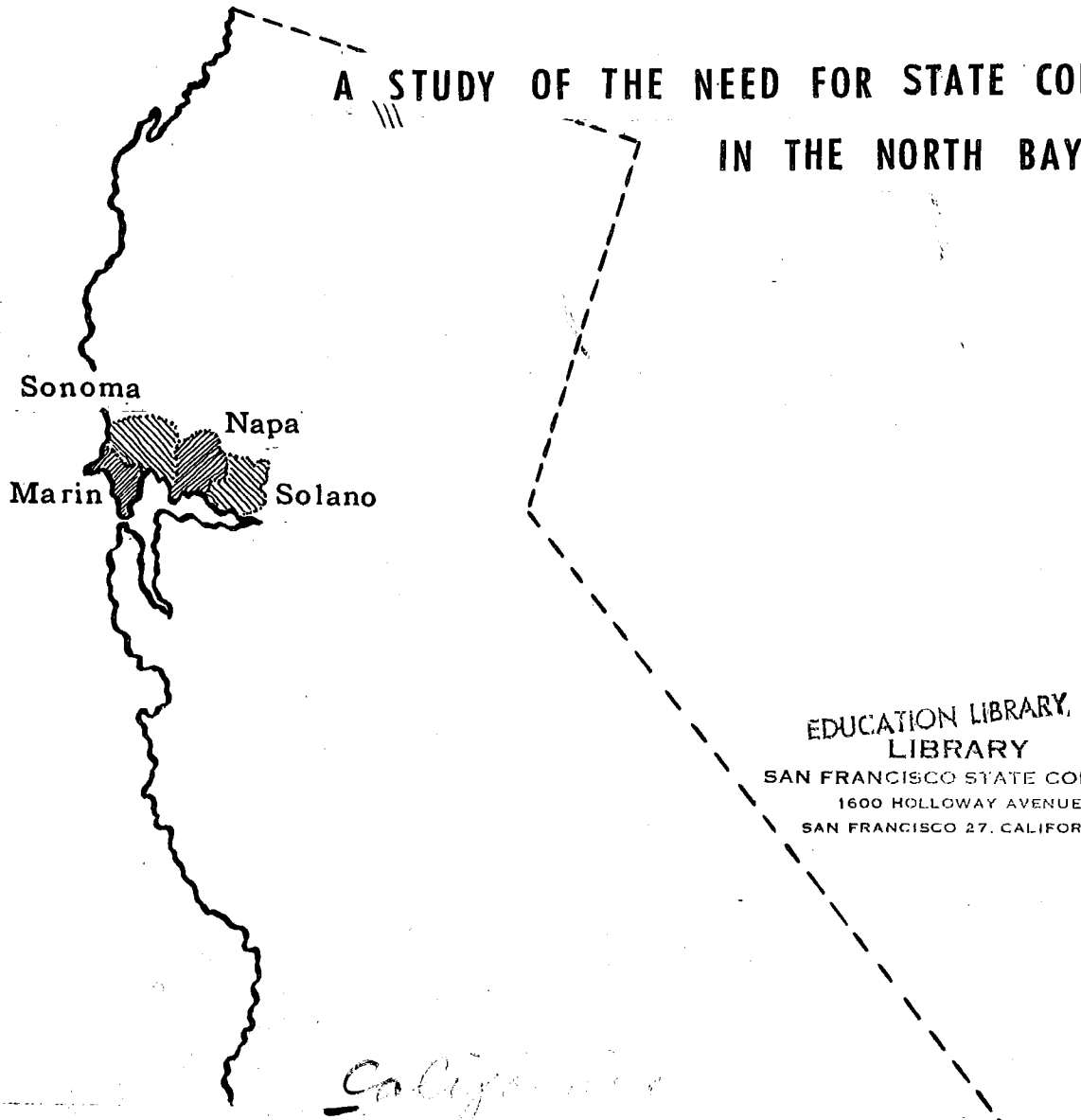
California. Liaison Committee.
A Study of the Need...

A STUDY OF THE NEED FOR STATE COLLEGES IN THE NORTH BAY AREA



Prepared by the Joint Staff for the Liaison Committee
~~of the California State Board of Education and the~~ of the California State Board of Education
Regents of the University of California

Sacramento November 1958 Berkeley

A STUDY OF THE NEED FOR AN ADDITIONAL STATE COLLEGE IN THE NORTH BAY AREA AND OF THE FEASIBILITY OF CONSOLIDATING THE CALIFORNIA MARITIME ACADEMY WITH A STATE COLLEGE

Prepared for the Liaison Committee
of the California State Board of
Education and The Regents of
the University of California

By

The Joint Staff for the Committee

State Department of Education, Sacramento
University of California, Berkeley

November, 1958

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BERKELEY AND SACRAMENTO
November, 1958

STATE DEPARTMENT OF EDUCATION
UNIVERSITY OF CALIFORNIA

November 18, 1958

TO: Liaison Committee of the Regents of the University of California and the State Board of Education

FROM: Joint Staff for the Committee

SUBJECT: Transmission of A Study of the Need for an Additional State College in the North Bay Area and of the Feasibility of Consolidating the California Maritime Academy with a State College

Senate Resolution No. 33, approved by the Senate on April 16, 1958, places responsibility on the State Public Works Board and the State Department of Education for the investigation of the two following items:

1. Whether there is need in the four-county area of Solano, Napa, Sonoma, and Marin for a second state college other than the one authorized in one of these four counties by Assembly Bill 4 enacted by the 1957 Legislature.

2. Whether it would be feasible to consolidate a state college located in the area with the California Maritime Academy.

Since the State Department of Education is part of the coordinating machinery between the State Board of Education and the Regents of the University of California, its responsibility for this study was transferred to the Liaison Committee. As a result of that action, the Joint Staff has assumed responsibility for the preparation of the report here transmitted.

This report deals with each of the two above items separately because they are not inherently related. If there is need for a second state college in the four-county area, it does not necessarily follow that it should be

consolidated with the Academy. Conversely, if it were found that consolidation of the Academy with a state college is feasible and in the public interest, such determination does not justify the need for a second state college in the North Bay area. Consequently, in this report item 1 is dealt with in Part I and item 2 in Part II and the Findings and Recommendations are found in Part III.

In accordance with the established procedure in the coordinating machinery between the State Board of Education and the Regents of the University of California, this report was considered by the Technical Advisory Committee to the Joint Staff at its meeting on December 10, 1958.

We are,

Very cordially yours,

Arthur D. Browne

Arthur D. Browne, Joint Staff Member
State Department of Education

T. C. Holy

T. C. Holy, Joint Staff Member
University of California

STATE OF CALIFORNIA
The Regents of the University of California
The State Board of Education

December 30, 1958

To the Speaker of the Assembly
and the President of the Senate

Gentlemen:

Senate Resolution 33, unanimously adopted by the California Senate on April 16, 1958, states

> ". . .It is deemed advisable that the Department of Education make further studies as to the need of a second state institution of college grade in addition to the site now authorized to serve the four-county area /Sonoma, Napa, Solano and Marin Counties/. . . ."

The resolution raises the further question, "Whether it would be feasible to consolidate a state college located in this area with the California Maritime Academy. . . ."

The two specific questions then which the resolution poses are:

1. Is there need for a second state college, other than the one authorized in Assembly Bill No. 4 of the 1957 legislative session, to serve the four North Bay Counties of Sonoma, Napa, Solano and Marin?

2. If another state college were located in this area, would it be advantageous to consolidate it with the California Maritime Academy?

Inasmuch as the Department of Education, which was requested to investigate these two questions, is represented on the Liaison Committee of The Regents of the University of California and the State Board of Education and any developments regarding state colleges in the area would have an impact on other segments of higher education serving the area, the

Liaison Committee assumed responsibility for the study through its Joint Staff.

In accordance with the terms of the resolution, we transmit to you A Study of the Need for an Additional State College in the North Bay Area and the Feasibility of Consolidating the California Maritime Academy with a State College. On suggestion of the Liaison Committee, the recommendations of the study were approved by the State Board of Education on December 17, 1958 and by The Regents of the University of California on December 19, 1958.

In any matters pertaining to education in California, may we assure you and your colleagues in the Legislature and in the State administration that we are happy to render any assistance our respective offices can give.

Sincerely yours,

Roy E. Simpson

Roy E. Simpson
Superintendent of Public Instruction

Clark Kerr

Clark Kerr
President, University of California

A STUDY OF THE NEED FOR AN ADDITIONAL STATE COLLEGE IN THE NORTH BAY AREA AND OF THE FEASIBILITY OF CONSOLIDATING THE CALIFORNIA MARITIME ACADEMY WITH A STATE COLLEGE

INTRODUCTION

On April 16, 1958, Senate Resolution No. 33 was read and, on motion of Senator Luther E. Gibson, unanimously adopted by the California Senate. This resolution, which is relative to site location studies for a state college or colleges in the North Bay area, reads as follows:

> "WHEREAS, By the terms of Assembly Bill No. 4 of the 1957 Session (Chapter 1681, Statutes of 1957), the acquisition of a site for a state college was authorized to be located in the area of Solano, Napa, Sonoma, and Marin Counties; and
>
> "WHEREAS, The State Public Works Board is charged with the responsibility of selecting the site most adaptable and appropriate for said college and is expected to conduct surveys and studies to accomplish that purpose within the next several months; and
>
> "WHEREAS, Prior to the adoption of Assembly Bill No. 4 of the 1957 Session the Department of Education had discussed in published reports the desirability of locating two institutions of this nature within the same area to serve these four and adjacent counties; and
>
> "WHEREAS, The educational emphasis in separate portions of this area might be different, one tending to be centered on teaching curricula with perhaps added attention to an agricultural curricula, and the other tending to a technical curricula because of the concentration of industrial activities, including now developing industry utilizing nuclear power; and
>
> "WHEREAS, It is deemed advisable that the Department of Education make further studies as to the need of a second state institution of college grade in addition to the site now authorized to serve the four-county area; and
>
> "WHEREAS, the California Maritime Academy, a state institution of college grade, is now located within this area; now, therefore, be it
>
> RESOLVED BY THE SENATE OF THE STATE OF CALIFORNIA, That the State Public Works Board and Department of Education as a part of their

investigations and studies are requested to analyze all facts available on:

(1) Whether because of the size of the four-county area, and the population and number of potential students in these plus adjacent counties which would be served thereby, the comparative lack of communications throughout the area, and other pertinent factors, one state college site can adequately serve the North Bay area;

(2) The type of curricula which should be established at such institution or institutions, and whether the demand for such curricula would feasibly justify the establishment of two campuses;

(3) Whether it would be feasible to consolidate a state college located in this area with the California Maritime Academy, whether there would be any advantage to the State from such a consolidation and whether such a move would tend to strengthen the programs of education offered or the administration of the Maritime Academy or such college, or tend to produce any economies in the operation of either; and be it further

"RESOLVED, That the Public Works Board and the Department of Education are requested to report any findings on these points to the Senate at the 1959 Session; provided, however, that nothing in this resolution shall act to interrupt any action of the Public Works Board to acquire a site for a state college, as authorized by Assembly Bill No. 4, 1957 Session; and be it further

"RESOLVED, That the Secretary of the Senate is directed to furnish a copy of this resolution to the Chairman of the Public Works Board and the Director of the Department of Education."

An analysis of this resolution indicates that the State Public Works Board and the Department of Education[1] are requested to investigate two matters. First, the resolution poses a question of whether or not one state college site can adequately serve the North Bay area. In reference to this question, the resolution alludes to Assembly Bill No. 4, enacted by the

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[1] Inasmuch as the Department of Education is included in the Liaison Committee arrangement between the State Board of Education and the Regents of the University of California, the Liaison Committee at its meeting on November 5, 1957, directed the Joint Staff for this Committee to make this study. Consequently, it is being channelled through the coordinating machinery.

1957 Legislature, which authorizes the acquisition of a site for a state college in the Solano, Napa, Sonoma, and Marin county areas. The resolution suggests that further studies be made to determine the need of a second state college in the four-county area because of the possibility that (a) geographic, population, and communication factors necessitate two campuses and (b) the differing economic interests of the area can best be served by two radically different types of curriculums.

