Concord Naval Weapons Station Reuse Project
Health Impact Assessment

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www.humanimpact.org

HUMAN IMPACT PARTNERS

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The Human Impact Partners' project team was led by Celia Harris and Jonathan Heller and included support from Kim Gilhuly, Peter Cohen and Jose Melendez. Human Impact Partners takes sole responsibility for this work.

Acknowledgments
Human Impact Partners (HIP) conducted the Concord Naval Weapons Station Reuse Project Health Impact Assessment (HIA) at the request of the East Bay Housing Organizations (EBHO) and the Contra Costa Interfaith Supporting Community Organization (CCISCO), as part of the Community Coalition for a Sustainable Concord. We thank our partners at those organizations, especially Amie Fishman at EBHO and Adam Kruggel at CCISCO, for their input and feedback during this process. We thank Seth Adams (Save Mount Diablo), Nancy Baer (Contra Costa Health Services), Wendel Brunner (Contra Costa Health Services), Cedrita Claiborne (Contra Costa Health Services), Rachel Arthur (Contra Costa Health Services), Michael Kent (Contra Costa Health Services), Ann Cheng (TransForm), and Alex Lantsberg (Northern California Carpenters Regional Council), for reviewing chapters of the report. We thank Rajiv Bhatia for his guidance during the HIA process. We thank all the Concord residents that participated in focus groups and completed our survey. We thank Urban Strategies Council for working with us to create GIS maps. We thank many other people and institutions for providing us with their time, data, and input, especially staff at the City of Concord and the Association of Bay Area Governments. Last, but not least, we thank The California Endowment for funding this work.

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Executive Summary

Development at the Concord Naval Weapons Station has the potential to greatly benefit the health and well being of current and future Concord and Contra Costa County residents. Such benefits could accrue through increasing:

- Access to parks and open space where residents, including families and youth, can exercise and relax;
- Number of homes affordable to moderate and lower income residents, including seniors and families with children. This would leave more money available for other needs, such as healthy food, medical care and education, reduce stress, overcrowding and substandard living conditions, as well as increase community stability;
- Number of jobs that pay a family-supporting living wage and provide health-related benefits;
- Proximity of residents to health-promoting goods and services, such as grocery stores and community centers;
- Neighborhood walkability and public transit options, as well as reducing driving. This would increase physical activity, decrease air pollution and noise, and decrease congestion, which reduces stress and provides workers more time with family.

At the request of members of the Community Coalition for a Sustainable Concord and with support from The California Endowment, Human Impact Partners conducted a Health Impact Assessment (HIA) to analyze how the Alternatives being considered for the Concord Naval Weapons Station (CNWS) Reuse Project would help realize health and well being benefits or potentially lead to negative health outcomes. The analysis considered how health would be impacted by changes in housing, jobs, transportation, retail and services, and parks and open space, and developed recommendations in each of these areas as to how to improve the potential health outcomes. In this analysis, health is defined as the state of complete physical, mental and social well-being and not merely the absence of disease or infirmity (World Health Organization).

HIA is a combination of procedures, methods and tools by which a policy or project may be judged for its potential health effects on a population, and the distribution of those effects within the population. HIA can be used to improve the quality of public policy decision making through evidence-based recommendations to enhance predicted positive health impacts and minimize negative ones.

CNWS Reuse Project HIA - Executive Summary

The Steps of HIA

Screening: determining the need and value of an HIA

Scoping: determining the potential health impacts to evaluate

Analysis: using qualitative and quantitative data, expertise and experience to judge the magnitude and direction of potential health impacts

Communication: delivering results to stakeholders through reports and presentations

Evaluation: tracking the effects of the HIA on the decision and critically reviewing the HIA process

Screening

The decision to conduct this Health Impact Assessment was made due to a number of factors, including:

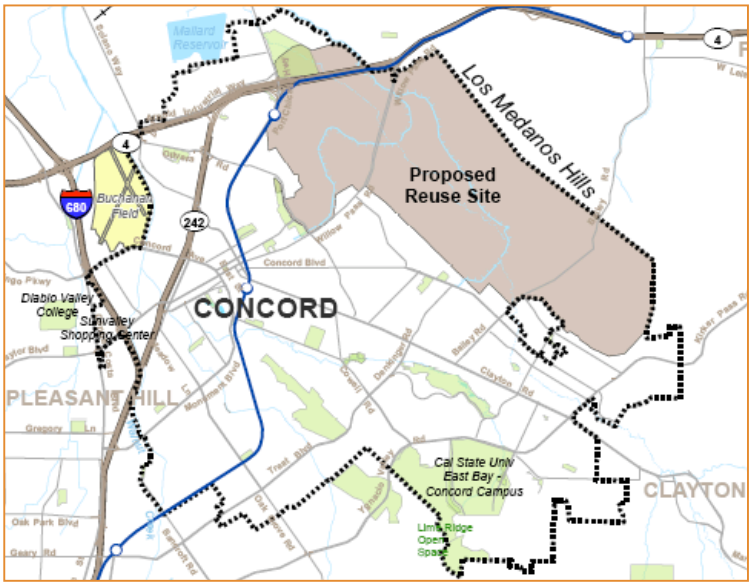
- The CNWS is over 5000 acres of land and is likely to be the biggest piece of property that will be developed in the San Francisco Bay Area for many years;
- The redesign of the CNWS site will have significant health implications for a large number of people;
- An active community coalition of stakeholders identified health as an important outcome of the reuse project.

Scoping

Research questions considered in the HIA were based on health-related needs and concerns of the Concord community and organized into five topic areas: Housing, Jobs, Transportation, Retail and Services, and Parks and Open Space. Research questions were identified by reviewing health statistics, results of a community survey, public documents regarding the CNWS site and various proposals for the use of the site. The project scope was reviewed by the Community Coalition before being finalized and is detailed in each chapter of the report.

Analysis

Relevant existing conditions data was collected from a number of sources, including the Draft Environmental Impact Report (DEIR), the U.S. Census Bureau, Concord's General Plan and other city documents, the Association of Bay Area Governments (ABAG), the California Nutrition Network, and through primary data collection. Existing standards and guidelines, like the Concord Community Reuse Project Planning Framework, the General Plan, and the Inclusionary Housing Ordinance, were reviewed. Three focus groups were conducted with current Concord residents to understand their perspectives. Using all of this information, five proposed Alternatives under consideration for the CNWS Reuse Project (Alternatives 2, 5 and 6 in the DEIR and the Clustered Villages and the Concentration and Conservation Modified Alternatives) were analyzed to understand how each would impact health based on the research questions posed.



Findings

A complete report with the results of this HIA is available at www.humanimpact.org/CNWS, as are summaries of conclusions and recommendations for each of the five topic areas. Major findings are summarized here.

CNWS Reuse Project HIA - Executive Summary

Major Findings

HOUSING

The amount of affordable housing proposed in all project Alternatives will not meet the demand based on an analysis of the wages offered by new jobs at the CNWS and ABAG's Regional Housing Needs Assessment. Housing affordability has many health implications, including families and seniors having enough money for healthcare and nutritious food, preventing overcrowding and displacement, and shorter commutes. The location and timing of affordable housing construction has not been specified. Integration of affordable housing throughout the site would lead to social inclusion and to positive health outcomes.

JOBS

Over half the jobs created will not pay a living wage and many will not offer health or paid sick day benefits. Local hiring policies and workforce training have not been specified at this stage. Jobs for local residents that pay well and offer health benefits would lead to longer lifespans, reduce mental health issues, increase use of preventative care, and reduce stress caused by lack of income and long commutes.

PARKS AND OPEN SPACE

All of the Alternatives provide significant amounts of open space. Those proposing the highest densities provide the most. Modes of access to new parks, especially for current Concord residents that do not have sufficient park space, have not been specified at this stage, nor has recreational programming. Distribution of land between parks with active uses and open space with passive uses has not been considered thoroughly with regard to community needs. Parks and open space encourage physical activity, improve mental health, speed recovery from illness, encourage social cohesion, and improve environmental quality.

TRANSPORTATION

Higher residential density near the BART station and new bus service to BART would lead to more public transit use and reduce driving. Less driving would lead to reduced air pollution, noise, and climate change, all of which would have positive health outcomes. Compact development with walkable streets would also promote active forms of transport, which are good sources of physical activity.

RETAIL AND PUBLIC SERVICES

Higher residential density Alternatives with retail centers, community facilities (e.g., community centers) and other public services distributed throughout the site would place more residents near the goods and services they need to live healthy lives. No plans or policies have been proposed at this stage to increase health-promoting retail such as grocery stores, and reduce health-detrimental retail such as liquor stores.

Summary Table

Area	Healthier Alternative	Notes
Housing	Similar unfavorable health outcomes	Both require significantly more affordable housing and require that locations of affordable housing be identified.
Jobs	Similar unfavorable health outcomes	CV would create more jobs. In both, wages for only ~15% of new jobs would allow for the purchase of a market rate house.
Parks & Open Space	Concentration & Conservation	Distribution of land between parks and open space and access to parks for existing residents need further consideration.
Transportation	Concentration & Conservation	C&C places more people within 1/2-mile of the North Concord BART.
Retail & Public Services	Concentration & Conservation	Due to higher residential density, C&C places more people near retail centers.

CNWS Reuse Project HIA - Executive Summary

Key Health Promoting Recommendations

DENSITY

• Maximize residential density, especially near the BART station, distribute retail and services throughout the residential neighborhoods and maximize the land available for parks and open space. Target density should be at least 20 units per acre.

HOUSING

• Match the cost of new housing to the projected wages of new jobs by adopting a stronger Inclusionary Housing Ordinance for the CNWS that reflects the true need (over 50%) for moderate, low and very low income housing. Ensure that the price of CNWS parcels paid by developers reflects sufficient affordable housing and implement other mechanisms to ensure sufficient affordable housing.

• Affordable housing should be dispersed throughout the project site to ensure social inclusion and integration of all populations and should be built in all phases of the development.

JOBS

• Adopt a Living Wage Ordinance to ensure that new construction jobs and permanent jobs pay residents enough for them and their families to lead healthy lives. Ensure that new jobs provide health benefits.

• Adopt local hiring policies and build on existing workforce development programs to prepare Concord residents for all new jobs created by the project.

PARKS AND OPEN SPACE

• Conduct a needs assessment with regard to parks and open space. Allocate land between those uses accordingly, and specify programming that is responsive to community needs.

• Ensure that the linear park proposed on the west side of the site is large enough and contains programming to accommodate the existing and new residents and families that will use it.

• Develop an operations and maintenance plan for open space to ensure ongoing care and use. Consider giving significant acreage over to East Bay Regional Parks District to assume responsibility for maintenance.

TRANSPORTATION

• Ensure that new neighborhoods in the CNWS site are walkable and bikeable for children and seniors by using pedestrian safety and traffic calming measures.

• Promote public transit use by providing high-quality and high-frequency bus routes.

• Ensure that all existing Concord residents have access to new parks, recreation facilities, retail and public services by creating greenways or other pedestrian-friendly routes and public transit between existing neighborhoods and the CNWS site.

RETAIL AND PUBLIC SERVICES

• Through zoning or other mechanisms, encourage healthy goods and services to be provided on the CNWS site, and discourage unhealthy goods from being offered.

Conclusions

Currently, the City of Concord is choosing between the Concentration and Conservation and the Clustered Villages Modified Alternatives. **Concentration and Conservation is a healthier Alternative from several perspectives. However, both Alternatives are predicted to lead to negative health impacts if mitigations are not implemented. Some mitigations, especially those regarding affordable housing, must be in place** ***before the footprint of development is finalized and the Navy puts the land to auction.*** The City should take advantage of the tremendous opportunity presented by the CNWS Reuse Project to improve the health, well-being, and lives of all current and future Concord residents.

Concord Naval Weapons Station Reuse Project
Health Impact Assessment
Introduction

This report presents results of a Health Impact Assessment comparing land-use development alternatives that have been proposed for the Concord Naval Weapons Station Reuse Project (CNWS Reuse Project). The CNWS Reuse Project is a multi-year process to plan and develop the 5,028-acre inland area of the Concord Naval Weapons Station Site (CNWS Site) in Concord, California. Following an extensive decision-making process involving many stakeholders and community input, in January 2009 the Concord City Council is scheduled to choose one of the proposed development alternatives. Subsequent site development will accommodate up to approximately 28,000 new residents and will include housing, jobs, parks and open space, retail, and public and community facilities. Given this, the CNWS Reuse Project has the potential to bring many community and health benefits to the city.

Health Impact Assessment (HIA) describes a process to inform policy-makers about how policies, plans, programs, or projects can affect the health of populations. HIA is increasingly being used throughout the world. By using diverse research methods and tools, HIA considers environmental, social and economic determinants of health and adds a focus on beneficial effects of proposed policies and projects and environmental justice. In addition, a successful HIA constructively and proactively suggests mitigations for unintended negative health effects and reduces health disparities.

The goal of this HIA is to provide a health perspective to the selection of CNWS development alternatives. In this report we present findings of our impact analysis as well as recommend health-promoting mitigations that will optimize public health opportunities within the Reuse Project. This HIA was commissioned by the Community Coalition for a Sustainable Concord (CCSC), conducted by Human Impact Partners (HIP - a non-profit organization specializing in HIA), and was supported by The California Endowment.

Background

The Concord Naval Weapons Station was, at one time, the United States Navy's primary munitions port on the Pacific Coast. The CNWS Site encompasses 12,800 acres, including a Tidal Area and an Inland Area. The Inland Area, which was used primarily for ammunition storage and included facilities for maintenance, administration, and housing, is located entirely within the City of Concord and comprises approximately one-quarter of the land area of the City (8 square miles of the City's 31 square miles). Due to changes in military operations, the Navy vacated the 5,028-acre Inland Area in 1999, and the potential use of this area for civilian recreation and open space was identified.

In late 2005, the Inland Area was approved for closure by the Department of Defense (DOD) through the Base Realignment and Closure (BRAC) process. While there are no military munitions currently stored there, the Inland Area includes 21 known contaminated areas with chemicals of concern including solvents, petroleum hydrocarbons, metals, napalm, explosives, paints, rocket fuel, arsenic, and pesticides. The Navy retains the liability for cleaning up the contaminated portions of the Inland Area, and an ongoing

environmental investigation and remediation process is now underway. The Navy is required to remediate the site to a level suitable to accommodate commercial and industrial land uses. However, further clean up will be necessary to make the site suitable for more sensitive land uses such as residential, recreational, and other community uses. This responsibility will be borne by parties other than the Navy.

In April 2006, the Concord City Council embarked on a planning process to prepare the Reuse Plan. That year, the City conducted a public outreach campaign to hear comments, suggestions and opinions from residents, business owners, and local and regional stakeholders. In November 2006, the City Council appointed a 21-member Citizen's Advisory Committee (CAC) to contribute to the decision. Technical advisory groups were formed for transportation; education; and parks, recreation and open space.

In October 2007, after receiving input from the City Council, the CAC, the Planning Commission, the Parks and Recreation and Open space Commission, and the community, the city released seven alternative concepts (numbered 1 through 7; hereafter referred to as Alternatives 1 through 7) for the conversion of the Inland Area of the CNWS Site to civilian uses. Each of the seven alternatives include the following elements in common:

- Preservation of hillsides at 30% slope or greater
- A 300 foot wide riparian corridor along Mt. Diablo Creek
- New biking and hiking trails that connect to the existing regional network
- Picnic areas and group areas
- A tournament quality youth and adult sports complex consisting of multiple sports fields and facilities
- Community golf course
- An environmental education and interpretive center
- Preservation of pre-historic cultural sites
- Wildlife habitat areas for a variety of plant and animal species
- Neighborhood parks
- Community parks
- Neighborhood buffers
- Cultural and community facilities – including an allocation for education, police/fire, library, community center, performing arts center, among others
- An allocation of land for places of worship, health care, senior care and homeless accommodation
- Limited crossings of Mt. Diablo Creek
- Limited access into the neighborhoods to the west of the site
- Extension of some existing streets

These seven originally proposed alternatives each have a unique character and represent a broad range of uses. Specifically, alternatives differ by the number of residents accommodated by housing, jobs created, acres of parks and open space, and land devoted to commercial uses.

Formed to promote a sustainable and environmentally protective platform for the Reuse Project, the Community Coalition for a Sustainable Concord (CCSC) is a collection of

dozens of affordable and non-profit housing, interfaith, conservation and labor organizations, and includes thousands of members. The CCSC offers a comprehensive vision to preserve open space and the environment; cluster sustainable, affordable development around the BART station and other transit centers; and promote inclusiveness and a high quality of life for all.

A Draft Environmental Impact Report (DEIR) based on the seven alternatives was released in May 2008. Several CCSC partner organizations wrote public comment letters criticizing the lack of attention to pedestrian and bicycle impacts, affordable housing impacts, public transit mitigations, employment of local residents during the construction phase of the project, and environmental impacts, and other topics.

In September 2008, two new Modified Alternatives were presented by the city. These alternatives, called the Concentration and Conservation Modified Alternative and the Clustered Villages Modified Alternative, reflect stakeholder input on original alternatives. Each draws various elements from the original plans. As of this writing, the Modified Alternatives are being considered by the City Council.

HIA Methodology

A typical HIA involves five stages: screening, scoping, assessment, communication of results, and monitoring. The summary that follows provides key activities and findings for each stage in the HIA process for the CNWS Reuse Project.

Stage 1: Screening

Screening, the first step of HIA, involves establishing the feasibility and value of an HIA for a particular decision-making context.

The 5,000-acre CNWS Site will most likely be the largest property to be developed in the San Francisco Bay Area for many years. Due to thousands of incoming residents and many new retail outlets, parks, and jobs on the site, the scale of the project clearly has significant health implications for thousands of people. In addition, a well-organized community coalition of stakeholders identified health as a priority early on. For these reasons, it was evident during the screening phase that an HIA would add value to project outcomes by identifying health assets, health liabilities, and health-promoting mitigations related to the range of alternatives being considered. Given that resources were available and the timelines were appropriate, the decision to conduct an HIA was made.

Stage 2: Scoping

Scoping, the second stage of HIA, involves creating a work plan and timeline for conducting an HIA that includes priority issues, research questions and methods, and participants' roles.

In order to understand some of the health-related needs and concerns of the Concord community, health statistics, results of a community survey, public documents regarding the CNWS Site and various proposals for the use of the site were reviewed. From these, HIP and CCSC drafted sets of research questions in each of five topic areas:

- Housing
- Jobs
- Transportation
- Retail and Services
- Parks and Open Space

Research questions are provided in each chapter.

While there are obvious environmental health implications related to the CNWS Site's former use as a military ammunitions storage site, HIP and CCSC decided during the scoping stage that residual chemical contamination in groundwater and soil contamination would not be included in the HIA. We absolutely believe that these potential health concerns are important and are to be considered as additive effects to the other health impacts discussed in this report. However, this type of analysis is outside of the technical expertise of the HIA team, project timeline and budget. Environmental investigation and remediation of the site is subject to federal regulatory oversight. Arc Ecology, a Bay Area community-based grassroots organization, is working with the CCSC on this aspect of the project.

This assessment also excludes comprehensive air quality and noise analyses. Air quality and noise issues were not near the top of the community's list of concerns, and are discussed but not focused on. We suggest that these topics be covered more extensively in the final Environmental Impact Report.

Monument Neighborhood
The Monument Boulevard Corridor is a section of southwest Concord that was identified during the scoping phase of this HIA as a community in need of many resources. The Monument Corridor is one of the most rapidly growing and densely populated areas in the county and has an ethnically diverse population that includes many new immigrants.

While definitions of the boundaries of the Monument Boulevard Corridor neighborhood vary, we will consider the Monument community to be bounded roughly by Clayton Road to the north, Galindo Street to the northeast, Cleopatra Drive/Walnut Creek and Monument Boulevard to the south and southeast, and Interstate 680 and State Route 242 to the west.

The population of the Monument neighborhood is approximately 20,000, which is about one-sixth of the Concord population. Broader geographic definitions of the neighborhood increase the population estimates to over 40,000. This community has a lower median income (less than 50% of the average median income) and car ownership than the rest of the city, and greater housing density, unemployment, populations who do not speak English, and population younger than five years old compared with the rest of the city. With the hope that the Reuse Project may provide accessible resources for this community that are currently lacking, this HIA seeks to specifically include input from, analysis of, and recommendations that would increase healthy opportunities for residents of the Monument community.

Stage 3: Assessment
Assessment, the third stage of HIA, involves making judgments of a project or policy's health impacts based on available information. Information sources include available

statistics, qualitative and quantitative research, expert opinion, and community experiences.

For this HIA, data regarding existing conditions relevant to the research questions were collected from a number of sources, including the DEIR, the U.S. Census Bureau, Concord's General Plan and other city documents, the Association of Bay Area Governments (ABAG), the California Nutrition Network, and other resources.

In addition, primary data was collected from the following sources:

- *Community Survey*

A community survey touching upon a variety of health topics related to the CNWS Reuse Project development was conducted at a community meeting held by CCISCO on April 5, 2008. The meeting included presentations regarding the CNWS Reuse Project and other topics, such as a workshop on how to become a US citizen. Eighty-seven people responded to the survey, which was provided in both English and Spanish. A copy of the survey is contained in Appendix B.

- *Focus groups*

Three focus groups were held with a total of approximately 28 Concord residents. CCSC partner organizations East Bay Housing Organization (EBHO), Contra Costa Interfaith Supporting Community Organization (CCISCO), and Neighborhood Alliance recruited their respective members to the following focus groups facilitated by HIP:

  - Affordable Housing residents, August 18, 2008
  - Neighborhood Alliance residents, August 26, 2008
  - CCISCO members, September 11, 2008

Identical questions were posed at each focus group, and topics discussed included existing gaps in service and personal preferences related to parks and open space, walkable neighborhoods, housing, and jobs. Focus group questions are included in Appendix C.

- *Field observation*

On September 18, 2008, HIP visited Concord to observe transportation features in various locations of the city.

Existing standards and guidelines, like the Concord Community Reuse Project Planning Framework, the General Plan, and the Inclusionary Housing Ordinance, were also reviewed. Using this information, the Concentration and Conservation Modified Alternative and the Clustered Villages Modified Alternative were analyzed to understand how they would impact health from the perspectives of the posed research questions.

Due to the availability of significantly more information and data pertaining to the original seven alternatives than the Modified Alternatives that are now being considered, this HIA uses original Alternatives 2, 5 and 6 as baselines for analyzing the Concentration and Conservation Modified Alternative and the Clustered Villages Modified Alternative.

Stage 4: Communication of HIA Findings and Recommendations

Communication, the fourth stage of HIA, involves delivering results to stakeholders through

reports and presentations. This report provides documentation of the HIA research findings including background literature, existing conditions, research methods and findings, and recommendations. In addition to this full-length report, an executive summary and short summaries of each of the five sections are available. All of these documents are posted on HIP's website at www.humanimpact.org/CNWS.

Stage 5: Evaluation and Monitoring

In the context of HIA, monitoring refers to the process of evaluating the outcomes of decisions about projects or policies on health determinants, and, if possible, health status of a population. The long lead times between decisions and their implementation is a challenge to monitoring, as are the complex relationships among environmental health and health outcomes. Monitoring may also entail "watchdog" duties, including, for example, observing whether or not the project decision-makers are instituting mitigations and recommendations to which they agreed.

A plan for monitoring long-term development impacts on health has not yet been established for this HIA.

Report Format

The following chapter of this report summarizes existing health conditions in Concord, and subsequent chapters present respective HIA analyses for Healthy Housing, Jobs, Transportation, Retail and Public Services, and Parks and Open Space. Each chapter includes a summary of existing conditions related to the chapter topic, followed by an analysis of health impacts that would result from the Reuse Project and a list of health-promoting mitigations.

Limitations

The findings and recommendations in this HIA report are made based upon available data, field observations, and our best professional judgment. It is possible that unforeseen events could occur that may limit the accuracy of this assessment.

Concord Naval Weapons Station Reuse Project Health Impact Assessment

Healthy Housing Summary

*H*ousing can impact health in a wide variety of ways. Affordable housing can leave a family with enough money for other necessities such health care, nutritious food and education. Lower housing costs can prevent stress, homelessness, overcrowding, substandard housing conditions, and social isolation of some populations. It can prevent displacement and help build social networks that keep communities stable. Appropriately located housing prevents exposure to air pollution, noise, and traffic, and allows for access to goods and services, parks, public transportation, and schools.

This analysis considered the effects of the CNWS Reuse Project on health through its effects on housing affordability, location, and density. To have a positive impact on health, we conclude that:

1. **Substantially more affordable housing will need to be built under any Alternative being considered to meet the needs of moderate, low and very low income families.**
2. **Affordable housing should be dispersed throughout the site and be built in all project phases.**
3. **Residential development density should be maximized.**

These health-related objectives are well aligned with goals and guiding principles detailed in the Concord Community Reuse Project Planning Framework (adopted by City Council in August, 2006).

Housing Affordability: Conclusions & Recommendations

Based on an analysis of the projected wages that will be paid at new jobs being created at the site and from findings in the Regional Housing Needs Assessment, we conclude that **the land use Alternatives being considered do not provide sufficient amounts of affordable housing**. In both Alternatives, approximately 36% of new jobs will pay very low income wages, 28% will pay low income wages, and 20% will pay moderate income wages. Current Alternatives would lead to negative health outcomes. Increasing the amount of affordable housing would improve health because it can prevent:

- Eviction and displacement. Moving often during childhood can result in depression, academic delay, behavioral issues, and loss of health-protective social networks;
- Lack of income available for other basic needs such as food, medication, and clothing. Low paying jobs and high housing costs are the most often cited reasons for hunger;
- Overcrowding or living in sub-standard conditions, which result in increased risk of infectious disease, mental health issues, higher stress levels, unintentional injury and respiratory disease; and
- Long commutes, which lead to stress, less time with family, and less time for health-promoting activities.

Health-Based Recommendations

1. **Require that at least 50% of the housing built at the CNWS site be affordable to moderate (80-120% Area Median Income), low (50-80% AMI) and very low income (<50% AMI) people and families. People and families at all income levels should have sufficient housing options.**
2. **Ensure that developers are fully informed** regarding these affordable housing requirements.
3. **Strengthen the City's Inclusionary Housing Ordinance at the CNWS Site**.
4. **Make the CNWS Reuse Project a redevelopment area** to ensure that a wider range of financing mechanisms are available for affordable housing development.

Housing Location: Conclusions & Recommendations

Locations within the CNWS site where affordable housing and homeless accommodations will be built have not been specified, making it impossible to analyze if new moderate, low and very low income residents will be: socially isolated; farther from goods, services, parks and other community assets; and/or closer to sources of harm, such as air pollution. Because of the lack of information, it is unclear what the health outcomes associated with housing location will be. Health will be impacted by housing location because:

- Integrated neighborhoods have better access to assets such as schools and parks;
- Proximity to supermarkets promotes quality nutritional choices;
- Living close to parks and open spaces increases physical activity;
- Proximity to public transit reduces personal vehicle travel, which benefits air quality; and
- Living farther from industry and busy roadways decreases the risk of respiratory disease.

Health-Based Recommendations

1. **Integrate affordable developments throughout the CNWS site**.
2. **Ensure that air quality near future housing is healthy** through siting of housing away from busy roadways or by using HVAC mitigations in the design/construction.
3. **Adopt the proposed integrated model of including housing for the homeless** as part of larger non-profit affordable housing developments.

Residential Density: Conclusions & Recommendations

Higher density development would place the most new residents close to retail, public services, and public transit. More compact options, such as the Concentration and Conservation Modified Alternative, are healthiest because:

- People in counties with compact development walk more and are less likely to be overweight or suffer from high blood pressure than those living in more sprawling counties;
- People in compact areas drive less. Less driving is directly proportional to less air pollution, which reduces heart and respiratory ailments, and lower greenhouse gas emissions, which contribute to climate change and have an impact on mortality from extreme weather events (e.g., heat waves), and on the spread of water-, food-, and vector-borne disease. Driving also is associated with injuries from accidents; and
- More compact areas have better access to parks and to health-promoting goods and services.

Health-Based Recommendation

1. **Maximize residential development density to at least 20 units per acre** in order to maximize land available for parks and open space and to maximize access to public transit and to goods and services.

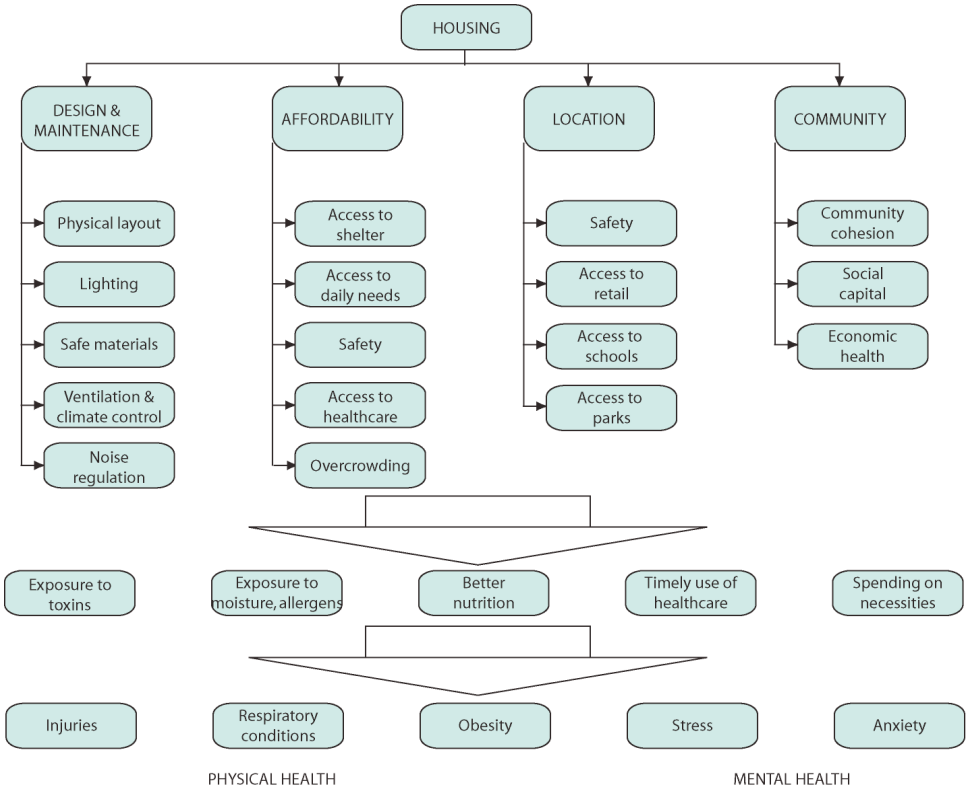
Additional recommendations that would lead to positive health outcomes:

1. **Ensure that affordable housing is built during each phase** of the CNWS Reuse Project build-out.
2. **Ensure that housing is of the size that meets the needs** of current and future residents and families.
3. **Ensure that housing matches the need by tenure**. The number of rental units and ownership units should match the needs of the future population of Concord.
4. **Include "healthy housing" design principles in design guidelines for residential units**.
5. **Promote all models for affordable housing development**, especially non-profit affordable housing development, to meet the affordable housing need.

Concord Naval Weapons Station Reuse Project
Health Impact Assessment
Chapter 1
Healthy Housing

Health Pathways

This analysis of healthy housing considers the ways in which the CNWS Reuse Project could address the issues of housing affordability, overcrowding, and housing conditions for current and future residents of Concord. It identifies feasible recommendations to ensure that the proposed housing is affordable, adequate in size/number of units, and provides quality living conditions for residents. This chapter also discusses residential density and its impacts on health. The following pathway diagram depicts connections between housing and health.



A. Introduction

Housing can impact health in a wide variety of ways. In this Health Impact Assessment the discussion will focus primarily on housing affordability, location, and density. Affordable housing can leave a family with enough money for other necessities such as health care and nutritious and adequate food. Affordable housing can prevent residential displacement, homelessness, overcrowding, and segregation. Proper location of housing can prevent exposure of families to sources of air pollution, community noise, and dangerous traffic. Proper location and density of housing can also impact access to goods and services, parks, public transportation, and schools, as well as prevent social isolation of populations by race or income.

This chapter considers the relationships between housing and human health and how the proposed development at the CNWS Site affects these relationships. Questions related to Healthy Housing in the CNWS Reuse Project that were examined in this Health Impact Assessment are:

- *What are the affordable housing needs in Concord, by levels of affordability, by size and by tenure, and how will the project help to meet that need?*

- *How will affordable housing be integrated with market rate housing into the overall community plan for this area?*

B. Existing Housing Conditions in Concord

Summary of Census 2000 data: Income, Housing, Overcrowding, Housing Affordability, and Geographic Distribution of Very Low Income Households

Census data from the year 2000 for Concord census tracts[1] are summarized below.

Housing units and Income

- Number of households: 43,456
- Total housing units: 44,529
- Average household size: 2.74
- Owner occupied housing: 27,129 (63% of housing units)
- Renter occupied housing: 16,237 (37% of housing units)
- Median household income: $54,719
- Per capita income: $24,197
- Approximate number of households earning 50% or less of median household income (~$27,500): 9000 (21% of households)
- Approximate number of households earning between 50% (~$27,500) and 80% of median household income (~$45,000): 8000 (18% of households)
- Approximate number of households earning between 80% (~$45,000) and 120% of median household income (~$65,000): 8000 (18% of households)
- Approximate number of households earning above 120% (~$65000) of median household income: 18,5000 (43% of households)
- Percent of residents of Concord living in poverty: 24.5% (compared to 19.6% in the county)

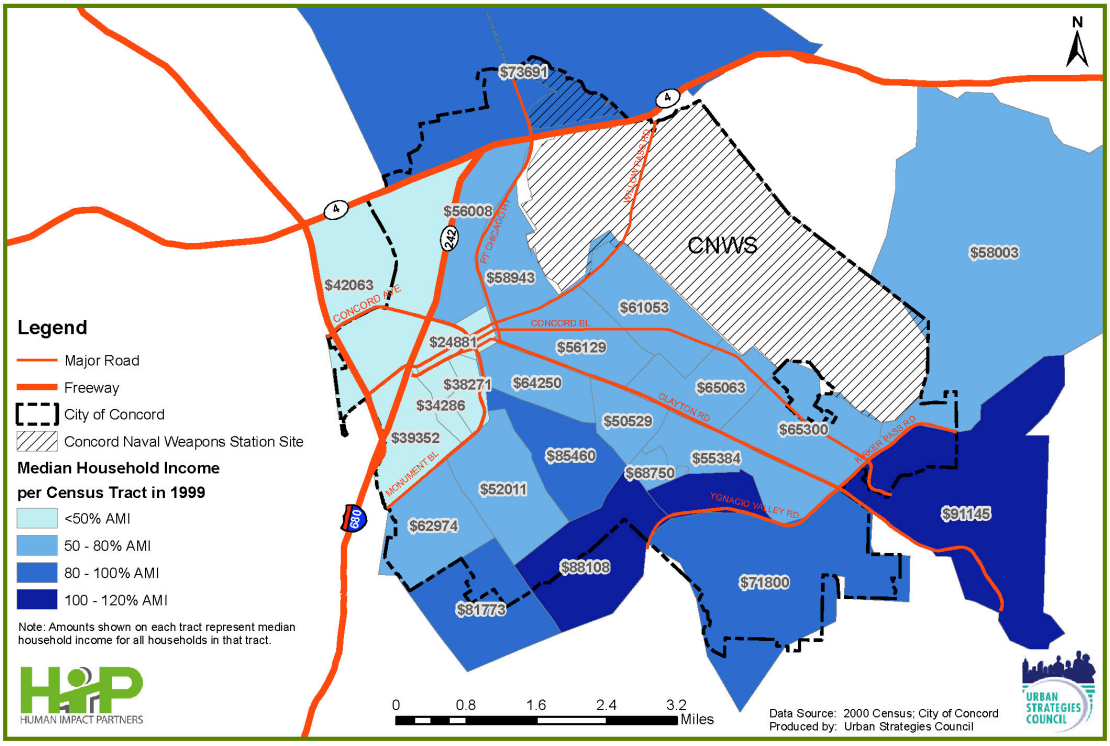
Overcrowding and Affordability. Using the US Department of Housing and Urban Development's (HUD) definition of overcrowding (overcrowded is defined as more than one person per occupiable room and severely overcrowded is defined as over 1.5 people per occupiable room) and affordability:

	Overcrowded		Severely Overcrowded	
	Number	Percent	Number	Percent
• Rental units:	1190	7.3%	1753	10.8%
• Owner occupied units:	667	2.5%	497	1.8%

	Paying 30% or more of income on rent/mortgage		Paying 50% or more of income on rent/mortgage	
	Number	Percent	Number	Percent
• Rental units:	6926	43%	2802	17%
• Owner occupied units:	6447	24%	1952	7%

Some areas of the city have residents that are better off or worse off from an economic perspective. As Figure 1-1 shows, lower income households are located in the Monument Corridor and near the freeways rather than dispersed throughout the city. This social isolation by income level (and potentially by other characteristics) can lead to a lack of opportunity for people living in those areas (e.g., schools in low income communities are frequently not as good and crime rates are higher, so children have a lower chance of gaining the skills needed to obtain high paying jobs).

Figure 1-1: Median Household Income in Concord (1999)



Homelessness in Concord

The City of Concord commissioned an assessment of homeless needs and services as part of the CNWS Reuse Project planning. The report[2] provides an analysis specifically of housing needs for homeless accommodation and sheds light on overall housing affordability issues for Concord and its neighboring cities. The report finds:

- The homeless population in the wider study area (the central and eastern part of Contra Costa County, which includes Concord, Walnut Creek, Pleasant Hill, Martinez, Pittsburg, Clayton and adjoining unincorporated areas) is between 1,421 and 1,788 persons (average 1,566 and median 1,527).
- The homeless population in Concord itself is calculated to be between 591 and 874 persons (average of 669 and median of 604). This is about 43% of the total homeless population in the study area.
- 26% of the homeless population is estimated to be persons in families.
- In addition to the identified homeless population, "as many as 8,500 very low income households in the study area are at high risk of becoming homeless in the future."
- The populations at highest risk to become homeless are households with extremely low incomes and former foster youth.

Housing price trends

The Draft Environmental Impact Report (DEIR) for the CNWS Reuse Project shows that housing prices in Concord have risen dramatically during the 2000-2006 period, with the median value of an owner occupied housing unit increasing by 149% to $582,300.[3] The median rent in Concord also rose 31% during this period.

The recent housing crisis has led to reduced housing prices. According to MDA DataQuick[4] the median house price in Contra Costa County in September 2008 dropped to $300,000, 46% below its peak in the summer of 2007. These price levels are approximately the same as prices in March 2003. The price drops have been a result of housing price depreciation region-wide, a shift of sales to cheaper regions, and a large number of sales of foreclosed homes. Also in September 2008, 59% of homes sold in the county had been involved in a foreclosure. According to RealtyTrac[5] California ranked 3rd in the US for foreclosure filings with 189,560 foreclosures between January and June 2007, or 1 foreclosure for every 69 households.

Past housing construction

According to the analysis in the DEIR, "Concord… over-allocated permits for above moderate price housing, and failed to meet RHNA goals for lower incomes."[6] During 1999 to 2006, the city issued residential development permits for 244% of established RHNA housing needs at the above-moderate income category but only 27% of affordable housing needs at all income categories below 120% AMI.

The DEIR points out that the underproduction of affordable housing in Concord is similar for Contra Costa County overall. However, Table 13-7 in the DEIR shows that Concord's trend in imbalanced housing production was even greater than for the county as a whole, where overall, 217% of above-moderate housing was permitted and 71% of affordable

housing needs were permitted. It is notable that the income categories where Concord's housing performance was most different than Contra Costa County's as a whole were:

- The low income (50%-80% AMI) category, where Concord permitted 42% of RHNA need compared to the county permitting 93% of need; and
- The moderate income (80%-120%) category, where Concord permitted 13% of RHNA need compared to the county permitting 83%.

Looking at the summary of affordable housing needs and production for Concord since 1980 (see Table 1-1), the demand for very low, low and moderate income housing has remained consistently high (approximately 56% of the total housing need across the entire time period). Production is more difficult to analyze, as the permitting and construction process take a long time. For the older time period (1990-1999), the amount of housing built is included in Table 1-1, while for the more recent time period (1999-2006), only the housing permitted is available and detailed in the table. Even this limited available data shows that, on the production side, there is clearly a trend of the city not meeting RHNA targets. During the 1990-1999 period, only about 2% (70 out of 3092) of the identified very low, low and moderate income housing need was built, while 68% of above-moderate income housing need was built.[7] The city's Housing Element calls this a "significant shortfall."

Table 1-1: Regional Housing Needs Assessments From 1980 To Present (and the degree to which needs have been met)

	1980-1990		1990-1999		1999-2006		2007-2014	
Affordability level	RHNA needs (units) (and % of total)	Units permitted or built (and % of needs)	RHNA needs (units) (and % of total)	Units permitted or built (and % of needs)	RHNA needs (units) (and % of total)	Units permitted or built (and % of needs)	RHNA needs (units) (and % of total)	Units permitted or built (and % of needs)
Very low	1,085 (20%)	No Data (N.D.)	785 (20%)	41 built (5%)	453 (20%)	171 permitted (38%)	639 (21%)	N.D.
Low	868 (16%)	N.D.	628 (16%)	15 built (2%)	273 (12%)	115 permitted (42%)	426 (14%)	N.D.
Moderate	1,139 (21%)	N.D.	824 (21%)	14 built (2%)	606 (26%)	76 permitted (13%)	498 (16%)	N.D.
Above moderate	2331 (43%)	N.D.	1,686 (43%)	1,154 built (68%)	987 (42%)	2,411 permitted (244%)	1480 (49%)	N.D.

Sources: ABAG, Dec 1983, Housing Needs Determinations Report: San Francisco Bay Region; Association of Bay Area Governments (ABAG), 2007. "Projections 2007"; City of Concord Housing Element. 2003.

Since 1980, the average needs, according to the RHNAs, have been:

- 20% for very low income housing;
- 15% for low income housing;
- 21% for moderate income housing; and
- 44% for above moderate income.

It is worth noting that the DEIR does not take this information into account and, instead, concludes that the CNWS Reuse Project as proposed (with standard "inclusionary" housing requirements as the sole affordable housing mechanism), will not present a significant housing impact. The DEIR bases this conclusion on statements that "[d]evelopment on site would assist in meeting the existing and future housing needs of both Concord and Contra Costa County"[8] and the CNWS Reuse Project alternative scenarios "would meet requirements for affordable housing set in the City's housing ordinance."[9]

Housing need for population growth (2007-2014)

According to the Regional Housing Needs Assessment by ABAG[10] and as shown in Table 1-1, Concord will need to build 1,563 affordable housing units between 2007 and 2014. This is 51% of the total housing production. Of those:

- 21% or 639 units will be needed for very low income households (<50% of the area median income (AMI));
- 14% or 426 units will be needed for low income households (50%-80% AMI); and
- 16% or 498 units will be needed for moderate income households (80%-120% AMI).

Clearly, ABAG predicts a significant amount of housing will be needed for very low, low and moderate income people moving into Concord. It is important to note that this housing need is estimated based on the expected population growth. Any current deficiency in the amount of affordable housing in Concord (i.e., the unmet affordable housing needs of the existing population) is not taken into account in these estimates.

