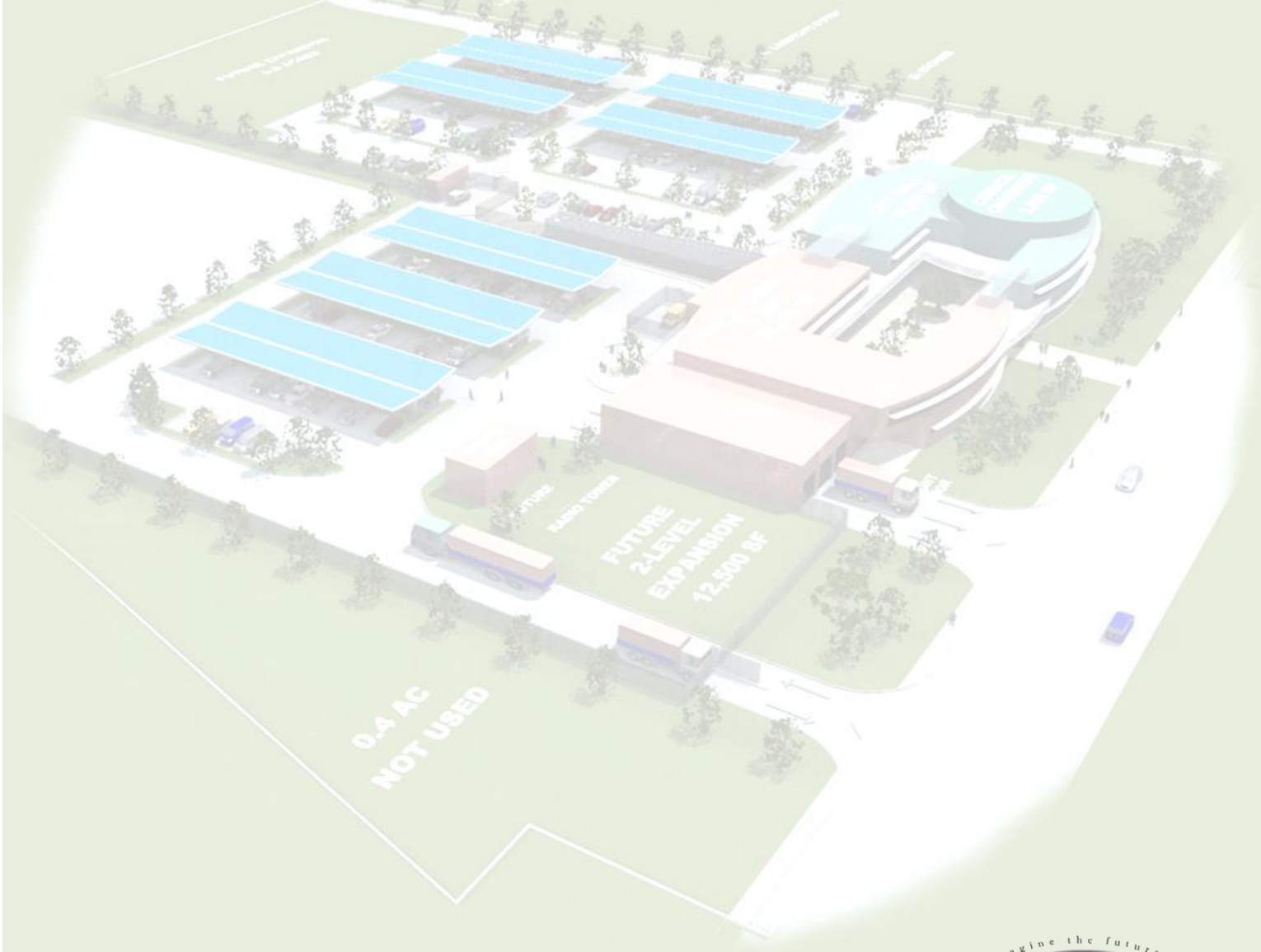
Final Report

Mini Public Facilities Plan
City of Live Oak, California

Goal: To continue to provide the community of Live Oak with basic and extended services that offer opportunities for individuals, families and businesses to prosper as they live, work and play in Live Oak.

7/8/2011

INDIGO | Hammond & Playle Architects, LLP
Bruce Playle, AIA Prescott Nichols, AIA



indigo
HAMMOND+PLAYLE
ARCHITECTS, LLP
art, architecture + ecology
231 G STREET, SUITE 2, DAVIS, CA 95616
530.750.0756 WWW.INDIGOARCH.COM

Imagine the future...
City of Live Oak
General Plan

ACKNOWLEDGEMENTS

The Mini Public Facilities Plan is a City of Live Oak document. It has been prepared by INDIGO | Hammond & Playle Architects, LLP, in coordination with City staff and contract consultants listed here.

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Denis Cook	Contract Planner
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Aaron Orr	Facilities Manager
Scott Rolls	Contract City Engineer
Dan Root	Fire Captain
Satwant Takhar	Finance Director

MASTER PLANNING ARCHITECT

Bruce Playle, AIA	Principal Architect
Prescott Nichols, AIA	Project Architect

INDIGO | Hammond & Playle Architects, LLP

231 G Street, Suite 2, Davis, CA 95616

CONTENTS

TABLE OF FIGURES

TABLE OF TABLES

APPENDICES

EXECUTIVE SUMMARY

The MPFP

The City of Live Oak initiated this Mini Public Facilities Plan (MPFP) to portray a clear statement of community objectives for public facilities, establish a vision of the future, and include strategies to achieve that vision. The MPFP promotes a future land use pattern that is consistent with the community's long-range goals.

The information and concepts presented in the MPFP are used to guide local decisions regarding public uses of land and the provision of public facilities and services. The Plan is long-range in its view and is intended to guide development of public facilities in the City through build-out of the General Plan area.

This MPFP includes evaluation of current conditions, space need projections, facility plan alternatives for three candidate sites as identified by the City, and comparative cost estimations.

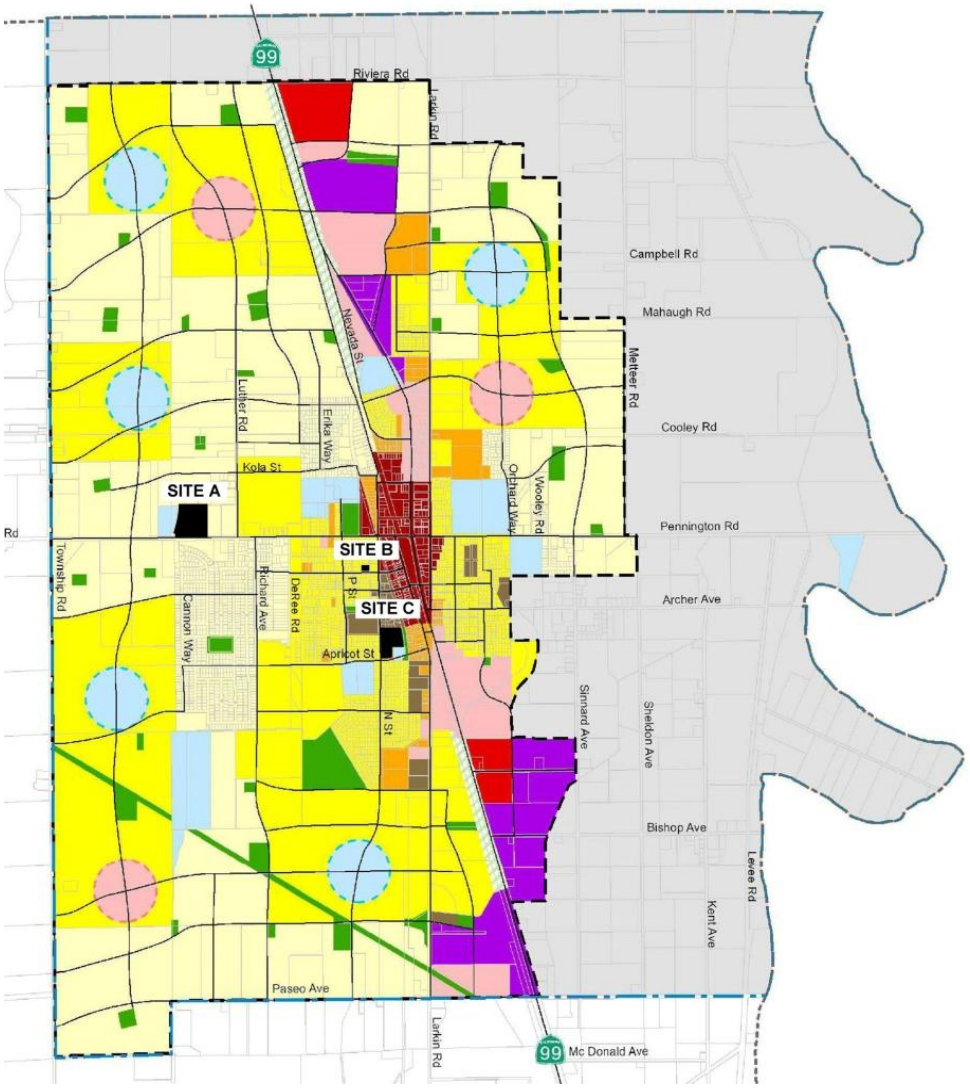

Figure 1 – General Plan Map

This MPFP is intended to be used as a guideline document for the identification of public facilities needed to serve future land development projects under the build-out condition for the City as described in the City's adopted General Plan. The study area for this MPFP is the City's 7 square mile General Plan area (see Figure 1). The scope of this study is limited to three City-owned sites labeled A, B, and C for convenience and as described below.

Figure 2 – Site A: Civic Center at Build-out with Photovoltaic (PV) System on Carports

Site A

Located at approximately 3515 Pennington Road, this 9.4 acre candidate site is currently occupied by a nursery lessee.

This site has been identified as the preferred location for a new Civic Center (Figure 2), phased in as follows:

- Phase 1 would build a new Public Safety Facility combining Fire, Sheriff, Emergency Operation Center (EOC) functions, and space for future Dispatch, Fire Training Facility, etc..
- Phase 2 would build the remainder of the Civic Center, including a City Hall and Council Chambers.

This site's central location relative to the General Plan map (Figure 1) makes it an ideal location for a new Civic Center. Of the three candidate sites, this one is furthest from the active rail line running parallel with Highway 99. A Public Safety Facility at Site A would be more likely to survive a derailment event along this line, should it ever occur, and in fact be able to respond to it. (See Figure 4 for build-out plan without PV option.)

Site B

Located at approximately 2745 Fir Street, this 0.3 acre candidate site is the current home to the existing Fire Station and Sheriff's Substation. For the purposes of the study the adjacent 0.3 acre Church property and adjoining alley were considered part of a 0.7 acre Site B.

