LOS ANGELES AND LONG BEACH MARITIME PORT HIA SCOPE

WORKING DRAFT

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FOR:

THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

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EXECUTIVE SUMMARY

Environmental, social, demographic, and economic conditions drive the health and well-being of communities. Factors such as housing, transportation, employment and income, noise, air quality, access to goods and services, access to parks, and social networks have well-demonstrated and reproducible links to health outcomes such as asthma, diabetes, and cardiovascular disease. Current and future activities at the Ports of Los Angeles and Long Beach impact these factors and thus the health of residents in communities neighboring the Ports.

Health Impact Assessment

Health Impact Assessment (HIA) is a public engagement and decision-support tool that can be used to assess how environmental, social, demographic, and economic factors, and therefore health, will change as a result of planning and policy proposals. The sound, objective data from a HIA, and close collaboration between public health experts, affected communities, and the decision-makers on a project, lead to practical, evidence-driven recommendations that address identified health concerns to the extent possible within the limitations of the regulatory or decision-making process. HIA and the HIA process: highlight positive health contributions of a proposal; may reveal unexpected health consequences and unanticipated costs; build collaboration, consensus and buy-in; identify agencies that have jurisdiction over the source of a health concern; engage communities; focus community involvement on real health concerns and mitigations; and can have bottom line benefits for the project sponsor.

Health Impact Assessment can be used to fulfill the requirement to analyze health effects in Environmental Impact Assessment (EIA) processes. An integrated approach to conducting a comprehensive analysis of health effects would allow data collected in the EIA process to be extended to the analysis of health outcomes.

HIA and the Ports of Los Angeles and Long Beach

As the US economy has become increasingly more global, trade through the Ports of Los Angeles and Long Beach has grown. Both globalization and trade through the Ports are expected to increase. In order to meet future demand, the Ports plan to increase their capacity. Over the past decade, several port capacity-building projects have gone through the approval process, including the approval of Environmental Impact Statements/Environmental Impact Reports (EIS/EIR). It is expected that additional capacity-building projects will be proposed at the Ports over the coming years.

The Ports of Los Angeles and Long Beach have recently made concerted efforts to address health-related concerns regarding their operations and they are leading ports across the nation in their attention to such concerns. Despite these efforts, there remain several reasons to use HIA to address health related concerns associated with port operations, such as the continued existence of health

inequities in communities impacted by port operations, the benefits that the HIA process offers the Ports, and the opportunity HIA presents to collaboratively understand project benefits and develop mitigations for adverse health impacts.

In discussions with, and comment letters to, the Ports regarding recent EISs/EIRs, the Environmental Protection Agency (EPA) has asked the Ports to include Health Impact Assessment to comprehensively analyze potential health impacts and inform mitigation options. With the goals of increasing understanding of and support for the concept of conducting HIA as part of the EIS/EIR process, the EPA offered to develop a model of a HIA Scope with public input. This document reflects the results of that effort.

The Los Angeles And Long Beach Maritime Port HIA Scope

This *Los Angeles And Long Beach Maritime Port HIA Scope* is intended for use as a model scope for future HIAs on proposed projects at the Ports. Once the decision to conduct a HIA on a specific project is made and project alternatives are selected for HIA analysis, the pathways, research questions, and definitions put forth in this document should be refined and narrowed to reflect the most relevant and important potential impacts of the proposed project. This process should be conducted with robust public involvement from a wide variety of stakeholders.

Specifically, this Scope contains information on the general parameters, questions, and data sources that need to be gathered to begin a HIA, including project alternatives to analyze, geographic and temporal limits of the analysis (i.e., 'defined geographies' and 'defined time period'), sensitive uses and vulnerable populations to consider, and existing population and community vulnerabilities. Questions relevant for this process: What are the demographic characteristics of the populations living and/or working in the impacted areas? What is the prevalence of relevant health issues in the impacted areas?

The Scope then contains information on each of eight health determinants: air pollution, noise, water pollution, traffic and rail, displacement, economics, neighborhood livability, and Port revenue and funding. For each of these, the Scope provides a brief review of literature linking the determinant to health, research questions for evaluating existing conditions and potential impacts (some of which may already be answered in an EIS/EIR and some of which build on data collected for an EIS/EIR), and examples of methods and potential mitigations. Below we summarize the health impacts and give examples of the research questions for each health determinant.

Air Pollution: Port construction, operations and related activities (including trucks, trains, and ships) cause harmful air pollution. The well-documented health effects of pollution from these sources include asthma and other respiratory diseases, cardiovascular disease, lung cancer, pre-term and low-birth weight births, and premature death. Important air quality-related questions to consider in a HIA include: How will the proposed project and resulting changes

in port-related activities impact these health outcomes? What is the cumulative impact of the proposed projects and all existing air pollution sources on air quality and health? How will projected changes in air quality impact the number of missed days of school and work for residents and workers in the impacted areas and how will those impact income, education, and employment of residents? Many of these analyses could use data already contained in an EIS/EIR as a starting point.

Noise: Port construction, operations and related activities (including trucks and trains) are major sources of environmental noise. As documented in the public health literature, noise exposure effects stress, hypertension, blood pressure, and heart disease, is associated with delayed learning, can cause sleep disturbance and annoyance which can impact concentration and aggression, and can impact children's learning abilities. Important noise-related questions to consider in a HIA include: How will the proposed project and resulting changes in port-related activities impact these health outcomes? How will the proposed project impact noise at noise-sensitive facilities and in residences? How will changes in noise impact school achievement and subsequent health outcomes? What is the cumulative impact of proposed projects and all existing noise sources on health?

Water Pollution: Water pollution from port activities and contaminants from storm water run off from the Ports can impact the health of people and marine wildlife. Documented health effects include skin irritation, stomach aches, flu, and neurological symptoms. Important water quality-related questions to consider in a HIA include: How would the proposed project impact exposure (dermal contact, ingestion) to polluted water and health impacts related to this exposure? How will the proposed project impact exposure to contaminants through consumption of fish and what are the health impacts of such exposure?

Traffic and Rail: Truck and rail traffic related to port activities impact traffic safety for pedestrians, bicycles, and drivers. It is well documented that traffic volume and speed relate to traffic-related injuries and fatalities and that they also relate to noise (see above) and to physical activity, which greatly impacts health. Important traffic- and rail-related questions to consider in a HIA include: How will the proposed project impact pedestrian and bicyclist environmental quality? How will the predicted changes in time spent in traffic impact levels of stress and physical activity for residents and workers and what are the related health impacts including cardiovascular disease and diabetes? How will the proposed project impact traffic collisions involving pedestrians, bicyclists, or drivers and thereby impact the number of injuries and fatalities? How will the proposed project impact emergency response times?

Displacement: Port projects and port-related activities may lead to direct and/or indirect displacement of residents, businesses, and community resources. Residential displacement impacts employment, housing (e.g., affordability, quality, homelessness, overcrowding), commute times, and social networks. Business displacement impacts employment and access to goods and services.

Displacement of community resources (e.g., parks and community centers) impacts social networks, physical activity, and other determinants of health. All of these forms of displacement have well documented health impacts including mental health (e.g., depression), communicable and chronic disease, and stress. Important displacement-related questions to consider in a HIA include: How will the proposed project impact the displacement of residents, businesses, and community resources? How will any displacement impact social networks, education, housing, and access to goods and services? How will these impact academic achievement, chronic disease (e.g., heart disease, diabetes, hypertension) and communicable disease (e.g., flu, sexually transmitted infections)?

Economic Effects: The Ports and port-related activities impact jobs and the supply of goods at local, regional, and state levels. Income is one of the strongest and most consistent predictors of health and disease in the public health research literature. Unemployment and poverty are definitively associated with poor health outcomes. Employment benefits, such as health insurance, also contribute to health outcomes. Important economic-related questions to consider in a HIA include: How will the proposed project impact the number and types of jobs offered by the Ports and at port-supporting businesses at local, regional and state levels? How will the proposed project impact unemployment in neighborhoods near the Ports? How will the proposed project impact goods and services available (including changes in cost) locally, regionally, and statewide? How will the proposed project impact job-training opportunities? How will these changes impact lifespan and chronic and communicable disease prevalence at the local, regional, and state level?

Neighborhood livability: A livable neighborhood is one that is not burdened with real or perceived deprivation due to factors such as concentrated poverty, a lack of resources, limited social networks, physical disorder or blight, crime, and/or environmental hazards. The Port and port-related activities greatly impact neighborhood livability for communities near the Ports. The availability of goods and services, including health clinics, childcare, schools, community centers, parks, and food impact livability and are tied to health outcomes in the public health literature. Neighborhood-level socioeconomic status (SES), independent of individual SES, impacts health (e.g., all-cause morbidity, heart disease, cancer, mental health) through employment opportunities and social networks. Important neighborhood livability-related questions to consider in a HIA include: How will the proposed project impact environmental hazards and perceptions of environmental hazards? How will the proposed project impact neighborhood resources and perceptions of those resources? How will the proposed project impact measures of the local economy and residents' perceptions of the local economy? How will the proposed project impact property values? How will the proposed project impact the social networks/social cohesion? How will the proposed project impact crime rates and perceptions of neighborhood safety in the impacted areas? How will these changes impact the health outcomes discussed above?

Port Revenue and Funding: Port revenue provides funding for local, county, and state government and for community benefits, which in turn funds local programs and services, such as health clinics, emergency services, parks, and pedestrian and bicycle infrastructure. Availability of such programs and services impact chronic and communicable disease and rates of injury and fatality. Important Port revenue and funding-related questions to consider in a HIA include: How will the proposed project impact the share of local city, county, or state revenue paid by the Port or port-related businesses? How will the proposed project impact the proportion of tax revenues earmarked for local community benefits? How will the proposed project impact port-related fees used to mitigate existing negative impacts to local communities? How will these impact neighborhood infrastructure/projects/programs, use of such resources and health outcomes such as rates of injury and fatality, and chronic and communicable?

As described above, this *Los Angeles And Long Beach Maritime Port HIA Scope* is intended to inform stakeholders in Port project proposals about what a Health Impact Assessment could contribute to the decision-making process. The Scope details the potential health issues that such proposals may influence and specific questions that a HIA could answer. We hope it contributes to a more comprehensive understanding of the health effects related to Port activities.

INTRODUCTION

Health Impact Assessment

Many land-use and transportation decisions affect health, even ones that may not seem to be specifically about health. For example, a decision to widen roadways will have impacts on noise and air quality for adjacent residents and on the safety of pedestrians along the street; noise, air quality and pedestrian safety are related to health outcomes that include asthma, cardiovascular disease, hypertension, injury, and mortality. HIA is a public engagement and decision-support tool that can be used to assess planning and policy proposals and make recommendations to improve the health outcomes associated with those proposals.

HIA is formally defined as a combination of procedures, methods and tools that systematically judges the potential, and sometimes unintended, effects of a proposed project, plan, or policy on the health of a population and the distribution of those effects within the population. HIA identifies appropriate actions to manage those effects. (Adapted from the IAIA, 2006)

There are five stages in a HIA process:

Screening	Determines the need and value of a HIA
Scoping	Determines which health impacts to evaluate, methods for analysis, and a workplan
Assessment	Provides: 1) a profile of existing health conditions 2) evaluation of potential health impacts 3) strategies to manage identified adverse health impacts
Reporting	Includes: 1) development of the HIA report 2) communication of findings and recommendations
Monitoring	Tracks: 1) impacts on decision-making processes and the decision 2) impacts of the decision on health determinants

Environmental, social, demographic, and economic conditions drive the health and wellbeing of communities. Factors such as housing, transportation, employment and income, noise, air quality, access to goods and services, access to parks, and social networks have well-demonstrated and reproducible links to health outcomes. A HIA analyzes health from a broad perspective by evaluating how a proposed project, plan, or policy affects these factors – often collectively referred to as "determinants of health" – and in turn, how impacts to these factors are likely to positively or adversely influence health.

Benefits of HIA and the HIA process

The HIA process fosters close collaboration between public health experts, affected communities, and the decision-makers on a project, These stakeholders, using the information from a HIA, develop creative evidence-driven recommendations for mitigation that address identified health concerns, to the extent possible within the limitations of the regulatory or decision-making process.

- HIAs provide sound, objective data on health impacts. By using this information, potentially unexpected health consequences and unanticipated costs can be identified and thus avoided.
- HIA helps develop healthier communities by identifying design solutions that address the root causes of many prominent health problems like asthma, diabetes, and cardiovascular disease.
- The HIA process can be used to build consensus and buy-in by addressing the affected community's fears about a project directly and transparently and by providing practical solutions. The HIA could also explicitly identify trade-offs between outcomes that are important to understand and use in project planning.
- The HIA process can help build collaboration between agencies and between other stakeholders, like community groups, and those agencies. The process can also help identify which agency has jurisdiction over the source of a health concern and build support for efforts to address that issue.
- HIAs help focus community involvement on real health concerns and on feasible mitigations to those health issues.
- Health issues are typically important to community members and HIA can serve to engage community residents in decisions that impact their lives.
- HIAs give project proponents a way to recognize positive health contributions of projects on communities and to inform stakeholders about those positive contributions. It also gives businesses the information they need to distinguish themselves as smart planners and build positive working relationships with the community.
- HIAs help decision-makers by ensuring that any potential concerns about a project are identified and addressed early on.

The International Council on Mining and Metals recently published "Good Practice Guidance on Health Impact Assessment." After detailing the benefits of carrying out HIA that are similar to those listed above, the guidance then details the "business case" for conducting HIA, stating:

> A proactive approach to preventing ill health and maximizing health and wellbeing, benefits can improve the financial performance of a project and parent company. Key bottom line benefits include:

- Speedier achievement of a mining and metals project's license to operate
- Lower planning and associated legal and consultancy costs
- Access to international funding
- Lower risk of disruptive protest or sabotage
- Lower risk of damage to a project and parent company's reputation
- Lower risk of future community-led liability and litigation
- Reduced absenteeism and health care costs for employees from local communities
- Improved general employee morale

HIA and Environmental Impact Assessment

The Requirement for Health Analysis in EIA

Health Impact Assessment can be used to fulfill the requirement to analyze health effects in Environmental Impact Assessment (EIA) processes, including Environmental Impact Statements (EIS) required by the National Environmental Policy Act (NEPA) and Environmental Impact Reports (EIR) required by the California Environmental Quality Act (CEQA). "Public Health Analysis Under the National Environmental Policy Act", a white paper by Wernham and Bear, describes the requirement to conduct a comprehensive health analysis under NEPA and other federal regulations (also see Appendix A, "Frequently Asked Questions about Integrating Health Impact Assessment into Environmental Impact Assessment"):

> The inclusion of a robust, systematic approach to public health is supported by NEPA, the regulations issued by the Council on Environmental Quality (CEQ), the agency in the Executive Office of the President charged with overseeing implementation of NEPA, Executive Orders 12898 and 13045, and available guidance on NEPA and environmental justice.
>
> *Congressional Intent*
>
> In using the term "human environment," Congress signaled that protection of human communities was a fundamental purpose of the legislation. In the debates leading to NEPA's enactment, Senator Henry Jackson stated: "When we speak of the environment, basically, we are talking about the relationship between man and these physical and biological and social forces that impact upon him. A public policy for the environment basically is not a public policy for those things out there. It is a policy for people."
>
> *Health in NEPA*
>
> NEPA [a six page document] mentions health a total of six times. Among NEPA's fundamental purposes is: "promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man." NEPA § 102 [42 USC § 4321]

NEPA is intended, furthermore, to: "assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings." [42 USC § 4331]

And finally to: "attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences." [42 USC § 4331]

Health in the CEQ Regulations

Several general provisions of CEQ's NEPA regulations support the inclusion of health.

First, agencies respond to substantive public concerns in the draft EIS [40 CFR § 1503.4]. When, therefore, an agency can anticipate substantive health concerns based on scoping, it is sensible to include these issues for analysis in the DEIS.

Second, in determining whether an effect may be significant (and therefore require analysis in the EIS) one of the factors that agencies should consider is "the degree to which the effects on the human environment are likely to be highly controversial" [40 CFR § 1508.27 (b) 4]. Commonly, health often figures among the strongest concerns expressed by affected communities.

The CEQ regulations also specifically define health as one of the effects that must be considered in an EIS or an EA. In defining "effects," the regulations state that:

"Effects" includes ecological, aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative." [40 C.F.R. § 1508.8] And, the regulations instruct agencies to consider "the degree to which the proposed action affects public health or safety" in determining significance. [40 C.F.R. § 1508.27]

Health in Executive Orders

Executive Order 12898 instructs agencies to: "make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States."

Similarly, Executive Order 13045 states that agencies must: "make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children; and ... shall ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks."

Statements relevant to NEPA-based health analysis in Federal Guidance

CEQ guidance on implementing Executive Order 12898 contains several suggestions relevant to public health analysis, including:

- Lead agencies should involve public health agencies and clinics
- Agencies should review relevant public health data (as for any other resource)
- Agencies should consider how interrelated cultural, social, occupational, historical, or economic factors may contribute to health effects of the proposed action and alternatives.

Incorporating Health Analysis in EIA

Currently, there are three ways in which health is incorporated into an EIR/EIS: 1) as a health risk assessment for a discrete exposure; 2) as a discussion of risk factors for health (e.g., air quality, traffic flow), but the link between those risk factors and health is not often made explicitly; and 3) as a demonstration of compliance with a health-based environmental regulation, such as the Clean Air Act. These approaches do not fully address the requirement for an analysis of potential public health effects according to the format/process established by NEPA.

A more complete analysis of health effects responsive to NEPA would consider all potentially significant direct, indirect and cumulative health impacts associated with the proposed action and alternatives. The analysis would include descriptions of baseline heath status and determinants of health for the affected population. These elements would generally be achieved through the implementation of an integrated HIA, which would:

- Include a systematic scoping of potentially significant direct, indirect, and cumulative health impacts;
- Analyze baseline health conditions and determinants of health;
- Analyze direct and indirect health impacts of the project; and
- Analyze cumulative impacts related to health outcomes.

The steps of Health Impact Assessment (described above) parallel the steps of Environmental Impact Assessment and, therefore, the two processes can be easily integrated. By integrating HIA and EIA, redundancy in data collection and analysis is avoided, as information collected in the EIA process provides inputs into the health analysis, which carry the analyses out to health outcomes. To conduct a HIA as part of an EIR/EIS, one would:

- Scope potential direct, indirect, and cumulative health concerns in the EIR/EIS Scoping stage. HIA Scoping includes stakeholder meetings to ensure the scope is complete and uses stakeholder knowledge and experience to prioritize the health concerns to analyze.
- Assess prioritized health concerns identified during Scoping. This assessment will include:

- new analyses (e.g., collecting existing data on health conditions and on existing determinants of health; analyzing impacts not previously analyzed as a result of the expanded Scope);
- extensions of existing analyses (e.g., using traffic data such as vehicle trips and volume to predict impacts on traffic injuries and physical activity); and
- developing potential mitigation measures to address significant health impacts.

In addition, HIA assessment could include methods that involve stakeholder participation, such as community surveys and focus groups.

- Report and receive public comment on baseline health conditions and determinants of health, the analysis of health impacts, and potential mitigation measures in the Draft EIR/EIS and respond to comments to develop the Final EIR/EIS.

Increasing Capacity at the Ports of Los Angeles and Long Beach

Over the last few decades, the US economy has become increasingly integrated into the rest of the world. One result of this globalization is the increase trade with other countries, including many in the Asia/Pacific region. The Ports of Los Angeles and Long Beach (hereafter referred to as the Ports) are the busiest ports in the US, and among the top five busiest ports in the world, handling millions of shipping containers each year. Today, nearly twenty times more international trade comes through U.S. West Coast Ports than in 1970, and by the year 2020, the Ports of Los Angeles and Long Beach are expected to handle the equivalent of 36 million, 20-foot containers annually - more than twice the container volume flowing through these two ports today.[1] Forecasts for the Port of Los Angeles show that even with anticipated improvements in operational efficiency, as well as expansions and modernization, the capacity of the Port terminals by 2030 would be unable to accommodate the forecasted cargo volume.[2]

In order to meet this demand, the Ports plan to increase the capacity of their operations. Over the past decade, a number of significant port expansion projects have been proposed and went through the approval process, including the approval of Environmental Impact Statements/Environmental Impact Reports (EIS/EIR). These include, for example, terminal expansions and improvements as well as channel deepening. It is expected that additional capacity-building projects will be proposed and undertaken at the Ports over the coming decades.

