA	SOLANO	

Obs	RR	Month	Day	TA	Incident Number	Type Person	Condition	Event	St	County	Age
99	BNSF	September	21	2	NW0905202	RR Emp on duty	Misc. repeated trauma condition	Highway-rail collision/impact	CA	MODOC	36
100	BNSF	September	21	2	NW0905202	Nontrespasser	Sprain/strain, neck	Highway-rail collision/impact	CA	MODOC	53
101	BNSF	September	25	3	CA0905011	Contractor	Sprain/strain, lower back	Overexertion	CA	SAN BERNARDI	49
102	BNSF	September	28	3	CA0905017	RR Emp on duty	Sprain/strain, lower back	Overexertion	CA	SAN BERNARDI	40
103	BNSF	September	30	3	CA0905018	Contractor	Fracture, wrist area	Lost balance	CA	SAN BERNARDI	65
104	BNSF	September	30	3	CA0905133	Trespasser	Fatality	Struck by on-track equipment	CA	MERCED	24
105	BNSF	October	08	3	CA1005001	Contractor	Sprain/strain, lower back	Collision/impact - auto, truck, bus, van, etc.	CA	LOS ANGELES	29
106	BNSF	October	12	2	CA1005202	Trespasser	Fracture, upper arm	Highway-rail collision/impact	CA	KINGS	44
107	BNSF	October	14	3	CA1005113	Trespasser	Fatality	Struck by on-track equipment	CA	KERN	53
108	BNSF	October	17	3	CA1005009	RR Emp on duty	Bruise/contusion, thumb/finger	Caught, crushed, pinched, other	CA	LOS ANGELES	36
109	BNSF	October	18	3	CA1005007	Contractor	Fracture, rib/ribcage	Slipped, fell, stumbled, other	CA	SAN BERNARDI	33
110	BNSF	October	20	3	CA1005008	RR Emp on duty	Fracture, nose	Struck by object	CA	SAN JOAQUIN	48
111	BNSF	October	24	3	CA1005010	RR Emp on duty	Cut/abrasion, thumb/finger	Caught, crushed, pinched, other	CA	LOS ANGELES	25
112	BNSF	November	03	3	CA1105001	RR Emp on duty	Fracture, toes	Struck by falling object	CA	SAN BERNARDI	32
113	BNSF	November	06	3	CA1105107	Trespasser	Cut/abrasion, skull	Other impacts - on track equipment	CA	SAN BERNARDI	15
114	BNSF	November	08	3	CA1105002	RR Emp on duty	Crushing injury, elbow	Caught, crushed, pinched, other	CA	SAN BERNARDI	41
115	BNSF	November	11	3	CA1105117	Trespasser	Fatality	Highway-rail collision/impact	CA	FRESNO	44
116	BNSF	November	12	3	CA1105003	Contractor	Sprain/strain, knee	Collision/impact - auto, truck, bus, van, etc.	CA	SAN BERNARDI	23
117	BNSF	November	12	3	CA1105003	Contractor	Sprain/strain, neck	Collision/impact - auto, truck, bus, van, etc.	CA	SAN BERNARDI	36
118	BNSF	November	12	3	CA1105005	RR Emp on duty	Cut/abrasion, skull	Slipped, fell, stumbled, other	CA	KERN	58
119	BNSF	November	13	3	CA1105004	Contractor	Sprain/strain, knee	Collision/impact - auto, truck, bus, van, etc.	CA	SAN BERNARDI	29
120	BNSF	November	13	3	CA1105004	Contractor	Bruise/contusion, rib/ribcage	Collision/impact - auto, truck, bus, van, etc.	CA	SAN BERNARDI	38
121	BNSF	November	13	2	CA1105202	Trespasser	Unspecified injury, multiple	Highway-rail collision/impact	CA	LOS ANGELES	30
122	BNSF	November	16	3	CA1105403	Employee off duty	Sprain/strain, upper back	Collision/impact - auto, truck, bus, van, etc.	CA	FRESNO	47
123	BNSF	November	16	3	CA1105403	Employee off duty	Sprain/strain, neck	Collision/impact - auto, truck, bus, van, etc.	CA	FRESNO	41
124	BNSF	November	16	3	CA1105403	Employee off duty	Sprain/strain, neck	Collision/impact - auto, truck, bus, van, etc.	CA	FRESNO	42
125	BNSF	November	18	3	CA1105006	RR Emp on duty	Fracture, thumb/finger	Caught, crushed, pinched, other	CA	SAN BERNARDI	54
126	BNSF	November	21	3	CA1105007	Contractor	Object in eye	Blowing/falling debris	CA	SAN BERNARDI	25

Obs	RR	Month	Day	TA	Incident Number	Type Person	Condition	Event	St	County	Age
127	BNSF	November	25	3	CA1105009	RR Emp on duty	Sprain/strain, lower back	Slipped,fell,stumbled,etc. due to object,ballast,	CA	SAN BERNARDI	50
128	BNSF	November	26	2	CA1105203	Trespasser	Unspecified injury, multiple	Highway-rail collision/impact	CA	SAN DIEGO	
129	BNSF	November	27	3	CA1105011	RR Emp on duty	Sprain/strain, neck	Ran into on-track equipment	CA	KERN	34
130	BNSF	November	30	3	CA1105130	Trespasser	Fatality	Struck by on-track equipment	CA	RIVERSIDE	27

Union Pacific: January through November, 2005:

TA=Type Accident/Incident: 1 = Train Accident (form 54), 2 = Highway-rail (from 57), 3 = Other (form 55a)

Obs	RR	Month	Day	TA	Incident Number	Type Person	Condition	Event	St	County	Age
1	UP	January	01	3	0105LA001	RR Emp on duty	Amputation, upper leg	Struck by on-track equipment	CA	LOS ANGELES	63
2	UP	January	03	3	0105LA006	RR Emp on duty	Sprain/strain, shoulder	Overexertion	CA	LOS ANGELES	61
3	UP	January	07	3	0105LA017	RR Emp on duty	Other burn, hand	Exposure to chemicals - external	CA	LOS ANGELES	44
4	UP	January	07	3	0105LA030	Contractor	Fatality	Struck by falling object	CA	LOS ANGELES	67
5	UP	January	09	3	0105LA018	RR Emp on duty	Cut/abrasion, head/face	Caught Between Material	CA	IMPERIAL	53
6	UP	January	09	3	0105LA019	Trespasser	Fatality	Struck by on-track equipment	CA	LOS ANGELES	71
7	UP	January	11	2	0105LA056	Nontrespasser	Sprain/strain, upper back	Highway-rail collision/impact	CA	LOS ANGELES	29
8	UP	January	11	2	0105LA056	Nontrespasser	Sprain/strain, upper back	Highway-rail collision/impact	CA	LOS ANGELES	30
9	UP	January	11	2	0105RS022	Trespasser	Fracture, upper leg	Highway-rail collision/impact	CA	FRESNO	18
10	UP	January	12	2	0105RS039	Trespasser	Fracture, upper leg	Highway-rail collision/impact	CA	STANISLAUS	83
11	UP	January	13	3	0105CT002	RR Emp on duty	Sprain/strain, ankle	Slipped,fell,stumbled,etc. due to object,ballast,	CA	LOS ANGELES	33
12	UP	January	14	2	0105RS023	Nontrespasser	Sprain/strain, neck	Highway-rail collision/impact	CA	YUBA	41
13	UP	January	17	3	0105CT003	RR Emp on duty	Fracture, upper leg	Missed handhold, grabiron, step, etc.	CA	LOS ANGELES	45
14	UP	January	18	3	0105RS024	RR Emp on duty	Bruise/contusion, upper back	Lost balance	CA	PLACER	49
15	UP	January	19	3	0105LA054	Trespasser	Fatality	Struck by on-track equipment	CA	LOS ANGELES	81
16	UP	January	20	3	0105LA035	RR Emp on duty	Sprain/strain, thumb/finger	Exposure to noise - single incident	CA	LOS ANGELES	38
17	UP	January	21	3	0105RS027	RR Emp on duty	Bruise/contusion, upper back	Slipped, fell, stumbled, other	CA	BUTTE	41
18	UP	January	22	3	0105RS030	Trespasser	Amputation, foot (general)	Struck by on-track equipment	CA	SISKIYOU	38
19	UP	January	25	3	0105LA038	RR Emp on duty	Sprain/strain, upper back	Collision - between on track equipment	CA	LOS ANGELES	47

Obs	RR	Month	Day	TA	Incident Number	Type Person	Condition	Event	St	County	Age
20	UP	January	28	3	0105LA055	RR Emp on duty	Sprain/strain, upper back	Overexertion	CA	LOS ANGELES	26
21	UP	January	28	3	0105RS035	RR Emp on duty	Sprain/strain, knee	Slipped, fell, stumbled, other	CA	FRESNO	53
22	UP	January	29	3	0105RV003	RR Emp on duty	Bruise/contusion, upper back	Struck by on-track equipment	CA	PLACER	50
23	UP	February	01	2	0205RS004	Trespasser	Fatality	Highway-rail collision/impact	CA	ALAMEDA	42
24	UP	February	02	3	0205LA002	RR Emp on duty	Unspecified injury, eye	Blowing/falling debris	CA	SAN BERNARDI	48
25	UP	February	02	3	0205RS003	RR Emp on duty	Rupture/tear, upper leg	Overexertion	CA	SACRAMENTO	60
26	UP	February	04	3	0205RS005	Trespasser	Cut/abrasion, head/face	Slipped, fell, stumbled, other	CA	MADERA	39
27	UP	February	05	3	0205LA005	RR Emp on duty	Unspecified injury, chest	Exposure to fumes - inhalation	CA	LOS ANGELES	28
28	UP	February	08	3	0205CT001	RR Emp on duty	Sprain/strain, upper back	Collision/impact - auto, truck, bus, van, etc.	CA	LOS ANGELES	35
29	UP	February	09	3	0205ES005	RR Emp on duty	Cut/abrasion, hand	Caught Between Material	CA	LOS ANGELES	51
30	UP	February	11	3	0205LA012	RR Emp on duty	Sprain/strain, ankle	Slipped,fell,stumbled,etc. due to object,ballast,	CA	IMPERIAL	35
31	UP	February	11	3	0205RS014	Trespasser	Fatality	Struck by on-track equipment	CA	SAN JOAQUIN	40
32	UP	February	13	3	0205LA013	RR Emp on duty	Sprain/strain, foot (general)	Slipped,fell,stumbled,etc. due to object,ballast,	CA	SAN BERNARDI	19
33	UP	February	13	3	0205LA014	RR Emp on duty	Cut/abrasion, lower arm	Struck by thrown or propelled object	CA	RIVERSIDE	29
34	UP	February	13	3	0205RS012	RR Emp on duty	Sprain/strain, ankle	Slipped,fell,stumbled,etc. due to object,ballast,	CA	SISKIYOU	26
35	UP	February	13	3	0205RS015	Trespasser	Fatality	On track equipment, other incidents	CA	MERCED	45
36	UP	February	14	3	0205ES007	RR Emp on duty	Cut/abrasion, hand	Struck against object	CA	LOS ANGELES	32
37	UP	February	17	2	0205RS030	Trespasser	Amputation, upper leg	Highway-rail collision/impact	CA	FRESNO	43
38	UP	February	18	3	0205ES012	RR Emp on duty	Sprain/strain, ankle	Lost balance	CA	PLACER	21
39	UP	February	19	2	0205RS019	Trespasser	Fatality	Highway-rail collision/impact	CA	BUTTE	20
40	UP	February	19	2	0205RS022	Trespasser	Unspecified injury	Highway-rail collision/impact	CA	STANISLAUS	37
41	UP	February	19	2	0205RS022	Trespasser	Unspecified injury	Highway-rail collision/impact	CA	STANISLAUS	53
42	UP	February	27	3	0205LA027	RR Emp on duty	Sprain/strain, ankle	Slipped,fell,stumbled,etc. due to irregular surfac	CA	LOS ANGELES	23
43	UP	February	27	3	0205LA029	Trespasser	Fatality	Lost balance	CA	LOS ANGELES	45
44	UP	February	28	3	0205CT002	RR Emp on duty	Fracture, nose	Sudden/Unexpected Movement of tools	CA	LOS ANGELES	36
45	UP	February	28	3	0205ES016	RR Emp on duty	Cut/abrasion, lower leg	Struck by thrown or propelled object	CA	KERN	24
46	UP	February	28	3	0205RS025	Trespasser	Amputation, upper leg	Struck by on-track equipment	CA	SANTA CLARA	24
47	UP	March	01	3	0305LA001	RR Emp on duty	Cut/abrasion, upper leg	Struck by object	CA	ORANGE	56