The small size of Site B makes it ill-suited for any of the City facilities included in this study. Fire's initial need is for an expanded Fire Headquarters building, which will be part of the Public Safety Facility at Site A. Further, Site B's proximity to Site A will make it ill-suited as a location for a fire substation. Existing buildings at Site B will be repurposed for another future City use or be decommissioned and the 0.3 acre parcel sold once Site A is developed.

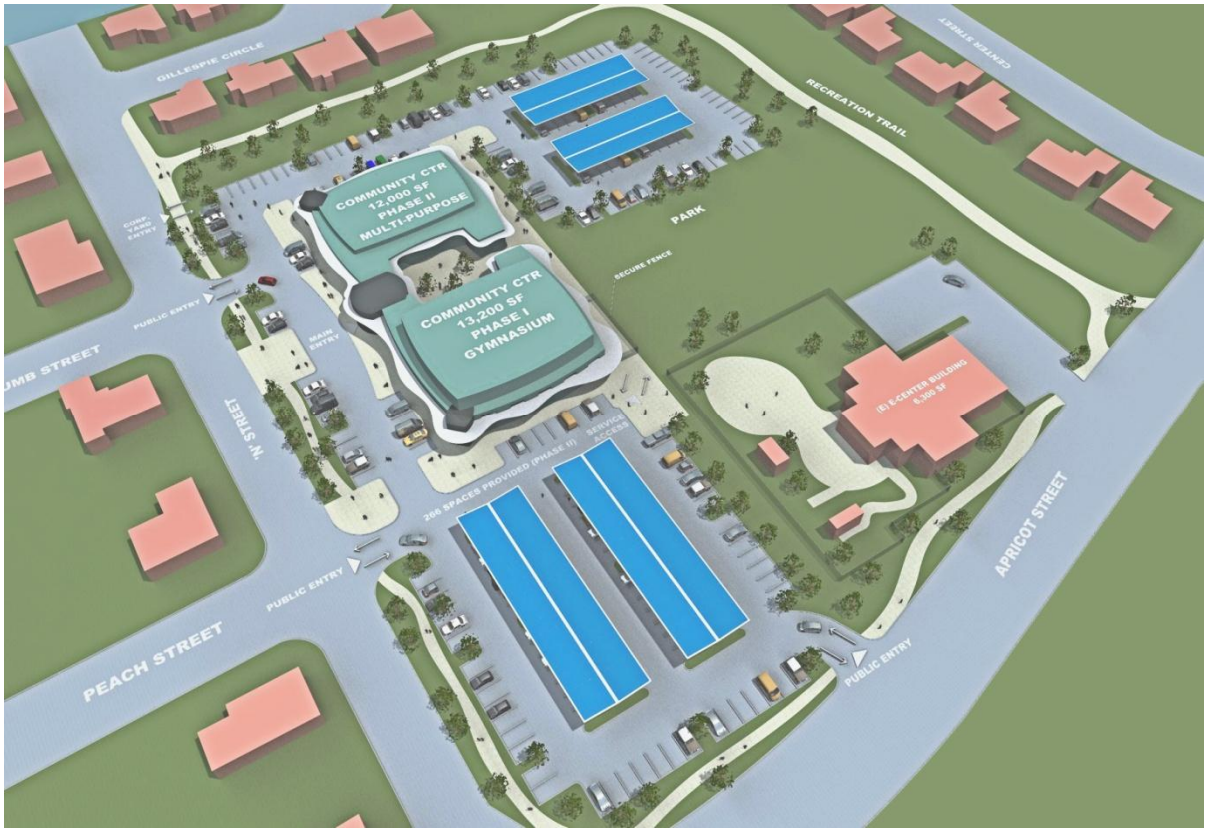

Figure 3 - Site C: Community Center at Build-out with Photovoltaic (PV) System on Carports

Site C

Located at approximately 9633 N Street, this 5.8 acre site is currently composed of the 1.9 acre Corporation Yard, 0.8 acre Migrant Head Start, and 3.1 acres of unused land. For the purposes of the study the 0.8 acre E-Center parcel is removed from consideration and the available site area is 5.0 acres. (See Figure 5 for build-out plan without PV option.)

Site C has been identified as the preferred location for a new phased-in Community Center (Figure 3).

- Phase 1 would build a new Gym and use 2.8 acres, leaving the Corporation Yard, and E-Center facilities in place.
- Phase 2 would build the remainder of the new Community Center and use the remaining 2.2 acres currently occupied by the Corporation Yard, which in the future will be relocated to another location outside the scope of this study.
- Open space adjacent to the existing Recreation Trail would be landscaped as a public park with possible Community Center amenities.
- The 0.8 acre E-Center facility would remain, but could later be converted to park or recreation uses.

Figure 4 - Site A: Civic Center at Build-out (no PV)

Figure 5 - Site C: Community Center at Build-out (no PV)

Findings

At build-out, the City of Live Oak is projected to have added 36,209 new residents to its current 8,791 population, growing to 45,000 residents. The City will also have added 12,800 new workers to its current 900, growing to 13,700 people working in Live Oak. The combined service population will grow from its current 9,007 to 48,288 at build-out. This will require approximately 57,000 SF of additional public facilities to serve all new development.[1]

In response, this report proposes the construction of the following public facilities:

- A new 46,700 SF Civic Center for the City of Live Oak at Site A, combining a 25,200 SF Public Safety Facility & Emergency Operations Center(EOC) with a 21,500 SF City Hall & Council Chambers ;
- A 25,200 SF Community Center at Site C, combining a 13,200 SF Gymnasium and a 12,000 SF Multi-Purpose recreational services building;
- Total project development cost for all projects complete at build-out is on the order of $49.2 million.
- Phasing would mean smaller costs for individual projects implemented over time. The Public Safety Facility is considered the most urgently needed and the highest priority among the facilities studied.
- Net zero-energy building goal: Reduce energy consumption, maximize the efficacy of a photovoltaic system, and achieve zero-net energy buildings by designing for the specifics of climate. Passive solar, thermal mass storage, natural lighting and ventilation and other low-cost sensible techniques will be employed. Efficient mechanical and electrical systems will be used that support the varied uses.

Figure 6 - Photovoltaic Carports at Site A

- A 56,000 SF, 493 kW photovoltaic array mounted on carport structures at both sites has been included at estimated cost of $4,900,000, including carport structures. This estimate, included in the $49.2 million total project development cost above, does not include solar incentives or power purchase agreement, which can dramatically lower costs but are difficult to assess at the planning

[1] See Appendix F for table of general assumptions and sources.

stage. Actual power generation required to meet net zero-energy building goals will be determined during project design, when total yearly energy demand will be calculated and converted to photovoltaic capacity in kW to offset electrical demand. As a benchmark, this MPFP provides the maximum feasible carport-based-only photovoltaic peak kW as follow:

- 176 kW – Civic Center Public Safety Facility
- 132 kW – Civic Center City Hall and Council Chambers
- 106 kW – Community Center Gym Building
- 079 kW – Community Center MPR Building

At Site A, the advantages of combining a new Fire Headquarters and Sheriff's Substation into one centralized Public Safety Facility are:

- Improved public responsiveness through shared lobby public counter;
- Improved site usage through shared secure parking;
- Improved access to shared training facilities;
- Improved access to joint Emergency Operations Center (EOC) facility, also shared with City Hall;
- Cost and space-savings are associated with all of the above.
- Once the Public Safety Facility is operational, Site B's existing 7,300 SF Fire Station and 1,500 SF Sheriff's Substation will be decommissioned and repurposed for other future City use, or sold.

At Site A, the advantages of co-locating the Public Safety Facility with a new City Hall and Council Chambers are:

- Providing a Civic Center for the City of Live Oak central to the community as it grows toward build-out per the General Plan;
- Project could be phased, with Public Safety Building constructed first, followed by City Hall and Council Chambers.
- Improved access to joint Emergency Operations Center (EOC) facility, also shared with Public Safety Facility;
- Essential Services-grade construction used for City Hall and Council Chambers, adding to their survivability and utility during emergencies.
- Once the new City Hall is operational, the 6,200 SF former bank building currently occupied by City Hall will be decommissioned and repurposed for other future City use, or sold.

At Site C, the advantages of providing Community Center services are:

- Adjacency with the popular Recreation Trail, bordering the east boundary of the site, offering indoor-outdoor recreational opportunities and shared parking for access.
- Phasing the project as two buildings allows the existing 1.9 acre Corporation Yard facility to continue

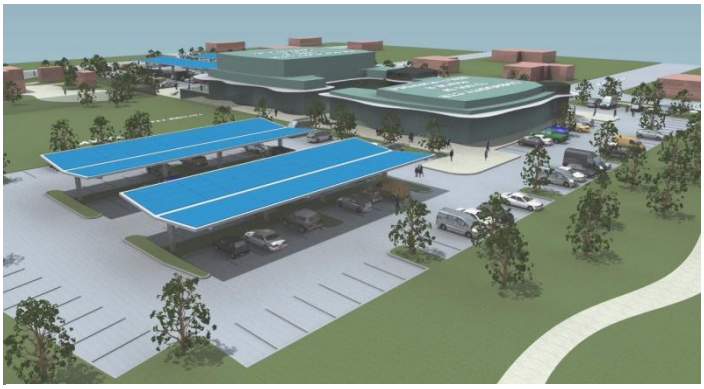

Figure 7 - Site C: Build-out Plan with PV

operations on site while the 13,200 SF Phase I Gymnasium is built.

- Phase I would also upgrade open space between the Gym Building and the Recreation Trail for park and recreational use.
- The 12,000 SF Phase II expansion would add Multi-Purpose Room (MPR) and support services along with additional parking for both the Community Center and the Recreation Trail. (See Figure 7.)
- The existing 6,000 SF Community Building at 10200 O Street would continue to operate at Build-out and complement the utility of the new Community Center.

Survivability & Sustainability

A principal outcome of this MPFP is to provide the City of Live Oak with public facilities which not only survive disaster events, but remain operational for service delivery long after the onset of the event. The proposed Public Safety Facility, City Hall, Council Chambers, and Emergency Operations Center (EOC) at Site A are designed to support the delivery of emergency services during post-disaster scenarios, even during protracted events beyond the 72-hour capacity of the emergency generator. While this is of obvious importance for the public safety program elements, it is also important for City Hall and Council Chambers for oversight of City operations, and even the Community Center which may be needed to house and shelter the public in times of emergency.

Extended survivability is a concept developed and put into practice by INDIGO Architects. It defines the natural ability of a building to maintain critical life-support conditions for its occupants at the same time improving the quality of the indoor workplace, increasing worker efficiency, and reducing absenteeism. First and foremost, buildings are protected from obvious threats such as flooding, earthquake or power grid outage. Natural lighting and ventilation help ensure that the building can be used when power supply for mechanical systems is compromised. Even during a protracted power outage, should fuel for the emergency generator be completely consumed, rooftop photovoltaics will provide power for mission-critical systems on an ongoing basis.