Secondly, Senate Resolution No. 33 inquires about the feasibility of consolidating the California Maritime Academy with a state college. Relative to this matter, the resolution poses a question as to whether or not such a consolidation would strengthen the educational programs and the administration of the Maritime Academy or of a local state college, as well as produce economies in the operation of these institutions.

The study undertaken herein is directed along the two lines of inquiry suggested by Senate Resolution No. 33. Part I attempts to answer the question of whether or not a second state college is necessary to serve the North Bay area and Part II explores the feasibility of consolidating the California Maritime Academy with a state college. Each of these questions is treated separately because it is assumed that they are not inherently related. In other words, if a second state college were recommended for the North Bay area, it does not necessarily follow that this college should be integrated with the Maritime Academy. Conversely, if it were ascertained that consolidation of the Academy with a state college is feasible, such a determination does not justify the need for a second state college in the North Bay area.

Part I

IS MORE THAN ONE STATE COLLEGE NEEDED TO SERVE THE NORTH BAY AREA?

It is recognized in Senate Resolution No. 33 that Assembly Bill No. 4 has already authorized the acquisition of a site for a state college in the North Bay area. The resolution alludes to factors which, potentially at least, suggest that a second state college is necessary to adequately serve the four-county area. This study is concerned, therefore, primarily with the priority ranking of this area to learn if a second state college is justified. The specific location of such a college, if it were recommended, is significant at this time only as it relates to the question of consolidation with the Maritime Academy.

Previous Studies Pertinent to this Project

During the last ten years, at least four studies concerned with the expansion of higher educational facilities in California have considered the need for additional institutions in the North Bay area. Each of these is reviewed below.

The Strayer Survey

A survey entitled, A Report of a Survey of the Needs of California in Higher Education,[1] called the "Strayer Survey", analyzed in 1948 the needs for additional higher education facilities in California. The Strayer Committee approached the task of demonstrating the need for higher education in California by measuring the population in certain areas to be served.

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[1] Monroe E. Deutsch, Aubrey A. Douglass, and George D. Strayer, A Report of a Survey of the Needs of California in Higher Education. Berkeley: University of California Press, March 1, 1948.

The state was divided into ten large population areas and estimates of future population for each area were made. The area most pertinent to the present study extended from Fort Bragg on the north to Oakland on the south and was designated as "Area 4--San Francisco-Oakland", consisting of the following county and city units: Contra Costa, Lake, Marin, Mendocino, Napa, San Francisco, Sonoma, and the cities of Alameda, Berkeley, Oakland, San Leandro, and Vallejo and Benicia townships. For this area, the estimated college student population reached 43,362 in 1960 and 51,408 in 1965. In the Strayer Report, however, it was assumed that the existing colleges in the area, with the development of new junior colleges in Contra Costa and Alameda Counties along with the expansion of San Francisco State College to 5,000 students, could accommodate about 43,362 enrollees. Therefore, the Strayer Survey did not recommend establishing any new state colleges in the North Bay area.

The Restudy

In 1953, five years after the Strayer Survey, the California Legislature authorized a restudy of the needs of California in higher education. Two years later, in 1955, this study, entitled A Restudy of the Needs of California in Higher Education,[1] was published by the California State Department of Education.

Chapter II, dealing with the needs for higher education in California, indicated for 1965 the number of full-time potential enrollment of state

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[1] T. R. McConnell, T. C. Holy, and H. H. Semans, A Restudy of the Needs of California in Higher Education. Sacramento: California State Department of Education, 1955.

college students in the four-county area as:

Napa-Sonoma	481
Marin	398
Contra Costa	1,900

One of the recommendations of this study, which was approved by both the Regents of the University and the State Board of Education, was that "no new state colleges and no new campuses of the University of California be established before 1965 and the potential enrollment be cared for by expanding the facilities of the present institutions".[1] The study suggested that new enrollment projections be obtained in 1960, at which time the establishment of additional state colleges after 1965 be considered.

The Additional Centers Study

The more recent study of higher education needs in California, entitled A Study of the Need for Additional Centers of Public Higher Education in California,[2] published in 1957, made three distinct contributions to the present problem: (1) it formulated a set of principles or criteria which are fundamental to the development of new collegiate institutions, (2) it developed a method of enrollment projection whereby the rates of graduating seniors in local and adjacent counties can be modified in such a way as to become predictors for the enrollments of a potential college in a specified area, and (3) it constructed a priority list, based "entirely on estimated enrollment potentials" for establishing possible new state colleges.

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[1] Ibid., p. 47.

[2] H. H. Semans and T. C. Holy, A Study of the Need for Additional Centers of Public Higher Education in California. Sacramento: California State Department of Education, 1957.

These contributions are most significant to the present report. The principles underlying development of new colleges are reproduced herein because they apply without decreased validity to the present problem. (See Appendix A). Likewise, the general method of enrollment projection developed in The Additional Centers Study has been employed in this study, although certain modifications are introduced to obtain more carefully constructed estimates. The third contribution--the priority listing for possible new state colleges--is still considered, as a general pattern, to be valid. Further, it is assumed that whatever adjustment in the projected 1965-66 or 1970-71 enrollments could be made by up-dating the data would not materially affect the state-wide priority listing of areas except, possibly, in one or two areas with almost equal enrollment projections.

With this assumption in mind, it should be emphasized that the Sonoma-Marin area and the Napa-Solano area were assigned seventh and eighth places, respectively, in terms of the state-wide need for new state colleges.[1] Of equal significance to this problem, it should be noted that The Additional Centers Study assigned third place priority to Contra Costa County, with a predicted enrollment in 1970-71 of 6,800, which approximates the combined predicted enrollment of 6,900 for the Sonoma-Marin and Napa-Solano areas. The importance of Contra Costa County in considering the need of a second state college in the North Bay area is explained later. (See page 10 ff.)

The Site Study

With the authorization of a new state college in the North Bay area by

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[1] Ibid., pp. 49-50.

the 1957 Legislature (Assembly Bill No. 4), it became necessary for the Department of Education to indicate factors important in site acquisition as well as a general area for a state college site in the four-county region. This report, entitled Factors in the Selection of a State College Site in Sonoma County, Marin County, Napa County, or Solano County[1] acknowledged the difficulty of locating one state college to serve adequately the four counties, because these counties tend to fall into two possible college service areas, East and West. However, with evidence based upon the present and future concentrations of public high school graduates, the estimated long-range enrollment potentials, and the transportation or commuting facilities, the report selected Sonoma County as the logical location of a new state college site. A rectangular area, $7\frac{1}{2}$ by 15 miles in size and stretching from Santa Rosa to Petaluma, was designated as the recommended area for locating a North Bay state college.[2]

In addition, The Site Study formulated a carefully constructed set of desirable state college site characteristics. As these characteristics are equally valid for the selection of a second North Bay state college, they are reproduced in Appendix B of this report.

Projection of Future Enrollments in the North Bay Area

Areas to be Served

Senate Resolution 33, posing the question of an additional state college in the North Bay area, re-opens a basic problem of determining how many state

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[1] Factors in the Selection of a State College Site in Sonoma County, Marin County, Napa County, or Solano County. Sacramento: Division of State Colleges and Teacher Education, California State Department of Education, September, 1957 (mimeographed).

[2] See Figure 1 for the designation of this rectangle.

colleges are needed to render adequate service to potential enrollees. As defined in this resolution, the North Bay area encompasses Marin, Sonoma, Napa, and Solano Counties. These four counties appear to be somewhat isolated in terms of state college service areas because: (1) on the west side of the Bay, San Francisco State College provides college facilities for San Franciscans but is less attractive to students from Marin County who are required to commute daily across a toll bridge (Golden Gate). Likewise, on the east side of the Bay the state college authorized for southern Alameda County is planned to provide educational services for students in Oakland and the surrounding area. Contra Costa County, which lies directly south of Napa and Solano Counties has sufficient population to warrant its own state college and, thus, as indicated later, should not be considered as a strong contributor to a North Bay state college.

The highway system and topographic features of the region cause natural clusters of population which should be taken into consideration in planning college service areas. As explained in The Site Study, for example, the four North Bay counties tend to fall into two possible college service areas, East and West. The alignment of population in the western area extends through Marin and Sonoma Counties along Highway 101. The eastern area includes Napa and Solano Counties, with the centers of heaviest population concentration at Vallejo and Napa. The city of Sonoma could be serviced by a college in either area, depending upon its proximity.

A clearer picture of the distribution of populations within the four-county area is portrayed in Table 1, which includes all incorporated cities over 5,000 population within this region. These data indicate clearly that a larger population, as well as a larger per cent of growth, characterize the Marin-Sonoma area as compared with the Napa-Solano region. In terms of educational service for general populations, therefore, it is logical to conclude that the first North Bay state college should be organized in the Marin-Sonoma area before one is established in the Napa-Solano region. However, the need for service to potential students, rather than general populations, must be explored in order to validate this priority claim.

The Influence of Contra Costa County Upon the College Service Areas in the North Bay Region

The key to any forecast of potential state college enrollments in the North Bay area is Contra Costa County and its educational plans. Its present population of 370,000 is nearly four-fifths as large as the combined population of all four North Bay counties. Presently Contra Costa has nearly as many high school graduates as found in the other four counties. The Additional Centers Study forecasts an enrollment potential of state college students for that county in 1970-71 which approximates the combined predicted enrollments of the Sonoma-Marin and the Napa-Solano areas.

Because of its large potential enrollment, Contra Costa County is rated third in California by The Additional Centers Study[1] in respect to a priority of need for possible new state colleges. In contrast, the Sonoma-Marin area is listed seventh, while the Napa-Solano area rates

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[1] H. H. Semans and T. C. Holy, A Study of the Need for Additional Centers of Public Higher Education in California. Sacramento: California State Department of Education, 1957, page 49.

Table 1

POPULATION OF COUNTIES AND INCORPORATED CITIES OVER 5,000
IN THE NORTH BAY AREA, 1950-1958

County; City	1950		1958 (Or Latest Available)		1950-1958 Increase	
	County	City	County	City	Number	Per Cent
Marin County	85,619		136,800		51,181	59.8
Mill Valley		7,331		9,436		
San Anselmo		9,183		10,446		
San Rafael		13,848		16,526		
Sonoma County	103,405		144,700		41,295	39.9
Petaluma		10,315		12,595		
Santa Rosa		17,902		29,644		
Total: Marin-Sonoma	189,024		281,500		92,476	48.9
Napa County	46,603		63,500		16,897	36.3
Napa		13,579		19,124		
Solano County	104,833		125,500		20,667	19.7
Benicia		7,284		7,284		
Fairfield		3,118		11,787		
Vacaville		3,169		9,018		
Vallejo		26,038		48,125		
Total: Napa-Solano	151,436		189,000		37,564	24.8

Source: County population figures from California's Population in 1958, State Department of Finance, Budget Division, July, 1958. Population of cities for 1950 from California City and Place Code Book, State Department of Public Works, Division of Highways, May 18, 1955. Population of cities for 1958 from State Department of Public Works, Division of Highways, City and Cooperative Projects, July, 1958.

eighth place. Clearly, then, Contra Costa County has greater need for a state college than any of the North Bay counties. The systematic, orderly development of higher education in California would suggest that such a college be established in the not too distant future. Present planning for the North Bay area, therefore, should not disregard the probability of having Contra Costa serviced by its own college.

The actual impact of a future Contra Costa state college upon potential college enrollments in the four counties in the North Bay area is a matter of conjecture. Because it would be considerably larger than a state college established in the North Bay area, it may attract more students from that area than it would yield to a North Bay state college. If this tendency holds, the North Bay counties would realize very few commuters from Contra Costa County.

Two other reasons support this contention. First, Contra Costa County is separated from the North Bay region by two toll bridges (Richmond and Carquinez) and a toll ferry (Benicia), thus attaching a price to daily commuting. Secondly, the potential college enrollment in Contra Costa County can be serviced by its own state college more adequately than by a college outside the county. It would be unwise for large numbers of students in Contra Costa to travel outside of the county for higher education if a state college located within the county can perform a better service to its local students.