Obs	RR	Month	Day	TA	Incident Number	Type Person	Condition	Event	St	County	Age
48	UP	March	02	3	0305CT001	RR Emp on duty	Sprain/strain, upper back	Sudden/unexpected movement of vehicle	CA	LOS ANGELES	48
49	UP	March	02	3	0305LA003	Trespasser	Fracture, upper leg	Struck by on-track equipment	CA	VENTURA	43
50	UP	March	02	3	0305LA003	Trespasser	Fatality	Struck by on-track equipment	CA	VENTURA	47
51	UP	March	05	3	0305LA004	RR Emp on duty	Sprain/strain, upper back	Bumped	CA	SAN BERNARDI	24
52	UP	March	06	3	0305LA005	RR Emp on duty	Bruise/contusion, upper arm	Slipped, fell, stumbled, other	CA	LOS ANGELES	60
53	UP	March	07	2	0305LA009	Trespasser	Fatality	Highway-rail collision/impact	CA	RIVERSIDE	62
54	UP	March	07	2	0305LA009	Trespasser	Unspecified injury, multiple	Highway-rail collision/impact	CA	RIVERSIDE	62
55	UP	March	08	1	0305LA011	Nontrespasser	Skin reaction, not specified	Exposure to chemicals - external	CA	LOS ANGELES	37
56	UP	March	08	3	0305RS008	Trespasser	Fatality	Struck by on-track equipment	CA	SANTA CLARA	31
57	UP	March	12	3	0305LA013	RR Emp on duty	Sprain/strain, knee	Slipped, fell, stumbled, other	CA	RIVERSIDE	58
58	UP	March	16	3	0305LA020	RR Emp on duty	Other burn, hand	Burned	CA	SAN BERNARDI	35
59	UP	March	17	3	0305ES011	RR Emp on duty	Cut/abrasion, upper arm	Struck by object	CA	SANTA CLARA	44
60	UP	March	17	3	0305RS017	RR Emp on duty	Cut/abrasion, head/face	Slack action, draft, compressive buff/coupling	CA	SAN JOAQUIN	46
61	UP	March	18	3	0305RS035	Trespasser	Fatality	Struck by on-track equipment	CA	ALAMEDA	16
62	UP	March	18	3	0305RS041	Trespasser	Fracture, ankle area	Struck against object	CA	SACRAMENTO	16
63	UP	March	18	3	0305RS041	Trespasser	Fracture, ankle area	Struck against object	CA	SACRAMENTO	17
64	UP	March	20	3	0305ES013	RR Emp on duty	Dislocation, shoulder	Slipped, fell, stumbled, other	CA	KERN	54
65	UP	March	24	3	0305LA029	Employee off duty	Sprain/strain, upper back	Collision/impact - auto, truck, bus, van, etc.	CA	SAN BERNARDI	41
66	UP	March	26	3	0305RS029	Trespasser	Unspecified injury	Struck by on-track equipment	CA	ALAMEDA	36
67	UP	March	28	3	0305RS027	RR Emp on duty	Cut/abrasion, mouth/teeth	Struck by thrown or propelled object	CA	SOLANO	22
68	UP	March	28	3	0305RS033	Trespasser	Fatality	Struck by on-track equipment	CA	SACRAMENTO	30
69	UP	March	30	3	0305RS040	RR Emp on duty	Cut/abrasion, thumb/finger	Caught, crushed, pinched, other	CA	PLACER	49
70	UP	March	31	3	0305PD040	RR Emp on duty	Fracture, toes	Caught, crushed, pinched, other	CA	SISKIYOU	54
71	UP	March	31	3	0305RS034	RR Emp on duty	Sprain/strain, elbow	Lost balance	CA	SAN JOAQUIN	36
72	UP	March	31	3	0305RS038	RR Emp on duty	Fracture, upper leg	Slipped,fell,stumbled,etc. due to irregular surfac	CA	MONTEREY	59
73	UP	April	02	3	0405ES001	RR Emp on duty	Bruise/contusion, foot (general)	Struck by object	CA	KERN	61
74	UP	April	04	3	0405LA005	RR Emp on duty	Cut/abrasion, eye area	Struck by object	CA	SAN BERNARDI	38
75	UP	April	04	3	0405RS002	RR Emp on	Sprain/strain,	Overexertion	CA	PLACER	43

