California Boating Facilities Needs Assessment

Volume I

Statewide Boaters and Boating Facilities

Gray Davis, Governor
State of California

Mary D. Nichols
Secretary of Resources

Raynor Tsuneyoshi
Department of Boating and Waterways

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California Boating Facilities Needs Assessment

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NewPoint Group®
Management Consultants

Sacramento, California

Subcontractors to NewPoint Group, Inc.

Planning and Applied Economics, Berkeley, California
Public Research Institute, San Francisco State University
Bay Area Economics, Davis, California
Budget Data Services, San Francisco, California
Marketing Systems Group, Moorestown, New Jersey

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Project Contributors

Project Administration:

California State University, Sacramento Foundation
Project Director: Anthony G. Sheppard, Ph.D. (Associate Professor, Recreation and Leisure Studies)
Project Co-Director: Erik Rosegard, Ph.D.
Research Supervisor: Gregory C. Shaw, M.S.
Graduate Research Assistants: Eric Foemmel, Rebecca A. Hemberger, Carrie R. Scott
Research Assistant: McKenzie Smith

Primary Research Design, Analysis, and Evaluation; and Report Preparation:

Newpoint Group Management Consultants
Director: James A. Gibson, Ph.D.
Senior Associate: Wendy B. Pratt, M.S.
Senior Publications Designer: Julie C. Holcomb, B.F.A

Primary Research Design, and Analysis; and Economic Assessments and Projections:

Planning and Applied Economics
Principal: Edgar Rust, Ph.D.

Primary Telephone Survey:

Public Research Institute, San Francisco State University
Associate Director: John D. Rogers, Ph.D.
Senior Researcher: Heidi Skolnik, Ph.D.
Senior Researcher: Diane Godard, Ph.D.

Economic Analysis Support:

Bay Area Economics
Principal: Matt Kowta
Senior Associate: Alexander Quinn
Senior Associate: Nancy Spitters

Telephone Survey Input Information:

Budget Data Services
Bill Woolen

Marketing Systems Group
Tim Antoniewicz

This report printed on recyled paper

Guide to Five Volume Report
California Boating Facilities Needs Assessment

Volume I	Statewide Boaters and Boating Facilities
Volume II	Regional Boaters and Boating Facilities
Volume III	Appendices to Statewide and Regional Boaters and Boating Facilities
Volume IV	Law Enforcement Boating Facilities Needs Survey
Volume V	Boating Economic Assessments and Facilities Demand Projections
Compact Disc	Database Inventory of Boating Facilities (In Volume III-Addendum)

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Chapter 1

Introduction

1. Introduction

This introductory chapter describes the history, mission, and programs of the California Department of Boating and Waterways (DBW), outlines components of the California Boating Facilities Needs Assessment, and provides an overview of boating in the United States and California. The chapter is divided into three major sections:

A. DBW Mission and Programs

B. California Boating Facilities Needs Assessment – Objectives, Scope, and Approach

C. Overview of U.S. and California Boating.

A. DBW Mission and Programs

The California Department of Boating and Waterways was founded in 1957 as the Division of Small Craft Harbors, within the Department of Natural Resources. The enabling legislation (SB 2107) authorized the Division to plan, acquire, construct, develop, and improve small craft harbors, facilities, and connecting waterways.

In 1966, a new Department of Harbors and Watercraft was formed by the legislature from the Division of Small Craft Harbors, and in 1969, the Department was renamed the Department of Navigation and Ocean Development.

In 1978, the Legislature changed the Department's name to the Department of Boating and Waterways. The change was intended to foster public recognition that there is an agency that represents California boaters and boating. The legislation also expressed the continuing importance of the public's use of the State's waters for recreation.

Throughout these name changes, the philosophy of the Department of Boating and Waterways has remained essentially the same, and is based on the belief that access and safety are fundamental needs of the boating public. One of the Department's primary objectives is to plan and develop boating facilities in environmentally acceptable areas with priority on the development or expansion of facilities where the greatest needs exist. The Boating Facilities program within DBW accomplishes this through:

- Grants to cities, counties, districts, and other public agencies, including the Federal Government, for the planning and construction of boat launch facilities
- Loans to cities, counties, and other governmental agencies for the planning and construction of small craft harbors
- Loans to private marinas for the development, expansion, or improvement of marinas and boater access statewide
- Planning, designing, financing, and constructing boating related facilities throughout the State Park System, at State Water Project reservoirs, and on other State lands

- Conducting control programs for the invasive weeds, water hyacinth and *Egeria densa,* in the Sacramento-San Joaquin Delta and its tributaries
- Grants, on a cost-sharing basis, to local and Federal governmental agencies to provide beach erosion control and public beach restoration measures for the protection of valuable coastal resources
- Coordinating, planning, and funding boating trail projects and protecting the public's right to recreational use of whitewater rivers.

In addition, DBW's Boating Operations Division operates the following programs for the benefit of the boating public and the State population: Boating Accident Program; Safety and Education; Boating Law Enforcement; Yacht and Ship Broker For-Hire Licensing; and Abandoned Watercraft Abatement Fund Grant Program.

Funding for the above projects, with the exception of beach erosion control and public beach restoration, is through the Harbors and Watercraft Revolving Fund. This fund is generated primarily from taxes paid by boaters on the gasoline used to propel their vessels, boat registration fees, and repayment of principal and interest on outstanding small craft harbor loans.

B. California Boating Facilities Needs Assessment – Objectives, Scope, and Approach

1. Objectives

Approximately every five years, DBW conducts an assessment of boating facilities in the State to assist in the allocation of boating facilities and resources. The last such study, The California Boating Facilities Inventory and Demand Study, was completed in 1995. The 1995 study provided a California boating facilities inventory, an assessment of boat ownership trends and projections, a facilities demand analysis for 1995 to 2010, and an assessment of capital funding needs and resources. To update this study, and in response to changes in the boating industry, recreation patterns, boater habits, the economy, and facility conditions, DBW initiated the California Boating Facilities Needs Assessment (BNA). The BNA was a comprehensive yearlong study of California boaters and facilities. The objectives of the BNA were to:

- Inventory and assess the status of boating facilities throughout the State through ongoing research on boating facilities and a comprehensive survey of facilities
- Assess California's boating facilities on a regional basis and identify specific boating areas of concern
- Survey California's boaters to identify how they use their boats, where they use their boats, and their recommendations to improve facilities and boating in California

- Survey California's boating law enforcement officers to gain their perspective on boating facility problems, areas of concern, and facility needs
- Provide the public with an opportunity to voice their concerns about facilities and boating in California through a series of public workshops
- Integrate the primary research findings into a comprehensive, but accessible, set of reports that would provide DBW with information they need to help allocate current and future recreational boating resources
- Update DBW boating facilities inventory to develop a comprehensive and complete database of California's waterways and the boating facilities on them, including marinas, launch ramps, dry storage facilities, recreation areas, and yacht clubs
- Identify, analyze, and recommend improvements to the existing DBW loan and grant programs, policies, and procedures
- Calculate the economic impact of California's recreational boating activity, including direct and indirect benefits to the economy
- Develop boating and facility demand projections through the next 20 years based on historical trends in total boat numbers, boat lengths, propulsion types, and facility use patterns.

This report is the first of five volumes that present results of this effort.

2. Scope

- The scope of the BNA includes California's boaters, waterways, and boating facilities. The emphasis of the study is on recreational boating, however. While the study did not exclude commercial boating activities, it did not conduct research specifically in this area.
- Because of the nature of boater registrations in California, the emphasis of the BNA is on motorized boating and facilities designed for motorized boats. The study did not inventory waterways that are used exclusively by non-motorized vessels. Non-motorized vessels and facility needs are included in the study through the non-motorized boater survey, and through an assessment of facility needs specific to these boaters.
- A separate boating needs assessment of the Sacramento-San Joaquin Delta (Delta Study) was initiated in 2000. The Delta Study Report provides a more detailed examination of the Delta region. The Delta Study facility survey results have been incorporated into this Chapter 3 facility analysis, and discussions of facility needs within the Delta are included in the regional discussion in Volume II. This report does not distinguish between the Delta and the remainder of the State for the Boater survey.
- For the purposes of the BNA, the State was divided into ten regions. These ten regions include five coastal regions and five interior regions. **Exhibit 1.1** and **Table 1.1** following this page, show these regions.

Exhibit 1.1

The Ten California BNA Regions

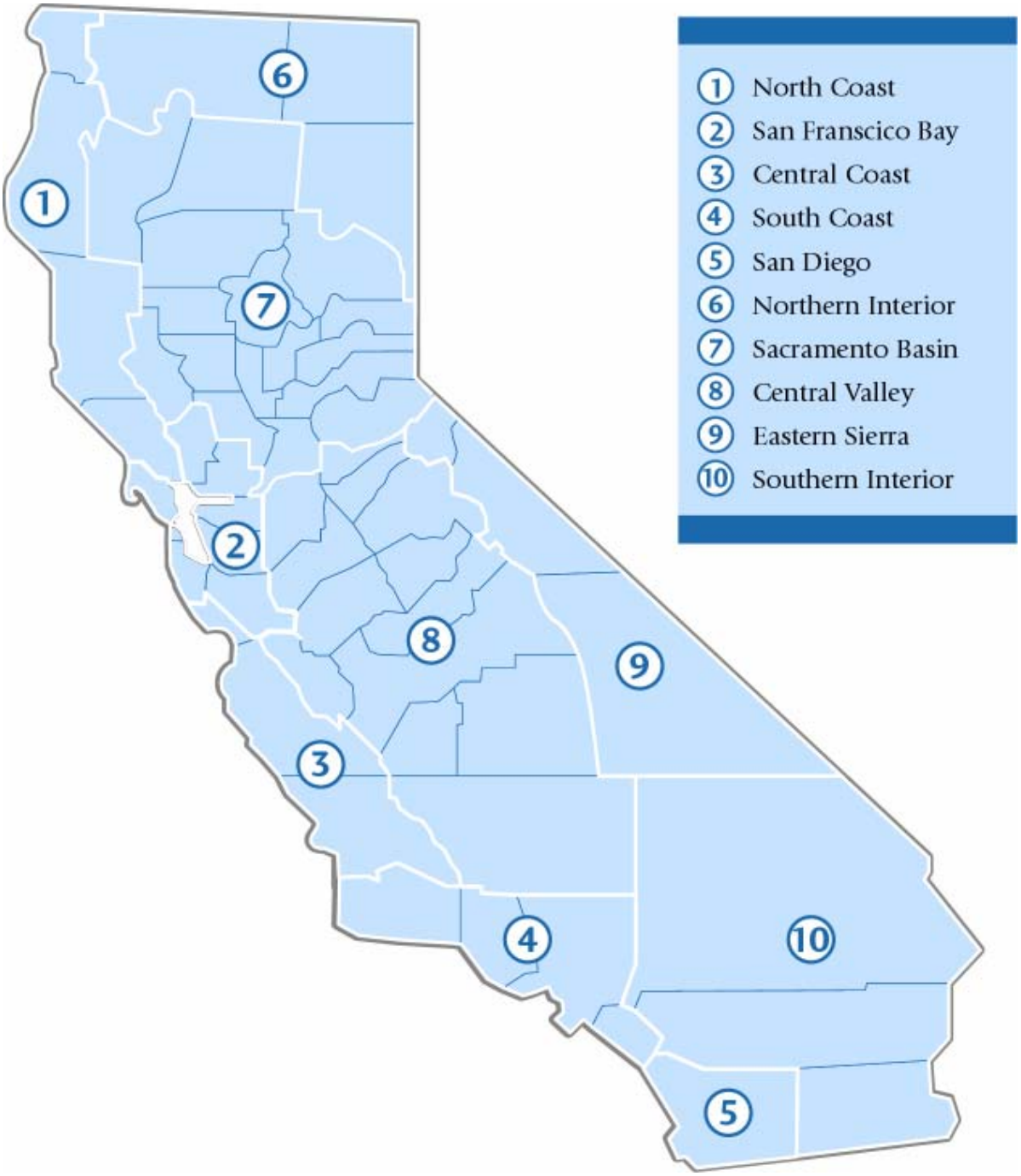


Table 1.1
Counties within Each California BNA Region

1. North Coast	6. Northern Interior
■ Del Norte ■ Humboldt ■ Mendocino ■ Sonoma	■ Lassen ■ Modoc ■ Siskiyou
2. San Francisco Bay Area	**7. Sacramento Basin**
■ Alameda ■ Contra Costa ■ Marin ■ Napa ■ San Francisco ■ San Mateo ■ Santa Clara ■ Solano	■ Butte ■ Colusa ■ El Dorado ■ Glenn ■ Lake ■ Nevada ■ Placer ■ Plumas ■ Sacramento ■ Shasta ■ Sierra ■ Sutter ■ Tehama ■ Trinity ■ Yolo ■ Yuba
3. Central Coast	**8. Central Valley**
■ Monterey ■ San Luis Obispo ■ Santa Cruz	■ Amador ■ Calaveras ■ Fresno ■ Kern ■ Kings ■ Madera ■ Mariposa ■ Merced ■ San Benito ■ San Joaquin ■ Stanislaus ■ Tulare ■ Tuolumne
4. South Coast	**9. Eastern Sierra**
■ Los Angeles ■ Orange ■ Santa Barbara ■ Ventura	■ Alpine ■ Inyo ■ Mono
5. San Diego	**10. Southern Interior**
■ San Diego	■ Imperial ■ Riverside ■ San Bernardino

3. Approach

The BNA was divided into two phases. Phase I included a comprehensive information-gathering effort, as well as preparation of this report and accompanying appendices. Phase II included an analysis of boating facility demand projections, and an assessment of the economic impact of boating in California and is contained in Volume V.

Phase I consisted of the following seven tasks. A detailed description of the methodology for each of these tasks is included in the Appendices contained in Volume III.

- ***A telephone survey of over 4,000 boaters, statewide***. The survey included approximately 400 boaters in each of the ten regions, with relatively even distribution within each region between owners of boats under 26 feet in length, and owners of boats over 26 feet in length. Boaters were asked questions about boat characteristics, storage, use (including boating trips), launching patterns, favorite waterways, reasons for boating at these locations, waterways they avoided, problems and facility needs, and their boat-related expenses. The results of this survey are presented in this Chapter 2 and in Volume III.

- ***An analysis of the Department of Motor Vehicle (DMV) and Department of Transportation (DOT) registered vessel databases***. These databases were analyzed to assess the current number and types of boats, as well as trends in boat ownership over time. Results of this analysis are also presented in this Chapter 2 and Volume III, and incorporated into the boater demand estimates in Phase II.

- ***A telephone survey of 646 boating facilities statewide***. Comprehensive surveys were conducted for 79 percent of California's boating facilities, and secondary research was used to obtain information about the remaining facilities. Facilities were asked about the services and features provided capacity, occupation rates, fees, dredging, maintenance, and facility needs over the next ten years. Results of the survey are presented in Volume II, Volume III, and the Compact Disc database.

- ***A statewide survey of over 120 non-motorized boaters***. A short survey was created to obtain input from non-motorized boaters, the majority of who are not included in the DMV or DOT databases of registered boaters. The survey was distributed at selected paddling club meetings and was available on a club web page. The URL was advertised to paddling clubs statewide. The survey included questions about the types of vessels owned, where they are used, facility needs, and annual trip expenses. Results of this survey are included in Volume III.

- ***A series of twelve regional workshops.*** These workshops, held between August 1 and October 18, 2001, provided the public with an opportunity to express their opinions and concerns about California's boating facilities and boating programs and policies. A total

of 91 people attended the twelve workshops, including facility operators, law enforcement officials, and recreational boaters. Information obtained at the workshops was incorporated into the analysis in Volume II, with detailed results presented in Volume III. The twelve workshops were held at the following locations:

- Turlock (Central Valley)
- Ventura (South Coast)
- Long Beach (South Coast)
- San Diego (San Diego)
- Redding (Sacramento Basin)
- Susanville (Northern Interior)
- Eureka (North Coast)
- Mammoth Lakes (Eastern Sierra)
- Needles (Southern Interior)
- Monterey (Central Coast)
- Sacramento (Sacramento Basin)
- Oakland (San Francisco Bay).

- A telephone survey of 80 boating law enforcement officers was conducted to obtain information and perspectives on boating facility needs from the law enforcement community. Officers were asked about problems and facility needs in their jurisdictions. Information obtained in these interviews is incorporated into the analysis in Volume II, with detailed results presented in Volume IV.

- Finally, additional interviews and supplemental secondary research was conducted to provide additional necessary information.

Description of BNA Reports

Results of the two-phase California Boating Facilities Needs Assessment are presented in five volumes, as follows:

- **Volume I– Statewide Boaters and Boating Facilities** — Summarizes the results of Phase I work, including, California boaters and boating facilities and an assessment of current facility needs, and future needs, as projected by facility operators

- **Volume II– Regional Boaters and Boating Facilities** — Summarizes boats and boating facilities for each of the State's ten regions, including a summary of issues and problem areas for each region

- **Volume III– Appendices to Statewide and Regional Boaters and Boating Facilities —** Presents the survey methodologies and survey instruments; regional workshop presentations and results; and detailed survey result tables. Also includes a computer compact disc that provides an updated inventory of California's boating facilities

- **Volume IV– Law Enforcement Boating Facilities Needs Survey —** Provides the methodology and results from the law enforcement boating facilities needs survey

- **Volume V– Boating Economic Assessments and Facilities Demand Projections** — Summarizes economic benefits of boating to California, the values of recreational boating in California, and twenty year demand projections for boating and boating facilities.

C. Overview of U.S. and California Boating

Boating has been an integral part of human societies for transportation, commerce, exploration, and recreation, for thousands of years. To provide context and background on the relative importance of boating in the United States and California, this section presents information on boat registrations, boating in the economy, and boating participation.

- About 45 percent of the U.S. population has been boating at least once.[1] According to one nationwide estimate, 72.3 million people participated in recreational boating in 2000.[2] Other studies estimate the number of people who take a boating trip each year to range from 37 to 46 million.[3] Roughly translating this information to California, an estimate of between 2.7 to 9 million Californians boat each year.

- Boating-related activities rank relatively high compared to other sports. Results of an annual National Sporting Goods Association (NSGA) survey of 35,000 Americans, age seven and over, rank fishing fourth (fishing involves boats in 60 percent of cases), with 48.8 million people participating at least once a year, and motor and power boating thirteenth, with 24.2 million participants. **Table 1.2**[4] presents sports participation rankings in 2000.

- Motor and power boating is just above running and jogging, and below weight lifting and golf, in overall participation. Combining all the boating activities except fishing – motor and power boating, canoeing, water skiing, kayaking/rafting, and sailing, the NSGA survey estimates that 41.4 million people participate at least once, ranking eighth among all sports.

- Kayaking/rafting, which was ranked a relatively low 52nd in overall participation, was ranked 9th in percentage increase, with a 5.2 percent increase in participation between 1999 and 2000. Fishing also ranked high in increased participation, at 4.5 percent.

Table 1.2
Sports Participation in 2000

Rank	Sport	Millions of Participants
1	Exercise walking	81.3
2	Swimming	59.3
3	Camping	49.9
4	**Fishing**	**48.8**
5	Exercising with equipment	43.2
6	Bicycle riding	43.5
7	Bowling	42.3
(8)	**Combined boating activities**	**41.4**
11	Golf	26.2
12	Weight lifting	24.6
13	**Boating – Motor/Power**	**24.2**
15	Running/jogging	22.5
38	**Canoeing**	**6.2**
40	**Water skiing**	**5.9**
52	**Kayak/rafting**	**3.1**
54	**Sailing**	**2.5**

[1] Fedler, Anthony J., Ph.D.
[2] National Marine Manufacturers Association. "2000 Population Estimates." Chicago. www.nmma.org
[3] Fedler, Anthony J., Ph.D.
[4] National Sporting Goods Association 2000 Sport Participation Survey. www.nsga.org.

- Several other boating activities dropped between 1999 and 2000: motor and power boating dropped 0.9 percent, sailing dropped 10.8 percent, canoeing dropped 15.1 percent, and water skiing dropped 9.9 percent. Personal watercraft use, which was not listed as a sport, has likely picked up some of the reductions in the water skiing and motor boating categories. Organizations, such as the Recreational Boating and Fishing Foundation, and the National Marine Manufacturers Organization, are considering marketing plans to address this drop in boating participation.

- Boating has a significant economic impact. An estimated $25.6 billion was spent in the United States in 2000 on retail sales for new and used boats, motors and engines, trailers, accessories, and other associated costs.

- In 1999, Californians spent an estimated $902 million on boats, motors, trailers, and marina accessories.[5] Looking beyond direct sales, in 1996 *The Economic Impact of Boating in California* calculated that boating contributed $11 billion to the gross State product. Results of the 2001 California boating economic analysis are forthcoming.

- Nationwide, there were just under 12.8 million registered boats in 2000, and just under 17 million total boats (including non-motorized boats).[6]

- In 2000, California accounted for 12.4 percent of the total U.S. population, and 7.2 percent of the registered boats in the nation

- For the last several years, California has ranked second in the nation in the number of registered boats, slightly behind Michigan (See **Table 1.3**[7]).

Table 1.3
Comparison of 1999 Boater Registrations – Top 7 States[8]

State	Number of Registered Boats
1. Michigan	985,732
2. California	**955,700**
3. Florida	805,079
4. Minnesota	793,107
5. Texas	629,640
6. Wisconsin	562,788
7. New York	524,326

[5] National Marine Manufacturers Association. "Annual Retail Unit Sales Estimates 1980-2000." Chicago. www.nmma.org

[6] National Marine Manufacturers Association, "U.S. Boat Registrations increase 43,000 in 2000." Chicago. www.nmma.org

[7] National Marine Manufacturers Association. 1999 U.S. Recreational Boat Registration Statistics. Chicago: NMMA.