Because of the weighty responsibility involved in determining the relationship of Contra Costa County collegiate services to the North Bay counties, the Joint Staff explored the enrollment potentials of a single state college to serve the entire Napa-Solano-Contra Costa region.

Enrollments were estimated on the basis of commuting distances, as explained later in this report, disregarding county boundaries and toll bridges. It became apparent from these projections that if a single state college is located to serve these three counties, its enrollment potential is considerably higher in Contra Costa County than at any location in the other two counties.

Another type of situation involving a two-college plan to serve the three counties was also considered. If a future state college were established in a location in eastern Contra Costa, such as Martinez, Concord, or Pittsburg, would it not be advantageous to locate another state college in the southern part of Napa or Solano Counties in order to serve these two counties as well as western Contra Costa? To answer this hypothetical question, enrollments were projected for two state colleges, one located at Concord and the second at Vallejo. Then, as an alternate plan, enrollments were similarly projected for two colleges, one at Concord and the second college at El Sobrante (or Richmond). Again, it was found that the much heavier school population predicted for Contra Costa County produced higher enrollments if the second state college is located in western Contra Costa rather than in southern Napa or Solano Counties. Actually, the Concord-El Sobrante combination produced 9,503 F.T.E. in 1970 as compared with 8,680 for the Concord-Vallejo arrangement. Again, it appeared evident that potential collegiate enrollments in Contra Costa can best be served by one or more local colleges rather than by an institution located in an adjacent county northward.

In summary, then, higher education facilities should be developed in a systematic, orderly fashion throughout the state, and in accord with the

following principle:

> "In order that a possible new institution may serve the greatest number of eligible students, it should be placed near the center of the population served by it."[1]

In other words, enrollments from a high priority area, as defined in The Additional Centers Study, should not be used to justify colleges in areas of lower priority. Accordingly, the Joint Staff does not believe that the North Bay counties should use Contra Costa enrollments to justify a local state college. For these reasons, in this study, Contra Costa enrollments were excluded in projecting enrollments for potential state colleges in the North Bay area.

Collegiate Services in the North Bay Counties

A number of collegiate institutions are serving the North Bay counties at the present time, although these colleges do not offer the full range of educational services available in the state colleges. Four junior colleges--College of Marin, Santa Rosa Junior College, Napa College, and Vallejo Junior College--provide junior college services, respectively, to Marin, Sonoma, Napa, and Solano Counties. The Santa Rosa Off-Campus Center, operated by San Francisco State College, contains an upper division curriculum for preparing elementary teachers. Also, three private colleges operate in the North Bay area: The Dominican College of San Rafael, a Roman Catholic school for women at Kentfield; the San Francisco Theological Seminary, a Presbyterian institution at San Anselmo; and the Pacific Union College, a Seventh Day Adventist college at Angwin.

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[1] Semans and Holy, op. cit., page vi.

Table 2 shows the 1957 enrollments of these institutions. The California Maritime Academy, situated at the Carquinez Straits, is not included in this table because of its specialized and limited curriculum, which is designed to train young men for the maritime services. About 200 students are accommodated at the Maritime Academy.

Additional educational service is realized in the North Bay counties through the Extension work sponsored both by the University of California and San Francisco State College. For example, within the four North Bay counties, San Francisco State College conducted fourteen classes with 496 enrollees in the fall of 1957, and sixteen classes with 624 students in the spring of 1958.

It is evident from a review of these educational services that only a limited number of students are accommodated by available institutions and that the full range of state college services and curriculums is not available within this area.

High School Graduates to be Served

One of the initial steps in planning possible collegiate services within a given region is to project the number of future high school graduates for the region. These estimates by high school districts in the North Bay area, as they apply to the years 1964-65 and 1969-70, appear in Table 3. The county totals are careful projections made by the State Department of Finance. The difference between the per cent of graduates from the total county achieved by each district in 1950-51 and the comparable per cent achieved in 1956-57 provides a trend which is applied to the estimated county totals in 1969-70 to determine the number of graduates in each district at that time.

Table 2

ENROLLMENTS IN INSTITUTIONS OF HIGHER EDUCATION WITHIN THE FOUR NORTH BAY COUNTIES, 1957-58[a]

College	Enrollment of Students	
	Full-Time	Part-Time
Public		
College of Marin (Kentfield)	715	71
Santa Rosa Junior College (Santa Rosa)	1,224	312
Napa College (Napa)	446	-
Vallejo Junior College (Vallejo)	848	314
Santa Rosa Off-Campus Center (Santa Rosa)	216[b]	
Private		
Dominican College of San Rafael	397	13
San Francisco Theological Seminary (San Anselmo)	292[c]	
Pacific Union College (Angwin)	630	212

[a] Enrollment data extracted from Bureau of Educational Research, Full-Time and Part-Time Students and Veterans in Institutions of Higher Learning. Sacramento: California State Department of Education, 1957-58.

[b] Total enrollments as reported in Division of State Colleges and Teacher Education, Academic Year Summary. Sacramento: California State Department of Education, 1958.

[c] 1956 total enrollments as reported in U. S. Office of Education, Education Directory, Part 3, 1957-58. Washington 25, D. C.: U. S. Printing Office, 1957.

Table 3 demonstrates clearly that according to these estimates, the Marin-Sonoma area will have nearly twice as many high school graduates in 1970 as the Napa-Solano area. It should be noted that about 2,600 high school graduates are predicted for 1970 in the Napa-Solano Counties, as compared with 5,200 for Marin-Sonoma Counties.

In order to visualize the distribution of these public high school graduates in the North Bay area, the estimated number of graduates in 1969-70 within each school district has been superimposed upon the map of the region. The numbers appear at the center or seat of each high school district. Thus, Figure 1 conveys a general impression of where the potential enrollees are located. Careful consideration of the numbers of these graduates, their location in relationship to each other, and their accessibility to common commuting points is necessary in order to plan service areas for future potential state colleges.

Eligibility of High School Graduates

One factor which should be considered in appraising the results of this inquiry concerning North Bay high school graduates, is the extent to which these high school graduates are eligible for admission to the state colleges. A study of the eligibility of high school graduates was made in 1956 and provides a clue concerning the potential enrollment to be realized by a North Bay state college. The results of this study, as they apply to the four counties in the North Bay area, are indicated in Table 4. These data show that a larger per cent of the June, 1955 graduates from the high schools of Marin County are eligible to enter a state college than the 1955 graduates of other North Bay counties. In fact, three of the four counties in the area have

Table 3

GEOGRAPHIC DISTRIBUTION OF PUBLIC HIGH SCHOOL GRADUATES BY DISTRICT FOR COUNTIES IN THE NORTH BAY AREA, SELECTED YEARS FROM 1950 TO 1970

High School District and Location	ACTUAL		ESTIMATED	
	1950-51	1956-57	1964-65	1969-70
	Number	Number	Number*	Number*
MARIN				
Tamalpais Union (Mill Valley)	303	528	1,408	1,968
San Rafael City	172	240	558	713
Tomales Jt. Union	31	27	34	19
Totals	506	795	2,000	2,700
SONOMA				
Sonoma Valley Union	72	102	181	215
Petaluma City	172	225	382	437
Santa Rosa City	300	464	874	1,070
Analy Union (Sebastopol)	149	182	294	325
Healdsburg Union	90	146	281	350
Geyserville Union	13	14	21	20
Cloverdale Union	20	34	67	85
Totals	816	1,167	2,100	2,500
NAPA				
Napa Union	270	368	780	1,064
St. Helena Unified	49	43	64	65
Calistoga Jt. Unified	25	29	56	71
Totals	344	440	900	1,200
SOLANO				
Vallejo City Unified	742	605	783	658
Benicia City Unified	53	74	130	133
Armijo Union (Fairfield)	66	112	210	221
Vacaville Union	64	104	194	202
Dixon Unified	27	48	92	97
Rio Vista Jt. Union	51	57	92	88
Totals	1,003	1,000	1,500	1,400

* May not add to indicated totals due to independent rounding.

Source: Actual number of public high school graduates by district from California Department of Education, Bureau of School Apportionments and Reports: Annual Financial Reports, 1950-51 and 1956-57. Estimated number of public high school graduates by county projected by California Department of Finance, Budget Division, July, 1958. Estimated distribution of public high school graduates by district projected by California Department of Education, Division of State Colleges and Teacher Education, Administrative Planning Office.

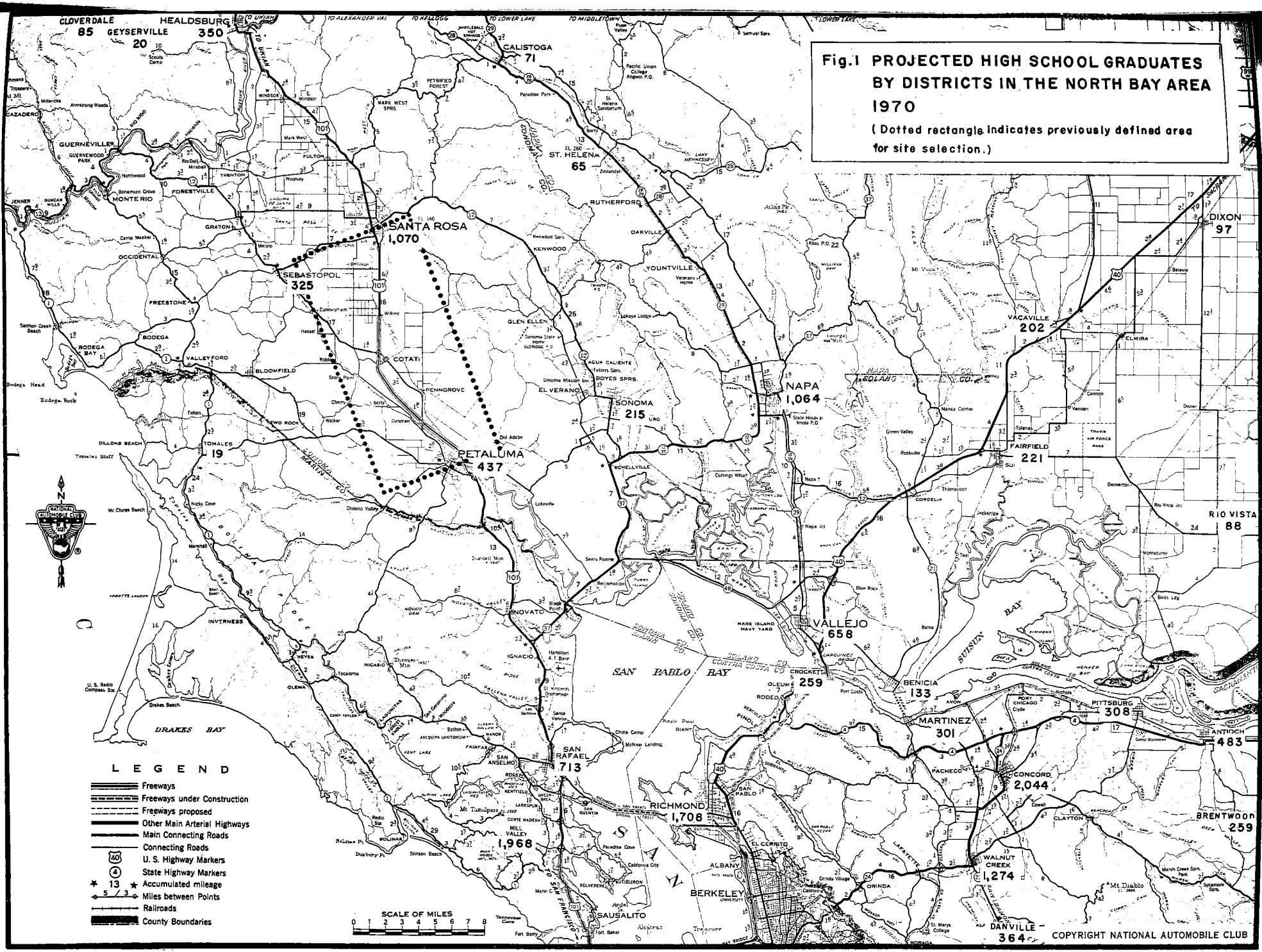
Fig.1 PROJECTED HIGH SCHOOL GRADUATES BY DISTRICTS IN THE NORTH BAY AREA 1970
(Dotted rectangle indicates previously defined area for site selection.)
CLOVERDALE 85
HEALDSBURG 350
GEYSERVILLE 20
CALISTOGA 71
ST. HELENA 65
SANTA ROSA 1,070
SEBASTOPOL 325
PETALUMA 437
SONOMA 215
NAPA 1,064
VACAVILLE 202
DIXON 97
FAIRFIELD 221
RIO VISTA 88
VALLEJO 658
BENICIA 133
MARTINEZ 301
PITTSBURG 308
ANTIOCH 483
CONCORD 2,044
CROCKETT 259
RICHMOND 1,708
SAN RAFAEL 713
MILL VALLEY 1,968
SAUSALITO
BERKELEY
ALBANY
EL CERRITO
WALNUT CREEK 1,274
DANVILLE 364
BRENTWOOD 259
TOMALES 19
DRAKES BAY
SAN PABLO BAY
LEGEND
Freeways
Freeways under Construction
Freeways proposed
Other Main Arterial Highways
Main Connecting Roads
Connecting Roads
U. S. Highway Markers
State Highway Markers
Accumulated mileage
Miles between Points
Railroads
County Boundaries
SCALE OF MILES
0 1 2 3 4 5 6 7 8
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Table 4