Obs	RR	Month	Day	TA	Incident Number	Type Person	Condition	Event	St	County	Age
						duty	lower back				
76	UP	April	05	3	0405LA006	RR Emp on duty	Unspecified injury, abdomen	Exposure to fumes - inhalation	CA	LOS ANGELES	30
77	UP	April	06	3	0405RS004	RR Emp on duty	Puncture wound, foot (general)	Stepped on object	CA	FRESNO	29
78	UP	April	10	3	0405LA017	RR Emp on duty	Cut/abrasion, mouth/teeth	Struck by object	CA	LOS ANGELES	23
79	UP	April	12	3	0405LA019	RR Emp on duty	Amputation, upper leg	Struck by on-track equipment	CA	SAN BERNARDI	50
80	UP	April	16	3	0405CT001	RR Emp on duty	Cut/abrasion, elbow	Struck by object	CA	LOS ANGELES	31
81	UP	April	23	3	0405LA038	Trespasser	Cut/abrasion, head/face	Lost balance	CA	SAN BERNARDI	30
82	UP	April	26	3	0405RS017	RR Emp on duty	Dislocation, knee	Slipped, fell, stumbled, other	CA	ALAMEDA	38
83	UP	April	26	3	0405RS019	RR Emp on duty	Sprain/strain, lower back	Overexertion	CA	SAN JOAQUIN	38
84	UP	May	04	3	0505RS008	RR Emp on duty	Sprain/strain, upper back	Lost balance	CA	PLACER	57
85	UP	May	05	3	0505RS009	RR Emp on duty	Fracture, thumb/finger	Caught, crushed, pinched, other	CA	MADERA	54
86	UP	May	10	3	0505CT001	RR Emp on duty	Sprain/strain, neck	Sudden/unexpected movement of vehicle	CA	LOS ANGELES	28
87	UP	May	10	3	0505RS016	RR Emp on duty	Fracture, thumb/finger	Slack adjustment during switching operation	CA	SAN JOAQUIN	24
88	UP	May	14	3	0505RS020	RR Emp on duty	Fracture, shoulder	Slipped,fell,stumbled,etc. due to irregular surfac	CA	SOLANO	49
89	UP	May	15	3	0505LA023	RR Emp on duty	Sprain/strain, lower back	Slipped, fell, stumbled, other	CA	KERN	23
90	UP	May	16	3	0505ES007	RR Emp on duty	Internal injury, fingers	Bitten/stung by bee, spider, other insect	CA	MADERA	39
91	UP	May	17	3	0505RS026	Trespasser	Fatality	Struck by on-track equipment	CA	SANTA CLARA	43
92	UP	May	17	3	0505RS028	Trespasser	Fatality	Sudden/unexpected movement of vehicle	CA	FRESNO	16
93	UP	May	18	3	0505CT002	RR Emp on duty	Bruise/contusion, lower back	Slipped, fell, stumbled, etc. due to climatic cond	CA	LOS ANGELES	35
94	UP	May	24	2	0505LA033	Nontrespasser	Unspecified injury, multiple	Highway-rail collision/impact	CA	LOS ANGELES	25
95	UP	May	24	2	0505LA033	RR Emp on duty	Emotional trauma/nervous shock	Highway-rail collision/impact	CA	LOS ANGELES	52
96	UP	May	28	3	0505CT004	RR Emp on duty	Sprain/strain, shoulder	Sudden/unexpected movement of vehicle	CA	LOS ANGELES	46
97	UP	May	28	3	0505RS047	Trespasser	Cut/abrasion, foot (general)	Struck by on-track equipment	CA	PLACER	41
98	UP	May	29	3	0505RS046	Trespasser	Bruise/contusion, upper back	Struck by on-track equipment	CA	STANISLAUS	33
99	UP	May	30	3	0505LA049	Trespasser	Cut/abrasion, head/face	Struck by on-track equipment	CA	LOS ANGELES	40
100	UP	May	31	3	0505CT005	RR Emp on duty	Sprain/strain, lower back	Sudden/unexpected movement of material	CA	LOS ANGELES	23
101	UP	May	31	3	0505LA041	RR Emp on duty	Sprain/strain, thumb/finger	Overexertion	CA	LOS ANGELES	29
102	UP	June	08	3	0605LA009	RR Emp on duty	Sprain/strain, shoulder	Sudden/unexpected movement of vehicle	CA	SAN BERNARDI	27