Extended survivability design principles are highly sustainable and inherently energy efficient. When adopted early on, they simplify the work of LEED certification and compliance with other high-performance building guidelines such as the newly enacted CalGreen building code. Key extended survivability and sustainability features of the MPFP include:

- Raised sites for minimum 100-year flood protection, consider berming
- Two-story Civic Center design
- Critical functions placed on second floor
- Elevated emergency generator and fuel supply
- Photovoltaic power for critical needs
- Isolated and protected critical utilities
- Structures designed to “immediate-occupancy” level
- Seismic dampening to improve survivability at same cost
- Energy-efficient design to reduce utility bills, extend survivability
- Use of natural light, ventilation to improve workplace quality, extend survivability
- Design consistent with LEED and CalGreen, making compliance easier.

METHODOLOGY

Beginning January 2011, INDIGO coordinated with City of Live Oak personnel and its separate consultants to prepare this Final Report for a Mini Public Facilities Plan (MPFP) which assesses future public building needs. INDIGO worked with a Facilities Committee formed by the City comprised of leadership from the City Manager, Building and Code Enforcement, Finance, Parks and Recreation, Planning, Public Works, Fire, and Sheriff Services. Periodic meetings with the City have been coordinated by INDIGO for the purpose of advancing the MPFP.

Both the General Plan and successive drafts of the AB 1600 findings were employed as a basis for primarily for staff projections. The Facilities Committee defined space needs to achieve the level of space planning necessary to understand the programmatic and planning requirements of the scoped facilities. Originally limited to Sheriff, Fire, and the need for a new Community Center, the scope was expanded mid-study to include City Hall when it became clear that Site A was large enough to support a Civic Center. Other City facilities which may be required are not included in the scope of this study.

To make this addition to the study possible, it was agreed that the expanded scope would be limited to a tops-down assessment of City Hall and Council Chamber space need based on maintaining existing levels of service. Only overall space need is provided, as the scope did not extend to developing an itemized space list program for City Hall or Council Chambers.

It was further agreed that the scope would be revised to combine the required Fire Headquarters and Sheriff's Substation into one centralized Public Safety Facility. The cost- and space-saving advantages of this approach include the following:

- Improved public responsiveness through shared lobby and public counter;
- Improved site usage through shared secure parking;
- Improved access to shared training facilities;
- Improved access to joint Emergency Operations Center (EOC) facility, also shared with City Hall.

Included in this MPFP are a new Civic Center comprised of a Public Safety Facility and City Hall and Council Chambers, and a new phased-in Community Center. The MPFP establishes programmatic needs for a Public Safety Facility and Community Center, basing projections on comparable facilities of other cities that are geographically and demographically similar to the community at build-out. The MPFP takes full advantage of several pre-existing studies and development land use types which have been provided by the City. Discussions with City department directors and selected staff have been conducted to fully understand and document needs.

EVALUATION OF CURRENT CONDITIONS

A very general assessment of existing facilities conditions was conducted, based on tours of the facilities, approximate age of the facilities, and review of photos. Detailed assessments of existing conditions, including roofing conditions, mechanical and electrical systems conditions, hazardous materials present, complete accessibility code compliance, etc., was not included in the scope of this study.

The three condition types identified are “good,” “fair,” and “poor,” as described below. These assessments indicate the physical condition of the facilities and are not intended to rate programmatic functionality of the uses within. See TABLE 1 for a tabular list of all public facilities within the scope of this study and an assessment of their condition.

Good Condition:

- The facility is in good or excellent condition;
- The facility has benefitted from ongoing maintenance;
- The facility’s key systems may be slightly worn but utility is not impaired;
- Key building systems, such as roof, windows, mechanical, electrical, etc., are estimated to have an average minimum of 10-20 years of useful life remaining;
- Relatively few accessibility compliance issues are present.

Fair Condition:

- The facility is in fair condition;
- The facility has received intermittent maintenance;
- The facility’s key systems may be soiled or shopworn, rusted, deteriorated or damaged, with utility slightly impaired;
- Renovation or repair is expected in the near future;
- Key building systems, such as roof, windows, mechanical, electrical, etc., are estimated to have an average minimum of 5-15 years of useful life remaining;
- Accessibility compliance issues are present.

Poor Condition:

- The facility is in poor condition;
- The facility has received little or no maintenance;
- The facility’s key systems may be badly broken, soiled, mildewed, deteriorated or damaged with utility seriously impaired, and may be reaching the end of their useful life;
- The facility does not support its intended use.
- Serious accessibility compliance issues may be present;
- Prompt renovation, repair, or replacement is needed.

TABLE 1 - EXISTING PUBLIC FACILITIES

BUILDING	ADDRESS	APPROX. SIZE (sf)	CONDITION
City Hall	9955 Live Oak Blvd.	6,200	**Good**
Community Bldg	10200 O Street	6,000	**Good**
Fire Station	2745 Fir Street	7,300	**Fair**
Sheriff's Substation	9867 O Street	1,500	**Poor**

- For City Hall, see Figure 8 - Aerial of Existing City Hall.
- For Community Bldg, see Figure 9 - Aerial of Existing Community Building.
- For Fire Station and Sheriff's Substation, see Figure 10 - Aerial of Site B: Existing Public Safety & Church.

Figure 8 - Aerial of Existing City Hall

Figure 9 - Aerial of Existing Community Building

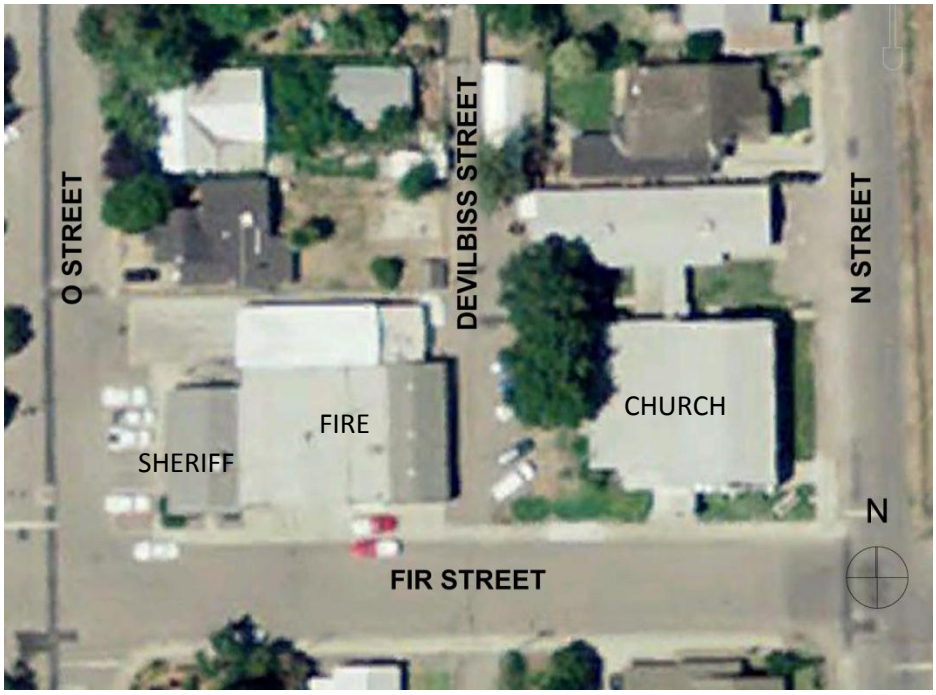

Figure 10 - Aerial of Site B: Existing Public Safety & Church

EVALUATION OF CANDIDATE SITES

Overview

The City of Live Oak, located in northern Sutter County has a service population of approximately 9,007. It is strategically located along the Highway 99 corridor between Yuba City and Chico, and has easy access to San Francisco, Lake Tahoe, and Sacramento. Live Oak residents enjoy the close by Feather River, local parks and abundant recreation opportunities in the area. Live Oak is a thriving rural community with many reasonably priced new homes, good local schools, and nearby colleges.[2]

Site A

Located at approximately 3515 Pennington Road, this 9.4 acre candidate site has been identified as the preferred location for a new Civic Center featuring a Public Safety Facility combining Fire, Sheriff's, and Emergency Operations Center (EOC) functions, and a new City Hall and Council Chambers. Site data:

- Rural Residential Use
- R-1 Low Density Zone District
- Proximity to Cannon Way Bicycle Path and Pennington Bicycle Lane
- Proximity to a Major Collector Street (Pennington Road)
- 0.5 Miles from Community Park
- 0.7 Miles from Historic Commercial District
- 0.7 Miles to 100-Year Floodplain (as of 2010)
- 0.7 Miles to Nearest Rail Hazard
- Storm Drain Access at Southwest Corner on Pennington Road
- Wastewater Manhole 0.1 Miles to East on Pennington Road
- Other Land[3]

Site B

Located at approximately 2745 Fir Street, this 0.3 acre candidate site is the current home to the existing Fire Station and Sheriff's Substation. For the purposes of the study the adjacent 0.3 acre Church property and adjoining alley were considered part of a 0.7 acre Site B. Nevertheless, no projected facility needs fit within this site. Site data:

- Civic Use
- R-2 Small Lot Residential Zone District
- Proximity to Fir & N Street Bicycle Lanes
- Proximity to Minor Collector Streets
- 0.1 Miles from Community Park
- 0.1 Miles from Commercial Core
- 0.1 Miles to 100-Year Floodplain (as of 2010)

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[2] Provided by City of Live Oak.

[3] This farmland mapping category shows "Farmland of Statewide Importance" at Site A; however, because this land is publicly owned, the category does not apply.

- 0.1 Miles to Nearest Rail Hazard
- Storm Drain Access at Southwest Corner at Fir & O Streets
- Wastewater Manhole Access at Southeast Corner on Fir Street
- Urban and Built-up Land

Site C

Located at approximately 9633 N Street, this 5.8 acre site is currently composed of the 1.9 acre Corporation Yard, 0.8 acre Migrant Head Start, and 3.1 acres of unused land. For the purposes of the study the 0.8 acre E-Center parcel is removed from consideration and the available site area is 5.0 acres. Site data:

- Civic & Office Use
- Civic & R-3 Medium Density Zone
- Proximity to Recreation Trail and Apricot & N Street Bicycle Lanes
- Proximity to Minor Streets, Two Blocks from Highway 99 Arterial
- 0.3 Miles from Community Park
- 0.1 Miles from Historic Commercial District
- 0.2 Miles to 100-Year Floodplain (as of 2010)
- 0.1 Miles to Nearest Rail Hazard
- Storm Drain Access at Southwest Corner of Apricot and N Street
- Wastewater Access at Southwest Corner of Apricot and N Street
- Urban and Built-Up Land

Site C has been identified as the preferred location for a new phased-in 25,200 SF Community Center.