[8] National Marine Manufacturers Association. 1999 U.S. Recreational Boat Registration Statistics. Chicago: NMMA.

- While California ranks high in the total number of boats, it is below the national average in boats per 1,000 people. Nationwide in 1999 there were 47 boats per 1,000, while in California the figure is about 28 boats per 1,000.[9] By comparison, Michigan, with the most registered boats, had 100 boats per 1,000, and neighboring Oregon had 60 boats per 1,000 in 1999 (See **Table 1.4**).

- Both nationally and in California, a greater proportion of rural residents boat, while a majority of boaters live in large urban and suburban areas.[10] California's boat data supports this, and the lower than national per-capita boat rate in California is a reflection of the impact of the large urban population centers. The number of boats per 1,000 people in the more rural interior regions of the State are close to, or significantly higher than, the national average (See Chapter 2).

- Nationwide, boating participation peaks in the 35 to 44 age group.[11] The age increases when considering boat owners rather than participation. In California the average boat owner is 53.9 years of age, and in neighboring Oregon the average boat owner is 53 years of age.[12]

Table 1.4
Selected Comparison of Population and Registered Boats for 3 States

State	% of U.S. Population, 1999	% of U.S. Registered Boats, 1999	Boats per 1,000 people, 1999
1. California	**12.4**	**7.5**	**28**
2. Michigan	3.6	7.7	100
3. Oregon	1.2	1.5	60

- Boaters enjoy the activity for many reasons, including: relaxation, escape from the daily routine, and as an outdoor activity with family and friends.[13] The top motives for boating include fishing (60 percent of boaters use their boats to fish), speed, cruising, and water-skiing. In California, top reasons to use a particular waterway reflect similar interests, including: being close to home, fishing, esthetics, and water quality.

- In national studies examining boater constraints, "lack of time" is the primary reason people don't boat. Other problems include boat repairs, storage problems, and operation and maintenance expenses.[14]

[9] The California figure is higher than the figure in Table 2.1 because it is based on a different year.
[10] Fedler, Anthony J. Ph.D. Participation in Boating and Fishing, A Literature Review, Executive Summary. Virginia: Recreational Boating & Fishing Foundation, September 2000.
[11] Fedler, Anthony J., Ph.D.
[12] Oregon State Marine Board. Boating in Oregon. Oregon: Oregon State Marine Board, 2000.
[13] Fedler, Anthony J., Ph.D.
[14] Fedler, Anthony J., Ph.D.

- There are an estimated 12,000 boat facilities, including marinas, boatyards, yacht clubs, dockominiums, parks, and other facilities nationwide.[15] California has over 800 such boating facilities, almost 7 percent of the total boating facilities nationwide – a figure that is fairly consistent with the California's percentage of the nation's registered boats (See **Table 1.5**).

Table 1.5
California Boating Facilities

Region	Number of Facilities
North Coast	42
San Francisco	149
Central Coast	24
South Coast	110
San Diego	58
Northern Interior	20
Sacramento Basin	233
Central Valley	100
Eastern Sierra	33
Southern Interior	47
Statewide	818

The brief overview illustrates the relative importance of boating both nationally and in California. The remainder of this report focuses on California boaters and facilities.

[15] National Marine Manufacturers Association. "2000 Population Estimates." Chicago. www.nmma.org

Chapter 2

California Boats and Boaters

2. California Boats and Boaters

This chapter describes the characteristics and regional distribution of boats in California, trends in boat ownership, patterns of boating activity, and boat owners' perceptions of California waterways and their facility needs. There are summary tables and charts throughout the chapter, with detailed data tables in Appendix A, Volume III.

This chapter is divided into three main sections. Section A discusses California boats, Section B discusses results of the boater survey, and Section C provides findings by region.

Highlights of the boats and boaters findings are summarized below:

- While total boat ownership is continuing to increase significantly, boat ownership per capita is declining, and major shifts in boat sizes are under way.
- The vast majority of boats are under 16 feet in length. Recent trends show little growth in the number of small outboard boats, and little growth in the number of small cruisers, the two types of boats for which most existing boating facilities were designed due to their popularity in the 1960s, 70s and 80s.
- The populous coastal metropolitan regions generally have more boats, but fewer boats per capita, than the rest of the State.
- In every region of the State, small boats dominate the mix of types. Personal Watercraft (PWCs) are the most popular type in the South Coast and Southern Interior. In all other regions of the State, the majority of boats are small outboards.
- A proliferation since 1990 of personal watercraft, and strong growth in the numbers of larger trailer-based boats and cruising boats, are stressing the capacity of some waterways and boating facilities.
- California boat owners are older and somewhat higher in household income than the general State population.
- California boat owners spend an average per boat of $1,700 per year on boat upkeep, and $136 per day on boating trips.
- California boat owners generally choose waterways close to their homes, and only PWC owners are likely to travel as much as 100 miles for a boating trip as often as once a year.
- Approximately 3 of every 4 California boaters have no problems with conditions or facilities at their most-used waterway. Sixty percent of respondents did not identify facility needs at their most-used waterway.

- The most frequently cited problem California boaters encounter is insufficient water depth, generally in their launching or berthing areas. It was particularly a concern for users of the Colorado River, Lake Oroville, and San Francisco Bay, and for Folsom Lake, Newport Harbor, and Lake Almanor.
- Also frequently mentioned was overcrowding, particularly among users of Lake Perris, Mission Bay, Colorado River, Folsom Lake, and Lake Berryessa.
- Reckless operation by others was frequently a complaint on the Sacramento-San Joaquin Delta, Sacramento River, Dana Harbor, Channel Islands Harbor, Shasta Lake, and the San Joaquin River.
- The most commonly mentioned boating facility needs are launching and general capacity increases (especially on the Pacific Coast, Colorado River, Channel Islands Harbor, and at Lakes Berryessa, Shasta, and Castaic). Other frequently mentioned needs are dredging, more docks, and dock repairs.

A. Boats

As of December 31, 2000, there were approximately 1.02 million boats in California. Described in this section are the 925,533 boats registered with the State Department of Motor Vehicles (DMV) or documented by the Federal Department of Transportation with California addresses for recreational or fishing use.[1] There are also an estimated 97,000 unregistered, undocumented boats in the State, mostly hand-powered craft for which no registration or documentation is required and for which no official data exist.

Government boat registration data allow us to analyze many characteristics of California boats in detail. Of particular interest for purposes of evaluating boating facility needs are:

- The owner's address location (which usually correlates with his or her boating and storage site preferences)
- Boat length (a major factor in berth and storage space requirements)
- Propulsion type (which tells much about how a boat is intended to be used)
- License or documentation type (which can reveal the boat's primary purpose)
- Year built and hull material (which influence the vessel's life expectancy).

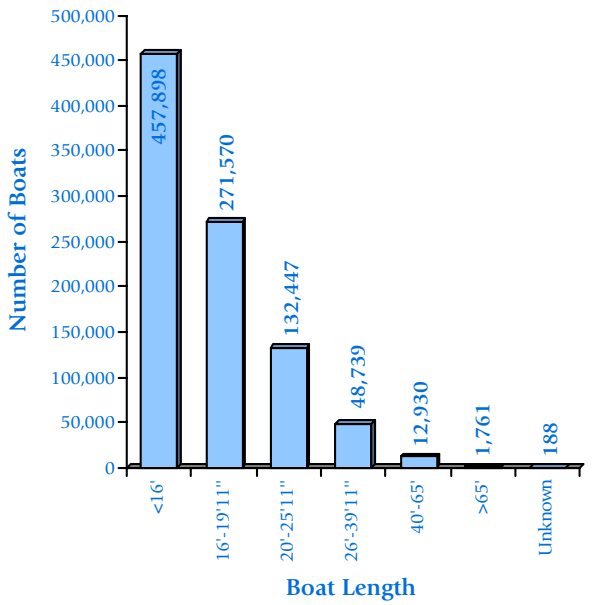
In the following analysis, owners' addresses have been grouped into ten geographic regions, five on the coast and five in the interior of California. A map of the boating study regions can be found on page 1-4.

[1] Federal documentation allows a boat to travel anywhere in the world. State registration, a simpler and less expensive process, is all that is required for boating within the U.S.

Table 2.1, below, shows that the number of boats in California's coastal regions is somewhat larger than in the interior. This is largely due to the higher populations there. When boats are compared with the populations for those regions, it becomes clear that boating, as measured by boat ownership rates, is far more popular in California's interior than on the coast. The one coastal region whose residents have a moderately high boat ownership rate is the North Coast, which contains many inland lakes and no large metropolitan areas.

The typical (median) boat in California is only 16 feet long. Larger boats are somewhat more common in the coastal regions than the interior, but small boats dominate the mix of sizes in every region, as shown in **Exhibit 2.1** and Appendix A1, Table A1.1.

Exhibit 2.1
Number of Boats by Length



Total **925,533**

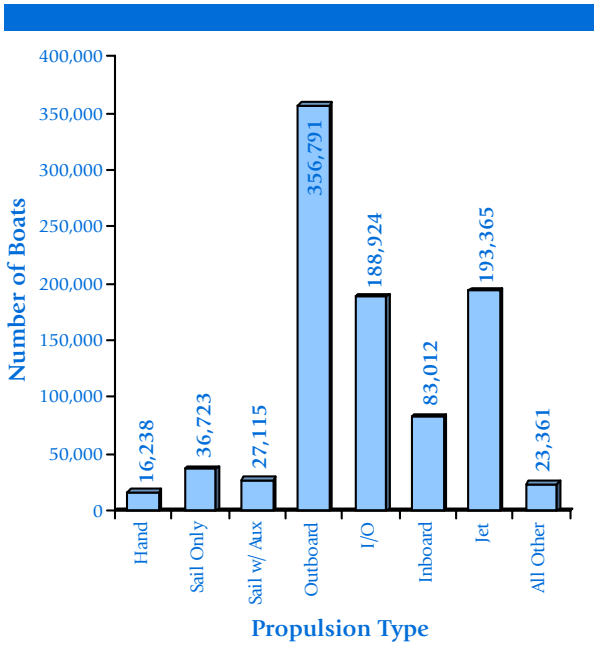
Table 2.1
Boats and Population by Region

Region	Boats 12/31/00	Population 1/1/01*	Boats per 100 People
1. North Coast	34,643	712,000	4.87
2. SF Bay Area	158,223	6,468,700	2.45
3. Central Coast	30,617	922,700	3.32
4. South Coast	245,380	13,910,900	1.76
5. San Diego	68,231	2,883,600	2.37
6. Northern Interior	7,804	89,800	8.69
7. Sacramento Basin	160,490	2,691,710	5.96
8. Central Valley	117,552	3,581,700	3.28
9. Eastern Sierra	2,951	32,720	9.02
10. Southern Interior	97,272	3,524,600	2.76
State Subtotal	**923,163**	**34,818,430**	**2.65**
11. Out of State	2,370		
Total	**925,533**		

* State of California, Department of Finance, *E-1 City/County Population Estimates, with Annual Percent Change, January 1, 2000 and 2001*. Sacramento, California, May 2001.

A total of 873,000 boats, or 95 percent of registered or documented boats in California, have some form of mechanical power (see **Exhibit 2.2**, excluding hand-propelled and sail only). Outboard motors propel 39 percent, water jets drive another 21 percent, most of which are PWCs, I/O units (inboard engine with outboard drive unit) propel 20 percent, and 9 percent have inboard engines. Sailboats, with or without auxiliary, total 7 percent. Hand-propelled boats are not legally required to be registered or documented, so the registration statistics include only a small fraction of the estimated 113,238 (16,238 registered and 97,000 unregistered) hand-propelled boats in the State.

Exhibit 2.2
Total Number of Registered Boats by Propulsion Type



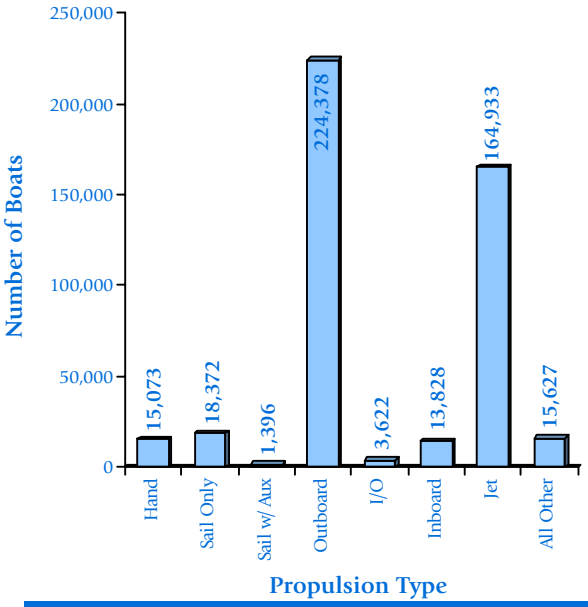
Total	925,533

The type of propulsion chosen is closely related to boat size, as shown in Appendix A1, Table A1.2 and **Exhibit 2.3**. Hand power is rare in boats over 16 feet. In general the smallest power boats are jet-driven PWCs, often 8 feet or less in length. Outboards are preferred for a majority of other boats under 16 feet, and are becoming popular for medium-sized cruising and fishing boats (up to 26 feet), as more fuel-efficient 4-stroke units become available in large sizes. The I/O type of drive, however, is the most popular for the 16-foot to 25-foot range. Inboard engines are generally preferred for large boats. Auxiliary power is an option in sailboats up to about 25 feet and a necessity for most sailboats above that size.

Exhibit 2.3

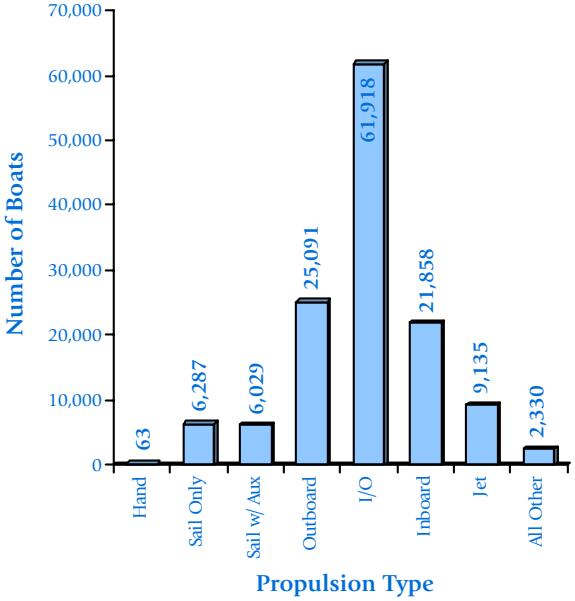
Number of Boats by Propulsion Type

a) Boats <16′



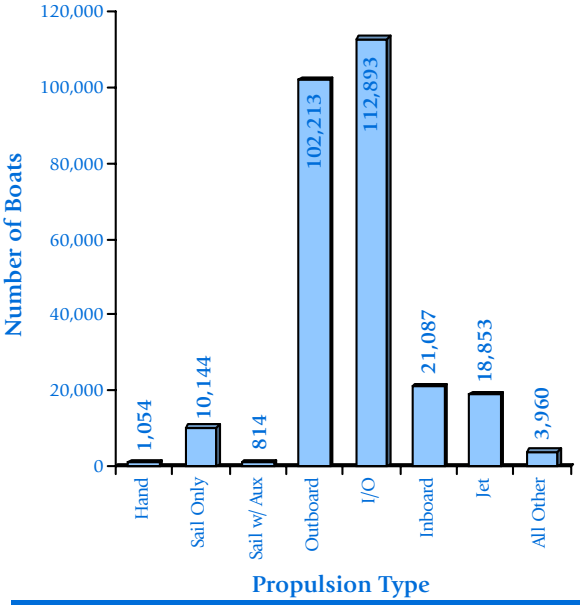
Total	457,229

c) Boats 20′ - 25′11″



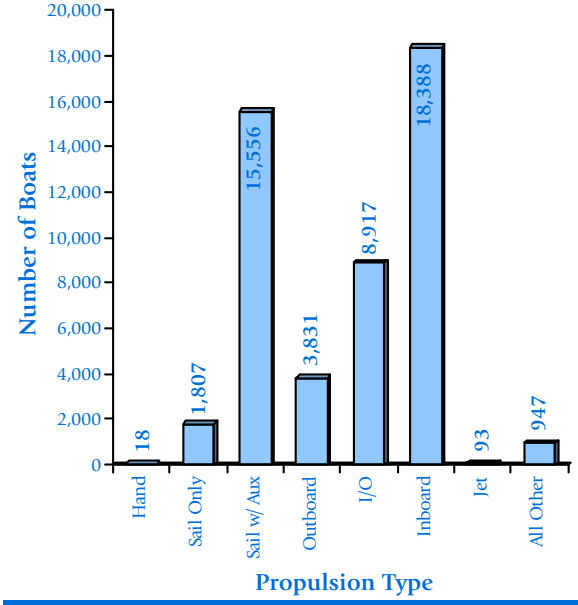
Total	132,711

b) Boats 16′ - 19′11″



Total	271,018

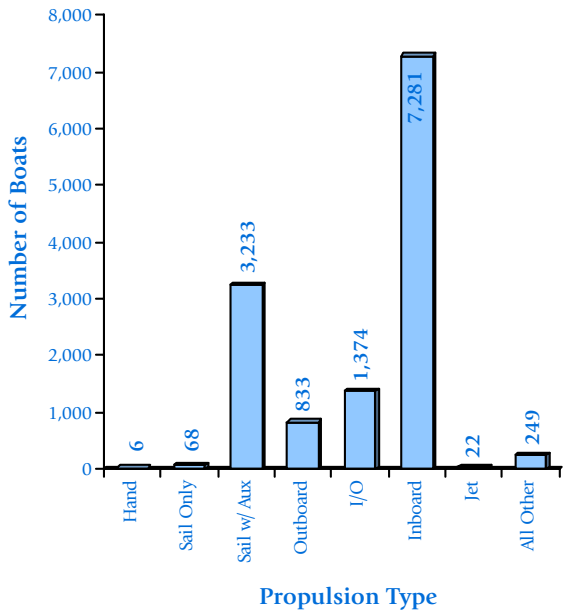
d) Boats 26′ - 39′11″



Total	49,557

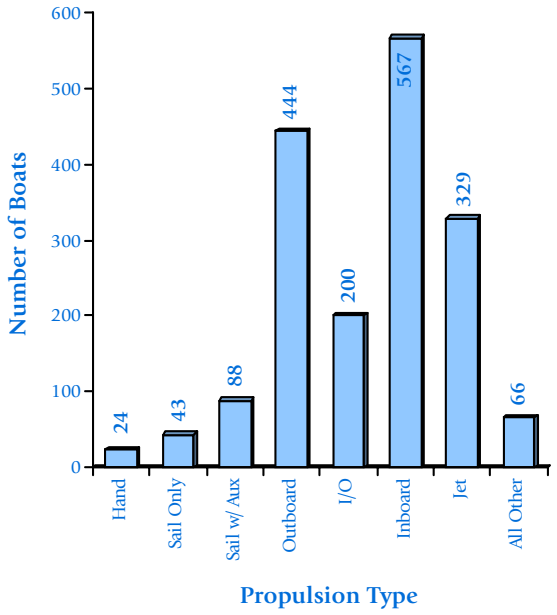
Exhibit 2.3 ***(continued)***
Number of Boats by Propulsion Type

e) Boats 40′ - 65′



Total	13,066

f) Boats >65′



Total	1,762

Boat propulsion preferences also vary by region as shown in Appendix A1, Table A1.3. Hand or outboard power is most popular in the remote Northern Interior and Eastern Sierra regions. Inboard and I/O propulsion are most popular in the Northern and Central Coast regions. Jet power dominates the mix in the South Coast and Southern Interior regions where personal watercraft are especially popular. (PWCs are shown separately in **Table 2.2**.) Sail power, with or without an auxiliary engine, is understandably most popular where the winds are dependable and the water deep. This favors the coastal regions generally, and especially the climatically mild San Diego region.

Table 2.2
Personal Watercraft* by Region

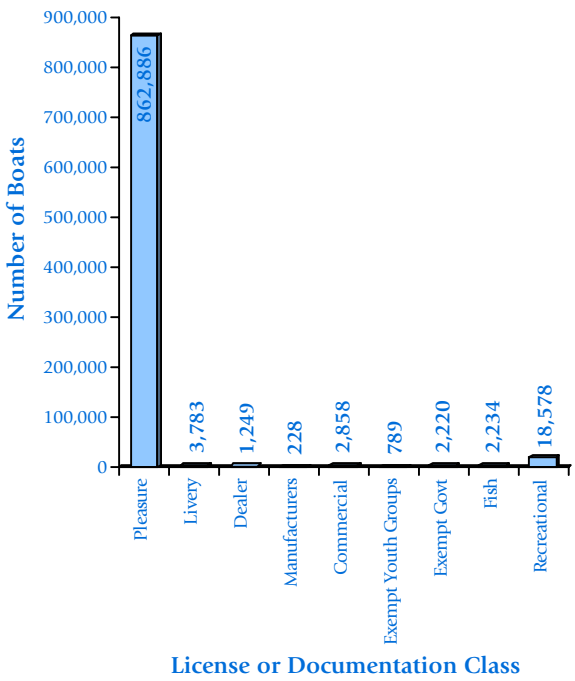
Region	Frequency	Percent
1. North Coast	2,941	1.8%
2. SF Bay Area	19,839	12.0%
3. Central Coast	3,151	1.9%
4. South Coast	67,424	40.7%
5. San Diego	12,827	7.7%
6. Northern Interior	335	0.2%
7. Sacramento Basin	12,810	7.7%
8. Central Valley	13,868	8.4%
9. Eastern Sierra	423	0.3%
10. Southern Interior	31,879	19.2%
State Subtotal	**165,497**	**99.8%**
11. Out of State	285	0.2%
Total	**165,782**	**100%**

* Boats with jet drive propulsion and length of 14' or less

Sources: DMV, MARAD

DMV-licensed boats are generally intended for use in waters of the United States, whereas MARAD-documented boats, 2.3 percent of the total, are usually intended for long-distance ocean cruising, or offshore fisheries. As shown in **Exhibit 2.4**, most boats (98 percent of the total) are registered for pleasure use or documented for recreational use. Other uses are livery (rental), commercial fishing, other commercial uses, and government, plus a few licenses issued to manufacturers and to youth groups. Livery licenses are concentrated in the interior, whereas commercial fishing licenses are concentrated in the coastal regions.