ELIGIBILITY OF JUNE, 1955 GRADUATES FROM PUBLIC HIGH SCHOOLS IN SELECTED CALIFORNIA COUNTIES TO ENTER THE STATE COLLEGES*

County	High Schools in Each County		June, 1955 High School Graduates Reported	Meeting State College Entrance Requirements	
	Total	Reporting		Number	Per Cent
Marin	4	4	481	264	54.9
Sonoma	7	7	933	343	36.8
Napa	3	2	343	120	35.0
Solano	6	6	699	280	40.0
Total	20	19	2,456	1,007	41.0
Total for California	319	265	41,423	18,052	43.6

* Adapted from Table 30, page 126, Joint Staff, A Study of the Need for Additional Centers of Public Higher Education in California. Sacramento: California State Department of Education, 1957.

lower proportions of eligible students than the average eligibility rate for the state as a whole. The net effect of these eligibility rates can not be assessed precisely. It appears, however, that, other factors being equal, a larger proportion of students from Marin County would be expected to enter a local state college than would be expected from the other three counties in this area.

School administrators in these districts were asked to supply information to the best of their knowledge as to how many of their 1955 high school graduates enter various types of higher education institutions within the state. These results, compiled in Table 5 for the North Bay area, indicate that larger proportions of students from Napa and Marin Counties enter higher education institutions than from Sonoma and Solano Counties. The lack of a state college in the four-county area accounts, in part, no doubt, for the very low rate of attendance at state colleges by these students. A larger proportion (a total of 14 per cent) of Solano County eligible graduates, as compared with other North Bay counties, appears to enter the state colleges. The limitations of methodology and number of cases evident in this study raise many questions, but as the best available data, these figures form a general framework for appraising predictive data concerning future state college enrollments.

Method of Predicting College Enrollments

The method employed herein for predicting college enrollments is based upon the assumption that attendance of students at a local state college will vary proportionately to the distance of their residence from the college. Recent studies of state college enrollments, as well as University of California enrollments, validate this principle. Admittedly, many factors other than com-

Table 5

DISTRIBUTION OF JUNE, 1955 GRADUATES OF PUBLIC HIGH SCHOOLS IN SELECTED CALIFORNIA COUNTIES, CONTINUING THEIR EDUCATION WITHIN THE STATE, BY TYPE OF INSTITUTION*

County	State Colleges			Number Continuing Education in California	
	Number Continuing	Per Cent of June, 1955 Graduates	Per Cent of Eligible Graduates	Number	Per Cent
Marin	18	3.7	6.8	250	52.0
Sonoma	32	3.4	9.3	377	40.4
Napa	10	2.9	8.3	194	57.0
Solano	40	5.7	14.3	297	42.5
Total	100	4.1	9.9	1,118	45.5
Total for Calif.	3,898	9.4	21.6	17,826	43.0

* Adapted from Table 31, page 130, Joint Staff, A Study of the Need for Additional Centers of Public Higher Education in California. Sacramento: California State Department of Education, 1957.

muting distance affect college enrollments, but unfortunately most of these factors can not be measured.

The distinct advantages of this technique are (1) commuting distances can be computed rather easily and objectively, (2) the measure of student flow to a given institution is not affected by artificial factors such as county boundaries and (3) a closer relationship between the specific site of a future college and the populations which it would serve can be determined.

Four major steps are required to predict the total regular college enrollment for a future state college:

(1) Estimate the total number of future high school graduates within the school districts of the region.

(2) Classify these future high school graduates according to zones, or commuting distances, from a potential state college site.

(3) Ascertain the expected number of freshmen to be derived from the commuting zone in which the several high school districts are located.

(4) Expand the predicted number of new freshmen to account for the total college enrollment.

Each one of these steps is amplified in the following pages to demonstrate the application of this method to this study.

(1) Computing the Number of High School Graduates to be Served

As indicated on pages 15-17, careful estimates were made of the number of public high school graduates from the various North Bay school districts in 1965 and 1970. These high school graduates were viewed as the basic potential clientele to be served by the college. It was assumed in this

study that the residence of these future high school graduates falls within the boundaries of the school district from which they graduated.

(2) Establishing Commuting Zones

The first step in establishing commuting zones was to select a hypothetical location for the college. This report did not attempt to designate specific sites for North Bay state colleges. The selection of sites was considered the sole responsibility of the State Public Works Board. It was necessary, however, to designate certain specific locations of potential state colleges as a basis for computing enrollment according to commuting zones. These locations were considered merely as being hypothetical and used only as convenient loci of general areas in order to test the enrollment potential of a future state college in the particular area. Five locations were thus surveyed in this study: Cotati, Novato, Sonoma, Vallejo, and Napa Y (or Napa). Each of these points represented a hypothetical location in which state college enrollments would be most favorable for the local area which it serves.

For example, Cotati, as a mid-point between Santa Rosa and Petaluma, represents a comparatively short commuting distance between these two centers of population. If a college were selected in this area however, it could be placed anywhere between Santa Rosa and Petaluma to realize the same general enrollment potentials. Likewise, Novato is a mid-point between Petaluma and San Rafael. It represents, therefore, a convenient point in discussing enrollment potential for the communities located between Petaluma and San Rafael. Projections of potential college enrollment in 1970, for Napa and the Napa Y are so similar, differing by less than 100 students, that although the Napa Y is used to designate this area, Napa would serve as well.

The next step in establishing commuting zones was to learn how far from these designated points the future high school graduates live. Table 6, "Commuting One-Way Mileage Between High School Districts and Five Potential North Bay State College Locations," was developed to show the highway or road mileage which commuters must travel, on the average, from the various high school districts to the designated points. In each instance, the shortest route over the best usable road was measured to derive the mileage. The table was designed to demonstrate, essentially, the accessibility of the various possible college locations to the potential freshmen from the various school districts.

The third step in the process of establishing commuting zones was to distribute the high school districts according to the distance, or commuting zone, in reference to the hypothetical location of a state college. For this purpose, two commuting zones were established: a primary commuting zone encompassing school districts within a radius of approximately fifteen miles from the college location and a secondary commuting zone ranging from sixteen to thirty-five miles from the college. These commuting zones were established after careful study of the commuting patterns at existing state colleges.

An intensive study was made of the rate of attendance, at each existing state college, of freshmen originating from various school districts located in successive five-mile intervals from the college. Detailed examination of these data revealed high rates of attendance at these colleges to the ten to fifteen mile commuting range. The commuting rate drops considerably thereafter. Thus it appeared that an average rate could be used for the longer commuting distances, varying from sixteen to thirty-five miles.

Table 6

COMMUTING ONE-WAY MILEAGE BETWEEN HIGH SCHOOL DISTRICTS AND FIVE POTENTIAL NORTH BAY STATE COLLEGE LOCATIONS*

High School District	Cotati	Novato	Sonoma	Vallejo	Napa Y
MARIN					
San Rafael	29	10.5	27	27	34
Tamalpais (Mill Valley)	35	15	32	35	41
Tomales	19.5	30	50	50	45
NAPA					
Calistoga	25	43.5	39	40	33
Napa	30	28.5	14	13	6
St. Helena	32.5	44.5	24	32	24
SOLANO					
Armijo Union (Fairfield)	54	35	31	16.5	13
Benicia	40	27	31	7	17
Dixon	69	56	51	37	31
Rio Vista	73	59	54.5	41	34
Vacaville	64	45	39	24.5	20
Vallejo	38	20.5	24	--	10
SONOMA					
Cloverdale	42	61	56	81	75
Geyserville	32	51	46	72	64
Healdsburg	24	43	38	64	56
Petaluma	8	11	19	31.5	30
Santa Rosa	8	27	22	47	41
Sebastopol	9	28	29	49	48
Sonoma	19.5	22	--	24	20

* Table adapted partially from data presented on page 5, Proposal for the Location of the State College in the Novato Area, Marin County. Marin County Development Foundation, Inc.: San Rafael, California, January, 1958.

A summary of these results appears in Table 7. The rate of freshmen at each existing state college per 1,000 public school graduates from the primary and secondary zones is given in Part A. It is obvious that these enrollment rates vary considerably among the colleges, ranging in the primary zone from 43 freshmen per 1,000 public school graduates at Long Beach to 431 at Chico. It is believed that the high rates occur at Chico and Humboldt because these institutions serve the junior college functions and thus have broad curriculums which accommodate high proportions of high school graduates. Other institutions, such as private colleges or public junior colleges, which might have attracted these graduates, are virtually non-existent in these areas.

On the other hand, the enrollment rates at Long Beach and San Francisco State Colleges are exceptionally low because these institutions are located in large metropolitan areas where many of the high school graduates enroll at private institutions or in junior colleges. Sacramento State College not only competes with two nearby junior colleges for its freshmen, but also has the disadvantage of being a comparatively new institution which is in the process of establishing its reputation and prestige among high school seniors.

The most consistent enrollment rates among all the state colleges occur at Fresno, San Diego, and San Jose State. Part B of Table 7 shows these data. Essentially, the rate is the ratio of freshmen to high school graduates and is computed by dividing the former by the latter reduced to thousands.

The average rates for all state colleges in the fall of 1957 are 193 freshmen per 1,000 public school graduates in the primary zone and 83 freshmen per 1,000 graduates in the secondary zone. The average rates for the selected colleges (Fresno, San Jose, and San Diego) are, respectively, 200 and 79. It

Table 7

SUMMARY OF STATE COLLEGE EXPERIENCE TABLES ON RATES OF NEW REGULAR FRESHMEN PER 1,000 PUBLIC SCHOOL GRADUATES BY COMMUTING ZONES, FALL, 1957

Part A. All State Colleges

College	Primary Zone (0-15 miles)	Secondary Zone (16-35 miles)
Chico	431	190
Humboldt	336	206
Fresno	227	53
San Diego	188	45
San Jose	200	87
Sacramento	65	39
San Francisco	52	31
Long Beach	43	12
Average rate	193	83

Part B. Selected State Colleges

College	Primary Zone			Secondary Zone		
	Number of Freshmen	Number of High School Graduates	Rate	Number of Freshmen	Number of High School Graduates	Rate
Fresno	476	2,093	227	63	1,185	53
San Diego	882	4,688	188	17	377	45
San Jose	589	2,950	200	467	5,364	87
Total	1,947	9,731	200	547	6,926	79

is the belief of the Joint Staff that these institutions are more representative of the long range potential North Bay state college and, thus, these rates are reasonably applicable to a college in that vicinity. In this study, therefore, a primary zone rate of 200 per 1,000 and a secondary zone rate of 80 per 1,000 are used in predicting future enrollments for potential North Bay state colleges.