Obs	RR	Month	Day	TA	Incident Number	Type Person	Condition	Event	St	County	Age
103	UP	June	08	3	0605RS011	RR Emp on duty	Unspecified injury, knee	Overexertion	CA	TULARE	54
104	UP	June	09	3	0605LA014	RR Emp on duty	Unspecified injury, abdomen	Exposure to fumes - inhalation	CA	SAN BERNARDI	53
105	UP	June	09	3	0605LA014	RR Emp on duty	Unspecified injury, abdomen	Exposure to fumes - inhalation	CA	SAN BERNARDI	28
106	UP	June	11	3	0605RS012	Trespasser	Fatality	Struck by on-track equipment	CA	BUTTE	45
107	UP	June	15	3	0605RS015	RR Emp on duty	Sprain/strain, knee	Slipped,fell,stumbled,etc. due to irregular surfac	CA	PLACER	55
108	UP	June	16	3	0605RS022	Trespasser	Amputation, upper leg	Struck by on-track equipment	CA	FRESNO	63
109	UP	June	17	3	0605LA029	RR Emp on duty	Sprain/strain, neck	Struck by object	CA	RIVERSIDE	43
110	UP	June	22	3	0605RS027	Trespasser	Fatality	Struck by on-track equipment	CA	STANISLAUS	30
111	UP	June	23	3	0605LA033	RR Emp on duty	Sprain/strain, upper arm	Slipped, fell, stumbled, other	CA	LOS ANGELES	50
112	UP	June	25	3	0605LA034	RR Emp on duty	Bruise/contusion, rib/ribcage	Slack adjustment during switching operation	CA	KERN	64
113	UP	June	27	3	0605CT003	RR Emp on duty	Sprain/strain, ankle	Lost balance	CA	LOS ANGELES	42
114	UP	June	29	2	0605RS039	Trespasser	Unspecified injury	Highway-rail collision/impact	CA	AMADOR	55
115	UP	June	29	2	0605RS039	Trespasser	Unspecified injury	Highway-rail collision/impact	CA	AMADOR	55
116	UP	July	01	3	0705CT001	RR Emp on duty	Bruise/contusion, upper leg	Sudden, unexpected movement, other	CA	ALAMEDA	37
117	UP	July	03	2	0705RS007	Trespasser	Sprain/strain, upper back	Highway-rail collision/impact	CA	SANTA CLARA	46
118	UP	July	07	3	0705CT002	RR Emp on duty	Cut/abrasion, eye	Rubbed, abraded, etc.	CA	LOS ANGELES	43
119	UP	July	12	2	0705RS014	Trespasser	Fatality	Highway-rail collision/impact	CA	SHASTA	80
120	UP	July	13	3	0705LA019	Contractor	Bruise/contusion, knee	Sudden/unexpected movement of vehicle	CA	SAN BERNARDI	30
121	UP	July	14	3	0705PD013	RR Emp on duty	Unspecified injury, eye	Horseplay, practical joke, etc.	CA	SISKIYOU	35
122	UP	July	14	3	0705RS016	Trespasser	Unspecified injury	Struck by on-track equipment	CA	KERN	25
123	UP	July	15	3	0705RS044	Trespasser	Cut/abrasion, head/face	Struck by on-track equipment	CA	SAN JOAQUIN	30
124	UP	July	17	3	0705RS017	Trespasser	Fatality	Struck by on-track equipment	CA	SACRAMENTO	23
125	UP	July	17	3	0705RS024	RR Emp on duty	Sprain/strain, ankle	Slipped,fell,stumbled,etc. due to object,ballast,	CA	SISKIYOU	35
126	UP	July	18	2	0705LA020	Nontrespasser	Sprain/strain, not specified	Highway-rail collision/impact	CA	LOS ANGELES	63
127	UP	July	19	3	0705RS025	RR Emp on duty	Cut/abrasion, knee	Slipped,fell,stumbled,etc. due to irregular surfac	CA	PLACER	46
128	UP	July	20	3	0705RS032	RR Emp on duty	Puncture wound, upper arm	Struck by object	CA	FRESNO	23
129	UP	July	22	3	0705LS002	RR Emp on duty	Unspecified injury, upper arm	Bitten/stung by bee, spider, other insect	CA	LOS ANGELES	40
130	UP	July	23	3	0705LA027	Trespasser	Fatality	Lost balance	CA	LOS	46