- Phase 1 would build a new 13,200 SF Gym building and use 2.8 acres, leaving the Corporation Yard, and E-Center facilities in place.
- Phase 2 would add a 12,000 SF Multi-Purpose Room building with support services and use 2.2 acres, including the remaining 1.9 acres currently occupied by the Corporation Yard, which in future will be relocated to another location outside the scope of this study.
- Open space adjacent to the existing Recreation Trail would be landscaped as a public park with possible Community Center amenities.
- The 0.8 acre E-Center facility would remain, but could later be converted to park or recreation uses.

The proposed public facilities will meet the public facility needs to serve the study area under ultimate build-out land use conditions per the City's General Plan, and as supplemented by additional land use assumptions provided by City staff.

SPACE NEED PROJECTIONS

Projected future City staffing levels were first collected from the City's AB 1600 report and validated with key department heads. The City of Live Oak will need additional public facilities to serve the service population of 48,288 new residents and workers brought into Live Oak by the anticipated new development. The projected new facilities needs of the City of Live Oak are based on assumptions about existing and new development in Live Oak, and based on service standards for comparable communities. The City will need an estimated 57,000 square feet of new public facilities space at build-out, which will be achieved by decommissioning 15,000 sf of existing facilities and constructing 72,000 sf of new facilities.

Program Summary Tables

Space projections were then developed on a line item basis using the staffing projections, reviews of existing space and plans, and spaces that are normal and customary for public facilities. **Appendices A-C** provide the spaces needed to properly support the staffing at build-out. Subtotal's of net space are provided for each department with estimates of "departmental" space, effectively equivalent to lease space in a commercial building with allowances for internal circulation, columns, etc. Gross building area is provided by use of an efficiency factor that provides allowances for exterior building walls, vertical circulation elements, primary circulation, public toilets, and mechanical rooms. The efficiency factor varies depending on type of facility. See TABLE 2 for a summary of space needs.

TABLE 2 - SUMMARY OF PROGRAM SPACE NEED

PLACE NAME	Existing City Facilities	Existing Must Expand By	Existing to Remain at Build-Out	Total New Const. at Build-Out
Community Building - Existing	6,000 sf	0 sf	(6,000) sf	0 sf
Community Center - Ph. 1 Gym	0 sf	13,224 sf	0 sf	13,224 sf
Community Center - Ph. 2 MPR	0 sf	11,991 sf	0 sf	11,991 sf
Public Safety Facility + EOC	8,800 sf	16,427 sf	0 sf	25,227 sf
City Hall + Council Chambers	6,200 sf	15,240 sf	0 sf	21,440 sf
TOTALS*	21,000 sf	57,000 sf	(6,000) sf	72,000 sf

*Totals are rounded to nearest 1,000 sf.

City Hall Projections

As discussed in the section on Methodology, the City Hall was added to the study mid-process, so it has received a more general assessment. Overall area requirements for a new City Hall and Council Chambers were developed using a "tops down" methodology that extrapolated Live Oak's current level of service indices to build-out. Currently, the City provides 1.11 staff per 1,000 population at City Hall. If this is extrapolated to a build-out service population of 48,288, City staff size grows to 54. A quick check with comparable communities validates this short-hand approach. **Appendix D** provides the area tabulations developed by this approach.

PREFERRED FACILITY PLANS

Civic Center at Site A

Phase 1: Public Safety Facility & EOC - An approximately 25,200 sf Public Safety Facility at Pennington Road (Site A) will combine existing sheriff and fire department functions and provide capacity as the City grows. The existing 1,500 sf sheriff's substation building, on 0.10 ac at O and Fir Streets downtown (Site B), functions beyond capacity serving Live Oak's 8,791 population. The existing 7,300 sf fire station, on 0.20 ac at Site B, functions at capacity to meet current needs. This has been identified as the highest priority project. Note that while the 0.4 acre westerly portion of Site A is shown unused in the graphics, it is recommended to retain this as part of the civic center site as it provides layout flexibility and buffering options, which likely will be needed during project design and construction. (See Figure 11.)

Figure 11 - Phase 1: Public Safety Facility & EOC at Site A

As the City grows to general plan build-out, it will add 36,209 residents, or approximately 14,577 new equivalent dwelling units, and 12,800 workers all requiring public safety services. To meet projected need, a 15,159 sf sheriff's facility and a 12,644 sf fire station headquarters will be needed. However, approximately 2,600 sf in savings can be gained by sharing functions such as a public lobby, conference rooms, and an emergency operations center (EOC), resulting in the need for a 25,200 sf public safety facility. The building, the grounds, and parking for 105 vehicles will require an estimated 4.0 ac of site

area, including shared secure parking and a shared emergency power enclosure. The public safety facility will also feature interview rooms, secure evidence processing, booking space, fire dormitories, locker rooms, three engine bays, secure parking, an emergency operations center (EOC), emergency power, and site training facilities.

The existing 1,500 sf sheriff's substation building at Site B is a substandard structure, and is recommended for removal. The existing 7,300 sf fire station at Site B will be decommissioned, and Site B will be assigned a new City use or sold.

Phase 2: City Hall & Council Chambers - An 18,000 sf city hall building with 3,400 sf council chambers attached will be co-located with the public safety facility at Site A to provide a new centralized Civic Center as the City grows toward general plan build-out. (See Figure 12.) The City Hall building, grounds, and parking for 111 vehicles will require an estimated 2.5 ac of site area. In addition to its co-location with the EOC, the City Hall will feature a public lobby, administrative offices, conference rooms, public counters, support spaces, and a new council chambers with its own lobby and media facilities. Combined, this new Civic Center will use 6.5 of the 9.4 ac Site A, leaving 2.9 ac of future growth. Beyond this, the City may want to consider purchase of adjacent parcels.

Figure 12 - Phase 2: City Hall & Council Chambers added at Site A

The existing city hall building will be decommissioned and the site will be assigned a new City use or sold.

Community Center at Site C

A 25,200 sf community center, co-located with the existing corporation yard at N Street and Apricot (Site C), will serve the City as it grows toward general plan build-out. The existing 6,000 sf Community Building faces growth pressure. The influx of new residents, as the City grows toward general plan build-out, requires this additional community center along with 5.0 ac of site area. This new community center will feature a gymnasium with locker rooms, a large divisible multi-purpose room, a commercial kitchen, and onsite parking for approximately 250 cars. The existing community center will remain in use.

Site C has been identified as a suitable site for the new community center given the central location, adequate size, and adjacency to residential & recreation areas served. The community center will initially be co-located with the existing corporation yard facility at Site C with the existing corporation yard occupying 1.9 ac and the community center occupying the remaining 2.8 ac.

Phase 1: Gym Building - Construct the 13,200 sf Gym building and supporting spaces. This initial installation will provide approximately 126 parking spaces, which will meet the parking needs of large events at the gymnasium. (See Figure 13.)

Figure 13 - Phase 1: Gym Building at Site C

Phase 2: MPR Building - Once the corporation yard relocates to its new site, Phase 2 will construct the 12,000 sf MPR building and supporting spaces. Community center parking will be increased to provide 266 parking spaces, enough for simultaneous events at the Gym and MPR buildings. (See Figure 14.)

Figure 14 - Phase 2: MPR Building added at Site C

COST ESTIMATE

Project Development Estimates for Facility Master Plan

The MPFP carries a total project development cost of approximately $49.2 million as shown on TABLE 3. Included are estimated total construction costs ($29 mil.), indirect costs ($14.2 mil.), and other costs including the PV system ($6.2 mil.). See **Appendix E** for breakdown of construction and indirect costs. Phasing of the projects will allow immediate needs to be provided for at lower incremental costs. Note that the component costs for Community Center Phase 1 & 2, for Public Safety, and for City Hall are suggestive of phasing opportunities. The Public Safety Facility is assumed to be built first, as it is the highest priority.

TABLE 3 - SUMMARY OF BUDGET-LEVEL COST ESTIMATE

PLACE NAME	ON-SITE DEVELOPMENT COST	BUILDING COST INCL. O & P	TOTAL BID AMOUNT (DIRECT COSTS)*
Community Center - Ph. 1 Gym	$1,280,408	$3,834,824	**$5,100,000**
Community Center - Ph. 2 MPR	$994,124	$3,477,271	**$4,500,000**
Public Safety Facility + EOC	$3,543,255	$7,895,947	**$11,400,000**
City Hall + Council Chambers	$1,000,000	$6,968,000	**$8,000,000**
TOTALS*	**$6,800,000**	**$22,200,000**	**$29,000,000**

PLACE NAME	INDIRECT COSTS	FF&E, FEES, PV, & LAND	TOTAL PROJECT COST*
Community Center - Ph. 1 Gym	$2,499,000	$1,331,000	**$8,900,000**
Community Center - Ph. 2 MPR	$2,205,000	$1,067,000	**$7,700,000**
Public Safety Facility + EOC	$5,586,000	$2,401,200	**$19,400,000**
City Hall + Council Chambers	$3,920,000	$1,355,000	**$13,200,000**
TOTALS*	**$14,200,000**	**$6,200,000**	**$49,200,000**

*Totals are rounded to nearest $100,000.

SURVIVABILITY & SUSTAINABILITY

Why Extended Survivability?

The recent earthquake & tsunami in Japan is yet another example of what happens in disasters when structures are not able to survive and remain in service. This was probably a 300-year event, but the probability of such events is often misunderstood and misused. This event could easily have happened today, here in California. While an ocean tsunami is not possible in our interior Central Valley, we are certainly flood-prone, and floods of large and damaging proportion in Sutter County and/ or earthquakes are likely to happen during the lifetime of Live Oak's public buildings, representing a serious threat to the delivery of public services when they are needed most. This may be the City of Live Oak's highest duty and responsibility - to serve the public during times of critical emergency.

Photo 1 - Linda Flood, Sacramento CA

To do so, it must have facilities that have survived any predicted event and remain functional and can support emergency service delivery. Most planning and building design standards for flood are based on the ability of a structure to withstand only a 100-year event. The tsunami in Japan, Hurricane Katrina, and other major events demonstrate the need for facilities to remain useable post disaster for extended periods without electric power and other services. Designing for this is called the "*extended survivability*" design process.

Photo 2 - Flood Protected Mech. Equip.

Extended Survivability Defined

"*Extended Survivability*" is the ability of a facility to remain useable even when disaster has stricken and electric and other utilities are down for extended periods. As an urban planning and architectural design concept, it defines how a district or building is able to continue to operate even during a protracted outage of utility services such as electric power, natural gas, water and sewerage. As applied in California, it defines the ability to survive the maximum anticipated earthquake, forest fire, flood or other natural disaster, and to endure the prolonged power and other outages that may follow. At present, public safety facilities need only to comply with minimum building code requirements and provide for emergency power generation for a limited period of time, up to 72 hours. Largely unaddressed, however, is the long term functionality of the post-disaster facility.