Table 1-2 details the income levels, affordable rents and affordable purchase price of homes for these income categories for a two person household. Table 1-3 details the same information for a four person household. For both these tables, rental calculations are based on 30% of household income and purchase price calculations are calculated from CBRE analysis Appendix H "affordable unit adjustments."[11]

Table 1-2: Income Levels, Affordable Rents and Affordable Purchase Price of Homes For a 2-Person Household

Income level	50% AMI	80% AMI	120% AMI
Annual income	$34,450	$53,000	$82,600
Affordable monthly rent	$861	$1,325	$2,065
Affordable purchase price	-	$162,000	$243,000

Source: CBRE Consulting, Inc. , July 2008, Technical Memorandum. Concord Naval Weapons Station and Concord Community Reuse Plan. CBRE Consulting's Interim Summary of Fiscal and Financial Analyses.

Table 1-3: Income Levels, Affordable Rents and Affordable Purchase Price of Homes For a 4-Person Household

Income level	50% AMI	80% AMI	120% AMI
Annual income	$43,050	$66,250	$103,300
Affordable monthly rent	$1,076	$1,656	$2,583
Affordable purchase price	-	$206,667	$310,000

Source: CBRE Consulting, Inc. , July 2008, Technical Memorandum. Concord Naval Weapons Station and Concord Community Reuse Plan. CBRE Consulting's Interim Summary of Fiscal and Financial Analyses.

Concord's affordable housing needs can also be viewed within the context of Contra Costa County overall (see Table 1-4). Concord has the third greatest affordable housing need of cities in the county, behind San Ramon and Brentwood.

Table 1-4: 2007-2014 Regional Housing Needs Allocation for Contra Costa County

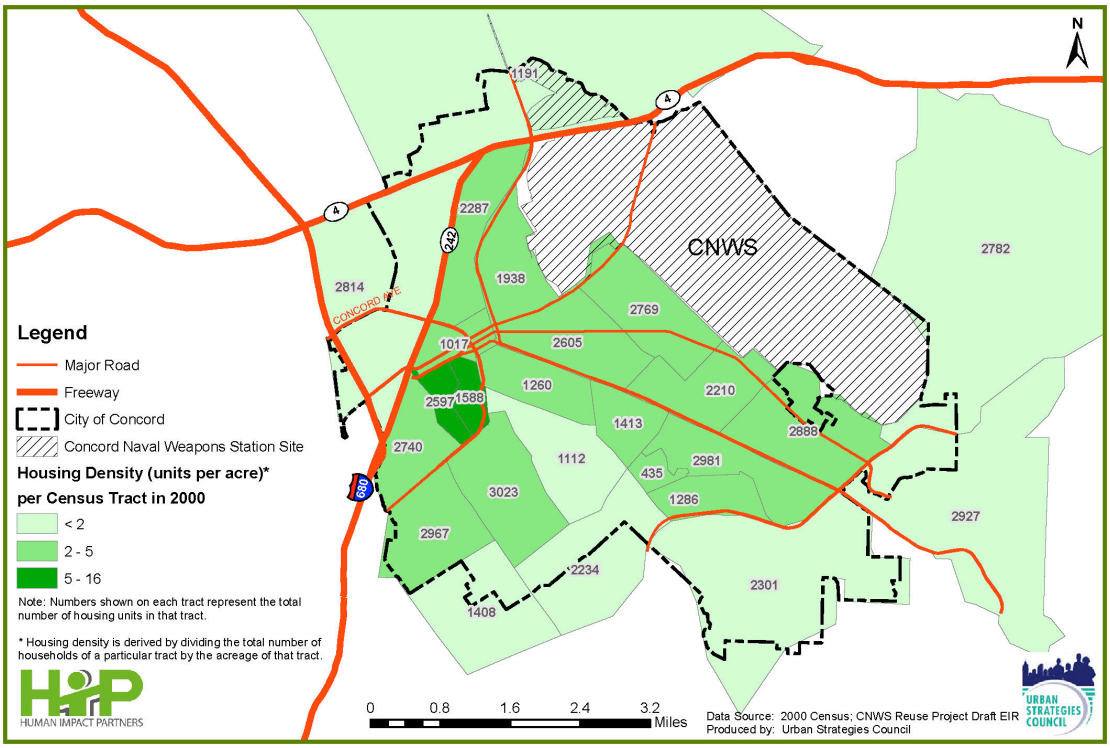
	Very Low <50%	**Low <80%**	**Mod <120%**	**Above Mod**	**Total**
ANTIOCH	516	339	381	1,046	2,282
BRENTWOOD	717	435	480	1,073	2,705
CLAYTON	49	35	33	34	151
CONCORD	**639**	**426**	**498**	**1,480**	**3,043**
DANVILLE	196	130	146	111	583
EL CERRITO	93	59	80	199	431
HERCULES	143	74	73	163	453
LAFAYETTE	113	77	80	91	361
MARTINEZ	261	166	179	454	1,060
MORAGA	73	47	52	62	234
OAKLEY	219	120	88	348	775
ORINDA	70	48	55	45	218
PINOLE	83	49	48	143	323
PITTSBURG	322	223	296	931	1,772
PLEASANT HILL	160	105	106	257	628
RICHMOND	391	339	540	1,556	2,826
SAN PABLO	22	38	60	178	298
SAN RAMON	1,174	715	740	834	3,463
WALNUT CREEK	456	302	374	826	1,958
UNINCORPORATED	815	598	687	1,408	3,508
CONTRA COSTA COUNTY	**6,512**	**4,325**	**4,996**	**11,239**	**27,072**

Source: Association of Bay Area Governments (ABAG), 2007. "Projections 2007."

Residential density

As can be seen in Figure 1-2, most of Concord currently has a residential density of less than 5 units per acre. The Monument neighborhood is the only area of the city with a higher density, with densities as high as 16 units per acre.

Figure 1-2: Residential Density in Concord (1999)



C. Analysis of Housing Impacts at CNWS Site

The City's Proposed Alternative Concept documents provide, for each alterative:

- Number of housing units that would be built;
- Average density;
- Number of units broken down by single-family units vs. multi-family units;
- Number of units broken down by single-family vs. multi-family units and by density; and
- Proposed locations for the residential land use by density.

Furthermore, it states, "Each alternative concept has a base assumption for affordable housing in accord with current policies set forth in the Housing Element of the City's General Plan." See Appendix A for details regarding goals and policies in the Housing Element.

The goals and guiding principles detailed for the CNWS Reuse Project in the Concord Community Reuse Project Planning Framework (adopted by City Council in November,

2006) include important objectives related to housing. Community Development Goal C (CD-C) (A Multi-Generational and Inclusive Community) includes: "Be responsive to the needs of people of all ethnicities, social and cultural backgrounds, income groups, and people with disabilities." Guiding Principle CD-3 (Housing Variety/Affordability) states:

- Provide a mix of housing types, densities and price ranges to accommodate community needs;
- Utilize market analysis to determine feasibility and demand for various housing types;
- Ensure that new development maintains an appropriate balance of jobs and housing; and
- Meet all local, state and federal housing requirements by providing access to a range of quality housing for all income groups, seniors, working families, low-income households, first-time home buyers, young professionals, and persons with disabilities.

With these goals, principles and community priorities in mind, we analyze how the proposed alternatives address housing at the CNWS Site.

Housing Affordability

Housing affordability impacts health through several pathways: for example, by affecting people's ability to buy food or get medical care, by displacing residents, and by increasing the number of overcrowded households. An increasing share of the population is subject to housing cost burdens in excess of their capacity. Spending a larger share of income on housing decreases the amount of money available for other basic living needs such as food, medication, clothing, and transportation to access jobs.[12] Low paying jobs and high housing costs are the most often cited reason for hunger.[13] In fact, higher levels of food insecurity are associated with an increasing percentage of income spent on housing in US and Canadian studies.[14] [15] The Canadian study specifies that in the lowest income quintile, 68% were unable to meet a food spending adequacy guideline. The USDA determined that median housing costs can predict food insecurity on a state-level; i.e., the higher the median cost of housing, the more likely a family is to not be able to consistently feed itself.[16]

Increased rents or mortgage costs can also precipitate eviction and displacement. Displacement is a stressful life event[17] and relocation can have significant impacts on health and childhood development. Residential stability at childhood (moved 0-2 times) increases the odds that an individual will rate their health positively in midlife by 42%.[18] More specifically, increased mobility in childhood (moving 3 or more times by the age of 7) resulted in a 36% increased risk of developing depression and also correlated with academic delay in children, school suspensions, and emotional and behavioral problems.[19] [20] Displacement can result in loss of job, difficult school transitions, and loss of health protective social networks.[21] Social networks – friends, family, co-workers, neighbors that one interacts with regularly – can provide important emotional and material support in times of sickness or stress.

Overcrowding is another common response to unaffordable housing. Overcrowding increases the risk of passing infectious diseases and can lead to stress. It has also been shown to have a direct relationship with poor mental health.[22]

The CNWS Reuse Project will be the major location for new housing in Concord for the next several decades
Table 1-5 details population growth estimates from ABAG and from the DEIR. In 2006 Concord's population was 121,753.[23] Development at the CNWS Site was taken into account in ABAG's Projections.[24] From 2010 on, the DEIR estimates are consistently about 4000 people lower than ABAG's.

Total estimated population growth from 2015 (the estimated start of the build-out of the CNWS Site) to 2035 is 24,500 people according to the DEIR.

Table 1-5: Projected Population Growth in Concord

Year	2005	2010	2015	2020	2025	2030	2035
ABAG Population estimate	128,300	129,200	132,900	139,300	146,200	152,900	158,300
DEIR population estimate	121,753 (2006)	125,800	129,400	135,400	142,000	148,400	153,900

Source: Association of Bay Area Governments (ABAG), 2007. "Projections 2007"; City of Concord, May 2008. Draft Environmental Impact Report for CNWS Reuse Plan. Chapter 13, "Population, Housing and Employment."

Table 1-6: Population Accommodated By Alternative Land Use Proposals

Alternative	2	5	6	Clustered Villages	Concentration and Conservation
Population growth that can be accommodated	30,600	22,300	18,100	28,100	22,950
Percent of 2015-2035 estimated growth	125%	91%	74%	115%	94%

Source: City of Concord, Oct 2007. Proposed Alternative Concepts; and similar document released for the Modified Alternatives on Sept 13, 2008.

Table 1-6 details the number of people accommodated by each alternative being considered for the CNWS Reuse Project, according to the City's Proposed Alternative Concepts

documents. As can be seen from the table, **the vast majority of Concord's population growth will be accommodated at the CNWS Site.**

Significant amounts of affordable housing are needed on the CNWS Site based on ABAG's RHNA
As Table 1-6 shows, for any of the alternatives chosen, the majority of housing over the coming years in Concord will be built on the CNWS Site. Table 1-7 details how much housing would be built under the alternatives being analyzed in this HIA. Alternative 2 provides for the most housing – 13,000 units – and Alternative 6 provides the least – 8,000 units.

Within the land use footprint for any of the alternatives, approximately 56% of the housing needs to be preserved for very low, low and moderate income housing (affordable housing) to meet ABAG's Regional Housing Needs Assessment figures from 1980 to the present (see existing conditions section). Depending on the alternative, as shown in table 1-7, this would be between 4480 and 7280 housing units.

Table 1-7: Affordable Housing Need by Alternative as Calculated Using the Regional Housing Need Assessment Averages From 1980 To the Present

Alternative	2	5	6	Clustered Villages	Concentration and Conservation
Total Housing	13,000	10,000	8,000	11,950	10,400
Very low income units (20%)	2,600	2,000	1,600	2,390	2,080
Low income units (15%)	1,950	1,500	1,200	1,793	1,560
Moderate income units (21%)	2,730	2,100	1,680	2,510	2,184
Above moderate income units (44%)	5,720	4,400	3,520	5,258	4,576

Not enough affordable housing is being planned at the CNWS Site to meet the need
The economic models developed by CBRE for the CNWS Reuse Project use the City of Concord's Inclusionary Housing Ordinance (see Appendix A) figures in its calculations. Based on this, depending on the density of housing built, either at most 10% of the housing is assumed to be set aside for affordable housing or a relatively small in-lieu fee is used for the calculations (table 8). Assuming that the set aside for affordable housing for the

Modified Alternatives is similar to the set aside used in the economic models created by CBRE for the Original Alternatives, **for the Clustered Village and Concentration and Conservation Modified Alternatives, about 1000 units plus about $20 million from in-lieu fees would be allocated to affordable housing for all income levels below 120% AMI.**

The CBRE analysis assumes that for a townhome for a 3-person household, the average market rate price purchase price would be $590,000. The California Department of Housing and Community Development set the 2008 official state household income limit[25] for affordable housing eligibility in Contra Costa County to $59,600 for a Low Income, 3-person household. Extrapolating from CBRE's analysis in their Appendix H, this translates into a purchase price of $184,667 for a townhome for 3 people. Therefore, the affordability gap would be about $400,000 per unit. The in-lieu fees of $20M would likely contribute toward building approximately another 50 housing units ($20M divided by $400,000) at most for low income households. Using different assumptions (e.g., regarding the size of homes, rental vs. purchase, income levels, etc.), the number of housing units would vary. For example, the current housing prices are lower than when the CBRE analysis was completed. Using current housing prices ($300,000), almost 200 housing units could be built with the in-lieu fees. Further changing assumptions would result in different number of units, but the total number of units built with in-lieu fees will not approach the total need for affordable housing.

Table 1-8: Proposed Affordable Housing Construction by Alternative

	Alternative	2	5	6	Clustered Villages*	Concentration & Conservation*
Total Housing Units Proposed by Density	**High****	3,820 (29%)	3,525 (35%)	2,700 (34%)	3,130 (26%)	3,010 (30%)
	Medium	4000 (31%)	3824 (38%)	2912 (36%)	4200 (35%)	3950 (39%)
	Low***	5205 (40%)	2632 (26%)	2390 (30%)	4620 (39%)	3080 (31%)
Affordability Level (# of Units)	**Very Low Income**	0	N/A	0	0	0
	Low Income	127	117	90	103	99
	Moderate Income	979	881	634	943	806
	Total Affordable Housing	1106	998	724	1046	905
	Above Moderate Income	11,919	8,983	7,278	10,904	9,135
	Approx. in Lieu Fees	$35 million	N/A	$14 million	$26 million	$17 million

*details for these affordable housing calculations on the Modified Alternatives are assumed to be generally consistent with pattern of assumptions in the CBRE analysis for project Alternative 6.
**includes both high and moderate-high density categories in the CBRE analysis.
***includes very low, low and moderate low density categories in the CBRE analysis.

Sources: CBRE Technical Memorandum July 2, 2008, Summary of Fiscal and Financial Analyses, pg 4 and Appendix A and Appendix H; City of Concord Sept 16, 2008 Program Summary for Modified Alternatives.

This total set-aside for affordable housing (approximately 1,200 housing units in either Modified Alternative) is far below the need calculated based on ABAG's RHNA (Table 1-7) of between 4480 and 7280 housing units. While Alternative 2 provides slightly more affordable housing units than the rest of the alternatives and thus might be considered the "healthiest" with regard to affordable housing, **none of the alternatives will serve the needs of present and future Concord lower income residents.**

The affordable housing being planned does not serve needs of the very low income households
The CBRE model for inclusionary affordable housing proposed for the CNWS Reuse Project is intended to target household incomes only as deep as 80% AMI for rental units and at 120% AMI for ownership units. Yet, clearly, according to the RHNA affordable housing allocation and Concord's existing policy, there is a great need for units for households below 80% AMI and for households at 50% AMI and below. The RHNA estimates that 20% of housing should be built for households with incomes below 50% of AMI and 15% should be built for households between 50% and 80% of AMI.

The wages paid by new jobs at the CNWS Reuse Project will require that affordable housing be built
As the Jobs Chapter of this HIA describes, in the Clustered Villages Modified Alternative, approximately 9381 jobs (36%) would be created that pay less than 50% of the AMI; approximately 7176 jobs (28%) would be created that pay between 50% and 80% of AMI; and approximately 5220 jobs (20%) would be created that pay between 80% and 120% of AMI. In the Concentration and Conservation Modified Alternative, approximately 7,334 jobs (36%) would be created that pay less than 50% of the AMI; approximately 5742 jobs (28%) would be created that pay between 50% and 80% of AMI; and approximately 4260 jobs (21%) would be created that pay between 80% and 120% of AMI. Although this analysis looks at wages of individual jobs and not at household income, it is clear that the new jobs at the CNWS Site will not pay workers enough to afford homes for above moderate income households. **To match the wages paid by new jobs, significant amounts of affordable housing will be required at the CNWS Site.**

Community members also believe affordable housing is important at the CNWS Site
Nearly 50% of our survey respondents listed "affordable housing" as one of their top three priorities for a large development project like the CNWS Reuse Project. "Affordable Housing" was tied for second with "Open Space and Recreation" as the most important issues, only behind "Jobs and Economic Development."

Respondents were asked whether they agreed, disagreed, or did not know if they agreed or disagreed with four statements about housing. Sixty-six percent of respondents agreed with the statement "It is hard for me to pay the mortgage/rent," while only 16% disagreed and 14% did not know. Fifty-four percent of respondents did not agree with the statement "There are homes available at every income level," while 24% agreed and 22% did not know. Forty-four percent of respondents agreed with the statement "I am satisfied with my current housing," while an equal percent disagreed and 12% did not know. Last, 36% agreed with the statement "My family is at risk of foreclosure on our house," while 52% disagreed and 12% did not know.

In the three focus groups, participants were asked two questions about housing: "What would be the type of housing most likely to satisfy your needs?" and "What do you think would be an affordable monthly payment that would fit most household incomes for people in your community?" One of the themes among responses was that affordability of housing is of great concern. It was addressed further in answers to the second question. Concern about overcrowding and multi-family living situations as a result of high rents was brought

up as well. When asked about affordable monthly payments for housing the three focus groups agreed on different rents. One focus group did not have an opinion, one proposed $1000 per month because participants were earning the minimum wage, and the last focus group said that $2000 was an affordable monthly rent and $2500 was an affordable monthly mortgage payment.
The City of Concord also conducted a survey of 600 Concord residents that was released in December 2008.[26] The need for affordable housing in the CNWS Reuse Project was identified as one of the top four priorities (the others being job opportunities, traffic, and preserving open space/creating parks), with 62% feeling that the need for more affordable housing was very or somewhat serious. Sixty-nine percent said they would support a mix of housing types so that housing could be affordable.

The City of Concord needs to negotiate the price of the CNWS Site based on building more affordable housing

Information from 1) our analysis of the Regional Housing Needs Assessment; 2) our analysis of jobs likely to be created; 3) the community focus groups and survey indicate that there will be a significant demand for affordable housing units at all depths of affordability at the CNWS Site. If these numbers and affordability levels are to be met, as the Concord Community Reuse Project Planning Framework (adopted by City Council in November, 2006) and Policy 1.1 of the Housing Element indicate is the intent of the City of Concord, they must be met largely (proportionally) on the CNWS Site.

The degree to which this will be possible depends, at least in part, on the Navy's auction price for the CNWS parcels. If the price of the CNWS land is estimated based on the assumption that primarily market-rate housing will be built, the cost of the land will be high. The high land cost will then make it more difficult to actually build affordable housing on the CNWS Site. Clear policies to ensure that affordable housing goals are capitalized into the land values before the Navy puts the land to auction would help achieve those goals.

Location of Affordable Housing

Frequently, affordable housing is concentrated in ethnically or economically segregated neighborhoods. This can impact environmental assets and exposures. Segregated neighborhoods have fewer institutional assets (e.g., schools, libraries, public transit),[27] but have more environmentally burdensome infrastructure (e.g., highways, power plants, factories, waste sites) – compromising air, noise, water, and soil quality.[28] Additionally, more violent crime, more infectious disease and chronic disease all occur in segregated neighborhoods.[29] Finally, residential segregation often affects minorities as well as low-income residents disproportionately, thus leading to inequities in health outcomes. In Concord, the Monument is a low income area, with large numbers of people of color, which faces these challenges. For example, the Monument is close to the freeways, contains few parks on a per capita basis, and has a large number fast food restaurants.

A number of additional effects on health and public safety are associated with the location of residential housing. These include:

- Children and adults living in proximity to freeways or busy roadways have poorer health outcomes including more symptoms of asthma and bronchitis symptoms[30] and reduced growth in lung capacity;[31]
- There is an increase in the frequency of respiratory illness in residents living in close proximity to industry;[32] [33] [34]
- Pedestrian hazards are increased in housing proximate to busy roadways;[35]
- Proximity to full service supermarkets promotes quality nutritional choices (see Chapter on Neighborhood Completeness);
- Proximity to parks and recreational facilities increases physical activity;[36] and
- Proximity to public transit reduces personal vehicle travel, resulting in regional benefits to air quality. (see Chapter on Transportation and Walkability)

The City of Concord has not yet specified at what locations within the CNWS Site affordable housing would be built. To maximize the positive health-related outcomes for its residents, it is important that the affordable housing and the homeless accommodations that are built on the CNWS Site are integrated with the market-rate housing. Doing so would ensure that certain sub-populations have adequate access to goods, services and parks, and that those sub-populations are not subject to higher exposure to environmental dangers.

Residential Density

Residential density impacts access to goods and services, success of neighborhood retail, walkability, success of public transit, amount and access to parks and open space and other factors that impact health. As discussed below, high density housing has the greatest potential to serve these health-related needs but requires careful planning to achieve the health-related goals (see chapters on retail, parks and transportation for more detail). Higher densities can also allow for more affordable housing, as land cost per unit are reduced and there are economies of scale in the construction.

Negative health implications have been associated with urban sprawl.[37] Research has found that people living in counties with sprawling development are less likely to walk, weigh more and are more likely to suffer from high blood pressure than those living in less sprawling counties. People in sprawling areas drive more. Vehicle miles traveled are directly proportional to air pollution and greenhouse gas emissions. Air pollutants, including ozone and particulate matter are causal factors for cardiovascular mortality and respiratory disease and illness. Greenhouse gases contribute to climate change and 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. Areas with high levels of vehicle miles traveled per capita also tend to have higher accident and injury rates.

The City of Concord found in its survey of 600 Concord residents that 65% of respondents felt that residential density is a sensible idea.

Table 1-9 shows the average residential density for the alternatives assessed here. Alternative 5 provides for the highest density housing. Alternative 2 provide for the least dense housing.

Table 1-9: Average Residential Density

Alternative	2	5	6	Clustered Villages	Concentration and Conservation
Residential Density (units/acre)	11.5	16.5	13.9	10.8	13.3

While there are many benchmarks for density (see for example, the Healthy Development Measurement Tool[38]), **an appropriate benchmark for the CNWS Reuse Project is from a report[39] produced by the Local Government Commission and the U.S. Environmental Protection Agency. This report concludes that a density of 20 units per acre can support a transit station and a density of 30 units per acre can support a high-frequency transit service with 10-minute headways, as BART has at peak hours. None of the alternatives being considered meet this density benchmark.**

Additional Factors Related to Housing: Housing size, Tenure and Air Quality

Other housing-related factors impact health as well. These include:

- Housing size: As discussed above, overcrowding can lead to negative health impacts. In addition to cost of housing, housing size issues can lead to overcrowding. A range of home size that matches the existing and predicted future population of the CNWS Site should be built. Not only should the mean number of members of a household be considered, but the range of the number of members of a household should be as well.
- Tenure: Currently, 37% of households in Concord are renters. The housing built on the CNWS Site should match predictions of future number of renters in order to best serve the needs of the population. Rental housing provides for the mobility of the workforce, allows for housing appropriate to one's stage in life, and is often more affordable. Many workers do not have the down payment necessary to buy a home and/or can not afford the costs of owning a home. As the current foreclosure crisis indicates, people should not be pushed to buy homes they cannot afford or when they are not ready. Rental housing offers a solution for those not yet ready to buy homes.
- Air quality: When housing is to be built by busy roads, air quality in the housing units could be of concern.[40] [41] [42] The California Air Resource Board recommends not placing sensitive receptors (e.g., children, seniors) within 500 feet of busy roadways,[43] but if it is necessary to place housing near busy roadways, many potential mitigations exist to improve air quality.[44] Air quality modeling can predict the need for mitigations for poor air quality. Based on the land use maps for the CNWS Reuse

Project alternatives, it is not possible to analyze how many housing units will be located near busy roadways and whether air quality mitigations will be required.

Focus group participants were concerned about several of these factors. In response to a question about the type of housing that would satisfy their needs, two factors that were brought up, in addition to affordability (see above) were:

- Residential density: Participants voiced a wide range of opinions regarding density. Some participants were interested in single-family homes while many others mentioned high density housing/multi-family units. There were concerns about continued sprawl and the building of very large homes.
- Size of housing: The need for a variety of sizes was voiced. Some people said that 2 bedrooms was enough, others wanted 2 to 3 and others felt that they needed 3 to 4.

D. Health-Promoting Mitigations for Housing

Based on evidence linking housing affordability and location to health, survey results, three focus group discussions with Concord residents about housing needs, ABAG's Regional Housing Needs Assessment, an analysis of wages paid by new jobs, and evaluation of the Concord 2030 General Plan's Health Element, Concord's Inclusionary Housing Ordinance, and the Concord Community Reuse Project Planning Framework, we recommend the following mitigations for housing at the CNWS Site:

- **Maximize residential development density** in order to maximize land available for parks and open space, access to public transit and to goods and services, and neighborhood walkability. Residential densities of between 20 and 30 units per acre are appropriate for the CNWS Site.
- In order to ensure that Concord and the Bay Area are places that very low, low and moderate income people can afford to live, **ensure that the fair share of the number of affordable housing units – as detailed in current and future Regional Housing Needs Assessment and as required by State law – are built** at the CNWS Site. Based on past and current RHNA goals, **approximately 56% of the housing units at the CNWS Site should be affordable to very low, low and moderate income households.**
- **Ensure that people at all income levels have housing options at the CNWS Site**. The affordable housing should meet the need both in terms of the number of units built AND the affordability of those units. A fair share of units should be built for very low, low, and moderate income households. Ideally, the cost of housing would be matched to the expected household incomes based on future local job opportunities (see Chapter on Jobs).
- **Ensure that the affordable housing units are dispersed throughout the CNWS Site** and are not concentrated in or excluded from one part of the site.
- **Ensure that affordable housing is built during each phase of the CNWS Reuse Project build-out** and that the construction of affordable housing is NOT held till the end of the project. By building this housing throughout the project lifetime, the jobs that are created can be filled by people living at the site and the chance that all the affordable housing is built is maximized.

- **Ensure that all the housing, but especially the affordable housing, is of the size that meets the needs of current and future Concord residents and families.** The size of the housing units should be matched to the expected size of future households.
- **Ensure that the housing units built match the need by tenure.** The number of rental units and ownership units should match the needs of the future population of Concord.
- The City of Concord should **ensure that developers are fully informed of the intent and requirements of the City regarding the above recommendations regarding density, affordability and location of housing.** The bids by developers must be informed by these policies and intents so that the cost of the land does not prohibit these recommendations from being implemented.
- **Ensure that air quality in future housing is of high quality** by either avoiding placing housing within 500 feet of busy roadways or by ensuring that housing built close to roadways includes mitigations (such as air handling systems with filters) to clean the air entering residential units. See the Healthy Development Measurement Tool[45] for a list of potential mitigations.
- **Include "healthy housing" design principles in design guidelines for residential units.** These include measures to ensure that housing is dry, clean, well ventilated, safe, contaminant- and pest-free, well maintained, and quiet. For specific recommendations regarding these measures, see the National Center for Healthy Housing reports[46] and the Healthy Development Measurement Tool objectives.[47] Many of these principles are consistent with Green Building design principles, such as LEED.
- **Strengthen the City's Inclusionary Housing Ordinance** so that it reflects the need for affordable housing as detailed above.
- **Make the CNWS Site a redevelopment area** to ensure that a wider range of financing mechanisms are available for affordable housing development.
- **Adopt the integrated model of including housing for the homeless** as part of larger non-profit affordable housing developments in order to ensure that some populations are not socially isolated.
- **Promote all models for affordable housing development, including non-profit affordable housing development, to maximize the potential to meet the affordable housing need.**

E. Conclusions

The land use alternatives being analyzed in this HIA provide for between 8,000 and 13,000 units of housing at the Concord Naval Weapons Station Reuse Project site. This housing is a very large percentage – at least 74% (see table 6) - of the housing need in Concord in the coming years. Because of this, it is vital that the housing built at the site meet the needs of the current and projected future population of Concord, including children and seniors. This housing is also a substantial percentage of the housing that will be built in the East Bay and will therefore impact everyone who lives in the region.

The health-related objectives with regard to housing at the CNWS Site are well aligned with goals and guiding principles detailed in the Concord Community Reuse Project Planning

Framework (adopted 11/14/06), which are described at the beginning of the Analysis section above. The Planning Framework discusses creating inclusive housing and affordable housing. It describes ensuring that there is an appropriate balance between jobs and housing.

While new housing will be an important benefit of the CNWS Reuse Project and will have an substantial health impact, the limited information available about the kind of housing that will be built on the site indicates that none of the alternatives under consideration meet the projected demand for affordable housing at all levels of need. This is because the City's Inclusionary Housing Ordinance does not mandate the construction of as much affordable housing as is projected to be needed by ABAG's Regional Housing Needs Assessment. **If the proposed land use alternatives are not modified to include more affordable housing at all levels of need, it is clear that many very low, low and moderate income households (including seniors) will not be able to afford to live in Concord and that the City will be building housing mainly for higher income households.** This will have many negative health consequences, including creating a jobs/housing mismatch, increasing the lengths of commutes throughout the East Bay, requiring people to pay more than they can afford for housing, and displacement.

The prices developers pay the Navy for the CNWS parcels will be determined largely by economic modeling. These economic models must take into account the amount of affordable housing that will be required. If models do not do so and are used as the basis of a price negotiation, the land costs for the site will be higher. The higher land costs will preclude the building of the required amounts of affordable housing in the future. Therefore the need for affordable housing must be taken into account and planned for now, before the prices are fixed and before the next stage of planning moves forward.

Affordable housing is an important health issue. As described above, paying excess amounts in rent leads to people having to choose between getting healthcare, buying food and other meeting other health promoting needs. It also leads to overcrowding and living in substandard conditions, which can impact mental health and disease transmission. As detailed in other sections, lack affordable housing can lead to longer commute times, which can lead to stress and musculo-skeletal injury, and can increase the need for people to work multiple jobs, which increases stress and takes time away from other health promoting behaviors, such as physical activity. Lastly, housing costs can lead to displacement and foreclosure, which can break health promoting social networks and lead to homelessness, which has tremendous health impacts.

Aside from housing affordability, many other details regarding the size, tenure, location, and timing of the construction of housing have not been planned as of yet. The size and ownership details of the new housing should match the existing and projected future need and should be worked out at this stage in the planning process. The affordable housing should be spread throughout the new development and not 'ghettoized'. This will ensure that all populations have access to goods, services, and parks, and access to the same opportunities (e.g., in terms of education). Size, tenure and location of housing will impact

health of future residents substantially. Additionally, the affordable housing should be constructed in all phases of the build-out so that it is available to workers as jobs are created and so that it is available as soon as possible for those who need it.

F. References

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Concord Naval Weapons Station Reuse Project Health Impact Assessment

Jobs & Livelihood Summary

Jobs can impact physical, mental, and social health. The proposed development at the CNWS will provide jobs during the construction phase as well as after construction is complete. Income level and unemployment are associated with a variety of health outcomes, including premature mortality, stress, depression and chronic disease. Being able to work close to home decreases poor health outcomes associated with driving time, such as stress, heart problems, musculoskeletal disorders, and lack of time for social cohesion and family. It also decreases air and noise pollution and emission of greenhouse gases, all of which have negative health impacts ranging from respiratory disease to stress to death from extreme weather.

This analysis considered health impacts of the CNWS Reuse Project through its effects on job creation, local hiring, and workforce development. To have a positive impact on health, we conclude that:

1. **Jobs created by the CNWS will need to pay a family-supporting living wage and provide health and sick day benefits. Wages paid in local jobs should reflect housing prices to ensure that people can afford to *live and work* in Concord.**
2. **New construction jobs and permanent jobs should primarily be filled by local residents.**
3. **Existing workforce development programs should be used and enhanced to train local residents for jobs created by the CNWS Reuse Project.**

These health-related objectives are well aligned with goals and guiding principles detailed in the Concord Community Reuse Project Planning Framework (adopted by City Council in August, 2006).

Wages & Benefits: Conclusions & Recommendations

Based on an analysis of wages that are likely to be paid and benefits likely to be offered at new jobs created at the site, we conclude that **over 50% of jobs created would not pay workers enough to allow them to live in Concord and have a reasonable quality of life.** CNWS land use Alternatives could lead to negative health outcomes because:

- Lower income increases risk of many health issues such as premature mortality, low birth weight babies, injuries, violence, most cancers, and chronic health conditions;
- Low income can lead to an inability to pay for basic needs such as nutritious food, medication, and clothing. Low paying jobs and high housing costs are the most often cited reasons for hunger;
- Unemployment can lead to shortened life expectancy, as well as higher rates of heart disease, hypertension, depression, and suicide; and
- Lack of health insurance and paid sick days can lead to increased spread of disease, such as stomach flu, and delay in receiving care, which can make disease more severe and lead to unnecessary hospitalizations.

Health-Based Recommendations

1. **Maximize the proportion of employment opportunities that pay a living wage** to ensure workers have income to afford housing, nutritious food, and medical care. Two methods to address this are **establishing a living wage ordinance** for the City of Concord or specifically for jobs at the CNWS site and **attracting employers who pay higher wages**.
2. **Ensure that new jobs provide health-related benefits**, such as health insurance and paid sick days.

CNWS Reuse Project HIA - Jobs & Livelihood

Local Hiring and Workforce Development: Conclusions & Recommendations

While the number of jobs created by the CNWS Reuse Project would result in a roughly equal number of workers and jobs in Concord, at this stage **none of the Alternatives being explored addresses local hiring policies for the build-out phase and thus do not take advantage of the opportunity to provide residents with quality jobs.** The CNWS Reuse Project also does not yet address local workforce development, which would train current residents for newly created construction and permanent jobs. Health will be impacted if local hiring is not addressed because:

- People who live and work in close proximity spend less time driving. Auto use is one of the primary contributors to greenhouse gases. Greenhouse gases contribute to climate change and have an impact on mortality from extreme weather events (e.g., heat waves), and on the spread of water-, food-, and vector-borne disease; and
- Increased commute time is associated with stress and cardiovascular problems, musculoskeletal disorders, increased injury from accidents, and less time for family, friends, and civic engagement.

Health-Based Recommendations

1. **Match the cost of new housing to the wages paid by jobs created at the CNWS site.** If housing costs are too high, workers at the new jobs will not be able to live in Concord, leading to displacement, overcrowding, substandard housing, longer commutes for lower income workers, increased global warming, traffic congestion, and segregation of communities by income, all of which have negative health outcomes.
2. **Build on existing workforce development programs** to improve their quality and effectiveness (e.g., increase number of young people graduating from high school, expand pre-apprentice options) **and allocate land at the CNWS site to establish workforce development programs where needed**.
3. **Ensure that construction jobs during the build-out phase and permanent jobs after build-out are primarily filled by local residents by adopting a local hire or first source hiring ordinance.**

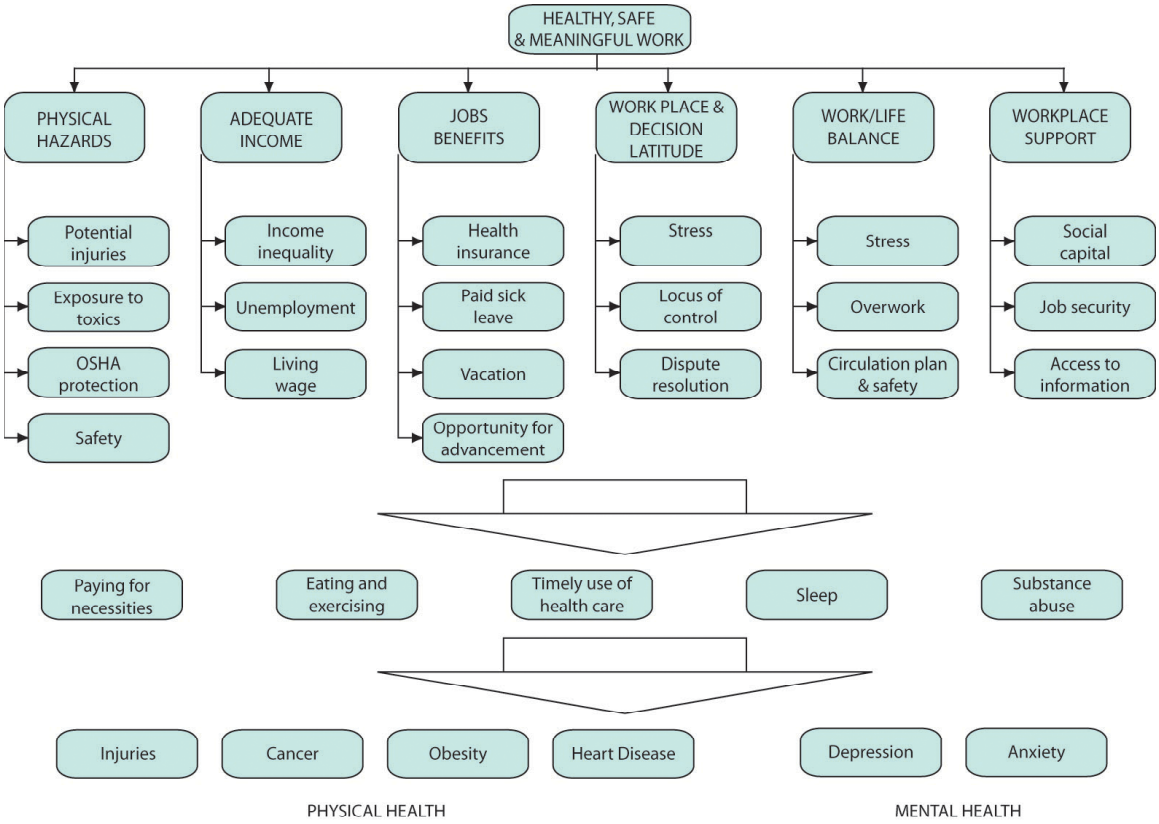
Estimated wages of new permanent jobs at the CNWS site:

	Clustered Villages	Concentration & Conservation
Median hourly wage	$19.60	$19.60
% jobs paying below living wage	57%	56%
% jobs paying very low income	36%	36%
% jobs paying low income	28%	28%
% jobs paying moderate income	20%	21%
% jobs paying above moderate income	16%	15%

Concord Naval Weapons Station Reuse Project
Health Impact Assessment
Chapter 2
Jobs and Livelihood

Health Pathways

This analysis of jobs and livelihood considers the ways in which the CNWS Reuse Project could provide good, safe and meaningful work for current and future residents of Concord. It identifies feasible recommendations to ensure that the proposed land use provides for 1) jobs that pay workers enough to live in the area with their families, are appropriate for residents and provide benefits and 2) offer job training facilities. The following pathway diagram depicts connections between jobs/livelihood and health.



A. Introduction

Jobs and livelihood can impact physical, mental and social health in a wide variety of ways, as the pathway diagram above shows. In this Health Impact Assessment the discussion will focus on how jobs provided at the CNWS Site during the construction phase and permanent jobs provided in the long term meet the needs of Concord residents from wage, benefits, and education/job training perspectives.

This chapter considers the relationships between jobs and human health and how the proposed development at the CNWS Site affects these relationships. Questions related to

Jobs and Livelihood in the CNWS Reuse Project that were examined in this Health Impact Assessment are:

- *What types of jobs will the project create, both during construction/buildout and permanent/long term jobs?*
- *How will the project ensure that some of the employment opportunities created by the redevelopment plan will benefit the local residents of Concord?*
- *Does the project include a workforce development plan that targets youth and underemployed populations to be able to take advantage of jobs created?*

B. Existing Jobs/Livelihood Conditions in Concord

According to California Employment Development Department's Labor Market Info website,[1] in October 2008, of Concord's 121,000 people, 71,500 people were in the workforce. The Association of Bay Area Governments (ABAG)[2] estimates that there were 66,560 jobs in Concord in 2005. In the 2000 census approximately 28% of employed Concord residents reported working in Concord, while 72% reported working outside of the city.

Summary of Census 2000 data: Income and Geographic Distribution of Labor-related Census Data

Census data from the year 2000 for Concord census tracts[3] are summarized below.

Income

- Median household income: $54,719 (compared to $63,675 in Contra Costa County and $62,024 in the Bay Area)
- Per capita income: $24,197 (compared to $30,934 in the Bay Area)
- Approximate number of households earning 50% or less of median household income (~$27,500): 9000 (21% of households)
- Approximate number of households earning between 50% (~$27,500) and 80% of median household income (~$45,000): 8000 (18% of households)
- Approximate number of households earning between 80% (~$45,000) and 120% of median household income (~$65,000): 8000 (18% of households)
- Approximate number of households earning above 120% (~$65000) of median household income: 18,5000 (43% of households)
- Percent of residents of Concord living in poverty: 24.5% (compared to 19.6% in the county)

The maps on the following pages illustrate how some of this and other census data is distributed geographically across the city. Figure 2-1, median household income, and Figure 2-2, per capita income, show that in 1999, lower income households and poorer people were generally located in the Monument and near the freeways. Higher income households were found in the areas nearer to Walnut Creek.