Exhibit 2.4
Boats by License or Documentation Class



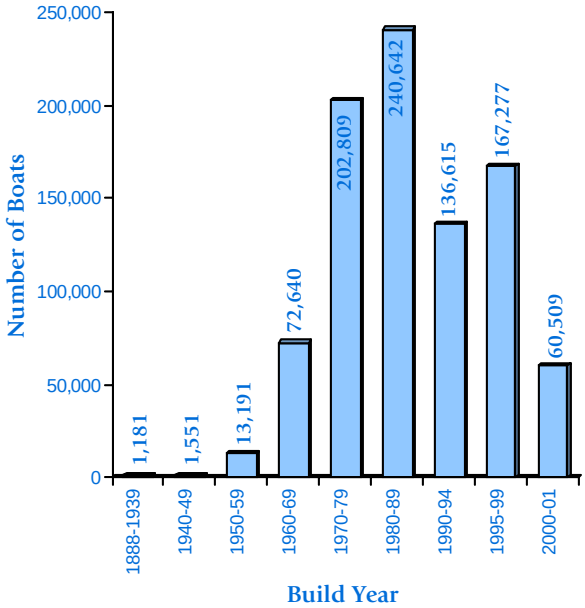
Total*	894,730

* Totals do not match population total due to cross-registration

Sources: DMV, MARAD

The majority of boats in California were built during the boating boom years from 1960 to 1990 (**Exhibit 2.5**). Less than 2 percent of boats now in California were built before 1960, while boats built in the last decade constitute approximately 40 percent of the total. Appendix A1, Exhibit A1.5 shows that growth figures are extremely uneven from year to year. An important characteristic of the boat age profiles is the fluctuation of annual growth rates, with synchronous peaks about every five years for all regions.

Exhibit 2.5
Number of Boats by Build Year



Total	896,414

The youngest fleets are found in the South Coast, San Diego, and Southern Interior regions, where about 45 to 50 percent of the boats were built since 1990; the oldest fleets are in the North Coast, Central Coast, and Sacramento Basin, where only 33 percent of the boats were built since 1990.

1. *Trends in Boat Types and Sizes*

Tables 2.3 and **2.4**, and **Exhibit 2.6**, illustrate 1973 to 2000 DMV boat registrations by size, and show a consistent growth in total boat registrations until 1997, but the sources of growth changed several times during that period. From 1973 to 1983, there was strong growth in the middle of the size distribution, with nearly 100,000 boats added to the 16-foot to 25-foot group. During the 1970s and early 1980s, growth shifted to the under-16-foot category and boats over 26-foot actually declined. From 1983 to 1993, by far the most important boating development was the introduction and proliferation of nearly 100,000 PWCs.

Boat Survival Rates

Survival rates are the percentage of boats of a given age still registered as of December 2000. Boats may leave the registered (or documented) fleet as a result of relocation, abandonment, or destruction. Survival rates of boats built since 1950 focus on the influence of hull material. Boats of the most durable materials (metal, then plastic) are the most likely to survive. Wood boats tend to age well only if they belong to people who maintain them diligently, so the wood-boat survival curve drops steeply at first but then flattens out after about age 10. The influence of boat size is less strong. Very small boats and very large ones have somewhat lower survival rates than those of medium size (16 feet to 26 feet). This may well be due to the predominance of FRP ("fiberglass") and aluminum as hull materials in the medium size range.

Table 2.3
Number of DMV-Registered Boats: 1973 to 2000

Type	DMV Registered Boats as of						
	Dec-73	Dec-83	Dec-88	Dec-93	Dec-94	Dec-97	Dec-00
<16', Jet	n.a.	12,205	42,516	98,437	110,916	161,896	175,226
<16', Other	278,854	287,047	312,030	318,608	316,225	306,880	286,663
<16', Total	278,854	299,252	354,546	417,045	427,141	468,776	461,889
16'-19'11"	168,469	263,101	249,133	264,404	264,403	265,862	266,571
20'-25'11"	incl above*	incl above*	81,842	98,897	101,685	113,726	130,983
26'-39'11'	23,647	37,013	42,163	39,755	39,076	47,451	50,780
40'+	3,030	6,021	7,133	6,768	6,744	13,171	15,300
California	**473,367**	**605,387**	**734,817**	**826,869**	**839,049**	**908,967**	**925,533**

* DMV data prior to 1988 were for 16'-25'11"

Source: DMV

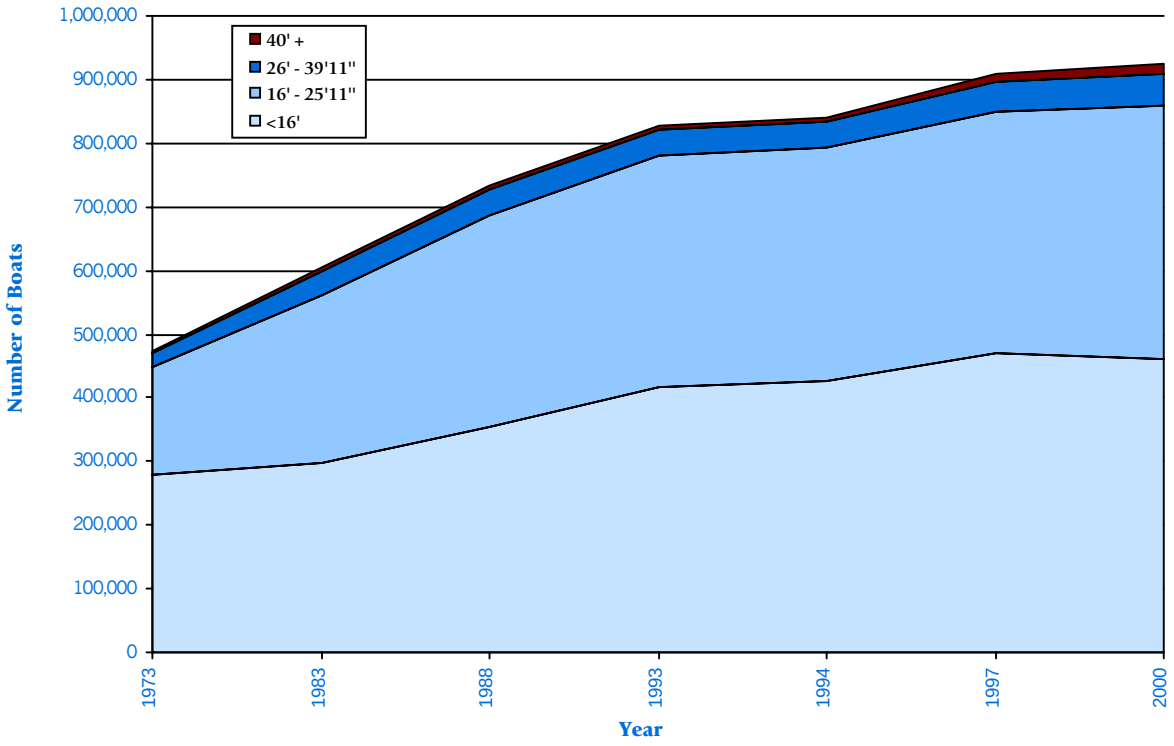
Table 2.4
Number of DMV-Registered Boats per 1,000 Population: 1973 to 2000

Length	Registered Boats per Thousand Population						
	Dec-73	Dec-83	Dec-88	Dec-93	Dec-94	Dec-97	Dec-00
<16'	13.17	11.59	12.17	13.05	13.22	14.13	13.27
16'-19'11"	7.96	10.19	8.55	8.27	8.18	8.01	7.66
20'-25'11"	incl above*	incl above*	2.81	3.09	3.15	3.43	3.76
26'-39'11'	1.12	1.43	1.45	1.24	1.21	1.43	1.46
40'+	0.14	0.23	0.24	0.21	0.21	0.40	0.44
California	**22.36**	**23.45**	**25.21**	**25.87**	**25.96**	**27.39**	**26.58**

* DMV data prior to 1988 were for 16'-25'11"

Source: DMV

Exhibit 2.6
Registered Boats by Size, 1973 to 2000



The growth trend of California boats gradually flattened through the 1990s and for 1997 to 2000 was somewhat below the State's population growth rate. (The apparent decline in numbers of large registered boats is more than offset by an increase in documented boats, as discussed below.)

The largest factor in the growth rate drop appears to have been much reduced demand at the lower end of the market: PWC growth dropped from 10,000 a year to under 5,000, while the number of conventional boats under 20 feet actually declined. The table of total boats since 1994 (**Table 2.5**) includes documented as well as registered boats. Since 1994, PWCs have increased by 58 percent, although growth slowed to only 8 percent after 1997. Registered boats under 16 feet other than jets declined, suggesting that PWCs were drawing demand from other small boats and no longer a net addition to the marketplace.

Since 1994, the number of large trailerable boats (20 feet to 25 feet) increased 29 percent, actually accelerating after 1997. The core of the traditional marina market, boats 26 feet to 40 feet, recovered from a 3 percent decline between 1994 and 1997 to grow 7 percent between 1997 and 2000. Boats over 40 feet, though few in number, have reversed their mid-decade decline to grow by several hundred a year between 1997 and 2000.

Table 2.5
California DMV-Registered Boats plus Documented Recreational or Fishing Vessels

Type	Dec-94	Dec-97	Dec-00	% Change 94-97	% Change 97-00	% Change 94-00
<16', Jet	110,916	161,896	175,226	46.0%	8.2%	**58.0%**
<16', Other	316,225	306,880	286,663	-3.0%	-6.6%	-9.3%
<16', Total	427,141	468,776	461,889	9.7%	-1.5%	8.1%
16'-19'11"	264,421	265,862	266,571	0.5%	0.3%	0.8%
20'-25'11"	101,850	113,726	130,983	11.7%	15.2%	**28.6%**
26'-39'11'	48,747	47,451	50,780	-2.7%	7.0%	4.2%
40'+	13,320	13,171	15,300	-1.1%	16.2%	14.9%
California	**855,462**	**908,967**	**925,533**	**6.3%**	**1.8%**	**8.2%**

Sources: DMV, MARAD

B. Boaters

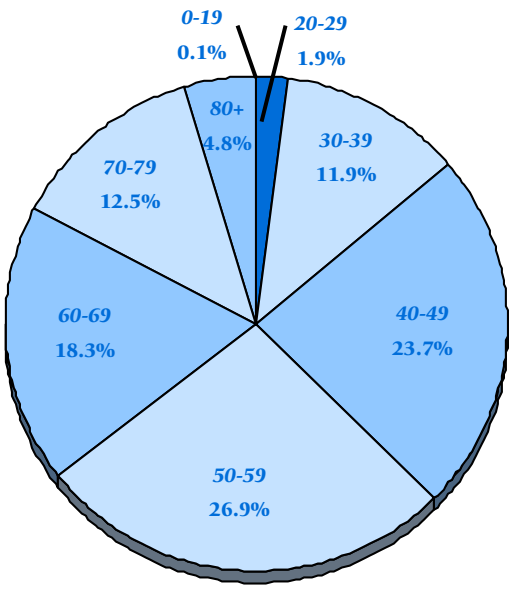
1. *Introduction*

Over 4,000 registered or documented California boat owners were surveyed by telephone during the spring and summer of 2001 to learn about their boating activities, their usage of California waterways and boating facilities, and their opinions about those waterways and facilities. The study sample, questionnaire and interviewing techniques, and data weighting method used are described in Appendix A-4. The survey gives a detailed picture of most California boaters and boating activity statewide, except the owners of unregistered boats, which is to say most canoes, kayaks, rowboats, sailboards, and sailboats under 8 feet, for which no systematically collected data are available (since they do not have to be registered). Approximately 2 percent of the study sample fell into this class, versus an estimated 10 percent of the boat population. A summary of a separate, less rigorous study of unregistered boater activities and opinions is included in Volume III, Appendix B.

2. *Demographics*

The ages of California boat owners are smoothly distributed around a mean of 53.9 years, much higher than the mean age of 33.2 years for the State population as a whole, as reported in the U.S. 2000 Census. Boat ownership grows most rapidly in the ages from 30 to 50 (**Exhibit 2.7**).

Exhibit 2.7
Boat Owners by Age Group



Total	100%

Household income of California boat owners is generally moderate, but is somewhat higher than that of the general population. Based on the boater survey, a majority of boat owner households have low to moderate income, but very few are in the bottom quartile of the State income distribution.

PWC and other jet boat owners tend to be younger and wealthier than owners of other small boats. Owners of boats over 40 feet are generally the oldest and wealthiest group. Every length and propulsion category has a mean age over 50, except for PWCs (42.7 years).

Length of Ownership

Boat ownership turnover appears to be slow compared to other durable goods: half of California boat owners have owned their present boats for seven years or more and 15 percent have owned their present boats more than 20 years.

Number of Boats Owned

Seventy-nine percent of California boaters own one boat, 16 percent own two, and 3 percent own three or more. About 5 percent of boats are in club, agency or rental fleets, dealer inventories, or other large fleets. The survey respondents included 26 owners of ten to seventeen boats, and two with fleets of about sixty.

Boating Activity

Average reported boat use is 44 days per year, per boat. Reported boat use varies somewhat by region and season, and by type of boat. Interviewers reported that they sensed a tendency of boaters to exaggerate both their annual number of trips and the typical number of days per trip. The data were cleaned to delete obviously exaggerated estimates (e.g. ones multiplying out to more than 365 days/year).

The most heavily used types of boats are boats over 40 feet and PWCs (**Table 2.6**).

Table 2.6
Mean Annual Boat Usage for 2000 *(weighted averages)*

Length Group	<16', Jet	<16', Other	16' - 19'11"	20' - 25'11"	26' - 39'11"	40' +	Total
Propulsion	**Jet**	**Non-Jet**	**All**	**All**	**All**	**All**	**All**
Trips in 2000	29.1	21.2	20.8	20.0	27.1	24.3	22.3
Typical trip days	2.9	2.6	2.6	2.1	2.5	3.9	2.6
Days used in 2000	58.1	48.5	38.1	35.3	50.6	61.8	44.5
N	323	796	822	433	206	28	2,608

Source: PRI Boat Owner Survey

Table 2.7
Boats Unused During Year 2000

	Count*	% within Type
<16', Jet	462	13.9%
<16', Other	1,530	22.2%
16' - 19'11"	1,319	15.5%
20' - 25'11"	567	8.1%
26' - 39'11"	259	8.5%
40' +	37	10.8%
Total	4,174	16.3%

* weighted values
Source: PRI Boat Owner Survey

Unused Boats

Sixteen percent of respondents did not use their boat in 2000, as shown in **Table 2.7**. Small boats other than PWCs were the most likely to go unused. Boats over 40 feet had the highest rates of utilization, followed by boats 16 feet to 20 feet and PWCs.

Boats owned by residents of the Eastern Sierra and Sacramento Basin regions had higher non-use rates than other regions, and the Central Coast and South Coast were somewhat lower than the others (**Table 2.8**). The age of the owner seems to have had little, if any, effect on the percentage not used.

The most common reasons boats went unused, accounting for 79 percent of reasons given, were that the owner was too busy or had other interests, the boat needs repairs, or the owner is ill. Owners still actively boating but using another boat were 4.3 percent of non-users. Displeasure with fishing conditions was the reason given by 2.8 percent.

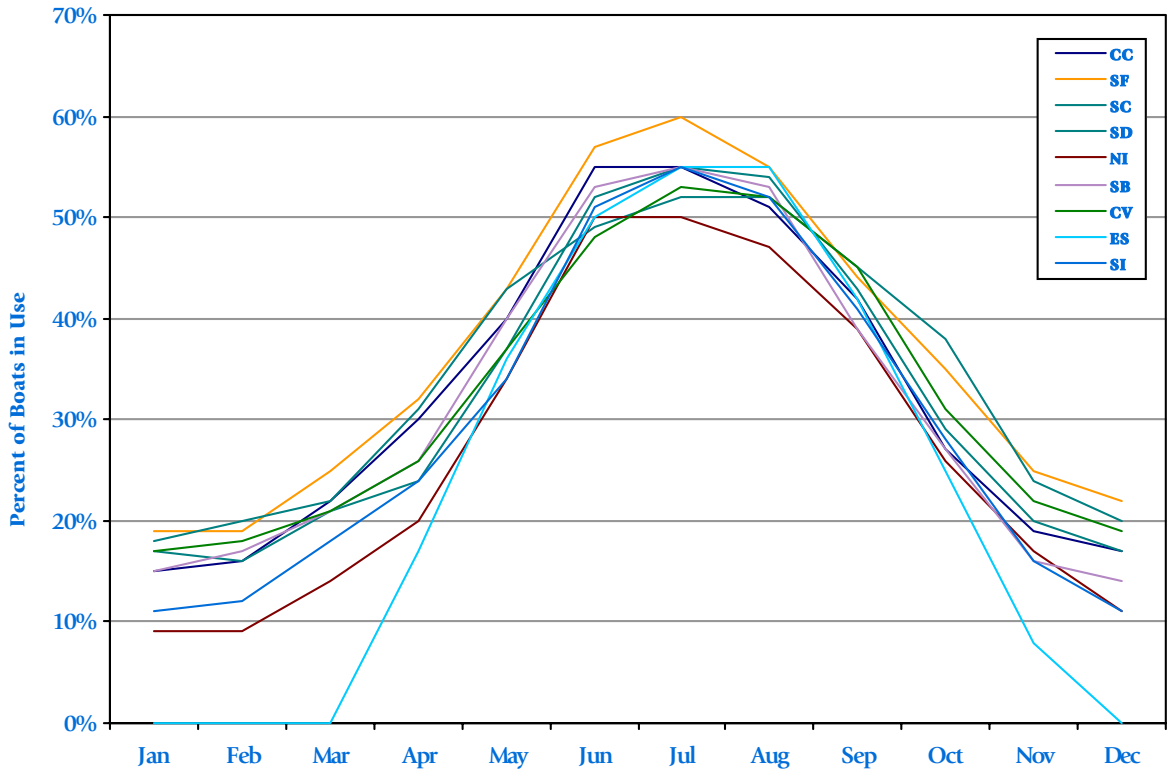
Table 2.8
Boat Usage During Year 2000 by Region

Region	% within Region	
	Used in 2000	Not Used in 2000
1. North Coast	81.6%	18.4%
2. SF Bay	85.9%	14.1%
3. Central Coast	87.9%	12.1%
4. South Coast	86.1%	13.9%
5. San Diego	82.1%	17.9%
6. Northern Interior	84.3%	15.7%
7. Sacramento Basin	79.5%	20.5%
8. Central Valley	80.6%	19.4%
9. Eastern Sierra	74.4%	25.6%
10. Southern Interior	83.8%	16.2%
Total	83.0%	17.0%

Table 2.9
Why Boats Went Unused (N=387)

	Percent of Responses
Owner too busy	40.8%
Owner ill	20.0%
Boat needs repair	12.4%
Other reason	6.5%
Change of interests	5.0%
Used other boat	4.3%
Owner deceased	2.9%
Bad fishing	2.8%
Kids grew up	1.6%
Low water	0.9%
Dissatisfied with boating places and facilities	0.7%
Too expensive to operate	0.6%
Too far from boat	0.5%
Cannot operate safely	0.4%
Total	100%

Exhibit 2.8
Boating Seasonality by Region



Seasonal and regional variations in boat use are illustrated in **Exhibit 2.8**. The exhibit shows that all regions have summer peaks and winter lulls in boating. However, the exposed, dangerous waters of the North Coast (NC), and the cool lakes of the Northern Interior (NI), have the lowest midsummer peaks. The winter lull is most pronounced in the Eastern Sierra (ES) and Northern Interior, when many lakes are frozen solid and from 0 percent to 9 percent of boats are used. In the San Francisco (SF), and San Diego (SD) regions, with their protected waters and mild climates, utilization is high year-around and 25 percent still go out in midwinter.

Boating trips that involved travel more than 100 miles from home were quite common for a majority of PWC owners, among whom the typical owner makes three such trips a year, but are relatively uncommon for owners of other types (**Table 2.10**).

Boat Storage and Launching Patterns

California's boats under 26 feet are most commonly stored on trailers on their owner's property, whereas most boats 26 feet or longer are kept in the water at boating facilities. Only 8 percent of boats under 26 feet are stored in water, and 76.5 percent are stored on trailers. For boats over 26 feet, almost the opposite is true, with only 14.5 percent stored on trailers and 84.2 percent stored in the water. **Table 2.11** illustrates the percent of boats, by storage method and support type.

This pattern is true for every region, though in very urbanized areas like the South Coast, somewhat fewer owners of small boats – about 70 percent – are able to keep them at home, opting frequently for general storage rather than boating facilities.

Most boat owners are satisfied with their storage arrangements. About 3 percent of small boat owners say they are dissatisfied because they would like to get their boat under cover, and many who keep their boat elsewhere would prefer to have it on their own property. About 1 percent of larger boat owners say their boat is stored too far from home. Detailed response frequencies are given in Appendix A2, Table A2.4.