Photo 3 - Flood Protected Communication Center, New Orleans

This is where extended survivability comes in. This is especially critical for Essential Services buildings which need to function after a disaster but also for other facilities such as the Community Center which may serve to shelter the public during any disaster. Advances in earthquake engineering, energy conservation, and design with climate and onsite energy production have made this possible to achieve. However, it requires the adoption of a new architectural and engineering design paradigm. A major component of this paradigm is the use of sustainable and passive design with climate-adapted techniques.

Photo 4 - Flood Protected School

Passive planning and design principles utilize the forces of nature to help ensure continued building functionality. Structural design techniques such as using "shock absorbers" in the frame to soften the blow of earthquake forces, allow the building to respond with minimal impact to structure and contents. Use of natural lighting from skylights and windows allows daytime building use without electric power for lighting. Natural ventilation and operable windows help ensure that the building can be used even when power or fuel supply for mechanical systems is compromised. Heating and cooling load avoidance strategies, passive solar design principles, and use of thermal mass to reduce indoor temperature fluctuation are all effective techniques. The reduced demand on emergency power generation resulting from the above listed strategies greatly extends the period of time when the building can remain operational. Finally, small photovoltaic electric systems can then maintain computer and critical communications functionality.

Benefits & Relation To Sustainability

The three main benefits of extended survivability in buildings are: 1) *extended emergency operations* are provided long after onset of an emergency, 2) *workplace quality* is dramatically improved and 3) *energy-efficiency* is improved substantially reducing energy costs and making LEED certification easier.

Photo 5 - Flood Protected Town Hall, Grand Isle, La.

Extended Emergency Operations - The first benefit is that services remain available in a post-emergency scenario and allow for continuous, operations long after the onset of an emergency event such as flood, earthquake, fire, etc. Services required for functionality, building envelope integrity, safety provisions, water and energy availability and the presence of light and air are all provided in a cascading arrangement depending on the extent and duration of emergency as shown on the following table.

TABLE 4 - EXTENDED EMERGENCY OPERATIONS

OPERATION		NORMAL MODE	EMERGENCY MODE	EXTENDED SURVIVABILITY MODE
		normally available	<72 hr. post-event	>72 hr. post-event
		(N)	(E)	(ES)
FUNCTION	All functions fully operational	X		
	Most functions are operational	X	X	
	Critical functions are operational	X	X	X
ENVELOPE	Envelope is intact and fully functional	X		
	Envelope, if damaged, can be immediately occupied	X	X	
	Envelope, if damaged, operates in manual mode	X	X	X
	Envelope admits natural light and air for occupancy	X	X	X
SAFETY	Structure resists all normal and lateral loads	X		
	Structure may be damaged but is safe to occupy	X	X	
	Structure and utilities may be damaged but safe to oc	X	X	X
WATER	Water systems are fully available	X		
	Water supplied by City pressure or e-generator pumps	X	X	
	Water provided only by storage or solar pumps	X	X	X
ENERGY	Normal heating and cooling is available	X		
	Heating and cooling powered by e-generator	X	X	
	Passive heating and cooling, thermal mass	X	X	X
	Photovoltaic with battery backup	X	X	X
LIGHT & AIR	Mechanical ventilation fully available	X		
	Electric lighting fully available	X		
	Electric lighting available assist from e-generator	X	X	
	Natural ventilation with power assist from e-generator	X	X	
	Natural lighting available with battery nightlighting	X	X	X
	Natural ventilation available	X	X	X

Normal (N) Mode operations provide for full serviceability. Emergency (E) Mode operation takes effect during the first 72 hours of an emergency and provides most services normally available, thanks in large part to the presence of emergency power generation with proper fuel supply. Extended Survivability (ES) Mode provides for continued serviceability during protracted emergencies when the grid may be down for long periods of time, beyond the 72-hour duration fuel supply and when refueling may not be an option due to the nature of the emergency, for example in a major flood. In this mode of operation, unlimited and ongoing operations of critical systems are possible.

Photo 6 - Flood Protected Pump Station

The traditional code-based design approach does not design with extended survivability in mind. Design to code only assures life safety for typical structures so people can get out, but does not limit damage to the degree that the building can remain in use. After an earthquake, for example, buildings still standing must often undergo major rehabilitation or be completely replaced due to cost prohibitive rehabilitation requirements. Extended survivability design protocol includes the use of high performance engineering methodologies instead of prescriptive code-based design techniques.

Photo 7 - Earthquake Protected Police Building with Seismic Dampers & Daylighting, Vacaville, Ca.

Workplace Quality Improved - The second benefit of designing for extended survivability is that a much higher quality workplace environment results from the use of natural lighting and ventilation. Daylight provides building users with superior visual acuity, a sense of psychological well being, and dramatic energy savings. Extensive research has shown that naturally lit buildings which control the use of daylight for the benefit of the occupants improve worker satisfaction and productivity as well as reduce absenteeism. This is due to the superior quality of natural light, exposure to the diurnal cycle and the provision of exterior views which are all part of a daylighting strategy. Just as we bring daylight and air inside the building envelope, we understand the importance of bringing people to the outside of buildings. Shelter, good solar orientation, courtyards and covered walkways provide outdoor spaces which can be used year-round.

Energy-efficiency, LEED and Sustainability - The third benefit is that the planned absence of energy to run the building causes the designer to consider the climate of a region in its design, which in turn makes a building inherently more energy-efficient. Designing for the specifics of climate is the most powerful way to reduce energy consumption. By designing with natural systems instead of trying to override them, low-cost or even no-cost energy reduction gains are made. In simple terms, passive solar, thermal mass storage, natural lighting and ventilation and other low-cost sensible techniques are employed to reduce reliance on energy-intensive mechanized solutions.

Developing a strong, simple extended survivability rationale results in elegant building designs that harness natural forces with the latest in technology and, in the process, make buildings more easily certifiable in high-performance building programs such as LEED. The path to LEED, zero net-energy buildings and carbon neutrality becomes easier to follow under the extended survivability framework, helping Live Oak meet those goals, as well as creating highly energy-efficient public facilities which are better, more productive work environments.

Green House Gas Reduction

Extended survivability and energy efficiency measures directly mitigate green house gas (GHG) emissions, facilitating City of Live Oak compliance with AB 32 and EO S-3-05.

Green house gases (GHG) trap heat in the atmosphere, causing the earth to warm. The scientific consensus on climate change is that the fossil fuel driven increase in CO2 emissions has caused a rapid increase in global average temperatures over the past one hundred years; this is particularly evident over the last five decades.

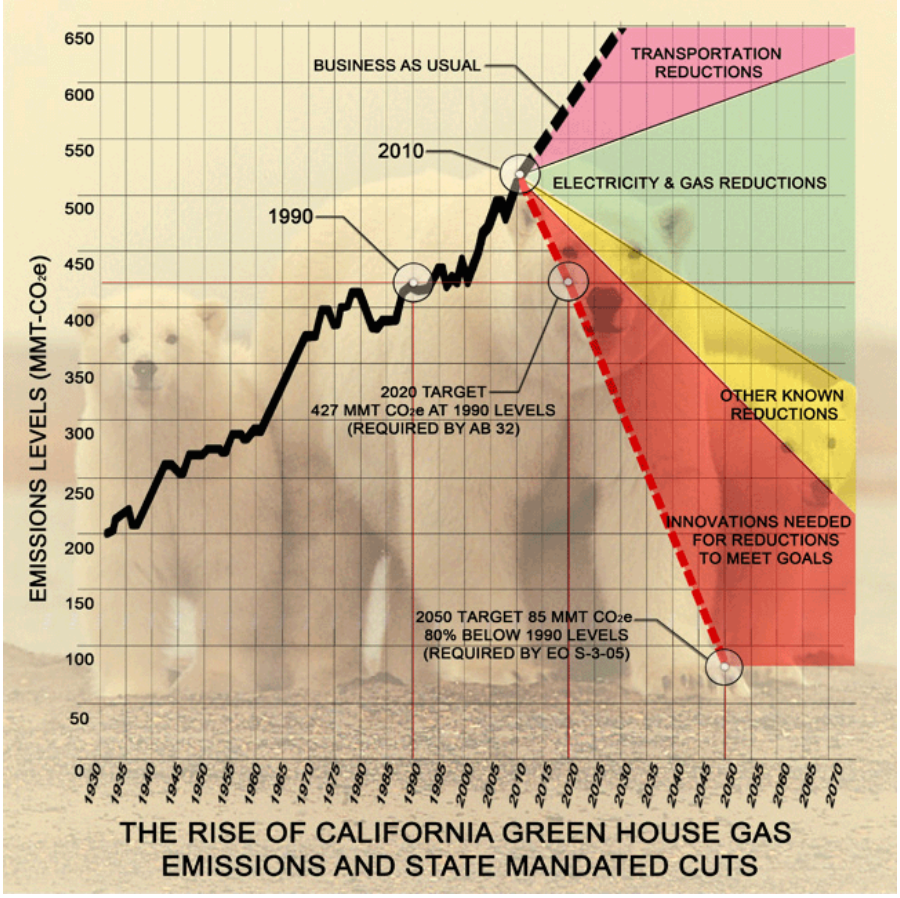


Figure 15 - Green House Gas Mandate

In response, California has enacted climate change legislation, most notably AB 32, which establishes climate change emissions reduction targets for the state. AB 32 requires GHG emissions to be reduced to 1990 levels by 2020 and EO S-3-05 would see emissions drop to preindustrial levels by 2050. General Plan update CEQA approvals offer the path to AB 32 compliance for Cities, with the State Attorney General providing ultimate oversight and enforcement.

Local governments have a unique ability to effect GHG mitigation by adopting Climate Action Plans (CAPs). When successfully amended to the General Plan, City and county CAPs provide a roadmap to reduce not only direct operational GHG emissions, but also influence the GHG footprints of citizens, industries, and businesses within their jurisdiction. Through visibility and purchasing power, local governments can set an example for households and businesses in their GHG-reduction practices. Nearly every local, county and state agency in California is acting to mitigate GHG emissions. (See Figure 15.)

Net Zero-Energy Buildings

Definition - Net zero-energy buildings (ZEB), including their site, consume zero net energy and emit zero net carbon annually. The result is net zero energy costs, when averaged over a year, for the City.

Simplified ZEB Protocol - Designing for the specifics of climate is the most powerful way to reduce energy consumption and achieve zero-net energy buildings. This is a key precept of the bioregional design approach. By designing with natural systems instead of trying to override them, low-cost or even no-cost energy reduction gains are made. In simple terms, passive solar, thermal mass storage, natural lighting and ventilation and other low-cost sensible techniques are first employed. Once the basic building envelope has been optimized for the particular Central Valley climate zone for Live Oak, efficient mechanical and electrical systems are used that support all facility uses such as lobbies, office, and training space. Total yearly energy demand is then calculated and converted to photovoltaic capacity in kW to offset this demand. (See Figure 16 for recently completed ZEB example.)

Figure 16 - Net Zero-Energy Transportation Center, Vacaville, Ca.