Figure 2-1: Median Household Income in Concord (1999)

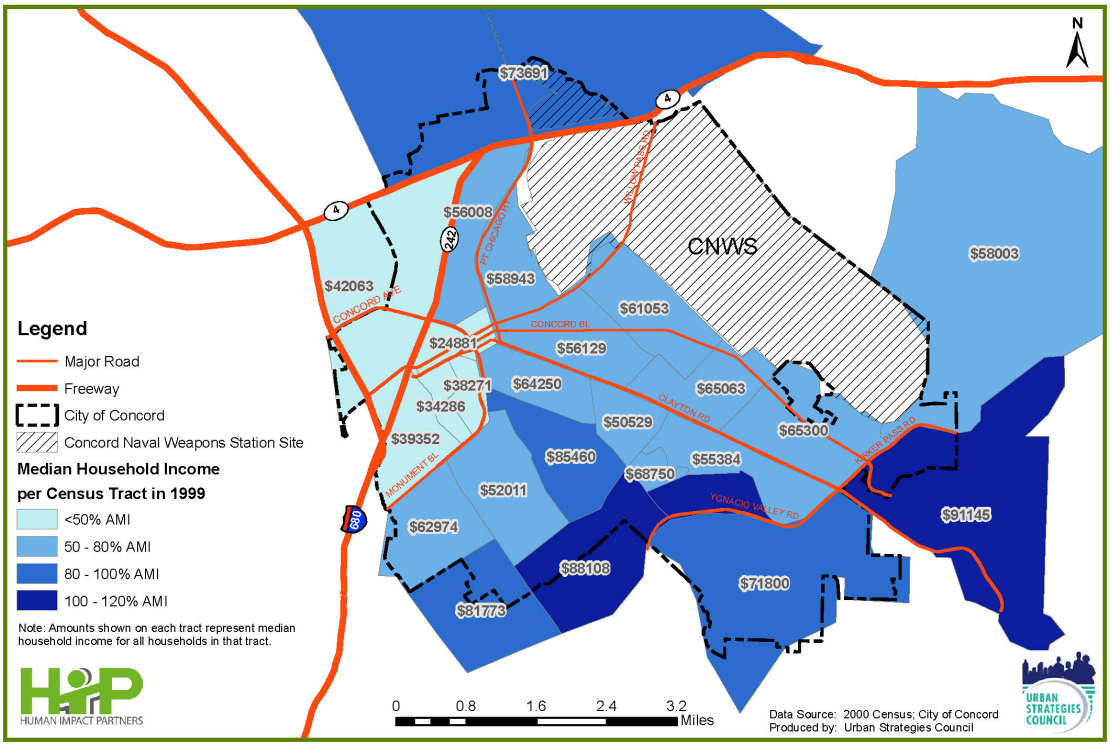
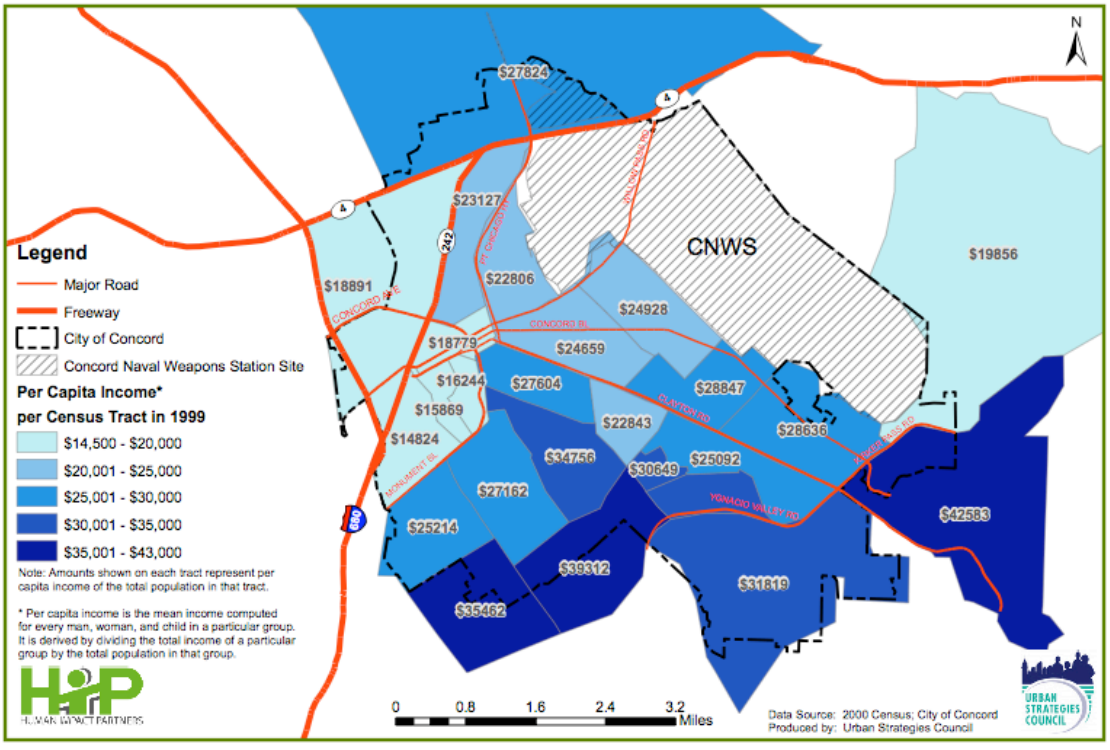


Figure 2-2: Per Capita Income in Concord (1999)



Figures 2-3 and 2-4 show maps of the employment rate and the unemployment rate in Concord in 1999. Employment rates varied between 49% and 82% across the city, somewhat independent of geography, reflecting the number of people in each household that work outside the house. Unemployment rates were higher in census tracts in the Monument and between the freeways. Unemployment rates reflect the number of people who are actively looking for work but cannot find jobs.

The distribution of employment by job type in 1999 is shown in Figures 2-5, 2-6 and 2-7. As one would expect, the areas with lower incomes correspond to areas in which more people were employed in labor jobs (transport, farming, construction) and in sales and service jobs, while higher income areas correspond to areas in which more people were employed in professional jobs.

Figure 2-3: Employment Rate in Concord (1999)

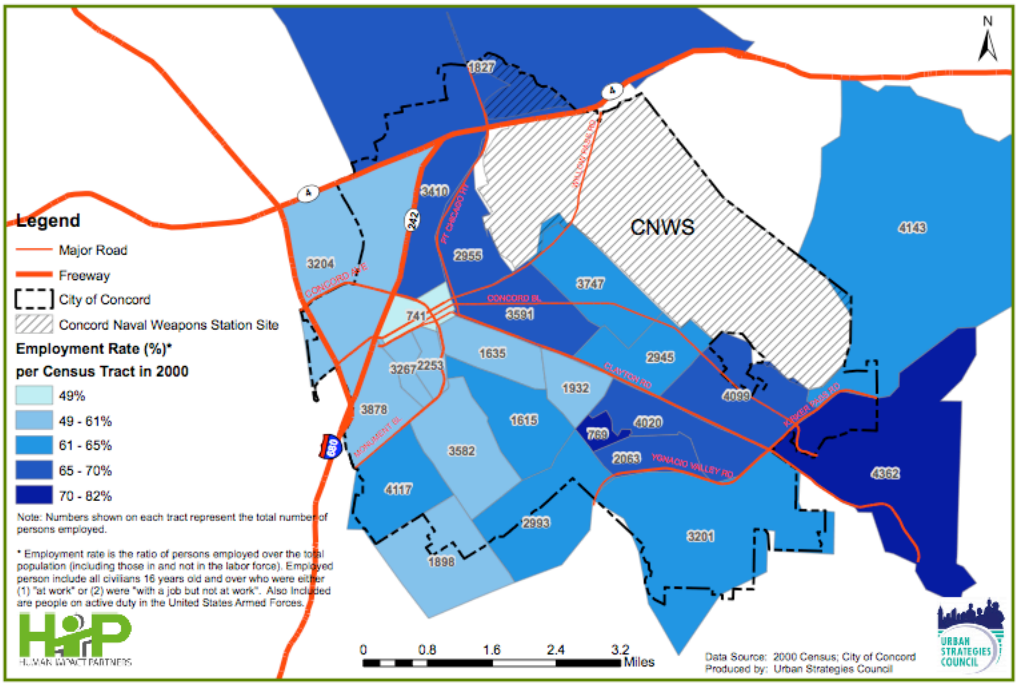


Figure 2-4: Unemployment Rate in Concord (1999)

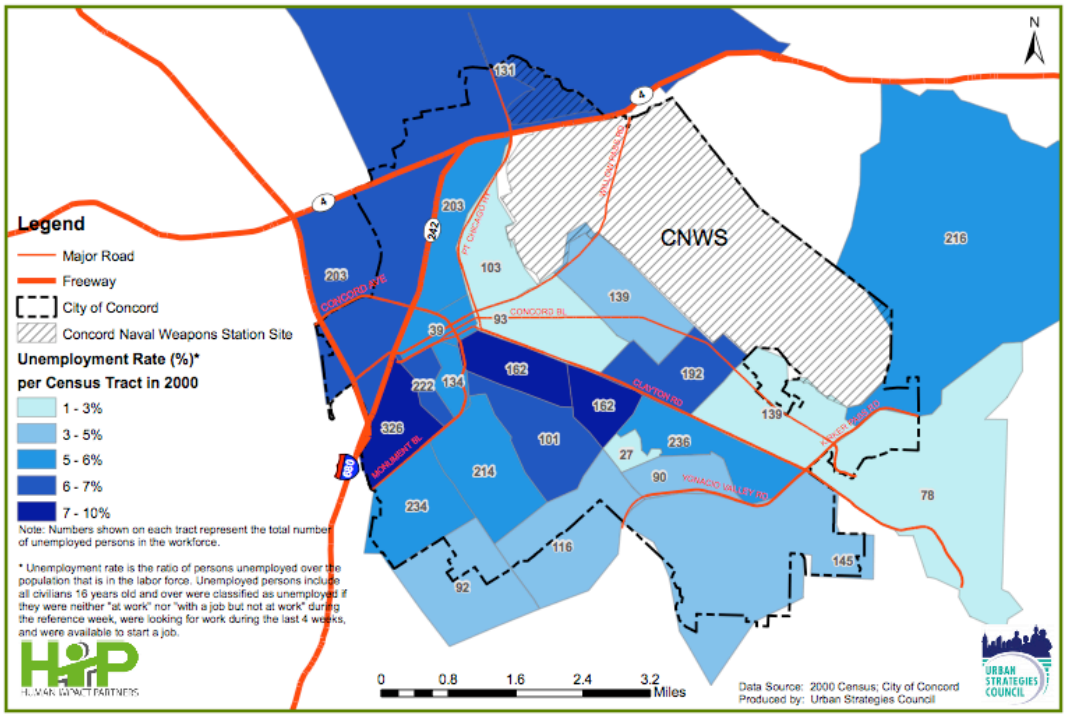


Figure 2-5: Percent of Concord Workforce in Professional Jobs (1999)

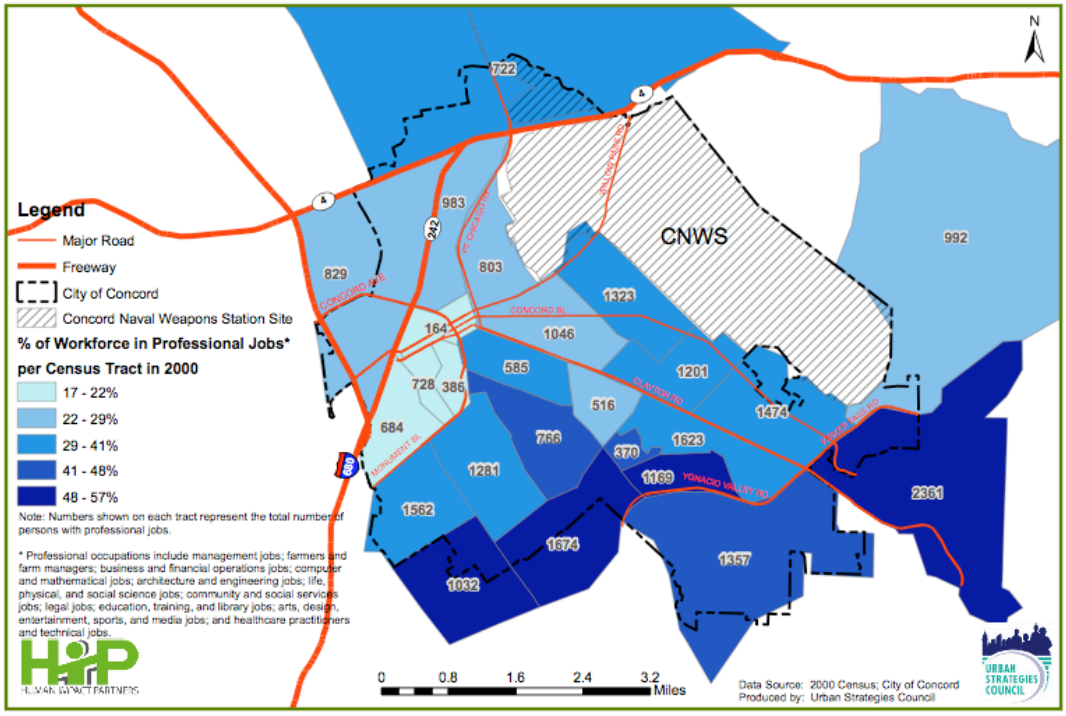


Figure 2-6: Percent of Concord Workforce in Labor Jobs (Transport, Farming, Construction) (1999)

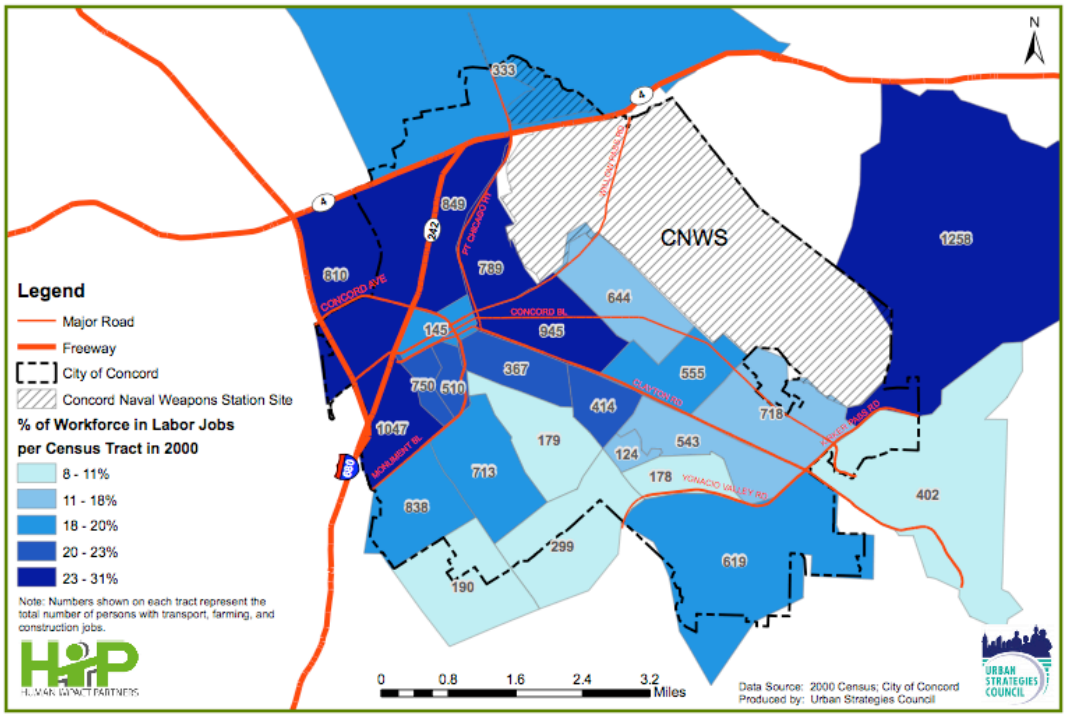
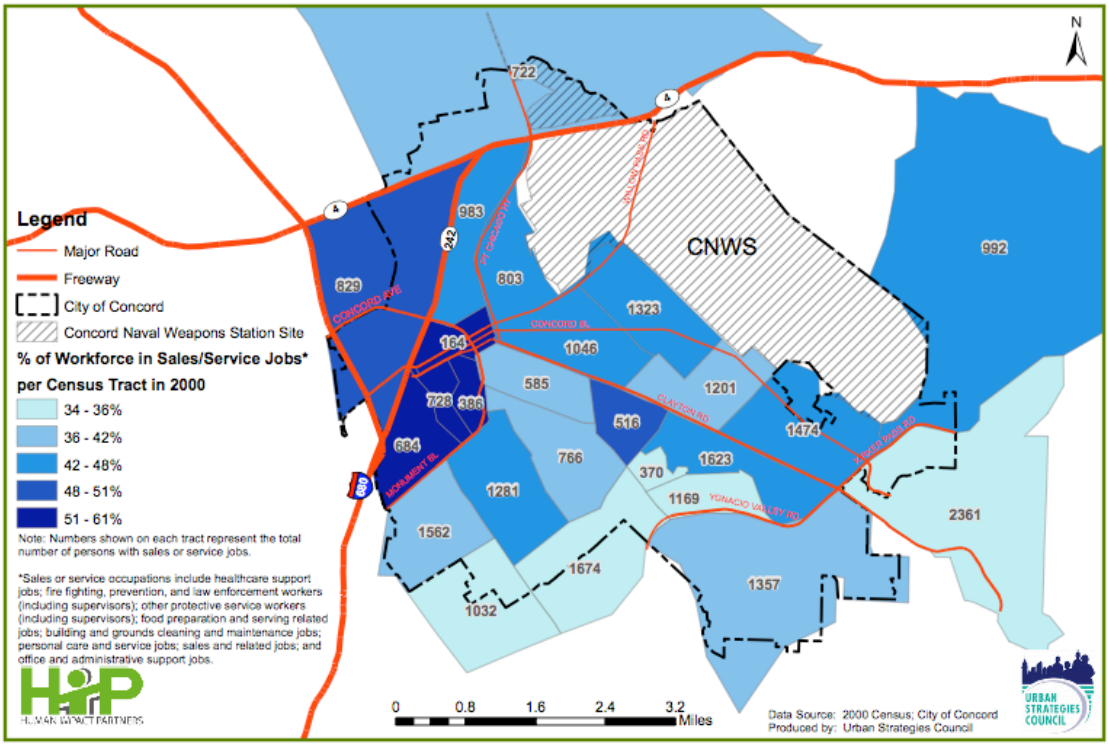


Figure 2-7: Percent of Concord Workforce in Sales and Service Jobs (1999)



According to the US Census Bureau,[4] in 2002, jobs in Concord were broken out as follows:

- 18% - Retail trade;
- 15% - Healthcare and social assistance;
- 13% - Professional, scientific & technical services;
- 12% - Other services (except public administration);
- 9% - Accommodation and food services;
- 8% - Administrative and support and waste management and remediation services;
- 7% - Wholesale trade;
- 6% - Real estate and rental and leasing;
- 5% - Manufacturing;
- 4% - Information;
- 1% - Educational services; and
- 1% - Arts, entertainment, and recreation.

Job-Employment ratio

The job-employment ratio is a measure of the number of jobs compared to the number of employed residents. The ratio would be 1:1 if the number of jobs in the city equaled the number employed residents. A ratio of 1:1 means that in-commuting and out-commuting are matched, and transportation systems are used efficiently. According to the City of Concord General Plan,[5] in 2005, the job-employment ratio was 0.92:1 which means that the number of jobs in the city was 8% lower than the number of employed residents. Given the data at the beginning of the existing conditions section (i.e., that only 28% of employed residents of Concord work in the city), clearly many of these jobs in Concord are filled by people who live elsewhere.

Job trends

ABAG job projections predict that the number of jobs in Concord will increase by 47% between 2010 and 2035 (see Table 2-1) as compared to a 42% growth in the number of jobs in the Bay Area. As Table 2-2 shows, the number of agricultural jobs is predicted to decline but all other sectors are predicted to have significant job growth. Figure 2-8 shows job projections by sector for 2035. While the proportion of jobs in manufacturing (as compared to the total number of jobs) is predicted to decline slightly between 2010 and 2035, all other job sectors except those in agriculture are predicted to increase as a proportion of the total number of jobs.

Table 2-1: ABAG Predictions for Job Growth in Concord

Year	2002	2005	2010	2015	2020	2025	2030	2035
Population	124,467	128,300	129,200	132,900	139,300	146,200	152,900	158,300
Jobs	66,180	67,530	71,150	76,730	83,110	89,030	96,850	104,260
Employed residents	62,596	59,550	62,350	66,260	72,340	77,950	83,670	90,660
Job/Employed resident ratio	1.05	1.13	1.14	1.15	1.14	1.14	1.15	1.15
Population/ job ratio	1.88	1.89	1.81	1.73.	1.67	1.64	1.57	1.51

Source: Association of Bay Area Governments (ABAG). 2007. Projections 2007.

Table 2-2: ABAG Predictions for Job Growth by Sector in Concord

Year	2002	2005	2010	2015	2020	2025	2030	2035
Agriculture & Natural Resources	220	230	220	210	200	190	180	180
Manufacturing Wholesale Transportation	10,650	9,950	10,070	10,550	11,140	11,660	12,390	13,050
Retail Jobs	8,720	8,780	9,170	9,850	10,660	11,430	12,430	13,390
Financial Professional Service	18,050	17,880	19,050	21,000	23,080	25,030	27,560	30,010
Health Education Recreational Service	18,150	19,820	21,240	22,970	24,970	26,800	29,200	31,450
Other jobs	10,390	10,870	11,400	12,150	13,060	13,920	15,090	16,180
Total	**66,180**	**67,530**	**71,150**	**76,730**	**83,110**	**89,030**	**96,850**	**104,260**

Source: Association of Bay Area Governments (ABAG). 2007. Projections 2007.

Figure 2-8: Job Projections by Sector for 2035

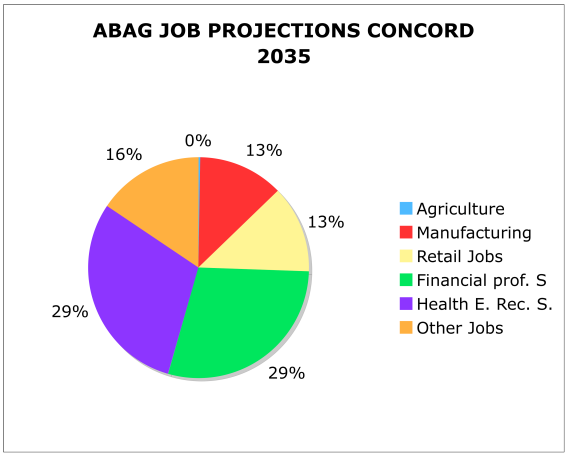


Table 2-3 shows the jobs that, according to California Employment Development Department's Labor Market Info website,[6] employ over 1000 people in Concord that are projected to grow the fastest between 2006 and 2016. These jobs require various amounts of education and training. The wages associated with these jobs vary over a large range, but many of them, such as personal care providers, pay below the local living wage (see below).

Table 2-3: Jobs Employing Over 1000 Concord Residents That Are Predicted to Grow the Fastest Between 2006 and 2016.

Occupation	Annual Average Employment		Percent Change
	2006	2016	
Personal and Home Care Aides	16,650	25,190	51.3
Home Health Aides	3,960	5,500	38.9
Pharmacy Technicians	1,560	2,100	34.6
Other Personal Care and Service Workers	28,510	38,080	33.6
Computer Software Engineers, Applications	7,890	10,460	32.6
Network Systems and Data Communications Analysts	3,460	4,580	32.4
Industrial Engineers	1,380	1,780	29
Public Relations Specialists	2,130	2,710	27.2
Personal Care and Service Occupations	42,980	54,010	25.7
Demonstrators and Product Promoters	1,210	1,520	25.6
Medical Scientists, Except Epidemiologists	1,550	1,930	24.5
Nursing, Psychiatric, and Home Health Aides	11,310	13,970	23.5
Pharmacists	1,490	1,820	22.1
Life Scientists	3,900	4,740	21.5
Graduate Teaching Assistants	3,780	4,550	20.4
Cost Estimators	2,270	2,730	20.3
Social and Human Service Assistants	2,940	3,530	20.1
Postsecondary Teachers	16,710	20,050	20
Petroleum Pump System Workers	1,550	1,860	20
Combined Food Preparation and Serving Workers	13,920	16,670	19.8

Wages in Concord

Researchers at Pennsylvania State University (Penn State) have gathered data on wages in many places in the United States. Their data on Concord is publicly available[7] and described below. The 'living wage' they calculate is intended to provide a minimum estimate of the cost of living for low wage families and includes information about costs of food, child care and education, healthcare, housing, transportation, other necessities and taxes.

Table 2-4 shows calculations of the living wage for different family types. In order to support the described family, an individual must earn the hourly amount listed as the living wage, assuming they are the sole provider and are working full-time (2080 hours per year). The state minimum wage is the same for all individuals, regardless of their family type. The poverty rate is the hourly earnings of a sole provider working full time that would classify that family as being below the poverty level.

Table 2-4. Comparison of Living Wage For the City of Concord For Different Family Scenarios.

Hourly Wages	1 Adult	1 Adult & 1 Child	2 Adults	2 Adults & 1 Child	2 Adults & 2 Children
Living Wage	$12.05	$21.41	$17.21	$26.61	$33.79
Minimum Wage	$8.00	$8.00	$8.00	$8.00	$8.00
Poverty Wage	$5.04	$6.68	$6.49	$7.81	$9.83

Source: Poverty in America: Living Wage Calculator. Available at: http://www.livingwage.geog.psu.edu/places/0601316000

The California Budget Project's Basic Family Wage[8] (the amount an adult needs to earn in order to achieve a modest standard of living without assistance from public programs) for a single parent family in the Bay Area is $31.67 per hour, higher than the Penn State numbers.

Table 2-5 lists various occupations and the typical wages paid for the occupation in Concord, as detailed by the Penn State researchers. The top of the table lists occupations that typically pay more than the living wage for one adult supporting one child ($21.41), while the bottom of the table lists occupations that pay below that wage. Note that the occupations that employ large numbers of people in Concord, such as retail trade (see above), often pay below the living wage.

Table 2-5. Hourly Wages For Different Occupations in Concord (occupations that pay wages below the living wage for one adult supporting one child are at the bottom of the table)

Occupational Area	Typical Hourly Wage
Management	$43.86
Legal	$41.96
Healthcare Practitioner and Technical	$34.47
Architecture and Engineering	$33.24
Computer and Mathematical	$32.13
Life, Physical and social Science	$30.20
Business and Financial Operations	$28.69
Education, Training and Library	$24.37
Protective Service	$23.05
Healthcare Support	$21.83
Community and Social Services	$21.83
Arts, Design, Entertainment, Sports and Media	$21.78
Construction and Extraction	$21.17
Installation, Maintenance and Repair	$19.93
Sales and Related	$16.20
Office and Administrative Support	$15.31
Production	$15.13
Transportation and Material Moving	$14.35
Building and Grounds Cleaning and maintenance	$11.90
Personal care and Services	$11.77
Farming, Fishing and Forestry	$10.03
Food Preparation and Serving Related	$9.43

Source: Poverty in America: Living Wage Calculator. Available at: http://www.livingwage.geog.psu.edu/places/0601316000

Unemployment Rate

According to California Employment Development Department's Labor Market Info website,[9] in October 2008, 5,400 people of Concord's workforce of 71,500 people were unemployed. Therefore, Concord's unemployment rate was 7.6%. This is lower than the State of California's rate (8.0%), but higher than that of Contra Costa County (7.0%).

Health Insurance

According to the Census Bureau,[10] it is estimated that 15.8% of Contra Costa County's residents did not have health insurance in 2005. This was lower than the estimate for the state, which was 20.5%. Note that the occupations that employ large numbers of people in Concord, such as retail trade (see above), often do not provide employees with health insurance benefits.

Paid Sick Time

While statistics for the City of Concord are not available, 40% of workers in California do not have the right to take time off from work when they are sick. This has significant health consequences including increasing the spread of infectious diseases such as stomach flu.[11] Many of the occupations that employ large numbers of people in Concord, such as retail trade and food service, do not provide employees with paid sick days. Fifty-one percent of retail trade workers in California do not have paid sick days and 70% of food service workers do not.

Educational Attainment

According to 2006 census data,[12] approximately 17% of the population 25 years or older in Concord did not have a high school diploma. Approximately 56% of the population 25 years or older graduated from high school only or had some college education and approximately 26% had a bachelors degree or higher.

The College Opportunity Ratio (COR),[13] developed by the UCLA Institute for Democracy, Education, and Access, is a three number figure that tells how many students graduate and how many pass the courses required for admission to California State University (CSU) and University of California (UC) compared to each 100 students enrolled as 9th graders. In the state of California, for example, a COR of 100:66:25 means that for 100 9th graders, four years later 66 graduated and 25 passed courses required for admission to CSU and UC. In Concord, the COR is 100:82:33, which indicates that only 1/3 of high school students in Concord are passing the courses they need to enroll in the CSU or UC systems.

Commute Times

For Concord residents, the average travel time to work is 28.9 minutes one way. Since only about 28% of employed residents work in Concord, this long commute time is not surprising. This commute time is slightly less than the 31.9-minute average commute time for Contra Costa County residents., but more than the average in the state and nationally, which are 26.8 and 25 minutes, respectively.[14] Residents may be choosing to commute because salaries in the Bay Area outside Concord are higher than those in the city.

Workforce Development

Elena Foshay, in a 2008 report entitled "Green Jobs and Workforce Development in Central and East Contra Costa County," [15] catalogued the workforce development resources near Concord, as shown in Table 2-6.

In the table, CTE indicates Career Technical Education classes, which are vocational training classes that expose students to a variety of different career options. Some CTE classes are part of the County Regional Occupational Program (ROP). These classes receive federal funding through the State Department of Education, and are strategically linked to local industries where jobs are available. Many ROP classes include an internship component, and all offer a certificate upon completion. Some ROP classes are open to adults as well, as are many of the other programs.

Table 2-6: Workforce Development Resources in Central and East Contra Costa.

Provider Name	Provider Type	Location
UA Plumbers and Steamfitters Local 159	Union Apprenticeship	Martinez, CA
Boilermaker Western States Apprenticeship	Union Apprenticeship	Pittsburg, CA
IBEW Electrical Training Center	Union Apprenticeship	Martinez, CA
Northern California Laborers Training Center	Union Apprenticeship	San Ramon, CA
Carpenters Training Committee of Northern California	Union Apprenticeship	Pleasanton, CA
Northern California Cement Masons	Union Apprenticeship	Pleasanton, CA
International Union of Painters & Allied Trades	Union Apprenticeship	Hayward and Pinole, CA
UA Plumbers and Steamfitters Local 342	Union Apprenticeship	Concord, CA
Iron Workers Local 378	Union Apprenticeship	Benicia, CA
Sheet Metal Workers Local 104	Union Apprenticeship	San Leandro, CA
Chevron Training Program	Employee training Program	Richmond, CA
PG&E Power Pathways Program	Employee training program	Oakland, CA
Pittsburg High School	CTE, ROP	Pittsburg, CA
Antioch High School	CTE, ROP	Antioch, CA
Deer Valley High School	CTE, ROP	Antioch, CA
Dozier-Libbey Medical High School	CTE, ROP	Antioch, CA
Prospects High School	CTE, ROP	Antioch, CA
Liberty High School	CTE, ROP	Brentwood, CA
Freedom High School	CTE, ROP	Oakley, CA
Heritage High School	CTE, ROP	Brentwood, CA
Clayton Valley High School	CTE, ROP	Concord, CA
Concord High School	CTE, ROP	Concord, CA
Mt. Diablo High School	CTE, ROP	Concord, CA
Ygnacio Valley High School	CTE, ROP	Concord, CA
Liberty Adult Education	CTE, ROP	Brentwood, CA
Antioch Adult School	ROP, adult education	Antioch, CA
Martinez Adult Education	ROP, adult education	Martinez, CA
Mt. Diablo Adult Education	ROP, adult education	Concord, CA
Pittsburg Adult Education Center	ROP, adult education	Pittsburg, CA
West Contra Costa Adult Education	ROP, adult education	Richmond, CA
Contra Costa County ROP	ROP	Pleasant Hill, CA (HQ)
Contra Costa College	Community College	San Pablo, CA
Diablo Valley College	Community College	Pleasant Hill, CA
Los Medanos College	Community College	Pittsburg, CA
Golden Gate University	University or College	Walnut Creek, CA
St. Mary's College	University or College	Moraga, CA
University of San Francisco - San Ramon	University or College	San Ramon, CA
Cal State East Bay - Concord campus	University or College	Concord, CA
Treasure Island Jobs Corps	Vocational Services	San Francisco, CA
Rubicon Programs, Inc.	Vocational Services for Mentally Ill	Richmond, CA
Contra Costa Small Business Development Ctr	Small Business Support	Concord, CA
Architecture, Construction, Engineering (ACE)	After School CTE Program	Antioch, CA
Monument Futures	Vocational Services for Immigrants	Concord, CA
Contra Costa Economic Partnership	Summer CTE camp	Pleasant Hill, CA

Source: Foshay, E. 2008. Green Jobs and Workforce Development in Central and East Contra Costa County.

C. Analysis of Jobs/Livelihood Impacts at CNWS Site

Seventy-eight percent of residents surveyed for the HIA considered job and economic development to be a priority issue that the CNWS Reuse Project should address. Significantly more people considered this to be a key issue that should be prioritized compared to other issues.

The City of Concord released a survey of 600 Concord residents about the CNWS Reuse Plan.[16] Similarly, in the City's survey, 77% thought the need for more job opportunities was very or somewhat serious, and it was the highest priority issue.

The goals and guiding principles detailed for the CNWS Reuse Project in the Concord Community Reuse Project Planning Framework (adopted by City Council in November, 2006) include important objectives related to jobs and employment. Economic Development Goal A (ED-A: A Vibrant and Diverse Economy) is: "Stimulate the local and regional economy by creating quality jobs, products, services and revenue." Guiding Principle ED-1: Creation of Quality Jobs states:

- Create quality jobs in Concord to allow more residents to both live and work in the community, thereby improving their quality of life, reducing work commutes and reducing congestion on freeways;
- Provide opportunities to live and work in Concord;
- Provide quality, living wage jobs; and
- Promote local-first hiring policies.

Guiding Principle ED-6: Business and Education Partnerships states:

- Explore opportunities for collaboration between the business and education sectors, such as workforce development programs, youth training and co-location of facilities.

With these goals, principles and community priorities in mind, we analyze how the proposed alternatives address job creation at the CNWS Site.

Health Impacts Associated with Employment and Income

Secure employment and sufficient income are fundamental determinants health. Unemployment leads to a shortened life expectancy and higher rates of cardiovascular disease, hypertension, depression and suicide.[17] [18] [19] [20] Those experiencing precarious or unstable employment have worse self-rated health and higher rates of hypertension, longstanding illness, mild psychiatric morbidity and general illness symptoms.[21] In 1976, an estimated 6,000 excess deaths were reported as a result of a 1% increase in unemployment in the United States.[22]

The strong relationship between income and health is not limited to a single illness or disease; people with lower incomes have higher risks than people with higher incomes for poor health and premature mortality, for giving birth to low birth weight babies, for suffering injuries or violence, for getting most cancers, and for getting chronic conditions.[23] With a decrease in income, the risk of mortality increases. Individuals with an income of less than $20,000 for 4-5 years had a higher mortality risk than those who earned this income for fewer years.[24] A separate study in the New England Journal of Medicine concluded that

people who earned $15,000 annually were three times more likely to die prematurely than those earning $70,000 annually.[25]

Occupational safety is another health concern associated with employment. Nationally, from 1995 through 1999, there were 30,824 fatal work injuries in the United States, including an estimated 17 fatal work injuries per day.[26] Some employees are at higher risk of work related injury, but regardless of fatal or nonfatal injury, occupational safety and hazards found in the workplace are clearly related to health.

Jobs During the Build-out Phase

The Concord Naval Weapons Station Reuse Project will create jobs in Concord both during the build-out phase and permanent jobs after the construction is complete. Given that the build-out will take approximately 30 years, there will be an opportunity to employ many people in construction trades in the project. The project serves as an opportunity to both train and improve employment for residents of Concord who are unemployed, underemployed or employed in jobs that do not pay a living wage.

Focus group participants expressed interest in construction and building trade jobs.

As currently described, **none of the alternatives being explored, including the Modified Alternatives, address local hiring policies for the build-out phase, as these alternatives only aim to define a land use footprint for the CNWS Site. It is important that local hire policies be implemented in the future to take advantage of this opportunity to provide residents with quality jobs.** Future health outcomes for Concord residents currently unemployed, underemployed or employed in jobs that do not pay a living wage are unlikely to improve as a result of the CNWS Reuse Project if such policies are not adopted.

Land Allocated for Employment and Creation of Permanent New Jobs

Table 2-7 shows the total number of jobs created in each originally proposed alternative being analyzed in this HIA as well as the breakout of those jobs by land use type. Alternative 2 would provide the most new permanent jobs, while Alternative 6 would provide the fewest, but all alternatives provide very significant numbers of new jobs.

Focus group participants were asked about their hopes for the types of jobs that the CNWS Reuse Project would create. Answers included:

- More jobs in general, since the economy is not good;
- Industrial, pharmaceutical, landscaping, maintenance, painting, childcare and home sales positions;
- County jobs and environmental jobs;
- Good wage jobs, like fire fighters and police;
- Jobs that teach people about the environment and conservation-related jobs, including jobs in alternative energy; and
- Manufacturing jobs (rather than having these jobs go elsewhere in the country or overseas).

Table 2-7: Number of Jobs Created by Alternative and Land Use Type

Alternative	2	5	6	Clustered Villages	Concentration and Conservation
Land Use Type					
Office	16,030	12,894	11,640	13,033	11,190
Retail	4,243	2,657	4,103	3,300	2,405
Hotel	946	946	619	619	619
Cluster Uses	3921	3485	1307	4937	2468
Non-Governmental/ Institutional	1,786	1,742	1,786	4,574	4,574
Other	1375	1006	813	ND	ND
TOTAL	**28,301**	**22,730**	**20,268**	**26,463**	**21,257**

Source: CBRE Technical Memorandum July 2, 2008, Summary of Fiscal and Financial Analyses, Appendix D; City of Concord Sept 13, 2008, Jobs calculations for Modified Alternatives.

Wages of Jobs to be Created

Focus group participants indicated that they hoped that the new jobs created at the CNWS Site would come with good wages. One said, "Do not bring minimum wage jobs… residents need decent money so they can afford to live better in this area."

To analyze the health benefits of future jobs that will be created, the wages and benefits associated with the jobs must be considered. Here, the results of an analysis[27] of wages performed by the Northern California Carpenters Regional Council are described. An important caveat to these results is that household income is not considered; only the wages of individual jobs were estimated in the analysis.

For the Clustered Villages Modified Alternative, the average wage across all 26,463 new permanent jobs was estimated to be $24.20 per hour. The median hourly wage was estimated to be $19.60. An estimated 57% of jobs would pay below the $21.41 per hour needed to provide a living wage to a family that includes one adult and one child (see existing conditions for a description of the living wage statistics). The wage equivalent to 50% of the Area Median Income (AMI) ($16.35 per hour) is approximately ¾ of the living wage of $21.41 per hour. As detailed below, approximately 36% of jobs would pay below this in this alternative.

For the Concentration and Conservation Modified Alternative, the average wage across all 21,257 new permanent jobs was estimated to be $25.21 per hour. Again, the median hourly wage was estimated to be $19.60. An estimated 56% of jobs would pay below the $21.41 per hour needed to provide a living wage to a family that includes one adult and one child. As detailed below, approximately 36% of jobs would pay below ¾ of the living wage (50% of the AMI) in this alternative.

As currently described, **the alternatives being considered in the CNWS Reuse Project do not include any living wage standard** and only guarantee workers the state's minimum

wage which is $8.00/hour. In both alternatives analyzed here, significant numbers of jobs would be created that would not pay workers enough to allow them to live in Concord and have a reasonable quality of life. These workers would need to make choices as to whether to spend their limited incomes on housing or food or medical care or other basic necessities, and choosing between these essential needs would lead to negative health outcomes. They would likely have to spend longer times commuting as well, which is also associated with negative health outcomes (see below).

Comparison of Wages of Jobs to be Created with Housing Affordability
The current Area Median Income is approximately $68,000 or a wage of $32.69/hour.[28]

It is important to note that, as stated previously, the wages considered here are the wages of individual jobs and not of household income. For the analysis below, we therefore assume that there is one worker per household.

In the Clustered Villages Modified Alternative, approximately 9381 jobs (36%) would be created that pay less than 50% of the AMI; approximately 7176 jobs (28%) would be created that pay between 50% and 80% of AMI; and approximately 5220 jobs (20%) would be created that pay between 80% and 120% of AMI.

I*n the Concentration and Conservation Modified Alternative*, approximately 7,334 jobs (36%) would be created that pay less than 50% of the AMI; approximately 5742 jobs (28%) would be created that pay between 50% and 80% of AMI; and approximately 4260 jobs (21%) would be created that pay between 80% and 120% of AMI.

To match these income levels, approximately 36% of housing would need to be built as affordable to people with very low income (earning less than $16.35 per hour), 28% for low-income people (earning between $16.35 and $26.15 per hour) and 20% for moderate income people (earning between $26.15 and $39.23 per hour). These needed levels far exceed the number of affordable housing units that are currently being proposed for any alternative (see Housing Chapter). This mismatch guarantees that people working in Concord will not be able to live in the city under any alternative, unless they choose to live in overcrowded or substandard conditions and/or work multiple jobs. This will impact health outcomes through a number of pathways, including those related to stress (e.g., from commuting), social isolation (e.g., more lower income workers will live in lower income communities rather than mixed income communities and thus not have access to the same goods, services and educational opportunities as higher income workers), overcrowding (e.g., if low income workers choose to live in Concord but can not afford to pay full rent), and overpaying for housing (e.g., if low income workers choose to live in Concord but pay more than 30% of their income on housing costs). The health outcomes associated with these pathways are discussed elsewhere in this HIA, but include not being able to afford health care and nutritious food, stress, more rapid spread of infectious disease, and lack of emotional and material support in times of need.

Benefits Associated with Jobs to be Created

According to the Institute of Medicine, jobs that do not include health insurance contribute to poor health outcomes.[29] According to the IOM:

- Annually, nationwide, 18,000 premature deaths are attributable to lack of health coverage; and
- Families with at least one full-time, full-year worker are more than twice as likely to have health insurance coverage, compared to families whose wage earners work as part-time employees (less than 35 hours per week), as contingent labor (e.g., on a seasonal or temporary basis, as employees of contractors, self-employed), or in which there is no wage earner.

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.

Other benefits associated with jobs are also important for health. Paid sick days provided by employers to workers contribute not only to a healthy and productive workforce, but also reduce the spread of infectious diseases to co-workers and customers.[30] Workers are able to care for themselves and for ill or recovering family members. The benefit also prevents hospitalizations and their associated costs.

Focus group participants hoped that the new jobs created would be "jobs with benefits, including health care, for all – including people working in day labor, young and old people."

As currently described, none of the alternatives being explored for the CNWS Reuse Project address benefits that employers would be required to provide, such as health insurance or paid sick days. Assuming no changes at the federal or state levels, significant numbers of workers on the CNWS site would not have access to these basic benefits that would improve their health, the health of their dependents, and the health of their co-workers and customers.

Workforce Development

Over 90% of surveyed residents were interested in attending training centers and apprenticeship programs to increase their job opportunities.

Focus group participants hoped that the CNWS Reuse Project would bring new job training and job placement opportunities to help residents prepare for the new jobs. They recommended that the CSU East Bay be used to prepare residents for better jobs. A need for technical schools that teach people how to be mechanics, welders and woodworkers was articulated.

As currently described, none of the alternatives being explored for the CNWS Reuse Project address workforce development. If no changes to workforce development are instituted in this project, the higher paying jobs at the CNWS Site during the construction phase and after the build-out is complete will not be accessible to large numbers of residents. These residents will remain unemployed, under-employed or in jobs

that pay below the living wage. As described above, this would impact health through pathways related to income.

Jobs/Employment ratio and Resulting Commute Times

Given the predicted number of people that will be living at the CNWS Site, the number of households, and the number of jobs that will be created, and assuming that 60% of the population is in the workforce (as is currently the case), the Jobs/Employment ratio, the number of jobs per resident and the number of jobs per household, can be calculated. These numbers are shown in Table 2-8.