Obs	RR	Month	Day	TA	Incident Number	Type Person	Condition	Event	St	County	Age
										ANGELES	
131	UP	July	23	2	0705LA028	Nontrespasser	Fatality	Highway-rail collision/impact	CA	KERN	30
132	UP	July	23	2	0705LA028	Nontrespasser	Fatality	Highway-rail collision/impact	CA	KERN	30
133	UP	July	24	3	0705LA026	RR Emp on duty	Cut/abrasion, thumb/finger	Caught in/compressed by hand tools	CA	SAN BERNARDI	36
134	UP	July	25	3	0705RS039	RR Emp on duty	Sprain/strain, ankle	Lost balance	CA	PLACER	26
135	UP	July	27	3	0705RS040	RR Emp on duty	Bruise/contusion, thumb/finger	Defective/malfunctioning equipment	CA	SANTA CLARA	25
136	UP	July	28	3	0705ES027	RR Emp on duty	Cut/abrasion, hand	Caught in/crushed by materials	CA	SAN JOAQUIN	48
137	UP	August	06	3	0805RS033	Nontrespasser	Fracture, upper arm	Lost balance	CA	SAN LUIS OBI	78
138	UP	August	10	3	0805LA019	RR Emp on duty	Other burn, ear	Struck by thrown or propelled object	CA	KERN	48
139	UP	August	12	3	0805RS032	Trespasser	Unspecified injury	Struck by on-track equipment	CA	SACRAMENTO	56
140	UP	August	16	3	0805RS024	RR Emp on duty	Bruise/contusion, upper back	Slipped, fell, stumbled, other	CA	SAN JOAQUIN	44
141	UP	August	16	3	0805RS029	Trespasser	Fatality	Struck by on-track equipment	CA	CONTRA COSTA	23
142	UP	August	17	3	0805RS025	RR Emp on duty	Cut/abrasion, eye	Struck by object	CA	PLACER	26
143	UP	August	18	3	0805TS016	Trespasser	Cut/abrasion, head/face	Struck by on-track equipment	CA	IMPERIAL	41
144	UP	August	18	3	0805TS016	Trespasser	Fatality	Struck by on-track equipment	CA	IMPERIAL	42
145	UP	August	20	3	0805RS019	RR Emp on duty	Bruise/contusion, knee	Slipped, fell, stumbled, other	CA	SAN JOAQUIN	39
146	UP	August	21	1	0805LA027	RR Emp on duty	Sprain/strain, upper back	Derailment	CA	IMPERIAL	40
147	UP	August	21	1	0805LA027	RR Emp on duty	Sprain/strain, upper back	Derailment	CA	IMPERIAL	26
148	UP	August	21	1	0805LA027	RR Emp on duty	Sprain/strain, upper back	Derailment	CA	IMPERIAL	28
149	UP	August	21	3	0805RS028	Trespasser	Unspecified injury, head/face	Struck by object	CA	YUBA	27
150	UP	August	22	3	0805LA030	RR Emp on duty	Sprain/strain, ankle	Slipped,fell,stumbled,etc. due to irregular surfac	CA	LOS ANGELES	53
151	UP	August	24	3	0805RS027	RR Emp on duty	Dental related	Struck by object	CA	TEHAMA	37
152	UP	August	29	3	0805RV004	RR Emp on duty	Crushing injury, elbow	Struck by falling object	CA	PLACER	35
153	UP	August	30	3	0805LA043	RR Emp on duty	Sprain/strain, shoulder	Slipped,fell,stumbled,etc. on oil, grease,etc.	CA	LOS ANGELES	23
154	UP	September	02	3	0905RS007	Trespasser	Fatality	Struck by on-track equipment	CA	STANISLAUS	41
155	UP	September	05	3	0905RS005	Trespasser	Fatality	Struck by on-track equipment	CA	SACRAMENTO	32
156	UP	September	07	3	0905RS003	RR Emp on duty	Cut/abrasion, head/face	Struck against object	CA	SAN JOAQUIN	56
157	UP	September	07	3	0905RV001	RR Emp on duty	Sprain/strain, knee	Bodily function/sudden movement, e.g.,sneezing,twi	CA	PLACER	58

Obs	RR	Month	Day	TA	Incident Number	Type Person	Condition	Event	St	County	Age
158	UP	September	10	3	0905LS001	RR Emp on duty	Sprain/strain, neck	Sudden, unexpected movement, other	CA	LOS ANGELES	30
159	UP	September	11	3	0905LS002	RR Emp on duty	Fracture, upper leg	Slipped, fell, stumbled, other	CA	SAN BERNARDI	51
160	UP	September	12	3	0905RS012	RR Emp on duty	Fracture, thumb/finger	Caught, crushed, pinched, other	CA	ALAMEDA	54
161	UP	September	13	3	0905RS014	RR Emp on duty	Sprain/strain, lower back	Overexertion	CA	TEHAMA	44
162	UP	September	15	3	0905LA027	Trespasser	Fatality	Struck by on-track equipment	CA	VENTURA	30
163	UP	September	15	3	0905LA043	Trespasser	Fatality	Exposure to chemicals - external	CA	IMPERIAL	23
164	UP	September	15	3	0905LA043	Trespasser	Fatality	Exposure to chemicals - external	CA	IMPERIAL	36
165	UP	September	15	3	0905LA043	Trespasser	Skin reaction, not specified	Electrical shock, other (explain in narrative)	CA	IMPERIAL	36
166	UP	September	17	3	0905LA032	RR Emp on duty	Unspecified injury, forehead	Struck by object	CA	SAN BERNARDI	29
167	UP	September	19	3	0905CT002	RR Emp on duty	Cut/abrasion, knee	Ran into object/equipment	CA	LOS ANGELES	40
168	UP	September	19	3	0905RS016	RR Emp on duty	Sprain/strain, knee	Collision - between on track equipment	CA	PLACER	48
169	UP	September	20	3	0905RS040	Trespasser	Fatality	Lost balance	CA	MONTEREY	34
170	UP	September	22	3	0905CT004	RR Emp on duty	Sprain/strain, upper back	Sudden, unexpected movement, other	CA	LOS ANGELES	43
171	UP	September	23	2	0905LA047	Nontrespasser	Fatality	Highway-rail collision/impact	CA	LOS ANGELES	30
172	UP	September	23	2	0905LA050	Nontrespasser	Unspecified injury	Highway-rail collision/impact	CA	LOS ANGELES	32
173	UP	September	24	2	0905RS030	Trespasser	Amputation, foot (general)	Highway-rail collision/impact	CA	FRESNO	64
174	UP	September	25	3	0905RS031	Trespasser	Fatality	Struck by on-track equipment	CA	MADERA	35
175	UP	September	25	3	0905RS033	Trespasser	Fatality	Slipped, fell, stumbled, other	CA	SAN LUIS OBI	35
176	UP	September	27	3	0905ES021	RR Emp on duty	Sprain/strain, lower back	Repetitive motion - work processes	CA	PLACER	35
177	UP	September	27	3	0905LA057	RR Emp on duty	Puncture wound, head/face	Struck by object	CA	LOS ANGELES	57
178	UP	September	28	3	0905ES019	RR Emp on duty	Misc. repeated trauma condition	Aggravated pre-existing condition	CA	LOS ANGELES	47
179	UP	September	28	3	0905LA056	RR Emp on duty	Sprain/strain, upper back	Caught, crushed, pinched, other	CA	ALAMEDA	39
180	UP	September	29	3	0905CT003	RR Emp on duty	Sprain/strain, wrist	Overexertion	CA	LOS ANGELES	43
181	UP	September	29	2	0905LA054	Trespasser	Unspecified injury, multiple	Highway-rail collision/impact	CA	SAN BERNARDI	35
182	UP	September	29	3	0905LA055	RR Emp on duty	Sprain/strain, foot (general)	Slipped,fell,stumbled,etc. due to object,ballast,	CA	SAN BERNARDI	56
183	UP	October	01	3	1005LA002	RR Emp on duty	Fracture, ankle area	Slipped, fell, stumbled, other	CA	IMPERIAL	27
184	UP	October	03	3	1005RS002	Trespasser	Fracture, multiple	Struck by on-track equipment	CA	SANTA CLARA	58
185	UP	October	04	3	1005CT001	Nontrespasser	Cut/abrasion, mouth/teeth	Struck by object	CA	ALAMEDA	45