ZEB and Life Cycle Cost - Choices at every stage - from standards and specifications to design and construction - are made based on efficacy of function, energy-efficiency, durability and cost. Cost is not only first cost but life cycle cost including maintenance, operations, recycling and replacement cost. Since total envelope and process loads are reduced to minimum, there is a corresponding reduction in the offset cost to achieve zero-net energy since less on-site renewable energy (e.g. photovoltaics) is required. This means less cost to installed KW capacity, or that the KW capacity the City installs will offset more building area.

Facility Design Recommendations

Key extended survivability and sustainability features recommended for the buildings included in the MPFP include:

- **Raise sites for minimum 100-year flood protection** - Civic Center and Community Center sites to be raised minimum 1' above base flood elevation (BFE) to protect against projected 100-year flood events. Consider berming to further protect against flooding.
- **Design two-story Civic Center** – This provides a second level retreat in case of severe flooding, helping ensure delivery of public services during emergencies. Also saves land and makes use of the Pennington site to house the new Civic Center possible. The resulting compact building design shares one elevator and results in a resource-efficient and energy-efficient design.
- **Place critical functions on second floor** – In order to provide an area of retreat in case of flooding which exceeds the 100-year projection, place critical functions on second floor where flood water will not reach. Included are the Emergency Operations Center (EOC), future Dispatch/ Communications Center and Council Chambers.
- **Elevate emergency generator and fuel supply** – Raise emergency power generator and its 72-hour fuel supply to be able to withstand any flooding risk, also includes transfer switch and emergency power panels. Space below to be used for storage and hardened against flooding.
- **Photovoltaic power for critical needs** – Consider small-scale rooftop photovoltaics array to power critical emergency circuits, IT, radio, etc. Could be rooftop mounted or site racks.
- **Isolate and protect critical utilities** – Evaluate each building system for criticality including but not limited to radio, telecommunications, power, sanitary sewer, potable water, etc. Identify feasible measures which can be cost-effectively taken to harden against flooding, earthquake or other threat to be determined.
- **Design structures to "immediate-occupancy" level** – The co-located Public Safety building housing Sheriff, Fire and Emergency Operations Center (EOC) together with adjoining City Hall will all be designed to the highest structural level, that of immediate occupancy which means that the structural frame and all building services will be available after a seismic event.
- **Use seismic dampening to improve survivability at same cost** – Consider use of viscous fluid dampers (VFD) or other structural dampening techniques to increase the resilience of the building frame under earthquake loads, improving survivability during and serviceability after an earthquake.
- **Use energy-efficient design to extend survivability and reduce utility bills –** A variety of measures such as east-west building orientation, use of thermal mass, high-efficiency mechanical strategies, etc. will reduce energy consumption and extend the duration in which emergency power can be provided.
- **Use natural light and ventilation to improve workplace quality and extend survivability –** Use of natural lighting and ventilation provides for a high-quality workplace day-in and day-out, but also means that the building can be passively operated and inhabited when emergency power has been exhausted.
- **Make full use of daylighting** – Make full use of windows for daylight, use skylights at roof so that most of building can be naturally lit for use in emergency. Daylighting means that primary work spaces are provided with natural light from skylights and/ or high windows with light shelves, with the electric lighting system controlled by light sensors which automatically turn them off when there

is sufficient natural light. 30% - 50% of the energy used by most buildings in the U.S. goes into lighting, a large share of that can be saved by a daylighting system.

- **Add window shading** – Use overhangs, solar screens and other devices to permit view out, yet reduce summer heat load, reduce air conditioning demand and extend duration of emergency generator power due to reduced rate of fuel consumption. Saves on utility bill, too.
- **Provide super-insulation** – Maximum insulation values are utilized. Wall insulation of up to R-40 is encouraged, twice the usual thermal resistance of a wall. Roof insulation values between R-30 and R-40 are desired. INDIGO has successful experience using Sutter County's own locally-produced rice straw bales in building construction which provides up to R-40 walls.
- **Increase thermal mass** – Heat storage capacity is maximized through the use of high specific heat and heat capacity materials such as concrete, masonry and even interior wallboard assemblies. Novel use of materials to increase thermal mass should be considered such as straw bale covered concrete exterior walls, concrete floor and concrete roof to name a few. The large heat storage capacity of these surfaces will moderate temperature swings in the building and reduce the demand for heating and cooling. The resulting "thermal flywheel" effect can be amplified through use of nighttime ventilation strategies to help "carry" the building through hot summer days with less mechanical cooling required.
- **Nighttime ventilation** – During the summer, when the night air is cool, buildings can be ventilated with outside air to cool the heavy mass of interior and exterior walls. A cool slab and heavy mass walls will help keep the building cool for much of the day. Thus, demand for mechanical refrigeration cooling can be greatly reduced in Live Oak's hot climate.
- **Reflective cool roof** – Where re-roofing is required, use "cool roof" products. Roofs should be cool roof designs which reduce roof surface temperatures, reduce heat transmission into the building and reduce "heat island" effect.
- **Use natural ventilation** – Natural ventilation or mixed-ventilation delivery of outside air could be provided. Naturally ventilated air will flow from low vents to high vents.
- **High-efficiency mechanical systems** – Use high-efficiency mechanical systems which will reduce utility bills at same time as extending duration of emergency generator power due to reduced rate of fuel consumption.

Public Safety Facility Program Summary

Projected Need at GP Buildout

STAFF/ SUPPORT SPACE	QTY SPACE	TYP DIMS	UNIT AREA (SF)	TOTAL AREA (SF)	COMMENTS
SHERIFF	**59**	**n/a**	**n/a**	**9,437**	
Administration					**597**
Shared Office	1	9x15	144	144	Office space for 2 at a time.
Sheriff's Office	1	12x19	224	224	Office.
Toilet Room	1	7x11	80	80	Unisex toilet room.
Records					**640**
Records Clerk	***3***	***8x13***	***100***	***300***	Workstation.
File Room	1	11x17	180	180	Records Files in fire-safe area.
Communications					**1,333**
Future Dispatch	1	25x40	1,000	1,000	Would support approximately 6 CAD stations & Supervisor.
Investigations					**1,344**
Detectives - Sergeant	1	11x17	180	180	Office.
Detectives - Deputies	***2***	***8x13***	***100***	***200***	Workstation.
Storage	1	8x13	100	100	
Interview Rooms	2	9x14	120	240	Hard interview, wired for A/V, patrol access, 1 with 1-way
Toilet for Interview Rooms Use	1	6x10	60	60	
Video Monitor Room	1	8x13	100	100	
NTF	1	6x10	64	64	Workstation.
GTF	1	6x10	64	64	Workstation.
Evidence					**649**
Evidence - CSO	1	8x13	100	100	Workstation.
Evidence Receiving	1	12x20	252	252	Including pass-thru lkrs., bag/tag, etc.
Evidence Preparation	1	9x15	135	135	Including counter and cabinet space.
Patrol					**4,405**
Sergeant's Office(s)	1	16x25	400	400	Shared office space with 1 workstation each.
Open Office Area	1	28x45	1,240	1,240	17 w.s., report writing and workstations indicated below.
Report Writing	3	6x9	49	147	Workstation incl. in Open Office Area, see above.
Corporals	3	6x9	49	147	Workstation incl. in Open Office Area, see above.
Officer	9	6x9	49	441	Workstation incl. in Open Office Area, see above.
Officer - SRO	1	6x9	49	49	Workstation incl. in Open Office Area, see above.
K-9	1	8x12	96	96	
Armory/ SWAT Storage	1	9x14	120	120	Equipment item incl. clearance.
Briefing/ Training	1	16x25	400	400	Seats 20.
Chair and Equip Storage	1	8x12	95	95	Chair and equipment storage.
Form Storage	1	7x11	75	75	Built-in cabinet space.
Radio Handset Station	1	5x9	45	45	Alcove or closet; see also locker rooms.
Volunteers	1	6x9	49	49	Shared workstation for 2 volunteers, incl. in above.
Booking					**573**
Personnel Sallyport	1	7x11	80	80	May be deleted if Vehicle Sallyport is considered to serve.
Reception and Booking	1	10x16	150	150	Incl. Live Scan.
Temporary Booking Interview Room	2	6x10	60	120	
Accessible Booking Interview Room	1	7x11	80	80	Assumes temporary.
Support					**3,040**
Sally Port Entry	1	11x18	200	200	
Kitchen/ Breakroom	1	12x20	250	250	Break table w/ 4 chairs. Rollup door/ service counter to Briefing
Locker Room (Men)	1	22x36	800	800	Lockers and showers.
Locker Room (Women)	1	16x25	400	400	Lockers and showers.
Staff Toilets (Men & Women)	2	10x16	150	300	In Locker area
Central Supply	1	7x11	80	80	Central stores for facility.
Storage	1	12x20	250	250	General building storage.

Public Safety Facility Program Summary

Projected Need at GP Buildout

STAFF/ SUPPORT SPACE	QTY SPACE	TYP DIMS	UNIT AREA (SF)	TOTAL AREA (SF)	COMMENTS
FIRE	**22**	**n/a**	**n/a**	**6,571**	
Administration					**731**
Workroom/ 1st Aid Station	1	8x13	100	100	Counter, 5 4-drwr file cab, CAD sys printer. Map walls.
Shared Office	1	9x15	144	144	Office space for 2 at a time.
Captain's Office	1	12x19	224	224	2 Workstations, Files for 6.
Toilet Room	1	7x11	80	80	Unisex toilet room.
Residential					**1,524**
Dorm Rooms	3	10x17	175	525	2 beds, 6 lockers per room.
Kitchen/ Dining Room	1	12x20	250	250	Table w/ 4 chairs.
Day Room	1	15x24	368	368	Bookshelves, TV, 4 easy chairs
Support					**1,533**
SCBA Room	1	9x14	120	120	
Laundry	1	9x14	120	120	Extractor & Drying Rack + H&C Hose Down Capability.
Turnout Room	1	9x15	140	140	
Hose Room	1	9x15	140	140	
Staff Toilets (Men & Women)	2	10x16	150	300	in Dorm Room Area
Central Supply	1	7x11	80	80	Central stores for facility.
Storage	1	12x20	250	250	General building storage.
Apparatus					**4,973**
Engine Bays	3	14x75	1,050	3,150	Accommodates future ladder truck.
Command Vehicle Bay	1	14x30	420	420	
Mechanic's Shop	1	10x16	160	160	
COMMON AREAS - PUBLIC	**4**	**n/a**	**n/a**	**1,325**	
Public					**460**
Lobby, incl. front counter	1	12x19	225	225	Counter, 1 to 2 Chairs, Paging Access.
Public Toilets	0	10x16	150	0	Required if not shared use with City Offices.
Interview Room	1	9x14	120	120	Soft interview, wired for A/V.
Emergency Operations Center (EOC)					**1,307**
EOC/ Community Meeting Room	1	23x37	850	850	Shared with City Hall
EOC/ Executive Conference	0	14x23	322	0	Shared with City Hall
EOC Storage	1	9x15	130	130	Shared with City Hall
COMMON AREAS - STAFF	**9**	**n/a**	**n/a**	**1,587**	
Administration					**909**
Reception/ Executive Assistant	1	9x14	120	120	Counter
Duplication Paper Processing Room	1	12x20	240	240	Copy and processing function.
Main Conference Room	1	14x23	322	322	Conference Room to seat 12 plus counter.
Support					**1,207**
Staff Entry	1	11x18	200	200	
Exercise Room	1	14x22	300	300	3 Cardio Stations, Impact Floor System, DF, TV
Janitor's Closet	1	5x9	45	45	Infrastructure requirement.
Electrical Room	1	9x14	120	120	Infrastructure requirement.
I.T. Data Room	1	9x14	120	120	Infrastructure requirement.
Mechanical Room	1	9x14	120	120	Infrastructure requirement.
Net Sub-Total	**94**	**n/a**	**n/a**	**18,920**	
Circulation				**75%**	Net-to-Gross Circulation Factor.
					25227
Gross Sub-Total	**94**	**125x202**	**25,227**	**25,227**	GSF = 18920 NSF /0.75 (or x 1.33) = 25227