Table 2-8: Calculations of the Jobs-Employment Ratio, Jobs per Household, and Jobs per Resident

Alternative	2	5	6	Concentration and Conservation	Clustered Villages
Housing units	13,025	9,981	8,002	10,040	11,950
Population	30,995	22,688	18,379	22,950	28,100
Workforce	18,597	13,613	11,027	13,770	16,860
Jobs	28,301	22,731	20,268	21,260	26,460
Jobs/Resident	0.91	1.0	1.1	0.94	0.92
Jobs/Household	2.17	2.28	2.53	2.21	2.11
Jobs-Employment on CNWS	1.52:1	1.67:1	1.84:1	1.54	1.57
Jobs-Employment for Concord	1.05:1	1.05:1	1.05:1	1.03:1	1.05:1

As can be seen from the table, the Jobs-Employment ratio that would result for the City of Concord as a whole, would be close to the ideal of 1:1 for each alternative being considered. This would be optimal from the perspective of balancing in- and out-commuting from the city. Even more ideally, this could be most advantageous if the created jobs were filled primarily by Concord residents. Commuting would be minimized and local residents would benefit from the new jobs.

Commute methods and times have significant health implications. Health impacts that arise from increased time spent commuting to work include stress and cardiovascular problems,[31] [32] musculoskeletal disorders,[33] and less time for family, friends, and civic engagement.[34] Additionally, as motor vehicle use is one of the primary contributors to greenhouse gases, longer commutes lead to increased global warming. Global warming will have significant health impacts, including increases in deaths due to dangerous weather (e.g., heat waves) and increased spread of infectious disease.

D. Health-Promoting Mitigations for Jobs and Livelihood

Based on evidence linking jobs to health, survey results, three focus group discussions with Concord residents about job needs, and analysis of the data available for each alternative, we recommend the following mitigations for jobs and livelihood at the CNWS Site:

- **Maximize the proportion of employment opportunities that pay a living wage** in order to ensure that workers have enough income to be able to afford housing, nutritious food, and medical care. This can be accomplished by several methods, for example by **establishing a living wage ordinance** for the city of Concord or specifically for jobs at the CNWS Site and by **attracting employers who pay higher wages** to the CNWS Site. The living wage definition used in any such ordinance should accurately reflect the true cost of living for low-wage workers in the area.
- **Ensure that new jobs provide health-related benefits**, such as health insurance and paid sick days. This will allow workers and their families to receive the medical care they need when they need it.
- **Match the cost of owning or renting a new home on the CNWS Site to the wages paid by jobs created.** Without intervention, housing costs to rent and to buy will be prohibitively high and workers at the new jobs will not be able to afford to live in Concord. This will lead to longer commutes for lower income workers, increased global warming, and potentially to segregation of communities by income, all of which have negative health outcomes.
- **Build on existing workforce development programs** to improve their quality and effectiveness (e.g., increase number of young people graduating from high school, expand pre-apprentice options) **and, after further assessing the exiting programs, allocate land at the CNWS Site to fill holes in existing workforce development programs**.
- **Ensure that construction jobs during the build-out phase are primarily filled by local residents.** These jobs could provide employment and higher incomes to many residents of Concord, thereby ensuring that they have enough income to be able to afford housing, nutritious food, and medical care. This would also reduce commuting. This could be accomplished with a **local hire or first-source hiring ordinance.**

E. Conclusions

The land use alternatives being analyzed in this Health Impact Assessment provide many new construction and permanent jobs at the Naval Weapons Station Reuse Project Site and thereby increase employment opportunities for residents of Concord and Contra Costa County. There would be many benefits to the health of the population of Concord if these jobs were: 1) primarily filled by local residents; 2) paid good wages; 3) to come with health-related benefits. In order to have the new jobs filled by local residents, both job training and local affordable housing are necessary. Health-related benefits of these objectives include the ability to afford housing, nutritious food, and health care, reduced commuting that would lead to reduced stress, reduced traffic, increased time with family, and reduced global warming, and less social segregation by income.

These objectives are completely aligned with goals and guiding principles detailed in the Concord Community Reuse Project Planning Framework (adopted 11/14/06), which are described at the beginning of the Analysis section above. The Planning Framework discusses creating quality jobs in Concord to allow more residents to both live and work in the community, thereby improving their quality of life, reducing work commutes and reducing congestion on freeways; it discusses providing opportunities to live and work in Concord; it discusses providing living wage jobs; and it discusses promoting local-first hiring policies and providing job training.

As currently described, none of the alternatives being considered include proposals that would promote these health-related job and workforce objectives, but there is an opportunity to implement such proposals with any of the alternatives. Implementing these proposals now, rather than after the transfer of land, is important as these proposals will impact what gets proposed and built on the land and, therefore, the cost of the land. Additional barriers to such proposals will be in place after the transfer of land takes place.

Income is one of the primary determinants of health and this project has the potential to greatly impact health. The opportunity to improve the health and well-being of all Concord residents should be seized by implementing policies now that will guarantee that the best job-related health outcomes are realized.

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Concord Naval Weapons Station Reuse Project Health Impact Assessment

Parks & Open Space Summary

Parks and open space impact health by offering a place for physical activity, which decreases chronic disease. Parks also improve mental health, foster social cohesion, and improve the environment. The amount, location, ease of access, and programming of parks and open space determine the extent to which they are used by families, youth, seniors, and all Concord residents.

This analysis considered the effects of the CNWS Reuse Project on health through its impact on availability, accessibility and planned use of parks and open space. To have a positive impact on health, we conclude that:

1. **While the CNWS Reuse Project Alternatives create significant amounts of new park and open space, planning must consider how *current and future residents and families will access new parks and open space.***
2. **A community parks needs assessment will aid in planning the amount of parks versus open space that should be created; bus, bicycle, and pedestrian routes to parks and open space; as well as programming and facilities for parks and open space that are most needed.**

These health-related objectives are well aligned with goals and guiding principles detailed in the Concord Community Reuse Project Planning Framework (adopted by City Council in August, 2006).

The amount, accessibility, and planned uses of parks and open space at the CNWS have immense potential to impact health because they can:

- *Increase physical activity.* About 30% of physically active people report exercising in public parks, and most park users live within one mile of a park. Physical activity can prolong life; prevent diabetes, high blood pressure, and colon cancer; support weight control, and improve mobility for elders;
- *Improve mental health.* Physical activity can help to alleviate stress and depression, but simply being in parks can do the same. Additionally, spending time in parks reduces irritability and impulsivity in children, and can help adults manage difficult issues more effectively;
- *Foster social cohesion.* Studies show that more people are involved in social activities in green spaces;
- *Improve environmental quality.* Parks and open space can filter dirty air and water, provide flood control, reduce heat island effects, and lower fossil fuel energy demands.

Availability of Parks & Open Space: Conclusions & Recommendations

Based on an analysis of the amount of park land and open space that will be created at the site, we conclude that **each Alternative allocates new park land well above Concord's goal of 6 acres of parks per 1,000 residents, and devotes between 50% - 73% of total acreage at the CNWS site to open space.**

Health-Based Recommendations

1. **Maximize residential development density** in order to maximize land available for parks and open space. This will allow the most land for recreational needs and preservation of natural areas.
2. **Ensure that the linear park proposed on the west side of the site is large enough** and contains programming to accommodate the existing and new residents and families that will use it.

Accessibility of Parks & Open Space: Conclusions & Recommendations

Accessibility of parks and open space is determined by proximity, transportation options, and safety. Access to places for physical activity combined with outreach and education can produce a 48% increase in physical activity.

Proximity: All of the Alternatives place existing neighborhoods bordering the CNWS site and new neighborhoods in close proximity to new parks. **Some current neighborhoods, however, are underserved and will not be near new parks.** For example, **Monument area residents have only 1.2 acres of park land per 1,000 residents, despite the fact that residents there own fewer cars.**

Transportation: **Improvements to the existing network of streets in Concord would make it more likely that residents will walk or bike to new parks and open space. Downtown Concord could be connected to newly created park land by public transit**. Alternatives that place a significant amount of new park land near public transit would improve health prospects. Availability of parking near parks will also impact park use.

Safety: **Details regarding plans to ensure safety have not yet been developed** for any Alternatives.

Health-Based Recommendations

1. **Ensure that new parks are easily accessible by foot, bike, or public transit from neighborhoods of Concord that are currently underserved by parks**. Create greenways/pedestrian- and bicycle-friendly routes and increase bus service, especially on weekends and holidays, from underserved neighborhoods to the CNWS site.
2. **Provide convenient entry points to open space including some with parking and some easily accessible by public transit.**
3. **Make paths accessible to people with special needs,** such as the elderly and handicapped.
4. **Ensure that new and existing parks discourage crime** through lighting, policing, limiting after-hours use, and other crime prevention methods.

Planned Use of Parks & Open Space: Conclusions & Recommendations

Use of parks and open space is impacted by their available programming and facilities. **At this stage, none of the Alternatives have detailed how they intend to meet the needs of youth, elderly, and the physically handicapped, or what types of activities will be formally offered and accommodated** (for example, basketball courts, soccer fields, benches by trails, flat and rugged paths).

Health-Based Recommendations

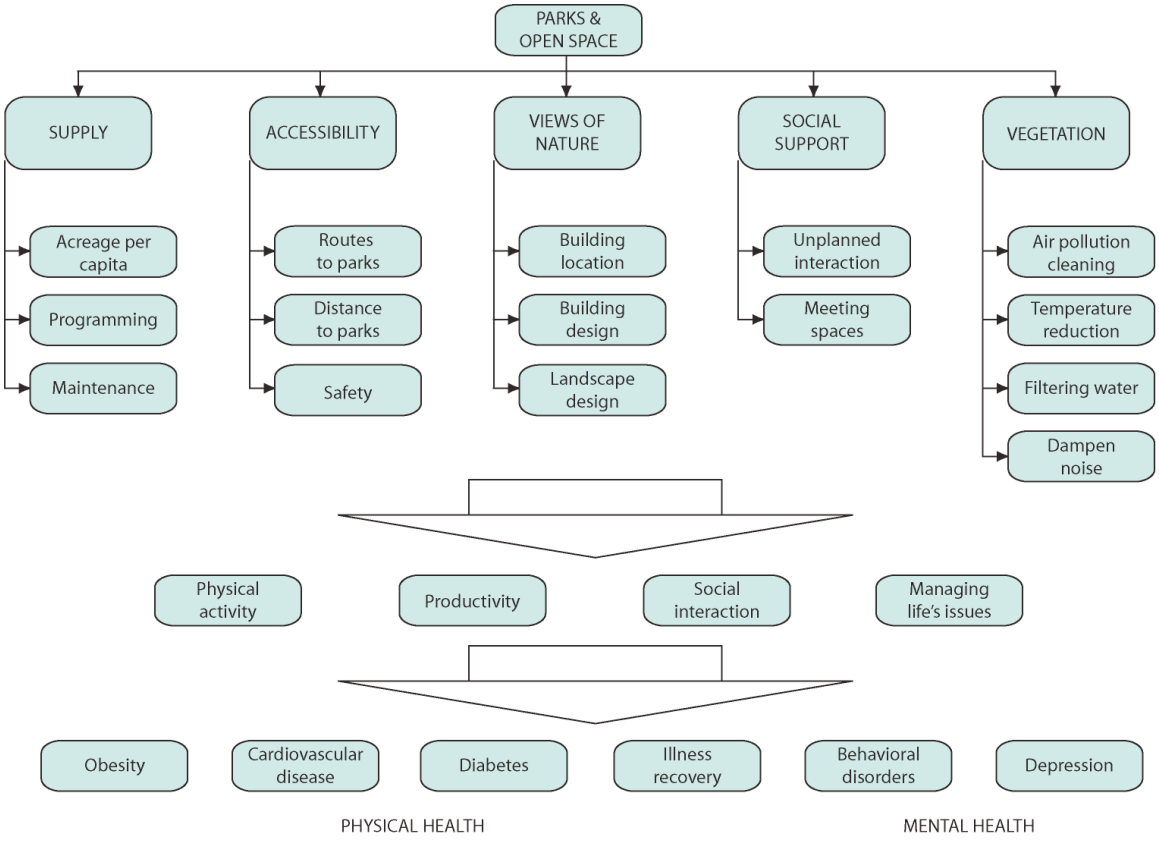
1. **Conduct a needs assessment for all existing neighborhoods to determine parks needs** and ensure that the needs of all residents of Concord are met by existing and new parks through appropriate programming.
2. **Ensure that new parks contain facilities useable by seniors, handicapped, and others with limited mobility in addition to children, adults, and able-bodied users.**

An additional recommendation that would lead to positive health outcomes is developing a detailed operations and maintenance plan for parks and open space to ensure that newly created parks and open space remain usable. Such a maintenance plan may include giving significant amounts of open space to the East Bay Regional Parks District.

Concord Naval Weapons Station Reuse Project
Health Impact Assessment
Chapter 3
Parks and Open Space

Health Pathways

The analysis of park and open space considered the effects of the CNWS Reuse Project on the availability, accessibility, connectivity and planned use of parks and open space. The following pathway diagram depicts connections between open space and health.



A. Introduction

Parks and open space are "green spaces" or vegetated areas within a city's boundaries. Parks often include playgrounds for children, benches and picnic tables for relaxing or picnicking, as well as athletic courts and fields for sports games. Open spaces may be any size, are generally less developed and more natural, and are often much larger than parks. Open spaces may include picnic areas, trails and secluded natural areas, and can be used, in addition to the above, for passive recreational uses such as walking, hiking, jogging and biking. Some open spaces might also include more active recreational facilities such as playfields, or more developed facilities such as campgrounds or environmental education centers.

The fact that physical activity plays a vital role in maintaining health, preventing disease, improving mental health, and increasing lifespan, is well established. Still, over half of adults and over one third of high school students do not get as much exercise as the Surgeon General recommends. While individuals must take some responsibility for this, there are important systemic causes, such as a lack of sufficiently safe and accessible parks and open space, which must be confronted as well. Besides providing opportunities for physical activity, parks and open space have other health benefits, such as increasing social cohesion and cleaning our air and water. Because of these positive benefits, planning large developments such as the CNWS Reuse Project should prioritize creating safe and accessible parks and open space.

This chapter provides an assessment of several health effects, mediated through parks and open space, of the proposed CNWS Reuse Project developments. The ability of existing parks to meet residents' needs is explored and the proposed land use Alternatives are analyzed for their ability to fill gaps. This chapter explores the following questions:

- *What are the needs for additional park and open space in Concord? How will this proposed project address these needs?*

- *How will new open space and parks be used? Will they be widely accessible to Concord residents?*

- *Does the project provide park space that will serve and connect new residential areas and existing neighborhoods, particularly for underserved populations, to ensure shared benefits of new amenities?*

B. Existing Park and Open Space Conditions in Concord

Existing Parks in Concord

Concord has 27 parks, five of which are dedicated to specialized recreation, serving approximately 121,000 residents. Table 3-1 lists the parks, their sizes, and their activities/programming. Figure 3-1 shows park locations.

The current supply of parkland provided by the City is approximately **5.25 acres per 1,000 residents**. About half of this amount is for specialized recreational uses, such as a golf course. This is slightly below the City's goal as stated in the General Plan and the National Recreation and Park Association's Standard of Excellence recommendation of more than 6 acres of parks per 1,000 people (see Appendix A).

Currently available parks in Concord include active recreation areas (e.g., sports fields), passive recreational areas (e.g., playgrounds), cultural and institutional programs and activities (e.g., community centers), and locations for water sports.

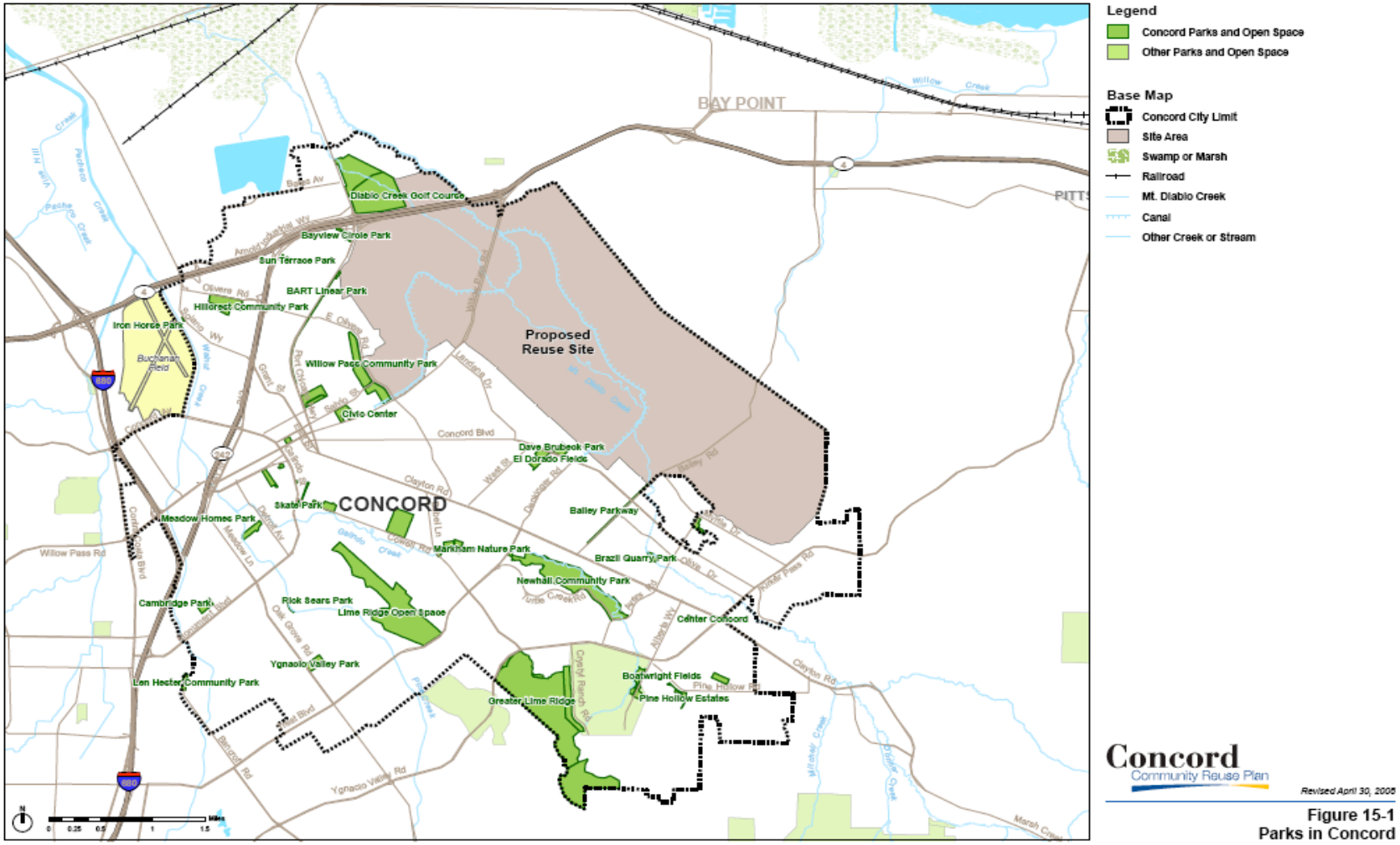
In addition to these city parks and open spaces, some neighborhoods include homeowner open spaces or private neighborhood parks, with varying levels of public access. The East Bay Regional Park District controls several facilities near Concord, such as the Contra Costa Canal Trail. Concord is the only city in Contra Costa County without a regional park within its planning area; the closest is Black Diamond Mines Regional Preserve between Clayton and Pittsburg. Regional parks contain extensive networks of trails and other facilities.

Table 3-1: Existing Public Parks and Recreation Facilities in Concord

Name	Acres	Activities/Programming
BART Linear Park (2.5 mile path)	5.2	Walking, jogging or bicycling paths
Bayview Circle Park	3.3	
Brazil Quarry Park	3.6	Play area, walking paths, playground
Cambridge Park	6.4	Picnic tables, playfields, children's play area
Dave Brubeck Park	7.1	Meadow, stage, picnic tables, child play area
Concord Community Park	30.2	Swimming pool, tennis courts, ball field, children's play area, picnic tables
Concord Skate Park	0.6	Skateboards, rollers skates
El Dorado Middle School Park	11.8	Soccer and baseball fields, volleyball courts, walking/jogging paths; children's play area
Ellis Lake Park	9.6	Walking paths, children's play area
Highlands Park	5.7	Walking paths, children's play areas ball fields, picnic tables
Hillcrest Park	28.4	Baseball and soccer fields, children's play area, picnic tables
Iron Horse Park	0.2	Bocce court, picnic table, access to trail
John F Baldwin Park	17.8	Senior Center, classrooms, dance studio, basketball court, softball, picnic tables
Krueger Fields	7.2	Baseball fields, volleyball court
Len Hester Park	3.9	Open space, picnic tables
Meadow Homes Park	8.5	Swimming pool, ball fields, basketball courts, climbing bars, picnic tables
Newhall Community Park	126.1	Walking, jogging, biking, and horseback paths, picnic tables
Rick Seers Neighborhood Park	0.6	Picnic & play equipment, ½ basketball court
Sun Terrace Park	2.6	Open space, children's play area
Todos los Santos Plaza	2	Picnic tables, children's play area
Willow Pass Community Park	40.4	Community center, tennis courts, baseball fields, children's rides
Ignacio Valley Park	9.5	Ball fields, jogging path, picnic tables, children's play area.
Neighborhood & Community Parks Subtotal	**330.7**	
Boatwright Sports Complex	9.4	Soccer and baseball fields
Diablo Creek Golf Course	189.9	Golf
Galindo House Gardens	1.6	
Lime Ridge (within Planning Area)*	90	Trails
Markham Nature Park & Arboretum	14.2	Nature study center, gardens
Specialized Recreation Subtotal	**305.1**	
Total	**635.8**	

Source: Concord Community Reuse Plan, Draft Environmental Impact Report, May 2008, Table 15-1, City of Concord; Concord Parks Flier, Concord Parks & Recreation.
*The cities of Walnut Creek and Concord share ownership of Lime Ridge Open Space. Walnut Creek operates area south of Treat Blvd (including some land owned by Concord). Concord manages north of Treat.

Figure 3-1: Locations of Existing Parks in Concord



Source: Concord Community Reuse Plan, Draft Environmental Impact Report, May 2008, Figure 15-1, City of Concord.
NOTE: Outside CNWS bounds are Mt. Diablo State Park (bottom right) and Diamond Mines Regional Preserve (lower right)

Mt. Diablo State Park is about 1 mile south of Concord or 2.5 miles from the CNWS Site. It is, however, between 4 – 7.5 miles from the section of CNWS Site proposed for intensive development.

Both regional and state parks have other purposes beyond recreation including resource protection of wildlife, clean air, clean water, and other environmental benefits that impact local residents' health positively - and which may also be degraded by nearby development.

Distribution of Parks within Concord

The City of Concord also has goals regarding residents' proximity to parks. For example, Policy POS-1.1.5 defines a reasonable distance to a park as ¼ to ½ mile, and sets a goal of having all residents within that distance (see Appendix A). Some sections of Concord do not meet that goal currently.

However, it is important to note that the city does not have a goal regarding the distribution of parks and open space throughout the city. Under the existing goal, even if the overall park area goal of six acres of parkland per 1,000 people is met, some areas could include fewer parks that may become overcrowded as a result of their scarcity, while other areas could have many parks that go unused. To account for spatial distribution, a potentially better goal would be to have each *neighborhood* of the city contain six acres of park per 1,000 people.

Within the Monument neighborhood, there are three parks: Cambridge Park (6.4 acres), Meadow Homes Park (8.5 acres) and Ellis Lake Park (9.6 acres). Skate Park is the closest park outside the boundaries and is approximately ¼ mile away. Other parks are more than a ½ mile outside the boundaries of the Monument.

The total park area serving the population in the Monument neighborhood is 24.5 acres for the 20,000 residents. **The ratio of parks to residents in the Monument community is 1.2 acres per 1,000 residents, which is well below the City's average of 5.25 acres per 1,000 people and its goal of 6 acres per 1,000 people.** A 2002 report[1] on access to parks calculated an even lower number for this neighborhood – 0.7 acres per 1,000 people. While the concentrated population in the Monument does not have enough park acreage to meet demand, most Monument residents do live within the City's goal of a ½ mile from a park. As described in a following section, members of the Monument community claim that barriers such as crime and lack of walkability may discourage use of even this limited amount of park space.

Besides the Monument neighborhood, other areas of Concord are also poorly served by parks, but because these areas are less densely populated, they may not be quite as impacted.

Accessibility of Parks

As noted below, many focus group participants commented on the lack of accessibility of parks. Issues were especially great for those who wanted to walk, bike, or take public transit to parks. According to a 2002 report on transit,[2] access issues are even greater for open space. For example, there is a bus, County Connections Route 308, which connects the Monument to the Martinez Regional Shoreline, but that bus only makes six trips within its

ten-hour span of service on Sundays. Weekends are the times when many people typically use such regional parks. Transportation issues such as this are discussed further in the Transportation Chapter.

C. Analysis of Park and Open Space Impacts at CNWS Reuse Project Site

Evidence Linking Access to Parks and Open Space to Health

Parks and open space impact health through several mechanisms. They are places where people participate in physical activity, and they also impact mental health, environmental quality, illness, and social cohesion.

Parks and open space impact health because they are locations for physical activity. In 1996 the U.S. Surgeon General concluded that regular physical activity improves health. The Surgeon General's report[3] found that exercise has many benefits, which include the following: prolonging life; preventing diabetes, high blood pressure, and colon cancer; supporting weight control; improving mobility and preventing falls for the elderly; reducing feelings of depression and anxiety; and promoting psychological well-being.

The Centers for Disease Control and Prevention (CDC) recommends that adults either engage in moderate exercise (e.g., walking briskly) for at least 30 minutes, five days per week, or in vigorous exercise (e.g., jogging) for at least 20 minutes, three days per week. Children should get some combination of moderate and vigorous exercise for at least one hour per day.

Nationally, about 30% of physically active people report exercising in public parks.[4] In a study about Los Angeles,[5] active people who live within two miles of a park are more likely to exercise in a park (34%) than at home (21%), at private clubs (6%), or at other locations (4%), although many people (35%) reported exercising in more than one location. The study also revealed that most (81%) park users live within one mile of a park, and that people living within one mile of a park are four times as likely to visit the park once per week or more.

Additional studies have shown that parks facilitate physically active lifestyles by providing relatively low-cost choices for recreation.[6] People who live in close proximity to parks usually have higher levels of activity compared to those who do not.[7] [8] [9]

Access to places for physical activity combined with outreach and education can produce a 48% increase in frequency of physical activity.[10]

Parks and open space improve mental health. Parks and open spaces provide a needed reprieve from everyday stressors, acting as "escape facilities." 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.[11] Spending time in parks can reduce irritability and impulsivity as well as promote intellectual and physical development in children and teenagers. A study in Chicago showed that people living in a housing project who had some green space near them scored higher on the ability to manage major life issues, they 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.[12] People dissatisfied with their available green spaces have 2.4 times higher risk for mental

health issues.[13] Researchers in Chicago have found that children with Attention Deficit Disorder function better than usual after activities in green settings and that the "greener" a child's play area, the less severe their ADD symptoms.[14]

Parks and open space improve general health and speed recovery from illness. Living in proximity to green space is associated with reduced self-reported health symptoms, better self-rated health, and higher scores on general health questionnaires.[15] One important study demonstrates that patients with views of trees versus views of a brick wall had shorter hospitalizations, less need for painkillers, and fewer negative comments in the nurses' notes.[16]

Parks and open space improve health by fostering social cohesion. Social networks and interaction have been linked to improvements in physical and mental health through multiple mechanisms.[17] A study that took place in Chicago[18] found that green spaces contained an average of 90% more people than spaces that do not include natural greenery. Additionally, 83% more people were involved in social activities in green spaces versus barren spaces.

Environmental quality is improved through parks and open space. Parks and open spaces 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 space 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 in turn lowers 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 per day.[19] In an area with 100% tree cover (such as forest groves within parks), tress 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.[20] Trees and the soil under them clean surface water by removing polluted particulate matter before it reaches storm sewers, as well as absorbing nutrients created by human activity such as nitrogen, phosphorus and potassium, which otherwise pollute streams and lakes.[21] In addition, increased vegetation dampens sound, thereby mitigating noise pollution.[22]

<u>Amount of New Parks and Open Space at the CNWS Reuse Project Site</u>
All Alternatives under consideration for the CNWS Site increase the amount of parks and open space in Concord and contain the following elements:

- Preservation of hillsides at 30% slope or greater;
- A 300-foot wide riparian corridor along Mt. Diablo Creek;
- New biking and hiking trails that connect to the existing regional network;
- Picnic areas and group areas;
- A tournament quality youth and adult sports complex consisting of multiple sports fields and facilities;
- Community golf course (either a replacement of the current golf course in Concord or making the existing golf course open to the community);
- An environmental education and interpretive center;
- Preservation of pre-historic cultural sites;
- Wildlife habitat areas for a variety of plant and animal species;

- Neighborhood parks;
- Community parks; and
- An urban linear park buffering already developed neighborhoods.

In our community survey about the CNWS Reuse Project, three questions addressed parks and open space. Almost half of the respondents considered "Open Space and Recreation" to be one of the top three priority issues that should be addressed in a major development like the CNWS Reuse Project, behind "Jobs and Economic Development" and "Crime Prevention", and tied with "Affordable Housing." Eighty-five percent of those surveyed visit a park at least once a month, and many of those visit weekly.

The City of Concord also surveyed 600 residents and released the results in December 2008.[23] Parks and open space is one of the top four priority issues (the other three being job opportunities, traffic on freeways, affordable housing). Specifically:

- 93% of respondents support keeping some land in open space with picnic areas, biking and hiking trails;
- 70% support keeping some land totally wild and closed to the public;
- 84% support providing parks and sports facilities;
- 78% at least occasionally (and some much more) would use hiking, running and bike trails; and
- 73% at least occasionally (and some much more) would use picnic areas.

The City of Concord has laid out a variety of objectives for planning considerations, community development, and specifically for parks, recreation and open space in their Planning Framework for the CNWS Reuse Project.[24] The objectives include meeting the need for long-term parks, recreation, and open space of Concord residents and the region; connecting to regional and local parks and trails; providing a variety of parks, recreation elements, trails, sports needs, community centers and the like. For a more complete list of the Planning Framework guidelines, see Appendix A.

Land Devoted to Parks and Active Recreation

Table 5-2 shows the amount of land allocated for parks and active recreation (not including open space) and the amount of land allocated per 1,000 residents for the two Modified Alternatives and, for comparison, for the original Alternatives 2, 5 and 6. Each of these Alternatives allocates well above the city's goal of 6 acres of parks per 1,000 residents. **The Clustered Villages Modified Alternative provides for more acreage for parks and active recreation of the two options currently being considered.**

Table 3-2: Land Allocated to Parks and Active Recreation (not including Open Space)

Alternative	Land Allocated (%)	Land Allocated (acres)	Potential New Residents	Acres of Land Allocated per 1000 residents
Clustered Villages	13	650	28,100	23
Concentration & Conservation	7	370	22,950	16
2	10	500	30,600	16
5	9	450	22,300	20
6	11	500	18,100	27

Land Devoted to Open Space

In all of the proposed Alternatives, an extensive amount of land is allocated to open space in addition to the park space described above. While open space and parks have some common health-related benefits, they also have some differences based on how the spaces are used. As described above, open space is typically used for walking, jogging and biking, while parks can be used for a greater variety of activities.

The amount of open space proposed in the Modified Alternatives ranges from 50% of the total acreage in the Clustered Villages Modified Alternative, to approximately 66% in the Concentration and Conservation Modified Alternative. By comparison, the original Alternatives proposed between about 40% of the total CNWS Site acreage in Alternative 2, and about 60% in Alternatives 5 and 6. Allowed uses in this open space have not been identified for any of the Alternatives.

Total Land Devoted to Parks and Open Space

In terms of total land allocated to both parks and open space, the five Alternatives being analyzed set aside between 50% and 73% of the total acreage of the CNWS Site for various types of parks and open space. The Concentration and Conservation Modified Alternative allocates the largest percentage of park and open space land of any of the five Alternatives. Therefore, assuming that the parks' facilities and programming, and the open space's trails and physical landscape characteristics, are accessible to and attract users, **the Concentration and Conservation Modified Alternative would provide the maximum potential for achieving positive health impacts related to parks and open space.**

Types of New Park and Open Space

Various types of parks and open spaces offer some similar health advantages. The environmental quality-related advantages are common. All types of parks and open space can remove air pollutants and dampen noise. All unpaved areas prevent water run-off and are therefore useful in filtering water and contributing to a clean water supply. Similarly, accessible and safe parks and recreation facilities, especially with walking/biking trails and programming that encourages exercise, have been shown to increase physical activity.

Some differences between the health benefits of different types of parks and open space may exist as well. For example, potential issues and questions to consider when assessing a community's needs and a municipality's capacity to maintain various programs, amenities and features of parks and open space include the following:

- *Park and open space preferences of different sub-populations may vary*. For example, do different ethnic groups play the same sports or use open space in the same way? Are there cultural norms that are barriers to some activities in some groups? To our knowledge, these questions have not been explored generally or in the context of Concord.
- *Maintenance costs, both financial and environmental, of different types of parks and open space may differ*. For example a grass sports field requires more maintenance water and expense than open space. What are the maintenance plans for the proposed parks and open space? Have environmental costs been considered?

In the three focus groups we conducted, participants were asked about activities they, their families and friends like to participate in at parks and what the CNWS Reuse Project could do to improve park usability.

Activities. In all three focus groups, walking, soccer, and basketball were raised as activities that people enjoy in parks. Other activities that came up in the one focus group with higher income Concord residents were hiking, socializing, building community, bird watching, dog walking, and biking. Picnicking was raised in two of the focus groups. There was recognition among the participants that activities in parks improve mental health, relieve stress, and encourage social cohesion. Forty-three percent of residents we surveyed use parks once or twice weekly.

Suggestions for usability. Focus group participants suggestions regarding the types of parks and open space needed include:

- Increase the number of open-use fields (i.e., those useable by groups other than formal teams);
- Increase the number of bike trails;
- Increase the amount of park area available for picnics and barbeques;
- Provide work-out stations near some paths; and
- Provide areas for water play besides than swimming pools.

Optimal Distribution of Land Between Parks and Open Space

All of the Alternatives that have been considered throughout the CNWS Reuse Project process supply more parks and recreation space than Concord requires in its General Plan (see Appendix A) while also supplying significant amounts of open space. However, the distribution of the land allocated to various types of parks and open space differs in each Alternative. **The Clustered Villages Modified Alternative contains the most land for Neighborhood, Community and Regional Parks, and the Concentration and Conservation Modified Alternative contains the most land for Open Space**. Original Alternatives 2, 5 and 6 offered more recreational fields than the Modified Alternatives now under consideration. Table 3-3 and Figure 3-2 show the allocation of parks and open spaces by type and by alternative.

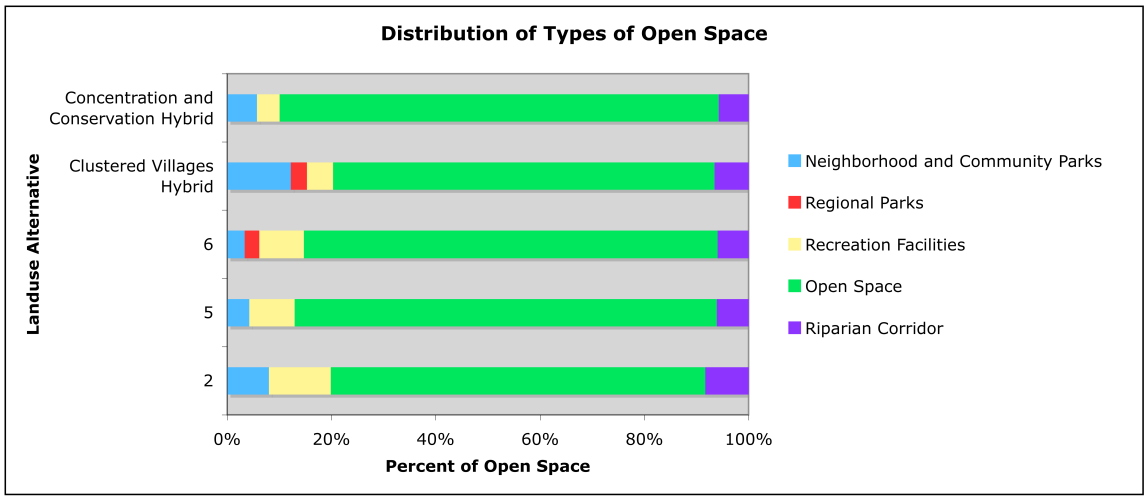
To our knowledge, the questions of how the proposed distribution of parks and open space would serve the needs of the existing population in Concord and how they will be maintained have not been explored at this stage. A needs assessment that includes in-depth focus groups with various populations in Concord could answer the first question and ensure that, for example, the amount of parks and open space dedicated to open-use fields (i.e., those useable by groups other than formally organized teams) is adequate. Development of a detailed maintenance plan that includes both financial and environmental costs could answer the second question.

Table 3-3: New Parks and Open Space by Alternative
For each Alternative analyzed, the number of acres of park land by type is specified. The percents in parentheses indicate the distribution of park lands by type for each Alternative.

Type of Park/ Open Space	Clustered Villages	Concentration and Conservation	2	5	6
Neighborhood and Community Park	390 (12.1%)	210 (5.7%)	201 (8.0%)	143 (4.2%)	117 (3.3%)
Current Regional Park	100 (3%)	0	0	0	100 (2%)
Recreation Field	160 (5%)	160 (4%)	300 (12%)	300 (9%)	300 (8%)
Proposed Regional Park (Open space)*	2349 (73%)	3089 (84%)	1814 (72%)	2776 (81%)	2803(80%)
Riparian Corridor**	211 (7%)	211 (6%)	211 (8%)	211 (6%)	211 (6%)
TOTAL acres	3210	3668	2526	3430	3531

Source: Technical Memorandum from CBRE Consulting to City of Concord dated July 2, 2008, Exhibit D-2; City of Concord Program Summary dated Sept 16, 2008 (sent to HIP by City of Concord).
*The East Bay Regional Park District has indicated a willingness to include more active recreation in some parts of the area east of Mt. Diablo Creek if a regional park is established there, which may provide a greater number of formal recreation fields.
**The Riparian Corridor is to remain primarily undeveloped and used for resource protection, however it may include trails. Areas alongside the Riparian Corridor may be either protected as open space or developed as urban parkland.

Figure 3-2: Distribution of Parks and Open Space by Percent of Each Type of Park and Open Space



Source: Technical Memorandum from CBRE Consulting to City of Concord dated July 2, 2008, Exhibit D-2; City of Concord Program Summary dated Sept 16, 2008 (sent to HIP by City of Concord).

Accessibility of New Parks and Open Space

Whether a person chooses to use a park or open space is determined by many factors including:

- Proximity;
- Modes of transportation available for access and ease of use of each mode (car, walkability, bikability, public transit);
- Connectivity of trails; a park connected to other areas with multiple bike paths and regional trails will receive more use than one with fewer connections;
- Safety and perceived safety;
- Availability of special facilities and programming (e.g., paved paths, benches for resting, organized sports, guided walks); and
- Cultural norms and preferences.

Together, these determine whether a park or open space is accessible.

In our community survey, 33 of 35 people that answered a question about the need for more easily accessible parks felt that there was such a need (94%). We also asked about accessibility of parks and open space in focus groups. While some focus group participants said they find it easy to get to parks (by walking, biking, or driving), others discussed the lack of walkability/bikability due to heavy traffic, pedestrian safety, noise, and poor air quality as issues that make park access difficult for them. Other participants drive to parks, have adults drive them, or take public transit. Distance from parks and park entrances were discussed as additional barriers to park access. Some focus group participants described crime (e.g., drug use and dealing) and lack of safety (e.g., from gangs) as deterrents from park use. Specific parks in the Monument neighborhood were cited as problematic in this regard, and because of this, some focus group participants drive to other communities to use safer parks.

Suggestions from focus group participants regarding the accessibility of parks and open space included:

- Increasing policing of parks and open space;
- Improving lighting;
- Offering more frequent and cheaper public transit and shuttle services to parks;
- Limiting and enforcing park hours after dark to discourage crime;
- Ensuring that there are paths that are accessible to people with special needs, such as the elderly and handicapped. Flat paths were mentioned multiple times, as were benches near paths.
- Ensuring that parks are more evenly distributed throughout Concord;
- Providing convenient entry-points to parks and open space, including some with parking areas; and
- Providing small local parks scattered within the new development area as well as the big regional open space.

Proximity of Parks and Open Space

The new parks and open space will only be in close proximity to the existing population living or working in the area that borders the CNWS Site if the new parks and open space are placed on the perimeter of site. The distribution of parks, open space, housing and jobs within the site, as well as the provision and distribution of connecting trails and bikeways, will determine whether the parks and open space are proximate to the new population on the CNWS Site. Design and size of the urban linear park along existing neighborhoods will determine how well utilized it is by existing Concord residents.

All five of the Alternatives being analyzed propose a system of parks and open space that is intended to link existing neighborhoods bordering the CNWS Site to the site, and to create a green buffer along the city perimeter. In addition, new housing clusters are to be bordered by parks. This would place many existing and new residents in close proximity to the new parks on the site. The details for each Alternative differ – some propose linear parks, and some buffers are bigger than others – but conceptually, all achieve a similar goal of putting the parks and open space near people. Without more detailed land use maps, it is difficult to compare the Alternatives.

Modes of Transport Available for Accessing New Parks and Open Space

Because the new parks and open space are not going to be proximate (i.e., within a ½ mile) to most of the population in Concord, it is important to consider how people will be able to get to the new parks, especially residents with fewer transit options. The Transportation Chapter also addresses the issue of transit into the CNWS Reuse Project Site for Concord residents currently living in other parts of the city.

The lack of sufficient park space in some existing neighborhoods, such as the Monument (see Existing Conditions analysis in Section B), makes it even more important for residents in these neighborhoods to have adequate modes of transport to new parks on the CNWS Site. This is not addressed in the planning documents. Providing public transit and pedestrian access to new parks from such neighborhoods should be an important aspect of the CNWS Reuse Project planning.

From our focus groups and other data available, it is clear that many people do not feel that Concord streets are very walkable or bikable, so unless significant changes are made to the existing network of streets, it is unlikely that many existing residents will walk to the new parks and open space. Added traffic that will result from development of the CNWS Site (e.g., from new residents, new commercial areas, and new tournament sports fields) may make the walkability and bikability even worse (see Transportation Chapter).

Existing residents could also use public transit to access the new parks and open space. However, given current perceptions and levels of use of public transit, significant improvements in transit will be necessary to make this a viable option.

Driving private vehicles is the third method that existing residents will use to access new parks and open space. The viability of this option will depend primarily on parking availability near the new parks and open space. However, due to the significant negative health consequences of driving, this option needs to be balanced with the positive health impacts of use of the new parks and open space. A more efficient public transit system and more walkable streets would offer healthier modes of transport than driving.

It is also true that some access options may be available but not well known. For example, parts of Concord are served by paved regional trails (such as the Contra Costa Canal, the Ironhorse Trail, and the Delta de Anza Regional Trail) which will connect into the Reuse Area. These and other transit and access options to Reuse Area parks and open space will become better used and more valuable - with the potential to serve more distant neighborhoods - if marketing programs make them better known.