Launching Methods

Most boats kept on land are launched by backing a trailer down a ramp. Over twenty percent of boats under 16 feet, however, are carried to the water or hauled on a wheeled, hand-propelled dolly. Less than 18 percent of the boats over 26 feet in length are launched from land, as most of these boats are stored in the water (**Table 2.12**). **Exhibit 2.9** provides the same information in graphic form, showing the distinct differences in launch preference by boat length.

Table 2.10
Trips Over 100 Miles from Home

Number of Trips	Boat Length						Total
	<16', Jet	<16', Other	16' - 19'11"	20' - 25'11"	26' - 39'11"	40' +	
0	32.7%	48.0%	48.8%	57.7%	72.8%	56.3%	50.0%
1 to 5	40.0%	37.4%	36.2%	26.7%	18.4%	28.1%	34.0%
6 to 10	7.9%	4.3%	3.7%	4.7%	3.2%	0.0%	4.5%
11 to 20	13.3%	4.5%	7.9%	8.0%	3.2%	6.3%	7.1%
Over 20	6.1%	5.8%	3.3%	2.9%	2.3%	9.4%	4.4%
Total	100%	100%	100%	100%	100%	100%	100%

Table 2.11
California Population of Registered and Documented Boats
Estimated Distribution by Storage Method

Length Class	Facility type	Type of Support: Water	Trailer	Rack	Ground	Total
<26′	Boat storage	6.0%	2.4%	0.9%	0.2%	9.5%
	General storage	0.4%	4.3%	0.2%	0.3%	5.2%
	Own property	1.1%	65.3%	4.6%	8.5%	79.4%
	Other	—	0.1%	—	0.1%	0.3%
	Club	—	—	—	—	0.1%
	Other private property	0.2%	4.1%	0.2%	0.5%	5.0%
	Other public property	—	0.1%	—	—	0.2%
	Private mooring	0.2%	—	—	—	0.3%
	Total	**8.0%**	**76.5%**	**6.0%**	**9.6%**	**100.0%**
26'+	Boat storage	74.7%	1.6%	0.2%	—	76.5%
	General storage	0.2%	2.1%	0.1%	0.2%	2.5%
	Own property	3.0%	10.3%	0.3%	0.3%	13.9%
	Other	0.4%	0.1%	—	—	0.4%
	Club	2.2%	0.1%	—	—	2.3%
	Other private property	1.8%	0.4%	0.1%	0.1%	2.5%
	Other public property	0.4%	—	—	—	0.4%
	Other vessel	0.4%	—	—	—	0.4%
	Private mooring	1.1%	—	—	—	1.1%
	Total	**84.2%**	**14.5%**	**0.7%**	**0.6%**	**100.0%**

Table 2.12
Primary Launching Method by Length Group

Launching Choice	Boat Length: <16′	16' - 19'11"	20' - 25'11"	26' - 39'11"	40' +	Total
Ramp	67.7%	88.6%	77.1%	14.7%	—	71.0%
Hoist	0.8%	1.0%	2.0%	1.1%	—	1.1%
Launching service	1.4%	1.2%	1.5%	0.4%	—	1.3%
Carry	20.4%	2.3%	—	0.4%	—	10.9%
Wheeled dolly	0.5%	0.1%	—	—	—	0.3%
Back-in, no ramp	1.0%	—	0.3%	—	—	0.6%
Other	1.9%	0.8%	0.9%	1.1%	—	1.4%
Total launching (N=2,306)	**93.8%**	**94.0%**	**81.8%**	**17.6%**	**—**	**86.4%**
Stored in water (N=3,978)	6.2%	5.9%	18.2%	82.4%	100.0%	13.5%
Total	100%	100%	100%	100%	100%	100%

Exhibit 2.9
Primary Launching Method by Length Group

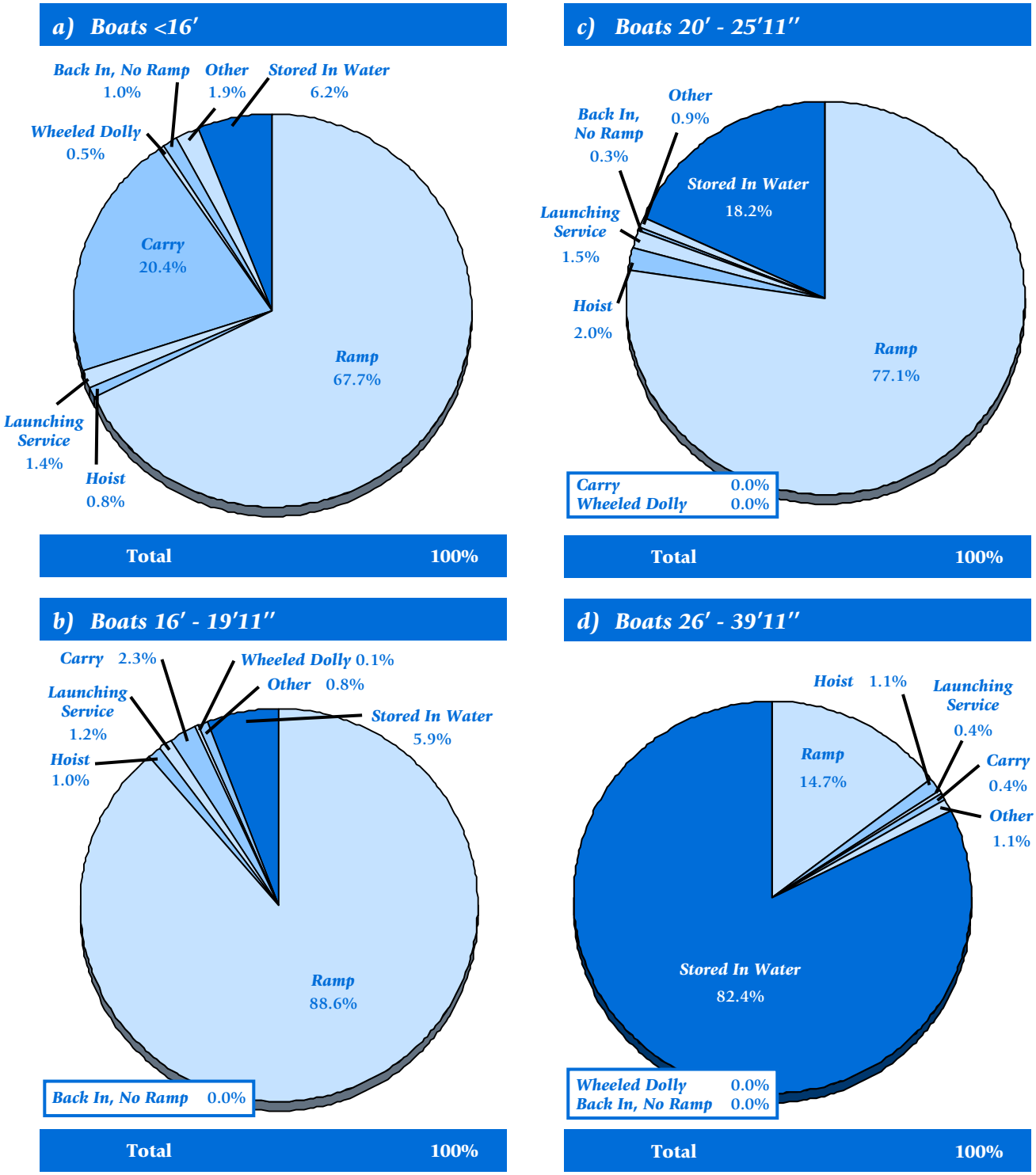
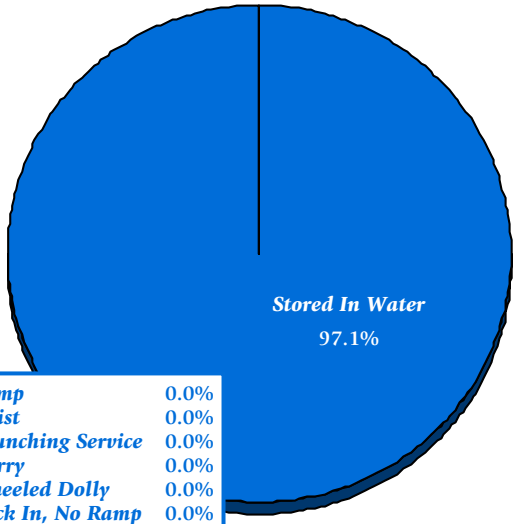


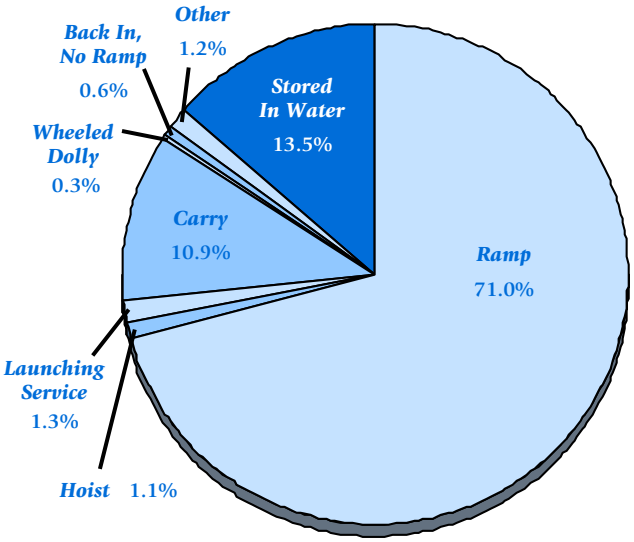
Exhibit 2.9
Primary Launching Method by Length Group

e) Boats 40′ +



Ramp	0.0%
Hoist	0.0%
Launching Service	0.0%
Carry	0.0%
Wheeled Dolly	0.0%
Back In, No Ramp	0.0%
Other	0.0%
Total	**100%**

f) Total



Total	**100%**

Table 2.13
Primary Launching Method by Length Group
Estimated Number of Boats Launching – Statewide

Launching Choice	Boat Length <16′	16' - 19'11"	20' - 25'11"	26' - 39'11"	40' +	Total
Ramp	312,808	236,294	100,930	7,445	—	657,477
Hoist	3,899	2,759	2,679	536	—	9,873
Launching svc	6,499	3,261	1,929	188	—	11,876
Carry	94,449	6,020	—	188	—	100,657
Wheeled dolly	2,166	251	—	—	—	2,417
Back in, no ramp	4,766	—	429	—	—	5,194
Other	8,665	2,007	759	572	—	12,422
Total launching	**433,252**	**250,843**	**107,144**	**8,937**	**—**	**800,177**
Stored in water	28,637	15,728	23,839	41,843	15,300	125,346
Total	**461,889**	**266,571**	**130,983**	**50,780**	**15,300**	**925,523**

Applying the boater survey distribution of launching methods shown above to the vessel population estimates from Table 2.3, the following total numbers of launching facility users are estimated. It is estimated that 657,000 California boats use launching ramps (**Table 2.13**).

Boater Expenditures

Boating costs were grouped for this study into two broad groups: trip-related costs and costs of ownership. Trip-related costs like fuel and groceries occur only when the boat is used, whereas ownership costs like upkeep, insurance, and storage occur whether the boat is used or not.

Average daily trip spending based on the survey results was $135.70 per boat. Annual average boat ownership costs in 2000 were $1,697. Boating expenditures by trip are illustrated in **Table 2.14** and **Exhibit 2.10**. Annual expenditures are provided in **Table 2.15** and **Exhibit 2.11**. The detailed breakdown of these costs by type of expenditure and type of boat, shown in Appendix A2, Tables A2.5 to A2.7 provide one basis for calculating the impact of boating on the state economy.

Despite their small size, PWCs incur larger daily and annual costs than most larger boats because of their frequent use, extensive highway travel, and high fuel consumption.

Table 2.14
Average Daily Boating Trip Expenditures per Boat

	Expenditure	Percent
Grocery & convenience	$29.52	21.8%
Restaurants	8.56	6.3%
Hotels & motels	9.10	6.7%
Campgrounds	6.14	4.5%
Gift, book, other retail	2.92	2.2%
Drug stores	1.65	1.2%
Boating equipment stores	12.43	9.2%
Gas stations, boat fuel	27.60	20.3%
Gas stations, vehicle fuel	22.69	16.7%
Marinas, transient berthing	4.84	3.6%
Marinas, parking	1.42	1.0%
Marinas, launching	2.89	2.1%
Marinas, boat fuel	11.31	8.3%
Marinas, boat/motor rental	0.58	0.4%
Marinas, gear rental	0.65	0.5%
Marinas, incidentals	3.29	2.4%
Total	$135.70	100.0%

Table 2.15
Average Annual Non-Trip Expenditures per Boat

	Expenditure	Percent
Equipment purchases	$469.79	27.7%
Repairs & maintenance	376.60	22.2%
Insurance	160.14	9.4%
Property tax on boat	67.44	4.0%
Marina slip	279.68	16.5%
Dry storage	59.42	3.5%
Other marina fees	10.42	0.6%
Club and association fees	46.21	2.7%
Other costs	38.85	2.3%
Total	$1,697.31	100.0%

Exhibit 2.10
Annual Daily Trip Spending per Boat

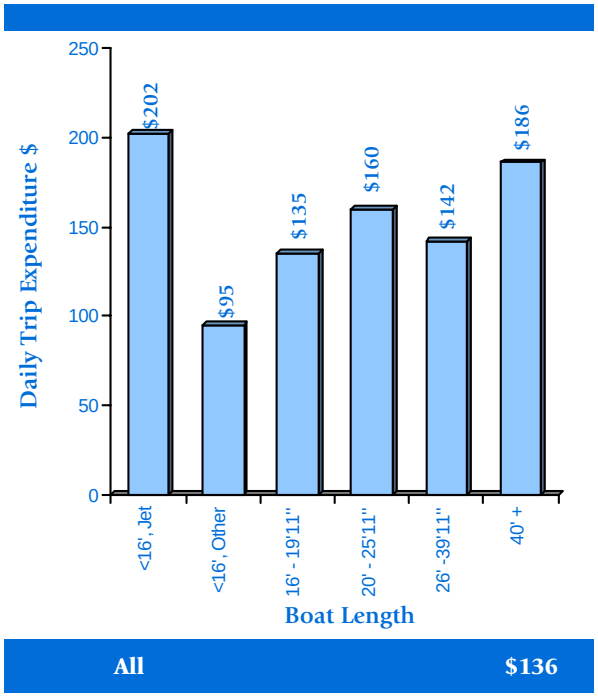
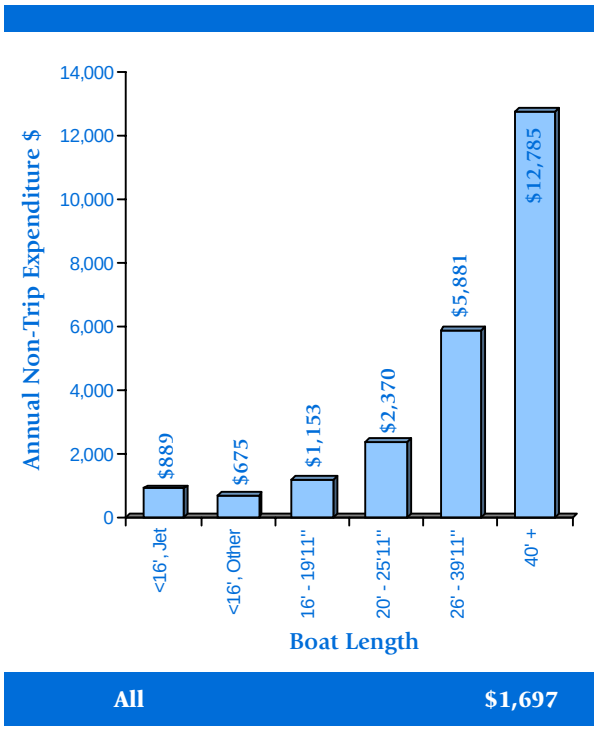


Exhibit 2.11
Annual Non-trip Expenditures per Boat



Boater Opinions on Waterways and Boating Facilities

What do boaters really want?

Boat owners were asked which waterway they use most often ("Waterway 1" in the following tables). A detailed table of most-used waterways by region and boat type is given in Appendix A2. Owners were then asked the first and second reasons they use that waterway. The answers were coded according to their main point. (Uncoded responses were retained in the data base for future analysis). The most frequent answers are tabulated below in descending order of frequency down to 1 percent of the number responding to a particular question.

The answers showed a surprising degree of unanimity. Being close to home is by far the most frequent consideration for the first and second waterway for every type of boat analyzed, especially if one adds closely related answers like "convenience" and "near vacation home". Fishing is the second most frequent consideration, though of little significance to jet skiers, sailboaters, and cruisers. Esthetics are the prime consideration for the many boaters who cited "like the place", "pleasure", "scenery, natural beauty" and perhaps "water quality". Jet skiers, not surprisingly in light of their far-flung travels (see "Trips more than 100 miles from home") also favor places with good camping, while owners of very large boats often look first for a waterway with adequate berthing facilities and also favor places with desirable boating

destinations. The second most-used waterway is generally chosen for many of the same reasons as the first. Additional factors mentioned by boaters who use a second waterway are lack of crowds and seclusion, a large water area, friends nearby, family time, good weather, and warm water.

Table 2.16 gives the most frequent first reasons given for the boater's most-used waterway. Subsequent responses are tabulated in Appendix A2. Throughout the remainder of this chapter, the number of waterways, problems, or facility needs listed varies, and is a result of natural break points in the data.

Table 2.16
Reasons Boaters Frequent Their Most-Used Waterway by Boat Length (N=3,084)

Reasons	Boat Length						Total
	<16', Jet	<16', Other	16' - 19'11"	20' - 25'11"	26' - 39'11"	40' +	
Close to home	31.5%	23.7%	30.1%	33.6%	25.2%	23.0%	26.8%
Good fishing	1.5%	40.7%	25.6%	15.2%	10.8%	6.3%	17.9%
Convenience	5.4%	8.1%	7.5%	6.9%	11.7%	9.4%	9.4%
Likes the place	9.9%	3.5%	4.5%	6.5%	6.8%	1.0%	5.6%
Pleasure	3.9%	2.9%	2.1%	3.6%	5.7%	11.0%	4.6%
Boat storage facility	—	0.6%	2.1%	1.1%	6.3%	16.8%	4.4%
Good sailing	—	1.0%	0.4%	1.4%	8.0%	1.6%	4.0%
Large water area	3.9%	0.8%	3.0%	5.1%	3.2%	3.7%	3.0%
Near vacation home or camp	4.4%	1.2%	4.5%	1.8%	1.8%	1.0%	2.3%
Boating destinations	—	1.0%	0.6%	1.4%	2.9%	3.7%	1.9%
Scenery, natural beauty	1.0%	0.4%	1.1%	3.2%	2.6%	1.0%	1.8%
Good facilities	—	2.7%	1.7%	3.6%	0.7%	0.5%	1.4%
Clean water	2.0%	0.6%	3.4%	1.8%	0.5%	1.0%	1.3%
Cruising	—	—	0.6%	—	2.1%	2.1%	1.1%
Good camping	4.9%	1.9%	1.1%	0.4%	0.1%	—	0.9%
Water skiing	2.5%	0.2%	2.4%	2.2%	0.1%	1.0%	0.9%
Ocean access	—	1.0%	0.0%	1.1%	1.4%	—	0.9%
N for type	203	519	535	277	1,359	191	3,084

Favorite Waterways by Length Group

Owners of boats under 26 feet named 257 different waterways as the one they use most often. The most frequently mentioned waterways included small and large lakes, rivers, bays and the Pacific Ocean. The top 25 are listed below in **Table 2.17**.

Table 2.17
Top Waterways for Boats Under 26 Feet
(N=2,343)

Waterway	Percent of Responses
1. Colorado River	4.7%
2. Pacific Ocean	3.1%
3. Sac-San Joaquin Delta	2.8%
4. Sacramento River	2.4%
5. Clear Lake	1.9%
6. Big Bear Lake	1.5%
7. Lake Perris	1.5%
8. San Francisco Bay	1.5%
9. Mission Bay	1.4%
10. Shasta Lake	1.4%
11. Folsom Lake	1.4%
12. Lake Mohave	1.3%
13. San Diego Bay	1.3%
14. Lake Berryessa	1.2%
15. Lake Oroville	1.2%
16. Lake Tahoe	1.1%
17. Castaic Lake	0.9%
18. Lake Havasu	0.9%
19. Huntington Lake	0.9%
20. Lake McClure	0.9%
21. Lake Nacimiento	0.9%
22. Monterey Bay	0.8%
23. Lake Almanor	0.7%
24. Channel Islands Harbor	0.7%
25. Lake San Antonio	0.7%

Owners of boats 26 feet and longer named 92 different waterways as the one they use most often. San Francisco Bay and the Pacific Ocean were mentioned most often, followed by the Sacramento-San Joaquin Delta. The top 25 are listed in **Table 2.18**.

Table 2.18
Top Waterways for Boats 26 Feet and Over
(N=1,865)

Waterway	Percent of Responses
1. Pacific Ocean	13.9%
2. San Francisco Bay	9.8%
3. Sac-San Joaquin Delta	6.0%
4. San Joaquin River	5.1%
5. San Diego Bay	4.1%
6. Sacramento River	3.8%
7. Santa Barbara Channel	3.1%
8. Santa Monica Bay	2.7%
9. L.A.-Long Beach Harbor	2.7%
10. Lake Oroville	2.6%
11. Channel Islands Harbor	2.3%
12. Newport Harbor	2.1%
13. Shasta Lake	2.0%
14. Dana Harbor	2.0%
15. Catalina Channel	1.7%
16. Mission Bay	1.2%
17. San Pedro Bay	1.2%
18. Monterey Bay	1.1%
19. Lake Don Pedro	1.1%
20. Pine Flat Lake	1.0%
21. Lake Tahoe	0.9%
22. Marina Del Rey	0.9%
23. Lake McClure	0.8%
24. Lake Mohave	0.6%
25. Catalina Island	0.5%

Favorite Waterways

The reasons boat owners gave for choosing their waterways are instructive. Waterways chosen for being close to home, the most common reason, included many bays and lakes near large population centers (**Table 2.19**).