Obs	RR	Month	Day	TA	Incident Number	Type Person	Condition	Event	St	County	Age
186	UP	October	04	3	1005LA004	RR Emp on duty	Fracture, upper back	Collision/impact - auto, truck, bus, van, etc.	CA	SAN BERNARDI	28
187	UP	October	05	3	1005LA006	RR Emp on duty	Cut/abrasion, lower arm	Struck by thrown or propelled object	CA	SAN BERNARDI	25
188	UP	October	05	3	1005RS013	RR Emp on duty	Sprain/strain, neck	Collision/impact - auto, truck, bus, van, etc.	CA	ALAMEDA	44
189	UP	October	06	3	1005RS008	Trespasser	Unspecified injury, multiple	Struck by on-track equipment	CA	FRESNO	54
190	UP	October	07	3	1005LA032	Trespasser	Fracture, upper arm	Struck by on-track equipment	CA	LOS ANGELES	18
191	UP	October	10	2	1005LA048	Nontrespasser	Cut/abrasion, head/face	Highway-rail collision/impact	CA	LOS ANGELES	30
192	UP	October	10	3	1005RS005	RR Emp on duty	Sprain/strain, multiple	Slipped, fell, stumbled, other	CA	SAN JOAQUIN	57
193	UP	October	11	3	1005RS014	RR Emp on duty	Sprain/strain, knee	Slipped,fell,stumbled,etc. due to irregular surfac	CA	SAN JOAQUIN	27
194	UP	October	18	3	1005RS022	Trespasser	Fatality	Struck by on-track equipment	CA	STANISLAUS	64
195	UP	October	19	3	1005CT003	RR Emp on duty	Sprain/strain, neck	Collision/impact - auto, truck, bus, van, etc.	CA	LOS ANGELES	44
196	UP	October	20	3	1005LS001	RR Emp on duty	Sprain/strain, lower back	On track equipment, other incidents	CA	LOS ANGELES	52
197	UP	October	22	3	1005RS019	RR Emp on duty	Cut/abrasion, thumb/finger	Caught, crushed, pinched, other	CA	SAN JOAQUIN	55
198	UP	October	24	3	1005RS023	RR Emp on duty	Bruise/contusion, lower leg	Slipped, fell, stumbled, other	CA	FRESNO	33
199	UP	October	26	3	1005HQ005	RR Emp on duty	Sprain/strain, lower back	Overexertion	CA	IMPERIAL	30
200	UP	October	27	3	1005CT004	RR Emp on duty	Sprain/strain, neck	Collision/impact - auto, truck, bus, van, etc.	CA	LOS ANGELES	58
201	UP	October	28	3	1005RS028	Trespasser	Fatality	Struck by on-track equipment	CA	SACRAMENTO	20
202	UP	October	30	3	1005LA049	Trespasser	Fatality	Struck by on-track equipment	CA	SAN BERNARDI	30
203	UP	October	31	3	1005LA042	Trespasser	Amputation, ankle area	Missed handhold, grabiron, step, etc.	CA	LOS ANGELES	30
204	UP	November	03	3	1105HQ004	RR Emp on duty	Cut/abrasion, shoulder	Apprehending/removing from property	CA	SAN BERNARDI	37
205	UP	November	04	3	1105RS003	Trespasser	Fatality	Struck by object	CA	SAN MATEO	40
206	UP	November	06	3	1105ES004	RR Emp on duty	Cut/abrasion, upper leg	Slipped, fell, stumbled, other	CA	PLUMAS	54
207	UP	November	07	3	1105RS009	RR Emp on duty	Fracture, thumb/finger	Sudden release of air	CA	ALAMEDA	25
208	UP	November	09	3	1105LA013	RR Emp on duty	Sprain/strain, upper back	Slack action, draft, compressive buff/coupling	CA	SAN BERNARDI	45
209	UP	November	14	3	1105RS017	RR Emp on duty	Unspecified injury, eye	Blowing/falling debris	CA	PLACER	47
210	UP	November	17	3	1105RS019	Trespasser	Fatality	Struck by object	CA	PLACER	31
211	UP	November	18	3	1105RS021	RR Emp on duty	Cut/abrasion, head/face	Collision - between on track equipment	CA	SAN JOAQUIN	29
212	UP	November	21	1	1105LA026	RR Emp on duty	Sprain/strain, neck	Slack adjustment during switching operation	CA	KERN	56
213	UP	November	22	3	1105LA039	Trespasser	Fatality	Struck by on-track equipment	CA	SAN BERNARDI	33