<u>Accessibility to Parks for the Monument Neighborhood</u>
Since 18% of Monument residents do not have access to a car (compared to 6% in Contra Costa County),[25] public transit access is very important in order for these families and individuals to access health-promoting resources of new parks. Downtown Concord will most likely be sufficiently connected to the CNWS Site by public transit on Willow Pass Road. Based on a simple analysis of land use maps for the CNWS Reuse Project, the following sums up opportunities for residents of the Monument neighborhood, and other neighborhoods west of the Reuse Project site:

- **The Clustered Villages Modified Alternative would reduce the degree to which residents of the Monument are underserved by parks** since new parks would be created not far from Willow Pass Road.
- **The Concentration and Conservation Modified Alternative would reduce the degree to which residents of the Monument are underserved by parks somewhat.** While it provides the least amount of new *park* land, some parks will be created that abut Willow Pass Road.
- **Development plans that do not place a significant amount of park space near Willow Pass Road (i.e., Alternative 2) would not greatly improve the situation for Monument residents.** However, neighborhood parks provided by Alternative 2's proposal would be valuable to future residents on the CNWS Site.
- Development plans that place significant amount of park space near Willow Pass Road (Alternatives 5 and 6) would improve the situation for Monument residents.

- Since the **urban linear park** proposed for the western boundary of the Reuse site is the **closest area to already developed Concord neighborhoods**, it will be among the most accessible park to them, and should be robust enough in size to support varied recreational uses.

Safety and Perceived Safety of Parks and Open Space

To our knowledge, details regarding the plans for ensuring the safety of new parks and open space have not been developed at this stage. Lighting, police and/or park ranger patrol, lines of sight and other factors will be important to consider when plans are further developed for any Alternative chosen. In general, parks with greater public use are perceived to be safer than less well used ones.

Availability of Special Facilities and Programming

Similarly, plans for ensuring that the new parks and open space meet the needs of youth, elderly, and physically handicapped populations in Concord have not been developed to our knowledge. For any Alternative chosen, parks should have the resources needed to serve these populations. Flat paths, benches for resting, and similar amenities should be carefully thought through. Because park programming can increase the amount of physical activity people get in parks, it should also be considered carefully.

Cultural Norms and Preferences

Cultural norms and preferences of incoming and existing Concord populations, as well as the degree to which new facilities will meet them, will contribute to determining who uses new parks and open space. Thus, the needs of current Concord sub-populations should be explored before the distribution and types of parks and open space are determined (see above) and before the programming of those spaces is completed.

D. Health-Promoting Mitigations for Parks and Open Space

Based on evidence linking parks and open space to health, community surveys, three focus group discussions with Concord residents about the parks in their neighborhoods, and evaluation of the Concord 2030 General Plan, we recommend the following mitigations for parks and open space at the CNWS Reuse Project Site:

- **Maximize residential development density in order to maximize land available for parks and open space.** This will allow the maximum utilization of space for recreational needs and will allow natural area conservation and preservation.
- **Conduct a thorough needs assessment for all existing neighborhoods regarding their park needs and develop an action plan** to ensure that all residents of Concord are able to benefit from the city's existing and new parks. Use this information to inform the distribution of parks and open space types and programming.
- While a sufficient amount of parks and open space has been proposed in many of the development alternatives considered for the CNWS Site, focus should be dedicated to **making new parks and open space accessible and conducive to physical activity, for example by including appropriate programming**:
    - Ensure that new parks contain facilities useable by seniors, handicapped, and others with limited mobility;

  - Ensure that there are paths that are accessible by people with special needs, such as the elderly and handicapped; and
  - Ensure that programming of new parks meets the needs of existing residents. Some suggestions are included on page 10 and 12 of this chapter, but a more extensive needs assessment is recommended.
- **Develop a detailed maintenance plan that includes financial and environmental costs** for the different types of parks and open space and use this information to inform the choice of the distribution of parks and open space type. One viable maintenance plan would be to transfer most of the open space to the East Bay Regional Parks District, which will have additional resources for operations, maintenance, and public safety (such as police, fire, and helicopter).
- **Ensure that new parks are easily accessible by foot, bike or public transit from the neighborhoods of Concord that are currently underserved by parks, especially at times when park use is high.**
  - Specifically, increase bus service, especially from areas of the city currently underserved by parks (such as the Monument neighborhood), at times when parks are most likely to be used such as weekends and holidays.
- Specifically ensure that the **size and programming for the urban linear park proposed for the western boundary of the CNWS Site** will support not only new residents, but also those in existing Concord neighborhoods since this new park will be most accessible to them.
- To accommodate non-motorized traffic into the CNWS Site, **create greenways or other routes that are extremely pedestrian and bicycle friendly** and that discourage cars and trucks, from existing neighborhoods in Concord to the CNWS Site parks and open space. For example, a network of greenways could be oriented toward the CNWS Site from various points around the city.
- **Provide convenient entry-points to open space**, including some with parking areas and some that are easily accessible by public transit.
- **Ensure that new parks discourage crime through lighting, policing, limiting after-hours use, and other crime-prevention methods**.

E. Conclusions

From the perspective of the health effects mediated through parks and open space, this analysis concludes that all the land use Alternatives being considered would have many positive health impacts for existing residents of Concord and future residents of the CNWS Reuse Project Site. **All the land use Alternatives provide for a significant increase in the parks and recreation land available per person and also provide a significant amount of open space. This will likely result in increased physical activity, better mental health, more extensive social networks, and improved environmental quality.**

However, this analysis also concludes that Alternatives providing the densest development and the most land for parks and open space would have the most positive health impacts. **Of the Alternatives still under consideration, the Concentration and Conservation Modified Alternative provides for the most combined amount of open space and parkland. While the Clustered Villages Modified Alternative provides for the most park acreage, the Concentration and Conservation Modified Alternative could be**

adjusted if the need for more parkland is prioritized in a community parks needs assessment.

However, **many of the factors that will ultimately determine accessibility and usability of new parks and open space, and thus the degree to which they lead to improved health have not been determined at this stage of planning.** The recommendations made throughout this chapter hold for any of the selected Alternatives and should be kept in mind as planning moves forward.

From a health perspective, it is important that the city of Concord understands the needs of its current residents regarding parks and open space, and that it understands the ways in which existing parks and open space fall short of providing for those needs. Some neighborhoods and populations within Concord do not currently have the safe and accessible parks and open space that they need. Many factors will determine who uses new parks and the health benefits they will receive, including:

- Distribution of parks and open space between different uses;
- Programming in the new parks;
- Amenities available for all populations, including special needs populations;
- Safety and perceived safety in the new parks;
- Accessibility of the new parks by different modes of transport: walking, biking, public transit and private cars;
- Cultural norms and preferences; and
- Maintenance of the new parks and open space.

The CNWS Reuse Project gives the city the opportunity to address these issues and by doing so, to improve the use and enjoyment of parks and open spaces for all Concord residents.

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Concord Naval Weapons Station Reuse Project Health Impact Assessment

Transportation Summary

HUMAN IMPACT PARTNERS

Transportation systems can have powerful effects on social and individual travel behavior, which in turn can impact health. A dense mix of uses that are well-served by pedestrian routes and public transit can ensure access to essential needs and services and increase physical activity, while reducing environmental and health costs associated with personal vehicle trips.

This analysis considered the effects of the CNWS Reuse Project through its effects on safety and quality of the pedestrian environment, public transit access and use, and traffic generation. To have a positive impact on health, we conclude that:

1. **Residential development density within ½-mile of the North Concord BART Station should be at least 20 units per acre.**
2. **Safe and attractive pedestrian and bicycle facilities should be prioritized.**
3. **Measures should be implemented to increase access to public transit, such as high-quality and high-frequency bus service, employer- and school-based incentives for public transit use, and an ongoing community transit needs assessment.**

These health-related objectives are well aligned with goals and guiding principles detailed in the Concord Community Reuse Project Planning Framework (adopted by City Council in August, 2006).

Pedestrian Safety and Quality: Conclusions & Recommendations

Based on an analysis of existing facilities for non-motorized transit in Concord and research that shows how to increase this health asset, **CNWS Alternatives that focus on dense development would enable pedestrians and cyclists to access their daily needs**. Walking and biking are linked to health in the following ways:

- Better mental health, social cohesion, financial savings, and a longer life result from regularly engaging in physical activities such as walking and biking;
- Physical activities prevent obesity, diabetes, heart disease, and stress; and
- Safe and attractive sidewalks, multi-use paths, and bike lanes encourage people to walk and/or bicycle.

Health-Based Recommendations

1. Include design features, such as traffic calming, to **increase the safety of pedestrians and bicyclists**.
2. Include aesthetic features such as trees and landscaping in pedestrian and bicycle trail/path designs.
3. **Residential density** within a half-mile of the North Concord BART Station should be at least 20 units per acre.
4. Include an **adequate network of bike lanes/paths in new roadway designs with connections to regional bike routes**.
5. **Create pedestrian-friendly greenways** between existing neighborhoods and the CNWS Reuse Site.
6. **Include storefronts adjacent to sidewalks** for easy access by pedestrians.
7. Provide **bicycle parking** at central locations and retail centers.

Public Transit: Conclusions & Recommendations

Compact development at the North Concord BART Station, as well as bus service oriented towards this regional transit hub, would result in increased transit use. **Alternatives that propose more compact development and predict higher BART ridership, such as the Concentration and Conservation Modified Alternative, are healthiest** because:

- Availability of public transit within walking distance ensures access to essential needs and services;
- Public transit allows people a travel option besides driving, thereby reducing environmental and health costs associated with personal vehicle trips; and
- Accessing public transit typically includes walking and cycling, which have many positive health outcomes.

Health-Based Recommendations

1. **Maximize residential density** within a half-mile of the BART station.
2. **Provide high-quality and high-frequency bus routes oriented toward BART** stations, evening/night service, and frequent bus stops with shelters.
3. **Encourage employer and school-based incentives for public transit use**.
4. Conduct an ongoing **community assessment for transit use** to assess transit needs.
5. Consider a **transit service financing strategy** (e.g., linked to a development fee) to cover costs of public transit improvements.
6. **Implement public transit service along existing city streets into the CNWS site**.
7. Consider a **shuttle service** to provide transport between the BART station and key features on the site.

Vehicle Miles Traveled (VMT): Conclusions & Recommendations

Based on our analysis of VMT modeling and background literature, **we conclude that compact development patterns would result in the smallest increase in vehicle use.** Reducing VMT would be beneficial to health because:

- Excessive vehicle use leads to physical inactivity, car accidents, stress, and high financial burdens associated with car ownership;
- Reducing VMT would reduce environmental air pollution and greenhouse gas emissions, which lead to cardiovascular disease, asthma, reduced lung function, cancer, heat stress/exhaustion, and water-borne and vector-borne diseases.

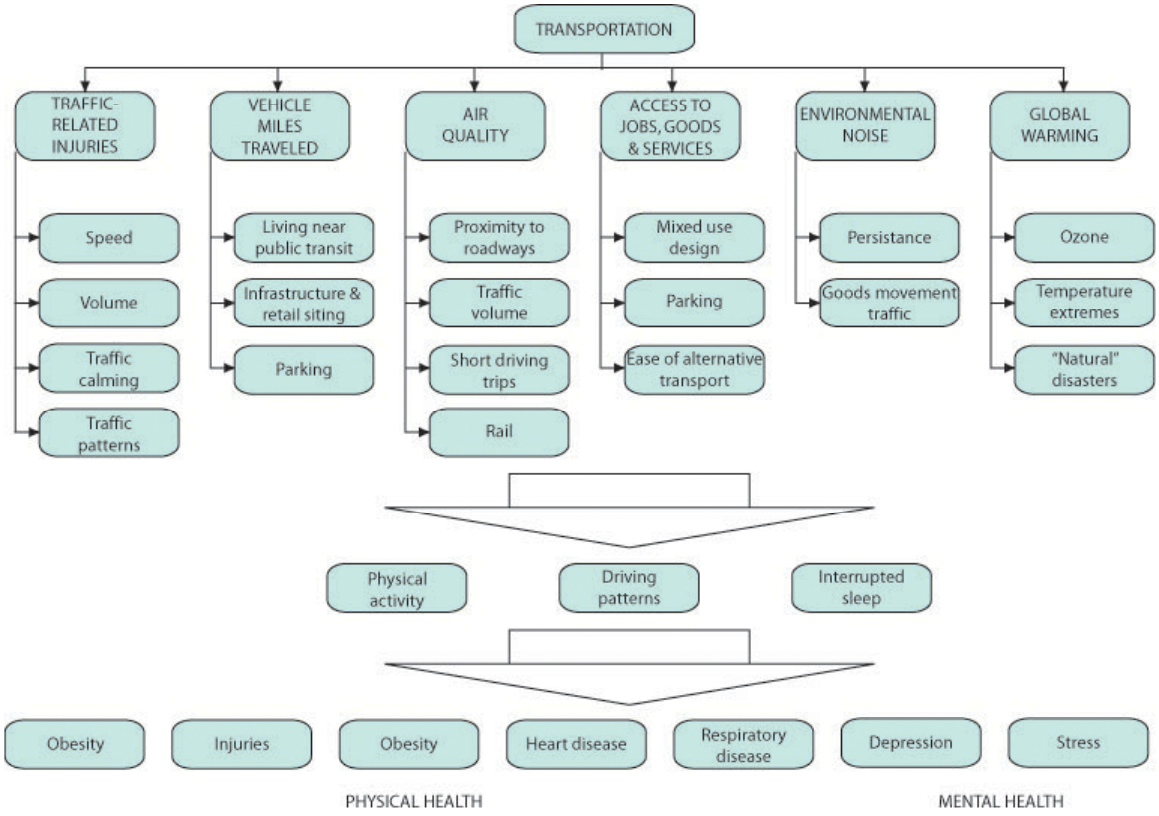
Health-Based Recommendations

1. **Residential density should be maximized** within a half-mile of the BART station and mixed-use area.
2. **Encourage carpool programs**, like preferential parking for carpool vehicles.
3. In order to reduce worker VMT, **hire local employees** who live close to the site to staff the CNWS construction phase and for permanent jobs.
4. Implement **parking cash-out programs** for non-driving employees who use the CNWS site.
5. Implement **parking fees** at transit and retail centers and for single-occupancy vehicle commuters.
6. Recommendations for **improving pedestrian facilities and public transit** will also reduce VMT.

Concord Naval Weapons Station Reuse Project
Health Impact Assessment
Chapter 4
Transportation and Walkability

Health Pathways

The analysis of transportation and walkability considered the effects of the CNWS Reuse Project on traffic generation, public transit use, and the pedestrian environment, and identified feasible recommendations to reduce project-generated vehicle trips, increase use of public transit, and create a high quality and safe pedestrian environment. The following pathway diagram depicts connections between transportation and health.



A. Introduction

Transportation systems can have powerful effects on social and individual travel behavior, which in turn impact health and the environment. A dense mix of uses that are well-served by pedestrian routes and public transit can ensure access to essential needs and services while reducing vehicle miles traveled (VMT), thereby reducing environmental and health costs associated with personal vehicle trips.[1] At the same time, planning large developments such as the CNWS Reuse Project should also prioritize protection of residents and workers from sources of environmental and safety hazards, such as busy roadways.

This chapter provides an assessment of several health effects, mediated through transportation systems, of the proposed CNWS Reuse Project developments. More specifically, we review effects on driving, transit use, and the pedestrian environment, and their indirect effects on health. This chapter explores the following questions:

- *Does the land use pattern and circulation system of the project maximize access to the North Concord/Martinez BART Station and facilitate extension of local public transit to the area? How does the project take advantage of the proximity to this BART station?*
- *Does the pedestrian environment encourage walking for commuting/recreation and reduce driving?*
- *Is the pedestrian environment safe?*

B. Existing Transportation Conditions in Concord

As the largest city in Contra Costa County and a major regional suburban hub within the San Francisco Bay Area, Concord has its fair share of people in transit, particularly during weekday commute hours. Many Bay Area residents commute through Concord on a daily basis, which results in congested city roadways, regional freeways, and BART trains.

Daily Commute

According to Census 2000 figures, 66% of employed Concord residents drive to work alone, while 15% carpool to work, 11% take public transit, 2.5% walk, and 1% bike. For Concord residents, the average travel time to work is 28.9 minutes, which is slightly less than the 31.9-minute average commute time for Contra Costa County residents. Nationally, the average travel time to work is 25 minutes.[2] Fig. 4-1 through 4-4 depict modes of transportation to work for Concord residents (Census 2000).

Figure 4-1. Percent of Workforce Who Drive to Work in Single-Occupancy Vehicles

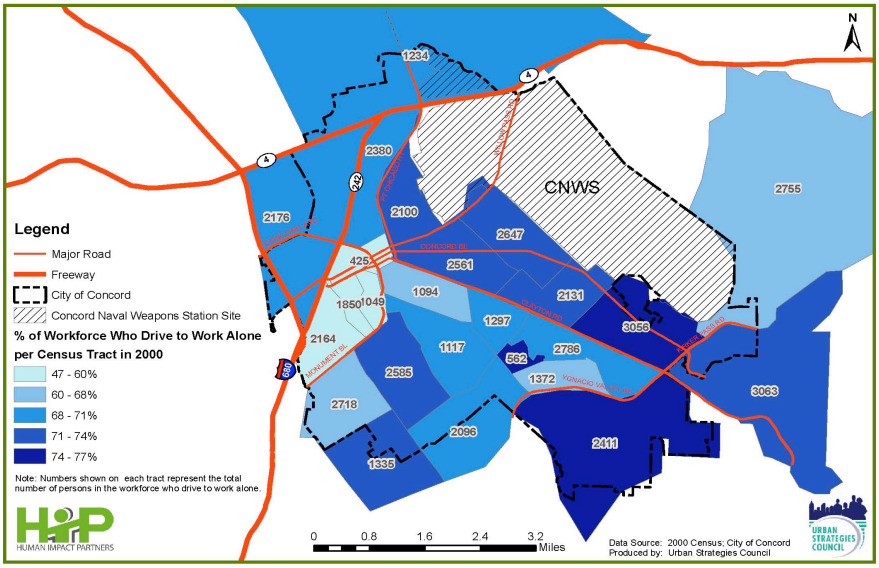
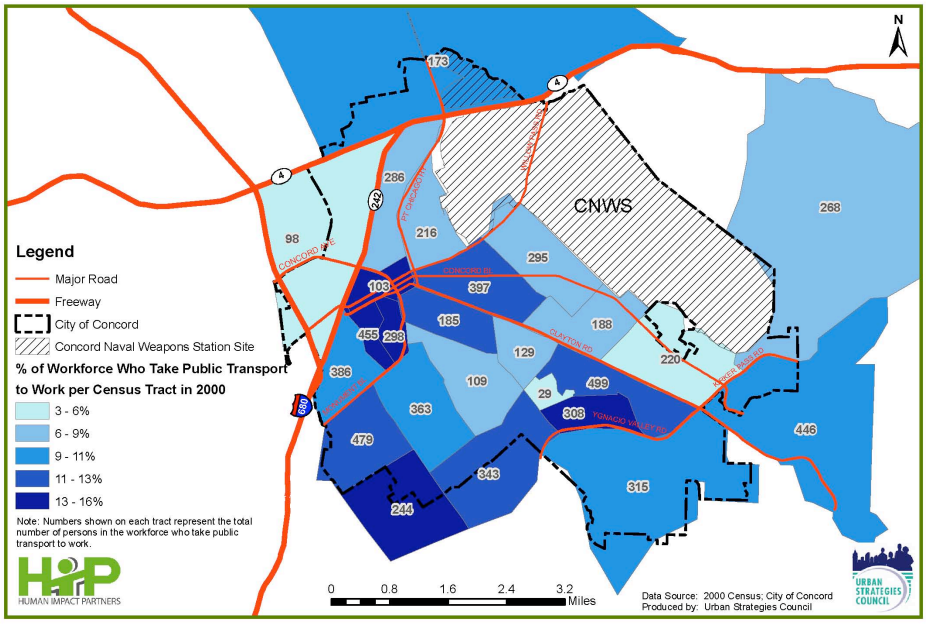
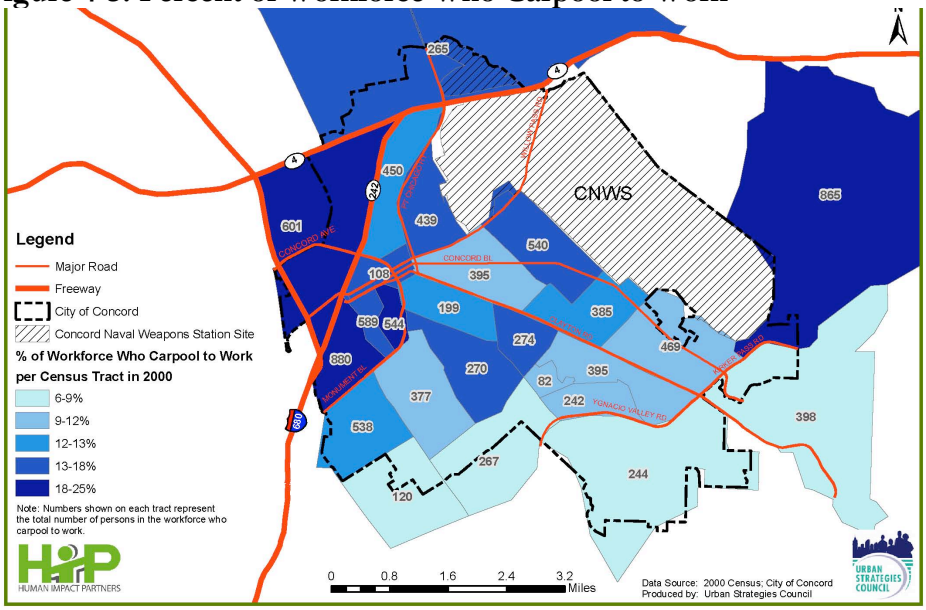


Figure 4-2. Percent of Workforce Who Take Public Transport to Work



Predictably, some of the areas with the highest percentages (11-16%) of the workforce that used public transit to get to work in 2000 lived in census tracts surrounding the Concord BART Station and those nearest to the Pleasant Hill BART Station (see Figure 4-2). Figure 4-2 also shows that in other areas of the city, the percentage of transit users ranges from 3 to 16%.

Figure 4-3. Percent of Workforce Who Carpool to Work



As shown on Figure 4-3, many of Concord residents who reported carpooling to work in 2000 lived in the western portion of the city, while very few residents along the southern border of the city carpooled to work.

Figure 4-4. Percent of Workforce Who Telecommute

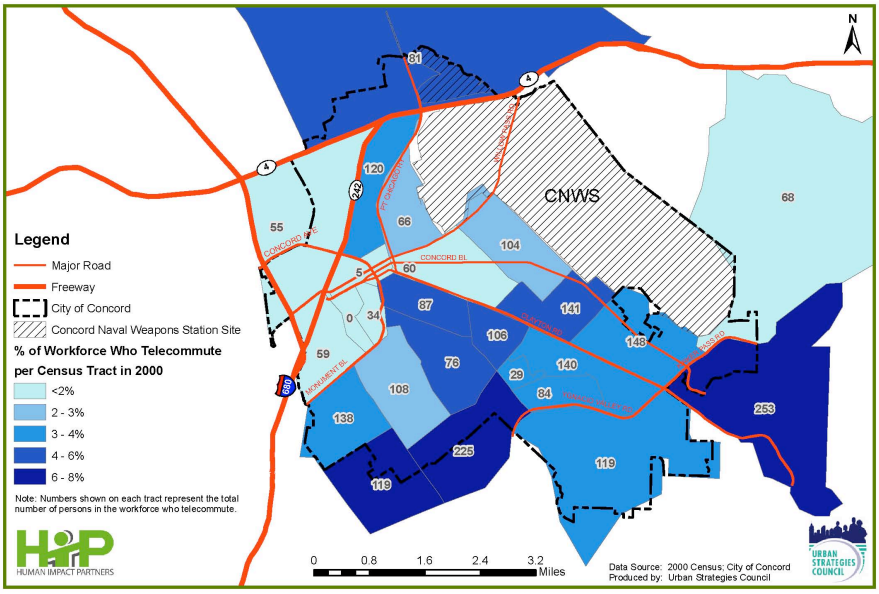


Figure 4-4 illustrates that most residents living near the Concord BART Station do not telecommute, while a slightly larger percentage of residents in the more affluent southern census tracts do.[3]

Pedestrian and Bicycle Transit

Bicycle Facilities. The Draft Environmental Impact Report (DEIR) for the CNWS Reuse Project shows that the City of Concord has several Class I through Class III bicycle trails, which range from completely separated paths with minimal crossing points to roadways shared by pedestrians and motorized vehicles with bicycle rights-of-way designated by signs.[4] However, based on a site visit, it was observed that many highly populated areas (for example, along Monument Boulevard, Concord Boulevard, and Clayton Road) are not bicycle-friendly. A summary of bicycle and pedestrian quality observations made by HIP during a site visit is provided in Section C.

Twelve keyed and sixteen electronic bicycle lockers are available at the Concord BART Station, and sixteen keyed bicycle lockers are available at the North Concord/Martinez BART Station. Keyed lockers are assigned to one person at a time and require a rental agreement, while electronic lockers allow shared use and are available on a first-come, first-served basis. While both types of lockers provide secure bike parking, electronic lockers allow more use.

Bicycle Collisions. Monitoring of bicycle collisions bears out community knowledge and observation. Nancy Baer, Director of Injury Prevention for Contra Costa Health Services, points out that "Concord has had in some years one of the highest rates in the state of

bicycle collisions in communities in its size category."[5] The Metropolitan Transportation Commission reported that in 2005, while Concord was 11th in terms of population in the Bay Area, it was ranked 6th with regard to rate of collisions.[6]

Pedestrian Facilities. As described in greater detail in a following section, a limited pedestrian quality assessment was conducted by HIP on September 18, 2008. This assessment, which focused on intersections and streets identified as "walkable" and "unwalkable" by focus group participants, captured a snapshot of Concord's pedestrian environment. Overall, besides provision of sidewalks and crosswalks alongside vehicle traffic on major streets, it was discovered that Concord is much like many other suburbs in that the pedestrian environment is dominated by the presence and priority of vehicle traffic.

Pedestrian Collisions. The following pedestrian-vehicle collision data was obtained from the Statewide Integrated Traffic Records System (SWITRS), which is a public database of reported vehicle crashes in California that occur on public roadways.

Monument Boulevard. During the 10-year period between 1997 and 2006, there were 60 vehicle collisions involving pedestrians on Monument Boulevard.[7] Of these, nine took place at the intersection at Monument Boulevard and Meadow Lane, which was identified by focus group participants as unsafe and unwalkable.

Table 4-1. Number of Pedestrian Collisions in Concord per Year, 1997 – 2006

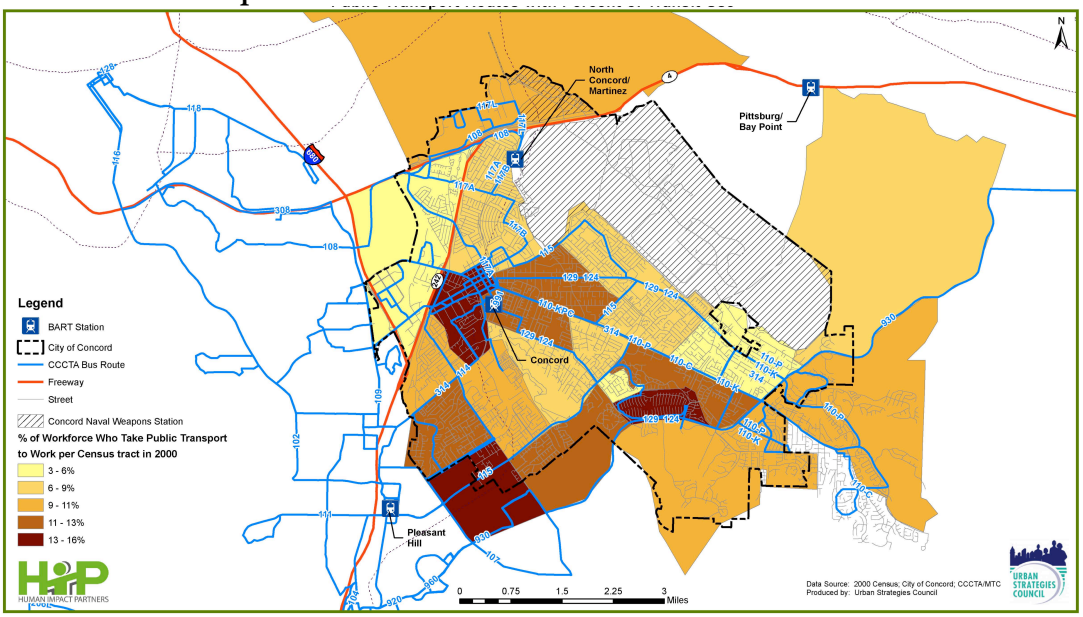
Year	Number of Pedestrian Collisions	Collision Rate (per 100,000 residents; based on 2000 population)
1997	46	38
1998	45	37
1999	64	53
2000	55	45
2001	34	28
2002	11	9
2003	35	29
2004	36	30
2005	34	28
2006	55	45
Total (10 years)	369	--
Average Per Year	36.9	--
Target Rate[8]		**20**

Source: SWITRS & US Census 2000 Target Rate is based on Healthy People 2010.

Public Transit

Figures 4-5 through 4-7 present the public transit routes in Concord along with percent of transit use, median household income, and housing density, respectively.

Figure 4-5. Public Transport Routes and Percent of Transit Use

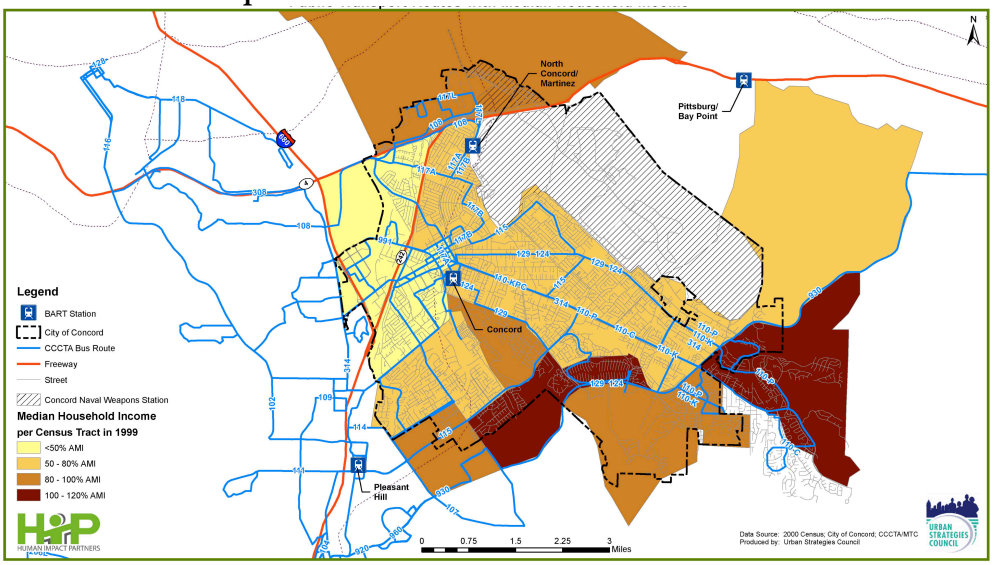


Similarly to Figure 4-2, Figure 4-5 (above) presents the percent of the Concord workforce, by census tract, who used public transit (including BART and public buses) during their daily commute in 2000. This map also includes BART and bus routes in the city. Residents who live near to the Concord or Pleasant Hill BART Stations, or along bus routes oriented towards these stations, are among the highest transit users in the city.

BART. There are two BART stations in Concord: Concord BART Station on Oakland Avenue near the historic downtown, and North Concord/Martinez BART Station, which abuts the western border of the CNWS Reuse Project site. Both stations are along the Pittsburg/Bay Point line with direct service to Oakland and San Francisco. Service to Richmond, Fremont, Dublin/Pleasanton, the San Francisco International Airport, and the Oakland International Airport is available by transfer. Park and Ride facilities, bicycle lockers, and County Connection bus feeder services are provided at both stations.[9]

It is evident that Concord residents utilize BART. As shown on Figure 4-5 and noted above, in census tracts surrounding the Concord BART Station, a large percentage (11-16%) of residents take public transit to work relative to those in many areas of the city. The same percentage of residents living in the Concord census tracts nearest to the Pleasant Hill BART Station are transit users during their daily commutes. On the inhabited side of the North Concord/Martinez BART Station, 6-9% of residents take public transit to work. Based on these numbers, there is a clear correlation between living near the Concord and Pleasant Hill BART Stations and using public transit for commuting, but a slightly lesser connection between residing near the North Concord/Martinez BART Station and using public transit. Potential reasons for this disparity are that relative to communities surrounding the North Concord/Martinez BART station, greater proportions of households in communities adjacent to the Concord BART Station do not own a vehicle (see Figure 4-8 below) and have lower incomes (see Figure 4-6).

Figure 4-6. Public Transport Routes and Median Household Income



As shown on Figure 4-6, more affluent Concord residents who live in the southern region of the city use public transit less. In addition to potentially having more personal vehicle access, which thereby decreases their need for public transit, there are also fewer bus routes in their area. In contrast, according to Figure 4-6, many bus routes converge in the Monument Corridor neighborhood, which is the lowest income region of the city.

Figure 4-7. Public Transport Routes and Housing Density

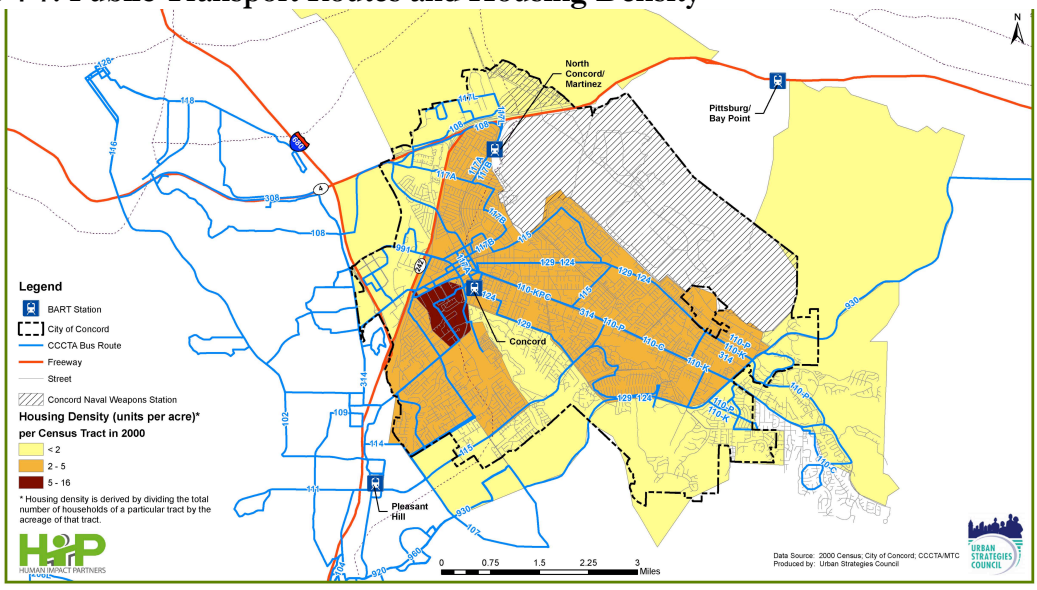


Figure 4-7, above, shows that the most residentially dense area in Concord is adjacent to the Concord BART Station and many bus routes. Residents in this area of the city have the easiest access to transit options.

Bus Service. Bus service is provided by the County Connection with 11 bus routes serving

Concord. In addition to local service and BART feeder service, County Connection buses connect Concord with Walnut Creek, Martinez, Lafayette, Orinda, Clayton, Alamo, and San Ramon.[10] The following table presents ridership and frequency information for three popular bus routes near the CNWS Reuse Project site. These routes are visually illustrated in Figures 4-5 through 4-7.

Table 4-2. County Connection Bus Routes Near CNWS with Highest Ridership

Route Number	Route	Weekday Ridership (July 07-June 08)	Annual Ridership (July 07 – June 08)	Approximate Frequency
110	Diablo Valley College to Concord BART to Kirkwood/Pinehollow/Clayton (big portion on Clayton Road)	54,152-72,327	764,038	Every 15 minutes between early morning and 8:30pm; every 30 minutes between 8:30pm and 10:30pm
114	Between Pleasant Hill BART and Concord BART (main route through Monument Corridor)	25,861-35,008	377,012	Every 20 minutes between early morning and 6:00pm; every 35-45 minutes between 6:00pm and 11:00pm
115	Walnut Creek BART to Pleasant Hill BART to Concord BART (also passes SW border of CNWS)	18,345 – 26,575	272,918	Every 30 minutes between early morning and 8:30pm

Source: County Connection, 2008.

The Monument Community-Based Transportation Plan (Monument CBTP), completed in June 2006, concluded that most of the bus routes that serve the Monument either have low frequencies (Routes 111 and 118), run only during the weekday peak (Route 991) or provide low frequency Sunday service only (Routes 308 and 314). Route 114 has much better service, with 20-minute headways during the weekday peak and midday time periods, though the frequency decreases to 40 minutes weeknights. On Saturday, Route 114 runs every 25 minutes and does not run on Sunday.[11]

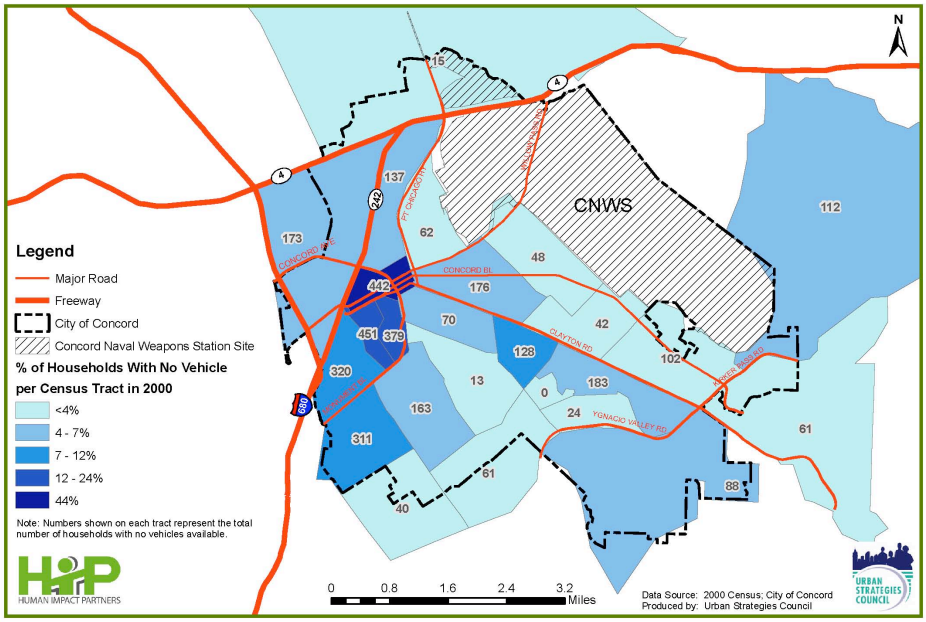
The Monument CBTP also reports that the transit fare for Monument residents is unaffordable ($1.75 for a single use ticket), particularly for students. In addition, this report says that most bus stops in this neighborhood had insufficient amenities and infrastructure such as shelters, seating and lighting. With frequencies of 30 minutes or more for many bus routes in the Monument, it is imperative that bus riders feel comfortable and safe.[12]

Vehicle Traffic

Average daily traffic. Concord roadways that provide alternatives to congested freeways during commuting hours tend to have high rush hour traffic volumes. For example, Ygnacio Valley Road east of Cowell Road, Bailey Road east of Concord Boulevard, Port Chicago Highway north of Olivera Road, and Willow Pass Road north of Landana Drive received low "level of service" scores in the DEIR,[13] suggesting that these roadways are associated with high traffic volumes and congestion as well as an unpleasant pedestrian environment.

Vehicle Ownership. Figure 4-8 portrays percentages of households that do not own a vehicle for each census tract in Concord. Compared to other areas of the city, a higher percentage of households surrounding the Concord BART Station and Monument Boulevard did not own vehicles in 2000; this indicates that public transit access potentially reduces the need for cars. In 2006, nearly 18% of households in the Monument neighborhood did not own a vehicle, as compared to 6% in Contra Costa County. In contrast, most households near the southern border of the city did own vehicles in 2000.

Figure 4-8. Percent of Households With No Vehicle

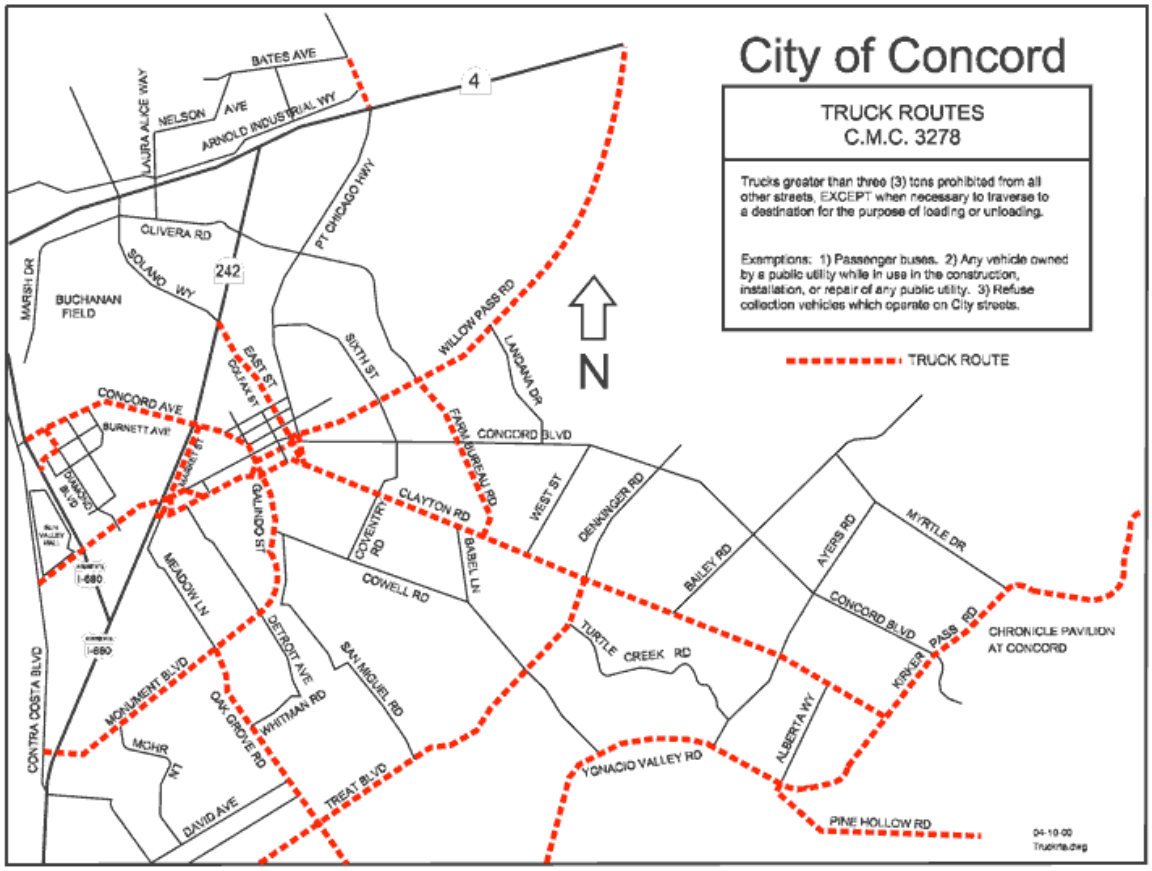


Air Quality

The nearest air monitoring station to the site is located at 2975 Treat Boulevard in Concord, and is approximately 3.5 miles from most of the proposed housing and retail development at the CNWS Reuse Project. According to reports from the past five years on record (2002–2006), ozone and PM10 generate the greatest concern because both pollutants have exceeded the established State or national emission standards at this monitoring station. A monitoring station located approximately 20 miles away in Pittsburg showed similar patterns.[14]

Diesel-powered trucks are significant emitters of diesel pollution, which can lead to serious health effects (see Section C, below). Truck routes Existing Concord truck routes are shown in Figure 4-9. A truck route on Willow Pass Road currently bisects the CNWS Site.