Table 2.19
Top Waterways Chosen because they are Close to Home (N=783)

Waterway	Percent of Responses
1. Clear Lake	4.0%
2. Sac-San Joaquin Delta	4.0%
3. Lake Berryessa	3.9%
4. Pacific Ocean	3.6%
5. Colorado River	3.5%
6. San Francisco Bay	3.3%
7. Lake Arrowhead	3.0%
8. Folsom Lake	2.8%
9. Sacramento River	2.8%
10. Lake Perris	2.6%
11. Shasta Lake	2.5%
12. Lake Oroville	2.3%
13. Lake Tahoe	2.0%
14. Lake Nacimiento	1.8%
15. Mission Bay	1.7%
16. Lake Isabella	1.7%
17. Rollins Lake (Reservoir)	1.6%
18. Alamitos Bay	1.6%
19. San Diego Bay	1.6%
20. Castaic Lake	1.5%
21. Anderson Lake	1.4%
22. Lake Sonoma	1.3%
23. Newport Harbor	1.3%
24. Monterey Bay	1.2%
25. Lake Elsinore	1.2%

The waterway most often chosen by respondents for fishing is the Pacific Ocean. After that the most popular fishing places include a variety of lakes, rivers, and estuaries (**Table 2.20**).

Table 2.20
Top Waterways Chosen for Fishing (N=668)

Waterway	Percent of Responses
1. Pacific Ocean	10.1%
2. Sacramento River	8.8%
3. Sac-San Joaquin Delta	5.7%
4. Big Bear Lake	4.5%
5. Lake Piru	2.6%
6. Huntington Lake	2.6%
7. Shasta Lake	2.4%
8. San Francisco Bay	2.3%
9. Monterey Bay	2.3%
10. San Diego Bay	2.1%
11. Folsom Lake	1.8%
12. Lake Cachuma	1.8%
13. San Joaquin River	1.7%
14. Clear Lake	1.5%
15. Lake Davis	1.4%
16. Eagle Lake	1.3%
17. Lake Don Pedro	1.3%
18. Bodega Bay	1.3%
19. Lake Amador	1.2%
20. San Pablo Bay	1.2%
21. Channel Islands Harbor	1.2%
22. Lake Casitas	1.1%
23. Santa Barbara Channel	1.1%
24. Lake San Vicente	1.1%

Waterway Problems

Boaters were asked several open-ended questions about problems they experience at waterways they use frequently. Three out of four boat owners have no problems at all with their most frequently used waterway. Of the problems that do exist, insufficient water depth topped the list, occurring almost twice as often as any other complaint, and was voiced by owners of every size and type of boat. (This may reflect the fact that boats are now generally larger than the ones for which existing facilities were built.) Next in importance are a set of complaints related to interactions among boaters in limited spaces, including overcrowding, reckless operation (note that PWC operators and boaters each complain about the other), excessive speed, drunkenness, and congestion at launch ramps. Boat storage, as noted earlier, is not a main issue except for owners of very large boats in areas without sufficient berthing in their size range: 95 percent of boat owners have no specific complaint about their storage arrangements. **Table 2.21** gives the top-ranking problems as indicated by the respondents' first-mentioned problem on their most-used waterway. Additional responses (Waterway 1, Problem 2; Waterway 2, Problems 1 and 2) are tabulated in Appendix A2.

Table 2.21
Problems at the Most-Used Waterways by Boat Length (N=2,874)

Problem	Boat Length						Total
	<16', Jet	<16', Other	16' - 19'11"	20' - 25'11"	26' - 39'11"	40' +	
None	73.6%	78.4%	73.1%	71.5%	75.8%	74.5%	75.2%
Insufficient water depth	4.1%	5.1%	2.8%	4.2%	4.2%	5.5%	4.2%
Overcrowding	7.8%	1.9%	6.4%	5.3%	0.7%	—	2.7%
Reckless PWC operators	2.6%	2.9%	1.8%	3.4%	1.2%	1.2%	1.9%
Reckless boaters	0.5%	1.0%	1.4%	0.8%	2.5%	1.8%	1.7%
Invasive species	1.6%	0.8%	2.2%	1.1%	1.6%	3.6%	1.6%
Congestion at launch ramps	—	0.6%	2.4%	1.5%	0.7%	0.0%	1.0%
Unpredictable weather	—	—	—	—	1.3%	3.6%	0.8%
Too windy	1.6%	0.8%	0.6%	1.1%	0.8%	—	0.8%
Poor water quality	0.5%	0.6%	1.4%	—	0.9%	—	0.8%
High facility use fee	—	0.4%	0.8%	0.8%	0.5%	1.8%	0.6%
Floating debris	—	0.2%	0.6%	0.4%	0.6%	3.0%	0.6%
Excessive/rude law enforcement	0.5%	0.6%	0.4%	0.8%	0.5%	0.0%	0.5%
Inadequate maintenance	—	0.6%	0.6%	0.8%	0.2%	0.6%	0.4%
Dangerous water	—	—	0.2%	0.8%	0.6%	—	0.4%
Drunkenness	3.6%	—	—	1.1%	0.1%	—	0.4%
Security in parking area	—	—	0.4%	—	0.2%	0.6%	0.2%
Environmental restrictions	—	—	0.6%	—	0.3%	—	0.2%
Inexperienced boaters	—	0.2%	—	—	0.3%	—	0.2%
Security in boat storage area	—	—	—	—	0.2%	—	0.1%
Need parking	—	—	0.4%	—	0.1%	0.6%	0.1%

Table 2.22
Problems at Unused Waterways by Boat Length (N=682)

Reason Waterway Unused	Boat Length						Total
	<16', Jet	<16', Other	16' - 19'11"	20' - 25'11"	26' - 39'11"	40' +	
Poor water quality	29.2%	5.8%	10.3%	12.7%	12.4%	14.3%	12.8%
Too far from home	2.8%	15.4%	9.7%	11.4%	15.0%	0.0%	11.4%
Insufficient water depth	2.8%	5.8%	8.5%	7.6%	11.5%	17.9%	8.8%
Overcrowding	8.3%	4.8%	13.9%	12.7%	6.8%	—	8.8%
Congestion at launch ramps	2.8%	12.5%	4.8%	1.3%	2.1%	—	4.3%
Inadequate facilities	1.4%	7.7%	0.6%	—	7.3%	—	4.0%
Limited access	—	6.7%	2.4%	5.1%	1.7%	7.1%	3.1%
Need public dock	—	3.8%	—	—	3.8%	7.1%	2.2%
High facility use fee	1.4%	6.7%	1.2%	3.8%	0.9%	—	2.2%
Boating prohibited	2.8%	3.8%	2.4%	3.8%	—	—	1.9%
Not enough time	—	1.9%	—	3.8%	2.6%	3.6%	1.8%
Facility closed	1.4%	1.9%	2.4%	1.3%	1.3%	—	1.6%
Poor ramp condition	—	1.0%	3.0%	—	1.7%	3.6%	1.6%
Needs more public access	—	1.0%	1.2%	—	2.1%	3.6%	1.3%
Need campgrounds	—	1.9%	1.2%	2.5%	0.4%	—	1.0%
Submerged obstacles	—	1.0%	—	3.8%	—	3.6%	0.7%
Floating debris	2.8%	—	0.6%	1.3%	—	—	0.6%
No facilities	—	—	—	—	1.3%	3.6%	0.6%

Boat owners were also asked what additional waterways they would like to use but do not, and why they do not. (The specific waterways mentioned are discussed below.) The primary reason a waterway was not used was poor water quality. Distance from home was the second most common reason to avoid a waterway. The next several perceived obstacles to their use are similar to the problems they experience on their frequently used waterways, especially greater water depth for launching and berthing their boats, uncrowded waterways, and adequate basic facilities (**Table 2.22**). In these instances, however, the problems are severe enough to deter them from using the waterway at all.

Facility Needs

Sixty percent of respondents felt there were no specific facility needs at their most frequently used waterway. Those who did perceive facility needs most often cited a general need for more capacity, or specific needs for more parking and launching ramp capacity. Marine toilet waste disposal was a frequent problem. Ramp and dock repair and dredging needs were cited. At the second waterway, campsites came close to the top of the list. Other needs named by ten or more respondents included security and crowd control, covered storage, and a number of convenience issues like floating and onshore bathrooms, restaurants, gasoline sales, electricity, better vehicle and wheelchair access, and other issues listed below. **Table 2.23** applies to the respondents' most-used waterway. A similar table for Waterway 2 is in Appendix A2.

Table 2.23
Facility Needs at Most-Used Waterways by Boat Length (N=2,856)

Facility Need	Boat Length						Total
	<16', Jet	<16', Other	16' - 19'11"	20' - 25'11"	26' - 39'11"	40' +	
None	60.7%	67.8%	64.1%	52.9%	58.1%	50.6%	60.0%
Launching capacity	3.0%	6.1%	6.6%	8.1%	3.8%	0.0%	4.8%
More capacity	3.5%	0.4%	5.0%	5.8%	2.4%	4.9%	3.0%
Dredging	0.5%	2.1%	1.6%	1.9%	3.7%	7.3%	2.9%
More docks	—	1.7%	1.2%	2.7%	3.3%	0.6%	2.2%
Dock repairs	1.0%	0.6%	1.0%	1.9%	2.6%	4.9%	1.9%
Better facilities	3.0%	0.8%	0.6%	0.4%	2.9%	1.8%	1.9%
Better restrooms	3.0%	1.0%	1.2%	3.9%	1.1%	0.6%	1.5%
Better waste pumpout	—	—	—	—	2.6%	5.5%	1.4%
Ramp repairs	1.5%	2.7%	0.6%	0.8%	1.0%	—	1.2%
Campgrounds	7.5%	1.9%	1.0%	0.4%	0.3%	0.6%	1.2%
Parking capacity	1.0%	1.0%	1.6%	2.7%	0.8%	—	1.1%
Better water quality	1.0%	0.4%	2.4%	1.5%	0.8%	1.2%	1.1%
More boat slips	—	—	0.2%	1.2%	1.4%	2.4%	0.9%
Gasoline sales	1.0%	0.8%	0.2%	0.8%	1.1%	1.8%	0.9%
Maintain water level	1.0%	1.3%	1.0%	0.8%	0.5%	2.4%	0.9%
Remove invasive species	1.5%	0.2%	0.8%	1.2%	1.0%	0.6%	0.9%
Crowd control	—	1.0%	2.0%	4.0%	1.0%	—	0.8%
More marinas	0.5%	—	0.8%	1.5%	1.0%	0.6%	0.8%
More public access	—	1.0%	1.6%	0.4%	0.5%	0.6%	0.7%
Another boat repair shop	—	0.0%	0.2%	0.4%	1.4%	1.2%	0.7%
Moorings	—	0.2%	—	0.8%	0.8%	3.0%	0.6%
Boat storage facility	—	0.2%	0.4%	0.4%	1.0%	—	0.6%
Covered storage	1.0%	0.2%	0.0%	—	0.8%	—	0.5%
Lower use fees	—	1.3%	0.2%	0.4%	0.4%	—	0.5%
More law enforcement	3.0%	—	0.2%	0.4%	0.4%	—	0.5%
Separate area for PWCs	—	0.6%	0.2%	0.4%	0.5%	—	0.4%
Retail supplies	—	0.6%	0.6%	—	0.3%	—	0.4%
Electricity	—	—	0.2%	0.4%	0.5%	—	0.3%
Security	—	0.4%	0.2%	—	0.2%	—	0.2%
Floating bathrooms	3.0%	—	—	—	—	—	0.2%
Restaurant	—	—	—	0.4%	0.5%	0.0%	0.2%
Better access road	—	0.2%	—	—	—	0.6%	0.1%
Free access	—	0.4%	—	—	—	—	0.1%
Keep ramps open year-around	0.5%	—	0.6%	—	—	—	0.1%
Freshwater wash area	—	—	—	1.2%	0.1%	—	0.1%

Table 2.24
Facility Needs at Unused Waterways by Boat Length (N=633)

Facility Need	Boat Length						Total
	<16', Jet	<16', Other	16' - 19'11"	20' - 25'11"	26' - 39'11"	40' +	
Launching capacity	3.0%	23.2%	16.1%	14.9%	5.0%	4.8%	11.4%
Better water quality	17.9%	2.1%	2.6%	10.8%	5.9%	9.5%	6.5%
None	1.5%	6.3%	5.2%	13.5%	5.4%	0.0%	5.8%
Dredging	—	3.2%	1.9%	4.1%	8.1%	4.8%	4.4%
More public access	4.5%	3.2%	3.9%	4.1%	2.7%	4.8%	3.5%
More law enforcement	0.0%	2.1%	3.9%	6.8%	4.1%	—	3.5%
Campgrounds	6.0%	4.2%	3.2%	6.8%	0.5%	4.8%	3.2%
Maintain water level	4.5%	4.2%	4.5%	1.4%	1.8%	4.8%	3.2%
Better facilities	4.5%	1.1%	5.8%	1.4%	1.4%	4.8%	2.8%
Needs to be cleaned up	4.5%	1.1%	2.6%	4.1%	1.8%	4.8%	2.5%
More docks	—	1.1%	0.6%	—	5.0%	9.5%	2.4%
Crowd control	1.5%	1.1%	2.6%	—	4.1%	—	2.4%
Less restriction of water sports	—	1.1%	5.2%	—	1.8%	—	2.1%
Lower use fees	1.5%	2.1%	1.9%	1.4%	1.8%	—	1.7%
Not enough facilities	—	2.1%	1.9%	5.4%	0.9%	—	1.7%
Parking capacity	—	2.1%	1.9%	2.7%	1.4%	4.8%	1.7%
More marinas	—	—	0.6%	—	3.2%	9.5%	1.6%
Moorings	—	—	—	—	4.1%	—	1.4%
Allow boating	—	1.1%	3.9%	—	—	—	1.1%
Remove floating debris	1.5%	—	0.6%	2.7%	—	—	0.6%
Plant trees	—	1.1%	—	—	—	—	0.2%

Boaters were asked to recommend improvements at waterways they would like to use, but do not (**Table 2.24**). Again, launching capacity and dredging were near the top. Improved water quality and public access improvements were also major considerations. For large boats, insufficient marina facilities on some otherwise desirable waterways appears the most frequent reason not to use them.

Problem Waterways

The next series of tables provides summary lists of waterways with specific problems and facility needs, as identified by survey respondents. The total percent refers to the percentage of boaters citing that problem or need (N) that referred to a particular waterway. A detailed breakdown by boat length is included in Tables A2.16 through A2.21 in Appendix A2.

Problem Waterways: Water Depth

Water depth was cited most often as their most important problem by boat owners at the waterways identified in **Table 2.25**. Water depth was cited as a problem by all boat lengths.

Table 2.25
Insufficient Water Depth, Top Waterways (N=103)

Waterway	Percent of Responses
1. Colorado River	23.2%
2. Lake Oroville	8.8%
3. San Francisco Bay	7.5%
4. Folsom Lake	5.9%
5. Newport Harbor	5.7%
6. Lake Almanor	5.1%
7. Lake Shasta	4.8%
8. San Pablo Bay	2.5%
9. Lake Pillsbury	2.4%
10. Coyote Lake (Reservoir)	2.4%
11. Anderson Lake	2.4%
12. Sacramento River	2.4%

Problem Waterways: Crowding

Overcrowding was cited most often as the most important problem on the waterways listed in **Table 2.26**. Crowding was cited as a problem by many boaters on Lake Perris, Mission Bay, and the Colorado River.

Table 2.26
Overcrowding, Top Waterways (N=121)

Waterway	Percent of Responses
1. Lake Perris	12.7%
2. Mission Bay	12.2%
3. Colorado River	11.0%
4. Folsom Lake	8.3%
5. Lake Berryessa	8.2%
6. Lake Elsinore	4.9%
7. L.A.-Long Beach Harbor	4.9%
8. Sac-San Joaquin Delta	4.2%
9. Oakland Estuary	4.1%
10. Lake Isabella	2.8%
11. Sacramento River	2.4%
12. Calero Reservoir	2.1%
13. Anderson Lake	2.1%
14. Bodega Bay	2.1%
15. Bucks Lake	2.1%

Problem Waterways: Recklessness

Reckless boat or PWC operation was cited most often as the most important problem by boat owners on the following waterways identified in **Table 2.27** and **Table 2.28**. Reckless boaters were most often cited as a problem by boats 26 feet to 39 feet 11 inches in length, and on some waterways by boats and PWC under 16 feet in length. Reckless PWC operators was most often a complaint of boats 16 feet to 19 feet 11 inches in length and boats over 26 feet in length.

Table 2.27
Reckless Boaters, Top Waterways (N=29)

Waterway	Percent of Responses
1. Lake Mohave (AZ)	19.9%
2. Sac-San Joaquin Delta	16.5%
3. Sacramento River	16.1%
4. San Joaquin River	11.2%
5. San Diego Bay	7.3%

Table 2.26
Reckless PWC Operators, Top Waterways (N=60)

Waterway	Percent of Responses
1. Dana Harbor	9.8%
2. Channel Islands Harbor	9.8%
3. Coyote Lake (Reservoir)	8.2%
4. Shasta Lake	8.2%
5. Sac-San Joaquin Delta	7.6%
6. Oceanside Harbor	7.3%
7. Colorado River	5.7%
8. Millerton Lake	5.6%
9. Woodward Reservoir	4.1%
10. Sacramento River	3.7%

Problem Waterways: Invasive Water Plants

The vast majority of reported problems with invasive water plants were in Clear Lake, the Delta, the San Joaquin River, and New Hogan Reservoir. Invasive species were cited as a problem in the Delta and San Joaquin River by boats over 26 feet in length (**Table 2.29**).

Table 2.29
Invasive Species, Top Three Waterways (N=37)

Waterway	Percent of Responses
1. Clear Lake	53.5%
2. Sac-San Joaquin Delta	14.4%
3. Sacramento River	6.4%
4. New Hogan Reservoir	5.4%

Problem Waterways: Congestion at Launch Ramps

Boaters reported congested launch ramps as a primary problem on the waterways listed in **Table 2.30**. Launch ramp congestion was most often cited as a problem by boats 16 feet to 19 feet 11 inches in length, and at Lake Berryessa by boats 26 feet to 39 feet 11 inches. In Morro Bay and the Pacific Ocean, boats 20 feet to 25 feet 11 inches complained about launch ramp congestion.

Other problem sites frequently mentioned by respondents are as follows:

- Parking area security: Lake Oroville and Monterey Bay
- Inadequate facility maintenance: Clear Lake, Humboldt Bay, Anderson Lake, and San Francisco Bay
- Floating debris: Shasta Lake, Lake Oroville, and Sacramento River
- Drunkenness: Blythe (Colorado River) and Sacramento-San Joaquin Delta
- Lack of pumpout facilities: Newport Harbor

- Facility closed: Lake Mendocino (seasonal), Pine Flat Lake (seasonal), and Sacramento River
- High fees: Shasta Lake, Lake Siskiyou, Channel Islands Harbor, Lake Oroville, and Lake McCloud
- Excessive/rude law enforcement: Monterey Bay, Folsom Lake, Pine Flat Lake, and Lake San Antonio
- Environmental restrictions: Moss Landing and Monterey Bay
- Dangerous water: Humboldt Bay, Noyo River, Pacific Ocean, Monterey Bay, and Delta
- Poor water quality: Mission Bay, San Diego Bay, Sacramento-San Joaquin Delta, and San Joaquin River.

Table 2.30
Launch Ramp Congestion, Top Waterways (N=31)

Waterway	Percent of Responses
1. Sac-San Joaquin Delta	15.8%
2. Sacramento River	12.7%
3. Shaver Lake	10.7%
4. Pacific Ocean	9.0%

3. *Facilities Needs*

Heavily Used Waterways with Facility Needs

More capacity in general was given as the number one facility need most often cited by boaters at the waterways shown in **Table 2.31**. (In Tables 2.31-2.41, the N refers to the total number of respondents who stated the particular kind of facility need addressed in the table.) The Pacific Ocean complaints generally refer to a perceived need for more boat launching and related facilities at popular ocean access sites such as Avila Beach, Huntington Beach, Trinity Head, and other coastal county and state beaches and at harbors not named as separate waterways. Respondents with all boat lengths identified general capacity needs.

Recommendations for launching capacity, illustrated in **Table 2.32** for Waterway 1, and **2.33** for Waterway 2, was most often cited as a recommendation by boats under 20 feet in length.