Past and Current Actions Taken by the Ports of Los Angeles and Long Beach to Address Health Issues

In the recent past, the Ports of Los Angeles and Long Beach have made concerted voluntary efforts to address health-related concerns associated with

their operations. The Ports progress in reducing air emissions is demonstrating leadership for ports across the nation. Both Ports provided an extensive description of their activities around community health, further grouping these activities according to the eight major pathways described in this scoping document. The following are summary points from the full descriptions, which are included in Appendix B and C, without edits:

- The Clean Air Action Plan – The goal of this Plan is to reduce air pollution from the ports by 45% (2005 baseline year) by 2012. To date, the port of Los Angeles has cut emissions of diesel particulate matter by 19% (23% per TEU)[3] and the Port of Long Beach has cut emissions by 21% (19% per TEU).[4] Elements of the Clean Air Action Plan[5] include:
    - The Clean Trucks Program, which has reduced heavy duty vehicle emissions of diesel particulate matter by an estimated 80%[6] in 2010 (from 2005 baseline).
    - Replacing a fleet of 16 switcher locomotives used at both Ports, with new cleaner, diesel engines.
    - Both Ports have several berths that provide alternate marine power, allowing ships to plug into cleaner electricity. The program goals include alternate marine power for 50% of berths by 2014 and 100% by 2020.

  The Clean Air Action Plan (http://www.cleanairactionplan.org) includes many additional measures to reduce air pollution from port operations.

The Ports have also contributed to projects aimed at improving neighborhood livability:

- The Port of Los Angeles' Wilmington and San Pedro Waterfront Projects will redevelop 526 acres of waterfront property including 68 acres of open space and 8 miles of connected bikeways and walkways.
- The Port of Long Beach provides 15,000-square-feet of facility space for the Homeless Services Center, created following the Navy Base closure. The Center provides one-stop access to resources for individuals and families experiencing homelessness within the City of Long Beach.
- The Los Angeles Harbor Department has contributed to the construction of parks and natural space for local communities including the 18-acre 22nd Street Park and the 5-acre park space at Knoll Hill.
- The Port of Long Beach has enhanced Coolidge Park, Hudson Elementary School and Perry Lindsey Academy, by planting 450 trees. The Port of Long Beach also helped create the Wrigley and 51st Greenbelts.

For a longer list of neighborhood improvement projects, see Appendix B and C.

Port and port-related business job creation represents a major benefit that the Ports of LA and Long Beach provide to local, regional, and statewide residents (see Section 6 for a discussion of the health benefits of jobs). Further, the Ports have invested in promoting education and vocational training for local residents.

- Combined, the Ports of Los Angeles and Long Beach directly employ approximately 1498 workers. According to studies commissioned by the Ports, the Port of Los Angeles supports 1.1 million jobs throughout California[7] and the Port of Long Beach supports more than 300,000 jobs in Southern California.[8]
- Some projects specify a minimum percentage of jobs set aside for local community members at prevailing wages. For example, the project labor agreement for the Middle Harbor Redevelopment Project requires that 30% of laborers come from the local community.
- Both Ports support a wide range of scholarships, programs and internships for local high school, community college and vocational or trade school students.

The Ports also engage with the community to provide a forum for the discussion of many issues, including the review of proposed port activities and ways the Ports can improve neighborhood livability. For additional information on these programs, see Appendix B, Port of Long Beach Programs Addressing Determinants of Health and Appendix C, Port of Los Angeles Initiatives Improving Health of the Local Community.

The Case for Continued Actions to Address Community Health Concerns

While the Ports have worked to address health-related concerns associated with port operations, there are three main rationale on which to base an expansion of this focus through the use of HIA: 1) continued health inequities in communities impacted by port operations; 2) benefits of the HIA process for the Ports; and 3) the possibility of collaboratively understanding project benefits and developing mitigations for adverse health impacts.

Health Inequities in Communities Impacted by Port Operations

Communities impacted by operations at the Ports, including those living near the Ports and those near the goods movement corridors that service the Ports, have worse health outcomes than other communities in Los Angeles County, in California, and in the United States. These data from the 2007 Los Angeles County Health Survey, conducted by the Los Angeles County Department of Public Health, indicate communities situated in close proximity to the Ports may experience higher rates of diseases like asthma (10.6% in Long Beach vs. 7.9% in LA County) and coronary heart disease (10.3% in Long Beach vs. 7.7% in LA County), depression (17% in Long Beach vs. 13.6% in LA County), and unhealthy days (7.0 days in the last 30 days in Long Beach vs. 5.4 days in LA County). Additionally, factors that determine health outcomes, such as crime

unemployment, physical inactivity, and poverty are higher in communities near the Ports. The estimates above and other sources of publicly available data illustrate the existing vulnerability of port communities and suggest port-related activities may contribute to health burdens. These data alone do not represent a comprehensive picture of community vulnerability. For example, data from neighboring communities, such as Wilmington, would be important to include and is not reflected here. The presentation of the above figures is not intended to minimize the potential impact to other communities, but is simply a reflection of a lack of readily available data at the appropriate geographic scale. While data on the prevalence of health burdens and the factors that determine health outcomes at the appropriate scale is available upon request, analysis of such data is beyond the scope of this HIA Scope.

Although it is clear that the Ports are not the only cause of these health issues, it is true that many of these issues are influenced directly or indirectly by port-related operations. In its "Methodology for Estimating Premature Deaths Associated with Long-term Exposure to Fine Airborne Particulate Matter in California" (released October 24, 2008), the California Air Resources Board reported that there are 3700 premature deaths/year directly attributable to the Ports and goods movement statewide, and approximately 120 deaths/year associated with diesel particulate matter emissions from activities at the Ports of Los Angeles and Long Beach specifically. In addition to particulate matter (PM)-related mortality, exposure to diesel PM is also associated with elevated cancer rates (mainly lung cancer), hospitalization rates, asthma exacerbation, respiratory disease, and missed workdays.

While the actions of the Ports (described above) intend to address many of the adverse health impacts from ports and goods movement activities, additional mitigations by the Ports would further reduce the existing health inequities faced by impacted communities.

The Benefits of the HIA Process for the Ports

The general benefits of HIA are described above, however, given recent history related to proposed projects at the Ports, several benefits of HIA for the Ports stand out as especially important:

- HIAs can help build consensus and collaboration and can address concerns early in the planning process. Controversy surrounding past proposals at the Ports has slowed projects down and led to litigation. Through focused and authentic engagement of stakeholders, the HIA process has been shown to enable diverse stakeholders to find common ground and understanding. In at least one case, a HIA has helped avoid a lawsuit (in Alaska).
- HIAs can help focus community concern around real health issues. Community concerns regarding port projects range widely. The use of a health lens to focus such concerns on issues that have the greatest impact

and around actionable mitigations of those issues can allow for new agreements between community and the Ports.

- HIAs can be a platform from which the Ports can raise awareness of their positive contributions to health including those related to regional jobs, contributions to the local tax base leading to enhancements in local government services, and other benefits, such as those described above. HIAs describe both positive and negative health impacts.
- The HIA process can provide an opportunity for stakeholders to work collaboratively to develop mitigations to address adverse health impacts that may not be considered as part of an EIR/EIS, and ensure that these mitigations are considered in decision-making processes. Development of feasible, research-based mitigations with stakeholders that have been involved in the HIA process (and therefore are grounded in the HIA research questions and findings) and with external subject matter experts has previously led to consensus and buy-in among stakeholders and successful implementation of health-promoting mitigations.

One critique of regulatory processes such as NEPA and CEQA is the lack of procedures to incorporate findings from environmental justice analyses into analyses conducted as part of EIR's/EIS's, and therefore a failure for environmental justice considerations to influence determinations of significant impacts and inform mitigations. The HIA process offers a mechanism to integrate environmental justice and other impact analyses, providing mitigations that address disproportionate health burdens and other inequities faced by some populations.

Environmental Protection Agency's Comments on Environmental Impact Statements for Port Projects

In response to the continued need to address community health concerns described above, since July 2008, EPA has asked the Ports to analyze potential health impacts of expansion projects by including a HIA in Port EISs/EIRs. With the goals of increasing understanding of and support for the concept of conducting HIA as part of the EIS/EIR process, the EPA offered to develop a model of a HIA Scope with public input. This document contains the results of that effort.

The Process of Developing this Scope

The process used to develop the *Los Angeles And Long Beach Maritime Port HIA Scope* adheres to standard HIA practice for scoping. Methods employed included:

- literature review
- review of public documents, including port-related EISs/EIRs
- key informant interviews

- a public stakeholder meeting (February 10, 2010 at Bannings Landing)
- public health expert review

Staff at Human Impact Partners, a non-profit with extensive HIA expertise, authored this draft of the Scope.

Intended Use of This Document and Next Steps in Conducting a HIA

This *Los Angeles And Long Beach Maritime Port HIA Scope* is intended to be a model scope for future HIAs on proposed growth and expansion projects at maritime ports. Because it is not specific to any one proposed expansion or growth project, it includes pathways and research questions, which may not be relevant for every proposed project. The pathways considered here include health effects that could occur through direct, indirect, or cumulative impacts of future port projects.

Once the decision to conduct a HIA on a specific project or set of projects has been made (HIA Screening) and project alternatives, including a 'no build' alternative, have been selected for HIA analysis, the pathways, research questions, and definitions put forth in this document should be refined and narrowed to reflect the most relevant and important potential impacts of the proposed project(s). Questions regarding the geographic and temporal scope of the potential impacts and which port-related activities (see definitions below) to include should be addressed on a project-specific basis. Similarly, after a specific project is selected, existing regulations relevant to that project would need to be researched, documented, and analyzed.

The process of refining and prioritizing pathways and research questions in this model Scope for a specific project or set of projects should be conducted with robust involvement from a wide variety of stakeholders. Prioritization criteria should be developed with those stakeholders and may include impact on existing health disparities, potential magnitude of impact, degree of concern to the community, and strength of evidence linking the pathway to the proposed action or alternatives.

This document includes a comprehensive set of potential pathways in order to account for many types of project proposals. But, because not all types of proposals can be foreseen, there may be health issues and pathways that are not part of this Scope that could be impacted by specific proposals. For this reason, while this Scope provides a framework and guide for future project-specific HIAs, it is not a substitute for the scoping phase of a HIA, which would take into account specific features of the proposed action, and the perspectives of stakeholders in that decision.

GLOSSARY OF COMMONLY USED TERMINOLOGY IN THIS DOCUMENT

At-grade crossings

Junctions in which freight trains intersect with and have priority over roadways *(University of California, Berkeley)*

Cumulative Impacts

"Cumulative impact" is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. *(CEQ Regulations for Implementing NEPA)*

Grade separated rail crossings

Roadway-rail grade separations divide vehicle traffic and railroad traffic by building bridges over or under railroad tracks, or rerouting train tracks over or under existing streets. *(San Bernardino Associated Governments)*

Health Disparities

Differences in the incidence, prevalence, mortality, burden of diseases and other adverse health conditions or outcomes that exist among specific population groups. Health disparities can affect populations groups based on gender, age, ethnicity, socioeconomic status, geography, sexual orientation, disability or special health care needs and occur among groups who have persistently experienced historical trauma, social disadvantage or discrimination, and systematically experience worse health or greater health risks than more advantaged social groups. (National Association of Chronic Disease Directors)

Impacted Areas

Includes areas in close proximity to the Port and to port-related activities that will be included in the HIA. The exact definition of areas that would be included in a HIA depends on both the proposal under consideration and the pathway describing the impact. For some pathways methods of determining impact areas, such as air and noise dispersion models are already established by current EIR/EIS practice, although there may still be room for improvement to account for all port-related emissions sources. For other less commonly studied pathways, such as displacement, economic effects, and neighborhood livability, geographic boundaries could be determined by factors such as the existence of data at an appropriate scale to answer the research questions and considerations of the locations and priorities of impacted communities.

Motor Vehicle Accidents (MVA)

Includes accidents involving motor vehicles with other motor vehicles, motor vehicles and pedestrians, and motor vehicles and bicyclists.

Neighborhood Resources

Key retail, services and facilities that are necessary for meeting the health needs of neighborhood residents (e.g., parks, playgrounds, retail, food outlets, banks,

day care centers, community centers). Access to these resources can impact walking and biking, daily vehicle trips and miles traveled, possibilities for healthful and meaningful work, and increased interactions among neighbors and others in the community.

Port-related Activities

Includes activities involving port construction, equipment, trucks, locomotives, ships, etc. that operate at, originate from, or have a destination of the Ports and port-related businesses such as container fumigation, transportation, and storage. The Ports do not have jurisdiction over all port-related activities, however, the role of the Ports in the generation of these activities should be recognized.

Sensitive Receptors

People or institutions with people (e.g. schools) that are particularly susceptible to illness from environmental pollution, such as the elderly, very young children, people already weakened by illness (e.g., asthmatics), and persons engaged in strenuous exercise. *(University of California CEQA Handbook, 2002)*

Social Cohesion

The quality of social relationships and the existence of trust, mutual obligations and respect in communities or in the wider society that helps to protect people and their health. *World Health Organization)*

Social Networks

Social relations and links between individuals that may provide access to or may mobilize social support for health. *(World Health Organization)*

Vehicle Miles Traveled (VMT)

One vehicle traveling the distance of one mile. Total vehicle miles, thus, is the total mileage traveled by all vehicles. *(Bureau of Transportation Statistics)*

Waterways

A river, canal, or other navigable channel used as a means of travel or transport. For the purposes of this HIA Scope, waterways refer to the Los Angeles and Long Beach Harbors, as well as other rivers and channels that are used by communities in the impacted areas.

OVERARCHING SCOPING PARAMETERS

Scoping Question	Examples of Potential Scoping Alternatives
Project / decision alternatives	Proposed port expansion or change in operations Alternative projects or project with mitigations No Project
Geographic and temporal limits	Communities living within a pre-defined distance of the port Communities living within a pre-defined distance of port-related activities Current and future impacts over a pre-defined time period
Sensitive uses and vulnerable populations	Residential neighborhoods Low-income housing Senior centers or senior housing Childcare centers Schools Parks
Population vulnerabilities	Poverty Prevalence of chronic diseases English language proficiency Educational Attainment Race/ethnic background
Community vulnerabilities	Housing, land use, and business conditions Existing pollution exposure
Potential project factors leading to impacts on health	Air Pollution Noise Water Pollution Traffic and Rail Displacement Economic Effects Neighborhood Livability Port Revenue and Funding

BASELINE RESEARCH QUESTIONS RELEVANT TO ALL PATHWAYS

The following questions apply to all the issue-specific sections included in this HIA Scope. They are included here to avoid repetition throughout the document.

- What are the demographic characteristics of the populations living and/or working in impacted areas? Including:
    - number of people
    - age
    - race/ethnicity
    - household income
    - unemployment rate
    - occupations
    - education levels
    - poverty rate
- What is the prevalence of health issues in the impacted areas? For example, what is the prevalence of the following:
    - asthma and other respiratory illnesses
    - cancer
    - cardiovascular disease
    - child development
    - communicable diseases (e.g., influenza, sexually transmitted disease)
    - diabetes
    - hypertension
    - immune response
    - injury
    - mental health issues (e.g., depression)
    - pre-term and low-weight birth
    - premature death (e.g., years of potential life lost – YPLL – or age of death subtracted from life expectancy; as defined by the CDC, see http://www.cdc.gov/mmwr/preview/mmwrhtml/00001773.htm)
    - stress
- What is the cost of diseases that could otherwise be avoided in the impacted areas?
- How many trips (truck and rail) originate from the Ports or have a final destination of the Ports?
- What are rates of physical activity among populations living in the impacted areas?

- What are the average commute times and mode splits for those who live and work in the impacted areas?
- What is the current mix of existing retail, public services, and other neighborhood resources in the impacted areas?
- What is the current status of measures of the local economy, including employment, income and access to goods and services?
- What are property values in the impacted areas and how have they been changing?
- What data exists on the actual impacts of past port projects (e.g., based on community level monitoring)?
- Access to health care (geographic and financial)?

EXAMPLES OF DATA SOURCES

Environmental Impact Statements and Environmental Impact Reports are an important source of data and analysis needed to understand the health impacts of a proposed project. Often, HIA research extends data and analyses collected as part of an EIR/EIS.

Other data sources include:

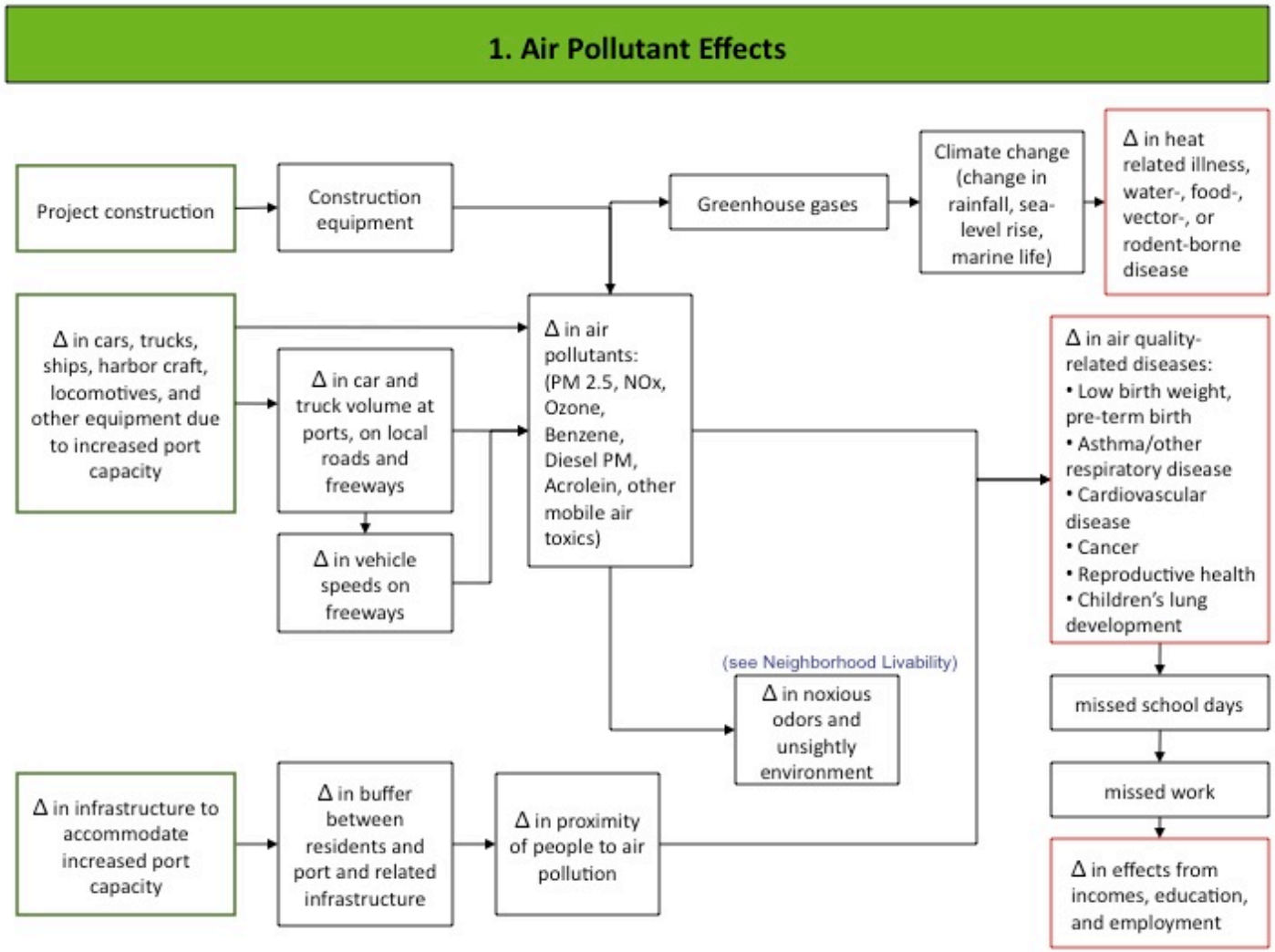
- Public Agencies, Offices, and Departments:
  - State and local health agencies (including the Los Angeles County Department of Public Health)
  - California Air Resources Board
  - CalTrans and other transportation agencies
  - Land use agencies
  - State Highway Patrol
  - Local Fire Departments
  - Chambers of Commerce
  - Department of Education
  - Departments of City Planning
  - Office of Economic Development
  - California Employment Development Department
  - City, County, State Comptrollers Offices
  - City of LA and Long Beach
  - Bureau of Labor Statistics
  - Office of Statewide Health Planning and Development (OSHPD), hospital data and records
- Surveys and Other Databases
  - Toxic Release Inventory (TRI) data
  - U.S. Census
  - The Los Angeles County Health Survey (LACDPH)

- California Health Interview Survey (CHIS)
- Dunn and Bradstreet databases
- Behavioral Risk Factor Surveillance System (BRFSS)

- Other Businesses, Organizations and Information Sources
  - Southern California Association of Governments
  - Alameda Corridor Transit Authority and San Pedro Bay Ports Economic Impact Study
  - BNSF and Union Pacific
  - Bicycle coalitions
  - School districts
  - Monitoring data and environmental documents from regulatory agencies
  - Emissions inventory
  - Port records of truck and traffic data
  - Truck counts conducted by local community organizations
  - Fitnessgram data/CA Department of Education
  - Reports by local organizations (with a youth or health focus)
  - Community surveys, focus groups, key informant interviews
  - Accounts kept by local service providers, retail or neighborhood centers
  - Tax Parcel records

It should be noted that some of the data that would be useful to assess baseline health conditions and health impacts is not currently available. As a result, HIAs use data available at the scale most appropriate to the issue being analyzed. For example, while cardiovascular disease rates by census block may be the most useful information, it may only be available by zip code or at the city-wide level. To the extent that is possible and useful the HIA will attempt to make comparisons with available data.