Figure 4-9. Concord Truck Routes



C. Analysis of Transportation and Walkability Impacts at CNWS Reuse Project

For many people, particularly those with low incomes and/or who don't own automobiles, non-motorized facilities and public transit services are necessary to access daily needs and resources. On a daily basis, people need to get to work, take children to school and childcare, shop for groceries and other retail services, and obtain timely medical care. For example, seniors who no longer drive require public transit and/or resources within walking distance in order to access their daily needs, and residents are more likely to access medical services if they are accessible by public transit or walking.

The City of Concord's Community Reuse Project Planning Framework[15] clearly prioritizes multimodal and alternative modes of transportation, transit-oriented development, regional access to transportation while mitigating local street traffic, and meeting the needs of all residents of Concord, not just new residents of the CNWS:

- Planning Consideration-7: A Regional Approach: Address long-term impacts including traffic and air quality.

- Community Development-D: Environmentally Sustainable Development:
  - Minimize the depletion of natural resources.
  - Promote environmental stewardship and economic development.
  - Contribute to the well-being of present and future generations.
- Transportation-A: An Effective Transportation System: Serve the diverse transportation needs of the community, including regional connectivity, by providing comprehensive, efficient and effective transportation solutions, allowing for multiple modes of travel.
- Transportation -1: Transit-Oriented Development:
  - Develop transit-oriented development including a high-density mix of housing, jobs, retail and entertainment, and multi-modal transportation.
  - Consider higher intensity uses around transit stations to complement parks and open space in other areas.
  - Utilize the existing public investment in regional transportation infrastructure such as the North Concord BART station.
- Transportation -2: Multi-Modal Transportation:
  - Develop a range of transportation alternatives to meet diverse community needs and reduce traffic congestion on local streets.
  - Explore use of alternative modes of transportation, including public transit, and bicycle and pedestrian paths to connect local and regional destinations.
- Transportation -3: Access and Mobility:
  - Enhance access to regional transportation while mitigating traffic on local streets.
  - Address the needs of seniors, low-income households and people with disabilities.
  - Explore innovative solutions to relieving traffic congestion and meeting parking requirements through the use of public transit, co-location of services and facilities, car-share programs, among others.
- Transportation -4: Maximizing Connective While Minimizing Impacts: Integrate new development with the existing community while minimizing transportation impacts on existing neighborhoods in Concord.

Pedestrian and Bicycle Facilities

Evidence Linking Pedestrian and Bicycle Facilities to Health

A "walkable" neighborhood characterized by mixed residential and commercial uses with easy access to a variety of food and retail options, parks and open space, and modes of transport, can lead to more exercise and less obesity by significantly reducing the need to drive.[16] [17] People walk an average of 70 minutes more per week in pedestrian-oriented neighborhoods.[18] Specifically, variables that encourage walking on streets include traffic calming measures, street connectivity, access to public spaces, well-maintained and well-lit sidewalks, traffic conditions that encourage maximum pedestrian visibility to drivers, safety from crime, and the presence of well-marked bike lanes.[19] [20] [21] In turn, it is well established that physical activity can prevent obesity, diabetes, and heart disease, reduce stress, improve mental health, and promote longevity.[22]

Investments in pedestrian facilities or traffic calming not only encourage more short walking and bicycling trips within a community but also provide settings for social interaction. Spending time on the street aids in decreasing isolation and encourages what city planning advocate and critic Jane Jacobs refers to as casual contact from unplanned social interactions.[23] Socially isolated people die at two or three times the rate of people with a network of social relationships and sources of emotional and instrumental support.[24]

The safety of pedestrians and bicyclists from vehicle collisions can be improved with careful design of roadways and pedestrian/bicycle facilities. Any project that increases residential populations and commercial development has the potential for increasing pedestrian-vehicle collisions. 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[25], vs. 11% in the U.S. [26] Crashes involving pedestrians are the third highest crash type of traffic-related fatality.[27] Important environmental variables associated with pedestrian collisions include pedestrian volume,[28] vehicle volume,[29] vehicle type,[30] vehicle speed,[31] intersection design, pedestrian facilities, lighting, and weather.[32] With regards to sensitive populations, the elderly and the very young populations are more vulnerable to vehicle injuries while walking because of slower walking speeds or slower reaction times.

Pedestrian and Bicycle Routes in the CNWS Site

Each Alternative includes new pedestrian and bicycle connections throughout open space and developed areas, including connections from adjacent neighborhoods to parks and open space. To our knowledge, precise locations and types of routes have not yet been specified.

Proximity by Walking/Bicycling to BART and Retail

Using the logic that residential and commercial development that is physically close (e.g. within a half-mile) to public transit, retail, and other goods and services encourages walking and biking to access daily needs and resources, in Table 4-3, we examine the proportion of the new population that would reside within a half-mile of the North Concord/Martinez BART Station under original Alternatives 2, 5 and 6. Transit-oriented development (TOD) surrounding the North Concord BART Station was proposed for these alternatives as well as the two Modified Alternatives now under consideration. This analysis operates under the assumption that this TOD development would include retail goods and services within its mix of uses.

Table 4-3. Percentage of New Population within a Half Mile of BART Station and TOD

Alternative	2	5	6
Percentage of population within Half Mile of BART Station	25%	39%	33%

Note: Population includes employees and students

With a similar development pattern to that proposed for Alternative 5, the Concentration and Conservation Modified Alternative is expected to lead to a comparable percentage of new population within ½ mile of the North Concord BART station – 39%. The proportion associated with the Clustered Villages Modified Alternative is expected to be similar to

Alternative 2, or 25%. Development plans that place higher proportions of new residents within convenient walking access to the North Concord/Martinez BART Station and TOD development would make it easier for residents to access regional transit and retail goods and services by walking or bicycling. As described above, walking and bicycling are healthier forms of transport than driving. **Thus, the Concentration and Conservation Alternative is the healthier option with regard to placing the most new residents near BART, encouraging active transport and public transit.**

Community Perspectives

Focus group participants recognized that the safety and quality of pedestrian environments affect their willingness to walk for transportation, recreation, and exercise. One focus group participant claimed, "*More people would walk if they think it's safe*." Another revealed that she does not allow her son to ride a bike on neighborhood streets due to traffic hazards, and another resident said that she knows someone who has asthma who is unable to walk on Concord streets due to the presence of vehicle exhaust. One man said, "*My interpretation of a walkable street is one without cars. I'm not joking*."

Members of the three focus groups named the following specific features of local intersections and streets that increased their perceptions of safety and quality:

- Pedestrian trails/sidewalks separate from roadway;
- Exclusive signals for pedestrians;
- Lights illuminating crosswalks, making pedestrians visible to drivers;
- Low traffic volume;
- Well-marked crosswalks;
- Blinking lights around pedestrian crossings;
- Speed bumps; and
- Signs alerting drivers to pedestrian rights-of-way.

Features of intersections or streets that were identified by focus group participants as having a negative impact on the pedestrian and bicycle environment include the following:

- High traffic volume;
- High traffic speed;
- Lack of crosswalks;
- High level of noise; and
- Car exhaust

Focus groups participants were asked to identify intersections in the city that they perceive as "walkable" and "unwalkable." HIP then visited these intersections to rate them based on physical street and intersection factors that are empirically known to affect people's travel behaviors.[33] Table 4-4 presents our evaluation of these streets and intersections. HIP drew upon these observations to devise specific health-promoting design recommendations for the pedestrian environment.

Table 4-4. Observation Checklist Results*

Intersection or Street	Pedestrian Safety (presence of crosswalks, pedestrian lights, sidewalks, speed bumps, etc.)	Pedestrian Quality (quiet, aesthetic; presence of trees, benches, retail resources, etc.)	Bike Lane or Buffer (increases safety for cyclists and pedestrians)	Number of Vehicle Lanes (directly relates to a loud pedestrian environment and more opportunities for collisions)
Identified by focus group participants as good, walkable intersections or streets				
Sunshine Dr. and Meadow Lane	+	~	No	2
Bailey Road between Concord Blvd and Clayton Road	+	+	Yes	2
Identified by focus group participants as bad, unwalkable intersections or streets				
Monument and Meadow Lane	~	-	No	4-8
Mohr Lane	-	~	No	2
Clayton Road and Ellis	~	-	No	6
Concord Blvd	~	~	In some locations	4
Clayton Road	~	~	No	4-6
Clayton Road and Treat Blvd	~	-	No	6-8
Willow Pass Road (downtown area only)	~	+	No	4

* = table includes select observations made at time of site visit. This summary is not necessarily representative of site conditions in general.
+ = Excellent
~ = Satisfactory
- = Unsatisfactory

Monument Boulevard Pedestrian and Bicycle Environment

Monument Boulevard is a busy thoroughfare with five to eight lanes of traffic. During our early afternoon visit to the area, the traffic was heavy and fast. It was mentioned in focus groups that more police presence is needed to enforce speed limits on this street in order to make it a safer place for pedestrians.

Several pedestrians were observed on Monument Boulevard. Several people were pushing strollers or carrying grocery shopping bags. Retail resources are available along the street, but they are typically separated from the sidewalks by parking lots.

Several bicyclists were observed on Monument Boulevard; however, there are no bike lanes or buffers on the street to protect cyclists from vehicle traffic. Most cyclists were observed on sidewalks. While sidewalks can be used as safe routes for bicyclists, sharing the width of the sidewalk often does not allow sufficient space for all users and can decrease safety for pedestrians.

Observation Summary and Conclusions

According to observations made during the site visit, **vehicle traffic generally moves very fast in Concord**. Often, posted speed limits are relatively high (e.g. 40 mph), and vehicle speeds are clearly even higher in some cases. **The layout of the city clearly prioritizes transit by car**: city streets are wide with several lanes of traffic; the flow of car traffic moves fast rather than slow (slower speeds would protect safety of pedestrians and cyclists); bike lanes or buffers are the exception rather than the rule; access to retail outlets is typically behind large parking lots; large signs for retail stores are placed nearer to the street to attract vehicle traffic; and few signs alert cars to pedestrian and bicycle rights-of-way.

Concord's pedestrian and bicycle environment is not in uniform compliance with recommendations made in the city's General Plan and Trails Master Plan (see Appendix A). For example, the General Plan recommends wide sidewalks, upgraded hardscapes, decorative crossways, signalized crossings, bulb-outs, street lighting, and "facilitated pedestrian circulation near high activity centers." For bicycle facilities, the General Plan proposes, for example, weather protected bicycle parking and "enhanced bicycle circulation throughout the City." Many of these features were not found in the areas observed. **CNWS Reuse Project roadway designs should incorporate pedestrian and bicycle aesthetic and safety features outlined in these guidance documents.**

Public Transit Facilities

Evidence Linking Public Transit Facilities to Health

Access to (including proximity, affordability, and quality of service) and use of public transit facilities is important for health and wellbeing. Many people depend upon public transit for travel to jobs, accessing goods and resources necessary for health, and connecting with family and friends. Public transit is especially crucial for households without vehicles. Even for households that have access to vehicles, public transit provides an alternative to driving. Choosing public transit over driving improves public health by reducing air pollution, greenhouse gases, vehicle collisions, and increasing physical activity (see discussion on vehicle use).

Using public transit encourages physical activity. Americans who use public transit spend a median of 19 minutes daily walking to and from transit. Twenty-nine percent achieve more than or equal to 30 minutes of physical activity per day solely by walking to and from transit, enabling them to reach the CDC recommended amount of physical activity (30 minutes a day, five times a week).[34]

Adequate access to public transit enables elderly and disabled populations to participate in community and civic life. For the elderly and the disabled, limited access to public transit creates barriers to participation in community and civic life, potentially, leading to feelings of depression and alienation.[35]

Because money is a general resource for health - securing essential human needs like food, clothing, and shelter - transportation options can impact health through their effects on household budgets. A household with two adults that uses public transit saves an average of $6,251 per year compared to an equivalent household that owns two cars.[36] The savings associated with taking public transit can be used for other necessities including healthcare, food, housing and clothing, and thereby lead to improved health.

BART Ridership

The following table presents the BART ridership projections associated with the original alternatives.

Table 4-5. BART Daily Ridership 2030 Forecast Summary for Alternatives 2, 5, and 6

Scenario	Total Daily Ridership	Change in Total Daily Ridership from 2000	Total Daily Ridership Growth (2000 to 2030)	Population	Ratio of New Daily BART Riders to Population
2000 Base Year Model	1,191	--	--	--	--
2003 No Project	3,173	1,982	166%	--	--
2030 Alternative Concept 2	14,101	12,910	1084%	30,573	0.42
2030 Alternative Concept 6	13,863	12,672	1064%	18,073	0.70
2030 Alternative Concept 5	15,760	14,569	1223%	22,327	0.65

Source: ARUP (prepared for the City of Concord), May 2008. Concord Community Reuse Plan, Draft Environmental Impact Report.

As illustrated in Table 4-5, of the originally proposed alternatives, Alternative 6 is associated with the highest proportion (0.70) of daily BART riders in relation to the incoming population at the CNWS Site, and Alternative 5 is a close second with a proportion of 0.65. Thus, it is likely that development plans resembling these alternatives would lead to many residents choosing BART as a mode of transport. This may be because Alternatives 5 and 6 have higher relative concentrations of development in close proximity to the North Concord/Martinez BART Station.[37] Though BART ridership numbers are not available for the two new Modified Alternatives, based on a similar mixed-use layout and population, the

Concentration and Conservation Modified Alternative is expected to be similar to Alternatives 5 and 6 in terms of transit choices and thus expected to increase BART ridership more than the Clustered Villages Modified Alternative (see below).

In contrast, Alternative 2 would produce a much lower proportion (0.42) of BART riders in relation to the incoming population. This lower percentage of residents, employees and students using BART may be due to Alternative 2 having a lower relative concentration of development in close proximity to the North Concord/Martinez BART Station.[38] Based on a similar mixed-use layout and population, the Clustered Villages Modified Alternative is expected to be similar to Alternative 2 in terms of transit choices.

A recent Metropolitan Transportation Commission (MTC) survey reinforces the findings of this BART ridership model. The MTC survey found that only 10.5% of Bay Area residents are willing to walk over one mile to take public transit. When the distance is decreased to a half-mile or less, 27% of Bay Area residents are willing to walk to a transit resource.[39] As reported in an earlier section, **the Concentration and Conservation Modified Alternative would place higher proportions of the population within ½ mile of the North Concord/Martinez BART station than would the Clustered Villages Modified Alternative**. Using the logic that more people choose public transit if they live in close proximity to a transit station, and that transit use is correlated with reduced automobile use, **development alternatives with higher proportions of people living near the North Concord/Martinez BART Station would lead to the most transit use and associated health benefits**.

Bus Transit

Citing the MTC survey above, Bay Area residents are more likely to use public transit if they are in close proximity to it.[40] Besides Alternative 1, each of the seven original alternatives proposed for the CNWS Reuse Project include a TOD/mixed use area surrounding the North Concord/Martinez BART Station and radiating a half-mile outward to the northeast, east, and southeast within site boundaries. All alternatives include housing and other developments on land beyond these streets. Thus, **to provide adequate local and regional transit service for residents who live beyond a reasonable walking distance from a transit resource and to reduce vehicle travel, it is essential that an accessible, affordable, and high-quality bus service be provided through areas beyond a half-mile from the BART Station development.** Such bus service would help ensure that all homes are within a reasonable distance from a form of public transit that could be combined with walking or bicycling.

Due to having a greater amount of development per area of roadway (and thus potential bus routes), compact and dense development generally leads to bus access for a greater number of people. Thus, it would follow that the dense and compact development associated with the Concentration and Conservation Modified Alternative might lead to bus service that would be accessible to many people.

In the Clustered Villages Modified Alternative, a bus route is proposed to connect village centers to one another and to the North Concord/Martinez BART Station mixed use area.[41] This is an excellent transit resource, however, the type of bus service is not specified in

planning documents. **Bus frequency, quality of service, and efficiency are factors that will determine whether people use buses.** Many residents, particularly seniors, handicapped people, and families with young children, depend on bus service to travel even short distances.

Community Perspectives on Public Transit

Twenty percent of community survey respondents indicated that access to public transit is a priority to them. Ninety percent of respondents said they would take BART more often if housing and jobs were located near the North Concord/Martinez BART Station, and 81% said they would use BART more if there were housing and stores that they liked near the BART station.

Additionally, the City of Concord released a survey of 600 current Concord residents as to their views about the CNWS Reuse Project.[42] 71% strongly or somewhat strongly approve of incentives to encourage public transit use and discourage car use.

Participants of all three HIA focus groups agreed that **bus routes in Concord need a higher frequency and longer hours**, noting that **bus service is not available in all neighborhoods, residents often wait a long time for buses to arrive**, and **many routes stop service before 8:00pm**. Other recommendations by focus group participants were:

- To install more bus stops (i.e., on every block) and bus shelters;
- Reduce bus fares to attract more users who might be on tight budgets (i.e., students and populations with low incomes);
- Invest in smaller shuttles with more frequent service rather than spend resources on large buses and less frequent service;
- Offer free shuttle rides to public services and events;
- Introduce environmentally-friendly buses; and
- Ensure that buses stick to posted schedules.

In addition, at least one participant brought up the lack of high-quality customer service on some buses, adding that elderly people in particular would like to feel comfortable and safe riding the bus.

Vehicle Miles Traveled

Evidence Linking Vehicle Use to Health

Use of personal motor vehicles affect health through impacts on air quality, environmental noise, and greenhouse gas emissions. Motor vehicles produce fine particulate matter, nitrogen oxides, carbon monoxide, and volatile organic compounds, contribute to tropospheric ozone, and emit air toxics, such as diesel exhaust. The following health conditions are caused by or exacerbated by air emissions and noise from vehicles:

- Particulate matter from roadway vehicles exacerbates cardiovascular disease and asthma leading to hospital visits and premature death.[43] Ozone is a respiratory irritant that exacerbates asthma and impairs lung development. Children living next to busy roadways have more respiratory disease symptoms and reduced lung function measures.[44] [45] [46]
- The state of California has estimated that 70% of the cancer risk from the air we breathe is attributable to diesel PM. Due to a combination of lagging emission

standards, the long life of the diesel engine, and the high number of miles each truck travels, diesel trucks are the largest emitter of diesel PM in the state.

- Other health impacts from diesel trucks include acute bronchitis, heart and lung disease, asthma and other respiratory symptoms. The ARB has estimated that diesel pollution from trucks and buses alone will be responsible for 4,500 premature deaths in California in 2008.[47] [48]
- Moderate levels of vehicle-generated noise significantly affect sleep, school and work performance, temperament, hearing impairment, blood pressure, and heart disease.[49] [50] Road traffic noise is a function of vehicle volume, vehicle speed, vehicle type, and road conditions.
- Motorized transportation accounts for a large and growing share of the country's greenhouse gas emissions. Climate change in turn threatens to have global and catastrophic effects on health through the environmental changes it creates, which include more frequent extreme weather events, flooding, species loss, changes in food production, increases in waterborne and food-borne illnesses, and increases in the vectors of infectious diseases. Two recent California bills aim to reduce greenhouse gas emissions: Assembly Bill 32, the "Global Warming Solutions Act of 2006," requires that by 2020 the state's greenhouse gas emissions be reduced to 1990 levels, which is a roughly 25% reduction under business-as-usual estimates. Senate Bill 375 establishes carbon reduction standards as part of a comprehensive land-use reform, and includes incentives and requirements to encourage local governments and builders to concentrate growth in urban areas or close to public transportation.

Worldwide, traffic injuries are the single greatest cause of disability and death between ages of one and 40.[51] Over 42,000 people have died on US roads since 2002,[52] and pedestrians account for 11% of all motor vehicle deaths.[53] Getting cars off the road would help to reduce traffic collisions and associated injuries and fatalities.

The more time a person spends in a car, the less time he/she has to engage in physical activity.[54] A study in the US showed that each additional hour spent in a car per day was associated with a 6% increase in the likelihood of obesity. Each additional hour walked per day was associated with a 4.8% reduction in the likelihood of obesity.[55] In a study in California 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.[56]

Traveling to and from work is the greatest cause of stress for many people. In a study of 900 working women in Texas, respondents rated commuting as the activity that gave them the least amount of happiness.[57]

Driving can lead to musculoskeletal pain. Time spent in a car driving is associated with between 1.6 and 2.8 times higher odds of having shoulder pain when compared to those who spend less time in a car.[58]

Projected Vehicle Miles Traveled

Table 4-6 presents Vehicle Miles Traveled (VMT) for Alternatives 2, 5, and 6.

Table 4-6. Daily Vehicle Trip Summaries for Alternatives 2, 5, and 6

Scenario	Household Population	Employment	Daily Vehicle Trips	Average Trip Length (Miles)	VMT (Vehicle miles traveled per day)	Daily VMT/Service Population *
2030 No Project	--	--	16	10.80	173	--
2030 Alternative 2	30,573	29,774	182,460	10.74	1,959,155	32.5
2030 Alternative 5	22,327	23,980	131,125	9.84	1,289,757	27.9
2030 Alternative 6	18,073	21,245	139,464	10.49	1,463,544	37.2

Source: ARUP (prepared for the City of Concord), May 2008. Concord Community Reuse Plan, Draft Environmental Impact Report. (EIR analysis was based on Contra Costa Transportation Authority [CCTA] modeling)
* Service population does not include students of the proposed California State University – Concord Campus. Thus, values in this column may be higher than they would be had the student population been included.

According to the 2030 CCTA travel demand model used in the DEIR, of the three alternatives considered in this analysis, **Alternative 5 would produce the lowest total daily VMT as well as the lowest VMT per service population.** The development pattern proposed in Alternative 5 is compact and concentrated in the northwest region of the site, with the majority of housing located within 1.1 miles of the North Concord/Martinez BART Station and all housing located within 2 miles of the BART Station. Because more people are willing to use transit when it is closer to home,[59] when compared to the other development alternatives, housing associated with Alternative 5 would be more easily served by transportation options besides cars.

Alternative 2, for which 52% more total daily VMT and 16% higher daily VMT per service population are expected, includes the highest increase in population, a lower residential density, and the most sprawling housing developments of the three alternatives examined. Housing for this Alternative is proposed as far as five miles away from the North Concord/Martinez BART Station. As stated above, many residents are not willing to walk over a half mile to reach public transit. Thus, residents living five miles away from a BART Station may choose to drive their car rather than use multiple forms of public transit to reach their destination.

According to the model, Alternative 6 would produce 13% more daily VMT and 33% higher VMT per service population compared to Alternative 5. Including housing as far as 2.5 miles from the BART Station, Alternative 6 is associated with development that is not accessible by BART. This explains the higher VMT forecasted for this alternative relative to Alternative 5. However, it is unclear why Alternative 6 is not associated with even lower

VMT values with respect to Alternative 2. According to EPA research, the average resident in a compact neighborhood will drive 20 to 30% less than residents of a neighborhood that is half as dense.[60] Adapting that logic to this discussion, development alternatives with higher residential densities should be associated with lower VMT. Alternative 6 is 14% more residentially dense than Alternative 2, and thus this Alternative 6 should produce far less total VMT and VMT per resident than would Alternative 2.

Modified Alternatives
Concentration and Conservation Modified Alternative and the Clustered Villages Modified Alternative were not included in the EIR VMT analysis, and therefore, VMT projections for these alternatives are unknown. However, according to the evidence presented above which indicates that people living in denser areas drive less, **the Concentration and Conservation Modified Alternative which proposes more dense and compact development is expected to produce less VMT than the Clustered Villages Modified Alternative, which proposes less dense and compact development.**

Community Perspectives on Vehicle Transit
Many Concord residents feel that transportation conditions in their city prioritize car travel over pedestrian travel. Generally speaking, one Concord resident expressed her opinion that a healthy transportation environment would be a neighborhood that is "*designed so that people can get to a grocery store, get where they need to go, without their car.*"[61]

Twenty-nine percent of those surveyed reported that air quality is a priority issue that should be addressed. Because vehicles cause about half of California's air pollution, this community concern is tied to vehicle use.

One focus group participant voiced his/her priority to decrease reliance on automobiles, and another suggested that the city promote alternative modes of transportation such as walking, bicycle-riding, and public transit. But as one woman expressed, a broad shift in transit choices in her community could be challenging: "*We're so spread out, we're all used to getting in our cars and going places. So this is a really hard task to reorient people to use transit. We're so car oriented.*"

D. Health-Promoting Mitigations for Transportation and Walkability

Based on evidence linking transportation and walkability to health, three focus group discussions with Concord residents, and information and guidelines presented in the Draft EIR and other resources (see Appendix A), we recommend the following mitigations for transportation and walkability at the CNWS Reuse Project site:

Pedestrian and Bicycle Facilities

- *Design Guidelines in Accordance with Concord Trails Master Plan[62], Concord 2030 General Plan[63], and the Concord Community Reuse Project Planning Framework.[64]*
    - **Include design features that increase the safety of pedestrians and bicyclists adjacent to roadways**, such as street lighting, crosswalks, guidance signs on trails and roadways, pavement markings, and bollards (large posts), at all new CNWS Site intersections and modified existing intersections.

  - With the goal of slowing vehicle traffic to create a safer pedestrian environment, **traffic-calming features should be implemented at new CNWS Site intersections** and modified existing intersections, such as narrow street widths, raised speed tables at crosswalks, bulb-outs, speed bumps, and enforcement of vehicle speed limits.
  - In order to make pedestrian and bicycle paths attractive to users, **aesthetic features should be included in pedestrian and bicycle trail/path designs for new CNWS Site intersections** and modified existing intersections, such as trees and landscaping.
  - **Bike paths should be separated from roadway**s if possible.
  - If possible, to increase visibility to and separation from vehicle traffic, **bike and/or pedestrian paths at new CNWS Site intersections and modified existing intersections should include a minimum width of 10 feet** or two separate 8-14' wide paths for pedestrians and bikes separated by landscaping.
- *Other Design Recommendations*
  - Include adequate **network of bike lanes** and/or bike paths integrated into new roadway designs with connections to regional bike routes.
  - Avoid pedestrian and bicycle crosswalks at un-signalized intersections.
  - **Include storefronts adjacent to sidewalks for easy access by pedestrians** (as opposed to storefronts set behind parking).
  - **Provide bike racks and electronic bicycle lockers at the BART Station and retail centers** to enable secure and weather-protected bike parking for many users.
  - To accommodate non-motorized traffic into and within the CNWS Site, **create greenways or other routes that are extremely pedestrian and bicycle friendly** and that discourage vehicle use. For example, a network of greenways could be oriented toward the CNWS Site from various points around the city, and if the Clustered Villages Modified Alternative is selected, greenways could connect villages to one another.

<u>Public Transit Facilities</u>

- **Development alternatives that increase BART ridership the most should be prioritized**. Of the two Modified Alternatives now being considered, the Concentration and Conservation Modified Alternative is assumed to be associated with the highest projected BART ridership in 2030.
- In order to support the use of public transit use, residential density should be maximized within a half-mile of the North Concord/Martinez BART Station and town center. **Residential densities of between 20 and 30 units per acre are appropriate for the CNWS site** (see Housing Chapter).
- To protect air quality for housing residents in this area, **either housing should be separated from freeways by at least 500 feet,[65] or residential ventilation mitigations should implemented**.
- **High-quality and high-frequency bus routes** with all-night service (or at least until midnight to allow residents a transit option to and from BART during BART operating hours) should be implemented.

- **A dedicated bus lane along major streets within the site**, with orientation towards a Transit Center at the North Concord/Martinez BART Station, should be implemented regardless of which alternative is selected.
- In order to make bus service more efficient, implement pre-board bus ticketing.
- **Weekend bus service into and out of the CNWS Site**, including stops at new parks within the site.
- Implement a discount bus pass program at local schools.
- Encourage developers to provide free bus passes for particular populations (e.g., affordable housing residents and/or seniors).
- **Reduce bus fares or provide reduced-price multi-use bus passes**.
- Implement a program that pairs seniors with volunteer escorts who provide personalized bus training to improve confidence and familiarity with the system (e.g. "bus buddy" or "transit ambassador" programs in Santa Rosa and Napa County).
- An ongoing community assessment for transit use should be conducted to assess transit needs.
- Because these transit services are considered a crucial resource for health and wellbeing, a transit service financing strategy (e.g. linked to a development fee) is recommended for covering the costs.
- **Incentives should be provided to transit users from the City of Concord or employers**.
- Create or enhance public transit along existing routes to reduce vehicle congestion and air quality impacts by providing an additional mode of transport besides driving.
- Create or enhance public transit along existing routes to provide access for existing Concord residents to attractive features on the site (i.e. parks, community centers, schools, shopping centers, etc.).
- **Shuttle service** should be considered to provide transportation between the following destinations:
    - BART and CNWS Site during construction phase
    - Residential neighborhoods within site and BART station/town center
    - Town center within site and healthcare facilities
    - To and from senior centers and youth centers

<u>Reduction of Vehicle Miles Traveled</u>

- **Recommendations for improving pedestrian/bicycle facilities and public transit will also serve to reduce VMT**. Please refer to those recommendations.
- Development alternatives that have been found by modeling to generate the least VMT per service population should be implemented.
- In order to reduce driving, **residential density should be maximized within a half-mile of the North Concord/Martinez BART Station and town center**.
- **Prioritize housing for low-income residents and seniors in the CNWS Reuse Project**, particularly in the TOD area surrounding the North Concord/Martinez BART Station. These populations are likely to walk or use public transit rather than drive.
- **Offer temporary and long-term jobs on the CNWS Site to local residents**.
- **Implement parking fees at transit and retail centers** to discourage driving, encourage walking and biking, and raise funds for pedestrian and bicycle infrastructure.
- Create a Transit Management Authority to **monitor progress in reduction of VMT** and other transportation objectives. Funds could be raised through parking fees.

Reducing VMT During Construction of CNWS Reuse Project Site

- In order to reduce VMT associated with workers traveling a long distance to get from other communities to their jobsite, **hiring local employees** to staff the construction phase of the CNWS Reuse Project site development is recommended.
- Provide **preferential parking for carpool vehicles** during site construction phase.
- Implement **parking fee for single-occupancy vehicle commuters** that could be used for pedestrian and bicycle infrastructure.
- Implement **parking cash-out program for non-driving construction employees** and city employees who use the CNWS Reuse Project site.
- **Provide a shuttle between public transit stops and the construction site**.

E. Conclusions

Based on a comparison of health effects mediated through transportation systems, **alternatives proposing dense and compact development (i.e. Alternative 5 and the Concentration and Conservation Modified Alternative) are likely to lead to the healthiest outcomes**. As compared to the other alternatives, Alternative 5 and the Concentration and Conservation Modified Alternative are expected to lead to the greatest BART and bus ridership. Denser, more compact development would encourage new residents and employees of the CNWS Reuse Project to walk rather than drive, and thus benefit from more physical activity and reduced risk of heart disease, diabetes, and many other ailments brought on by obesity and overweight. **These alternatives would decrease reliance on cars, which would result in a better air quality and by extension, lower the incidence of health problems such as respiratory diseases. On a broader scale, a movement towards reducing societal reliance on cars may eventually reduce unintentional injuries associated with vehicle collisions**.

Regardless of the development plan selected, high-quality bus service should be provided between residential neighborhoods and the North Concord/Martinez BART station. In addition, measures should be taken that prioritize a safe, accessible, and enjoyable pedestrian environment.

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Concord Naval Weapons Station Reuse Project
Health Impact Assessment
Access to Retail & Public Services Summary

Residents need access to certain retail and public services in order to be able to make healthy choices in their lives. The proximity of goods and services to where people live and work helps determine whether people use them, how often, and what form of transportation they use to get to them (e.g., active or inactive).

This analysis considered the effects of the CNWS Reuse Project on health through its effects on access to retail and public services. Currently there is a large gap in existing Concord residents' access to healthy retail, particularly in the Monument area where there are a disproportionate number of unhealthy retail food stores. The CNWS Reuse Project has the potential to offer current and new residents a mix of healthy retail goods and public services. Specific retail and community establishments that are to move into the CNWS site are unknown, which makes it difficult to judge corresponding values to community health. Based on an analysis of land area devoted to retail in various CNWS Reuse Project proposals, we conclude that to have a positive impact on health:

1. **Retail centers and community facilities should be focused at the North Concord BART station and also distributed throughout the development to ensure that most residents live or work within a half-mile of these amenities.**
2. **Healthy goods and services, such as affordable food, locally owned grocery businesses, affordable clothing, community centers, libraries, and schools should be offered at the CNWS site. Fast food outlets and liquor stores should be minimized.**

These health-related objectives are well aligned with goals and guiding principles detailed in the Concord Community Reuse Project Planning Framework (adopted by City Council in August, 2006).

Access to Neighborhood-Serving Retail: Conclusions & Recommendations

Based on proposed land area allocation for retail centers within residential neighborhoods and at the North Concord BART Station, we conclude that **development proposals which include high residential density at the BART station mixed-use area (i.e., the Concentration and Conservation Modified Alternative) and that place neighborhood retail centers within a half-mile or less of all homes and/or workplaces would be beneficial to health.** Health will be impacted by access to neighborhood retail in the following ways:

- Complete neighborhoods with integrated public and retail services increase physical activity by making everyday retail destinations accessible by walking;
- The presence of a supermarket in a neighborhood predicts higher fruit and vegetable consumption and a reduced prevalence of overweight and obesity;
- A vibrant neighborhood retail environment is one type of setting for social interaction, which can lead to more community cohesion and can prevent crime; and
- Complete neighborhoods with adequate retail and public services in close proximity to residents' homes can reduce dependence on cars for every day needs, which in turn can reduce health impacts related to air pollution and noise.

CNWS Reuse Project HIA - Retail & Public Services

Access to Neighborhood-Serving Retail: Conclusions & Recommendations, continued

Health-Based Recommendations

1. **90% of new residents should be within a ½-mile of a neighborhood center** that includes retail, community centers, and schools.
2. **Maximize residential density within a ½-mile of the North Concord BART Station**.
3. **Developers or the City of Concord should conduct a community needs assessment regarding retail needs** of existing residents and use results to recruit neighborhood serving retail.
4. **Transit options, such as a shuttle service or additional bus lines, should be incorporated into the transit service plan** for the project to aid in accessing retail goods.
5. **Recruit food markets that offer healthy foods** such as large supermarkets and produce markets.
6. **Limit the density of unhealthy food retailers** such as chain fast-food establishments, convenience stores and liquor stores through zoning codes or other regulations.

Regional Retail: Conclusions & Recommendations

A large regional retail development has been proposed for the CNWS Reuse Site, to be located along Highway 4 near the Diablo Creek Golf Course. **This is not expected to improve community health**. A large shopping center along a freeway that caters to the regional Bay Area market would *not* be expected to:

- Encourage walking and bicycling, which are important forms of physical activity;
- Reduce driving, which would decrease multiple health impacts including those related to air pollution; or
- Provide access to healthy goods and services for populations that do not own vehicles.

Health-Based Recommendation

1. **Select an alternate location for a shopping center**, such as one integrated within the city infrastructure and that would serve Concord residents and employees in addition to regional visitors.

Community & Educational Facilities: Conclusions & Recommendations

At this stage it is not known what community facilities will be offered at the CNWS site, so value to community health is difficult to predict. **Residential access within a half-mile to community/educational facilities (schools, senior and cultural centers, libraries) leads to positive health outcomes because:**

- Public spaces for holding meetings, after school activities, political engagement, and adult education would increase social cohesion and reduce crime, which improves health and well-being; and
- Accessible public schools would allow students to travel by walking, bicycling, or convenient bus routes.

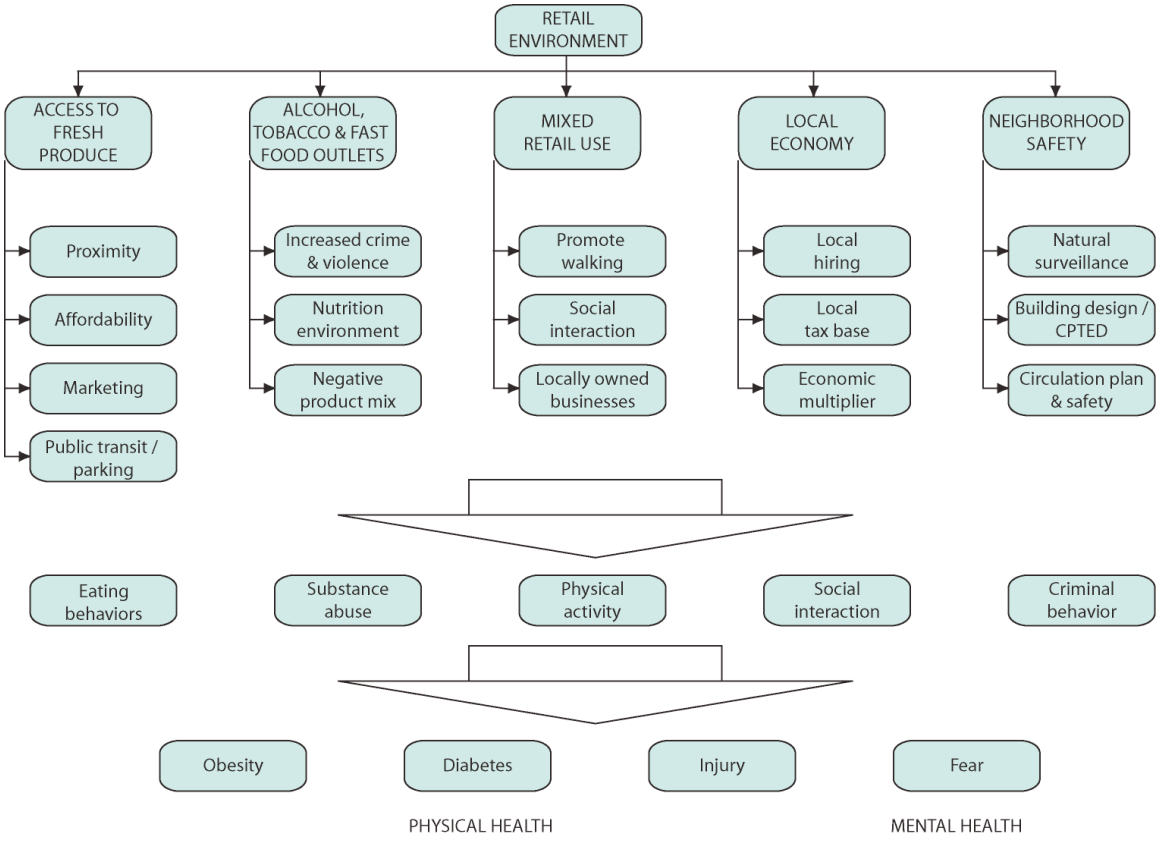
Health-Based Recommendations

1. **A community needs assessment should be conducted to identify specific public service needs** of Concord residents that could be fulfilled by this project. A **Community Benefits Agreement** could specify locations that could be set aside for specific identified uses.
2. **Residential areas should be located within a half-mile of a public elementary school** and within 30-minute public transit access of a middle school and high school.
3. **Transit options, such as a shuttle service or additional bus lines, should be incorporated into the transit service plan for the project to aid residents in accessing community services**, especially to regional health care centers such as the Contra Costa Regional Medical Center in Martinez.

Concord Naval Weapons Station Reuse Project
Health Impact Assessment
Chapter 5
Access to Retail and Public Services

Health Pathways

This analysis considered the effects of the CNWS Reuse Project Alternatives on access to goods and services for residents, employees, and visitors to the site. The types of retail that a city encourages to locate in an area, as well as the public services that are made available, can impact the choices that residents make. The following pathway diagram depicts the relationship between access to goods and health.



A. Introduction

Residents need access to certain retail and public services in order to make healthy choices in their lives. The proximity of goods and services to where people live and work helps determine whether people use them, how often they use them, and what form of transportation they use to get there (e.g., active or inactive).

Examples of retail and public services that impact health include food-related businesses (e.g., full-service supermarkets, small grocery stores, convenience stores, farmers markets, restaurants, cafes, fast food establishments, liquor stores, and bars), other retail (e.g., pharmacies, bookstores, specialty shops, hardware stores, and auto supply stores), and

services open to the public (e.g., dry cleaners, laundromats, banks, credit unions, check cashers, beauty salons, hotels/motels, maintenance services, entertainment, auto repair, healthcare, schools, libraries, and post offices).

At this stage of the CNWS Reuse Project site planning process, specific sites, quantities, and types of retail outlets and public services have not yet been proposed. Therefore, this analysis relies on quantities of land area that each Alternative devotes to retail and community facilities. This analysis also considers existing gaps in retail and public goods and services, and identifies corresponding recommendations for fulfilling those gaps.

This assessment sought to answer the following questions about retail and public services:

- *Does the project have a mix of uses that provide access to services and amenities for a diversity of Concord residents?*

- *How will the land use pattern and density promote walking and biking? Does this also recognize needs of a diversity of populations?*

B. Existing Conditions

Existing On-Site Retail and Public Services

According to CNWS Reuse Project planning documentation, there are no existing retail and services at the CNWS Site itself. Additional retail and public services will certainly be needed to accommodate incoming residents.

Appendix D details chronic disease levels in Contra Costa County and in Concord. Many of these diseases have been associated with available retail and service opportunities, such as those described here.

Local Shopping Centers

Many suburban shopping centers or "strip malls" include retail businesses such as grocery stores, video stores, dry cleaners, restaurants, clothing stores, pharmacies, coffee shops, gas stations, banks, electronics stores, home improvement stores, and gift shops. Clearly, some of these retailers provide essential items for health (e.g. healthy food, pharmacies, and clothing), while others are less critical for health (e.g. video stores, and gift shops). According to a Preliminary Market Assessment conducted for the CNWS Site by CBRE Consulting, Inc., there are five major shopping centers in the City of Concord, and four more in areas surrounding the city.[1] With the inclusion of neighborhood shopping centers intended to serve populations who live and work nearby, there are 22 in total.[2] Table 5-1 and Figure 5-1 show locations of main shopping centers in Concord (as identified by the City of Concord).