(3) Expanding Freshmen Enrollment to Total College Enrollment

After applying the standard rates (200 and 80) to the predicted number of future high school graduates in the two zones surrounding each potential location of a state college, the number of new regular freshmen was estimated. The expansion of this number to derive the total regular enrollment at the college was a mechanical process based upon experience derived in studying the enrollments at existing state colleges. First, the new regular freshmen enrollments, which constitute about 80 per cent of local freshmen enrollments, were expanded to include continuing and returning freshmen. This expanded enrollment was then further increased to account for additional freshmen who, for various reasons, come from outside the college service area to attend the institution. Experience indicated that state colleges vary greatly in the proportion of outside students which they attract. In this study, it was assumed, chiefly because of the experience of other state colleges, that a single North Bay state college would enroll about 85 per cent of its freshmen class from the local area and that the remaining 15 per cent would come from outside the immediate service area. If two colleges were established in the North Bay area, however, it was assumed that the proportion of outside attendance would be reduced to 10 per cent at each college.

Admittedly, this anticipated proportion of non-local students is comparatively low, but these low rates are supported by the realization that the North Bay area is surrounded by Sacramento State College, San Francisco State College, and the future southern Alameda state college, all of which would tend to attract outside students who might otherwise migrate to the North Bay area for educational purposes. The largest potential migration would probably originate from some of the northern counties which are thinly populated, such as Mendocino, Lake, Colusa, or Yolo Counties. If two colleges were established in the North Bay region, this migration from the north would be reduced considerably at each college. Hence, the anticipated non-local proportion of freshmen is reduced from 15 to 10 per cent in projecting potential enrollment for two North Bay state colleges.

The two steps in processing data, as outlined above, yielded an estimate of the total regular freshmen class. By multiplying the freshman enrollment by three and one-half, the estimated full-time equivalent enrollment for the future state college was computed. This standard was based upon the existing average ratio of freshman class to total enrollments at other state colleges.

Potential Enrollment of One North Bay State College

The basic question posed in Senate Resolution 33 concerns the feasibility of one or two state colleges serving the four North Bay counties. Can an institution located at a single site, as authorized in Assembly Bill 4, adequately serve this large area? Are there sufficient students to support a single college? Would a single campus be too overloaded for effective operation?

In order to determine the future potential enrollment of a single North Bay state college, a college was planned at each one of the five hypothetical locations, as explained on page 24, and the total enrollments estimated by the method explained heretofore.

Enrollment data for each one of these locations, showing the school districts involved within the primary and secondary commuting zones, appear in Tables 11, 12, 13, 14, and 15 in Appendix C. A summary of these data is given in Table 8, showing the predicted enrollments for the five locations: Cotati, Novato, Sonoma, Vallejo, and Napa Y. It may be observed in this table that if only one state college were planned for the North Bay area, maximum enrollment potential would be realized in the Marin-Sonoma area.

Novato

A college at or near Novato, according to these estimates, would achieve an enrollment of nearly 3,800 Full-Time Equivalent in 1965 and over 4,700 F.T.E. in 1970. The reason that a college at or near Novato succeeds in gaining high enrollments is because its primary commuting zone includes large freshmen enrollments from the Tamalpais District, with additional large enrollments from San Rafael and Petaluma. Its secondary zone extends to most of the heavily populated areas in the North Bay region, such as Vallejo, Sonoma, Santa Rosa, Napa, etc. Approximately 1,000 more 1970 enrollees are gained by locating a college in this area as compared with any other area in the North Bay region.

Cotati

The Cotati location yields approximately 3,000 F.T.E. college enrollees by 1965, increasing to over 3,700 F.T.E. in 1970. This location derives heavy

Table 8

SUMMARY OF TOTAL REGULAR COLLEGE ENROLLMENT PROJECTED AT SELECTED NORTH BAY LOCATIONS, FALL, 1965 AND 1970

Location	Fall, 1965			Fall, 1970		
	Total New Regular Freshmen	Total Regular Freshmen	Total College Enrollment*	Total New Regular Freshmen	Total Regular Freshmen	Total College Enrollment*
Novato	733	1,078	3,773	920	1,353	4,735
Cotati	581	854	2,989	725	1,066	3,731
Sonoma	568	835	2,922	703	1,034	3,619
Vallejo	579	851	2,978	677	996	3,486
Napa Y (Or Napa)	495 (477)	728 (701)	2,548 (2,453)	551 (534)	810 (785)	2,835 (2,747)

* Full-time equivalent enrollment.

enrollments from the Santa Rosa area, with considerable support within its primary zone from the Petaluma and Analy Districts, but it loses potential enrollments from heavily populated southern Marin County because these students live in its secondary zone. In fact, the Tamalpais District is considerably closer to San Francisco State College (via a toll bridge, Golden Gate), thus possibly reducing further the enrollment potential from this growing area.

Sonoma

It may be contended that an appropriate location for a single North Bay state college is near the geographic center of the four-county area. This college, if located at Sonoma, would, according to these estimates, attain about 2,900 F.T.E. in 1965 and 3,600 in 1970. Only Sonoma and Napa are within the primary commuting zone of a potential college at this location, forcing longer commuting by students from the more populous areas. Potential enrollments at Sonoma would be considerably less than could be achieved if the college were located in the western section of the North Bay area. Moreover, if the college were located at Sonoma, some of the students from the Tamalpais and San Rafael Districts, perhaps, would commute southward to San Francisco State. Thus, the enrollment projections attributed herein to Sonoma might be reduced considerably.

Vallejo

If a single North Bay state college were located at Vallejo, it would realize nearly 3,000 F.T.E. by 1965 and approximately 3,500 by 1970. These data are somewhat liberal for they assume that students would travel from San Rafael and Tamalpais Districts to Vallejo rather than southward to

San Francisco State. It appears that the potential enrollment at Vallejo would be greater than any other location in the Napa-Solano Counties, but would be considerably less than the locations designated in the Marin-Sonoma area.

Napa

Of the five hypothetical locations in the North Bay counties, the least favorable enrollment is realized in the Napa area. At the Napa Y, for example, a state college would achieve between 2,500 to 2,600 F.T.E. in 1965 and approximately 2,800 F.T.E. in 1970. As indicated on page 24, a college at Napa, according to these estimates, would achieve approximately 100 fewer F.T.E. students than at Napa Y. Thus, in terms of estimated enrollments, Napa and the Napa Y are considered equally representative of the area.

Potential Enrollment of Two North Bay State Colleges

Senate Resolution 33 inquires about the feasibility of more than one state college campus to serve the North Bay area. It appears reasonable to assume that if two state colleges were established to serve the North Bay region, they should be placed strategically to serve the heaviest concentrations of population. In other words, maximum service can be derived by locating one college in the Marin-Sonoma Counties, probably between San Rafael and Santa Rosa, and by locating another state college in the Napa-Solano Counties, probably between Vallejo and Napa. Of the five hypothetical locations for which enrollments were projected in Table 8, a location at or near Novato appears to serve the maximum number of students in the two western counties and a location at or near Vallejo renders optimum service to the two eastern counties. Accordingly, these two locations were accepted as the best hypothetical locations for determining the potential

enrollments to be achieved through a two-college service to the North Bay region.

Detailed projections for these locations are given in Tables 16 and 17 in Appendix D. A summary of the potential enrollments achieved through a two-college service to the North Bay counties appears in Table 9. It is estimated that Novato will achieve about 2,800 students in 1965, growing to 3,600 F.T.E. in 1970. The enrollment at Vallejo, according to these estimates, would approximate 1,800 or 1,900 F.T.E. in 1965, rising to slightly over 2,000 F.T.E. in 1970. As might be expected when two colleges serve an area, the potential enrollments of each college are reduced somewhat because of overlapping of commuting zones. In this instance, Sonoma Valley which lies nearly equidistant between the two colleges is served by each institution, thus splitting enrollments from this area. Likewise, the proportions of students outside the North Bay region would be reduced at each college because this arrangement would force a sharing of the available supply of such students. The effect of these and similar modifying factors is reflected in these enrollment estimates, for each college appears to lose a thousand or more F.T.E. in the two-college plan as compared with its enrollment potential if it were the sole state college serving this region. The combined F.T.E. enrollment at the two colleges, as may be seen in Table 9, would be 4,652 in 1965 and 5,663 in 1970.

Comparison of One College Versus Two Colleges

According to this study, the maximum enrollment attainable in 1970 at any of the five locations for a single state college would be approximately 4,700 F.T.E. (Novato). At the same time, if two state colleges were developed

Table 9

SUMMARY OF TOTAL REGULAR COLLEGE ENROLLMENTS PROJECTED AT TWO NORTH BAY LOCATIONS, ASSUMING STATE COLLEGES WERE DEVELOPED AT EACH LOCATION, FALL, 1965 and 1970*

Enrollments	1965		1970	
	Novato	Vallejo	Novato	Vallejo
Total New Regular Freshmen	573	384	746	419
Total Regular Freshmen	796	533	1,036	582
Total College Enrollment	2,786	1,866	3,626	2,037
Total, both colleges	4,652		5,663	

* All enrollments are F.T.E.

in the North Bay area, one at Novato and another at Vallejo, their enrollments are estimated to be in 1970, respectively, 3,626 and 2,037, or a total of 5,663 F.T.E. On the basis of these enrollment projections, certain differences between a one and two-college service for the region can be estimated. These differences, as reflected in enrollments, appear in Table 10. At best, these data are rough estimates, designed only to convey approximations.

Enrollments

These data show that the combined enrollments of two North Bay state colleges in 1965 would be slightly less than 900 additional students, compared with the enrollment of a single state college. In 1970, this enrollment difference would grow to be slightly over 900 F.T.E. In subsequent years after 1970, the enrollment difference would gradually become larger in favor of the two-college arrangement.

Costs

It is extremely difficult to predict accurately the cost differences posed by the alternate plans presented in Table 10, i.e., one college of 4,735 F.T.E. in 1970 versus two colleges with a total of 5,663 F.T.E. By 1970, inflationary changes and other economic fluctuations, as well as changing standards for educational operations, may alter the cost picture in an unforeseen manner. Certain rough estimates of these cost differences, however, are assigned to Appendix E primarily as an illustration of the relative, rather than actual, differences which characterize this situation. These estimates demonstrate the higher cost per student involved in establishing and operating two small colleges as compared with a single larger institution.

For example, it is obvious that the capital outlay required for two campuses, each with a minimum complement of services and facilities, would be

Table 10

DIFFERENCES IN ESTIMATED ENROLLMENTS* RESULTING FROM A TWO-COLLEGE AS COMPARED WITH A ONE-COLLEGE SERVICE TO THE NORTH BAY AREA

Year	One College (Novato)	Two Colleges (Novato—N; Vallejo—V)	Difference
1965	3,773	4,652 (N = 2,786) (V = 1,866)	879
1970	4,735	5,663 (N = 3,626) (V = 2,037)	928

* Full-time equivalent of regular students.

considerably more expensive than funding a single campus. Regardless of the number of students served, each campus should have a gymnasium, athletic fields, cafeteria, bookstore, heating plant, classroom and laboratory facilities, library building, etc. Obviously, it is less expensive to accommodate a large enrollment within a single set of such buildings than to divide these enrollments among duplicate facilities required for two campuses.

Likewise, the operating costs would be somewhat greater for two colleges, as compared with a single campus. A two-college service would require duplicate administrative staffs, student personnel services, health services, maintenance crews, etc. Presumably the initial costs per student at two colleges with comparatively low enrollments, as depicted in Table 10, would be comparatively high; but these costs would decrease proportionately with enrollment gains.

Other Values

Recognition should be given to the fact that this study is concerned primarily with enrollment potentials as a means of judging, in the words of the resolution, "the need of a second state institution of college grade in addition to the site now authorized to serve the four-county area." There are, of course, other related factors in the situation. Obviously, commuting costs are reduced, local pride is stimulated, economic advantages to the community are obtained, commuting time is saved, and other benefits result from the establishment of an additional state college. Moreover, if two state colleges are needed ultimately in this region, early development of the college would result in better land acquisition and more economic building costs.

The findings and recommendations derived from these data are presented in Part III of this study. Before these recommendations are presented, Part II dealing with the feasibility of consolidating the California Maritime Academy with a state college is presented to complete the survey part of the report which deals with Senate Resolution Number 33.

II

Part II

IS CONSOLIDATION OF THE CALIFORNIA MARITIME ACADEMY WITH A STATE COLLEGE FEASIBLE?