1. AIR



Summary of Evidence Supporting Pathway

New or expanded port operations can incrementally add to local air pollution.

- Major air pollutants from diesel engines at ports that can affect human health include particulate matter (PM), volatile organic compounds (VOCs), nitrogen oxides (NOx), and sulfur oxides (SOx).[9]
- The health effects of pollution from ports may include asthma, other respiratory diseases, cardiovascular disease, lung cancer, and premature death.[10]

Living near roadways increases respiratory disease.

- A study of children in the Netherlands found that lung function declined with increasing truck traffic density especially for children living within 300 meters of motorways.[11]
- Children in Erie County, New York hospitalized for asthma were 1.93 times more likely to live within 200 meters of heavily trafficked roads.[12]
- In a study of Southern California School Children, living within 75 m of a major road was associated with an increased risk of lifetime asthma, prevalent asthma, and wheeze.[13]
- Vehicle miles traveled are directly proportional to air pollution and greenhouse gas emissions.[14]

Specific air pollutants impact human health

- Fine particulate matter (PM), oxides of nitrogen and sulfur impact human health. [15]
- There is a 1% – 8% increased risk of mortality for every 50 ug/m3 PM10 and a 1% – 3.5% increase in mortality for every 25 ug/m3 PM2.5.[16]
- Average life expectancy is decreased by 1.5 years when you compare cities at the highest and lowest PM levels.[17]
- There is an increased risk of dying of between 0.2% – 0.6% for each increase in 10ug/m3 in O3 (smog).[18]
- In a Southern California study, children were followed for 5 years. Children who played three or more sports in a high ozone

community showed a 3.3 times higher risk of having asthma than those who did not play sports, but still lived in a high-ozone community.[19]

- The rate ratio of the most air-polluted cities compared to the least air-polluted cities is 1.26 times higher for mortality rates from respiratory illness.[20]
- According to the United States Environmental Protection Agency, reducing the National Ambient Air Quality Standards for PM 2.5 by 1 mg3 from 15 to 14 would result in 1,900 fewer premature deaths, 3,700 fewer non-fatal heart attacks, and 2,000 fewer emergency room visits for asthma each year.[21]
- According to the California Air Resources Board, attaining California PM standards would annually prevent: - 6,500 premature deaths (3% of all deaths) - 4,000 hospital admissions for respiratory disease - 3,000 admissions for cardiovascular disease - 2,000 asthma-related ER visits - 400,000 cases of lower respiratory symptoms (such as cough) in children - 400,000 cases of upper respiratory symptoms (runny nose, itching eyes) in children - 8,000 cases of chronic bronchitis - 500,000 cases of respiratory illness (colds and flu) - 350,000 asthma attacks.[22]
- Health effects associated with short-term exposure to PM 2.5 include: increased hospital admission and ER visits for cardiovascular diseases and respiratory diseases, non-fatal heart attacks, premature death in people with heart and lung disease, lung function changes especially in children and people with lung diseases such as asthma.[23]
- Studies have found that diesel exhaust increases cancer risks, and a 2000 California study found that diesel exhaust is responsible for 70 percent of the cancer risk from air pollution.[24]
- Vehicle exhaust adversely affects lung function and is related to cardiovascular disease, cancer, mortality from diabetes and other causes, and can exacerbate chronic obstructive pulmonary disease.[25]
- Greenhouse gases are contributing to climate change, which may increase heat-related illness and death, health effects related to extreme weather events, health effects related to air pollution, water-borne and food-borne diseases, and vector-borne and rodent-borne disease.[26] [27]

- Air pollutants, including ozone and particulate matter, are causal factors for cardiovascular mortality and respiratory disease and illness.[28]

Mitigating factors

- Pollution from existing industrial stationary and mobile sources should be considered when assessing the impact of incremental air pollution from the expansion of port activities.
- Housing conditions may mitigate exposure to air pollution by preventing outside air from making its way into indoor spaces.

Indoor air quality is also unhealthy and therefore contributes to the cumulative impacts of air pollution (e.g. indoor exposure to asthma triggers such as pests, mold, and chemicals).

Port projects may reduce some pollutant emissions relative to the expected growth in shipping without the project.

Research Questions

Baseline Questions	Impact Questions
What is the existing air quality in the impacted areas and in the region? What are the current contributions of each port-related activity to air pollution?	How will the proposed project impact port- related activities? How will the projected changes in port-related activities affect air quality in the impacted areas? How will construction activities related to the proposed project contribute to air pollution? How will the proposed project impact the port's contribution to greenhouse gasses and climate change?
What other sources of air pollution are present near the Ports and what is their contribution to air pollution in the impacted areas and the region?	What will be the cumulative impact of the proposed project and all existing air pollution sources on air quality?
What is the current vehicle volume (cars and trucks) at ports, and on local roads and freeways in the impacted areas?	How will the proposed project impact vehicle volume at the Ports and on local roads and freeways? How will the proposed project impact vehicle speed on freeways?

Baseline Questions	Impact Questions
What is the current proximity of residents and workers to port and port-related air pollutant sources?	How will the proposed project impact the proximities of residents and workers to sources of air pollution? How will changes in proximities of residents and workers to sources of air pollution impact their exposure to air pollution?
What is the current prevalence of asthma and other respiratory diseases in the impacted areas, compared to in the region and in the rest of the state?	How will projected changes in air quality impact asthma prevalence and the prevalence of other respiratory diseases in the impacted areas and region?
What is the current prevalence of cardiovascular disease in the impacted areas, compared to in the region and in the rest of the state?	How will projected changes in air quality impact prevalence of cardiovascular disease in the impacted areas and region?
What is the current cancer risk due to air pollution in the impacted areas, compared to in the region and in the rest of the state?	How will projected changes in air quality impact cancer risk in the impacted areas and region?
What is the current mortality rate associated with exposure to air pollution in the impacted areas, compared to in the region and in the rest of the state?	How will projected changes in air quality impact rates of premature death in the impacted areas and region?
What is the current number of low-birth weight babies, pre-term births, and status of other reproductive and endocrine health measures in the impacted areas compared to in the region and in the rest of the state?	How will projected changes in air quality impact the number of low-birth weight babies, pre-term births, and status of other reproductive and endocrine health measures in the impacted areas compared to in the region and in the rest of the state?
How many missed days of school are currently attributable to effects from air pollution in the impacted areas?	How will projected changes in air quality impact the number of missed days of school and work for residents and workers in the impacted areas? How will projected changes in number of missed days of school and work for residents and workers impact income, education and employment of residents and workers in the impacted areas?

Examples of Analysis Methods

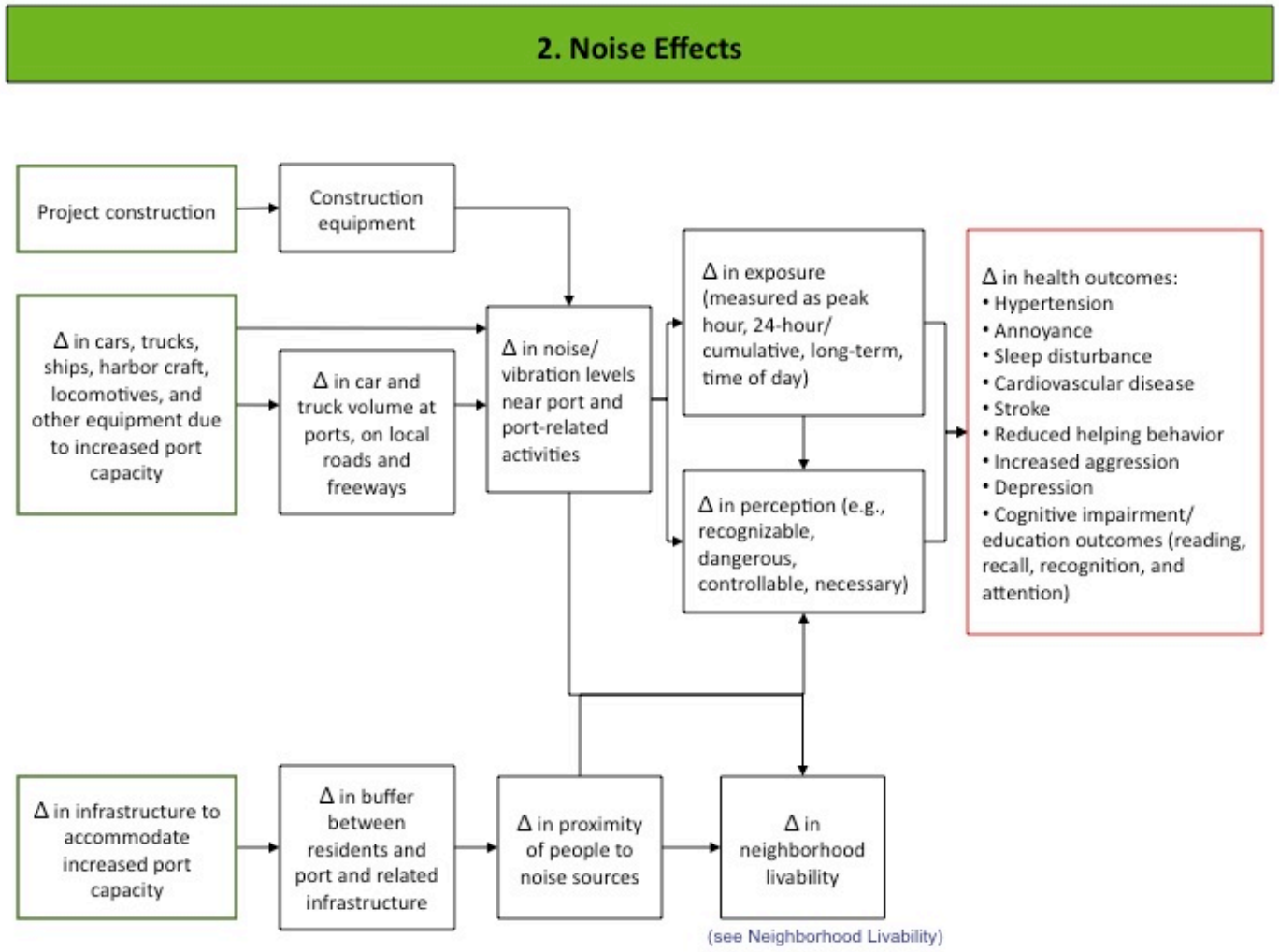
- Combined quantitative and qualitative analysis based on academic literature and past studies

- Predicted change in VMT based on research findings and current/predicted traffic data
- Emissions models (e.g., EMFAC)
- Dispersion models (e.g., AERMOD, CAL3QHC)
- EPA or CalEPA dose response functions from regulatory impact analyses
- Morbidity and mortality models (e.g. BenMAP)

Examples of Design and Mitigation Alternatives

- The Clean Air Action Plan is an example of they ways in which the Ports are setting the standard for implementation of the best available technologies to reduce air pollutant emissions (http://www.cleanairactionplan.org/reports/caap_fact_sheets.asp)
- Electrification of transportation infrastructure
- Measures to reduce air pollution exposures inside residences (e.g. ventilation system retrofits)
- Re-routing roadway freight traffic away from residential areas
- Retrofit existing housing near roadways with adequate air filtration, and ensure that new residential construction has filtration systems capable of providing safe indoor air supply

2. NOISE



Summary of Evidence Supporting Pathway

Traffic and construction activity are sources of environmental noise[29]

- Urban noise increases 6.7 dB with 10-fold increased street traffic, with important contributors being bus and heavy truck traffic.[30]
- 22% of the population of the European Union are exposed to transportation noise level exceeding 65 dB during the day, which many countries consider unacceptable.[31]

Noise exposure has an effect on stress, hypertension, blood pressure, and heart disease

- In a meta-analysis of 43 studies of noise exposure and heart disease, road traffic noise was associated with higher risk for myocardial infarction and ischemic heart disease than in the general population, and air traffic noise was associated with consultation with a doctor about heart problems, use of cardiovascular medications, and angina pectoralis.[32]
- Men exposed to sound levels of outdoor traffic noise more than 70 dB(A) during the day were 30% more likely to have had a myocardial infarction than those whose noise exposure was not above 60 dB(A). Men who had lived at their present address for more than 10 years were 80% more likely to have had an MI.[33]
- A case-control study in West Berlin found a 32% higher odds of heart attack in men who had lived for at least 15 years on streets with 6-22 hours per day of noise levels above 70 dB(A) compared to those who lived on streets with noise measuring less than 60 dB(A).[34]
- Non habitual noise causes an increase of adrenaline. People working for 2 days under exposure to car racing noise (85-100 dB(A)) had a significant increase of adrenaline, serum MG, a decrease in erythrocytes, and total cholesterol in blood serum was increased (risk factor for heart attack).[35]

Exposure to environmental noise is associated with delays in learning [36]

- Chronic road traffic could impair cognitive development in children, such as reading comprehension, speech intelligibility, memory,

motivation, attention, problem-solving, and performance on standardized tests.[37]

- Noise exposure may also slow rehearsal in memory, influence processes of selectivity in memory, and choice of strategies for carrying out tasks.[38]

Long term exposure to environmental noise can cause sleep disturbances

- Reductions of noise by 6-14 dBA results in subjective and objective improvements in sleep.[39]
- Noise can cause sleep disturbances.[40]
- Sleep disturbances have been associated with a variety of health problems, such as functional impairment, medical disability, and utilization of treatment. Sleep difficulties are also associated with increased use of medical services even among those with no previous health problems.[41]
- Exposure to night-time noise also induces secondary effects, which are measured the day following the night-time exposure, while the individual is awake. The secondary effects include reduced perceived sleep quality; increased fatigue; depressed mood or well-being; and decreased performance.[42]

Environmental noise is a risk for hearing impairment

- Noise-induced hearing impairment occurs predominantly in the high-frequency range of 3,000-6,000 Hz, the effect being largest at 4,000 Hz. With increasing exposure time, noise-induced hearing impairment also occurs at 2,000 Hz.[43]
- In a case-control study, noise-exposed persons had much greater hearing loss than their age cohorts who were relatively unexposed to noise.[44]

Environmental noise causes annoyance, which can impact concentration, increase aggressive behavior, and decrease helping behaviors

- Frequent annoyance was reported by 13% of subjects exposed to 24 hr > 50 dB(A) compared to 2% among those exposed to < 50 dB(A).[45]
- Noise may reduce helping behavior, increase aggression and reduce the processing of social cues seen as irrelevant to task performance.[46]
- Living along arterial urban streets increased risk of annoyance from noise by 40%. Relative risk of annoyance from living in a high noise area in San Francisco 2.1 times compared to a low noise area.[47]
- 17% of a major urban city, by scientific measurement, was deemed at risk of noise annoyance.[48]

Environmental noise impacts children physically as well as their learning abilities

- In studies with dB(A) ranging from 95 - 125, elevated blood pressure levels in school-aged children is associated with living or going to school near a major chronic noise source (e.g., airport, traffic, trains).[49]
- Older children from quieter environments were better at discrimination tasks done under noisy conditions. Children from noisy environments learned to tune out auditory stimuli but in a nondiscriminatory way and tuned out important cues.[50]
- There is a link between chronic noise exposure and reading. One study took place at a school where planes from a nearby airport flew over a school every 6 minutes resulting in classroom decibel levels of 90 dB(A). In this study children in the noisy school had poorer reading skills than children from the quiet school.[51]

Research Questions

Baseline Questions	Impact Questions
What are the intensity and duration of noise in the impacted areas (measured as peak-hour, 24-hour/cumulative, long-term, and by time of day)? What are the current contributions of each port-related activity to noise intensity and duration?	How will projected changes in port-related activities affect noise intensity and duration in the impacted areas (measured as peak-hour, 24-hour/cumulative, long-term, and by time of day)?
What is the intensity and duration of vibration in the impacted areas?	How will projected changes affect vibration in the impacted areas?
What other sources of noise pollution exist near the Ports and what is their contribution to existing levels of noise in the impacted areas?	What will be the cumulative impact of proposed projects and all existing noise sources on noise intensity and duration at various times of day?
What are existing perceptions of noise in the impacted areas?	How will the proposed project impact perceptions of noise and vibration?
What noise-sensitive uses (i.e., schools, childcare facilities, hospitals, etc.) are located near port-related activities? Where are these located? How many people (including sensitive receptors) are served by these facilities? What are existing noise levels at these sites?	How will the proposed project impact noise at these noise-sensitive facilities? How will these changes in noise impact people who use these facilities?
How many residences are located near port-related	How will the proposed project impact noise in these residences?

Baseline Questions	Impact Questions
activities in the impacted areas? Where are these residences located? What are existing noise levels at these sites?	Will the proposed project put residences in closer proximity to noise sources? How will projected changes in noise impact people in these residences?
What are the current impacts of exposure to noise pollution on academic achievement (standardized tests, reading comprehension) for children in the impacted areas?	How will projected changes in noise affect school achievement? How will changes in school achievement affect health outcomes?
What is current prevalence of hypertension, cardiovascular disease, and stroke in the impacted areas?	How will proposed changes in noise affect the prevalence of hypertension, cardiovascular disease, and stroke?
What is current prevalence of annoyance and sleep disturbance in the impacted areas?	How will projected changes in noise affect prevalence of annoyance and sleep disturbance?
What is current prevalence of depression and aggression?	How will projected changes in noise affect prevalence of depression and aggression?
What is the current prevalence of hearing impairment?	How will projected changes in noise affect prevalence of hearing impairment?