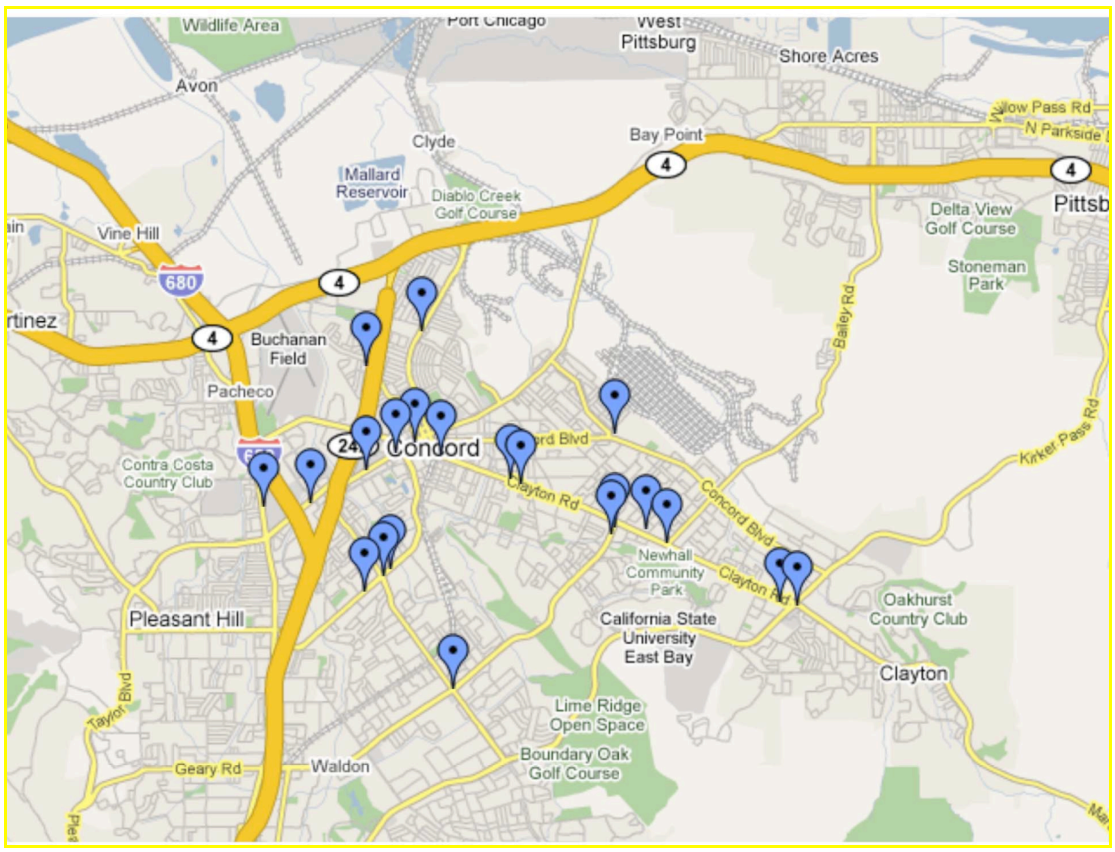
Table 5-1. Shopping Centers in Concord

Name of Shopping Center	Address*	Major Tenants (if known)	Square Footage (if known)
Chestnut Square	3425 Chestnut	--	--
Clayton Fair	5356 Clayton Road	--	--
Clayton Valley Shopping Center	5400 Ygnacio Valley Road	Yardbirds, Longs, Peets, Bank of America	243,000
Concord Terminal Shopping Center	2689 Clayton Road	Big 5 Sporting Goods	--
Dana Plaza	Concord Road and Landana Dr	Dana Foods	--
Dianda Plaza	4511 Clayton Rd	--	--
El Monte Shopping Center	3509 Clayton Road	Sports 4 All	--
Estates Shopping Center	2150 Solano Way	--	--
Food for Less Shopping Center	Monument Blvd and Meadow Lane	Food for Less	--
Heritage Square	1150 Concord Avenue	Ashley's Furniture, Trader Joe's	--
Monument Plaza	1500 Monument Blvd.	Safeway	--
Oak Grove Plaza	Oak Grove Road and Treat Blvd	--	--
Olivera Crossing	3375 Port Chicago Plaza	Bill's Ace Hardware, Starbucks	53,050
Orchard Supply Plaza	2050 Monument Blvd.	Orchard Supply	--
Park 'n' Shop	1675 Willow Pass Road	Burlington Coat Factory, Fry's Electronics	425,000
Sports Chalet Plaza	1280 Willow Pass Road	Sports Chalet, Guitar Center	--
Staples Shopping Center	4498 Treat Blvd	Staples	--
Sunvalley Mall	One Sunvalley Mall	Sears, Macy's JC Penney	1.4 million
T.J. Maxx Center	4673 Clayton Road	T.J. Maxx	--
Todos Santos Plaza	Willow Pass and Grant Street	Peet's, Sway, Half-Price Books, Starbucks	--
Treat Plaza	4425 Treat Blvd.		--
Willows Shopping Center	1975 Willow Pass Road	REI, Cost Plus, Old Navy, Any Mountain	284,000

Source: City of Concord

* Some addresses were approximated using online research and Google maps

Figure 5-1. Approximate Locations of Major and Neighborhood Shopping Centers in Concord



Sources: City of Concord, Google Maps.

Public Services

There are four post offices and four police stations in the city, and 30 fire stations in the county. The main branch of the Concord Library is located approximately two miles southwest of the North Concord BART Station, which is at the western border of the CNWS Site. Approximately 13 community centers were identified throughout the city.[3] A few museums and art galleries were identified in Concord, which are mostly located in the downtown area. Several places of worship were found using a Google Maps analysis.[4] One community garden was identified in Concord, and is about 3.5 miles southeast of the North Concord BART Station.[5] Within a ½ mile of the Monument area, there are 2 police stations, one fire station, 0 post offices, 2 specialty libraries, and 3 community centers. Parts of the Monument are closer to downtown Concord, which increases access to post offices, museums, and the main library.

Healthcare Facilities

If the center of the proposed development area of the CNWS Site is defined as the approximate midpoint on Willow Pass Road between Landana Drive and Highway 4, there are four licensed healthcare facilities within a two-mile radius. These include two skilled nursing facilities and two home health agencies. When the radius is expanded to five miles, there are 32 facilities, including general acute care hospitals, hospices, community clinics,

surgical clinics, a psychology clinic, chronic dialysis clinics, skilled nursing facilities, and home health agencies. Several of these facilities are clustered around the intersection of Highway 242 and Concord Boulevard.[6]

The Monument neighborhood has very little access to healthcare facilities. According to a 2002 report by Transportation and Land Use Coalition, **no (0%) Monument residents live within a 30-minute transit travel time or half mile walk from a hospital, and only 1% reside within this travel time and distance from a community health clinic.** Even though Mt. Diablo Medical Center is less than a mile from the edge of their neighborhood, Monument residents cannot reach it in a reasonable time on either of the two bus routes that traverse their neighborhood due to the bus stopping at the BART station. In addition, close to 18% of Monument residents do not own a vehicle, compared to six percent countywide. The lack of access by foot or bike or access by transit means that Monument residents who do not own a car currently have a significant barrier to seeking care, getting to appointments on time, or obtaining care before a condition deteriorates and requires emergency attention.[7]

Retail Food

Supermarkets (Healthy Retail Food). Using the same point of reference as that defined above, there are seven "general grocery" stores within a two-mile radius. Six of these are to the south, five of which are on Willow Pass Road and one of which is on Concord Boulevard. The seventh is north of Highway 4 in Pittsburg. Based on their names and classifications within the California Nutrition Network Map Viewer, at least two are independently owned and three have names indicating Mexican foods. One is classified as a retailer of alcoholic beverages in addition to groceries, and thus could be primarily a liquor store.

When the radius is expanded to five miles, there are 64 general grocery stores. Within three miles, there are 22. These include large chain grocery stores like Safeway and More for Less, and four have over 20 employees, indicating that they are large stores.[8] Large chain supermarkets are more likely to have a large selection of foods including healthy food options.

With between 18,000 and 30,600 new residents at the CNWS Site,[9] there will be a great demand for additional retail outlets at the site selling affordable and healthy food.

Farmers' Markets (Healthy Retail Food). There are two farmers' markets in Concord, both located at Todos Santos Park: one is on Tuesdays at 10am – 2pm and is year round, and the other is on Thursdays at 4-8pm and is open between May and October.[10] Todos Santos Park is located approximately 3 miles from the North Concord BART Station, which is approximately the western border of the Concord Reuse Site. Other nearby farmers' markets are located in Walnut Creek, Pleasant Hill, Martinez, Pittsburg, and Orinda.

Fruit and Vegetable Markets (Healthy Retail Food). There is just one fruit and vegetable market within a two-mile radius, and is located on Willow Pass Road just south of the site. Within a five-mile radius, there are four.[11]

Food Stamp and WIC Vendors (Unknown Quality Retail Food). WIC, the Women, Infants, and Children program, is a nutrition program that helps pregnant women, new mothers and

young children eat well and stay healthy. WIC issues vouchers to buy healthy foods such as milk, juice, eggs, cheese, cereal, dry beans and peas, and peanut butter, and fresh produce at participating WIC vendors.[12] No WIC vendors were reported within a two-mile radius of the site, but within a 5-mile radius, 14 were reported.

The US Food Stamp Program is a federal assistance program that provides food to low- and no-income people living in the United States. There are four retail food stores that accept food stamps within a two-mile radius. However, these include a 7-Eleven, another convenience store that also sells liquor, and a gas station market. Only one of the four, listed as a small grocery store, has the potential for selling healthy food. There are 83 retail food stores that accept food stamps within a five-mile radius.[13]

Fast Food (Unhealthy Retail Food). Using the same point of reference as that used previously, there are five fast food and pizza restaurants within a two-mile radius of the site. Within a five-mile radius, there are 106 fast food, pizza and sandwich restaurants. Most of these are located south of the site, along the 680 Freeway, Highway 242, Clayton Road, and Concord Boulevard.[14] While fast food outlets are generally considered to offer unhealthy retail food, it is important to note that healthy food options are offered at some fast food restaurants.

Convenience Stores (Unhealthy Retail Food). There are two convenience stores within a two-mile radius. Both are branches of the 7-Eleven chain and are considered here to be unhealthy retail food outlets. When the radius is expanded to five miles, there are 28 convenience stores. Included in this list are liquor stores, gas station mini-markets, and chain stores like 7-Eleven and Beverages and More. Many are clustered on Monument Boulevard.[15] While categorized as unhealthy in this analysis, convenience stores have the potential to offer healthy foods as well, particularly if they are locally owned and thus have more control over what products are offered.

Below, Table 5-2 presents the quantities of healthy and unhealthy food outlets in the vicinity of the CNWS Site.

Table 5-2. Number of Retail Food Outlets within 2-Mile and 5-Mile Radius of Site

	Two Mile Radius	5 Mile Radius
Healthy Retail Food		
Supermarkets	7	64
Farmers Markets	0	2
Fruit and Produce Markets	1	4
Unknown Quality Retail Food		
Food Stamp and WIC Vendors	4	97
Unhealthy Retail Food		
Fast Food Establishments	5	106
Convenience Stores	2	28

Retail Food Environment Index. In order to evaluate the existing retail food environment in Concord, the Retail Food Environment Index (RFEI)[16] was calculated for each census tract

in the city. The California Center for Public Health Advocacy (CCPHA) developed the RFEI to evaluate the distribution of retail food outlets throughout the state of California. CCPHA compiled an inventory of supermarkets, produce vendors, convenience stores and fast-food restaurants in large California cities and counties. The RFEI is defined as the ratio of the number of outlets of unhealthy food (i.e., fast-food establishments and convenience stores) to the number of healthy food options such as fruits and vegetables (available at grocery and produce stores). Thus, *the higher the RFEI index, the more likely consumers will find unhealthy food options.*

HIP obtained the dataset for Concord's healthy and unhealthy retail outlets from CCPHA.[17] Using the same methodology used by CCPHA, HIP calculated RFEIs for Concord as a whole as well as each census tract within the city. Results are described below.

The RFEI for Concord overall is 4.44, which indicates that there are 4.44 times more unhealthy food outlets, such as fast food establishments and convenience stores, than there are healthy food retailers such as supermarkets, produce stores, and farmers' markets. Contra Costa County's RFEI is slightly higher at 4.67, while the state's overall score is lower (4.18).

With RFEIs above 5, the unhealthiest scores are found in census tracts bordered by Clayton Road to the north, Monument Boulevard to the west, and Kirker Pass Road to the east. Confounding this situation in 2000, these tracts had unemployment rates that were among the highest in the city (7-10%), median household incomes between 50 and 80% of the area median income (AMI)(defined as "low income" by the state), and 4-12% of these households had no vehicle.[18] Thus, in addition to not having geographical access to healthy foods, many people in these census tracts also have reduced opportunities to make healthy nutritional choices due to lacking financial resources and/or not owning a car to efficiently transport them to healthier retail food environments.

Even some of the census tracts in this area where households earn between 80 and 120% of the AMI, ("moderate income" for the area) and where nearly every household (over 96%) owns a car, there are no retail stores at all. While most of the residents living in these tracts have financial and transportation resources with which to travel into other areas to buy food, closer access might improve health by allowing them to exercise, reduce stress, increase social interactions, and reduce air pollution while traveling to the grocery store (see Chapter 3 on Transportation). The lack of availability of retail stores may be a particularly important issue for children and seniors who have less access to private motor vehicles.

Census tracts in Concord with the lowest (most healthy) RFEI scores are primarily located on either side of Highway 242 in the west side of the city. In most of these tracts, RFEI scores range from 1 to 4. Even in many of these census tracts, unhealthy food choices far outnumber healthy food outlets.

Of the six Concord census tracts that border the CNWS Site, there is only one healthy food outlet and six unhealthy food establishments.[19] As of 2000, these census tracts were home to 40,818 people.[20] These residents, who currently live adjacent to the unoccupied CNWS Site,

are living in what can be considered a "food desert,"[21] or an area where affordable and nutritious foods are virtually inaccessible. The CNWS Reuse Project Site has the potential to fulfill some of this existing demand for accessible healthy retail food.

Retail Food in the Monument Community. The California Department of Public Health - Cancer Prevention and Nutrition Section has been monitoring and implementing nutrition interventions for over 15 years. The California Nutrition Network Communities of Excellence in Nutrition, Physical Activity, and Obesity Prevention or "CX3" program is one of these interventions.[22] CX3 has a planning framework that examines communities in relation to a variety of obesity prevention benchmarks. These benchmarks are set for the prevention and reduction of chronic diseases related to overweight and obesity. The CX3 process consists of a survey completed every three years to identify areas in need of improvement in certain very low income communities identified by state and local health departments. Communities are surveyed regarding a spectrum of categories including healthy and unhealthy food availability, food marketing, and walkability. The Monument Community is a community that is being monitored in this way. The most recent CX3 data from the Monument Community[23] was reviewed for this assessment and is summarized below.

According to the CX3 report, there are two supermarkets within or on the border of the Monument neighborhood. According to CX3, only sixty-four percent of Monument residents live within a half-mile of a supermarket,[24] which is a benchmark distance for healthy access to supermarkets.[25] While many Monument residents have access to a supermarket within a half-mile, neither of the two supermarkets offers a nearby transit or shuttle service for residents who are unable to walk this distance (e.g., children and seniors) or who live outside of this radius.

Several CX3 criteria measure accessibility of food outlets, including acceptance of WIC vouchers and food stamps, the range of healthy foods offered, prices, marketing strategies, and safety of surrounding streets. Only 28% of supermarket chains, large grocery stores, small markets, and convenience stores in Monument accept WIC and food stamps. Thirty-nine percent sell a range of quality fruits, 44% sell a range of quality vegetables, and 39% sell a range of other healthy foods. Fifty-five percent of food stores in Monument sell fruit and vegetables at prices less than 10% above the county average. Forty-four percent of stores are considered to be on safe and walkable streets. The majority of Monument's retail food outlets do not employ healthy marketing practices such as visible signage in interiors and exteriors of the store, participation in a state-sponsored retail nutrition program, or offering nutrition information and promotion.[26]

There are ample opportunities for unhealthy eating in the Monument neighborhood, including near public schools. The CX3 results report that there are 17 fast food outlets in the neighborhood, which makes for a 1:956 ratio of fast food outlets to population. Three of these fast food outlets are within 1,000 feet of a school, and 11 are within a half-mile of a school. With two schools in the neighborhood, within a half-mile, there is an average of six fast food outlets per school.[27]

The RFEI calculated in the CX3 report for the Monument neighborhood is 5.7.[28] This

means that there are nearly six times the number of fast food restaurants and convenience stores as supermarkets and produce vendors in this neighborhood. The RFEI for the Monument neighborhood is 1.3 times higher than the RFEI for Concord, 1.2 times higher than that for Contra Costa County, and 1.4 times higher than the state's RFEI.[29]

Overall, the CX3 report indicates a great need for more healthy and accessible food choices for residents of the Monument community. CNWS Reuse Project development alternatives that offer healthy, high-quality food that is accessible to all Concord residents in terms of proximity, public transit, and affordability, have the potential to promote opportunities for improved nutrition and health in Concord communities including the Monument neighborhood.

Schools

There are 51 public schools in Concord. California State University – East Bay includes a Concord Campus, which offers exclusively upper division, graduate, credential and certificate instruction and is located approximately two miles south of the CNWS Site.[30]

Other Services

There are several childcare facilities, laundromats, drug stores, pharmacies, and banks throughout the city.[31]

C. Analysis of Retail and Public Services Impacts at CNWS Reuse Project Site

Evidence Linking Access to Retail and Public Services to Health

Complete neighborhoods with integrated public and retail services as well as quality pedestrian environments can increase physical activity by making everyday retail destinations accessible by walking.[32] A San Francisco Bay Area study looking at non-work related trips in four neighborhoods, controlled for socio-economic status, found that proximity and mix of retail as well as having many quality destinations and modes of transport choices are some of the most influential factors in people's decisions to walk.[33] Several studies have shown that a majority of people get their groceries from locations that take 5-10 minutes to reach, and are 0.4 – 0.9 miles away.[34] Physical activity has been associated with various health benefits including reductions in premature mortality, the prevention of chronic diseases such as diabetes, obesity, and hypertension, and even improvements in psychological wellbeing.[35] [36]

The presence of a supermarket in a neighborhood predicts higher fruit and vegetable consumption and a reduced prevalence of overweight and obesity.[37] [38] Diet-related disease is one of the top sources of preventable deaths among Americans,[39] with the burden of overweight and obesity falling disproportionately on populations with the highest poverty rates.[40] A lack of supermarkets can lead to smaller stores being the main source of local groceries, or the need to drive to get groceries. Smaller retail food stores typically charge about 10% more for products than supermarkets.[41] Many such stores have less or no fresh produce available, and offer more processed foods. However, there is room for improvement for smaller neighborhood markets, especially for those that are locally owned and thus have more freedom to offer more healthy and fresh food options.

Having a supermarket in close proximity to one's residence leads to healthier eating and a healthier body weight. One study conducted in Los Angeles County concluded that longer distances traveled to grocery stores were associated with an increased body mass index (BMI).[42] For a person with a height of five feet and five inches, traveling 1.75 miles or more to get to a grocery store meant a weight difference of about five pounds. On the other hand, a lack of proximity results in households with low incomes having little choice about where to purchase food. Such households buy less expensive but more accessible food at fast food restaurants or highly processed food at corner stores. These types of foods are often higher in calories and lower in nutritional value.[43] The result of consuming these types of foods is higher obesity in low-income populations.[44]

A vibrant neighborhood retail environment is one type of setting for social interaction, which can lead to more community cohesion and less crime. Well-designed mixed-use retail environments may have a deterrent effect on crime by creating opportunities for natural public surveillance. Opinions about crime are strongly related to feelings about community. A sense of being part of the community results in less fear.[45]

Complete neighborhoods with adequate retail and public services in close proximity to residents' homes can reduce dependence on cars for every day needs, which in turn can reduce health impacts related to air pollution and noise levels. See chapter 3 on Transportation for a more detailed discussion on this.

Some types of retail also have greater potential to actually have adverse effects on one's health. For example, the density of liquor stores in an area is strongly associated with assault rates. In one community, each six additional liquor outlets accounted for one additional violent assault that resulted in at least one overnight stay in a hospital.[46] Crime and safety concerns create anxiety among business owners and create reluctance among potential retailers, thereby limiting the ability for commercial revenue for some neighborhood economies. Another form of retail that can lead to higher health risks is fast food. Fast food restaurants tend to lead to low quality nutrition and are associated statistically to diet-related disease rates, while full-service restaurants are associated with better health outcomes.[47] [48]

In the Concord Community Reuse Planning Framework[49](See Appendix A), the City's objectives that apply to retail include:

- Stimulating the local and regional economy by creating quality jobs, products, services and revenue (Economic Development-A);
- Ensuring that new development complements rather than competes with existing business and retail, providing neighborhood scale retail, generating opportunities for existing area businesses (Economic Development-2);
- Enhancing overall quality of life for all residents of Concord with education and performing arts centers, museums, libraries, and schools (Community Development-4);
- Providing a mix of uses to address a range of community needs, including well-paying jobs, quality shopping and entertainment (Community Development-2); and
- Ensure that senior citizens have access to services, youth have access to schools, activities and programs, and families have access to recreation (Community Development-C).

The City of Concord recently released the results from a survey of 600 Concord residents

about the CNWS Reuse Project.[50] While retail needs did not rise as one of the top priorities of current residents (job opportunities, traffic on freeways, affordable housing, and need for open space were the rated as most serious priorities), 52% supported building retail stores and shops as part of the CNWS Reuse Project.

Retail Land Use Allocation in the CNWS Reuse Project Site

This discussion of land use allocation is largely based upon visual evaluation of site maps that portray commercial retail areas proposed for each Alternative. When available, quantitative land area figures included in a Preliminary Market Assessment completed for the CNWS Reuse Project[51] are also presented here. As implied by its name, this Preliminary Market Analysis is preliminary and not intended to be conclusive and binding; thus, it is our understanding that these figures are approximate. Moreover, *the factors that will ultimately determine the influence of retail on community health at the CNWS Site will be the types, affordability, and accessibility of businesses that are to occupy site.* For the new Modified Alternatives currently under consideration, only total commercial retail values, which presumably include retail-, office-, and hotel-commercial uses, are available. Thus, we examined retail quantities for the original Alternatives 2, 5 and 6, and draw connections between these and the Modified Alternatives. Table 5-3 presents available information.

Table 5-3. Retail Land Allocation and Retail Acres per Resident

Alternative	2	5	6	C&C	CV
Number of Commercial Retail Locations+	7	3	4	2	3
Acres "Town Center Retail"	10	10	10	ND	ND
Acres "Neighborhood Retail"	28	20	24	ND	ND
Acres "Regional Retail"	90	40	90	ND	ND
Total Commercial Retail	128	70	124	110*	143*
New Population	30,600	22,300	18,100	22,950	28,100
Square Feet Commercial Retail per New Resident	182	137	298	209*	222*

Sources: ARUP, October 9, 2007. Proposed Alternative Concepts, Concord Community Reuse Plan. City Council Meeting October 9, 2007; ARUP, September 13, 2008. Poster Presentations for Clustered Villages and Concentration and Conservation Alternatives; CBRE Consulting, Inc. (Prepared for city of Concord), March 2007. Preliminary Market Assessment.
Notes:
ND = No Data. This data is unavailable for the Modified Alternatives.
+ = Includes large regional commercial retail center along Highway 4, which is shared by each Alternative.
* = values reflect acres of commercial land use, which presumably includes retail, office and hotel commercial use.
C&C = Concentration and Conservation Modified Alternative; CV = Clustered Villages Modified Alternative.
"Town Center Retail" is assumed to signify retail developments near the North Concord BART Station.
"Neighborhood Retail" would serve the new population that chooses to live and/or work on the property.
"Regional Retail" signifies large format retail and wholesale sales in shopping centers for regional use.

Neighborhood Retail

The Preliminary Market Assessment (see Appendix A) states that neighborhood centers are intended to serve the new population that chooses to live and/or work on the property.[52] Neighborhood retail would likely consist of grocery stores, drug stores, restaurants, and other local-serving businesses. If healthy goods and services were to be offered by incoming retailers, which would be a more likely outcome for independently owned businesses than for chain businesses, these neighborhood centers could provide valuable resources for community health.

For many development alternatives, the majority of proposed housing appears to be within an approximately half-mile radius of a retail center. All housing appears to be within a one-

mile radius of either a neighborhood retail center or the North Concord BART Station mixed-use area.

While Neighborhood Retail appears to be included in two of the so-called "villages" in the Clustered Villages Modified Alternative, it does not appear to be included in the southern most village. This places residents of this village a relatively far distance from retail offerings.

Almost all residents in the Concentration and Conservation Modified Alternative appear to be within a half-mile radius of Neighborhood Retail.

Overall, of the three original Alternatives, Alternative 2 includes the greatest number of distinct locations (seven) designated for retail use. Because this Alternative proposes a low-density and spread-out residential configuration, it needs to include the greatest number of neighborhood retail centers to meet the need geographically. This inclusion of retail in close proximity to residences and workplaces is a health asset related to this Alternative.

In contrast, some residential and office areas within each of the three original Alternatives considered in this analysis (including Alternative 2) do not include this neighborhood access to commercial retail locations within a half-mile. This is considered a liability for health. **Regardless of which Alternative is selected, neighborhood retail centers that are accessible to all residents and workers, within a half-mile or less of their homes and/or workplaces, would be beneficial to health.**

Regional Retail

The Preliminary Market Assessment (see Appendix A) suggests that regional retail development on the CNWS Site be located along Highway 4 near the existing Diablo Creek Golf Course. This retail center would serve a market area including cities of Concord, Martinez, Pittsburg/Bay Point, Pleasant Hill, Walnut Creek, and parts of Solano County, along with East County commuters.[53] Although area devoted to this type of retail for the two Modified Alternatives is unknown, based on the visually illustrated plans, land area allocations for regional retail in both Modified Alternatives are similar to that proposed for Alternative 5.

The presence of Regional Retail is not expected to improve community health. A large shopping center along a freeway that caters to the regional Bay Area market would not be expected to encourage walking and bicycling, reduce driving, or provide access to healthy goods and services for populations that don't own vehicles. Thus, **an alternate location for a shopping center, such as one integrated within the city infrastructure and that would serve Concord residents and employees in addition to regional visitors, would be optimal, provided that it does not increase traffic on local roads significantly.**

Town Center Retail/Mixed-Use Area at North Concord BART Station

The same amount of land area devoted to Town Center retail is included for each original Alternative. We make the assumption that Town Center retail represents businesses located at the North Concord BART Station mixed-use development. In general, transit-oriented development (TOD) consists of a "mixture of uses in close proximity including office,

residential, retail, and civic uses."[54] Regardless of which Alternative is chosen, the North Concord BART mixed-use area has the potential to offer retail and public services that are essential to health. Residential development in close proximity to this area would increase access to these goods and services.

Most proposed development in Alternative 5 and the Concentration and Conservation Modified Alternative appears to be concentrated within one mile from the North Concord BART mixed-use area. According to the Healthy Development Measurement Tool (HDMT; see Appendix A) healthy development would include neighborhood-serving retail within a half-mile.[55] If Alternative 5, which is similar to the Concentration and Conservation Modified Alternative, were implemented, 39% of the residential, employment, and student population would be located within one half mile from the North Concord BART mixed-use area. Alternative 2, which shares features with the Clustered Villages Modified Alternative, would place 25% of this population within a half-mile of the mixed-use area.[56]

Based on these figures and assumptions, **compact development such as that proposed by the Concentration and Conservation Modified Alternative would make retail accessible to the highest number of residents.** In addition, placing retail stores within walking distance would provide opportunities for physical activity (see Chapter 3 on Transportation).

Retail Access for Existing Concord Residents

Provided that they offer healthy products, the addition of retail stores on the CNWS Site could also be of value to existing Concord residents who live south of the CNWS border. As mentioned previously, many of these residents live in a "food desert" that lacks availability of healthy food options. Each of the Alternatives under consideration may contribute retail food options in the North Concord BART Station mixed-use area, a regional shopping center along Highway 4, and in smaller neighborhood retail centers. **Making these retail outlets accessible to existing Concord neighborhoods by walkable and bike-able streets, public transit, and vehicles would benefit existing residents** as well (see Chapter 3 on Transportation).

Land Use Allocations for Community Facilities and Institutions at the CNWS Site

As with retail, the types of community facilities that will occupy the site in the future remain largely unknown at this stage. One exception is that an educational campus, likely California State University – East Bay, is in the plans for both of the Modified Alternatives under consideration. Proposed locations for community and institutional uses are included in the planning maps for each Alternative, and quantitative land use figures for these uses are available for original Alternatives only. Table 5-4 summarizes this information.

Table 5-4. Community Facilities Land Allocation and Acres per Resident

Alternative	2	5	6	C&C	CV
Number of Community/Institutional Locations[%]	7	3	4	2	3
Acres Community Facilities*	288	242	200	ND	ND
Acres Non-governmental/Institutional[+]	60	25	60	53	53
New Population	30,600	22,300	18,100	22,950	28,100
Square Feet Community/Institutional Facilities per New Resident	495	522	626	101[$]	82[$]

Sources: ARUP, October 9, 2007. Proposed Alternative Concepts, Concord Community Reuse Plan. City Council Meeting October 9, 2007; ARUP, September 13, 2008. Poster Presentations for Clustered Villages and Concentration and Conservation Alternatives; ARUP, September 16, 2008. Program Summaries for Alternatives; CBRE Consulting, Inc. (Prepared for city of Concord), March 2007. Preliminary Market Assessment.
Notes:
ND = No Data. This data is unavailable for the Modified Alternatives.
[%] = Includes Educational campus
* = includes police, fire, government, library, community center, public schools
+ = Educational campus
$ = This includes Institutional Facilities only. Community Facilities are not included in Program Summaries for Modified Alternatives.
C&C = Concentration and Conservation Modified Alternative; CV = Clustered Villages Modified Alternative.

Because land use allocation figures for community facilities are known only for the three originally proposed Alternatives (program summaries for the Modified Alternatives do not include community facilities), it is impossible to compare the quantity of land dedicated to community facilities between the Modified Alternatives that are now being considered.

Based on visual approximation, the Concentration and Conservation Modified Alternative places all residential development within a half-mile of community or educational use. The Clustered Villages Modified Alternative includes a very small area of proposed residential development that does not have half-mile access to a community or educational facility. The HDMT benchmark is that community facilities such as general community centers, culturally specific organization centers, arts and cultural centers, recreation centers, training and employment centers, senior centers, and teen centers, should be accessible within a half-mile[57] (see Appendix A). Thus, of the new Modified Alternatives, **the Concentration and Conservation Modified Alternative provides slightly better access to community and educational facilities than the Clustered Villages Modified Alternative.**

A caveat to this analysis is that while certain Alternatives may propose slightly more or less allocation of community and institutional facilities per future resident, it is difficult to judge the corresponding value to community health because we do not know what types of facilities will be planned. For example, teen centers, senior centers, and meeting rooms open for public use may be beneficial throughout all areas of the site. On the other hand, the

amount of land occupied by a higher education campus may be less relevant to local residents who are not students at the campus.

Schools at the CNWS Site

The Concord 2030 General Plan presents findings of a school analysis conducted by the Mt. Diablo Unified School District for the CNWS Site.[58] Based upon demand by the incoming population and the assumption that all new schools will be built on the CNWS Site, it was determined that 32 acres of land devoted to schools for grades K-8 are needed on the site. The General Plan recommends that between 1.5% and 3% of land area in new residential neighborhoods on the CNWS Site be devoted to "public uses such as education." All seven originally proposed Alternatives, which propose between 3.2% and 4.7% of total acreage be allocated for schools, comply with this requirement.

Community Perspectives on Retail and Public Services

When asked whether they would use BART more frequently if there were stores that they liked near the North Concord BART station, 81% of survey respondents replied that they would. In addition, when presented with a list of various retail and public services (including supermarkets, healthy and affordable restaurants, banks, senior centers, childcare services, parks, medical care facilities, training centers, pharmacies, library, and community centers) and asked whether they would like better access to these goods and services, at least 79% of respondents answered "yes" to each.

Focus group participants had a wide variety of ideas about goods and services that would, in their opinion, contribute to a complete neighborhood. The following list summarizes their input:

Public Uses

Community Centers

- Latino community centers;
- Community centers offering programming for a variety of age groups; and
- Senior centers.

Youth Centers

- After-school programs;
- Tutoring services;
- Youth-focused activity centers (i.e., facilitated/sponsored by the school district); and
- Childcare (including care for children with special needs).

Educational Services

- Educational services and activities focused on culture and nature;
- Job training centers, including training and placement for youth;
- Public university;
- Environmental education center; and
- English as a Second Language (ESL) education.

Other Services

- Community health clinics, including dental, pediatric and prenatal care;

- Drug rehabilitation programs;
- Centers offering services for reintegrating former gang members, homeless people, and day laborers into society; and
- Athletic/recreational centers (i.e. with basketball and volleyball courts and swimming instruction).

Retail Uses

- Clothing stores;
- Affordable food stores;
- Locally-owned "mom and pop" grocery stores (participant cited that many locally owned stores have gone out of business);
- Locally-owned dry cleaners; and
- Retail businesses in residential areas.

D. Health-Promoting Mitigations for Retail and Public Services

Based on a health impact assessment of retail and public goods and services associated with various development alternatives, as well as an assessment of existing gaps in retail and public goods and services, we present the following recommendations.

- According to three focus groups with limited sample sizes, public services such as community centers, youth centers, community health clinics, social services, and athletic/recreational facilities are needed in Concord. **A community needs assessment should be conducted to identify specific public service needs of Concord residents that could potentially be fulfilled by this project.** A Community Benefits Agreement could specify location set aside for specific identified uses.
- A needs assessment should be conducted to assess the public access to community facilities. **If a need for improved transit access is identified, transit options, such as a shuttle service or additional bus lines, should be incorporated into the transit service plan for the project.**
- In order to ensure access to health care for incoming residents at the CNWS Site, a **shuttle or enhanced bus service should be available for transporting residents to regional health care centers** (i.e., the Contra Costa Regional Medical Center in Martinez).
- **Sufficient space should be explicitly allocated in the project design for accommodating healthy retail** such as affordable food, affordable clothing, dry cleaners, and locally owned grocery businesses.
- **We recommend the inclusion of food markets that offer healthy foods** such as large supermarkets, fruit and produce markets, and farmers' markets. This could be implemented through zoning codes or other regulations.
- **We recommend limiting the density of unhealthy food retailers** such as chain fast-food establishments, convenience stores and liquor stores. This could be implemented through zoning codes or other regulations.
- When possible, **development should comply with Healthy Development Measurement Tool (HDMT) proximity benchmarks for healthy retail and public services and neighborhood-serving community centers** (see Appendix A). For example, the a Concord-specific HDMT could be developed and used as a project-planning tool.

- **Maximize residential density within a half mile of the North Concord BART Station.** If most people live near this BART station - where a significant retail and services are planned - this will result in increased retail quality and choices for residents.
- **Ninety percent of new residents should be within a ½-mile of a neighborhood center** including retail, community centers, and schools.
- In order to allow all students to travel by walking, bicycling, or convenient bus routes, we recommend **residential areas be located within a half-mile of a public elementary school and within 30-minute public transit access of a middle school and high school**.
- **Retail and services should be pedestrian and bicycle friendly** rather than focused on facilitating car use. For example, parking lots should be on the periphery of stores and not present barriers to pedestrians who want to access the stores from the streets.

E. Conclusions

There are large gaps in Concord's existing access to retail and public services and community uses. One example of this is in the Monument neighborhood, where there is a disproportionate number of unhealthy retail food stores in relation to healthy food retailers. Gaps in access to healthy foods exist in other areas in the city as well. Many residents in these neighborhoods do not have the opportunity to conveniently choose retail goods and community services that are essential to health.

The CNWS Site has the potential to offer current and new residents a healthy mix of retail goods and public services that are in close proximity to their homes and workplaces. In addition, development of retail space and community facilities on the site may help fulfill needs of existing residents in other areas of Concord by providing more options and in some cases, options that are closer to home.

While specific types of retail and community facilities have not yet been established at this stage of project planning, this analysis evaluated land use planning maps and quantified land use allocation figures in order to analyze the ability of future retail businesses and community facilities to serve the needs of the existing and future community. **We generally conclude that development alternatives which include multiple retail centers and community facilities distributed within the development, so that most residents have the opportunity to access them within a half-mile or less, have the potential to lead to the greatest health outcomes.**

However, this development's impact on health outcomes as mediated through access to goods and services will ultimately depend on the types of goods and services offered. Our list of health-based recommendations advises incentivizing specific types of retail businesses that are beneficial to health, such as healthy food markets and community centers that cater to all populations in the city. The North Concord BART Station mixed-use area, which has been proposed in all of the considered Alternatives, presents an opportunity to incorporate some of these healthy retail and public services into site development.

Incorporating healthy retail and public services that serve and employ local residents can also

benefit health via employment and a vibrant local economy (see Jobs & Livelihood chapter).

Using the limited information available at this stage of development planning, and with the provision that healthy types of retail and public services be incorporated into the site, we recommend a dense, mixed-use development pattern such as that proposed by the Concentration and Conservation Modified Alternative.

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Appendix A: Established Standards and Health Objectives

Overarching Standards

A. Local Standards and Guidelines

a. Concord Community Reuse Project Planning Framework[1]

- **Overarching Goals (OG)**
  - OG-2: A Balanced Approach: Balance multiple interests including a broad range of community needs, regional as well as local requirements, and the need for parks and open space with the need for jobs, housing, and community facilities.
  - OG-4: Quality of Life: Ensure that the reuse plan builds on community assets and opportunities, addresses critical needs and issues, creates net positive benefits, and provides new opportunities to live, work and play in Concord.
- **Planning Considerations (PC)**
  - PC-A: An inclusive, transparent and collaborative planning process: Develop a comprehensive reuse plan with ideas from a range of individuals, groups, and organizations, including the residents of Concord, businesses, community groups and leaders, neighboring jurisdictions, and public agencies. Make the process inclusive and representative of all interests throughout the planning process. Make the planning process open and collaborative. Support the Community Advisory Committee in its efforts to ensure that all segments of the community – young and old, ethnic populations, geographic areas – are well represented in the planning process.
  - PC-4: Quality of Development: Emphasize quality development and avoid sprawl. Ensure that the development has an overall character and enhances the identity of Concord and the surrounding region. Encourage innovative and creative solutions.
- **Community Development (CD)**
  - CD-C: A Multi-Generational and Inclusive Community: Build a strong community by including people of all ages. Ensure that long-term residents who are now senior citizens have access to affordable housing and services, that youth have access to good schools, activities and programs, and that families have access to housing, jobs, and recreation. Be responsive to the needs of people of all ethnicities, social and cultural backgrounds, income groups, and people with disabilities.
  - CD-1: Shared Identity: Ensure that new development is a logical extension of the existing community and avoid creating the sense of 'two Concords'.

Chapter 1. Housing Standards

A. Federal Standards

a. US Dept. of Housing and Urban Development Strategic Plan Objectives[2] include:

A. Increase home ownership opportunities

- A1: Expand national home ownership opportunities.
- A2: Increase minority home ownership.
- A5: Help HUD-assisted renters become home owners.
- A6: Keep existing home owners from losing their homes.

B. Promote decent affordable housing
- B1: Expand access to and availability of decent, affordable rental housing.
- B3: Improve housing opportunities for the elderly and persons with disabilities.

C. Strengthen communities
- C2: Enhance sustainability of communities by expanding economic opportunities.
- C4: End chronic homelessness and move homeless families and individuals to permanent housing.
- C5: Address housing conditions that threaten health.

b. Affordability

The federal government considers housing to be affordable if a family spends no more than 30 percent of its income on its housing costs, including utilities.[3]

c. Overcrowding

The most common measure of overcrowding is persons-per-room in a dwelling unit. Overcrowding, as defined by the U.S. Department of Housing and Urban Development (HUD), is having more than 1 person living in a habitable room, and having more than 1.51 people residing in a habitable room is considered to be severe overcrowding.[4]

B. California State and Regional Policies and Standards

a. California General Plan Guidelines (2003):[5]

The 2003 State of California General Plan Guidelines call for ensuring environmental sustainability by matching employment potential, housing demand by income level and type and new housing production.

b. California Government Code Section 65584[6]

Section 65584 of the California Government Code requires that the Department of Housing and Community Development, with local Council of Governments, determine the existing and projected need for housing for each region of the state. The objectives of doing so are stated to be:

(1) Increasing the housing supply and the mix of housing types, tenure, and affordability in all cities and counties within the region in an equitable manner, which shall result in each jurisdiction receiving an allocation of units for low- and very low income households.
(2) Promoting infill development and socioeconomic equity, the protection of environmental and agricultural resources, and the encouragement of efficient development patterns.
(3) Promoting an improved intraregional relationship between jobs and housing.
(4) Allocating a lower proportion of housing need to an income category when a jurisdiction already has a disproportionately high share of households in that income category, as compared to the countywide distribution of households in that category from the most recent decennial United States census.

C. *Local Standards and Guidance*

a. Inclusionary Housing Ordinance[7]

On October 12, 2004, Concord City Council passed an Inclusionary Housing Ordinance. The ordinance was based on findings that include:

- "An adequate supply of affordable housing, including both rental and owner-occupied units, is essential to meet the housing needs of all economic segments of Concord's existing and projected population. Erosion of housing affordability causes many negative consequences. Households are required to devote an increasing share of their monthly income to meet escalating housing costs. Residents on fixed incomes are not able to keep up with rising rents. Local employees move farther away from their jobs in search of affordable housing in other communities. Overcrowding also increases as people turn to shared homes and apartments to reduce monthly costs. The widening gap between local incomes and housing costs places some individuals and families at risk of homelessness." (pg 1, section 1B)
- Reference to ABAG's Regional Housing Needs Assessment.
- "Failure to meet demonstrated needs for housing affordable to a range of income levels will adversely impact the health, safety, and general welfare of persons working and living in the City." (pg. 2, section 1D)
- "In order to further the general welfare of the Concord community and surrounding area by encouraging Concord residents to remain in the City and by encouraging persons working in Concord to reside within the City rather than commuting to their jobs in Concord from other areas, the City Council deems it appropriate to provide a preference in allocating available Inclusionary Units created pursuant to this Ordinance to qualified purchasers or renters who live an work within the City of Concord." (pg. 2, section 1E)

Concord's Inclusionary Housing Ordinance requires that:

- For rental projects, either 10% of the units built are affordable to low income households (incomes between 50% and 80% of area median income) or 6% of the units are affordable to very low income households (incomes below 50% of AMI);
- For ownership projects, either 10% of the units are affordable to moderate income households (incomes between 80% and 120% of AMI) or 6% of the units are affordable to low income households;
- For projects under 20 acres in size:
  - For rental projects, an in-lieu fee of $4,903 per unit in the project be paid;
  - For ownership projects, an in-lieu fee of $17,660 per unit in the project be paid.