Public Safety Facility Program Summary

Projected Need at GP Buildout

SITE AREA	QTY	TYP DIMS	UNIT AREA (SF)	TOTAL AREA (SF)	COMMENTS
Buildings at Ground Level					**2.63**
Building Footprint				25,227	
Vehicle Sallyport	1	25x40	1,000	1,000	1000 sf Vehicle Sallyport w/ 1,000 sf approach.
Training Tower	1		4,800	4,800	
Training Tower Apron	1		10,400	10,400	
Drafting Pit	1		14,000	14,000	For pump testing and engineer training.
Burn Building	0		9,000	0	
Burn Building Apron	0		39,300	0	
Training Storage Building	1		800	800	Pre-engineered building.
Apparatus Bay Approach	1		1,000	1,000	
Public Safety Facility Parking & Drives					**0.98**
Administration, Captain	1		300	300	
Administration, Sheriff	1		300	300	
Patrol units - onsite	***12***		***300***	***3,600***	Assumes approx. 1 per sworn.
Patrol units - take home	20		300	6,000	Assumes may be parked on site in the future.
Detectives	1		300	300	
School Resource Officer	1		300	300	
Community Services - Truck	1		300	300	
Community Services - Car	1		300	300	
Radar trailer	1		300	300	
K-9	1		300	300	
Pressure washer trailer (graffiti abatement)	1		300	300	
Bicycles for bicycle patrol unit	2		35	70	
Staff & Volunteers	30		300	9,000	
		73			
Other Parking & Drives					**0.44**
EOC/ Community Meeting Room	16		300	4,800	50 capacity/ 3 = 16 spaces
Visitors	16		300	4,800	
		32			
Net Site Area Required	**105**			**88,197**	Quantity Total = Parking Spaces Total
Circulation				**50%**	Net-to-Gross Circulation Factor.
					4.05
Gross Site Area Required	**105**	**330x534**	**176,393**	**176,393**	GSF = 88197 NSF /0.5 (or x 2) = 176393
Gross Site Area Required (in acres)				**4.05**	Acres = 176393/43560

Referenced Notes:
1) Program summary is preliminary only and subject to confirmation.

LEGEND:

= Public / Non-departmental Space

= Sheriff Department Space

= Fire Department Space

= Joint / Inter-departmental Space

Phase I: Community Center Gymnasium Building
Program Summary

STAFF/ SUPPORT SPACE	QTY SPACE	TYP DIMS	UNIT AREA (SF)	TOTAL AREA (SF)	COMMENTS
SPACE LIST	**11**	**n/a**	**n/a**	**11,240**	
Public Spaces					Gross Sub-Total for Public Spaces is 684 GSF.
Lobby, incl. front counter	1	14x22	300	300	Counter, 1 to 2 Chairs, Paging Access
Reception area	1	11x18	200	200	Built-in reception desk & filing cabinets
Public Toilets	1	7x11	81	81	ADA for staff and public
Support Spaces					Gross Sub-Total for Support Spaces is 1007 GSF.
Gym office	1	12x20	250	250	
Janitors closet	1	7x11	75	75	
General storage	1	12x20	250	250	
Mechanical room	1	9x14	120	120	
Electrical room	1	10x16	161	161	
Common Spaces					Gross Sub-Total for Common Spaces is 11533 GSF.
Women's restroom	1	12x20	250	250	
Men's restroom	1	12x19	225	225	
Gymnasium	1	88x106	9,328	9,328	Dining capacity is 622; Assembly capacity is 1333.
Net Sub-Total	**11**	**n/a**	**n/a**	**11,240**	
Circulation				**85%**	Net-to-Gross Circulation Factor.
Gross Sub-Total	**0**	**90x146**	**13,224**	**13,224**	GSF = 11240 NSF /0.85 (or x 1.18) = 13224

STAFF/ SUPPORT SPACE	QTY SPACE	TYP DIMS	UNIT AREA (SF)	TOTAL AREA (SF)	COMMENTS
SITE UTILIZATION					
Building at Ground Level					
Building Footprint				13,224	
Delivery/ service/ trash/ yard	1		375	375	15' x 25' walled court with gate to contain trash dumpster, grease interceptor, a/c and refrigerator condensers, gas meters, etc
Parking					
Visitors	156		300	46,873	Based on 1 space per 40 SF of GYM assembly area.
Staff	5		300	1,500	
Net Site Area Required	**161**			**61,972**	
Circulation				**50%**	Net-to-Gross Circulation Factor.
Gross Site Area Required	**161**	**277x448**	**123,943**	**123,943**	GSF = 61972 NSF /0.5 (or x 2) = 123943
Gross Site Area Required (in acres)				**2.85**	Acres = 123943/43560

Referenced Notes:
1) Program summary is preliminary only and subject to confirmation.

Phase II: Community Center MPR Building
Program Summary

STAFF/ SUPPORT SPACE	QTY SPACE	TYP DIMS	UNIT AREA (SF)	TOTAL AREA (SF)	COMMENTS
SPACE LIST	**20**	**n/a**	**n/a**	**10,192**	
Public Spaces					Gross Sub-Total for Public Spaces is 507 GSF.
Lobby, incl. front counter	1	11x18	200	200	Counter, 1 to 2 Chairs, Paging Access
Reception area	1	10x16	150	150	Built-in reception desk & filing cabinets
Public Toilets	1	7x11	81	81	ADA for staff and public
Administration					Gross Sub-Total for Administration is 1212 GSF.
Open office	1	16x25	400	400	
Director's office	1	11x18	200	200	
Info & assist. Office	1	11x17	180	180	
Tech. support/ open	1	10x16	150	150	
Kitchenette	1	6x9	50	50	8' long base & upper cab's
Copy Room	1	6x9	50	50	8' long base & upper cab's
Support Spaces					Gross Sub-Total for Support Spaces is 2419 GSF.
Kitchen	1	27x44	1,200	1,200	Commerical kitchen.
Boutique / store	1	11x18	200	200	
Drink and snack bar	1	6x9	50	50	
Janitors closet	1	7x11	75	75	
General storage	1	12x20	250	250	
Mechanical room	1	9x14	120	120	
Electrical room	1	10x16	161	161	
Common Spaces					Gross Sub-Total for Common Spaces is 7853 GSF.
Senior Lounge	1	11x18	200	200	
Large, Divisible Multi-Purpose Room	1	61x99	6,000	6,000	Dining capacity is 400; Assembly capacity is 857.
Women's restroom	1	12x20	250	250	
Men's restroom	1	12x19	225	225	
Net Sub-Total	**20**	**n/a**	**n/a**	**10,192**	
Circulation				**85%**	Net-to-Gross Circulation Factor.
Gross Sub-Total	**0**	**86x139**	**11,991**	**11,991**	GSF = 10192 NSF /0.85 (or x 1.18) = 11991

STAFF/ SUPPORT SPACE	QTY SPACE	TYP DIMS	UNIT AREA (SF)	TOTAL AREA (SF)	COMMENTS
SITE UTILIZATION					
Building at Ground Level					
Building Footprint				11,991	
Exterior covered entry	1		600	600	Single aisle porte-cochere.
Courtyard	1		5,000	5,000	Combination of hardscape/ softscape, water feature, barbecue, paths, benches, small and large gathering spaces. Connects to Multi-Purpose Room.
Delivery/ service/ trash/ yard	1		375	375	15' x 25' walled court with gate to contain trash dumpster, grease interceptor, a/c and refrigerator condensers, gas meters, etc
Parking					
Visitors	101		300	30,150	Based on 1 space per 40 SF of MPR assembly area.
Staff			300	0	
W					
Net Site Area Required	**101**			**48,116**	
Circulation				**50%**	Net-to-Gross Circulation Factor.
Gross Site Area Required	**101**	**244x395**	**96,231**	**96,231**	GSF = 48116 NSF /0.5 (or x 2) = 96231
Gross Site Area Required (in acres)				**2.21**	Acres = 96231/43560

Referenced Notes:
1) Program summary is preliminary only and subject to confirmation.

City Hall & Council Chambers
Program Summary

STAFF/ SUPPORT SPACE	EXISTING	*ADD*	BUILD-OUT	COMMENTS
City Office Staff	10	*44*	54	
Service Population	9,007	*39,281*	48,288	
Level of Service	1.11		1.11	Staff per 1000 Population
City Office Area (SF)	6,200	*11,840*	18,040	(E) to be confirmed
SF per Staff	620		400	Adjusting to Typical SF/ Staff
City Office (SF)/ Pop	0.69		0.37	
Council Chambers (SF)	600	*2,800*	3,400	(E) to be confirmed
Council (SF)/ Pop	0.07		0.070	
Seats	30	*140*	170	
Seats per Council SF	0.05		0.050	
Seats per 1000 Population	3.33		3.52	
Parking Space Need	20	*91*	111	Staff + Council Seating/ 3
Site Area (AC)	0.3	*2.20*	2.5	Based on parking and footprint.

Note: Projections are preliminary only and subject to change based on bottoms-up program summary.