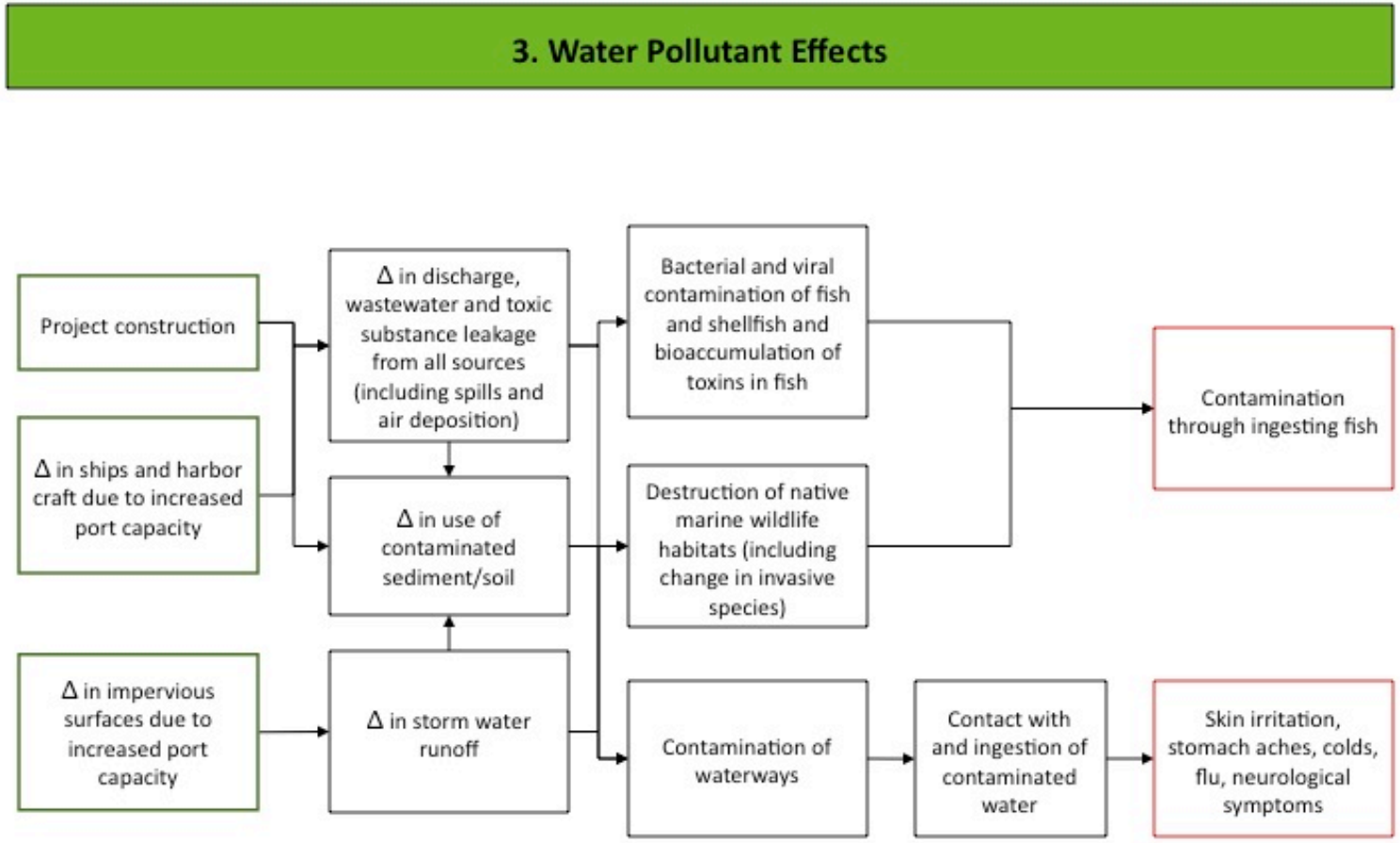
Examples of Analysis Methods

- Surveys or focus groups
- Modeling using FHWA traffic noise model or other noise modeling tools
- Published dose response equations and epidemiological relationships

Examples of Design and Mitigation Alternatives

- Measures to reduce noise emissions (e.g., road surface treatments, rail treatments, engine design, or speed reductions)
- Measures to mitigate exposure (e.g., sound walls or residential window retrofits, timing of high-noise activities to avoid sleep hours in residential areas and school hours near schools.)
- Engineering measures to re-route or limit freight traffic in residential areas and near schools

3. WATER



Summary of Evidence Supporting Pathway

Water pollution from port activities can impact the health of marine wildlife and humans[52]

- TBT, used to prevent barnacles and other marine organisms, is linked to skin irritation, stomach aches, colds, flu, and neurological symptoms. [53]
- Oil from bilge and other ship-related secretions is deposited in waterways and harms ecosystems and human health.[54] [55]
- Dredging ports to remove sediment potentially stirs up toxic substances.[56] [57]

Storm water run off pollutes waterways

- Paved surfaces contribute to flooding, habitat loss, water quality decline, and reduced diversity of aquatic life.[58]
- Storm runoff from urban and suburban areas contains dirt, oils from road surfaces, nutrients from fertilizers, and various toxic compounds.[59] [60]
- Water runoff may contain high concentrations of heavy metals, organic pollutants, fecal coliform bacteria, nutrients and total suspended solids.[61] [62]
- Automobile emissions and the wear of automobile parts and road construction materials are the primary sources of lead, zinc, copper, and iron to roadways and parking lots.[63]

Contaminants from storm water runoff have been found in marine wildlife and impact human health

- Contaminants found in marine wildlife[64] [65]
- PCBs, copper, zinc, and benzo[a]pyrene in contaminated sediments may pose a significant threat to human health via diet.[66]
- Persistent organic compounds are endocrine disruptors and are associated with eggshell thinning.[67]

Mitigating factors

- New technologies such as storm water management strategies.

Research Questions

Baseline Questions	Impact Questions
What is the current water quality in waterways near the Ports? What are the current contributions of each port-related activity to water pollution (e.g., TBT, oil pollution)? (Including from water run-off from port land and spills.)	How will projected changes in port-related activities impact water quality in waterways near the Ports?
Has there been any sediment/soil contamination? If so, describe. What is the current contribution of each port-related activity to sediment/soil contamination?	How will projected changes in port-related activities impact sediment/soil contamination? Will the proposed project make use of contaminated soil? How will use of contaminated soils impact water quality in waterways near the Ports?
What other sources of water/sediment/soil pollution exist near the Ports and what is their contribution to existing levels of water pollution?	What will be the cumulative impact of the proposed project and all existing water contamination sources on water quality?
How many people utilize the local waterways for various types of recreation?	How will the proposed project impact recreational users of local waterways?
Are people currently exposed to port-related water pollution through dermal contact with or ingestion of local water sources (recreational or otherwise)? What are the health impacts of this exposure?	How would projected changes in port-related activities impact exposure (dermal, ingestion) to polluted water and health impacts related to this exposure?
How much do local populations currently consume fish caught in local waterways? How much are local residents exposed to contamination as a result of consumption of fish caught in local waterways? What are the health impacts of this exposure?	How will projected changes in port-related activities impact fish caught in local waterway? How will projected changes impact exposure to contaminants through consumption of fish?

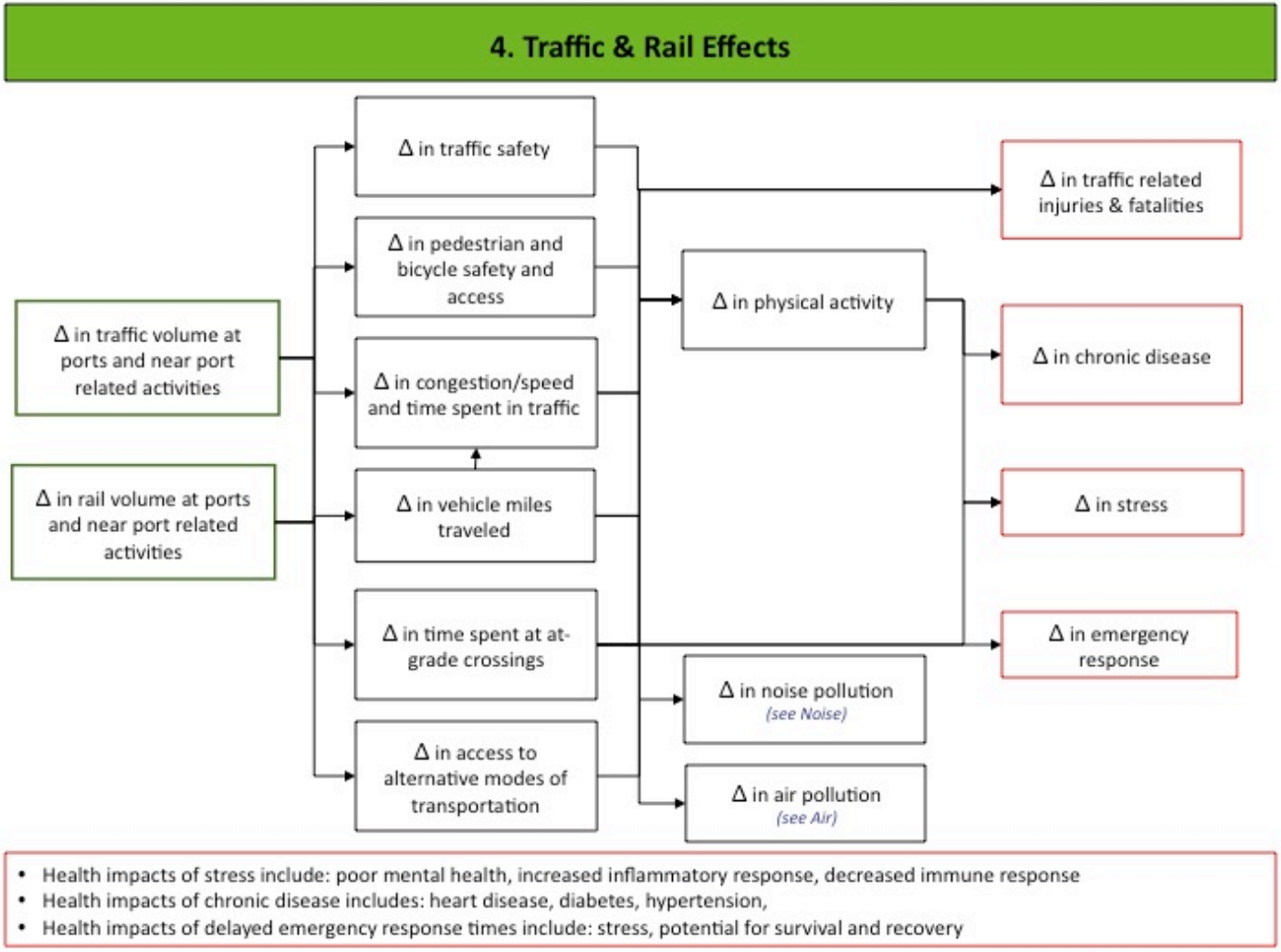
Examples of Analysis Methods

- Estimate of risk in terms of number of people - specific to the toxic substances they would come into contact with
- A simple method for estimating dermal absorption of chemicals in water: Chemosphere, VoI.19, No.12, pp 1989-2OO1, 1989 (a method for judging the health risks from dermal exposure to chemical pollutants in water)

Examples of Design and Mitigation Alternatives

- Best available technologies for preventing leaking and spills, dredging and soil remediation
- Fishing or recreational water use advisories/bans

4. TRAFFIC & RAIL



Summary of Evidence Supporting Pathway

Pedestrian safety and bicycle access

- There is a statistically significant relationship between traffic volume and the number of vehicle collisions involving a pedestrian.[68] [69] [70] [71]
- A neighborhood with features that make the pedestrian environment unsafe, such as high traffic volumes and speeds, narrow or degraded sidewalks, poorly connected streets, and a lack of lighting, is likely to reduce walking on residential streets.[72] [73] [74]
- The risk of pedestrian injuries may discourage walking as a mode of transport, and negatively impact physical activity levels.
- California's pedestrian fatality rates are much higher than the nation's, with pedestrians accounting for more than 17% of motor vehicle deaths in California.[75]
- The perception of collision risk prevents people from cycling. In a survey of adults in the Vancouver metropolitan area, the top deterrents were the risk of injury from car-bike collisions; the risk from motorists who don't know how to drive safely near bicycles; motorized vehicles driving faster than 50 km/hr; and streets with a lot of car, bus, and truck traffic.[76]
- Pedestrian collisions are more common in low-income areas, potentially reflecting a greater residential density, greater traffic volume, and lower automobile ownership among residents of these neighborhoods.[77]

Traffic related injury and fatalities

- Traffic crashes continue to be the greatest single cause of death and disabilities for Americans in the 1-44 years of age.[78]
- Traffic volume increases the risk of pedestrian, cyclist and motorist injury and death, with pedestrians, cyclists, and motorized two-wheeled vehicle users bearing a disproportionate share of road injury burden.[79] [80]
- Vehicle speed increases the risk for serious injury and death from MVA; there is also evidence that driving slower than the typical rate of speed increases risk of MVA. [81] [82] [83] [84] [85]

Vehicle miles traveled

- Areas with high levels of vehicle miles traveled per capita tend to have higher

accident and injury rates. More time in a car means higher exposure to the perils of driving, including accidents.[86]

- VMT and commute times correlate with obesity and have an inverse relationship to amount of physical activity.[87] [88] Physical activity decreases risk for obesity, diabetes, cardiovascular disease, stress, osteoporosis, and depression; and physical activity can improve mental health and longevity. [89] In a study of California counties assessing vehicle miles traveled and obesity, counties with the highest average amount of vehicle miles traveled were significantly associated with the highest average rank of obesity.[90]

Physical activity

- The 1996 Surgeon General's report found that exercise prolongs life and prevents diabetes, high blood pressure, and colon cancer; that exercise controls weight, improves mobility in the elderly, and prevents falls; and that exercise reduces feelings of depression and anxiety and promotes psychological well-being. [91]
- Centers for Disease Control and Prevention (CDC) recommend that adults should either engage in moderate exercise (e.g., walking briskly) for at least 30 minutes 5 days a week or in vigorous exercise (e.g., jogging) for at least 20 minutes 3 days a week.

Noise

- See Section 2: Noise Effects

Mitigating factors

- Existing concentration and distribution of traffic, including truck traffic
- Existing pedestrian safety or traffic calming measures in areas near the Ports
- Economic constraints on mobility
- Occupation
- Location of schools that local children attend

Research Questions

Baseline Questions	Impact Questions
What are the existing transportation routes in the impacted areas? (e.g. roads, public transportation routes, pedestrian and	How will the proposed project impact transportation routes? How will the proposed project impact the quality of the environment for

Baseline Questions	Impact Questions
bicycle infrastructure)	pedestrians and bicyclists in the impacted areas?
What are the current volumes of traffic at ports and on roads in the impacted areas?	How will the proposed project impact traffic volumes at ports and on roads in the impacted areas? How will projected changes in traffic impact air quality and noise pollution in the impacted areas? [See Air Quality and Noise]
What are the current traffic/congestion conditions on roads in defined geographies at various times in the day and week (including speed and time spent in traffic)?	How will the proposed project impact traffic/congestion conditions at various times in the day and week? How will the proposed project impact traffic speed on roads in the impacted areas? How will the proposed project impact time that vehicles traveling in the impacted areas spend in traffic?
What is the average number of VMT for residents and workers in the impacted areas?	How will the proposed project impact the average number of VMT for residents and workers in the impacted areas?
What are the current commute times and transportation mode splits for people who live and work in the impacted areas?	How will the proposed project impact the commute times and transportation mode splits for people who live and work in the impacted areas? Will the proposed project impact access to alternative modes of transportation available within the impacted areas?
How many traffic collisions occur annually in the impacted areas? How many injuries and fatalities currently occur as a result of traffic collisions in the impacted areas?	How will the proposed project impact traffic collisions involving pedestrians, bicyclists, or drivers? How will projected changes in traffic collisions impact the number of injuries and fatalities in the impacted areas?
What is the current rail volume in the impacted areas? What is the average time that on-road vehicles spend at at-grade crossings in the impacted areas?	How will the proposed project impact the volume of rail in the impacted areas? How will projected changes in rail volume impact the average time spent at at-grade crossings in the impacted areas?
What are current emergency response times in the impacted areas?	How will projected changes in rail volume impact emergency response times (time spent at at-grade crossings by emergency vehicles)? What are the health impacts of the predicted changes in emergency response times (stress, potential for survival and recovery)?

Baseline Questions	Impact Questions
What are the current rates of physical activity for populations living in the impacted areas? What are the health impacts of these activity levels (e.g., cardiovascular disease, mental health, diabetes)?	How will projected changes in time spent in traffic, commute times, and mode of transportation impact rates of physical activity for these populations? What are the health impacts of projected changes in levels of physical activity (e.g., cardiovascular disease, mental health, diabetes)?

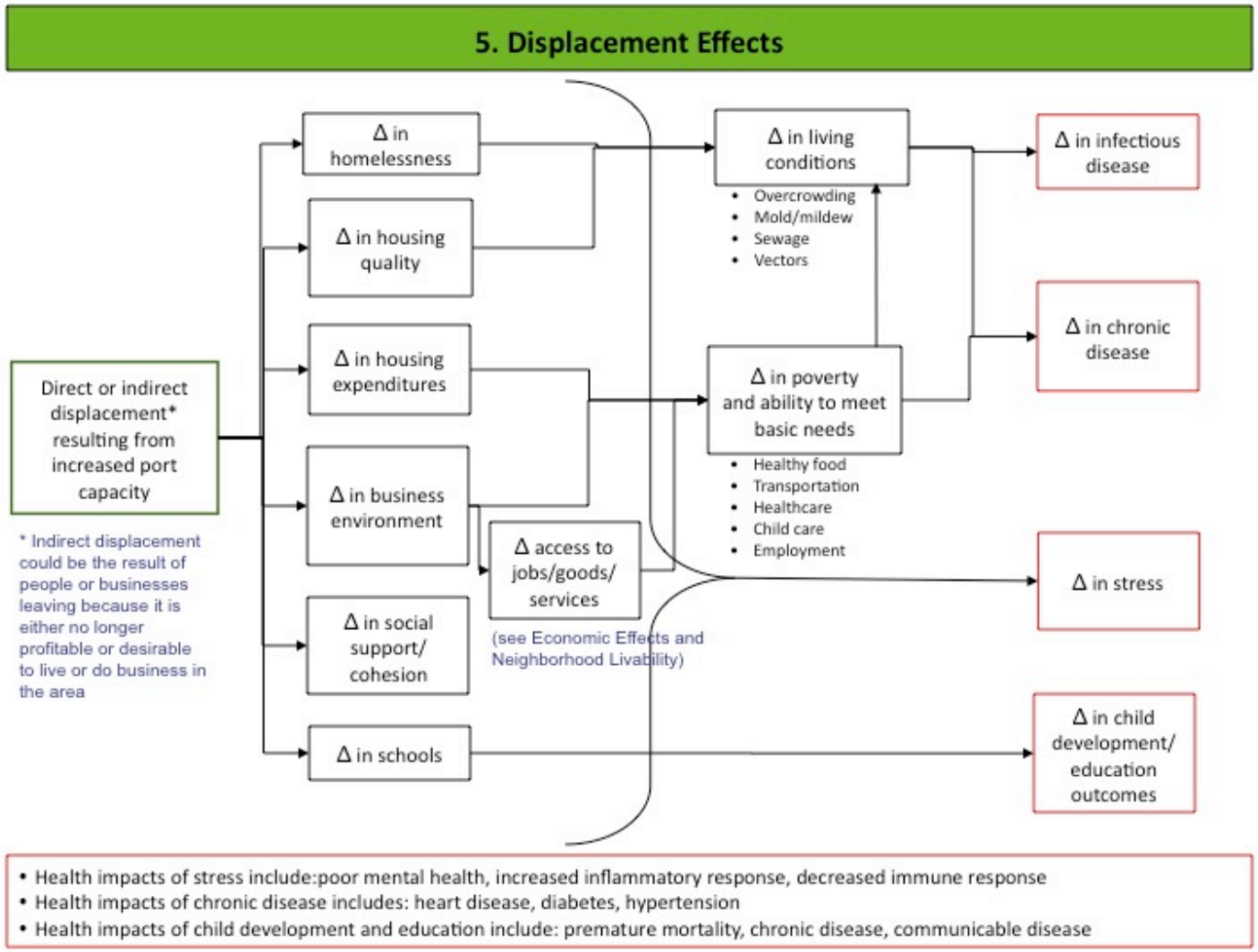
Examples of Analysis Methods

- GIS mapping
- Traffic modeling, predicted truck traffic increase based on project type
- Predicted change in VMT based on research findings and current/predicted traffic data
- FHWA methods for traffic safety analysis

Examples of Design and Mitigation Alternatives

- Engineering measures to re-route, slow or limit freight traffic in residential areas
- Enhancement of pedestrian and biking infrastructure (sidewalks, traffic calming, bike routes, trails, crosswalks)
- Grade separated rail crossings

5. DISPLACEMENT



Summary of Evidence Supporting Pathway

Involuntary residential displacement causes short- and long-term health effects

- Displacement can result in loss of jobs, and loss of health protective social networks.[92] [93]
- Housing stability is associated with self-rated health status such that as housing stability decreases so does self-rated health status.[94]
- Moving frequently is associated with higher rates of stress, mental health issues, child abuse, and neglect.[95]
- Displacement and relocation disrupts people's emotional bonds with places, including social ties and engagement in neighborhood activities.[96]
- The long commutes of workers who are forced to move away from their jobs to more affordable suburbs encroach on quality family time and contribute to increases in greenhouse gases, both of which have health implications for future generations.[97]

Displacement, and inability to afford housing can lead to homelessness

- In a study done in New York City, age-adjusted death rates were four times higher in the homeless than the general U.S. population [98]
- Homelessness is linked to higher rates of mortality and increased morbidity due to respiratory infections and poor nutrition.[99]

Housing quality

- Substandard and deteriorating housing contributes to a variety of ailments, from respiratory disease and neurological disorders to psychological and behavioral dysfunction.[100]
- Home deterioration such as compromised climate control, growth of mold and mildew, pest or rodent infestation can lead to respiratory disease such as asthma or other allergic symptoms.[101] [102] [103]
- Research has also found that children living in dilapidated, poorly maintained inner-city housing may be at a particularly high risk for lead poisoning.[104]
- At the community level, deterioration of housing stock results in "housing filtering", or the trend of those with lower levels of income to move into a neighborhood over time, which results in progressively poorer housing maintenance and quality.[105] [106]

Housing affordability

- The inability to find affordable housing as a result of displacement may cause many families and individuals to have to less income to spend on basic necessities such as food and clothing.
- Higher rents, especially for low-income families, limit the amount that a family can spend on other life needs, such as food, clothing, medication, health care and family activities that provide exercise and emotional stability.[107] [108]
- Research has also found significant associations between unaffordable rent, and inadequate childhood nutrition and growth.[109] [110]

Overcrowding

- Overcrowding increases the risk of passing infectious diseases. A study in Sao Paolo, Brazil found that for every average increase of one additional dweller per bedroom in a household there was a 14% increase in tuberculosis mortality.[111] There can also be increased risk of ear infection in children due to overcrowding.[112]
- Children in low-income families exposed to one or more environmental risks such as overcrowding and noise showed an increase in urinary cortisol and epinephrine, which are biomarkers of chronic stress.[113]
- Overcrowding and poor-quality housing also have a direct relationship to poor mental health, developmental delay, heart disease, and even short stature.[114]
- Overcrowded housing has been associated with increased mortality rates (particularly for women), meningitis, and Helicobacter pylori bacteria that can cause stomach ailments.[115]
- Crowded housing conditions also contribute to poor child development and school performance, in part, because overcrowding limits the space and quiet necessary for children to do homework.[116] [117]
- Overcrowding can affect health indirectly by creating conditions conducive to poor sanitation, high environmental noise, and residential fires.[118]

Impacts on children, and child development

- Displacement is a stressful life event and relocation can have significant impacts on health and childhood development.[119]
- Residential stability at childhood (moving 0-2 times by the age of 7) increases the odds that

an individual will rate their health positively in midlife by 42%.[120]

- Increased mobility in childhood (moving 3 or more times) resulted in a 36% increased risk of developing depression and also correlated with academic delay in children, school suspensions, difficult school transitions and emotional and behavioral problems.[121] [122]
- Studies have also shown that for adolescents with high mobility during childhood, the odds of smoking increased 1.3 times, and risk for suicide increased 2.5 times.[123]
- Homelessness and living in temporary housing have been linked to behavioral problems and depression among children.[124]
- It is estimated that 78% of homeless children have suffered from depression, behavior problems, or severe academic delay. [125]

Mitigating factors

- Housing tenure
- Existing social networks among residents living in close proximity to Ports
- Affordability of housing near ports compared to other areas of Los Angeles and Long Beach
- Current commute times from existing housing to jobs, retail, services, schools
- Compensation for displacement

Research Questions

Baseline Questions	Impact Questions
What is the current population living in the impacted areas and how has this changed as a result of displacement?	How will projected changes in port-related activities impact the displacement of residents living in the impacted areas?
What industries and businesses are present in the impacted areas and how has this changed as a result of displacement?	How will projected changes in port-related activities impact the displacement of businesses in the impacted areas?
What are the priority concerns of local residents regarding potential displacement? What type of displacement has occurred in defined geographies in the past?	How will projected changes in port-related activities impact local residents concerns about displacement?
What is the nature of current social networks/support?	How would projected displacement due to the proposed project impact social networks/support?