A part of Senate Resolution No. 33 poses the following question:

> "Whether it would be feasible to consolidate a state college located in this area with the California Maritime Academy, whether there would be any advantage to the State from such a consolidation, and whether such a move would tend to strengthen the programs of education offered or the administration of the Maritime Academy or such college, or tend to produce any economies in the operation of either . . ."

A review of the characteristics of the Maritime Academy, and a comparison of it with the state colleges, is necessary to resolve this question.

Description of the California Maritime Academy

The California Nautical School, now named the California Maritime Academy, was established by a legislative act signed by the Governor on June 3, 1929. The school was established primarily for the training of officers for the merchant marine service. This type of institution had been established earlier, elsewhere. Various states have assumed the obligation of training maritime officers since 1874 when the New York State Maritime Academy came into existence. The State of Massachusetts established a similar institution in 1893. Pennsylvania in 1895, and Maine in 1941, also commenced academies. Thus, the State of California is not unique in providing state support for a maritime school.

The Academy is governed by a Board of Governors consisting of five members, four of whom are appointed by the Governor. The State Director of Education serves ex officio as the fifth member. Section 21121 of the Education Code states, "The Board of Governors shall provide, maintain, manage, and control a state nautical school pursuant to this chapter". Also,

Section 21101 of the Education Code provides that the Board of Governors be a part of the Department of Education and, for practicable purposes, this relationship is expressed primarily in coordinating the Academy's budgetary and building programs with the state agencies.

The Academy is responsible, also, in part, to the United States Maritime Commission, which provides certain regulations and standards for all state maritime academies. The Federal Government recognizes state maritime academies by providing considerable financial aid for their support, by granting Naval Reserve commissions to graduates of these institutions, and by loaning a training ship to them. The minimum regulations established by the Maritime Commission govern such matters as the amount of federal aid extended to the Academy, the right of inspecting the records of the school, length of the curriculum, equipping and maintaining the training ship, approval of the superintendent and the ship's commanding officer, entrance standards of students, and the governing of compensation for cadets.[1]

Further rules and regulations for nautical schools are promulgated by the United States Coast Guard, which organization is responsible for the licensing of merchant marine officers. The Coast Guard regulations[2] pertain primarily to the manning and equipping of public nautical school ships.

The California Maritime Academy is located on the north shore of the Carquinez Straits, just south of the city of Vallejo. Adjacent to the

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[1] See, Title 46 Shipping, Chapter 2, United States Maritime Commission, Part 310, Merchant Marine Training, Sub-part A, Regulations and Minimum Standards for State Maritime Academies (Edited, 11-20-57).

[2] United States Coast Guard Rules and Regulations for Nautical Schools, November 1, 1953.

Academy, a deep water pier provides berthing space for the training ship, "Golden Bear," and encloses a boat basin for power, sailing, and rowing boats. Permanent buildings include the gymnasium and natatorium, mess hall, classroom building, seamanship building, boat shed, a new administration building, and a nearly-completed residence hall.

The course of study extends eleven months of each year for a three-year period and, thus, approximates four years of collegiate instruction. Two types of curriculums, with some overlap, are designed to train deck officers and marine engineers, respectively. Students who complete the prescribed course of study receive either the B.S. in Nautical Science (deck officers) or the B.S. in Marine Engineering (marine engineers). The school is not accredited by any regional or specialized accrediting associations, but it is recognized by the United States Government as meeting the standards established for maritime institutions.

Enrollment data (October 5, 1957) indicate the Academy had 179 students. Students are admitted by special examinations given throughout the state during the early part of the year. The battery of examinations consists of the Navy Classification Test, Navy Mechanical Aptitude Test, Navy Arithmetic Reasoning Examination, and a standard English test. The College Board Examination may be submitted in lieu of this battery of tests. The Academy plans to accept 110 of the 400 applications received for the 1958-59 year. With the normal attrition rate, it is anticipated an enrollment of 235 students will be accommodated during the 1958-59 school year.

Tuition fees of $405.00 are charged for resident students and $675.00 for non-resident students. Presently, nine of the students are enrolled as non-residents. Students receive room and board, as well as a federal subsidy

of $200.00 per year for uniforms and text books.

The instructional staff is composed of thirteen individuals, all with bachelor degrees except one person who holds an M.A., and the Dean of Instruction, who has a doctorate. The majority of the instructors are graduates of the California Maritime Academy. All of the regular instructors are licensed officers, holding ratings as Third Officers or higher. They are twelve-month employees. All have had sea experience. Indeed, one of the major responsibilities of the instructors is to supervise ship operations during the annual cruise. Ordinarily, instructors are required to teach fifteen hours of class work and supervise twenty hours of practical training during each week, as well as stand a twenty-four hour duty watch every thirteen days.

A Review of Potential Coordinating Factors

A careful review of the program and facilities of the California Maritime Academy was made to determine elements of similarity, or dissimilarity, between it and the typical state college. The material which follows presents that comparison.

COMPARISON OF THE CALIFORNIA MARITIME ACADEMY WITH THE STATE COLLEGES

CALIFORNIA MARITIME ACADEMY	STATE COLLEGES
Purposes	
Education Code, Section 21151, "A State nautical school shall be maintained at the Port of San Francisco, for the purpose of giving instruction in the science and practice of navigation, seamanship, steam, diesel, and electrical engineering to male pupils from the several counties of the	Education Code, Section 20301, "The primary function of the state colleges is the training of teachers. State colleges also may offer courses appropriate for a general or liberal education and for responsible citizenship; offer training in engineering, science, and mathematics; offer vocational training in such fields as

CALIFORNIA MARITIME ACADEMY	STATE COLLEGES
Purposes (Cont'd.)	
State, who have the qualifications of good moral character, education, and physical fitness, required by the board of governors of the school."	business, industry, public services, homemaking, and social service; and offer the preprofessional courses needed by students who plan to transfer to universities for advanced professional study. Courses in military science and tactics may be given in conformance with the laws of the United States made and provided with reference to R.O.T.C. units in educational institutions."
Accreditation	
Meets Federal Government requirements for maritime schools and successfully prepares graduates for passing government licensing examinations for third mate status.	Regional accreditation by the Western College Association and/or Northwest Association of Colleges and Secondary Schools. State Board of Education accredits the Teacher Education programs. Accreditation by specialized agencies such as National League for Nursing, American Chemical Society, Engineers' Council for Professional Development, etc., is authorized.
Admission of Students	
The regulations of the United States Maritime Commission specify that students must be males, from 17 to 22 years of age, unmarried, acceptable as to certain physical requirements, and be graduates of an accredited secondary school with at least two and one-half years of mathematics, three years of English and adequate training in science including at least one year of physics. A screening examination, consisting primarily of naval tests, is administered to select candidates.	Title 5 of the California Administrative Code, Section 925, specifies that high school graduates are admitted to the college upon completion of seventy semester periods of course work in subjects other than physical education and military science, with grades of A or B during the last three years of high school; or have completed fifty semester periods in the specified course work and attained the twentieth percentile on a standard college aptitude test; or be judged by the appropriate college authorities as giving promise to be able to succeed in college. Entrance to the state colleges cannot be based upon screening tests, marital status, sex, or physical characteristics.

CALIFORNIA MARITIME ACADEMY	STATE COLLEGES

Curriculum

The course of study is fixed and rigid, without electives, except that students may choose either a training program for deck officers or one for marine engineers. About sixty per cent of the curriculum is formal classroom study and about forty per cent consists of allied practical experience on the training ship. Over half of the courses are directly related with maritime training, such as Seamanship, Cargo, Marine Rules and Regulations, and Naval Weapons. The more general subjects such as English, mathematics and physics are slanted definitely toward vocational objectives.

A wide selection of courses is available. A degree-seeking student is expected to complete a minimum of forty-five semester units (1½ years) in general education subjects such as social sciences, natural sciences, humanities, health and physical education, English, psychology and electives. Majors of at least twenty-four units for the B.A. and thirty-six units for the B.S. may be selected from a large variety of liberal arts, occupational, and professional fields. The remainder of the 124 semester units (four years), necessary to graduate, are taken in a minor area and/or electives.

Schedule

Operates on a trimester system with two terms on campus of approximately 17 weeks each and one term on a training cruise of ten weeks or longer. The schedule for 1958-59 is as follows:

First trimester, September 2 - December 19, 1958.
Second trimester, January 5 - May 1, 1959.
Third trimester, May 11 - July 18, 1959.

As the student is obligated to attend three terms each year, he completes his full course of training in three years.

Operates on a semester plan, with two terms of approximately 17 weeks each during the regular school year. An optional summer session of six weeks and a post-session of four weeks are available. A typical state college schedule for next year is as follows:

First semester, September 22 - January 30, 1959.
Second semester, February 9 - June 12, 1959.
Summer term, June 22 - July 31, 1959.

Students usually complete two semesters each year, graduating in four calendar years.

Discipline

Military discipline is observed during the assigned daily schedule from reveille at 6 A. M. to taps at 10 P. M. Students wear uniforms

A permissive atmosphere prevails on the typical college campus. Students move freely according to their own schedules, with voluntary participation

CALIFORNIA MARITIME ACADEMY	STATE COLLEGES

Discipline (Cont'd.)

and march in formation. Leaves of absence from the Academy are granted only on week ends. All students live in a dormitory, eat in a mess hall, stand periodic watches, and live as midshipmen 24 hours a day.

in out-of-class activities. The vast majority of students live at home and commute to college only for classwork. Meals and lodging, if desired, are purchased individually. Colleges are commencing to operate a few dormitories governed by collegiate rules.

Tuition

Resident students pay $405.00 tuition; non-resident students pay $675.00. Students receive room and board, plus $200.00 per year for uniform and textbooks.

The fees are approximately $30.00 per semester ($60.00 per year) for regular students; non-resident students pay an additional tuition fee of $90.00 per semester. Summer session fees are $9.50 per unit. Room, board, and other living expenses must be met individually by students.

Physical Facilities

Situated on 67 acres, some of which are steep hills unsuited for campus development. Also, the training ship constitutes a site for approximately 40 per cent of the daily instruction during two trimesters and 100 per cent of the instruction during the cruise period. The physical facilities of the Academy are geared to support 200 to 300 students.

Existing California state college sites vary from 97.5 to 3,216 acres. For new college sites with projected F.T.E. enrollments of 5,000 or more, at least 160 to 200 acres are recommended.

Faculty

The instructional staff consists of thirteen persons. All instructors have bachelor degrees (most of them conferred by the California Maritime Academy), and one instructor has a master's degree. All instructors are licensed officers, with ratings of third officers or better, and all have sea experience. Faculty members are required to teach 15 hours of class work and 20 hours of practical

Appointees to the California state colleges, during the years 1954 to 1956 inclusive, held the following degrees:

42.9 per cent doctorates, 47.0 per cent master degrees, 9.7 per cent bachelor degrees, and .3 per cent none.

Most of these individuals have had prior teaching experience before being employed

CALIFORNIA MARITIME ACADEMY	STATE COLLEGES

Faculty (Cont'd.)

training each week. In addition, they stand a twenty-four hour duty watch every thirteen days. The salary range, fixed by the State Personnel Board, for Watch Officer Instructors extends from $6,360 to $7,728 per year. Instructors are employed upon a twelve-month basis.	by the state colleges. The annual salary ranges, excluding summer session salary, extend from $4,980 for the lowest level of instructor to $10,86 at the highest level for professor. The normal teaching load is based on 12 semester hours of lecture-discussion typ courses or the equivalent.

Administration

Controlled by a Board of Governors and administered by a superintendent, a dean of instruction, a commandant of midshipmen, a business manager and three heads of departments. The departmental heads are also executive officers on the training ship.	Controlled by the State Board of Educati and administered by a president, at leas three major deans, and a variable number of other deans, division chairmen, department heads, and other officers, depending upon size and programs.