Obs	RR	Month	Day	TA	Incident Number	Type Person	Condition	Event	St	County	Age
214	UP	November	22	3	1105LA039	Trespasser	Fatality	Struck by on-track equipment	CA	SAN BERNARDI	62
215	UP	November	22	3	1105RS024	Trespasser	Fatality	Struck by object	CA	SAN JOAQUIN	25
216	UP	November	26	3	1105LA029	RR Emp on duty	Sprain/strain, upper back	Collision/impact - auto, truck, bus, van, etc.	CA	LOS ANGELES	21
217	UP	November	26	3	1105LA029	RR Emp on duty	Sprain/strain, upper back	Collision/impact - auto, truck, bus, van, etc.	CA	LOS ANGELES	45
218	UP	November	26	3	1105LA029	RR Emp on duty	Fracture, head/face	Collision/impact - auto, truck, bus, van, etc.	CA	LOS ANGELES	27
219	UP	November	26	3	1105LA029	RR Emp on duty	Sprain/strain, abdomen	Collision/impact - auto, truck, bus, van, etc.	CA	LOS ANGELES	49
220	UP	November	26	3	1105LA029	RR Emp on duty	Rupture/tear, internal injuries	Collision/impact - auto, truck, bus, van, etc.	CA	LOS ANGELES	56
221	UP	November	27	3	1105RS031	Trespasser	Fatality	Struck by object	CA	BUTTE	30
222	UP	November	28	3	1105LA038	Trespasser	Sprain/strain, shoulder	Lost balance	CA	LOS ANGELES	71
223	UP	November	28	3	1105RS029	RR Emp on duty	Sprain/strain, knee	Lost balance	CA	PLACER	50

Source for above: Bureau of Transportation Statistics:
http://www.bts.gov/publications/state_transportation_profiles/state_transportation_statistics_2004/html/table_02_10.html

See also:
http://www.bts.gov/publications/state_transportation_profiles/state_transportation_statistics_2004/

Appendix IID.

Excerpts from: National Cooperative Highway Research Program, NCHRP Report 535. Predicting Air Quality Effects of Traffic-Flow Improvements: Final Report and User's Guide. Transportation Research Board of the National Academies. 2005.

"The total air quality effects of transportation projects, especially those designed to improve traffic flow, are not fully understood. Projects may result in beneficial or detrimental impacts over the short or long term. For example, traffic-flow improvement projects may have a short-term air quality benefit by reducing congestion and increasing speed yet have a negative effect by facilitating additional travel. Also, transportation actions such as high-occupancy vehicle (HOV) projects, tolling strategies, and reduction in parking availability may have long-term air quality benefits by reducing trips and VMT, yet might make air quality worse in the short term by increasing congestion and queuing."

2.1 PROBLEM STATEMENT

Within the past decade, transportation professionals have reluctantly accepted that many of the transportation projects

that are implemented affect the level of travel demand. Most importantly, following a landmark court case in the San Francisco Bay Area,[1] the existence of induced demand for travel has been recognized and must be dealt with in planning transportation facilities. Induced demand, however, is not the only effect that changes to transportation facilities will have. The context within which induced demand has surfaced is that of the addition of capacity, usually through widening an existing, congested roadway. However, also of importance is the effect of a myriad of transportation demand and supply management and low-cost investments, many of which are aimed at achieving the opposite of induced demand, namely the reduction of vehicular travel.

2.2 RELATIONSHIP BETWEEN TRAFFIC-FLOW IMPROVEMENTS AND EMISSIONS

A complex chain of effects connects traffic-flow improvements to mobile source emissions (see Figure 1). Traffic-flow improvements, by definition, improve overall vehicle operating speeds and reduce congestion. Reduced congestion means fewer and less extreme vehicle acceleration and deceleration events for the facility. These first-order effects (see Box 1 in Figure 1) usually mean a change in the vehicle emission rates for the facility. Fewer acceleration and deceleration events will result in lower emission rates. Higher speeds may increase or decrease the vehicle emission rates. However, there are second-order effects as well. The higher speeds mean lower travel times. Lower travel times may encourage vehicle drivers to make more trips, make longer trips, and change their mode, route, and time of day for making their trips. These second-order effects usually occur fairly soon (within a year) of the facility improvement.

2.7 CONCLUSION

This chapter reviewed some of the attempts that have been made to measure induced travel and ideas for measuring induced travel in the future. First, induced and diverted traffic occur as a result of transportation system facility changes. There appears to be no dispute in the profession at this point on this issue; rather, it seems to be widely accepted that such changes occur and need to be estimated.