Baseline Questions	Impact Questions
How many schools are present in the impacted areas and what is their enrollment?	How would projected displacement impact schools or school enrollment?
What are current rates of homelessness? What is the current quality of housing in the impacted areas? What are housing expenditures in the impacted areas?	How would projected displacement impact homelessness and housing quality and expenditures?
What are current living conditions in the impacted areas (e.g., overcrowding, mold/mildew, sewage, and disease vectors)?	How would projected displacement impact living conditions in the impacted areas?
What are current poverty rates in the impacted areas? How able are current residents to meet their basic needs (food, transportation, health care, child care, and employment)?	How would projected displacement impact poverty rates in the impacted areas? How would projected displacement impact residents' abilities to meet their basic needs?
What is the current rate of infectious disease, chronic disease (heart disease, diabetes, hypertension), and stress in the impacted areas?	How would projected changes to social networks, homelessness, housing quality and expenditures, poverty, and residents abilities to meet basic needs impact infectious disease, chronic disease (heart disease, diabetes, hypertension), and stress rates in the impacted areas?
What are current child development outcomes and levels of academic achievement in the impacted areas?	How would projected changes to schools and school enrollment impact child development and education outcomes in the impacted areas?

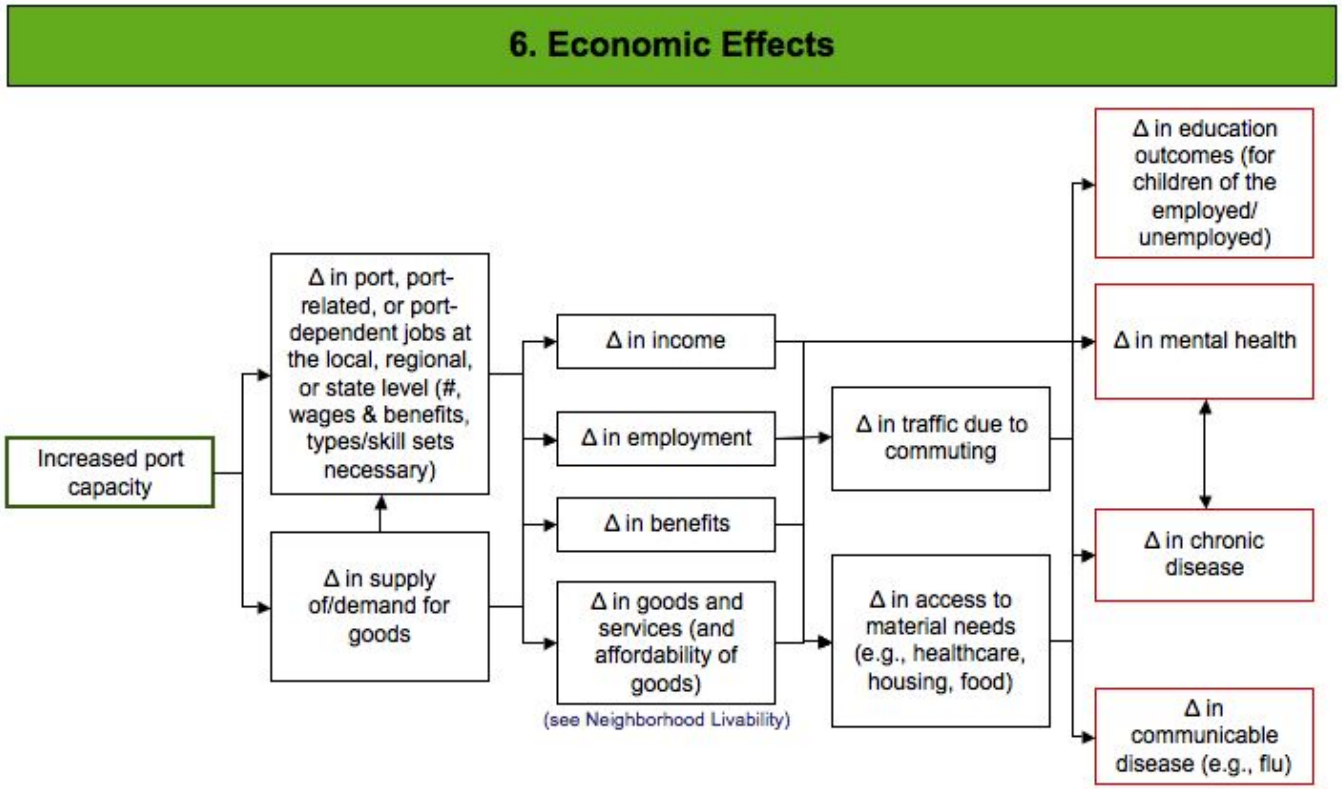
Examples of Analysis Methods

- Calculate trends in residential population and business changes and apply % changes to current demographics and expansion plans
- Compare port neighborhood trends to regional trends
- Qualitative analysis of surveys/focus groups
- Analyze investment in port area communities over time compared to other communities

Examples of Design and Mitigation Alternatives

- Buffer technologies – to shield residents from exposure to toxic substances
- Involvement/intervention by other public agencies such as Department of City Planning, Education, and Housing

6. ECONOMIC EFFECTS



- Health impacts of mental health include: stress-related illness, crime, substance abuse, domestic abuse, change in lifespan
- Health impacts of chronic disease includes: heart disease, diabetes, hypertension
- Health impacts of child development and education include: premature mortality, chronic disease, communicable disease

Summary of Evidence Supporting Pathway

Income is one of the strongest and most consistent predictors of health and disease in public health research literature.

- Attainment of self-sufficiency income predicts better health, improved nutrition, and lower mortality.[126]
- People with average family incomes of $15,000 to $20,000 were three times as likely to die prematurely as those with family incomes greater than $70,000.[127]
- People with lower incomes have higher risks than people with higher incomes for giving birth to low birth weight babies, for suffering injuries or violence, for getting most cancers, and for getting chronic conditions.[128]
- Prevalence of obesity and type 2 diabetes is higher among groups with the lowest levels of income and education and in the most deprived areas.[129]
- A review found that lower socioeconomic status was adversely associated with psychosocial factors linked to coronary heart disease, particularly hostility and depression.[130]
- Individuals who experience more frequent episodes of income loss are likely to have higher levels of depression.[131]

Unemployment and underemployment are associated with poor health outcomes.

- Men who were unemployed in several cities in Europe were 1.5 - 3.25 times more likely than those who were employed to have ischemic heart disease.[132]
- In one study, people who lost a job prior to being interviewed were 85% more likely than those not losing a job to experience worsening health status, about 90% more likely to report the onset of disability and just under 50% more likely to report the onset of high levels of depressive symptoms.[133]
- Unemployment is associated with premature mortality cardiovascular disease, hypertension, depression, and suicide.[134] [135]

Jobs that do not provide health insurance and guaranteed sick leave contribute to poor health outcomes.

- Annually nationwide, 18,000 premature deaths are attributable to lack of health coverage.[136]
- The lack of sick leave benefits is associated with workers 1) coming to work sick, 2) working at lower levels of productivity, 3) risking infecting other workers, 4) experiencing longer recovery times, 5)

experiencing worse health outcomes in children, and 5) utilizing higher cost health care down the line.[137]

- Individuals without health insurance frequently forego timely health care, suffer more severe illness, and are more likely to die a premature death than their insured counterparts. Annually nationwide, 18,000 premature deaths are attributable to lack of health coverage.[138]
- Having health insurance coverage is significantly associated with access to medical checkups.[139] [140]

Living in poverty is associated with many poor health outcomes.

Mitigating factors

- Many factors influence unemployment and income, including national economic trends.
- Poverty limits access to important health-enabling resources, including proper nutrition, good medical care, stable health insurance, and favorable housing.[141]
- Dropping out of school is associated with delayed employment opportunities, poverty, and poor health.[142]
- Adolescents living in neighborhoods with high levels of poverty and distress tend to have lower level of scholastic achievement and a higher risk of dropping out of school.[143] [144]
- Poverty and lack of economic opportunity are risk factors for crime. [145] [146] [147]

Research Questions

Baseline Questions	Impact Questions
How many and what types of jobs (including wages, benefits, types, skill sets necessary, safety hazards, leave policies) do the Ports currently offer? How many and what types of jobs (including wages, benefits, types, skill sets necessary, safety hazards, leave policies) do the Ports currently provide residents neighboring the Ports?	How will the proposed project impact the number and types of jobs offered by the Ports? How will the proposed project impact the number and types of jobs offered by the Ports to local residents?
How many and what types of jobs (including wages,	How will the proposed project impact the number and types of

Baseline Questions	Impact Questions
benefits, types, skill sets necessary, safety hazards, leave policies) do port-supporting businesses (e.g., trucking, container storage, warehousing, restaurants) at the local, regional and state levels currently offer? How many and what types of jobs (including wages, benefits, types, skill sets necessary, safety hazards, leave policies) do port-supporting businesses (e.g., trucking, container storage, warehousing, restaurants) provide residents neighboring the Ports?	jobs offered by the port-supporting businesses at the local, regional and state levels? How will the proposed project impact the number and types of jobs offered by the port-supporting businesses to local residents?
What are the demographic characteristics of the populations living near the Ports and in the region? (see Baseline Research Questions Relevant to all Sections above)	How will projected changes in employment impact these demographic characteristics?
What goods and services are available locally, regionally, and in the state as a result of the Port?	How will the proposed project impact the goods and services available (including changes in cost) locally, regionally, and in the state?
What are current job-training opportunities in the impacted areas?	How will projected changes in employment impact job-training opportunities in the impacted areas?
What is the lifespan of people living in the impacted areas and regionally?	How will projected changes in jobs and availability of goods and services impact lifespan of those living in the impacted areas?
What is the prevalence of chronic disease (e.g., diabetes, cardiovascular disease, hypertension) in the impacted areas and regionally?	How will projected changes in jobs and availability of goods and services impact chronic disease prevalence?
What is the prevalence of communicable disease (e.g., flu, STDs) and regionally?	How will projected changes in jobs and availability of goods and services impact communicable disease prevalence?
What is the current educational attainment of people living in the impacted areas?	How will projected changes in jobs and availability of goods and services impact educational attainment in the impacted areas?

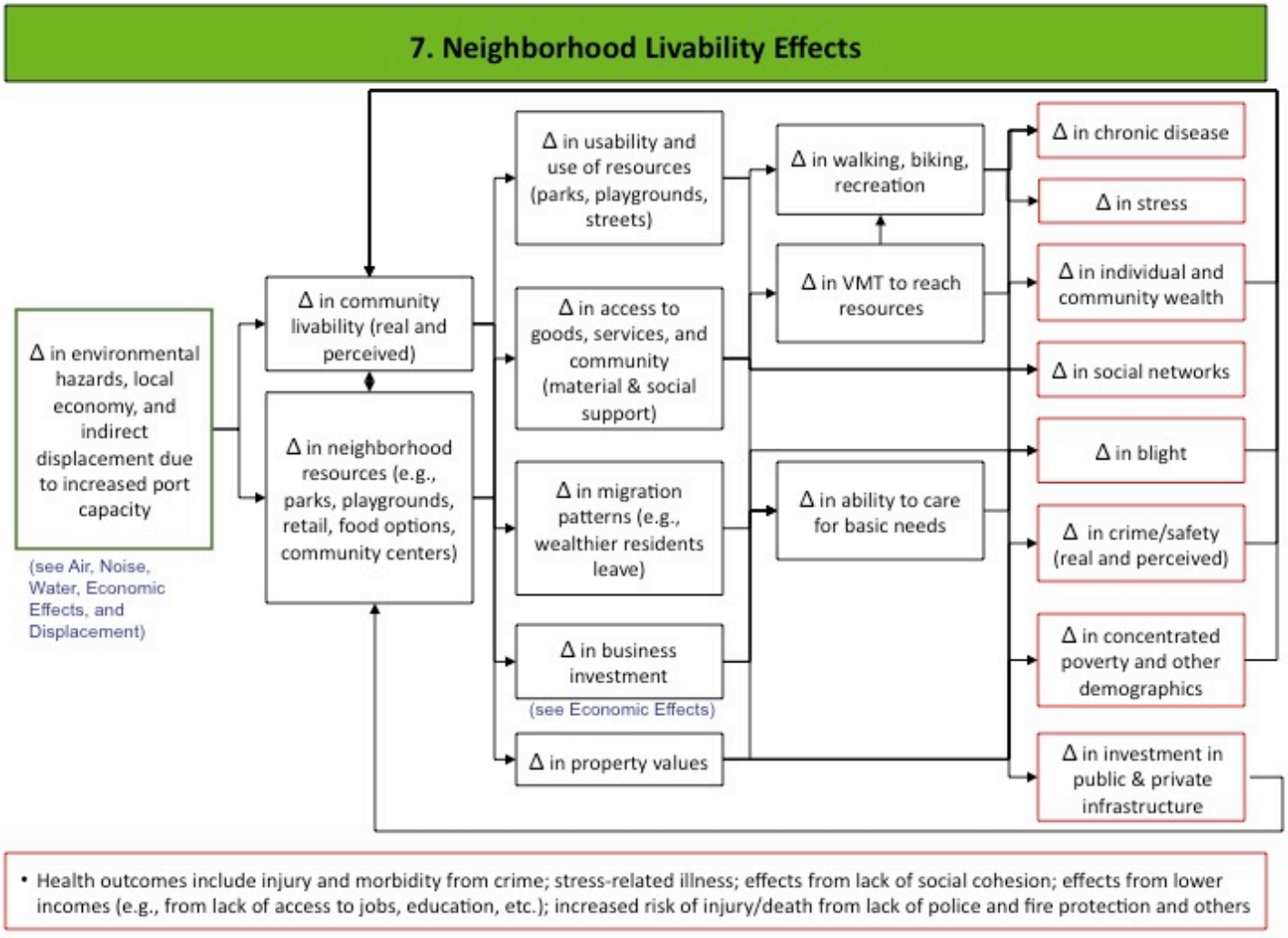
Examples of Analysis Methods

- Employment modeling

Examples of Design and Mitigation Alternatives

- Job training
- Local hiring
- Aid for local businesses

7. NEIGHBORHOOD LIVABILITY



Summary of Evidence Supporting Pathway

* Conceptually, a livable neighborhood is one that is not burdened with real or perceived deprivation due to factors such as concentrated poverty, a lack of resources, limited social networks, physical disorder or blight, crime, and/or environmental hazards.

The types of goods and services that are located in a neighborhood can ultimately impact the health outcomes of local residents

- The more key public and retail services a neighborhood has, the greater the chance for residents and workers to walk or bike to access those services, increasing physical activity, social interactions, and safety through "eyes on the street."
- How much one drives is affected by traffic congestions and proximity to public transportation, work, goods and services, walking and cycling infrastructure, and parking facilities. Amount of driving has an impact on the money a family has available for other health needs, such as nutritious food and health care.
- Living in a neighborhood with a higher concentration of organizations or services for young people and adults was associated with lower levels of aggression.[148]
- In-depth interviews conducted in Baltimore revealed that employment opportunities and local businesses, were among the important perceived neighborhood factors influencing young people's experiences including violence.[149]

Vehicle Miles Traveled

- Neighborhoods with diverse and mixed land uses can create closer proximity between residences, employment, and goods and services, thereby reducing vehicle trips and miles traveled and as a result, reducing air and noise pollution.[150]
- Relying on cars to access day-to-day retail and public service needs also has adverse consequences on health via air pollution and noise levels. Ensuring complete neighborhoods with adequate retail and public services in close proximity to residents' homes can reduce reliance on cars for every day needs.