Summary of Factors Bearing Upon Potential Coordination

It is readily apparent from the comparative review above that the Californi Maritime Academy, as presently constituted, is not organized as an academic type of institution with the broader objectives of intellectual and other preparation for typical civilian life and economic activity such as characterize the state colleges. The Academy is, rather, a technical institute operated as a military school for the specific purpose of achieving licensing of its graduates. The educational program of the Academy is predominantly vocational training. If one counts the cruise experience and the "laboratory-type" of work experience achieved in the afternoons during the other two semesters, it becomes apparent that over half of the curriculum of the Academy is devoted to practical training in ship operations. Even the formal classroom study, occupying four hours

per day during two trimesters, is oriented solely toward vocational competencies. The educational program of the Academy, therefore, is primarily one of vocational apprenticeship with sufficient technical training to achieve licensing.

From the viewpoint of collegiate standards, the Academy lacks the time for the intellectual breadth and depth of the liberal arts as found in the state college curriculums. The Academy has few of the scholastic resources of collegiate institutions, notably lacking a library and a faculty with advanced degrees. Because of these marked differences in purposes and programs, therefore, it would be very difficult to integrate the Academy with a state college.

These differences are not, in any sense, a criticism of the Academy. It is an institution of high standards. It fulfills its purposes and fits its role admirably well, as evidenced by the fact that during the past ten years all graduates have succeeded in gaining licensing. The Academy is organized and administered efficiently to accomplish its purposes. Its alumni tend to become leaders in the maritime services or in sea-related occupations. Moreover, there is cause to believe that if the Academy were remolded into a standard collegiate institution with academic emphasis, its efficiency in achieving its purposes and goals would be thwarted.

Secondly, the integration of the Academy with a state college would undoubtedly cause many problems among the midshipmen. As contrasted with the freely-moving college students, the California Maritime Academy enrollees

follow a regimented schedule during their entire collegiate careers. They are subject to different fees than are state college students. Their living conditions and standards of conduct are supervised on a twenty-four hour basis. Even in appearance, the midshipmen are differentiated by their uniforms. Because of these differences which mark the cadet as an integral part of a highly organized group with self-awareness, it is doubtful if propinquity would lead to integration. Attempts in this direction could lead to a serious disruption of group morale and military discipline considered important to cadet training.

Thirdly, consolidation of the Academy with a state college would not result in any economies. The Academy's 67 acres, much of it consisting of a filled-in cove and steeply inclined hills, are occupied nearly to capacity in accommodating 200 students. Conceivably, with increased dormitory space and other modifications, the present campus could support a maximum of only 300 students. It is physically impossible, therefore, to locate a state college on the present Academy's property.

Adjoining the Academy grounds, however, an area of some 200 acres belonging to the Federal Government, could be diverted to state college use through very costly grading and leveling. Very few economies could be achieved, however, by the mutual use of common facilities shared by the Academy with an adjacent state college. A small athletic field on a hilltop above the Academy's dormitory could possibly be shared by both institutions. The Academy mess hall, which can accommodate 300 persons, would be somewhat out of the way for state college students and, as well, would require a separate accounting for cadet service and student meals. The swimming pool

and natatorium are too small to accommodate a state college enrollment and, moreover, would require considerable walking or even bus-ride time for state college students to reach from a possible state college site. The Academy classrooms are too few, and functionally ill-designed and located, for state college use. The training ship, which constitutes a large part of the Academy's campus, has little, if any, relationship with the college curriculum. Finally, the Academy's new dormitory is filled to capacity when occupied by the 200 midshipmen who are expected to live in small, confined rooms as a part of their preparation for sea duty.

If the Academy were administered as a division within an adjacent state college, it would be necessary to provide such administrative officers as a head of the division, chairman of the departments, an extra accounting officer in the business office, executive officers for the training ship, and perhaps a commandant of midshipmen. If this staffing were provided, utilizing the present dean of instruction as a curriculum coordinator to supervise the scheduling problems, screening tests, and other unique features of the maritime curriculum, all of the present California Maritime Academy administrators would be needed to staff the "maritime division" of the new state college.

An integration of the classroom work at the Academy with instruction at a state college would, in all likelihood, increase state costs for instruction. First, as explained earlier, very few of the Academy courses are of a general nature (English, physics, mathematics, etc.) such as taught in a college. Because most of these classes at the Academy equal or exceed the breaking point limits established by the faculty staffing formula of the California state colleges, it would be necessary to create just as many new sections of these subjects at the college as were eliminated at the Academy. Actually, this

shifting of classrooms would be costly to the State because a state college instructional staff would receive larger salaries than the California Maritime Academy instructional staff. Watch Officer Instructors at the Academy receive salaries within a $6,360 to $7,728 range for their year-around services. This range is about equal to the salaries of the lowest rank--instructors--in the state colleges, if the state college personnel were employed for a comparable time basis (regular session, six-weeks summer session, and a four-weeks post session). Moreover, since the Watch Officer Instructors teach such a heavy load (15 hours of classroom and 20 hours of practical training each week), additional state college staff members carrying the normal twelve-hour teaching load would be required to replace the Academy instructors. It appears, then, that from an instructional viewpoint, consolidation does not yield any economic benefits.

Legal and technical complications would attend any move toward integration of the Academy with a state college. Under state law, the Academy is unlike other state colleges in that it has its own Board of Governors which manages and controls the school. In order to receive federal funds for the maintenance of the ship and for grants-in-aid for students, the Academy is subjected to federal regulation through the United States Maritime Commission. Thus, any integration of the Academy with a state college would be only nominal, as the legal entity and operational integrity of the Academy would have to be maintained to meet federal requirements.

If the Academy were integrated with a state college, the natural consequence of such a move would cause the Academy to accept a new role. No longer could this school remain a special technical institution, with its single-track vocational objective, but rather it would be required to adopt

a collegiate pattern. The parent state college would not risk its accreditation status by granting B.S. degrees to graduates of the present technical program sponsored by the Academy. Students would be required to fulfill at least 45 semester units of general education subjects. The faculty would be required to hold advanced degrees. Library resources would be made available to the midshipmen. The net result of this arrangement is that, although these changes would be costly, it is doubtful if they would produce better qualified graduates for the licensing examination and for merchant marine service.

As currently organized and operated, the California Maritime Academy is very dissimilar to the state colleges. It is beyond the province of this report, and beyond the assignment stated in Senate Resolution 33, to consider the feasibility of remolding the Academy into the state college pattern. A separate study would be necessary to determine the possibility, or even the desirability, of such a change. If such studies were made in the future and the Academy's purposes, programs, and policies were altered, then perhaps the feasibility of consolidation with a state college should be restudied.

It is abundantly apparent at the present time that consolidation of the Academy with a state college is not feasible in terms of economy, educational programs, or more efficient administration. Certainly, it is clear that the prospects of consolidation do not yield sufficient benefits as to justify or warrant selection of a state college site adjacent to the Maritime Academy as opposed to its location elsewhere. The location of an additional state college in the North Bay area should be determined on the basis of the more important criterion of its proximity to the maximum number of enrollees which it may serve rather than to the California Maritime Academy.

PART III

CONCLUSIONS AND RECOMMENDATIONS

Summary

This study was undertaken in compliance with Senate Resolution 33 unanimously adopted by the California Senate in 1958. That resolution dealt with these two questions: (1) is more than one state college needed in the North Bay area, and (2) is it feasible to consolidate the California Maritime Academy with a state college. These two questions were treated in Parts I and II, respectively of this report.

The study was confined to a consideration of state college enrollment potential in the four North Bay counties--Marin, Sonoma, Napa, and Solano, the four counties named in the resolution--and, for reasons advanced in Part I, it did not include consideration of Contra Costa enrollments. First, the estimated numbers of high school graduates in 1965 and 1970 were plotted by school districts throughout this area. Secondly, estimated rates of enrollment by commuting zones were constructed from data gathered at existing state colleges. Thirdly, these commuting zone rates were applied to five strategic locations in the North Bay area where, hypothetically, future state colleges could be located. These applications resulted in estimates of potential enrollments at these various locations. Then, through the application of the enrollment rates by commuting zones, the future collegiate enrollments in two state colleges strategically located to serve the area, as opposed to a single state college, were computed. Finally, differences in enrollment between a single state college versus two state colleges were derived.

Part II of this study is an investigation of the feasibility of consolidating the California Maritime Academy with a state college. A description of the similar and dissimilar characteristics between the Academy and the state colleges was developed. Finally, a comparison of the advantages and disadvantages of consolidation was made and conclusions were drawn.

Findings

(1) The highest priority for a state college in the North Bay area, based upon projections of future college enrollees as determined in this study, is among the cities extending along Highway 101 in the Marin-Sonoma area. It is estimated that a college established between San Rafael and Petaluma would enroll about 3,800 F.T.E. students in 1965 and 4,700 in 1970.

(2) Two state colleges, located strategically in the North Bay area, would each have smaller enrollments than a single state college but their combined enrollments would exceed those of a single state college. Among the hypothetical locations surveyed, the two which would achieve maximum enrollments are in the vicinity of Novato and Vallejo. The estimated enrollments for the two-college plan would be, in 1965, approximately 2,800 F.T.E. students at Novato and 1,900 at Vallejo and, in 1970, about 3,600 students at Novato and 2,000 at Vallejo.

(3) The two-college plan would yield a total, in 1965, of about 4,650 students as compared with nearly 3,800 at a single college, or a difference of less than 900 additional students served by the two-college plan. In 1970, two colleges would enroll considerably less than 5,700 students as compared with more than 4,700 enrolled in a single college, or a difference of about 900 students. The difference would grow larger in future years.

(4) In order to educate a net difference of about 900 additional students in 1970, considerable capital outlay and additional operating expense would be required to establish two colleges instead of one in the North Bay area.

(5) Comparison of the California Maritime Academy with the state colleges shows that the Academy is unlike these collegiate institutions in terms of objectives and programs. Integration of the Academy with a state college would introduce many problems in terms of legal status, financing, discipline, accreditation, and possibly scheduling.

(6) Consolidation of the California Maritime Academy with a state college would not result in significant economies in staffing, building, or auxiliary enterprises.

Recommendations

The recommendations herein are based upon the assumption that the State will proceed with the development of a state college for which $500,000 was appropriated in Assembly Bill 4, enacted by the 1957 Legislature, for "site acquisition in Sonoma County, Marin County, Napa County or Solano County for a state college to be established in one of such counties."

This study has shown that such a state college strategically located in the North Bay area should attain an enrollment of nearly 5,000 full-time equivalent students by 1970. According to the priority table for possible state colleges (Table 21, page 106 of The Additional Centers Study) two other areas[1]--San Bernardino-Riverside and Contra Costa County--have higher potential enrollments by 1970 than a North Bay college of this size.

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[1] Although Alameda County had first priority in the table cited above, it is not included here because a state college was authorized in that county in 1957. Two other counties with more than 5,000 F.T.E. enrollment projections--San Mateo and Los Angeles--do not appear on the priority list in this table.

Also, the following items should be noted:

(a) A second state college in the North Bay counties would so divide the enrollment that both colleges would be small, one of them barely attaining 2,000 full-time equivalent enrollment by 1970, the minimum suggested for commencing a new state college.

(b) The capital outlay and operating expenses for two state colleges would be excessive in terms of the additional number of students which the two would serve (a difference of some 900 between the 1970 estimated enrollments for one college as compared with two in the North Bay area).

(c) According to the priority table in The Additional Centers Study, there are a number of other areas in the State which have higher estimated enrollment than would two state colleges in this area.

In view of these factors it is recommended that:

1. Consideration of a second state college in the North Bay area be deferred until at least 1965 to allow time for the currently authorized North Bay College to be located, its programs and operations to become well established, and its effects upon collegiate enrollments and services in the North Bay area to become more clearly evident than at present. A reappraisal of this situation at that approximate time would define more clearly the growth potential for a second college and would leave sufficient time before 1970 to develop the college if justified by its priority.

2. Inasmuch as it is not feasible in terms of educational programs, more efficient administration, and economy to consolidate the California Maritime Academy as presently organized with a state college, it is recommended that if a new state college is considered in this area, its location be based upon consideration of other educational services.

Appendix A

CRITERIA FOR SITE SELECTION

The following criteria for site selection have been adapted from material presented on pages v, vi, 109, and 110 in The Additional Centers Study:

1. It is the established educational policy of the state to provide educational opportunities as widely as possible within the means of the state and its school districts.