Table 2.31
Top Waterways, More Facility Capacity (N=87)

Waterway	Percent of Recommendations
1. Lake Berryessa	8.6%
2. Colorado River	7.5%
3. Huntington Harbor	6.8%
4. Castaic Lake	6.8%
5. L.A.-Long Beach Harbor	6.8%
6. Pacific Ocean	6.2%
7. Anderson Lake	5.7%
8. Napa River	5.7%

Table 2.32
Launching Capacity, Waterway 1, Top Waterways (N=149)

Waterway 1	Percent of Recommendations
1. Channel Islands Harbor	11.8%
2. Pacific Ocean	10.9%
3. Lake Mohave (AZ)	5.7%
4. San Diego Bay	4.9%
5. Sac-San Joaquin Delta	4.7%
6. Sacramento River	4.2%
7. Lake Elsinore	3.9%
8. Lake Tahoe	3.3%
9. Lake Shasta	3.1%
10. Bodega Bay	3.0%
11. Mission Bay	3.0%
12. Lake Oroville	2.9%
13. Monterey Bay	2.7%
14. Lake Havasu	2.6%

Table 2.33
Launching Capacity, Waterway 2, Top Waterways (N=107)

Waterway 2	Percent of Recommendations
1. Lake Piru	11.0%
2. Lake Berryessa	9.7%
3. Pyramid Lake	5.6%
4. Alamitos Bay	5.5%
5. Lake Casitas	5.5%
6. Big Bear Lake	5.5%
7. Bass Lake	3.1%

Waste pumpout facility needs were of concern mainly to owners of boats 26 feet and up, on large waterways like San Francisco Bay, and the Delta (**Table 2.34**).

Table 2.34
Waste Pumpout, Waterway 1, Top Waterways (N=8)

Waterway 1	Percent of Recommendations
1. San Francisco Bay	28.2%
2. San Diego Bay	15.8%
3. Petaluma River	13.0%

Boat owners on the waterways identified in **Table 2.35** feel they need better restrooms. PWC owners requested more restrooms on the Colorado River and Lake San Antonio, while recommendations on the other waterways were provided by owners of boats of all sizes except 16 feet to 19 feet 11 inches.

Table 2.35
Better Restrooms, Waterway 1, Top Waterways (N=46)

Waterway 1	Percent of Recommendations
1. Lake San Antonio	18.7%
2. Anaheim Bay	12.7%
3. Sacramento River	8.9%
4. Lake Elsinore	7.3%
5. Lake Perris	7.3%
6. Napa River	5.3%
7. Anderson Lake	5.3%
8. Lake Tahoe	4.3%
9. Colorado River	3.8%
10. Big River	3.6%
11. Lake Cachuma	3.6%
12. San Joaquin River	3.6%
13. Sac-San Joaquin Delta	3.6%
14. Modesto Reservoir	3.6%

Campgrounds were recommended for Waterway 1 and Waterway 2, as shown in **Table 2.36** and **Table 2.37**. Campgrounds were most often recommended by PWC and boats under 20 feet, although at Kaweah Reservoir, Lake Oroville, the San Joaquin River, and Clear Lake, owners of boats over 26 feet recommended campgrounds.

Table 2.36
Need for Campgrounds, Waterway 1, Top Waterways (N=51)

Waterway 1	Percent of Recommendations
1. Lake Isabella	18.3%
2. Pyramid Lake	11.6%
3. Lake Oroville	8.5%
4. Lake Havasu	6.7%
5. Modesto Reservoir	6.6%
6. Lake Berryessa	6.3%
7. Lake Pillsbury	4.9%
8. Shasta Lake	4.0%
9. Folsom Lake	4.0%
10. Lake Davis	4.0%

Table 2.37
Need for Campgrounds, Waterway 2, Top Waterways (N=30)

Waterway 2	Percent of Recommendations
1. Pine Flat Lake	38.6%
2. San Joaquin River	8.5%
3. Shasta Lake	8.3%
4. Lake Pillsbury	7.7%
5. Clear Lake	6.6%
6. Big Bear Lake	5.5%
7. Lake Don Pedro	5.5%
8. New Hogan Reservoir	5.5%

Boaters recommended more docks at the waterways identified in **Table 2.38**. Boats of all sizes recommended more docks, however in general smaller boats recommended docks on lakes, and larger boats recommended docks on oceans and bays.

Table 2.38
More Docks, Top Waterways, Waterway 1 (N=42)

Waterway 1	Percent of Recommendations
1. Dana Harbor	14.1%
2. Oakland Estuary	11.9%
3. San Francisco Bay	9.4%
4. Blue Lake	5.9%
5. San Diego Bay	5.2%
6. Whiskeytown Lake	4.8%
7. Jenkinson Lake	4.8%
8. Tomales Bay	4.2%
9. San Joaquin River	4.2%
10. Lake Perris	4.0%
11. Bass Lake	4.0%
12. Millerton Lake	4.0%
13. Pacific Ocean	3.7%
14. Mission Bay	3.5%
15. Shasta Lake	2.1%
16. Lake Sonoma	1.8%
17. Humboldt Bay	1.6%

The total recommending boat storage facilities are shown in **Table 2.39**. On most waterways, only boats over 26 feet requested more storage facilities.

Table 2.39
Boat Storage Facilities, Top Waterways (N=10)

Waterway	Percent of Recommendations
1. Lake Tahoe	44.9%
2. Folsom Lake	20.6%

Other facility needs mentioned were the following:

- More boat slips: Monterey Bay, Catalina Island
- More public access: Lake Almanor, New Melones Reservoir
- More law enforcement: Silverwood Lake
- Better facilities: Channel Islands Harbor, San Francisco Bay, Cabrillo Beach
- Gasoline sales: Humboldt Bay, Delta
- Another boat repair shop: Lake Berryessa, Sacramento River
- More marinas: Iron Gate Reservoir.

Unused Waterways with Facility Needs

Boat owners most frequently recommended increasing launching capacity, more public access, and dredging for those waterways they would like to use, but don't. Launching capacity (**Table 2.40**) is again most frequently recommended by boats under 20 feet in length, although this need was specified by boats of all sizes. More public access (**Table 2.41**) and dredging (**Table 2.42**) were recommended by boats of all sizes.

Table 2.40
Launching Capacity, Top Unused Waterways (N=101)

Waterway	Percent of Recommendations
1. San Diego Bay	26.3%
2. Sacramento River	8.5%
3. Lake Isabella	5.8%
4. Sac-San Joaquin Delta	4.6%
5. Lake Sonoma	3.8%
6. San Francisco Bay (West)	3.1%
7. San Joaquin River	2.8%
8. San Pablo Bay	2.8%
9. Lake Tahoe (Tahoe City)	2.6%
10. Lake Chabot	2.5%
11. Gold Lake	2.5%
12. Moss Landing	2.5%
13. San Francisco Bay	2.5%
14. Pacific Ocean (Drake's Bay)	2.5%
15. Lake Tahoe	2.1%
16. Feather River	2.0%
17. Folsom Lake	2.0%
18. Slab Creek Reservoir	2.0%
19. Silverwood Lake	1.7%
20. Lake Elsinore	1.7%
21. Lake Tahoe (South)	1.7%
22. Kaweah Reservoir	1.7%
23. Success Lake	1.7%
24. Lake Perris	1.5%
25. Colorado River	1.5%

Table 2.41
More Public Access, Top Unused Waterways (N=24)

Waterway	Percent of Recommendations
1. Sacramento River	17.8%
2. Diamond Valley Reservoir	14.4%
3. Calaveras Reservoir	10.4%
4. Shasta Lake	8.6%
5. Sac-San Joaquin Delta	8.5%
6. American River	8.4%
7. San Joaquin River	8.4%
8. Lake Hemet	7.0%
9. Lake Sonoma	2.9%
10. Colorado River	2.3%

Table 2.42
Dredging, Top Unused Waterways (N=19)

Waterway	Percent of Recommendations
1. Petaluma River	16.5%
2. Lake Davis	12.9%
3. San Joaquin River	12.9%
4. Carquinez Strait	12.9%
5. Mendota Slough	8.7%
6. Stanislaus River	8.7%
7. Lake Elsinore	7.7%
8. San Rafael Canal	7.5%
9. Alviso Harbor	3.7%

Table 2.43
Improve Water Quality, Top Unused Waterways (N=47)

Waterway	Percent of Recommendations
1. Lake Elsinore	14.9%
2. Lake Perris	12.8%
3. Clear Lake	10.6%
4. Sacramento River	8.5%
5. Crowley Lake	6.4%
6. Mission Bay	4.3%
7. Salton Sea	4.3%

In addition, the following recommendations were made for waterways boaters would like to use more:

- Moorings: Cojo Anchorage, Monterey Bay, Delta, and Wishon Reservoir
- Law enforcement and crowd control: Lakes Perris, Oroville and Silverwood, and Sacramento River
- Fewer boating restrictions: Lake Casitas and Santa Margarita Lake
- More facilities: Shasta Lake, Lake Elsinore, Lake McCloud, Millerton Lake, and the Delta.

Final Comments

Boat owners were asked for up to three final comments they would like to make about California boating needs. The top answers out of 4,200 received are shown in **Table 2.44**.

Table 2.44
Most Frequent Boater Comments (N=4,200)

		Frequency	Percent of Responses
1.	California waterways are good	240	5.8%
2.	Concerned about usage fees	238	5.8%
3.	Need additional boating facilities	154	3.7%
4.	There should be more boating safety courses/licenses	150	3.6%
5.	There should be more launching capacity	142	3.4%
6.	There should be more law enforcement	117	2.8%
7.	Prohibit alcohol consumption while boating	95	2.3%
8.	There should be more public access	92	2.2%
9.	Prohibit/restrict PWC use	90	2.2%
10.	There should be more general facility improvements	89	2.2%
11.	There should be less overcrowding	78	1.9%
12.	Cleaner waterways	56	1.3%
13.	Insufficient water level	51	1.2%
14.	More parking capacity	49	1.2%
15.	There should be more dredging	40	1.0%
16.	Add docks	31	0.8%
17.	Decrease government involvement	31	0.7%
18.	More slips	30	0.7%
19.	Control reckless PWC operators	27	0.6%
20.	Better waste pump-out stations	26	0.6%
21.	Allow two stroke engines	26	0.6%
22.	Use boating tax revenues for facility improvements	25	0.6%
23.	Gas docks needed	24	0.6%
24.	Free public access	22	0.5%
25.	Repair ramps	21	0.5%
26.	Improve safety	20	0.5%
27.	Improve fishing	19	0.5%
28.	Remove/reduce boating restrictions	18	0.4%
29.	High gas prices	17	0.4%
30.	Appreciates Coast Guard services	17	0.4%
31.	Additional funding for boating facility improvements	16	0.4%
32.	MTBE problem	16	0.4%

Chapter 3

California Boating Facilities

3. California Boating Facilities

A. Introduction

This chapter provides an overview of California's boating facilities and an assessment of facility needs. The assessment is based on the 2001 BNA survey of California boating facilities as well as results of the Delta Study and secondary research on facilities. Section B describes the number and type of boating facilities: how many, what type, capacity, occupancy, services, and prices. Section C examines facility needs and the estimated cost of facility repairs for the State as a whole. For an overview of facilities and an assessment of facility needs by regions and key waterways, see Volume II.

This Chapter is organized into the following sections:

A. Introduction

B. Overview of California's Boating Facilities

1. *Launch Ramps*
2. *Dry Storage*
3. *Wet Storage*

C. Boating Facility Needs

1. *Age and Material Types of California's Boating Facilities*
2. *Facility Repairs, Replacement, Expansion, or Additions by Time Period*
3. *Dredging*
4. *Maintenance*
5. *Facility Needs and Final Survey Comments.*

B. Overview of California's Boating Facilities

This section provides a statewide summary of California's boating facilities. It includes the results of the BNA facility survey, the Delta Study facility survey, and secondary research on facilities for which surveys were not conducted. **Table 3.1** summarizes the number of facilities surveyed and researched. For a discussion of the survey methodology and limitations, refer to **Appendix C1**. The discussion in this chapter relates to the 646 facilities included in the survey. See Appendix C1 for a discussion of the implications of the approximately 172 other facilities in the State.

Table 3.1
Count of California Boating Facilities and Facilities Surveyed

Category	Number of Facilities
BNA Full Survey	511
BNA Research	78
Delta Study Survey	57
Survey Subtotal	**646**
Not in Analysis	**172**
State Total	**818**

California has at least 818 boating facilities, including marinas, launch ramps, dry storage facilities, resorts, recreational areas, and yacht clubs. These facilities are located on 246 different waterways, such as harbors, bays, channels, rivers, reservoirs, lakes, and the Pacific Ocean. Exhibit C1.2, in Appendix C1, contains a list of the State's waterways known to have boating facilities. Due to the changing nature of the boating industry, the existence of many bodies of water with minimal facilities, and the difficulty in identifying each and every facility, there are likely to be additional facilities and waterways that will be added to the DBW database over time.

Facilities were categorized by three main services or features: launch ramps, dry storage, and wet storage (berths or moorings). A total of 128 facilities in the state provide all three features (marina/launch/dry), while 129 provide launch ramps only, 6 provide dry storage only, and 194 provide wet storage only. Over 180 provide some combination of the two.[1] **Table 3.2** summarizes the types of facilities, statewide, and **Table 3.3** illustrates the number of facilities by region. Tables C2.1 and C2.2, in Appendix C2, provides a more detailed breakdown by region.

Table 3.2
Types of Boating Facilities

Facility Type	Number of Facilities	Percent of Total
Launch Only	129	20.0%
Dry Storage Only	6	0.9%
Marina Only	194	30.0%
Marina/Launch/Dry	128	19.8%
Marina/Launch	113	17.5%
Marina/Dry	54	8.4%
Launch/Dry	15	2.3%
"No Facility"	7	1.1%
Total	**646**	**100%**

Table 3.3
Number and Percent of Facilities, by Region

Region	Number of Facilities	Percent of Total
1. North Coast	30	4.6%
2. San Francisco	138	21.4%
3. Central Coast	21	3.3%
4. South Coast	93	14.4%
5. San Diego	41	6.3%
6. Northern Interior	10	1.5%
7. Sacramento Basin	183	28.4%
8. Central Valley	73	11.3%
9. Eastern Sierra	21	3.3%
10. Southern Interior	36	5.6%
Total	**646**	**100%**

Boating facilities in the state provide a wide range of services. **Table 3.4** provides total numbers and percentages for each of 28 services among the 646 facilities for which detailed information was available. The DBW facility database lists each of the services available, by facility. Some services or features are not appropriate for all facility types, for example, water and electric on dock are only applicable to facilities with wet

[1] Seven facilities stated, apparently incorrectly, that they did not have launch ramps, dry storage, or wet storage. Because it appears that these actually are boating facilities, their answers are included in the survey but they are not assigned facility type categories.

storage. Almost all facilities, 93 percent of the total, have restrooms. The next most common features are showers (59 percent), day-use or picnic areas (54 percent), and transient berths or tie-ups (50 percent). Transient berths or tie-ups can only be offered at facilities with wet storage, so actually close to 70 percent of applicable facilities provide this feature.

Table 3.4
Boating Facility Services and Features

Services and Features	Number of Facilities	Percent of Facilities with Service
1. Restrooms	603	93.3%
2. Showers	378	58.5%
3. Day-use/picnic areas	351	54.3%
4. Transient berths/tie-ups	320	49.5%
5. Water on dock	272	42.1%
6. Electric on dock	266	41.2%
7. Carry-down walkways	266	41.2%
8. Ice vending	253	39.2%
9. Convenience store	238	36.8%
10. Campsites	224	34.7%
11. Sewage/bilge pumpout	221	34.2%
12. Fishing tackle sales	211	32.7%
13. Boat rentals	204	31.6%
14. Fuel sales	200	31.0%
15. Swimming area	197	30.5%
16. Laundry	181	28.0%
17. Restaurant	175	27.1%
18. Phone service on dock	168	26.3%
19. Snack bar	168	26.0%
20. Fish cleaning	170	26.0%
21. Oil disposal	145	22.4%
22. Haulout/boat repair	114	17.6%
23. Boat washdown area	113	17.5%
24. Lodging	110	17.0%
25. Gear lockers	97	15.0%
26. Shore boat service	81	12.5%
27. Launching valet service	63	9.8%
28. Cable TV on dock	56	8.7%

Over one-third (38 percent) of California's boating facilities are publicly owned. The remaining 62 percent of facilities are privately owned and operated. Government ownership is more common with launch ramps (half of all launch ramps are publicly owned), and less common with dry storage (only 22 percent are publicly owned) and wet storage (only 23 percent of the total are publicly owned). Table C2.3, in Appendix C2, provides a breakdown of facility ownership. Publicly operated facilities were asked about operation. One-third of the government facilities are operated by a private operator – through a concessionaire, lessee, or other operating agreement.

The large majority of boating facilities statewide are open to the general public – 90 percent of those answering the question. The remaining facilities are open to club members and "others", for example military personnel or rental customers.

1. *Launch Ramps*

Of the 646 facilities included in the analysis, there are 385 facilities with launch ramp facilities that provide at least 942 launch ramp lanes. This is 58 percent of the total (1,638) launch ramp lanes statewide, calculated by extrapolating to the facilities not in the survey. Because respondents were asked to specify the number of launch ramp lanes available at one time, the exact number of lanes will vary, depending on the water level. A total of 355 facilities provided estimates of the number of launch ramp lanes available at one time. Of these facilities, 39 percent of the facilities have only one lane,

and 121 facilities, or 34 percent have two lanes. **Table 3.5** provides the number of lanes and percent for the 355 facilities. These facilities also provide 26,911 parking spaces for trailers, 698 boarding floats, and 376 carry-down walkways, as summarized in **Table 3.6**.

Table 3.5
Number of Launch Ramp Lanes at Facilities

Number of Lanes	Number of Facilities	Percent of Total
1	137	38.6%
2	121	34.1%
3	26	7.3%
4	26	7.3%
5	6	1.7%
6	14	3.9%
7	7	2.0%
8	7	2.0%
9 to 10	2	0.6%
11 to 12	5	1.4%
13 to 18	1	0.3%
19 to 20	2	0.6%
21 to 24	1	0.3%
Total	**355**	**100%**

Table 3.6
Launch Ramp Support Features

Support Feature	Total Number	Facilities Providing Number
Trailer parking spaces	26,911	292
Boarding floats	698	228
Carry-down walkways	376	175

Launch Ramp Fees

The DBW Planning Unit conducted a survey of launch ramp fees during 2001. Results, summarized below, are for the 227 launch ramp facilities that completed the one-page survey. Until last year, the DBW allowed a maximum of $5 to launch a vessel for facilities that have received Boat Launch Facility grants; however, facilities often charge a series of fees that exceed the $5 maximum. As a result of the DBW study, the Boating Commission increased the maximum for all collected fees for grant recipients to $13. The total fees ranged from zero to $45. The average total fee charged is $6.45, and the average total fee for those facilities that charge is $9.83. Thirty-five percent (78) of the facilities do not charge any fees. Overall average fees and average fees for those that charge a particular fee are provided in **Table 3.7**. For facilities that charge a fee, the most common charge is the launch fee. One hundred of the 227 survey respondents charge a launch fee. The overall average launch fee is $3.48, and the average launch fee charged by the 100 facilities with a launch fee is $7.90. Launch fees make up 54 percent of the total fee collected to launch a vessel.

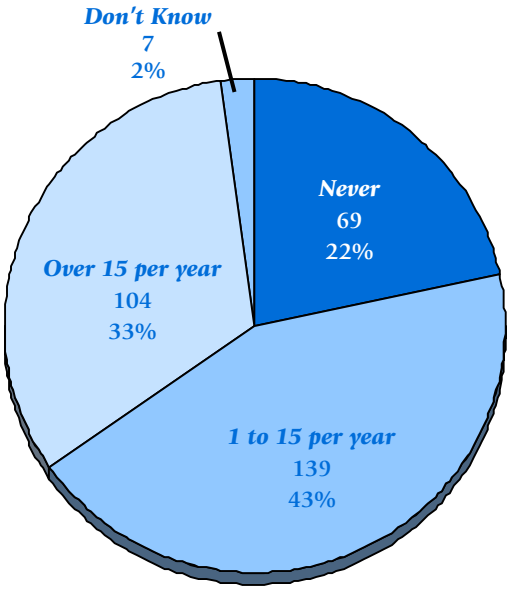
Table 3.7
Launch and Associated Fees at Boating Facilities – DBW Survey Results

Fee	Overall Average	Average with Fee	Number of Facilities with Fee
Launch fee	$3.48	$7.90	100
Parking fee	1.68	5.43	46
Entry/gate fees	0.66	8.25	12
Day-use fees	1.63	5.04	48
Water-use fees	0.33	4.90	10
Fishing stock fees	0.23	3.78	9
Average total fees	6.45	9.83	149

Capacity and Expansion

One-third of the 319 launch ramp facilities answering the question reported that they reached capacity more than 15 times per year. Forty-three percent of the facilities reach capacity 1 to 15 times per year, and 22 percent never reach capacity. **Exhibit 3.1** illustrates the frequency with which these launching facilities reached capacity.

Exhibit 3.1
Launch Ramps at Capacity, Number of Facilities



Total	319

Because there are fewer opportunities to develop new launch ramp facilities, it is important to examine the potential to expand existing facilities as a way to increase overall launch ramp capacity. The facility survey questioned operators about both the ability and need to expand launching facilities. Only those 82 facilities (27 percent) that answered yes to both questions could potentially require DBW funding for new launch ramp lanes in order to increase statewide launch ramp capacity. Almost 100 facilities reported either the need or room to expand, but not both, and 110 facilities reported neither the room nor need to expand. Any facilities, however, could require funding for upgrade and renovation of the existing ramp(s) (as discussed in **Section C** of this Chapter, and in **Volume II**).

2. *Dry Storage*

There are 203 facilities that provide dry storage. As shown in Table 3.2, only 6 of these facilities provide dry storage only, most facilities provide wet storage as well, and 15 provide dry storage along with launch ramps. **Table 3.8** provides a summary of the number of facilities with dry storage by region.