Health Clinics

- Federally Qualified Health Centers in medically underserved areas can lower preventable hospitalization rates.[151] Travel distance to a health care provider, and lack of

transportation are well-established barriers to receiving adequate health care.[152] [153] [154]

Childcare

- Accessible high-quality childcare provides children with valuable opportunities for cognitive, behavioral and educational development, and results in positive physical health outcomes.[155] [156] [157] [158]

Schools

- The higher the amount of income inequality in a society (inequality between rich and poor), the higher the mortality in the lower economic segment. Lack of high school education accounts for the income inequality effect and is a powerful predictor of mortality variation among US states.[159]
- Higher education leads to lower hostility, and hostility is linked to coronary heart disease, alcohol use, obesity, and premature mortality.[160]
- Independent of income, education level is associated with improved health outcomes: each additional year in school is associated with increased life expectancy.[161]
- Research findings indicate that the physical location of schools, in particular, the distance that students travel to school, may significantly impact health outcomes.[162] [163]

Recreational Facilities/Community Centers

- In 1996 the U.S. Surgeon General concluded that regular physical activity improves health. The Surgeon General's report found that exercise prolongs life and prevents diabetes, high blood pressure and colon cancer; that exercise controls weight, improves mobility in the elderly, and prevents falls; and that exercise reduces feelings of depression and anxiety and promotes psychological well-being.[164]
- One study published by the CDC, showed that creation of or enhanced access to places for physical activity led to a 25.6% increase in the percentage of people exercising on three or more days per week.[165] Research has also shown that access to places for physical activity combined with outreach and education can produce a 48% increase in frequency of physical activity.[166]
- Access to public parks and recreational facilities has been strongly linked to reductions in crime, and in particular, to reduced juvenile delinquency.[167] Recreational facilities keep at-risk youth off the streets, give them a safe environment to interact with their

peers, and fill up time within which they could otherwise get into trouble.[168]

- Community centers serve to enhance social cohesion among neighborhood residents. Social connection has a variety of health impacts, ranging from reducing stress, having a longer lifespan, supplying access to emotional and physical resources.[169]

Parks & Open Space

- People who live in close proximity to parks usually have higher levels of activity compared to those who do not.[170] [171] [172] Studies have shown that parks facilitate physically active lifestyles by providing relatively low cost choices for recreation.[173] Most (81%) users of a park live within one mile of it. People living within one mile of the park were found to be four times as likely to visit the park once per week or more.[174]
- Urban parks provide a space where people can experience a sense of community and increase neighborhood cohesion. Social networks and interaction have been linked to improvements in physical and mental health through multiple mechanisms.[175] A study in Chicago found that 83% more people were involved in social activities in green spaces vs. barren spaces.[176]
- Contact with the natural world improves psychological health. Being able to escape fast-paced urban environments improves health by reducing stress and depression and improving the ability to focus, pay attention, be productive, and recover from illness.[177] One study showed that people living in a housing project near green space scored higher on the ability to manage major life issues, procrastinated less, found their issues to be less difficult and reported them to be less severe and long-standing than those who lived in barren surroundings.[178]
- Spending time in parks can reduce irritability and impulsivity as well as promote intellectual and physical development in children and teenagers. Researchers in Chicago found that children with Attention Deficit Disorder (ADD) function better than usual after activities in green settings, and that the "greener" a child's play area, the less severe their ADD symptoms.[179]
- Parks and open spaces also improve environmental quality by filtering dirty air and polluted water, and by dampening noise, thereby contributing to the general health of the area. Unpaved parks and open spaces alleviate pressures on storm water management and flood control efforts by

slowing and filtering water flow and decreasing the area of impervious surfaces. Trees and green space remove pollution from the air, mitigating heat island effects in urban areas, which lower energy demands and associated emissions during warm periods. Evaporation from a single large tree can produce the cooling effect of ten room-size air conditioners operating 24 hours a day.[180] In an area with 100% tree cover (such as forest groves within parks), trees can remove as much as 15% of the ozone, 14% of the sulfur dioxide, 13% of particulate matter, 8% of the nitrogen oxide, and .05% of the carbon monoxide.[181] Trees and the soil under them filter water pollution by removing polluted particulate matter from water before it reaches storm sewers, and absorbing nutrients created by human activity such as nitrogen, phosphorus and potassium, which otherwise pollute streams and lakes.[182] In addition, increased vegetation dampens sound and mitigates noise pollution.[183]

Retail

- Having everyday retail destinations accessible by walking increases physical activity.[184] Physical activity is associated with reductions in premature mortality; prevention of chronic diseases such as diabetes, obesity, hypertension; and improvements in psychological well-being.[185]
- A 12.2% reduction in odds of being obese was detected with increase in density, mixed use, and street connectivity within 1 km of residential area, i.e., living in a mixed use area with a variety of shops and services is a robust predictor of obesity in urban areas.[186]

Food Retail

- The choices that people make about what they consume on a day-to-day basis are influenced by food options available.[187]
- Research has demonstrated that the retail environment has an impact on individual health. Individuals that have to travel long distances to supermarkets and other food retail must spend more time in their cars, on the bus, or on foot in order to obtain healthy food for their households.
- For residents without access to a car, having local retail (including healthy food options) in close proximity increases accessibility.
- Low-income households often have little choice about where to purchase food. Such households often buy less expensive but more accessible food at fast food restaurants or highly processed food at corner stores. These

types of foods are usually higher in calories but lower in nutritional value.[188] Consuming these types of foods is one of the causes of higher rates of obesity for many low-income populations.[189]

- Lack of access to healthy food is one of the barriers, particularly for low-income communities, to healthy eating.
- It is well known that nutritious eating and regular physical activity aid in the prevention of chronic medical conditions, especially diabetes, cardiovascular diseases and cancers.[190]

Neighborhood-level socioeconomic status (SES) affects health through various social and economic community-level conditions including employment opportunities, social capital, and collective efficacy. [191]

- The association between neighborhood deterioration and well-being (stress and depressive symptoms) may be mediated through social contact with neighbors, trust of neighbors, and perceptions of crime. Neighborhood deterioration increases stress and depressive symptoms through decreased contact with one's neighbors and increased concerns with safety.[192]
- Neighborhood disadvantage manifested its effect via lower neighborhood cohesion, which was associated with maternal depression and family dysfunction. These processes were, in turn, related to less consistent, less stimulating, and more punitive parenting behaviors, and ultimately, poorer child outcomes.[193]
- Neighborhood social capital forms—social support, social leverage, informal social control, and neighborhood organization participation—were directly associated with both positive and negative health outcomes in adults.[194]

Living in a neighborhood with high levels of deprivation is known to have diverse negative health effects, independent of socioeconomic status on the individual level. [195196] [197198199]

- After adjusting for individual-level socioeconomic status, a review found that all but two of the 25 reviewed studies reported a statistically significant association between at least one measure of neighborhood socioeconomic context and health outcomes including mortality, infant/child health, chronic diseases among adults, mental health, and health behaviors.[200]

- Living in more deprived neighborhoods is associated with increased all cause mortality in the US and five European countries, independent of individual socioeconomic characteristics.[201]
- Neighborhood disadvantage manifested its effect via lower neighborhood cohesion, which was associated with maternal depression and family dysfunction. These processes were, in turn, related to less consistent, less stimulating, and more punitive parenting behaviors, and ultimately, poorer child outcomes.[202]

Residents in a disadvantaged neighborhood are more likely to engage in health risk behaviors than those living in neighborhoods of higher socioeconomic status (SES).

- Neighborhood SES was positively associated with fruit and vegetable intake.[203]
- An analysis of the National Health and Nutrition Examination Survey data linked with U.S. census tracts found an association between high levels of neighborhood deprivation and increased odds of health risk behaviors such as smoking, high dietary fat intake, and self-reported excessive alcohol consumption and physical inactivity, independent of socio-demographic factors, BMI, and co-morbidities.[204]
- Studies found direct associations between neighborhood disorder and psychological stress, neighborhood disorder and sexual risk behaviors, and neighborhood disorder and drug use.[205] [206]
- Neighborhood disorder is positively associated with heavy drinking and this association is largely mediated by anxiety and depression, as some residents consume alcohol to cope with feelings of anxiety and depression due to living in a disadvantaged neighborhood characterized by problems with drugs, crime, teen pregnancy, unemployment, idle youth, abandoned houses, and unresponsive police.[207]

Neighborhood disadvantage and disorder increases adolescent risk behaviors that may affect their long-term health and well-being. [208]

- Adolescents living in neighborhoods with high levels of poverty and distress tend to have lower level of scholastic achievement and a higher risk of dropping out of school.[209] [210]
- Neighborhood disadvantage increases youth violence and aggression through the criminogenic street milieu in extremely

disadvantaged communities, which increases the chances of becoming embedded in deviant peer relationships, easy access to firearms, witnessing street violence, personal experiences with violent victimization, expectations that future victimization could result in death.[211]

Neighborhood social and physical disorder adversely affects mental health, which also leads to other negative health outcomes.[212] [213] [214] [215]

- A disadvantaged neighborhood exposes residents to chronic stressors in the form of crime, trouble, harassment, and other potentially distressing signs of disorder and decay. The stress response occurs in the body and brain in the form of fearful anxiety and depression, dizziness, chest pains, trouble breathing, nausea, upset stomach, and weakness, leading to poor health.[216]

Neighborhood socioeconomic status (SES) affects health through access to health care, retail, and other services that impact health.

- Living in disadvantaged neighborhoods reduces the likelihood of having a usual source of care and of obtaining recommended preventive services, while it increases the likelihood of having unmet medical needs.[217] [218]
- The elderly living in disadvantaged neighborhoods with poor access to public transportation were more likely to report a decline in physical functioning, which may be due to their inability to attain needed services and engage in community participation.[219]
- Key informant interviews and focus groups conducted with residents in diverse neighborhoods in Oakland, California indicated that neighborhoods of higher SES received better municipal services as well as more attention and action from municipal agencies to health and social problems that may affect the residents. Residents in such neighborhoods also tend to be better organized in collective actions to improve their neighborhoods.[220]

Neighborhood Safety

- Land use patterns that encourage neighborhood interaction and a sense of community have been shown not only to reduce crime, but also create a sense of community safety and security.[221]
- Crime is associated with low social capital (often measured as connection and trust to others in the community and/or civic involvement).[222]

Social Networks

- Social connection has a variety of health impacts, ranging from reducing stress, having a longer lifespan, to supplying access to emotional and physical resources.[223]
- People who reported a severe lack of social support were 2.19 times more likely to report fair or poor health.[224]
- Individuals with low levels of social support have higher mortality rates, for example from cardiovascular disease, cancer and HIV.[225] [226] [227]
- Social ties provide access to new health-related information and resources, enhancing people's actual control and improving their ability to solve various problems. Members of wide networks are well informed about health issues. [228]

Mitigating factors

- Current mix of commercial land uses and zoning in communities around the Port
- Current mix of existing retail, services and other community resources in Port communities
- Current use of retail, services and other community resources by Port communities
- Perceptions of livability are impacted by many factors including real changes (e.g., property values) and belief as influenced by media and frames.
- Factors outside Port control influence income, wealth, demographics, property values, etc.

Research Questions

Baseline Questions	Impact Questions
What are the allowable land uses in the impacted areas? How are these land uses distributed throughout the impacted areas?	How will projected changes in port-related activities impact land uses and their locations? Will projected changes require changes to the current zoning in the impacted areas?
What, if any, are planned changes to zoning and development in the impacted areas according to the general plan?	Are projected changes consistent with the general plan?

Baseline Questions	Impact Questions
What environmental hazards exist in the impacted areas? [See environmental sections above.] What is the current perception of environmental hazards among residents in the impacted areas?	How will projected changes directly and indirectly impact environmental hazards in the impacted areas? [See environmental sections above.] How will projected changes impact residents' perception of environmental hazards?
What are the neighborhood resources that currently exist in the impacted areas (e.g. parks, libraries, schools, health clinics, day care centers, community centers, post offices, banks, grocery stores etc.)? [See other sections.]	How will projected changes impact neighborhood resources? [See other sections.] How will the proposed project impact residents' perception of neighborhood resources? Will proposed port-serving infrastructure (e.g. transport facilities) require demolition or displacement of existing community-serving public or private uses? How will projected changes impact usability and use of neighborhood resources (e.g. parks, playgrounds, streets)? How will projected changes impact access to retail, public services, and community (material and social support)? How will the projected changes impact changes in migration patterns in the impacted areas (e.g. wealthier residents leaving or coming into the neighborhood)? How will projected changes impact the ability of residents to care for basic needs (e.g. goods, services, nutrition, healthcare, housing)? How will projected changes impact individual and community wealth?
What are the levels of use (and by which populations) of the current neighborhood resources?	How will the levels of use of the current neighborhood resources change due to projected changes? Will the demographics of the users of these resources change?
What is the current status of measures of the local economy? (see Economic Effects)	How will the projected changes impact measures of the local economy and residents' perceptions of the local economy? How will projected changes impact business investment (e.g. retail and other local employers)? [See Economic Effects] How will projected changes impact investments in public and private infrastructure in the impacted areas? [See Port Revenue and

Baseline Questions	Impact Questions
	Port Funding] How will projected changes impact concentrated poverty and other demographic measures?
What is the household income and ethnicity of residents in defined geographies and how has that been changing?	How will projected changes to neighborhood resources, the local economy, and concentrated poverty impact household income in defined geographies? How will projected changes to neighborhood resources, the local economy, and concentrated poverty impact the ethnic make-up of the population in defined geographies?
What are property values in the impacted areas and how have they been changing?	How will projected changes to neighborhood resources, the local economy, and concentrated poverty impact property values? How will projected changes to neighborhood resources, the local economy, and concentrated poverty impact blight in the impacted areas?
What are the rates of physical activity (e.g. walking, biking, recreation) among populations in the impacted areas?	How will projected changes to neighborhood resources, and the local economy impact rates of physical activity in the impacted areas? How will projected changes to physical activity rates impact the prevalence of chronic diseases/conditions associated with physical activity (e.g. obesity, cardiovascular disease, diabetes, high blood pressure)?
What is the average number of VMT by residents in the impacted areas? What is the average cost to residents in the impacted areas of travel to reach necessary goods and services (e.g. gas, bus fare)?	How will projected changes to neighborhood resources impact the average number of VMT by residents in the impacted areas? How will projected changes to neighborhood resources and the local economy impact the amount of time residents spend traveling to reach necessary goods and services and jobs? How will projected changes to neighborhood resources and the local economy impact the cost of travel to reach necessary goods and services and jobs for residents in the impacted areas?

Baseline Questions	Impact Questions
What are the current conditions of neighborhood safety in the impacted areas?	How will projected changes to neighborhood resources, the local economy, and concentrated poverty impact crime rates and perceptions of neighborhood safety in the impacted areas? How will projected changes to crime rates impact injury, morbidity and other health impacts of crime?
What is the nature of existing social networks/social cohesion in the impacted areas?	How will projected changes to the neighborhood population and resources impact the social networks/social cohesion of local communities?
What are the current levels of stress among residents living in the impacted areas?	How will projected changes impact levels of stress among residents?
What are the perceptions of neighborhood livability (environmental hazards, neighborhood resources, displacement, the local economy) in the impacted areas?	How will projected changes impact local residents' perception of neighborhood livability?

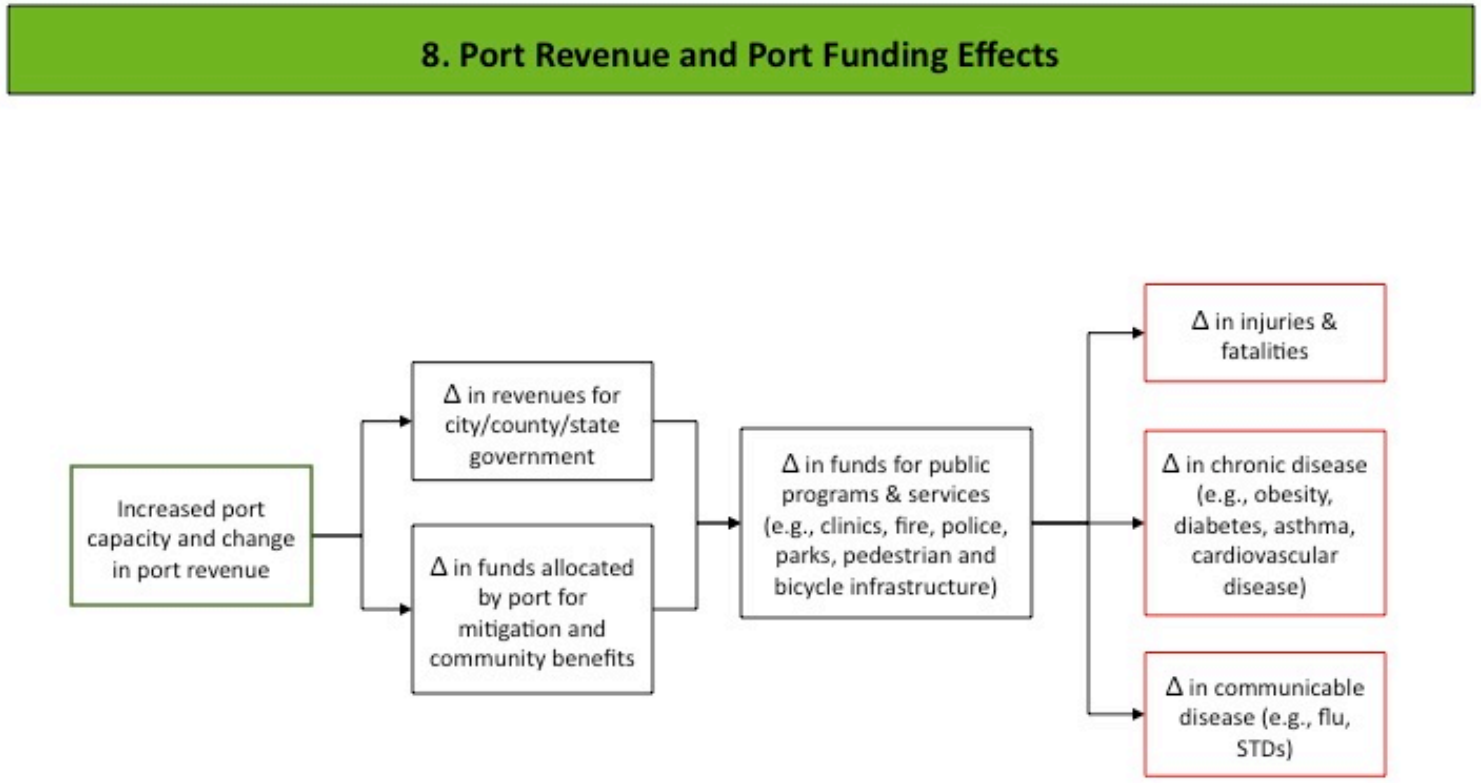
Examples of Analysis Methods

- GIS mapping
- Calculate trends in demographics (including income and wealth) as ports in LA/LB or other locations have expanded in the past; apply that % change to current demographics and expansion plans
- Compare port neighborhood trends to regional trends
- Focus groups and/or surveys
- Calculate change in property values as ports in LA/LB or other locations have expanded in the past; apply that % change to current property values and expansion plans
- Compare port neighborhood trends to regional trends
- Analyze investment in port area communities over time compared to other communities; qualitatively access implications for LA/LB communities

Examples of Design and Mitigation Alternatives

- Replacement of infrastructure (public or private) demolished or displaced because of port expansion
- Co-location of community-serving infrastructure with port serving infrastructure – greenways, parks, trails, waterfront access, etc.
- Neighborhood livability mitigation strategies are included in mitigation strategies of other sections

8. PORT REVENUE AND PORT FUNDING



Summary of Evidence Supporting Pathway

The types of goods and services that are located in a neighborhood can ultimately impact the health outcomes of local residents

- How much one drives is affected by traffic congestions and proximity to public transportation, work, goods and services, walking and cycling infrastructure, and parking facilities. Amount of driving has an impact on the money a family has available for other health needs, such as nutritious food and health care.
- Living in a neighborhood with a higher concentration of organizations or services for young people and adults was associated with lower levels of aggression.[229]

Vehicle Miles Traveled

- Relying on cars to access public services needs also has adverse consequences on health via air pollution and noise levels. Ensuring complete neighborhoods with adequate retail and public services in close proximity to residents' homes can reduce reliance on cars for every day needs.

Health Clinics

- Federally Qualified Health Centers in medically underserved areas can lower preventable hospitalization rates.[230] Travel distance to a health care provider, and lack of transportation are well-established barriers to receiving adequate health care.[231 232 233]

Childcare

- Accessible high-quality childcare provides children with valuable opportunities for cognitive, behavioral and educational development, and results in positive physical health outcomes.[234 235 236 237]

Schools

- The higher the amount of income inequality in a society (inequality between rich and poor), the higher the mortality in the lower economic segment. Lack of high school education accounts for the income inequality effect and is a powerful predictor of mortality variation among US states.[238]
- Higher education leads to lower hostility, and hostility is linked to coronary heart disease, alcohol use, obesity, and premature mortality.[239]
- Independent of income, education level is associated with improved health outcomes: each additional year in school is associated with increased life expectancy.[240]

- Research findings indicate that the physical location of schools, in particular, the distance that students travel to school, may significantly impact health outcomes.[241] [242]

Recreational Facilities/Community Centers

- In 1996 the U.S. Surgeon General concluded that regular physical activity improves health. The Surgeon General's report found that exercise prolongs life and prevents diabetes, high blood pressure and colon cancer; that exercise controls weight, improves mobility in the elderly, and prevents falls; and that exercise reduces feelings of depression and anxiety and promotes psychological well-being. [243]
- One study published by the CDC, showed that creation of or enhanced access to places for physical activity led to a 25.6% increase in the percentage of people exercising on three or more days per week.[244] Research has also shown that access to places for physical activity combined with outreach and education can produce a 48% increase in frequency of physical activity.[245]
- Access to public parks and recreational facilities has been strongly linked to reductions in crime, and in particular, to reduced juvenile delinquency.[246] Recreational facilities keep at-risk youth off the streets, give them a safe environment to interact with their peers, and fill up time within which they could otherwise get into trouble.[247]
- Community centers serve to enhance social cohesion among neighborhood residents. Social connection has a variety of health impacts, ranging from reducing stress, having a longer lifespan, supplying access to emotional and physical resources.[248]

Parks & Open Space

- People who live in close proximity to parks usually have higher levels of activity compared to those who do not.[249] [250] [251] Studies have shown that parks facilitate physically active lifestyles by providing relatively low cost choices for recreation.[252] Most (81%) users of a park live within one mile of it. People living within one mile of the park were found to be four times as likely to visit the park once per week or more.[253]
- Urban parks provide a space where people can experience a sense of community and increase neighborhood cohesion. Social networks and interaction have been linked to improvements in physical and mental health through multiple mechanisms.[254] A study in Chicago found that 83% more people were involved in social activities in green spaces vs. barren spaces. [255]
- Contact with the natural world improves psychological health. Being able to escape

fast-paced urban environments improves health by reducing stress and depression and improving the ability to focus, pay attention, be productive, and recover from illness.[256] One study showed that people living in a housing project near green space scored higher on the ability to manage major life issues, procrastinated less, found their issues to be less difficult and reported them to be less severe and long-standing than those who lived in barren surroundings.[257]

- Spending time in parks can reduce irritability and impulsivity as well as promote intellectual and physical development in children and teenagers. Researchers in Chicago found that children with Attention Deficit Disorder (ADD) function better than usual after activities in green settings, and that the "greener" a child's play area, the less severe their ADD symptoms.[258]
- Parks and open spaces also improve environmental quality by filtering dirty air and polluted water, and by dampening noise, thereby contributing to the general health of the area. Unpaved parks and open spaces alleviate pressures on storm water management and flood control efforts by slowing and filtering water flow and decreasing the area of impervious surfaces. Trees and green space remove pollution from the air, mitigating heat island effects in urban areas, which lower energy demands and associated emissions during warm periods. Evaporation from a single large tree can produce the cooling effect of ten room-size air conditioners operating 24 hours a day.[259] In an area with 100% tree cover (such as forest groves within parks), trees can remove as much as 15% of the ozone, 14% of the sulfur dioxide, 13% of particulate matter, 8% of the nitrogen oxide, and .05% of the carbon monoxide.[260] Trees and the soil under them filter water pollution by removing polluted particulate matter from water before it reaches storm sewers, and absorbing nutrients created by human activity such as nitrogen, phosphorus and potassium, which otherwise pollute streams and lakes.[261] In addition, increased vegetation dampens sound and mitigates noise pollution.[262]

Research Questions

Baseline Questions	Impact Questions
What share of local city, county, or state revenue is paid directly by the Ports? What share of local city, county, or state revenue is paid by port-related	How will the proposed project impact the share of local city, county, or state revenue paid by the port-related businesses?