Inclusionary ownership units are required to remain affordable for 45 years and inclusionary rental units are required to remain affordable for 55 years. It is presumed that units built as part of the Inclusionary Housing Ordinance will be on-site with other units being

built, but the ordinance allows for off-site construction with some limitations. When built on-site, inclusionary units are expected to be dispersed throughout the project. Inclusionary units are expected to be built at the same time as the other units, and are expected to have the same average number or bedrooms.

b. Housing Element of the Concord General Plan[8]

The Housing Element, approved by City Council in 2003, has the following relevant goals and policies:

- GOAL 1: HOUSING SUPPLY AND MIX: Promote a balanced supply of housing for all income groups residing or who wish to reside in Concord.
    - Policy 1.1 Fair-Share Housing Objectives: Housing production objectives for the City of Concord for the 1999 to 2006 planning period, as established through the Regional Housing Needs Process of the Association of Bay Area Governments (ABAG), are presented below. The City shall strive to achieve these 'fair-share' need numbers for new housing development in Concord through the year 2006.
    - Policy 1.2 Affordable Single-Family Homes: Encourage the development of single-family homes that are affordable to very-low-, low- and moderate-income households in all new single-family developments as well as in existing single-family neighborhoods. For the purposes of this policy, "single-family" includes detached homes, townhomes, and similar housing types. Condominiums are considered separately under Policy 1.5.
    - Policy 1.4 Affordable Multi-Family Housing: Encourage the development and conservation of multifamily housing that is affordable to very-low-, low- and moderate-income households. (NOTE: "Multi-family" as used here indicates rental apartments in buildings of three units or more.)
    - Policy 1.6 Condominiums: Encourage the development of new condominiums and cooperatives to provide homeownership opportunities for lower income families and individuals. However, ensure that the creation of condominium opportunities is not at the expense of the City's rental housing stock by limiting the conversion of apartments and other rental units to condominium ownership.
    - Policy 1.7 Above-Moderate-Income Housing: Continue to encourage a diversity of housing choices for all levels of income, including the types of housing desired by households whose incomes are above 120 percent of the area's median household income.

c. Concord Community Reuse Project Planning Framework[9]

The Reuse Project Planning Framework, adopted by City Council in 2006, has the following relevant principles:

- CD-C: A MultiGenerational and Inclusive Community
    - Build a strong community by including people of all ages.

- Ensure that long-term residents who are now senior citizens have access to affordable housing and services, that youth have access to activities and programs, and that families have access to housing, jobs, and recreation.
- Be responsive to the needs of people of all ethnicities, social and cultural backgrounds, income groups, and people with disabilities.

- CD-2: Mix of uses
  - Provide a mix of uses to address a range of community needs, including housing types, well paying jobs, quality shopping and entertainment, adequate parks and recreation, and open space.
- CD-3: Housing Variety/Affordability
  - Provide a mix of housing types, densities and price ranges to accommodate community needs.
  - Utilize market analysis to determine feasibility and demand for various housing types.
  - Ensure that new development maintains an appropriate balance of jobs and housing.
  - Meet all local, state, and federal housing requirements by providing access to a range of quality housing for all income groups, seniors, working families, low-income households, first-time home buyers, young professionals, and persons with disabilities.

Chapter 2. Jobs and Livelihood Standards

A. Federal Standards

a. Federal Minumum wage is $6.55 per hour. http://www.dol.gov/esa/whd/flsa/

B. California State and Regional Policies and Standards

a. California minimum wage is $8.00 per hour. http://www.dir.ca.gov/Iwc/MinimumWageHistory.htm.

D. *Local Standards and Guidance*

a. Concord Community Reuse Project Planning Framework (11/14/06)[10]

- ED-A: A Vibrant and Diverse Economy: Stimulate the local and regional economy by creating quality jobs, products, services and revenue.
  - ED-1: Creation of Quality Jobs:
    - Create quality jobs in Concord to allow more residents to both live and work in the community, thereby improving their quality of life, reducing work commutes and reducing congestion on freeways.
    - Provide opportunities to live and work in Concord.
    - Provide quality, living wage jobs.
    - Promote local-first hiring policies.
  - ED-6: Business and Education Partnerships
    - Explore opportunities for collaboration between the business

and education sectors, such as workforce development programs, youth training and co-location of facilities.

Chapter 3. Park and Open Space Standards

A. Federal Standards

a. Healthy People 2010:

The US Department of Health and Human Services (USDHHS) establishes national objectives for health.[11] By 2010, the following objectives related to parks and open space should be achieved:

Physical Activity

- Objective 22-2 - Increase the number of adults who engage in regular, preferably daily, moderate physical activity for 30 minutes per day.
- Objective 22-7 - Increase the proportion of adolescents who engage in vigorous physical activity that promotes cardiorespiratory fitness 3 or more days per week for 20 or more minutes per occasion.

Overweight and Obesity

- Objective 19-3c - Reduce the proportion of children and adolescents who are overweight or obese.
- Objective 19-2 - Reduce the proportion of adults who are obese.

B. California State and Regional Policies and Standards

a. According to the Quimby Act (California Code §66477), a city may require the dedication of land or the payment of fees to provide up to five acres of park per area per 1,000 residents.

C. Local Standards and Guidance

a. The City of Concord 2030 General Plan (Planning Commission Review Draft)[12]

Section 6 of the General Plan is completely dedicated to parks and open space. Section 6.1 of the General Plan states:

- "The current performance standard for public parkland requires new development to acquire 5 acres of public parkland per 1,000 new residents. The City's current citywide goal for public parkland is 6 acres per 1,000 residents."
- "Although the proposed General Plan does not specifically designate new parkland, the City will identify sites for potential new parks as part of the subsequent base reuse planning for the CNWS.

  "In addition, the City will continue to strive to locate neighborhood and community parks in areas that are currently not located within reasonable walking distance to a park."

There are two goals and many park-related principles and policies in the General Plan:

- Goal POS-1: Premier Parks and Recreation Facilities
  - Principle POS-1.1: Provide and Maintain Park and Recreation Facilities for the Entire Community.
    - Policy POS-1.1.1: Acquire and develop additional neighborhood and community parks to serve existing and future needs, at a ratio of 6 acres of park land per 1,000 residents.
    - Policy POS-1.1.2: Provide a variety of recreation spaces and facilities to serve the needs of the community. Examples of this include play fields, parks, open spaces, trails, recreation centers, special recreation areas, golf courses, outdoor entertainment facilities such as bandstands, and commercial recreational uses.
    - Policy POS-1.1.3: Continue to acquire and/or redevelop new and innovative parklands as needs or opportunities arise.
    - Policy POS-1.1.4: Secure and maintain parks and open space facilities consistent with the ability of the City to finance acquisition and their operation.
    - Policy POS-1.1.5: Pursue the development of park and recreation facilities within reasonable walking distance of all residences. For planning purposes, reasonable walking distance is defined as one-quarter to one-half mile.
    - Policy POS-1.1.6: Review infrastructure needs for existing and new recreational facilities, and where appropriate, identify required improvements in the City's Capital Improvement Program. The City will assess its recreational facilities to ensure that all infrastructure, including parking lots, pathways, buildings, and service facilities are functional and well maintained. Attention will also focus on providing on-site parking for all new park facilities that will meet the needs of park users and adjacent neighbors.
    - Policy POS-1.1.7: Identify new park sites within the City limits to ensure that a minimum of 89 acres of park and recreation facilities be set aside for Concord residents through the parkland dedication process established for subdivisions or acquired through in lieu fees paid by subdividers. This action will meet the parkland standard set in the Growth Management Element of the General Plan. Additionally, as part of implementation of the City's long-term policy for new parkland, as expressed in Policy POS-1.1.1, the City intends to acquire a total of 217 acres of new parkland to meet the 6-acre standard by 2030.

- Principle POS-1.2: Provide a Citywide, Interconnected, Multi-UseTrails System.
  - Policy POS-1.2.1: Implement strategies and actions associated with the design, development, and operation of multipurpose trails as contained in the Trails Master Plan. The Trails Master Plan provides the framework for the future planning of an integrated and easily-accessible system of routes and trails.
  - Policy POS-1.2.2: Work with proposed development projects to provide new linkages to existing trails and create new trails where feasible.
  - Principle POS-1.3: Facilitate Community Recreational Opportunities at Public School Sites.
  - Policy POS-1.3.1: Utilize closed or under-used public school sites for community recreation when feasible.
  - Policy POS-1.3.2: Work with the Mt. Diablo Unified School District to provide use of school facilities after school and during summer months for community recreation uses. See also Policy PF-2.1.4.
- Principle POS-1.4: Facilitate Private Recreation.
  - Policy POS-1.4.1: Encourage developers to provide for-profit regional recreation facilities. While the City's first and foremost objective is to ensure that new neighborhoods provide recreational amenities for the enjoyment of its future residents, the City also encourages new development to contribute recreational facilities to the greater community, when feasible. These may include new golf courses, equestrian centers, and water-related facilities, all of which can help meet recreational needs.

- Goal POS-2: A Protected and Accessible Open Space System
  - Principle POS-2.1: Provide an Interconnected Open Space System.
    - Policy POS-2.1.1: Acquire, preserve, and maintain open space for future generations.
    - Policy POS-2.1.2: Participate in joint planning and implementation with the State of California Parks and Recreation Department, and other appropriate agencies to establish connections to Mt. Diablo State Park.
    - Policy POS-2.1.3: Utilize the Trails Master Plan and Map to develop connections between open space areas.
  - Principle POS-2.2: Preserve Natural Resources within Designated Open Space.
    - Policy POS-2.2.1: Design structures and facilities located within parks and open space areas to complement the natural setting and values of each site and adjacent lands.

        - Policy POS-2.2.2: Strive to preserve open space in southeast Concord in order to expand the Lime Ridge Open Space area. The City will coordinate with the East Bay Regional Park District on how best to obtain additional open space in this area. A connection from Concord's open space system to the Mt. Diablo State Park is of high importance.
        - Policy POS-2.2.3: Use open space where feasible to delineate an urban edge.
        - Policy POS-2.2.4: Require degraded open space areas to be restored to an environmentally sustainable condition as part of development approval where these lands are proposed as permanent open space in new development. This can be done with use of native plants during revegetation.
        - Policy POS-2.2.5: Restore degraded open space owned by the City, including but not limited to habitat improvements and control of invasive plant species.
    - Principle POS-2.3: Expand Open Space Systems as Opportunities are Identified.
        - Policy POS-2.3.1: Increase the regional trail, ridgeline, and hillside open space system in the City's Planning Area through joint efforts with East Bay Regional Park District, Contra Costa County, the U.S. Government, and nonprofit trustee agencies.
        - Policy POS-2.3.2: Establish priorities for open space preservation in the City's Planning Area based on an evaluation of natural resources, viewsheds, wildlife habitats, and recreational opportunities. Examples of establishing priorities include the following:
            - Significant natural areas that are historically, ecologically, scientifically, locally unique, important or threatened;
            - Ridgelines and viewsheds above 300 feet elevation, as well as scenic vistas;
            - Wildlife and plant habitats and fragile ecosystems with sensitive species in need of protection;
            - Creek environments; and
            - Lands suitable for recreation such as hiking, photography, nature study, bicycling, horseback riding, and fishing.
- Concord Community Reuse Project
    - Planning Framework
- Principles for Parks & Open Space

b. Concord Community Reuse Project Planning Framework[13]

- **Planning Considerations (PC)**
  - PC-3: Buffer and Transition Zones: Ensure that open space, parks and greenbelts provide effective buffer zones between exiting neighborhoods and new uses on the Weapons Station, and provide access to open space and trails.
- **Community Development (CD)**
  - CD-C: A multi-generational and inclusive community: Build a strong community by including people of all ages. Ensure that long-term residents who are now senior citizens have access to affordable housing and services, that youth have access to good schools, activities and programs, and that families have access to housing, jobs and recreation. Be responsive to the needs of people of all ethnicities, social and cultural backgrounds, income groups, and people with disabilities.
  - CD-D: Environmentally Sustainable Development: Minimize depletion of natural resources. Promote environmental stewardship and economic development. Contribute to the well-being of present and future generations.
  - CD-1: Shared Identity: Ensure that new development is a logical extension of the existing community and avoid creating the sense of 'two Concords'.
  - CD-2: Mix of Uses: Provide a mix of uses to address a range of community needs, including housing types, well paying jobs, quality shopping and entertainment, adequate arks and recreation, and open space.
  - CD-6: Integration of Parks and Open Space with Development: Promote a healthy lifestyle by locating parks and open space elements as an integral part of new development, including trails, neighborhood parks, and sports fields. Minimize parking and traffic impacts associated with these facilities.
- **Parks, Recreation, and Open Space (PR)**
  - PR-C: Community Parks and Recreation: Meet the long-term park and recreation needs of the community.
  - PR-1: Maximizing Open Space: Provide parks and open space to serve Concord residents and the region. Ensure that there are large, contiguous and usable open space elements in the Community Reuse Project. Protect significant views and view-sheds.
  - PR-3: Regional Connectivity: Explore possibilities for connecting to other regional's and local parks and trails to provide a comprehensive system of habitat, open space, and recreation areas.
  - PR-5: Variety of Parks and Recreational Facilities: Provide a variety of parks and recreation elements including regional and neighborhood parks, trails and outdoor recreation. Address sports and recreation needs in Concord, including regional-scale, lighted or multi-purpose sports facilities, community centers, and

cultural and performing arts facilities. Ensure that facilities and amenities include opportunities for older adults and people with disabilities.

- **Transportation**
  - TR-2: Multi-Modal Transportation: Develop a range of transportation alternatives to meet diverse community needs and reduce traffic congestion on local streets. Explore use of alternative modes of transportation, including public transit, and bicycle and pedestrian paths to connect local and regional destinations.

Chapter 4. Transportation and Walkability

A. Federal Standards

a. Healthy People 2010

The US Department of Health and Human Services (USDHHS) establishes national objectives for health.[14] By 2010, the following objectives related to transportation should be achieved:

A. Unintentional injury prevention

- A rate of non-fatal vehicle injuries to pedestrians no greater than 19 injuries per year per 100,000 people.
- A rate of fatal vehicle injuries to pedestrians no greater than 1 injury per year per 100,000 people.

B. Obesity and Overweight

- Objective 22-2 - Increase the number of adults who engage in regular, preferably daily, in moderate physical activity for 30 minutes per day.

C. Physical Activity

- Objective 22-14 - Increase the proportion of trips made by walking.
- Objective 22-15 - Increase the proportion of trips made by bicycling.

B. California State and Regional Policies and Standards

a. Governors Environmental Goals and Policy Report[15]

- Encourage a balance between job and housing development, at the regional, sub-regional, and community level to reduce the negative impacts of long commutes and automobile dependency.
- Provide the public with a transportation network that increases mobility choices—including public transportation, walking, and biking—and allows equitable access to jobs, community services and amenities.
- Promote compact, higher density residential development patterns to maintain and enhance agricultural and natural resources.

b. Caltrans Strategic Plan 2007-2012[16]

- Goal 2: Maximize transportation system performance and accessibility.
  - Objective 2.3: By 2012, increase intercity-rail ridership by 28% on the state-supported routes.
  - Obj. 2.4: By 2012, reduce single occupancy vehicle commute trips by 5%.

c. Metropolitan Transportation Authority's 2025 Regional Transportation Plan[17]

- Improve the ease and convenience of using the transportation system.
- Improve the safety of the transportation system for its users.
- Achieve fairness in the planning, funding, and operation of the region's transportation system.
- Plan and develop transportation facilities and services in a way that protects and enhances the environment.
- Support transportation investments that are essential to the economic well-being of the Bay Area.
- Support community-based efforts to improve quality of life by providing access to transportation funding.

C. Local Standards and Guidance

a. The City of Concord 2030 General Plan (Planning Commission Review Draft)[18]

Goals, Principles, and Policies include the following:

A. Principle T-1.1: Provide an Easily Accessible, Functional, and Attractive Circulation Network
- Policy T-1.1.8: Designate specific truck routes to provide for movement of goods throughout the City.
- Policy T-1.1.14: Continue to implement the City's Traffic Calming Program to enhance safety and livability on residential streets.

B. Principle T-1.2: Ensure that Transportation and Circulation Projects are Adequately Funded
- Policy T-1.2.1: Schedule public transportation improvement projects in the Capital Improvement Program and Transportation Improvement Program.

C. Principle T-1.4: Promote a Well-Integrated and Coordinated Transit Network
- Policy T-1.4.1: Coordinate with public transportation agencies to facilitate safe, efficient, and convenient access to transit.
- Policy T-1.4.2: Work with public transportation agencies to ensure adequate transit service.

D. Principle T-1.5: Provide Safe and Convenient Pedestrian Circulation
- Policy T-1.5.1: Plan linkages to minimize walking distance and enhance the pedestrian experience.
- Policy T-1.5.2: Use innovative and effective walkway features to enhance the pedestrian environment. *Examples*

include wide sidewalks, upgraded hardscapes, decorative crossways, signalized crossings, bulb-outs, and street lighting.

- Policy T-1.5.3: Facilitate pedestrian circulation near high activity centers.
- Policy T-1.5.4: Encourage new development to provide pedestrian connections to adjacent open spaces, and trails.

E. Principle T-1.6: Provide a Safe and Comprehensive Bicycle Network

- Policy T-1.6.1: Implement strategies and actions for enhanced bicycle circulation throughout the City.
- Policy T-1.6.2: Require provision of bicycle facilities in new developments, where appropriate. *Examples include weather protected bicycle parking and direct and safe access for pedestrians and bicyclists to adjacent routes.*
- Policy T-1.6.4: Encourage new development to provide bicycle access to parks, schools, and transit stops in the design of new residential neighborhoods.

b. <u>Concord Trails Master Plan</u>

Strategy areas identified for reducing single-occupant vehicle use and traffic congestion, and enhancing the overall accessibility of goods, services, and employment, include the following:

i. Strategy Area #1: Bicycle Circulation – Provide facilities that promote safe bicycling as a mode of transportation.
ii. Strategy Area #2: Trails – Provide a safe, functional, cost-effective system of multi-purpose trails both for recreation and as an alternate transportation mode linked to regional and state trail systems and parks, the two BART stations, the Chronicle Pavilion, the central area, and the State University. The system should also link residential areas with activity centers such as parks and recreational facilities, educational institutions, employment centers, cultural sites, and other focal points of the city environment.
iii. Strategy Area #3: Multi-purpose Trails – Provide multi-purpose trail routes by employing appropriate linear rights-of-way along existing features such as creeks and riparian corridors, drainage and irrigation easements, utility easements, abandoned railroad rights-of-way, and major street corridors.
iv. Strategy Area #4: Equestrian Trails – Where appropriate, establish a network of equestrian trails that cross the city and link regional trail routes with recreational areas.
v. Strategy Area #5: Interpretive Resources – Identify and interpret Concord's natural and historical resources as an integral component of the multi-purpose trail system.
vi. Strategy Area #6: Trail Safety and Security – Trails should be planned and designed to provide the safety and security of both the trail user and the adjacent property owner.

vii. Strategy Area #7: Trail Priorities – Prioritize trails for acquisition and development in a manner that provides the maximum public benefit given the available public and private resources.
viii. Strategy Area #8: Coordinated Trails Planning – Encourage communication among a variety of agencies and interest groups to assist Action of the multi-use trail system.

c. Contra Costa Countywide Bicycle and Pedestrian Plan[19]
- Goal 1: Expand, Improve and Maintain Facilities for Bicycling and Walking
- Goal 2: Improve Safety for Bicyclists and Pedestrians
- Goal 3: Encourage More People to Bicycle and Walk
- Goal 4: Support Local Efforts to Encourage Walking and Bicycling
- Goal 5: Plan for the Needs of Bicyclists and Pedestrians

d. Concord Community Reuse Project Planning Framework[20]
- PC-7: A Regional Approach:
  - Engage regional and neighboring jurisdictions to identify common goals, potential partnerships, and opportunities for resource sharing and collaboration.
  - Address long-term impacts including traffic and air quality.
- CD-D: Environmentally Sustainable Development:
  - Minimize the depletion of natural resources.
  - Promote environmental stewardship and economic development.
  - Contribute to the well-being of present and future generations.
- TR-A: An Effective Transportation System: Serve the diverse transportation needs of the community, including regional connectivity, by providing comprehensive, efficient and effective transportation solutions, allowing for multiple modes of travel.
- TR-1: Transit-Oriented Development:
  - Develop transit-oriented development including a high-density mix of housing, jobs, retail and entertainment, and multi-modal transportation.
  - Consider higher intensity uses around transit stations to complement parks and open space in other areas.
  - Utilize the existing public investment in regional transportation infrastructure such as the North Concord BART station.
- TR-2: Multi-Modal Transportation:
  - Develop a range of transportation alternatives to meet diverse community needs and reduce traffic congestion on local streets.
  - Explore use of alternative modes of transportation, including public transit, and bicycle and pedestrian paths to connect local and regional destinations.
- TR-3: Access and Mobility:
  - Enhance access to regional transportation while mitigating traffic on local streets.

  - Address the needs of seniors, low-income households and people with disabilities.
  - Explore innovative solutions to relieving traffic congestion and meeting parking requirements through the use of public transit, co-location of services and facilities, car-share programs, among others.
- TR-4: Maximizing Connective While Minimizing Impacts: Integrate new development with the existing community while minimizing transportation impacts on existing neighborhoods in Concord.

D. Air Quality: California and Federal Standards

California and Federal Air Quality Standards are provided in the following Table A-1. The California Air Resources Board's (CARB's) *Air Quality and Land Use Handbook: A Community Health Perspective* provides the recommendations for locating sensitive receivers near sources of air pollution listed in Table A-2.

Table A-1. California and Federal Air Quality Standards

Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards [1]		Federal Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]
Ozone (O_3)	1 Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m^3)		0.08 ppm (157 µg/m^3)		
Respirable Particulate Matter (PM10)	24 Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		—		
Fine Particulate Matter (PM2.5)	24 Hour	No Separate State Standard		35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	15 µg/m^3		
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m^3)	None	Non-Dispersive Infrared Photometry (NDIR)
	1 Hour	20 ppm (23 mg/m^3)		35 ppm (40 mg/m^3)		
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		—	—	—
Nitrogen Dioxide (NO_2) *	Annual Arithmetic Mean	0.030 ppm (56 µg/m3)	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m^3)	Same as Primary Standard	Gas Phase Chemiluminescence
	1 Hour	0.18 ppm (338 µg/m^3)		—		
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	—	Ultraviolet Fluorescence	0.030 ppm (80 µg/m^3)	—	Spectrophotometry (Pararosaniline Method)
	24 Hour	0.04 ppm (105 µg/m^3)		0.14 ppm (365 µg/m^3)	—	
	3 Hour	—		—	0.5 ppm (1300 µg/m^3)	
	1 Hour	0.25 ppm (655 µg/m^3)		—	—	—
Lead[8]	30 Day Average	1.5 µg/m^3	Atomic Absorption	—	—	—
	Calendar Quarter	—		1.5 µg/m^3	Same as Primary Standard	High Volume Sampler and Atomic Absorption
Visibility Reducing Particles	8 Hour	Extinction coefficient of 0.23 per kilometer — visibility of ten miles or more (0.07 — 30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent. Method: Beta Attenuation and Transmittance through Filter Tape.		No Federal Standards		
Sulfates	24 Hour	25 µg/m^3	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[8]	24 Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

* The Nitrogen Dioxide ambient air quality standard was amended on February 22, 2007, to lower the 1-hr standard to 0.18 ppm and establish a new annual standard of 0.030 ppm. These changes become effective after regulatory changes are submitted and approved by the Office of Administrative Law, expected later this year.

See footnotes on next page ...

For more information please call ARB-PIO at (916) 322-2990 **California Air Resources Board (02/22/07)**

Source: CARB. 2007. California Ambient Air Quality Standards. California Air Resources Board. Available at http://www.arb.ca.gov/research/aaqs/aaqs2.pdf. Accessed on January 4, 2008.

Table A-2. CARB 2005 Guidance on Preventing Air Quality—Land Use Conflicts

Source of Air Pollution	Air Resource's Board Recommendations
Freeways and High-Traffic Roads	Avoid siting sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day.
Distribution Centers	Avoid siting sensitive land uses within 1,000 feet of a distribution center (that accommodates more than 100 trucks per day, more than 40 trucks with operating TRUs per day, or where TRU unit operations exceed 300 hours per week). Take into account the configuration of existing distribution centers and avoid locating residences and other sensitive land uses near entry and exit points.
Rail Yards	Avoid siting sensitive land uses within 1,000 feet of a major service and maintenance rail yard. Within one mile of a rail yard, consider possible siting limitations and mitigation approaches.
Ports	Consider limitations on the siting of sensitive land uses immediately downwind of ports in the most heavily impacted zones. Consult with local air districts for the latest available data on health risks associated with port emissions.
Refineries	Avoid siting sensitive land uses immediately downwind of petroleum refineries. Work with local air districts to determine an appropriate separation.
Chrome Platers	Avoid siting sensitive land uses within 1,000 feet of a chrome plater.
Dry Cleaners Using Perchloro-ethylene	Avoid siting sensitive land uses within 300 feet of any dry cleaning operation. For large operations with two or more machines, provide 500 feet. Do not site sensitive land uses in the same building with perc dry cleaning operations.
Gasoline Dispensing Facilities	Avoid siting sensitive land uses within 300 feet of a large gas station (defined as a facility with a throughput of 3.6 million gallons per year or greater). A 50 foot separation is recommended for typical gas stations.

CARB. 2005. California Environmental Protection Agency Air Resources Board Air Quality and Land Use Handbook: A Community Health Perspective (Draft approved for publication). Available at http://www.arb.ca.gov/ch/landuse.htm.

Chapter 5. Access to Retail Goods and Public Services

A. Federal Standards

a. Concord 2030 General Plan

Two of the "themes and key initiatives" listed in the Draft Concord 2030 General Plan (General Plan) involve the necessity of retail goods and services:

- Protecting community assets.

The General Plan renews the City's commitment to protect and enhance its community assets, which include *convenient shopping* among other things.

- Supporting mixed use development and transit-supportive land uses around BART stations and in commercial corridors with bus service. The General Plan promotes mixed-use development around BART stations and along arterial streets on underused or abandoned retail sites to create more vitality in these commercial corridors.

b. Land Use Allocations

The General Plan presents land use allocations for the CNWS site with the objective of ensuring "a mix of uses and a level of development that will be able to pay for necessary improvements and amenities, while at the same time developing a system of parks and coherent open spaces that create a distinctive and unifying sense of place." Ranges are given for the minimum and maximum levels of development for each type of land use, which are intended to allow for flexibility in master planning and neighborhood planning:

A. Regional Commercial Land Use

This land use type includes large format retail and wholesales in shopping centers and visitor-oriented commercial uses.

- The minimum and maximum allowable gross acreages are 2.2% and 5% of the total site area. This corresponds to a range of 120 to 273 acres.

B. Neighborhood Design Guidelines

Guidance for individual neighborhoods within the CNWS is also provided in the General Plan. The following potential neighborhood design guidelines are recommended:

- Neighborhoods are 80-120 acres in size, so that 90 percent of residents would be within ¼-mile of the neighborhood center.
- Each neighborhood includes a commercial center (2-10% of total area), parks (6 acres per 1,000 residents up to 25% of total area), and neighborhood-serving facilities such as elementary schools and community centers (3-20% of total area), thereby reducing the need for automobiles.
- Each neighborhood has a mix of housing, which could be based on residential density allocations or on allocation by basic building types.

c. Preliminary Market Assessment

A Preliminary Market Assessment of the CNWS development was prepared for the City of Concord. According to this analysis, the following retail centers were recommended:

- Neighborhood centers to serve the new population that chooses to live and/or work on the property. This retail would likely consist of grocery stores, drug stores, restaurants, and other local-serving services.
- Regional/sub-regional (or destination) retail development that would probably be located on several hundred acres of property that lies west of Highway 4 and that surrounds and includes the Diablo Creek Golf Course. This would serve a market area including the cities of Concord, Martinez, Pittsburg/Bay Point, Pleasant Hill, Walnut Creek, and parts of Solano County, along with East Contra Costa County commuters.
- Relocating the Concord auto mall to the frontage road along Highway 4, which would help the City maintain its long-term strong position in auto sales.

- Concord Community Reuse Project Planning Framework[21]
  - CD-C: A Multi-Generational and Inclusive Community:
    - Build a strong community by including people of all ages
    - Ensure that long-term residents who are now senior citizens have access to affordable housing and services, that youth have access to good schools, activities and programs, and that families have access to housing, jobs, and recreation.
    - Be responsive to the needs of people of all ethnicities, social and cultural backgrounds, income groups, and people with disabilities.
  - CD-2: Mix of Uses
    - Provide a mix of uses to address a range of community needs, including housing types, well paying jobs, quality shopping and entertainment, adequate parks and recreation, and open space.
    - Consider such factors the level of environmental remediation, among others in shaping the Community Reuse Project.
  - CD-4: Community and Cultural Facilities: Enhance the overall quality of life for all residents of Concord and the region with facilities and programs such as recreation, education and performing arts centers, museums, library and schools.
  - ED-A: A Vibrant and Diverse Economy: Stimulate the local and regional economy by creating quality jobs, products, services and revenue.
  - ED-2: Complementary Development:
    - Ensure that new development complements rather than competes with existing business and retail areas in Concord including the downtown.
    - Provide appropriate neighborhood scale retail in conjunction with new development.
    - Generate opportunities for existing area businesses.

d. Healthy Development Measurement Tool[22]

Developed by the San Francisco Department of Public Health, the Healthy Development Measurement Tool (HDMT) is a comprehensive

evaluation metric to consider health needs in urban development plans and projects. With this tool, development projects can be compared to established development targets that would maximize population health. [23]

A. The HDMT development targets typically advise development projects to be within a half-mile of the following neighborhood public services:
    - Elementary school
    - Public art or performance space
    - Public library
    - Childcare/daycare
    - Community garden
    - Hospital and public health clinic
    - Open spaces
    - Neighborhood/regional parks of ½ acre or more
    - Post office
    - Recreational facility
B. HDMT development targets for neighborhood-serving retail typically advise development projects to be within a half-mile of the following retail services:
    - Supermarket
    - Retail food market (including supermarket, produce store and other retail food stores)
    - Bank or credit union
    - Auto repair
    - Beauty salon/barber
    - Bike repair
    - Dry cleaner
    - Eating establishments (restaurants and cafes)
    - Gym/fitness center
    - Hardware store
    - Laundromat
    - Pharmacy
    - Entertainment (i.e. video store or movie theater)

References

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[1] Concord Community Reuse Project Planning Framework. Available at http://www.concordreuseproject.org/about/goals.htm. Accessed November 10, 2008.

[2] Available at: http://www.hud.gov/offices/cfo/stratplan.cfm. Accessed November 12, 2008.

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Appendix B

Concord Community Survey Questions

Survey conducted: April 5, 2008

1. Community Survey/CCISCO: CONCORD NAVAL WEAPONS STATION

REDEVELOPMENT OF THE CONCORD NAVAL WEAPONS STATION
The information provided through this survey is confidential and critical to enhance our knowledge about your needs and concerns. It is important to include your ideas with regard to this project in order to ensure positive health impacts AND outcomes of this development and future development projects that affect our community. The input from this survey will help us in identifying important issues to analyze the city's proposals for the CNWS. We will share these results at our next community forum. Your participation is very important so that our community can have a voice in this development project.

Please take your time to read carefully and answer all the survey questions and write comments as needed.

1. Which City do you live in?

☐ Concord ☐ Pittsburg ☐ Bay Point ☐ Other

2. In order to see how far you are from services, can you tell us what are cross streets closest to you? (For example, Monument, Oak Road)

Main _____

Crossing street _____

3. Do you know where the Concord Naval Weapons Station(CNWS)is located?

◯ Yes ◯ No

4. Have you heard about the CNWS Redevelopment Plan before coming to the meeting?

☐ Yes ☐ No ☐ Only a little

5. For a major development project like the CNWS, what are key/priority issues you think should be addressed? Please check 3 priority issues/concerns:

◯ Affordable housing
◯ Jobs and Economic Development
◯ Access to Public Transportation
◯ Open Space and Recreation
◯ Pedestrian safety/ walkable neighborhoods
◯ Environmentally Sustainable Development
◯ Air quality
◯ Access to goods and services
◯ Crime prevention

6. With regard to your choice to drive or to take public transportation, please check the answer that is closest to how you feel.
If housing is built around at the CNWS site near the North Concord BART station:

	Yes	No
I would use BART more often.	◯	◯
I would use BART more if there were also stores that I like near the BART station.	◯	◯
I would use BART more only if local buses to BART come often enough	◯	◯
I would use BART and local public transportation more if there were more places to work in the CNWS area.	◯	◯

7. How often do you visit public parks?

☐ Every day ☐ Once a week ☐ Once a month

☐ 2-5 times a week ☐ 2 times a month ☐ Rarely

8. I need more of these types of stores and public services that are easily accessible:

	Yes	No
Supermarkets	◯	◯
Healthy and affordable restaurants	◯	◯
Banks	◯	◯
Senior Citizen Centers	◯	◯
Parks	◯	◯
Medical care facilities	◯	◯
Training centers	◯	◯
Pharmacies	◯	◯
Library	◯	◯
Community centers	◯	◯

9. Would you be interested in increasing your job opportunities through?

	Yes	No
Attending a Training center	◯	◯
Apprenticeship Programs	◯	◯

Other (please specify)

10. This question asks your opinions about cost of housing in Concord.

	Yes	No	I don't know
I am satisfied with my current housing	◯	◯	◯
It is hard for me to pay the mortgage/rent	◯	◯	◯
There are homes available for every income level in Concord.	◯	◯	◯
My family is at risk of foreclosure on our house.	◯	◯	◯

Other comments

11. Besides thinking of health in personal or family terms, WHAT do you think makes a healthy community?

- ☐ A clean safe, high quality physical environment
- ☐ A high degree of public participation in and control over the decisions affecting one's life.
- ☐ The meeting of basic needs (food, water, shelter, income, safety work) for all people in the community
- ☐ All of the above statements define a healthy community

12. Do you or does anyone in your family have?

- ☐ Asthma or respiratory conditions
- ☐ Injury from an accident involving a car in the last 5 years
- ☐ Injury or assault from crime in the last 5 years
- ☐ Overweight or diabetes
- ☐ Depression or anxiety

13. Do you think community participation is important in the process of the CNWS redevelopment project?

◯ Yes ◯ No

14. How would you like to participate in this project? Please check one.

- ☐ Attending informational meetings at the Church or School
- ☐ Participating in public events like this one

Other options

15. Would like to be contacted with opportunities for involvement in the CNWS development project?

◯ Yes ◯ No

*** 16. If you answer yes to the previous question, please provide your contact information below. Thanks**

Name:	
Address:	
City/Town:	
ZIP/Postal Code:	
Phone Number:	

17. other comments or suggestions

Appendix C: Focus Group Questions

Parks and Open Space

1. What are the types of activities you, your family and friends like to do at parks and open spaces?

    - Probes: Picnics, soccer/ball sports, kids play facilities, hiking, biking, camping, etc

2. Do you have easy accessibility to open spaces and parks? How do you usually get to these places (walk, transit, car)? How far are you willing to walk to get to a park? Are there any special populations in your community who you think need better accessibility to open spaces and parks?

    - Probes: such as seniors, transit dependent, youth, children

3. What do you think this project could do to make parks accessible and usable to people in your community?

    - Probes: proximity, hours of access, public safety/crime concerns, safe routes

Walkable Neighborhoods

1. What intersections and streets in Concord are examples of "bad" pedestrian safety and walkability and what are "good" examples?

    - Probes:

2. How could the project take advantage of public transit to promote walkability?

    - Probes: Proximity to BART, bus lines, mix of nearby retail stores, on site jobs

3. Are there specific improvements in transit service that you think are needed?

    - Probes: distance to bus stops, destinations of routes, bus frequencies, bus hours

Housing

1. What would be the type of housing most likely to satisfy your needs?

    - Probes: unit size, support services, on-site open space, etc

2. Do you have some ideas of the types and location of neighborhood goods and services that should be included in this project to support residents' needs?

    - Probes:

3. What do you think would be an affordable monthly payment that would fit most household incomes for people in your community?

    - Probes: $2000, $2500, $3000, $3500

4. If there were a community center o other community –serving facility in your neighborhood, what would you want it to offer?

    - Probes: Library, job resources, teen activities, classes (e.g., cooking, meeting rooms, computer labs, etc.)

Jobs

1. Thinking of your family, friends and neighbors; what kinds of jobs do they have? Where do they work?

    - Probes: In Concord, commute

2. What types of jobs or entrepreneurship opportunities do you hope that the project might bring to this community?

    - Probes: Career ladder, pay benefits, non-polluting, environmental jobs.

Appendix D: Existing Health Conditions

The following section summarizes existing population health conditions for the City of Concord. Unless otherwise noted, this information reflects health conditions between 2002 and 2004 and summarizes the Contra Costa Health Services (CCHS) report, *Community Health Indicators for Contra Costa County.*[1] Because the most readily available health data for Concord are birth and death records, most of the information presented here reflects birth outcomes and causes of mortality. Some aspects of chronic illnesses (e.g. managing diabetes or heart disease on a daily basis) are not represented by the following statistics.

Chronic Diseases

Cancer

The cancer death rate in Concord is higher than that of Contra Costa County overall, and **Concord has been identified by CCHS as a high-risk community for cancer**. Between 2002 and 2004, the cancer death rate in Concord was 191.2 per 100,000 residents, compared to a county rate of 170.5 per 100,000 residents. African Americans have the highest cancer incidence rate among men in Contra Costa County. Among women, Whites have the highest incidence rate, while African Americans are more likely to die of cancer.

The breast cancer death rate in Concord (26.7 per 100,000 women) is relatively close to the rate in the county overall (26.0 per 100,000 women), and neither death rate meets the Healthy People 2010 objective of 22.3 per 100,000. In Contra Costa County, White and African American women die of cancer at a significantly higher rate than do Asian and Latina women.

The death rate for colorectal cancer is 20.3 per 100,000 Concord residents and 16.3 per 100,000 residents of the county. Neither rate meets the Healthy People 2010 objective of 13.9 per 100,000. In the county, all racial and ethnic groups are equally likely to die from colorectal cancer.

Lung cancer death rates are much higher in Concord (60.4 per 100,000) than in Contra Costa County (44.6 per 100,000). For comparison, the Healthy People 2010 objective is 44.9 per 100,000. Men in the county have a higher rate of death from lung cancer than women, and the death rate for African Americans is approximately twice as high as the rate for Asians and Latinos. New lung cancer cases are also disproportionately distributed: African American men in the county have a very high rate of new lung cancer cases (89.8 per 100,000). **Concord has been identified by CCHS as a high-risk community for lung cancer.**

Concord's death rate for prostate cancer is 24.1 per 100,000 men. This is very close to the county death rate of 24.5 per 100,000, and both rates meet the Healthy People 2010 objective of 28.8 per 100,000. African Americans were identified by CCHS as a high-risk group for death from prostate cancer.

Diabetes

The death rate from diabetes in Concord is 24.4 per 100,000, which is higher than the county rate of 19.7 per 100,000. The prevalence of diabetes in the county is 5.3%, which

does not meet the Healthy People 2010 objective of 2.5%. Whites are less likely to die from diabetes than other groups in the county. African Americans are more than twice as likely to die from diabetes compared to the county overall, and have been identified by CCHS as a high-risk group. Latinos have the second highest death rate from diabetes of all racial/ethnic groups.

Heart Disease

The heart disease death rate in Concord is 199.7 per 100,000 residents, which is slightly higher than the death rate in the county of 179.9 per 100,000. Both rates are higher than the Healthy People 2010 objective of 166.0 per 100,000. Men and African Americans are high-risk groups.

Stroke

Concord's death rate from stroke is 64.8 per 100,000, compared to a stroke death rate of 57.8 per 100,000 in the county. Neither rate meets the Healthy People 2010 objective of 50.0 per 100,000. African Americans are at a greater risk of death by stroke than members of other racial and ethnic groups, with a death rate of 85.0 per 100,000.

Childhood Asthma

In Concord, 11.7 out of 100,000 children are hospitalized for asthma. This is significantly lower than the overall county rate of 17.0 per 100,000 children. African American children in the county are hospitalized at a rate almost four times that of White, Asian and Latino children. Hospitalization rates typically represent the most severe asthma cases and leave out the children who seek care at clinics, manage asthma on an ongoing basis, or are not being treated at all.

Obesity and Overweight

Obesity and overweight are considered health conditions because they have been found to increase one's risk for many health problems such as high blood pressure, type II diabetes, coronary heart disease, stroke, some forms of cancer and several sleeping, breathing and joint problems. In 2004, 28.3% of Concord children in grades five, seven and nine were overweight.[2] Countywide in 2005-06, 27.5% of fifth graders were overweight. Fifth grade boys were more likely to be overweight than 5th grade girls, and greater percentages of Pacific Islander American Indian/Alaska Native, Latino, and African American fifth graders are overweight in the county.

Approximately 60% of Contra Costa County adults over age 20 are overweight or obese, and one quarter are obese. This is nearly twice the Healthy People 2010 objective for obesity of 15%.

Injuries

Unintentional Injury

Concord's death rate due to unintentional injuries is 22.3 per 100,000 residents. While it is lower than the county rate of 26.4 per 100,000, Concord's rate does not meet the Healthy People 2010 objective of 17.5 per 100,000. In Contra Costa County, men are almost twice

as likely to die from unintentional injury as women. Residents 65 years and older have the highest unintentional injury death rate of all age groups. Motor vehicle accidents are the leading cause of death for younger people, and falls are the leading cause of death among elderly people.

Homicide

There were 14 homicides in Concord between 2002 and 2004, and 233 in the county overall. The homicide death rate in Concord is lower than the county rate. Men, African Americans, and adults between the ages of 21 and 44 are high-risk groups. Shockingly, African American men represented half of all homicide deaths that occurred in the county during this time even though they comprise only 4.1% of the county population.

Concord's rate of hospitalizations due to non-fatal assault is also lower than the county's rate. High-risk groups are the same as those at a high risk for homicide. African American men are almost seven times as likely to be hospitalized for non-fatal assault than county residents overall.

Suicide

The suicide rate in Concord is 11.7 per 100,000 residents, compared to a county rate of 9.9 per 100,000. By comparison, the Healthy People 2010 target is 5.0 per 100,000. White residents have the highest rate of suicide of all racial/ethnic groups, and men are three times as likely to commit suicide than women.

Concord's rate of non-fatal self-inflicted hospitalizations is also higher than the county's rate, and the rate for White and African American residents is higher than the rate for the county overall.

Communicable Disease

HIV/AIDS

Concord's rate of AIDS diagnoses is 9.3 per 100,000 residents. This is higher than the county rate of 8.6 per 100,000 and much higher than the Healthy People 2010 rate of 1.0 per 100,000. **CCHS considers Concord a high-risk community for HIV and AIDS**. High-risk groups for AIDS in Contra Costa County include men and African Americans. Reporting of HIV infections in the county began in 2002; preliminary data shows that 30.5% of reported cases have been among African Americans and 50.0% among Whites.

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[1] Contra Costa Health Services, Community Health Assessment, Planning and Evaluation Group (CHAPE), June 2007. Community Health Indicators for Contra Costa County.

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