Table 3.8
Dry Storage Facilities by Region

Region	Number of Facilities	Percent of Total
1. North Coast	6	3.0%
2. San Francisco	57	28.1%
3. Central Coast	10	4.9%
4. South Coast	20	9.9%
5. San Diego	9	4.4%
6. Northern Interior	3	1.5%
7. Sacramento Basin	48	23.6%
8. Central Valley	22	10.8%
9. Eastern Sierra	8	3.9%
10. Southern Interior	20	9.9%
Total	**203**	**100%**

Of the 203 dry storage facilities, 183, or 90 percent, provided capacity information. Among these facilities, there are a total of 18,689 dry storage spaces. Extrapolating to the total number of boating facilities with dry storage statewide, the estimated capacity is over 21,000 spaces. **Table 3.9** illustrates the distribution of number of spaces for the facilities that provided capacity information. Most of the facilities provide between 26 and 100 dry storage spaces. A total of 148 facilities were able to provide occupancy information. Sixty facilities were full. The total occupancy rate for the facilities reporting both capacity and occupancy information in late 2001 was 74 percent.

Table 3.9
Number of Spaces at Dry Storage Facilities

Number of Dry Storage Spaces	Number of Facilities	Percent of Total
1 to 10	19	10.4%
11 to 25	30	16.4%
26 to 50	40	21.9%
51 to 75	20	10.9%
76 to 100	22	12.0%
101 to 150	14	7.7%
151 to 200	11	6.0%
201 to 250	11	6.0%
251 to 300	6	3.3%
301 to 400	3	1.6%
401 to 500	4	2.2%
501 to 600	2	1.1%
Over 600	1	0.5%
Total	**183**	**100%**

Dry Storage Rates

Most dry storage facilities charge by the space, rather than by the foot. Only 11 facilities charged by the foot. The average rate per space per month is $79, with a minimum rate of $15 per space per month, and a maximum of $700 per space per month. **Table 3.10** illustrates the distribution of monthly storage rates per space for the 137 facilities reporting.[2]

Table 3.10
Distribution of Monthly per Space Rates for Dry Storage Facilities

Monthly Rate per Space	Number of Facilities	Percent of Total
Up to $25	20	14.6%
$26 to 50	59	43.1%
$51 to 75	21	15.3%
$76 to 100	18	13.1%
$101 to 150	9	6.6%
$151 to 200	1	0.7%
$201 to 250	2	1.5%
$251 to 300	3	2.2%
$301 to 350	0	0.0%
$351 to 400	1	0.7%
$401 to 500	1	0.7%
Over $500	2	1.5%
Total	**137**	**100%**

Expansion

Thirty-six dry storage facilities reported both the ability and need to expand dry storage capacity, while 47 facilities reported either the need or room to expand, but not both, and 50 facilities reported neither the room nor need to expand. Increasing dry storage capacity was mentioned by 30 facilities in the open-ended questions on facility needs.

[2] For the purposes of Table 3.10, a per space rate was calculated for the eleven facilities reporting the rate per foot using a 25-foot boat.

3. *Wet Storage*

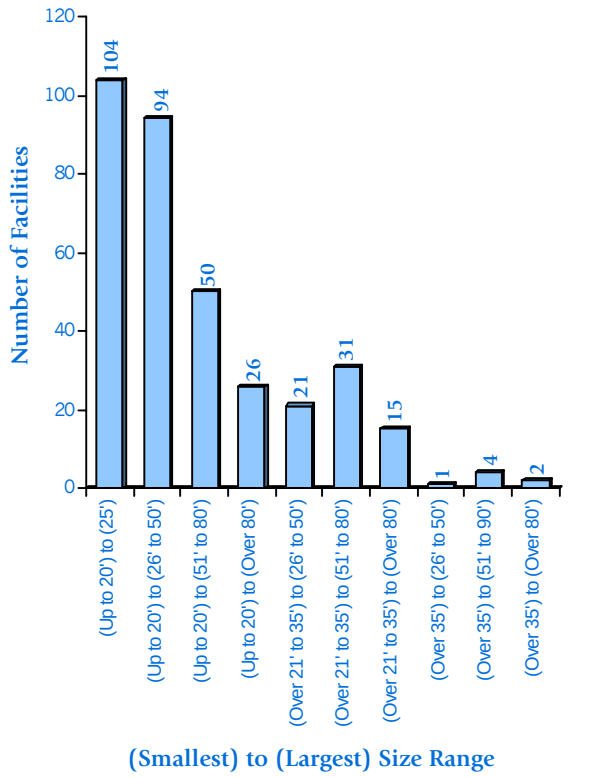
There were 489 facilities with wet storage in the survey. This is approximately 91 percent of the estimated total number for the State. **Table 3.11** summarizes the distribution and types of wet storage facilities. **Table 3.12** provides the number of facilities and capacity for each of three storage types – open berths, covered berths, and moorings, for those facilities reporting capacity information. Table C2.4 in Appendix C2 provides total capacity information by region. Extrapolating to the total number of wet storage facilities statewide, there are an estimated 113,648 slips, tie-ups, or moorings in the State.

Table 3.11
Distribution of Wet Storage Facilities

	Number of Facilities	Percent of Total
Marina Only	194	39.7%
Marina/Launch/Dry	128	26.2%
Marina/Launch	113	23.1%
Marina/Dry	54	11.0%
Total	**489**	**100%**

Facility operators were asked about the smallest and largest boats that used their facilities. **Exhibit 3.2** illustrates the size distribution of the 348 wet storage facilities responding to these questions. Not all facilities answered all survey questions. The tables and exhibits in this chapter show the total number responding to the relevant question. Almost one-third of the facilities are designed for small boats, ranging from less than 20 feet (smallest) to 25 feet in length (largest). Another 94 facilities are designed for boats ranging from less than 20 feet (smallest) to 50 feet (largest) in length, while far fewer facilities are designed only for larger boats.

Exhibit 3.2
Distribution of Smallest and Largest Boats Using Boating Facilities



Total **348**

Open Berths

As shown in **Table 3.12**, the facilities represented in the survey account for 73,425 open berths statewide. Based on the number of facilities that were not surveyed, this is approximately 70 percent of the total number of open berths statewide, estimated to be approximately 106, 400. **Table 3.13** illustrates the number of open slips or tie-ups at the 407 facilities providing information for this question. The majority of facilities provide between 51 and 400 slips, although there are several facilities that provide only a few slips, and a small number of facilities that provide over 800 slips.

Table 3.12
Wet Storage Facilities and Capacity

	Open Berths	Covered Berths	Moorings
Number of Facilities	416	84	88
Capacity	73,425	8,903	8,760

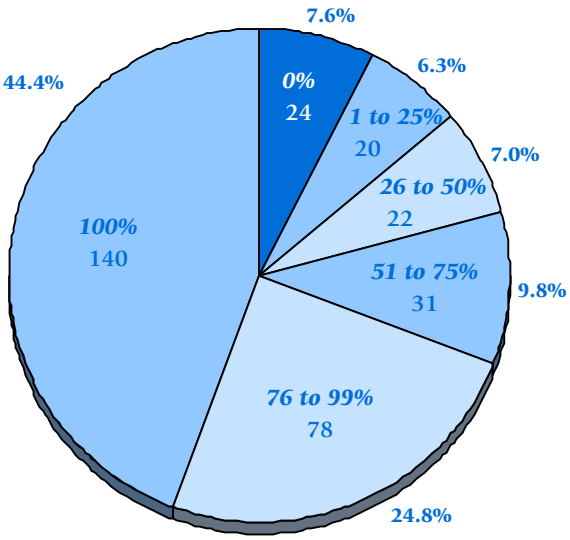
Table 3.13
Number of Open Slips or Tie-Ups at Wet Storage Facilities

Open Slips or Tie-ups	Number of Facilities	Percent of Total
Up to 20	69	16.9%
21 to 50	70	17.2%
51 to 100	80	19.7%
101 to 200	78	19.2%
201 to 400	53	13.0%
401 to 600	35	8.6%
601 to 800	11	2.7%
801 to 1,000	6	1.5%
Over 1,000	5	1.2%
Total	**407**	**100%**

Occupancy and Expansion

Facilities providing a total of 59,150 berths provided both capacity and occupancy information. The occupancy rates are based on figures provided in the second-half of 2001. The overall occupancy rate at these facilities was 88.9 percent. Almost one-half of these facilities were at capacity, and about 25 percent had occupancy rates between 76 and 99 percent. **Exhibit 3.3** illustrates the distribution of occupancy rates among the 315 facilities providing information.

Exhibit 3.3
Distribution of Open Slip Occupancy Rates – Number of Facilities



Total	315

Facility operators were asked about open slip vacancies. A total of 155 facilities responded that they had vacancies. **Table 3.14** and **Table 3.15** illustrate the types of vacancies for these facilities. The majority of vacancies, just over 50 percent of the responses, are in slips under 26 feet in length. There are also a relatively large number of vacancies in the 26-foot to 39-foot range, but much fewer in the larger slip sizes. About 75 percent of the facilities responding to these questions had vacancies in only one of the slips size categories. Three facilities had vacancies in all four slip sizes.

Table 3.14
Facilities with Vacancies by Slip Size

Slip Size of Vacancies	Number of Facilities	Percent of Total
Under 26 feet	108	52.2%
26 to 39 feet	64	30.9%
40 to 65 feet	27	13.0%
Over 65 feet	8	3.9%
Total	**207**	**100%**

Table 3.15
Number of Facilities and Categories of Slip Vacancies

Number of Vacant Slip Categories	Number of Facilities	Percent of Total
One	116	74.8%
Two	23	14.8%
Three	13	8.4%
Four	3	2.0%
Total	**155**	**100%**

A total of 84 facilities reported both the need and room to expand their open slips or tie-ups. Over 100 facilities had either the room or the need to expand, but not both. Just over 100 facilities had neither the room nor the need to expand.

Covered Berths

Covered berths make up a small percentage of the total number of marina berths – about 11 percent of those surveyed. Some regions have a relatively large percentage of covered berths – particularly in the Delta (San Francisco Bay Area, Central Valley, and Sacramento Basin) while other regions have no covered berths. Among the facilities surveyed, there were a total of 8,903 covered berths at 84 facilities. Most facilities with covered berths have less than 100 covered berths, and most have both open and covered berths available.

Occupancy information was available for just under half of the facilities with covered berths. The occupancy rate for those facilities was high – 94 percent. Over 25 facilities had 100 percent occupancy rates for covered berths. For the 12 facilities that answered specific questions about covered slip vacancies, six had vacancies under 26 feet in length, five had vacancies in the 26-foot to 39-foot range, and three had vacancies in the 40-foot to 65-foot range.[3]

[3] Two facilities had vacancies in more than one slip size.

A total of 13 facilities indicated both the need and room to expand their covered berths, 33 percent of the facilities answering the expansion questions. There were 11 facilities that indicated either the need or room to expand, and 14 facilities that had neither.

Moorings

Ninety facilities in the survey had moorings, for a total capacity of 8,760 moorings. The occupancy rate for moorings is 70 percent, significantly lower than open and covered berths. There were 27 facilities with 100 percent occupancy in late 2001, but many facilities had occupancy rates between 50 and 100 percent.

Liveaboards

Respondents were asked a series of questions about liveaboards. Just over 100 facilities of the 371 answering these questions allow liveaboards. The occupancy rate (liveaboards at facility divided by liveaboards permitted for facility), for those facilities providing numbers was 85 percent. As shown in **Table 3.16**, most facilities with liveaboards allow up to 10 percent of the total berths for liveaboards.

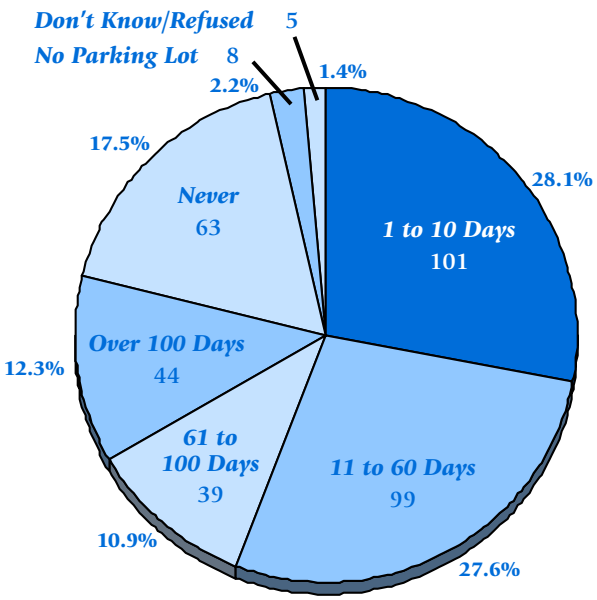
Table 3.16
Liveaboard Permits as a Percent of Total Berths

Percent of Total Berths	Number of Facilities	Percent of Total
Up to 10 percent	70	66.0%
11 to 25 percent	24	22.6%
26 to 50 percent	6	5.7%
51 to 75 percent	1	1.0%
76 to 100 percent	5	4.7%
Total	**106**	**100%**

Parking Capacity and Transient Berths

Respondents were asked about parking capacity at wet storage facilities. **Exhibit 3.4** illustrates the frequency with which these facilities reach their parking capacity. Only 18 percent of those facilities answering the question never reach their parking capacity.

Exhibit 3.4
Number of Days Wet Storage Facilities Reach Parking Capacity



Total	**359**

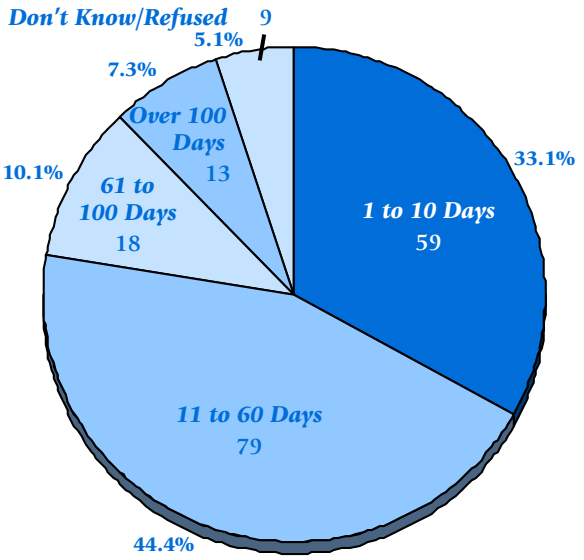
Respondents were also asked about transient capacity. Over 350 of the facilities surveyed provide services for transient boaters. **Table 3.17** and **Exhibit 3.5** illustrate the number of facilities that turned away transients in 2000, and the frequency with which transients were turned away. Almost 50 percent of the facilities turned

away transients in 2000, and 45 percent of those facilities turned away transients between 11 and 60 days that year.

Table 3.17
Number of Facilities Turning Away Transients in 2000

Transients Turned Away in 2000	Number of Facilities	Percent of Total
Yes	178	49.3%
No	165	45.7%
Don't know	16	4.4%
Refused to answer	2	0.6%
Total	**361**	**100%**

Exhibit 3.5
Frequency that Transients were Turned Away in 2000



Total	**178**

Wet Storage Rates

This section briefly summarizes information obtained on rental rates for open berths, closed berths, moorings, liveaboards, and transient berths. Almost two-thirds of the facilities surveyed charge by the space, rather than by foot. As shown in **Table 3.18**, rental rates cover a wide range in all categories. Generally, rates are highest in the South Coast and San Diego and lowest in smaller markets such as the Eastern Sierra and Northern Interior. **Table 3.19** provides the per-foot rates for the approximately 100 facilities that charge customers by the foot. In those cases where it is relevant – open and closed berths and liveaboards – about one-half of the rates include utilities, while the other one-half of facilities charge separately for utilities.

Table 3.18
Monthly per Slip Rental Rates in Late 2001 – Dollars per Space or Slip

Facility Type	Average	Minimum	Maximum
Open Berths	$229	$30	$900
Covered Berths	209	63	675
Moorings	196	30	1,080
Liveaboards	323	50	999
Transient*	17	4	85

* Rate per night

Table 3.19
Monthly per Foot Rental Rates in Late 2001 – Dollars per Foot Boat Length

Facility Type	Average	Minimum	Maximum
Open Berths	$8	$1	$31
Covered Berths	6	1	8

C. Boating Facilities Needs

This section summarizes the facility needs, as described by facility providers, drawing primarily on the facility survey. The survey included questions about projected facility upgrades in three time periods: within the next two years, two to five years, and five to ten years. The survey asked providers to estimate the expected costs of facility repairs, replacement, expansion, or additions in each of the three time periods. Providers were also asked about the age and life expectancy of their facilities, dredging, maintenance costs, and to identify specific facility needs. In addition, both the boater and law enforcement surveys and the workshops gave respondents an opportunity to identify specific facility needs on familiar waterways. (These open-ended responses are summarized in the regional discussions in Volume II.) This section includes the following:

- Facility materials, ages, and life expectancies
- Repairs by time period, including costs
- Dredging
- Maintenance costs
- Facility survey open-ended responses on facility needs.

1. *Age and Material Types of California's Boating Facilities*

Wet Storage

We asked wet storage facilities about the age, materials, and life expectancy of their dock systems. Facility operators were asked a series of questions about wooden docks, concrete docks, and docks of other materials. A total of 428 of those facilities surveyed answered this series of questions. Approximately 50 of these dock systems include a mix of wooden, concrete, and/or other materials. **Table 3.20** illustrates the percentage of facilities and total (open and covered) berths of each type. A regional breakdown of dock types is provided in Appendix C2, Table C2.5. Totals exceed 100 percent because some facilities consist of more than one material type.

Wooden Docks

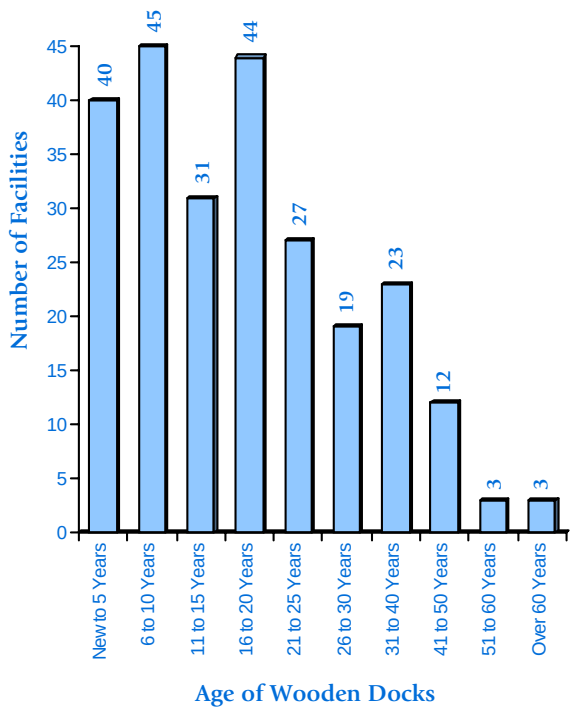
Among those surveyed, most dock systems are wooden. Seventy-five percent of the respondents had wooden docks. However, because many larger marinas have been built with concrete docks, only 59 percent of the total open slips are wooden. The average original age of the wooden docks in the survey is 20 years. The average years left for wooden docks is 14. **Exhibit 3.6** illustrates the age distribution and **Table 3.21** illustrates the distribution of years left (remaining life expectancy). The frequency is for the number of facilities (not berths) in these and the following exhibits. Almost 50 facilities statewide will require replacement of wooden docks in ten to twenty years, a time period that is beyond the questions asked in the survey. [4]

[4] In the pretest, facilities were asked to estimate costs for upgrades in 10 to 20 years, but few could provide estimates that far ahead. The question was eliminated from the survey.

Table 3.20
Types of Docks – Number of Facilities and Berths

Facility Type	Number of Facilities	Percent of Facilities	Number of Berths	Percent of Berths
Wood	322	75%	48,717	59%
Concrete	91	21%	29,444	36%
Other Dock Types	85	20%	10,368	13%
Total Facilities/Berths	**428**		**82,328**	

Exhibit 3.6
Distribution of Original Age of Wooden Docks



Total	**247**

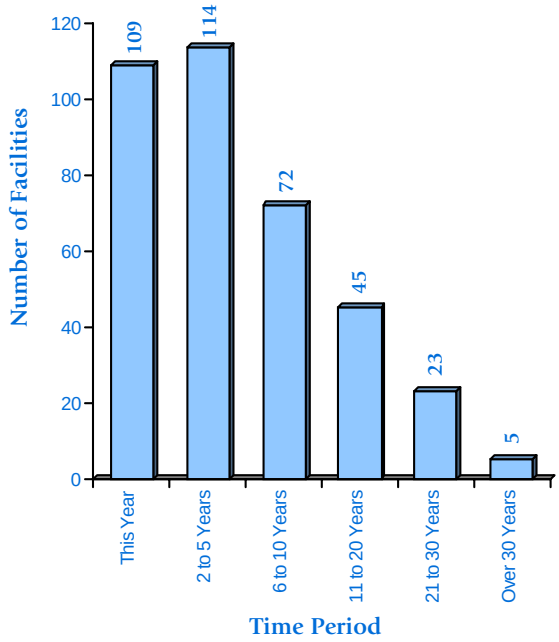
Table 3.21
Distribution of Years Remaining for Wooden Docks

Years Remaining	Number of Facilities	Percent of Total
1 year	15	6.7%
2 years	31	13.9%
3 to 5 years	48	21.6%
6 to 10 years	49	22.0%
11 to 15 years	23	10.3%
16 to 20 years	25	11.2%
21 to 30 years	18	8.1%
31 to 40 years	2	0.9%
41 to 50 years	5	2.2%
Over 50 years	7	3.1%
Total	**222**	**100%**

Most wooden dock systems (61 percent of those in the survey) have undergone additions and replacements over the years. **Exhibit 3.7** provides the number of facilities that made repairs in each of six time periods. Many facilities made repairs in more than one time period (resulting in the total of 368 in Exhibit 3.7); however, the majority of respondents made repairs in only one time period. As with the other material types, most of these facilities made repairs within the last five years. This could be due to the fact that the respondents were most familiar

with recent repairs, and were not aware of repairs made in earlier time periods.