Baseline Questions	Impact Questions
businesses?	
What share of city/county/state port-related tax revenue is specially earmarked for local community benefit?	How will the proposed project impact the proportion of tax revenues earmarked for local community benefit?
Does the port currently pay any fees to mitigate negative impacts to local communities?	How will the proposed project impact port related fees used to mitigate existing negative impacts to local communities?
How do current tax revenues support neighborhood resources/projects/programs? How much are programs supported by these revenues used? What are the health impacts of the utilization of these programs?	How will the proposed project impact tax revenues used to support neighborhood resources/projects/programs? How will the change in tax revenues impact the projects/programs? How will use of infrastructure/projects/programs change? How will change of use impact health outcomes?
What is the current rate of injury and fatality in the impacted areas?	How will projected changes in spending on neighborhood resources/projects/programs impact current rates of injury and fatality in the impacted areas?
What are current chronic disease rates in the impacted areas?	How will projected changes in spending on neighborhood resources/projects/programs impact current chronic disease rates in the impacted areas?
What are current communicable disease rates in the impacted areas?	How will projected changes in spending on neighborhood resources/projects/programs impact current communicable disease rates in the impacted areas?

Examples of Analysis Methods

- Prediction of change in tax revenues and the use of those revenues
- Prediction of effects from public programs

Examples of Design and Mitigation Alternatives

- Earmark Port tax-revenue for programs that support neighborhood resources in defined geographies
- Community agreements

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Appendix A

Frequently Asked Questions about Integrating Health Impact Assessment into Environmental Impact Assessment

1. What is Health Impact Assessment (HIA)?

Many land-use and transportation decisions affect health, even ones that may not seem to be specifically about health. For example, a decision to widen roadways will have impacts on noise and air quality for adjacent residents and on the safety of pedestrians along the street; noise, air quality and pedestrian safety are related to health outcomes that include asthma, cardiovascular disease, hypertension, injury, and mortality. HIA is a straightforward and cost-effective tool that can be used to assess planning and policy proposals and make recommendations to improve the health outcomes associated with those proposals.

HIA is formally defined as a combination of procedures, methods and tools that systematically judges the potential, and sometimes unintended, effects of a proposed project, plan, or policy on the health of a population and the distribution of those effects within the population. HIA identifies appropriate actions to manage those effects. (Adapted from the IAIA, 2006)

There are five stages in a HIA process:

Screening	Determines the need and value of a HIA
Scoping	Determines which health impacts to evaluate, methods for analysis, and a workplan
Assessment	Provides: 1) a profile of existing health conditions 2) evaluation of potential health impacts 3) strategies to manage identified adverse health impacts
Reporting	Includes: 1) development of the HIA report 2) communication of findings and recommendations
Monitoring	Tracks: 1) impacts on decision-making processes and the decision 2) impacts of the decision on health determinants

2. What health issues does a HIA consider?

Environmental, social, demographic, and economic conditions drive the health and wellbeing of communities. Factors such as housing, transportation, employment and income, noise, air quality, access to goods and services, access to parks, and social networks have well-demonstrated and reproducible links to health outcomes. A HIA analyzes health from a broad perspective by evaluating how a proposed project, plan, or policy affects these factors – often collectively referred to as "determinants of health" – and in turn, how impacts to these factors are likely to positively or adversely influence health.

3. What are benefits to conducting Health Impact Assessment?

Overall, the information from a HIA, and close collaboration between public health experts, affected communities, and the decision-makers on a project, lead to practical, evidence-driven recommendations that address identified health concerns to the extent possible within the limitations of the regulatory or decision-making process.

- HIAs provide sound, objective data on health impacts. By using this information, potentially unexpected health consequences and unanticipated costs can be identified and thus avoided.
- HIA helps develop healthier communities by identifying design solutions that address the root causes of many prominent health problems like asthma, diabetes, and cardiovascular disease.
- The HIA process can be used to build consensus and buy-in by addressing the affected community's fears about a project directly and transparently and by providing practical solutions.
- HIAs help focus community involvement on real health concerns and on feasible mitigations to those health issues.
- Health issues are typically important to community members and HIA can serve to engage community residents in decisions that impact their lives.
- HIAs give project proponents a way to recognize positive health contributions of projects on communities. It also given businesses the information they need to distinguish themselves as smart planners and build positive working relationships with the community.
- HIAs help decision-makers by ensuring that any potential concerns about a project are identified and addressed early on.

4. Is a comprehensive analysis of health impacts required under NEPA/CEQA?

As stated in "Public Health Analysis Under the National Environmental Policy Act", a white paper by Wernham and Bear:

> The inclusion of a robust, systematic approach to public health is supported by NEPA, the regulations issued by the Council on Environmental Quality (CEQ), the agency in the Executive Office of the President charged with overseeing implementation of NEPA, Executive Orders 12898 and 13045, and available guidance on NEPA and environmental justice.
>
> *Congressional Intent*
> In using the term "human environment," Congress signaled that protection of human communities was a fundamental purpose of the legislation. In the debates leading to NEPA's enactment, Senator Henry Jackson stated: "When we speak of the environment, basically, we are talking about the relationship between man and these physical and biological and social forces that impact upon him. A public policy for the environment basically is not a public policy for those things out there. It is a policy for people."
>
> *Health in NEPA*
> NEPA mentions health a total of six times. Among NEPA's fundamental purposes is: "promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man." NEPA § 102 [42 USC § 4321]
>
> NEPA is intended, furthermore, to: "assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings." [42 USC § 4331]

And finally to: "attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences." [42 USC § 4331]

Health in the CEQ Regulations

Several general provisions of CEQ's NEPA regulations support the inclusion of health.

First, agencies respond to substantive public concerns in the draft EIS [40 CFR § 1503.4]. When, therefore, an agency can anticipate substantive health concerns based on scoping, it is sensible to include these issues for analysis in the DEIS.

Second, in determining whether an effect may be significant (and therefore require analysis in the EIS) one of the factors that agencies should consider is "the degree to which the effects on the human environment are likely to be highly controversial" [40 CFR § 1508.27 (b) 4]. Commonly, health often figures among the strongest concerns expressed by affected communities.

The CEQ regulations also specifically define health as one of the effects that must be considered in an EIS or an EA. In defining "effects," the regulations state that: "Effects" includes ecological, aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative." [40 C.F.R. § 1508.8] And, the regulations instruct agencies to consider "the degree to which the proposed action affects public health or safety" in determining significance. [40 C.F.R. § 1508.27]

Health in Executive Orders

Executive Order 12898 instructs agencies to: "make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States."

Similarly, Executive Order 13045 states that agencies must: "make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children; and ... shall ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks."

Statements relevant to NEPA-based health analysis in Federal Guidance

CEQ guidance on implementing Executive Order 12898 contains several suggestions relevant to public health analysis, including:

- Lead agencies should involve public health agencies and clinics
- Agencies should review relevant public health data (as for any other resource)
- Agencies should consider how interrelated cultural, social, occupational, historical, or economic factors may contribute to health effects of the proposed action and alternatives.

5. What is the relationship between Health Impact Assessment and Health Risk Assessment (HRA)?

Health Risk Assessments are sometimes conducted as part of EIRs and sometimes conducted outside the EIR process. This is true of HIA as well. While there is significant overlap between HIA and the theoretical framework for HRA, in practice, HIA and HRA differ substantially because HRA is carried out in a manner much more limited than its theoretical framework allows for. Below we compare and contrast existing practice of HRA and HIA:

- The purpose of HIA is to make evidence based judgments on the health impacts of a decision and to make health-promoting recommendations while the purpose of HRA is to quantify the health risk from a change in exposure to a particular hazard.
- HIA uses a broad framework to predict all of the potentially significant health effects that could result from changes in the physical, social, and economic environment. In doing so, HIA includes analysis of impacts on the determinants of health, such as housing, transportation, employment and income, noise, air quality, access to goods and services,

access to parks, and social networks. HRAs are typically used to analyze discrete relationships between a single environmental contaminant (e.g., diesel) and a single health outcome (e.g., lung cancer).

- Following the basic pattern of an EIA, HIA starts with an analysis of existing conditions in a community and, in particular, identifies special sub-populations who may be particularly vulnerable, or in which there are significant baseline health inequities. For example, HIA examines existing burdens to EJ communities and assesses impacts cumulatively. HRA does not typically take existing health conditions or disparities into consideration.
- HIA uses both quantitative and qualitative/descriptive methods in analysis, while HRA uses modeling to quantify risks. If there is strong evidence of the existence of a hazard but data does not exist to quantify a prediction, HRA will not consider that hazard while HIA will. Currently, sufficient data to conduct HRA exist for only a limited number of health-relevant environmental exposures and conditions.
- The HIA process can be used to engage stakeholders, including community residents, and build consensus, while HRA is typically conducted by expert risk assessors.
- HRAs can be a useful tool to analyze potential impacts, but they do not comply with the form and process required by NEPA as can an integrated HIA/EIA approach (see answer to question 8).
- HRA is one analytical tool that could be used in the assessment phase of HIA.

6. Does a HIA use qualitative or quantitative data?

HIA may use both qualitative and quantitative data and methods to predict potential impacts. Where feasible and data allows, HIA uses quantitative modeling to increase the precision of analysis and to support significance judgments. Because of substantial data requirements, using quantitative forecasting methods exclusively may present a partial or biased accounting of health effects. Quantification can also be resource intensive and divert from other impact assessment activities. Qualitative analyses provide valuable data when quantitative analyses are not possible.

It is important to note that NEPA regulations do not require quantitative analysis and that many predictions in EIA are descriptive. Indeed, simple descriptions of *possible* causal links between the proposed action and a given outcome may be more legally defensible than quantitative modeling, and can still provide valuable insights into differences between the alternatives and potential mitigation measures.

HIA standards include the ethical use of evidence, whether it is quantitative or qualitative. This includes the utilization of evidence from diverse sources, such as available statistics, empirical research, original investigation results, professional expertise, local knowledge, and the findings of well-designed and peer-reviewed systematic reviews. HIA calls for the justification of the selection or exclusion of particular methodologies and data sources and the explicit statement of assumptions used in judgments, particularly quantitative estimates of hazards or impacts. Data gaps, uncertainties, and limitations should be identified and stakeholders should be allowed to critique the validity of findings.

7. How would a comprehensive health analysis (e.g., using HIA) differ from what is already done in an EIR/EIS?

Currently, there are three ways in which health is incorporated into an EIR/EIS: 1) as a health risk assessment for a discrete exposure (described in question 5); 2) as a discussion of risk factors for health (e.g., air quality, traffic flow), but the link between those risk factors and health is not often made explicitly; and 3) as a demonstration of compliance with a health-based environmental regulation, such as the Clean Air Act. These approaches do not fully address the requirement for an analysis of potential public health effects according to the format/process established by NEPA.

A more complete analysis of health effects responsive to NEPA would consider all potentially significant direct, indirect and cumulative health impacts associated with the proposed action and alternatives. The analysis would include descriptions of baseline heath status and determinants of health for the affected population. These elements would generally be achieved through the implementation of an integrated HIA which would:

- Include a systematic scoping of potentially significant direct, indirect, and cumulative health impacts;
- Analyze baseline health conditions and determinants of health;
- Analyze direct and indirect health impacts of the project; and
- Analyze cumulative impacts related to health outcomes.

8. How does HIA fit in with the EIR/EIS process?

The steps of Health Impact Assessment (described in question 1) parallel the steps of Environmental Impact Assessment and, therefore, the two processes can be easily integrated. By integrating HIA and EIA, redundancy in data collection and analysis is avoided, as information collected in the EIA process provides inputs into the health analysis. To conduct a HIA as part of an EIR/EIS, one would:

- Scope potential direct, indirect, and cumulative health concerns in the EIR/EIS Scoping stage. HIA Scoping includes stakeholder meetings to ensure the scope is complete and uses stakeholder knowledge and experience to prioritize the health concerns to analyze.
- Assess prioritized health concerns identified during Scoping. This assessment will include:
    - new analyses (e.g., collecting existing data on health conditions and on existing determinants of health; analyzing impacts not previously analyzed as a result of the expanded Scope);
    - extensions of existing analyses (e.g., using traffic data such as vehicle trips and volume to predict impacts on traffic injuries and physical activity); and
    - developing potential mitigation measures to address significant health impacts.

  In addition, HIA assessment could include methods that involve stakeholder participation, such as community surveys and focus groups.
- Report and receive public comment on baseline health conditions and determinants of health, the analysis of health impacts, and potential mitigation measures in the Draft EIR/EIS and respond to comments to develop the Final EIR/EIS.

9. How do you know when a health impact can or should be addressed or mitigated?

As for any other resource or impact more commonly analyzed in an EIS, the analysis of health effects is generally limited to those deemed to be potentially significant, as defined by the CEQ regulations (40 CFR § 1508.27). In practice, the HIA team will typically bring a public

health-based perspective on significance which will drive the initial proposed scope of the analysis. The final scope of impacts included in the EIS, however, evolves over the course of the analysis through ongoing collaboration and discussions between the HIA team and the participating agencies, and based on determining which outcomes are best supported by the evidence.

10. Are there other examples of HIAs being done for major projects and policies and as part of EIA?

To date, HIAs have been included in five published NEPA documents, all in Alaska.[1] In San Francisco, the health department collaborates with the planning department to ensure the inclusion of health analyses for environmental analysis conducted under CEQA.

HIA is currently being applied to other important proposals, including those subject to NEPA such as the I-710 Corridor Project in Los Angeles. HIA is also being applied to the proposed Cap and Trade regulations under the California Global Warming Solutions Act.

11. Are there practice standards for HIA?

Yes, the North American Health Impact Assessment Working Group released standards in 2009. Those are available at: http://www.humanimpact.org/HIA_PracticeStandards.pdf.

12. Where can I learn more about HIA?

The Human Impact Partners website (http://www.humanimpact.org/) contains information, tools, and resources regarding HIA. Other good resources include the Centers for Disease Control website (http://www.cdc.gov/healthyplaces/hia.htm), the Health Impact Project website (www.healthimpactproject.org), and the UCLA HIA CLIC website (http://www.ph.ucla.edu/hs/hiaclic/).

Human Impact Partners would like to thank Aaron Wernham at the Health Impact Project and Rajiv Bhatia at the San Francisco Department of Public Health for their significant contributions to this FAQ.

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Appendix B
Port of Long Beach Programs Addressing Determinants of Health[1]

Note: The Port of Long Beach provided the following information to highlight current and ongoing activities it is engaged in that are relevant to community health and well-being. The information in this appendix has not been edited or independently verified by the authors of the HIA Scoping document.

Housing/Neighborhood Livability

The Port has funded and implemented projects to improve neighborhood aesthetics, access to housing services and cultural arts in areas most impacted by Port operations, including:

- Four major tree planting and neighborhood clean-up projects in west and north Long Beach since 2006; resulted in the planting of nearly 450 new trees and shrubs in these areas
- Free 15,000-square-foot facility space for the Homeless Services Center; created following the Navy Base closure
- $2.4 million to assist the city's historic preservation fund following the Navy Base closure
- Sponsorship of neighborhood concerts and parades
- Sponsorship of exhibits at local art museums featuring works inspired by the Port industry

Livelihood

The Port has partnered with community and educational groups to promote workforce development and generate jobs, particularly in neighborhoods most impacted by Port operations, such as west Long Beach. Examples include:

- Partnerships with Long Beach City College to provide job training for technicians in alternative fuel engines, security and green building/architecture
- Partnership with Cabrillo High School (west Long Beach) to provide job training and college credit for alternative fuel engine repair
- The Port supports about 30,000 Long Beach jobs
- The Port supports 316,000 jobs in Southern California
- Construction projects currently sustaining nearly 900 jobs over one to three years
- Future and current construction projects (Middle Harbor, Pier G) anticipated to sustain nearly 16,000 jobs
- Project labor agreement for the Middle Harbor Redevelopment Project that requires 30% of laborers to come from the local community, payment of prevailing wages and apprenticeship/training opportunities for long-term workforce investment
- Partnership with the Pacific Gateway Workforce Investment Network to publicize trucking jobs and training opportunities in association with the Clean Trucks Program; included establishment of a Web site to match trucking companies with potential hires

Transportation

The Port addresses project-specific traffic impacts through the California Environmental Quality Act (CEQA) process. In addition, the Port has addressed transportation issues in the following ways:

- Conducted projects to improve traffic circulation, such as the Ocean Boulevard/Terminal Island Freeway improvement project, which sped transit times for commuters and cargo trucks
- Participates in and has committed $5 million to the I-710 Freeway improvement project

[1] "Determinants of Health" taken from the Human Impact Partners February 10 presentation

- Participates in regional transportation planning efforts
- Works with the City of Long Beach on transportation infrastructure

Education

The Port has numerous education programs and partnerships with local schools including:

- Free international trade/Port curriculum available to all teachers
- $60,000 in scholarships each year to students in high school, college and community college
- Active role in planning and supporting the proposed Goods Movement Academy for Long Beach high school students
- Paid summer internships for high school students in port-related industries

Air Quality

The Port has conducted rigorous analyses of its air emissions and takes a leadership role in reducing these impacts. These programs exceed regulatory mandates. Major programs include:

- The San Pedro Bay Ports Clean Air Action Plan, adopted in 2006, set a goal of 45 percent air pollution by 2012. The plan addresses every machine that moves cargo in the Port, from cranes to ships to trucks. Using the latest available figures, the result so far is a 21 percent reduction in diesel pollution from 2005 to 2008.
- The Clean Trucks Program reduced truck pollution by nearly 80 percent on January 2010, nearly two years ahead of schedule. The program Is replacing all of the older trucks with newer, low-polluting vehicles to serve the Port.
- The Port's switching railroad, Pacific Harbor Line, has completed a transformation of its fleet of more than 20 locomotives, swapping out all the old ones for new clean-diesel engines.
- Shore power, which allows ships to shut down diesel engines and plug into clean electricity while at berth, is being installed. The Port's first container berth with shore power opened in 2008, and the world's first oil tanker berth with shore power was dedicated in 2009. There's more to come. By 2014, 50 percent of container ships will be required to plug in. By 2020, the Port aims to have 100 percent of its container ships plugging in.
- The Port's Green Flag Program has achieved more than 90 percent participation, with cargo ships voluntarily slowing down to reduce emissions within 20 of the Port. The Port is now providing incentives for vessels to slow within 40 miles.
- Terminal operators are signing "Green Leases," which require cleaner yard equipment and other measures to reduce environmental impacts.
- The modernization of the Middle Harbor will transform two aging docks into a new terminal that can handle twice the cargo with half the air pollution.
- Environmental standards are part of the boom in the construction of sustainable Port buildings with energy efficiency, natural light use, drought-tolerant landscaping and recycled building materials. The Port's new headquarters will be built to achieve the highest rating by the U.S. Green Building Council and serve as a maritime and community model for sustainable operations in the workplace.
- Mitigation Grant Programs, which fund activities to reduce the cumulative impacts of Port air emissions on the community; includes funding for air filters, school bus replacement, asthma outreach and diagnostic programs and education programs

Water Quality

The Port is a leader in advancing clean water initiatives in the local community, and harbor waters are among the cleanest in the area. These programs exceed regulatory mandates. Major programs include:

- Water Resources Action Plan, a comprehensive plan with the Port of Los Angeles to improve harbor water quality with measures to enhance stormwater programs, to establish guidance manuals for ships and other harbor users and to develop best practices for reducing water pollution
- Master Storm water Program to manage storm drain runoff and prevent pollution from Port facilities
- Expansive street sweeping program to reduce potential water contaminants
- Periodic biosurvey of Harbor Gull Park following the Navy Base closure

Noise

The Port addresses project-specific noise impacts through the CEQA process. The Port has monitoring and enforcement mechanisms in place to ensure the noise does not exceed acceptable standards, and the Port adheres to the city's noise ordinance. Because the Port is not in close proximity to residential neighborhoods, noise from terminal operations is not an issue for community health.