BUDGET-LEVEL COST ESTIMATE

MINI PUBLIC FACILITIES PLAN, CITY OF LIVE OAK, CALIFORNIA

INDIGO/ Hammond & Playle Architects, LLP

July 8, 2011

KEY	PLACE NAME	PROGRAM AREA				ON-SITE DEVELOPMENT COST			BUILDING COST INCL. O & P			TOTAL BID AMOUNT (DIRECT COSTS)*
		Existing City Facilities	Existing Must Expand By	Existing to Remain at Build-Out	Total New Const. at Build-Out	Site Area	*Cost/ ac*	Subtotal	Bldg. Area	*Cost/sf*	Subtotal	
CCE	Community Building - Existing	6,000 sf	0 sf	(6,000 sf)	**0 sf**	0.0 ac	*$0/ac*	**$0**	0 sf	*$0/sf*	**$0**	**$0**
CC1	Community Center - Ph. 1 Gym	0 sf	13,224 sf	0 sf	**13,224 sf**	2.8 ac	*$450,000/ac*	**$1,280,408**	13,224 sf	*$290/sf*	**$3,834,824**	**$5,100,000**
CC2	Community Center - Ph. 2 MPR	0 sf	11,991 sf	0 sf	**11,991 sf**	2.2 ac	*$450,000/ac*	**$994,124**	11,991 sf	*$290/sf*	**$3,477,271**	**$4,500,000**
PSF	Public Safety Facility + EOC	8,800 sf	16,427 sf	0 sf	**25,227 sf**	4.0 ac	*$875,000/ac*	**$3,543,255**	25,227 sf	*$313/sf*	**$7,895,947**	**$11,400,000**
CH	City Hall + Council Chambers	6,200 sf	15,240 sf	0 sf	**21,440 sf**	2.5 ac	*$400,000/ac*	**$1,000,000**	21,440 sf	*$325/sf*	**$6,968,000**	**$8,000,000**
TOTALS*		**21,000 sf**	**57,000 sf**	**(6,000 sf)**	**72,000 sf**	**11.6 ac**	***$586,000/ac***	**$6,800,000**	**72,000 sf**	***$308/sf***	**$22,200,000**	**$29,000,000**

KEY	PLACE NAME	INDIRECT COSTS					FF&E, FEES, PV, & LAND					TOTAL PROJECT COST (DIRECT + INDIRECT)*
		Design & Planning	Construction Management	General Contingency	Project Admin.	Subtotal	Furniture, Fixtures & Equipment	Utilities & Roadway Improv'nts	Carport Photovoltaic System	Land	Subtotal	
		14.0%	10.0%	20.0%	5.0%							
CCE	Community Building - Existing	$0	$0	$0	$0	**$0**	$0	$0	$0	$0	**$0**	**$0**
CC1	Community Center - Ph. 1 Gym	$714,000	$510,000	$1,020,000	$255,000	**$2,499,000**	$200,000	$75,000	$1,056,000	$0	**$1,331,000**	**$8,900,000**
CC2	Community Center - Ph. 2 MPR	$630,000	$450,000	$900,000	$225,000	**$2,205,000**	$240,000	$35,000	$792,000	$0	**$1,067,000**	**$7,700,000**
PSF	Public Safety Facility + EOC	$1,596,000	$1,140,000	$2,280,000	$570,000	**$5,586,000**	$500,000	$210,000	$1,760,000	($68,800)	**$2,401,200**	**$19,400,000**
CH	City Hall + Council Chambers	$1,120,000	$800,000	$1,600,000	$400,000	**$3,920,000**	$430,000	$105,000	$1,320,000	($500,000)	**$1,355,000**	**$13,200,000**
TOTALS*		**$4,100,000**	**$2,900,000**	**$5,800,000**	**$1,500,000**	**$14,200,000**	**$1,400,000**	**$400,000**	**$4,900,000**	**($600,000)**	**$6,200,000**	**$49,200,000**

*Totals are rounded to nearest $100,000 or 1,000 sf.

Notes:

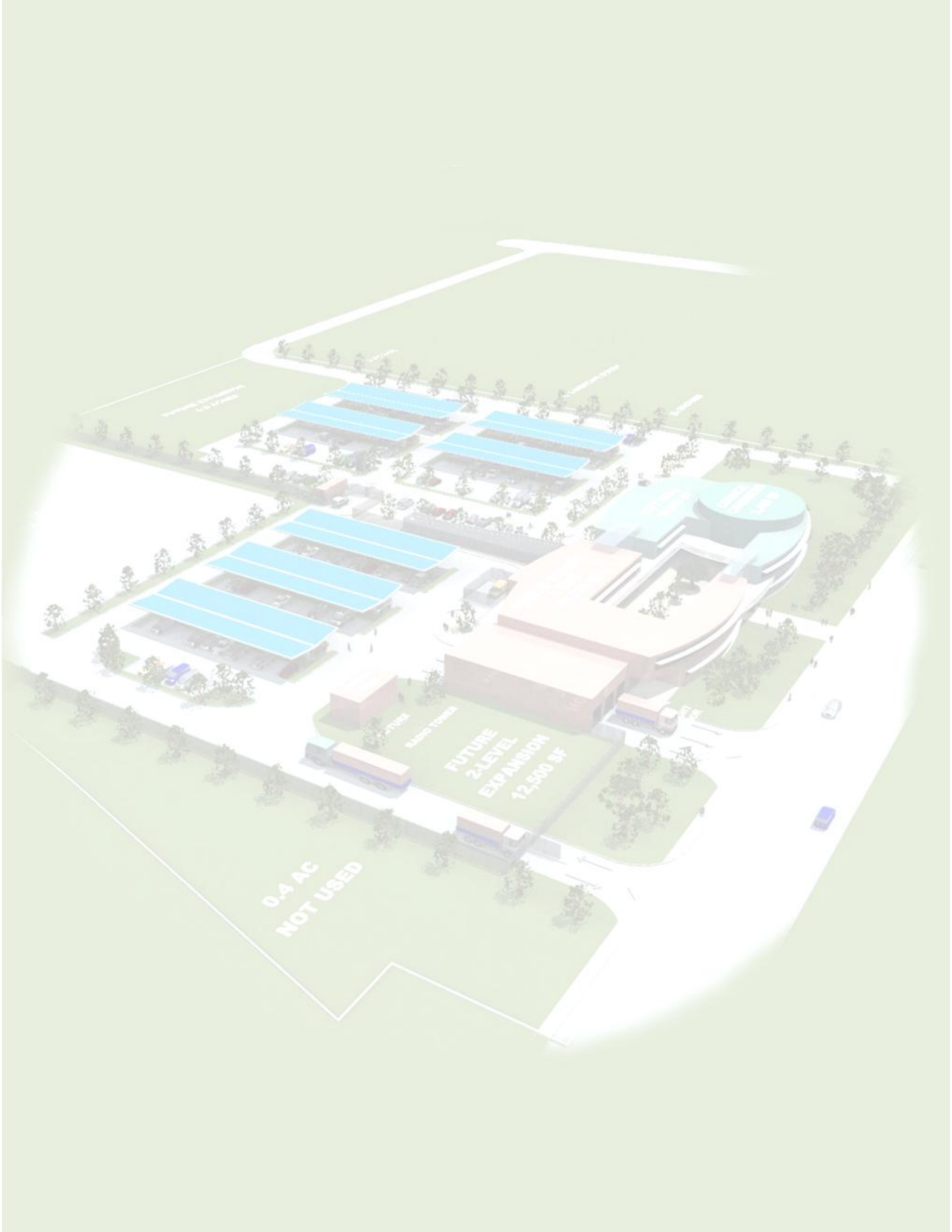
1) Figures shown are in 2011 dollars and exclude any and all escalation to bid date.
2) Figures shown are preliminary only and subject to change based on comments and further detail to be developed in the course of study.
3) Where remodel present, cost includes necessory renovations to to existing building(s) to regularize spaces and circulation.
4) Facilities shown are selected for study and do not include all City facilities.
5) FF&E is for buildings only, excludes vehicles.
6) Values for sale of land estimated only, subject to market conditions.

General Assumptions

Assumptions		Note
2010 Demographics		
Existing Population	8,791	2010 Department of Finance Schedule E-1
Existing Housing Units	2,423	AB 1600 Nexus Study v6 1-24-11
Existing Employees in Live Oak	900	Survey, City of Live Oak
Resident:Employee Equivalency Ratio	0.24	AB 1600 Nexus Study v6 1-24-11
Resident-Equivalents	216	= 900 x 0.24
Existing Service Population	9,007	= 8,791 + 216
Growth Projection		
Growth in Population	36,209	AB 1600 Nexus Study v6 1-24-11
Growth in New Housing Units	14,577	AB 1600 Nexus Study v6 1-24-11
Added Employees in Live Oak	12,800	AB 1600 Nexus Study v6 1-24-11
Growth in Resident-Equivalents	3,072	= 12,800 x 0.24
Growth in Service Population	39,281	= 36,209 + 3,072
GP Buildout Projected Demographics		
Build-out Population	45,000	2030 General Plan
Build-out Housing Units	17,000	2030 General Plan
Build-out Employees in Live Oak	13,700	2030 General Plan
Build-out Resident-Equivalents	3,288	= 216 + 3,072
Build-out Service Population	48,288	= 45,000 + 3,288

Budget-Level Photovoltaic Estimates

Item		Note
Carport Roof-mounted PV		
Number of Carports		
Public Safety Facility	4	Includes 1 in Public Lot
City Hall and Council Chambers	3	
Community Center - Gym	2	
Community Center - MPR	2	
Carport Panel Area		
Public Safety Facility	20,000 sf	
City Hall and Council Chambers	15,000 sf	
Community Center - Gym	12,000 sf	
Community Center - MPR	9,000 sf	
Total Panel Area	56,000 sf	
Key Assumptions		
Unit Output Efficiency (DC)	11 W/sf	
Daily Average Full Sun	4.78 hrs	
Unit Cost of PV Panel (DC)	$6.50/W	Assumes no incentives apply.
Unit Cost of PV Panel incl. Carport Shelters (DC)	$8.50/W	Assumes modular construction.
DC to AC Derate Factor	0.8	
Projections		
Public Safety Facility Projections		
Peak Power Output (AC)	176 kW	Panel Area x Unit Output Efficiency x Derate Factor
Annual Power Output (AC)	307,067 kWh/yr	Kilo Watt hours per year
Estimated Total Installation Cost	$1,760,000	Rounded to nearest $1,000.
City Hall and Council Chambers Projections		
Peak Power Output (AC)	132 kW	
Annual Power Output (AC)	230,300 kWh/yr	Kilo Watt hours per year
Estimated Total Installation Cost	$1,320,000	Rounded to nearest $1,000.
Community Center - Gym Projections		
Peak Power Output (AC)	106 kW	
Annual Power Output (AC)	184,240 kWh/yr	Kilo Watt hours per year
Estimated Total Installation Cost	$1,056,000	Rounded to nearest $1,000.
Community Center - MPR Projections		
Peak Power Output (AC)	79 kW	
Annual Power Output (AC)	138,180 kWh/yr	Kilo Watt hours per year
Estimated Total Installation Cost	$792,000	Rounded to nearest $1,000.
Total Roof Area Projections		
Peak Power Output (AC)	493 kW	
Annual Power Output (AC)	859,788 kWh/yr	Kilo Watt hours per year
Estimated Total Installation Cost	$4,900,000	Rounded up to nearest $100,000.


FUTURE
2-LEVEL
EXPANSION
12,500 SF
0.4 AC
NOT USED