Exhibit 3.7
Time Periods During which Repairs were Made to Wooden Docks



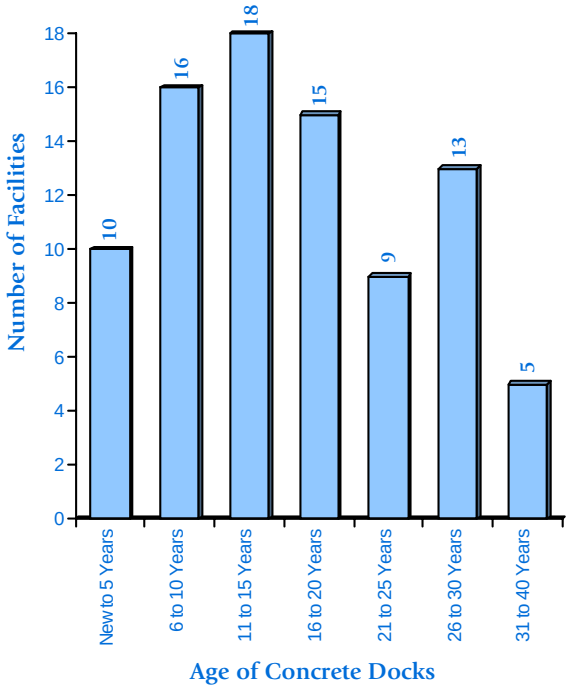
Total	368

Concrete Docks

About 21 percent of the facilities and 36 percent of the slips are made of concrete. The average original age of the 90 docks that provided information is 17 years, while the average years remaining is 16. **Exhibit 3.8** illustrates the age distribution and **Table 3.22** illustrates the distribution of years left for concrete docks. There are just over 20 concrete dock systems that will need replacing in 11 to 20 years.

Only 25 percent of the concrete docks have had additions or replacements since they were built. Almost all of these were made within the last five years, and most respondents had only made replacements or additions in one time period.

Exhibit 3.8
Distribution of Original Age of Concrete Docks



Total	86

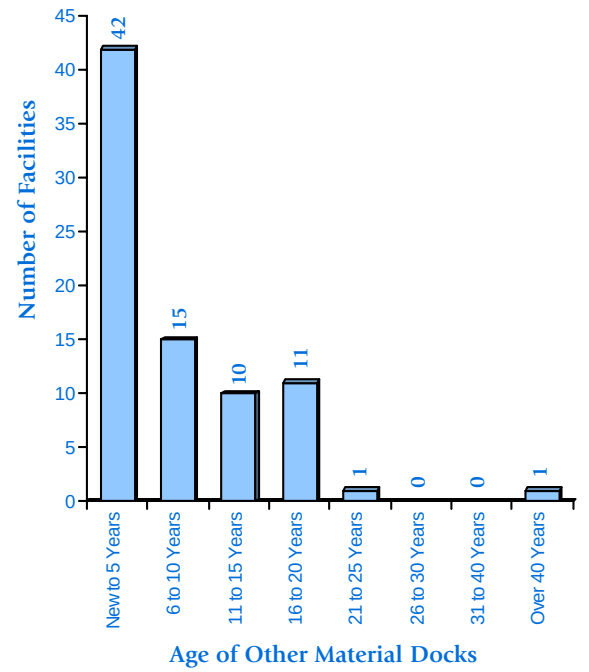
Table 3.22
Distribution of Years Remaining for Concrete Docks

Years Remaining	Number of Facilities	Percent of Total
1 year	4	5.5%
2 years	2	2.7%
3 to 5 years	12	16.4%
6 to 10 years	13	17.8%
11 to 15 years	10	13.6%
16 to 20 years	12	16.4%
21 to 30 years	17	23.3%
31 to 40 years	1	1.4%
41 to 50 years	2	2.7%
Total	**73**	**100%**

Other Dock Materials

Over 20 percent of the facilities surveyed had docks of other material types. Facilities with other material types account for about 13 percent of the total open berths. Other materials most frequently used include aluminum, steel, metal (unspecified), fiberglass, plastic, recycled plastic, composites, and combinations of these materials, often with wood or concrete. The average age of these docks is 8 years, and the average years remaining is 22. **Exhibit 3.9** illustrates the distribution of age and **Table 3.23** provides the distribution of years remaining for the docks of other materials. There are 22 facilities that will need their dock systems replaced in 11 and 20 years. Only 21 percent of the facilities had made repairs or additions to these docks, with most repairs done in only one time period, within the last five years.

Exhibit 3.9
Distribution of Original Age of Other Material Docks



Total	**80**

Table 3.23
Distribution of Years Remaining for Other Material Docks

Years Remaining	Number of Facilities	Percent of Total
1 year	1	1.3%
2 years	—	0.0%
3 to 5 years	8	10.8%
6 to 10 years	16	21.65
11 to 15 years	6	8.1%
16 to 20 years	16	21.6%
21 to 30 years	13	17.6%
31 to 40 years	7	9.5%
41 to 50 years	4	5.4%
Over 50 years	3	4.1%
Total	**74**	**100%**

2. *Facility Repairs, Replacement, Expansion, or Additions by Time Period*

All three facility types – launch ramps, dry storage, and wet storage – were asked about the need for facility repairs, replacement, expansion, or additions in three time periods, within 2 years, 2 to 5 years, and 5 to 10 years. Thus, the figures presented in this section are based on facility survey respondents' estimates of the need for and cost of repairs. **Table 3.24** summarizes the total estimated costs for each of the three time periods for launch ramps, dry storage, and waterside and landside improvements at wet storage facilities. Respondents were first asked about the time periods in which repairs were needed, and then the estimated costs for those repairs. Only about 75 percent of the respondents could provide cost estimates, thus, the cost figures provided here are low compared to actual needs. Detailed upgrade costs by region and ownership are provided in Appendix C2, Tables C2.6, and C2.7.

Launch Ramps

Almost 20 percent of the 385 launch facilities surveyed did not have any facility upgrade needs in the next ten years. About 20 percent did not know and the remaining 60 percent of facilities stated that they have upgrade needs. **Table 3.25** summarizes the number of facilities and total and average per facility upgrade costs. A frequency distribution of upgrade costs in each time period is provided in Appendix C2, Table C2.8.

Table 3.24
Summary of Estimated Costs for Repairs, Replacement, Expansion, or Additions

Facility Type	Number with Need	Number with Costs	Within 2 Years	2 to 5 Years	5 to 10 Years
Launch Ramps	230	169	$41,075,400	$48,584,600	$52,884,000
Dry Storage	90	60	8,550,600	9,084,800	7,395,500
Wet Storage - Waterside	290	213	88,487,400	184,481,603	89,787,100
Wet Storage - Landside	230	177	106,349,500	93,698,000	70,100,008
Total*	**840**	**619**	**$244,462,900**	**$335,849,003**	**$220,166,608**

* Facilities may be included more than once if repairs are needed at more than one facility type.

Table 3.25
Launch Ramp Facility Upgrade Costs

Facility Type	Number with Need	Number with Costs	Total Costs	Average Costs
Within 2 years	147	110	$41,075,400	$373,413
2 to 5 years	141	106	$48,584,600	$458,345
5 to 10 years	120	78	$52,884,000	$678,000
None needed	70	—	—	—
Don't Know	27	—	—	—
Total	**230**	**169**	**$142,544,000**	**$843,456**

Dry Storage

Just under 45 percent of the dry storage facilities surveyed indicated that they would need upgrades in at least one of the three time periods; however, only about one-half of the facilities answered this series of questions. Only 60 of the 90 facilities could provide cost estimates, as summarized in **Table 3.26**. Upgrade costs at dry storage facilities are low relative to the other facility types. Appendix C2, Table C2.9, provides frequencies for dry storage upgrade costs during the three time periods.

Waterside Upgrades at Wet Storage Facilities

Almost 60 percent of the 489 wet storage facilities indicated that they had waterside facility upgrade needs – upgrades to the breakwaters, docks, and dock support systems such as gangways and fuel docks. Only 59 facilities specified that they had no upgrade needs in the next ten years. **Table 3.27** summarizes the waterside facility upgrades by total and average cost per facility for the three time periods. About one-half the facilities required upgrades in only one time period, while 25 percent require upgrades in two time periods, and 25 percent require upgrades in three time periods. Almost 75 percent of those stating they required upgrades were able to provide cost estimates. Appendix C2, Table C2.10, provides frequencies for waterside upgrade costs during the three time periods.

Table 3.26
Dry Storage Facility Upgrade Costs

Facility Type	Number with Need	Number with Costs	Total Costs	Average Costs
Within 2 years	48	37	$8,550,600	$231,097
2 to 5 years	57	38	9,084,800	239,074
5 to 10 years	35	18	7,395,500	410,861
None needed	—	—	—	—
Don't Know	21	—	—	—
Total	**90**	**60**	**$25,030,900**	**$417,182**

Table 3.27
Wet Storage Facility Waterside Upgrade Costs

Facility Type	Number with Need	Number with Costs	Total Costs	Average Costs
Within 2 years	199	153	$88,487,400	$578,349
2 to 5 years	180	122	184,481,603	1,512,144
5 to 10 years	132	73	89,787,100	1,229,960
None needed	59	—	—	—
Don't Know	21	—	—	—
Total	**290**	**213**	**$362,281,103**	**$1,700,850**

Landside Upgrades at Wet Storage Facilities

Just less than one-half of the wet storage facilities indicated that they had landside facility upgrade needs – upgrades to restrooms, marina offices, landscaping, and parking facilities. A total of 99 facilities specifically indicated that they had no landside upgrade needs in the next ten years. **Table 3.28** summarizes the landside facility upgrades by total and average cost per facility for the three time periods. Like the waterside upgrades, about one-half the facilities indicated upgrades in only one time period, and about 25 percent indicated they needed upgrades in either two or three time periods. Just over 75 percent of those requiring landside upgrades were able to provide cost estimates. Appendix C2, Table C2.11, provides frequencies for landside upgrade costs during the three time periods.

Upgrade Costs – Public versus Private Facilities

Table 3.29 provides a summary of upgrade costs by ownership category. The cost figures represent a total for the next 10 years. As might be expected, public facility upgrade costs for launch ramps are significantly higher than estimated upgrade costs for private launch ramps. The average total upgrade costs per year for all public facilities are $44.4 million, and the average total upgrade costs per year for private facilities are $35.5 million.

Table 3.28
Wet Storage Facility Landside Upgrade Costs

Facility Type	Number with Need	Number with Costs	Total Costs	Average Costs
Within 2 years	159	153	$106,349,500	$695,095
2 to 5 years	132	122	93,698,000	768,016
5 to 10 years	109	73	70,100,008	960,274
None needed	99	—	—	—
Don't Know	30	—	—	—
Total	**230**	**177**	**$270,147,508**	**$1,526,257**

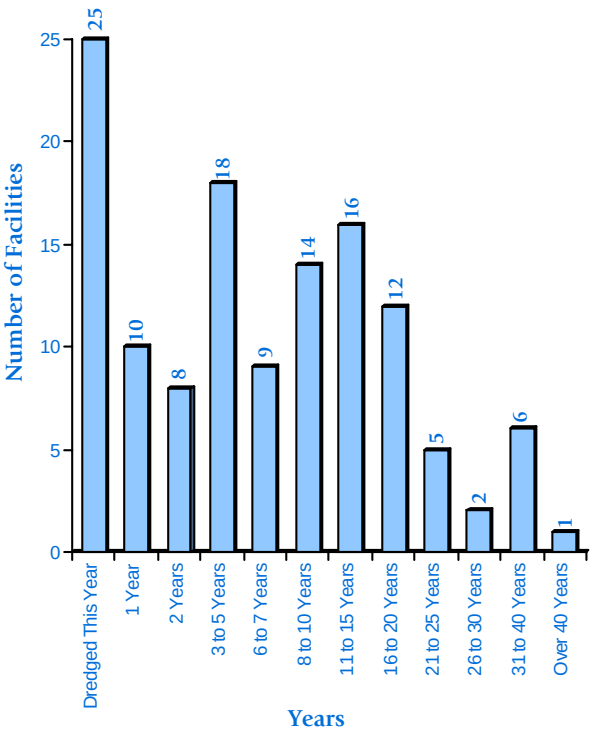
Table 3.29
Total Upgrade Costs by Ownership Category

Upgrade Category	Public	Private
Sum of launch ramp total upgrade costs	$126,606,800	$15,937,200
Sum of total dry storage upgrade costs	8,212,300	16,818,600
Sum of total waterside upgrade costs	197,743,400	164,537,703
Sum of total landside upgrade costs	111,985,000	158,162,508
Total	**$444,547,500**	**$355,456,011**

3. *Dredging*

Respondents were asked a series of questions about dredging. Of the 450 respondents who answered these questions, 39 percent, or 172 facilities, require dredging. Only 126 facilities were able to answer questions about the years since the last dredging. The average was 9 years, and the frequency distribution of facilities and number of years since the last dredging is shown in **Exhibit 3.10**.

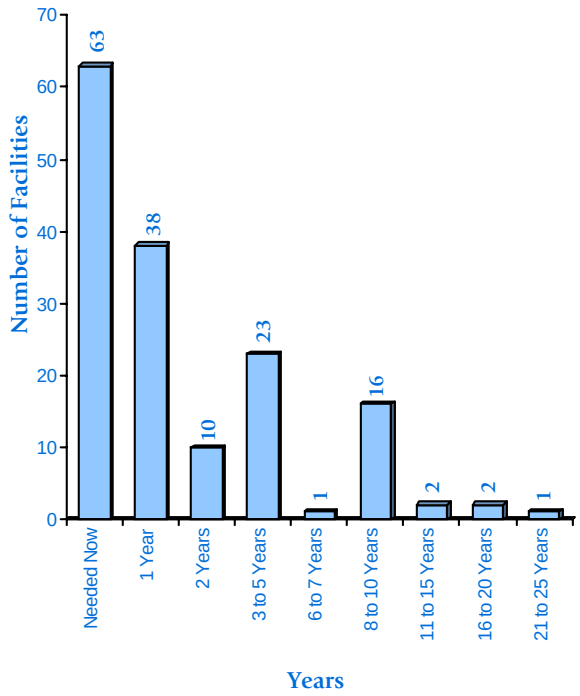
Exhibit 3.10
Years Since Last Dredging



Total	126

Sixty-three facilities stated that they needed to dredge their facilities now (year 2001), and 28 facilities needed to dredge in one year (2002). The average number of years until the next dredge is needed was three. **Exhibit 3.11** illustrates the frequency distribution of years until the next dredging. **Exhibit 3.12** provides the years between dredging for the 117 facilities that provided information. The average number of years between dredging among these facilities was 12.

Exhibit 3.11
Years Until Next Dredge

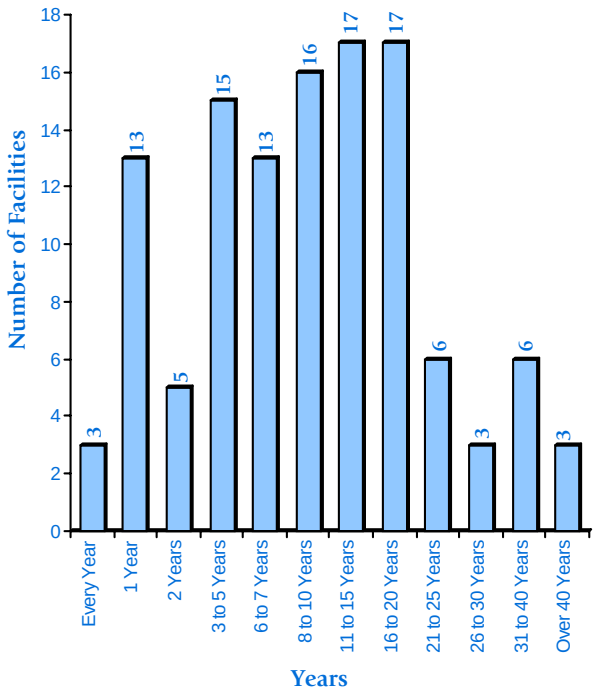


Total	156

Respondents were also asked about whether or not funding was available to cover the costs of dredging. The responses to this question are shown in **Table 3.30**. Sixty-five facilities do not have funding for their dredging needs. In

the open-ended facility needs question discussed in Section C5 of this Chapter, dredging was the most frequently stated need – mentioned by 77 facilities (perhaps including the same 63 who said they need to dredge now), and making up over 6 percent of the 1000-plus responses to this question.

Exhibit 3.12
Years Between Dredging



Total	117

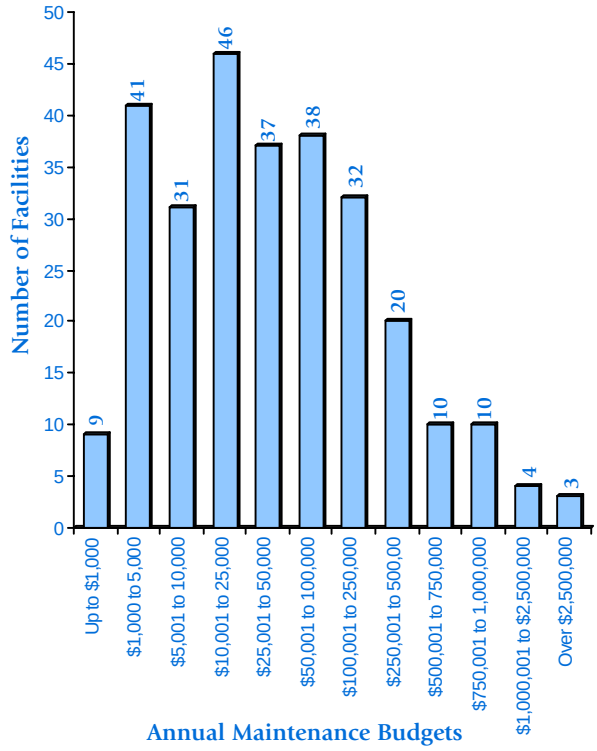
Table 3.30
Is Funding Available for Dredging?

Answer	Number of Facilities	Percent of Total
Yes	54	38%
No	65	45%
Don't know	23	16%
Refused to answer	2	1%
Total	**144**	**100%**

4. *Maintenance Budgets*

All respondents were asked to specify their annual maintenance budget, including materials, labor, and contracts, but excluding dredging. A total of 281 facilities were able to provide a figure for this question. The average maintenance budget was $250,000. **Exhibit 3.13** illustrates the frequency distribution of annual budget amounts for the facilities answering this question. **Table 3.31** provides additional detail on the average maintenance budgets for each type of facility.

Exhibit 3.13
Distribution of Annual Maintenance Budgets



Total	281

Table 3.31
Average Annual Maintenance Budgets by Facility Type

Facility Type	Average Annual Maintenance per Facility	Number Answering
Launch Ramp Only	$113,456	64
Dry Storage Only	128,750	2
Marina Only	134,692	76
Marina/Launch/Dry Storage	735,811	54
Marina/Launch	148,658	56
Marina/Dry Storage	172,364	22
Launch/Dry Storage	193,333	3
"No Facilities"	18,250	4
Total	**$250,032**	**281**

5. *Facilities Needs and Final Survey Comments*

Respondents were asked to identify up to three facility needs and problems in the boating area they serve. Responses to this open-ended question were coded to one of 284 specific responses. The full list of responses is provided in Appendix C2, Table C2.10. Over 85 percent of the 511 respondents who were asked this question identified at least one facility need. Almost 69 percent identified a second need, and almost 50 percent identified three facility needs. There were a total of 1,034 specific needs identified by respondents. **Table 3.32** provides the facility needs mentioned most often by respondents and the number of times each was mentioned. Facility needs mentioned frequently for specific waterways are provided in the regional discussion in **Volume II**.

The final survey question provided respondents with an opportunity to provide any additional comments or suggestions about California's boating facility needs. Respondents provided a wide range of responses, ranging from very positive to very negative. Almost half, 290 respondents, did not provide additional comments. **Table 3.33** identifies the comments mentioned most often by respondents. Table C2.13 in Appendix C2 provides the full list of comments. Appendix C2, Table C2.14, provides a sampling of verbatim comments.

Table 3.32
Top Facility Needs Identified by Facility Survey

Facility Need	Number of Facilities
Dredging	77
Parking capacity	60
Launching capacity	57
Needs boat slips	54
Better waste pumpout	50
Dock repairs	42
Needs a gas pump station/improve current station	34
Add docks	33
Better restrooms	33
Larger boat slips	31
More dry storage	30
More law enforcement	25
General facility improvements	25
Transient slips/guest docks	24
Maintain water level	21
Ramp repairs	18
Longer/steeper launch ramp	17
More public access	15
Remove invasive species	14
Add facilities	14
Additional funding	14
Improve/add breakwater	13
Make wheelchair accessible facilities	13
Another boat repair shop	13
Mooring buoys	13
Access road improved	13
Total	**753**

Table 3.33
Final Comments on Boating Facility Needs in California

Comment	Number
Boating safety courses/licenses	22
DBW is very supportive	21
Easier access to dredging/expansion permits	13
Additional boating facilities	10
Additional funding for boating facility improvements	10
DBW should help with dredging costs	9
General facility improvements	7
Dredging	7
Launching capacity/more ramps	6
Better waste pumpout stations	6
Waterways are good	6
More law enforcement	5
Additional marinas	5
Gas pumps stations needed	5
Transient slips/docks	5
Cleaner waterways	4
Private facilities instead of government facilities	4
Insufficient water level	4
Prohibit/restrict PWC use	4
Invasive species control	4
More liberal live-aboard policies	4
Remove floating debris	4
Give funds to established facilities and not just new marinas	4
Dry storage	4
	173