Parks and Natural Space

The Port has funded and implemented projects to enhance and, in many cases, add natural space and parks in the local community. Projects include:

- More than $1.5 million in funding to help restore the Colorado Lagoon wetlands in Long Beach
- Restoration of wetlands throughout Southern California
    - Upper Newport Bay Ecological Reserve: The Port contributed more than $1 million toward restoration of 29 acres of wetlands
    - Anaheim Bay in the Seal Beach National Wildlife Refuge: The Port developed, managed and funded an $8.8 wetlands restoration project
    - Bolsa Chica Wetlands: The Port contributed $39 million toward the 1997 acquisition and restoration of 267 acres of degraded wetlands in Huntington Beach
- Port-sponsored clean-up projects of the Los Angeles River and Colorado Lagoon
- Creation of new parks in west Long Beach (Wrigley Greenbelt and 51st Street Greenbelt)
- Enhancement of parks and school yards in west and north Long Beach (Hudson Elementary School, Coolidge Park, Perry Lindsey Academy)
- Contributed $2 million to create Cesar Chavez Park
- New administration building to feature one-mile-long public walking trails and amphitheater

Private Goods and Services

The Port is a vital hub for international trade. More than $120 billion in products move through the Port, including many of the low-cost goods from overseas found in the homes of residents. One-third of the Port's imports are consumed in Southern California.

Social Networks

Various Port programs help to strengthen a sense of community and bring neighbors together, such as:

- Green Port Fest, an annual one-day open house providing free, family entertainment such as boat and train tours for about 10,000 local residents
- Free boat tours of the Port for about 2,000 people (separate from Green Port Fest)
- Free family events in neighborhoods, including the Wrigley Greenbelt and 51st Street Greenbelt celebrations (west Long Beach)
- Sponsorship of dozens community events and organizations

- Participation in Sea Festival, which brings hundreds of low-income children to the beach for summer activities and sponsors neighborhood events
- Social networking sites (Facebook, Twitter)

Social Equity

The Port actively engages the community in an ongoing dialogue about Port operations. Among its efforts:

- Multiple opportunities for public comments on proposed development projects (scoping meetings, public hearings and comment timeframes in excess of regulatory mandates)
- Board of Harbor Commissioners meetings are webcast live, and then archived so that the proceedings are easily accessible.
- Once a month, the Harbor Commission meeting is held in the evening to facilitate community involvement.
- Community Advisory Committee to guide implementation of the Mitigation Grant Programs
- Clean Air Action Plan Stakeholder Group comprised of industry, community, labor and environmental groups to advise the Port on clean air strategies
- Let's Talk Port, a series of forums in the community, where residents are invited to discuss various Port topics
- Pulse of the Port video clips featured on cable televisions and YouTube.com, taking viewers behind-the-scenes at the Port
- Re:Port community newsletter, with news about the Port, is distributed free to more than 200,000 households and businesses
- Email updates are sent to more than 5,000 subscribers with information about Port activities
- Ongoing outreach and presentations to neighborhood associations, environmental organizations and community groups, including presentations by Port representatives who speak Spanish
- Because Spanish speakers are the largest minority group in Long Beach, many of the Port's printed materials are translated into Spanish.
- The Port's web site, www.polb.com, includes pages in Spanish, Chinese, Korean and Japanese.
- Public participation opportunities through partnering/regulatory agency meetings, including Environmental Protection Agency, California Air Resources Board, Air Quality Management District, CalTrans, Southern California Association of Governments, Regional Water Quality Control Board

Appendix C
Port of Los Angeles Initiatives Improving Health of the Local Community

Note: The Port of Los Angeles provided the following information to highlight current and ongoing activities it is engaged in that are relevant to community health and well-being. The information in this appendix has not been edited or independently verified by the authors of the HIA Scoping document.

The Port of Los Angeles (Port) has been proactive in addressing the health needs of the local communities. The Port often uses quantitative analysis to assess impacts through project environmental assessments; however the Port also uses community input and recommendations to move forward with initiatives benefitting the communities above and beyond the project level. The following outlines some of the Port's Initiatives designed to improve the health of local residents and communities as a whole.

Port Community Advisory Committee (PCAC)

A communication tool between the Port and the communities is the Port Community Advisory Committee (PCAC), which was established in 2001. The PCAC was established as a standing committee of the Los Angeles Board of Harbor Commissioners. The PCAC is made up of community organizations, neighborhood councils, local academic institutes, labor groups, residential organizations, industry, and others.

The purposes of the PCAC are:

(1) To assess the impacts of Port developments on the harbor area communities and to recommend suitable mitigation measures to the Board for such impacts.

(2) To review past, present and future environmental documents in an open public process and to make recommendations to the Board that ensure that impacts of the communities are appropriately mitigated in accordance with Federal and State of California law.

(3) To provide a public forum and to make recommendations to the Board to assist the Port in taking a leadership role in creating balanced communities in Wilmington, Harbor City and San Pedro so that the quality of life is maintained and enhanced by the presence of the Port.

The PCAC is made up of subcommittees such as Air Quality, Water Quality, EIR/Aesthetic Mitigation, Port Master Plan, San Pedro Coordinated Plan Quality, Traffic, and Wilmington Waterfront. These subcommittees are used to provide the community and the Port a medium to exchange information and comments on Port initiatives, projects and direction. PCAC also has the authority to make recommendations directly to the Board of Harbor Commissioners regarding policy and procedures.

As stated above, neighborhood councils are included as members of the PCAC. In addition to PCAC membership the Port maintains an open dialogue with all neighboring councils. The port assigns one staff member to each council to serve as their port liaison.

Waterfront Projects

As the Port has expanded, there has been a continuing disconnect with the communities of San Pedro and Wilmington and their respective waterfronts in previous decades. The communities felt that the amenities of the waterfronts were diminishing as the Port expanded and physical and perceived barriers were preventing full use and enjoyment of the waterfront. The Port recently approved two historic projects designed to help address this concern: the San Pedro Waterfront the Wilmington Waterfront Projects, together known as the world's largest waterfront and community enhancement project combining for over 500 acres of

redevelopment. The two projects were designed to provide a buffer between the communities and industrial uses as well as re-invigorate the waterfronts with commercial and recreational opportunities that give the local communities and visitors an inviting waterfront to enjoy. Both projects provide improved local access to the waterfronts via new pedestrian and bike paths as well as upgraded public transportation, such as the historic Red Car, to both destinations. The two waterfronts are also connected to each other by bike and pedestrian pathways. The improved access and removal of physical barriers are meant to reconnect the communities with the waterfronts they have long been associated with. Both waterfront projects include public art, increased recreational areas, viewpoints, and open areas to congregate and gather. Additionally, the projects were designed to provide a local attraction for residents and visitors while providing economic opportunities to stimulate the local economy. This is accomplished by redeveloping underutilized areas and restoring blighted areas.

The San Pedro Waterfront Project includes 27 acres of new park space, a town square, commercial opportunities as well as public infrastructure such as an 8-mile promenade with viewpoints, rest areas, bikes paths and walkways. Additionally, the San Pedro Waterfront Project would redevelop the Ports O' Call area, which is already a key attraction for the community. A future research center providing educational and employment opportunities is also included in the project.

The Wilmington Waterfront Project includes a 30-acre buffer from residents and container facilities with recreational opportunities. This buffer will include walking trails, an adventure playground, water features. There will also be a 90-acre waterfront redevelopment area that includes 11 acres of open space, recreation areas, walkways, bike paths, and landscaping. Project features also include a museum and a walking bridge and an observation tower. Additionally, there is a local economic development component with areas set aside for light industrial uses and office space to provide jobs to local residents.

Both projects were designed through an extensive community planning process for the benefit of the community. A one and a half year community process for planning process took place for the San Pedro Project alone prior to the official project scoping for environmental review. The San Pedro Waterfront was redesigned multiple times to respond to community input. Through the Wilmington Waterfront planning process, a consensus project design was developed. Beyond the overall design and larger project components, project design elements such as public art, monuments, and character of the waterfront projects were guided by public comment.

For more information on the San Pedro and Wilmington Waterfront Projects please visit: http://www.lawaterfront.org/.

Mitigation Funds/Programs

In 2003, as part of the China Shipping Settlement, the Port implemented an unprecedented environmental mitigation program and earmarked more than $50 million from Port revenues to address significant impacts of Port-related activities. The Port has exceeded the initial $50 million in funding. The Port has worked with the PCAC to review various air quality and aesthetic mitigation proposals to make the best use of this funding. The interaction in reviewing proposals has contributed to dialogue, establishing trust and a sense of common objective between the community and the Port. To date the Port has allocated the following funds:

- $30.8 million for community aesthetic mitigation projects
- $29.0 million for the reduction of air quality impacts
- $11.9 million to the Gateway Cities Program for use as incentives to replace, re-power or retrofit existing diesel-powered on-road trucks.

A Technical Advisory Committee (TAC), comprised of representatives of various agencies specializing in air quality and environmental management, reviews and evaluates air quality proposals requesting mitigation

funding. The TAC is also charged with advising the PCAC on how to best utilize the air quality mitigation funds to maximize air emission reductions at the Port.

In 2008, the Port established the Port Community Mitigation Trust Fund (Trust Fund) to be operated by a nonprofit organization established to administer the fund. The purpose of the Trust Fund is to address off-port impacts created by existing and future Port operations in the local communities. The Trust Fund will begin with $11.24 million, with $6 million set aside for filtration systems at schools and the remaining funds to be used for other projects that benefit the community.

Other Initiatives Addressing Specific Health Pathways:

Below is a summary of programs that address community health impacts. These programs exceed regulatory requirements and aim to mitigate cumulative impacts and potential inequities.

Housing/Neighborhood Livability

The Harbor Department has funded projects to improve neighborhood and cultural arts in the local communities including:

- Tree distribution events resulting in 3,947 trees to employees and 6,060 trees to community members at no charge. In addition, 4,374 trees have been recently planted on Harbor Department property.
- Financial support to fund the curator's salary for the Point Fermin Lighthouse a local historic facility located in San Pedro.
- Sponsorship of exhibits at local museums: the Banning Museum in Wilmington and both the Cabrillo Aquarium and Los Angeles Maritime Museum in San Pedro.
- The construction of the Fanfare Fountain, Harbor Boulevard Parkway, and Cruise Ship Promenade in San Pedro.
- Mitigation Grant Programs are funding the Plaza Park Redevelopment project, the Los Angeles Lighthouse renovation project, Wilmington Youth Sailing Center, Alameda Street/Harry Bridges Beautification project, Wilmington YMCA Aquatic Center construction, Banning's Landing Health Education program, Marina's Parkway Landscaping in Wilmington, Storm Drain Education Program in Wilmington 3rd and 4th grade classes, and Tall Ship Restoration project which will allow for the expansion of the existing TopSail program.

Livelihood

The Harbor Department has partnered with the community and education groups to promote workforce development. Examples include:

- The Harbor Department sponsors many annual community events in both San Pedro and Wilmington most of which are related to business development in conjunction with the local Chambers of Commerce including World Trade Week now in its 84th year.
- A major contributor and organizer of the International Trade Education Program Summer Intern Program (ITEP) which places interns (ITEP students who will enter the 12th grade in the fall) in Port and maritime related jobs.
- A financial and in kind supporter of the annual Propeller Club and International Longshore Workers Union's Seafood Feast which provides scholarships locally.
- Based on the 2007 report, "Economic Impacts of the Port of Los Angeles" prepared by Martin Associates, the Harbor Department directly supports 1,073 jobs in San Pedro and Wilmington, and provided 1.1 million jobs throughout California, and 3.3 million throughout the United States. http://www.portoflosangeles.org/DOC/REPORT_2007_Economic_Impacts.pdf

- The Port has recently developed Port Tech LA, a maritime focused technology incubator. The purpose of Port Tech LA is to assist technology companies in building their companies by providing business services and guidance in a common local office space with the intent of creating and retaining local green collar jobs.
- The Port Electrical Mechanic Apprentice program, a new five-year program designed to provide on-the-job and classroom training on solar power, cranes, and alternative maritime power.
- Los Angeles City Works program where the Port hires vocational workers as Maintenance Assistance and Office Trainees.

Transportation

Project specific traffic impacts are assessed through the CEQA assessment process. In addition, the Harbor Department has addressed other community transportation issues, such as:

- Paving streets off of Port property in Wilmington.
- Participation in and has commitment of $5 million to the I-710 Freeway Improvement Project, designed to reduce surface street impacts in communities.
- Participation in regional transportation planning efforts.
- Working with City of Los Angeles on transportation infrastructure.

Education

The Harbor Department provides, supports, and sponsors numerous education programs including:

- Financial support to establish the Port of Los Angeles High School
- Financial support for the ongoing operations of the Port of Los Angeles Boys and Girls Club
- School Boat Tour Programs targeting 5th grade students.
- The TransPORTer which is a 53-foot mobile museum that is presented at schools throughout Southern California.
- Red Car Field Trip Program that is available to schools on select days.
- Times in Education, in partnership with the Los Angeles Times, which is an entire curriculum based on the business of the Port and is offered to schools.
- Los Angeles Maritime Institute TopSail Program targeting Middle and High School students statewide.
- International Trade Education Programs which has trade related academies on eight high school campuses including four at Banning High School in Wilmington, The Port of Los Angeles Boys and Girls Club, and Port of Los Angeles High School.
- Harbor Department Engineers participate in annual outreach to 2-3 school as part of "Engineers Week."
- The Harbor Department serves an active role in the Southern California Academy of Sciences.
- Mentoring Program for high school students through the Global Environmental Studies Academy.

Air Quality

The San Pedro Bay Ports have conducted rigorous analysis of air emissions and have taken a leadership role in reducing the two ports' impacts at the source. Major programs include:

- The San Pedro Bay Ports Clean Air Action Plan (CAAP), a joint program with POLB adopted in 2006, set a goal of 45 percent air pollution reduction by 2012. The plan addresses every piece of equipment that moves cargo in the Port. Using the latest available figures the results so far is a 30 percent reduction of DPM.

- The Clean Trucks Program reduced truck pollution by nearly 80 percent by January 2010. The program replaces all older trucks with newer, low-polluting vehicles that serve the Port.
- The Port's switching railroad, Pacific Harbor Line, has completed a transformation of its fleet of more than 20 locomotives, swapping out all the old ones for new clean-diesel engines with each Port covering 25% of the total cost.
- Alternative Maritime Power, which allows ships to shut down diesel engines and plug into clean electricity while at berth, reducing near-community impacts.
- Terminal leases require cleaner yard equipment and other measures to reduce environmental impacts.
- Construction contractors are required to meet environmental standards in their use of equipment and selection of supplies.
- Mitigation Grant Programs, which fund activities to reduce the cumulative impacts of Port pollution, include funding new windows and air filters in schools and engine replacements and retrofits on cargo handling equipment, harborcraft, and off and on-road vehicles.
- The Port, along with the Port of Long Beach, has developed the Technology Advancement Program (TAP) which accelerates the commercialization of new technologies to provide more options to reduce emissions. The TAP has contributed over $9 million of funding for new technology projects.
- The Port, along with the Port of Long Beach, has begun the Zero Emission Container Mover System Program which is currently evaluating zero emission regional transportation systems such as magnetic levitation and linear induction.

Water Quality

The Harbor Department is a leader in clean water initiatives in the community. These programs exceed regulatory mandates. Programs include:

- Water Resources Action Plan (WRAP), a comprehensive plan with the Port of Long Beach to improve harbor water quality with measures to enhance stormwater programs, to establish guidance manuals for ships and other harbor users, and to develop best practices for reducing water pollution.
- Clean Marinas Program, a program that advocates that marina operators and boaters use best management practices—environmentally friendly alternatives to common boating activities that may cause pollution or contaminate the environment.
- Tenant Storm Water Outreach/Assistance Program increases tenant awareness of their industrial activities and its impact to water quality. The Harbor Department also participates in the inspection of tenant facilities.
- Conduction of daily trash collection activities throughout the Port.
- The Seaplane Lagoon Sunken Vessel Program the Harbor Department has removed several submerged vessels clearing navigational hazards and removing potential sources of pollutants.
- The Vessel Disposal Program helps marinas and boaters to dispose of derelict vessels that were in danger of sinking. All hazardous materials are disposed of in compliance with mandates reducing the chance of the release of hydrocarbons and other pollutants.
- A Tenant and Boater Education Program, including green methods to reduce pollution, was presented to boaters and marina operators through guidebooks and education materials.

Noise

The Harbor Department assesses project specific noise impacts through the CEQA process and adheres to local noise ordinances. The Harbor Department established the Noise Subcommittee of the Port Community Advisory Committee in .

Parks and Open Spaces

Recently the Harbor Department has built the following new open spaces to enhance the local community and add natural space and parks:

- 18 acres at 22nd Street Park (http://portoflosangeles.org/newsroom/2010_releases/news_010910_22nd.asp)
- North Gaffey Street Beautification Project (http://www.portoflosangeles.org/newsroom/2009_releases/news_062009_north_gaffey.asp)
- 5 acres of park space including baseball facilities and parking on Knoll Hill
- 1.4 acres of open space and parking at Front Street Dog Park

Additionally, the Cabrillo Way Marina is currently under construction. The Cabrillo Way Marina includes a 10,000 square foot park, an additional 2 acres of site landscaping spread across the site, 46 acres of project backland area, 41 acres of improvements to water areas, and approximately 3000 linear feet of promenade along the waters edge varying in width.

Also, the Waterfront Projects includes over 38 acres of open space and 8 miles of connected bike and walkways.

Social Networks

The Harbor Department used social networking sites such as Twitter and Facebook and also eAlerts to update users on Board Meeting Agenda, Cargo Updates, New Alerts, Public Notices, Environmental Notices, and Newsletters.

Participation in various local annual events, sponsored by the Harbor Department, bring the community together:

- 4th of July Fireworks at Cabrillo Beach
- Shakespeare by the Sea at Pt. Fermin Park
- Wilmington Winter Wonderland
- Cars and Stripes Forever
- Holiday Fountain Event
- Happy Harbor Halloween
- Lobsterfest
- Sponsorships of other events as requested by both the San Pedro and Wilmington Chambers of Commerce or other community groups.

Social Equity

The Harbor Department engages the community in ongoing dialogue about Port operations. Efforts include:

- Multiple opportunities for public comments on proposed projects (scoping meetings, public hearings, and extended comment periods.
- Harbor Commission meetings are held in either San Pedro or in Wilmington in order to provide easy access for both communities. Meetings are also webcast and archived.
- Port Community Advisory Groups meet regularly to make recommendations on a variety of subject areas. It is made up of Neighborhood Council representatives, Community members-at-large, and industry representatives.
- Clean Air Action Plan Stakeholder Group comprised of industry, community, labor and environmental groups to advise on clean air strategies.
- Speakers Bureau of Harbor Department employees for schools and organization who attend community events and make Port related presentations.
- The Main Channel Newsletter sent directly to our resident and business neighbors to update recent activities.

- Portfolio television program airs on Channel 35 throughout Los Angeles and streams on the Port of Los Angeles website.