2. The expansion of existing institutions and the establishment of new ones should depend on the optimum use of the state's resources for higher education in relation to the greatest relative need both geographically and functionally (in terms of the state's need for certain curriculums or types of training).

3. Differentiation of functions so far as possible of the three segments of public higher education, namely the junior colleges, the state colleges, and the University of California, is imperative if unnecessary and wasteful duplication is to be avoided.

4. Adequate junior college facilities should be provided through local initiative and state assistance prior to the establishment of additional state college or university campuses in any area. This principle is very important since junior colleges provide an opportunity for all high school graduates to continue their education, while only about 10 to 15 per cent of all high school graduates are eligible to enter the University of California, and about 40 to 45 per cent are eligible to enroll in state colleges. In addition, the types of technical-terminal programs and adult-community programs offered by junior colleges are not available in state college or university programs as normally offered.

5. The financing of new publicly supported institutions should be such that it interferes in no way with the needs, including necessary improvement or expansion, of existing ones.

6. In order that a possible new institution may serve the greatest number of eligible students, it should be placed near the center of the population served by it.

7. Extension of publicly supported institutions to the degree that the continued operation of private ones long in existence and seemingly serving the community well is jeopardized, is not in the public interest.

8. To conserve the resources of the state, and to provide for efficient institutional operation, the following minimum enrollment potentials should be attainable within a 10 to 15 year period from date of establishment, before consideration is given to the establishment of new centers of public higher education:

8. (Cont'd.)

Junior colleges: 400 full-time students.
State colleges: 2,000 full-time equivalent students.
University of California campuses: 2,000 full-time students for campuses with limited functions; 10,000 full-time students for full-scale campuses.

9. The interests of the state and its citizens will best be served if such new institutions as may be approved are established in order of priority depending upon their relative enrollment potentials, and in conformance with the above principles.

10. Because of the magnitude of estimated enrollments in existing and possible new institutions, every effort should be made to secure the greatest possible utilization of physical plants and facilities in publicly supported institutions, the most effective use of faculty and administrative organization, and the optimum coordination of curricular offerings and programs.

11. In order that the state's higher education facilities may be kept in balance with enrollments and the state's needs for trained personnel, continuing review by the Liaison Committee of the State Board of Education and the Regents of the University of California of estimated college enrollments and the means by which they may be accommodated, is necessary.

Appendix B

DESIRABLE STATE COLLEGE SITE CHARACTERISTICS[1]

Physical Characteristics of Site.

In selecting a state college site it is essential that the following desirable features and minimum requirements be considered.

Size. Existing California State college sites vary from 97.5 to 3,216 acres. The optimum size of a site is dependent on a number of factors, most important of which are the projected student enrollment for the college and the inclusion or exclusion of agriculture in the curriculum. For the same student enrollment, some reduction in the size of a site can be made by the use of more expensive multi-story buildings and parking structures as well as the use of public carriers to reduce the need for parking space. In general, sites selected a generation or more ago are too small today because of the increased student enrollment and demand for parking space brought on by the increase in the number of students who drive cars.

Positively correlated with the factor of student enrollment in determining the size of a state college site is the area devoted to parking, buildings, playfields, and open or free area. The following average figures for these additional factors affecting the size of a state college site have been computed by using data obtained from existing state college sites that are adjudged adequate.

1. Parking area (4.7 acres per 1,000 F.T.E. students).

    a. 1.7 F.T.E. per parking space.
    b. 125 parking spaces per acre.

2. Building area.

    a. 30 to 40 acres for one and two story buildings.
    b. 20 to 30 acres for three, four or more stories.

3. Athletic and playfield space.

    a. 20 to 22 acres including all sports.
    b. 15 to 18 acres for reduced athletic program.

4. Open or free area.

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[1] This statement is extracted from Division of State Colleges and Teacher Education, Factors in the Selection of a State College Site in Sonoma County, Marin County, Napa County, or Solano County. Sacramento: California State Department of Education, September, 1957, pages 14-19.

Sixty per cent of the total site is estimated to include walks, roadways, entrances, landscaped areas and non-usable space because of ravines, drainage ditches, and other topographical features. Using the average figures for the above factors, the following data have been developed, indicating a range of acreage for a state college site for various F.T.E. of regular student enrollment.

Projected F.T.E. Enrollment	Suggested Range of Acreage for a State College Site
3,000	135 - 178
4,000	148 - 190
5,000	160 - 202
6,000	170 - 212
7,000	182 - 225
8,000	195 - 238
9,000	205 - 248
10,000	218 - 260
11,000	230 - 272
12,000	240 - 282
13,000	252 - 295
14,000	265 - 308
15,000	275 - 318

Shape. A square or rectangular shaped parcel of land as opposed to an irregular, narrow, or odd shaped parcel is highly desirable for a state college site. Where peripheral paving is to be provided by the State, a square parcel would be the most economical. All other costs being equal, a 3 x 5 rectangular shaped parcel is the most desirable.

Soil. State college buildings require reasonably stable soil. Soil requiring special foundations such as piling, drilled caissons, or excessive spread footing increases the cost of buildings tremendously. Borings or load tests should be taken prior to the final selection of any site where the soil condition is questioned.

In general, a clean site free of boulders, trees, improvements, etc., is highly desirable. A rocky, eroded and cluttered site usually indicates extensive site development problems. Existing structures, roads, curbs, walks, powerlines, fire hydrants and other man-made improvements on a proposed site should be noted.

Environment.

A desirable state college site is not hemmed in by business or residential buildings. It should be free from: (1) loud and distracting noises created by heavy traffic, (2) industrial fumes and smog, and (3) the flight pattern of aircraft from the local airport. Approach and take-off patterns for the local airport should be studied and in no case should a site be located closer than two miles from the main runway.

Fire protection and suppression facilities in the vicinity of a state college site are necessary. In certain instances the State has had to provide its own in connection with existing state colleges. Ideally, however, they should be provided locally.

Businesses and other commercial enterprises operating on the land surrounding a proposed college site must be considered a part of the educational environment. The Statutes still provide that there shall be no liquor establishments within the immediate vicinity of a college or university campus.

General climatic conditions can vary within a very short distance in mountainous or bay areas. The wind velocity within a radius of one half mile can vary as much as five to ten miles per hour. Climatic conditions affected and controlled by local topography and terrain should be considered in selecting a site.

At least two or more access and egress routes from a state college site to the major highway network should be provided. This would imply that a campus should be bounded by at least two arterials or improved county roads leading to different sections of the major highway network surrounding the college site. Local city and county traffic ordinances should be considered before a final selection is made.

Acquisition.

Easements, encroachments and rights of way greatly affect complete land use. An ideal site would be free of all easements, encroachments and rights of way or other restrictions of a special nature that might affect the full use of the property for its intended purpose. Acquisition of a site is facilitated by a single ownership.

Development.

An ideal site should not have a slope of less than two per cent nor more than six per cent. The slope should be general throughout and to one side or end so as to provide a central storm and sewage drainage connection. The surface should be free from ravines, canyons, streams and springs.

Utilities. In general, the state colleges have not experienced any trouble in obtaining adequate electrical, telephone, or gas services. The major problems from the standpoint of utilities on existing campuses have been connected with the water supply and sewage disposal. In round figures the water consumption on existing state college campuses is as follows:

a. 42 gallons per non-resident F.T.E. student per day; 100 to 125 per resident F.T.E. student.

b. In addition, 3 acre feet per acre per year for landscaping.

On the basis of these figures the average water consumption per day for a state college with 5,000 F.T.E. of regular students and 100 acres of landscaping would be approximately 475,000 gallons.

Sewage flow in round figures runs about 45 gallons per day per non-resident F.T.E. student. Local sewage disposal facilities, therefore, should be able to handle an additional load of 225,000 gallons a day if a state college of 5,000 F.T.E. of regular students is to be connected to the system. It is also highly desirable that the local water and sanitation districts' trunk lines be in proximity to the college site and easily connected. The lack of either a local water or sanitation district capable of handling a state college's needs should be considered a handicap in locating a college in the area.

Appendix C

The five tables in Appendix C show the estimated college enrollment of proposed state colleges at various locations in the North Bay area. These enrollment estimates are based upon the number of projected high school graduates in various school districts within commuting zones of each location. These data demonstrate the detailed elements comprising each enrollment projection.

Appendix C

Table 11

ESTIMATED COLLEGE ENROLLMENT OF A PROPOSED STATE COLLEGE AT NOVATO, BASED UPON PROJECTED HIGH SCHOOL GRADUATES WITHIN COMMUTING ZONES (1965 AND 1970)

High School District	Mileage	1964-65 High School Graduates	1965 New Regular Freshmen	1969-70 High School Graduates	1970 New Regular Freshmen
PRIMARY ZONE (0-15 Miles)					
San Rafael	10.5	558		713	
Petaluma	11	382		437	
Tamalpais	15	1,408		1,968	
		2,348	470	3,118	624
SECONDARY ZONE (16-35 Miles)					
Vallejo	20.5	783		658	
Sonoma Valley	22	181		215	
Benicia	27	130		133	
Santa Rosa	27	874		1,070	
Analy (Sebastopol)	28	294		325	
Napa	28.5	780		1,064	
Tomales	30	34		19	
Armijo (Fairfield)	35	210		221	
		3,286	263	3,705	296
Total New Regular Freshmen[a]			733		920
Total Regular Freshmen[b]			1,078		1,353
Total College Enrollment[c]			3,773		4,735

[a] Rates of new regular freshmen per 1,000 public high school graduates vary by commuting distance as follows:
Primary Zone: 0-15 miles, approximately; rate of 200.
Secondary Zone: 16-35 miles, approximately; rate of 80.

[b] New regular freshmen from the commuting zones are converted to total freshmen as follows:
New freshmen are expanded from 80% to include continuing and returning freshmen. This result is then expanded from 85% to include freshmen from outside the two commuting zones.

[c] Total freshmen are multiplied by a factor of 3.5 to estimate full-time equivalent enrollment including all class levels.

Appendix C

Table 13

ESTIMATED COLLEGE ENROLLMENT OF A PROPOSED STATE COLLEGE AT SONOMA, BASED UPON PROJECTED HIGH SCHOOL GRADUATES WITHIN COMMUTING ZONES (1965 AND 1970)

High School District	Mileage	1964-65 High School Graduates	1965 New Regular Freshmen	1969-70 High School Graduates	1970 New Regular Freshmen
PRIMARY ZONE (0-15 Miles)					
Sonoma Valley	0	181		215	
Napa	14	780		1,064	
		961	192	1,279	256
SECONDARY ZONE (16-35 Miles)					
Petaluma	19	382		437	
Santa Rosa	22	874		1,070	
St. Helena	24	64		65	
Vallejo	24	783		658	
San Rafael	27	558		713	
Analy (Sebastopol)	29	294		325	
Armijo (Fairfield)	31	210		221	
Benicia	31	130		133	
Tamalpais	32	1,408		1,968	
		4,703	376	5,590	447
Total New Regular Freshmen[a]			568		703
Total Regular Freshmen[b]			835		1,034
Total College Enrollment[c]			2,922		3,619

[a] See footnote, Appendix C, Table 11.

[b] See footnote, Appendix C, Table 11.

[c] See footnote, Appendix C, Table 11.

Appendix C

Table 14

ESTIMATED COLLEGE ENROLLMENT OF A PROPOSED STATE COLLEGE AT VALLEJO, BASED UPON PROJECTED HIGH SCHOOL GRADUATES WITHIN COMMUTING ZONES (1965 AND 1970)

High School District	Mileage	1964-65 High School Graduates	1965 New Regular Freshmen	1969-70 High School Graduates	1970 New Regular Freshmen
PRIMARY ZONE (0-15 Miles)					
Vallejo	0	783		658	
Benicia	7	130		133	
Napa	13	780		1,064	
		1,693	339	1,855	371
SECONDARY ZONE (16-35 Miles)					
Armijo (Fairfield)	16.5	210		221	
Sonoma Valley	24	181		215	
Vacaville	24.5	194		202	
San Rafael	27	558		713	
Petaluma	31.5	382		437	
St. Helena	32	64		65	
Tamalpais	35	1,408		1,968	
		2,997	240	3,821	306
Total New Regular Freshmen[a]			579		677
Total Regular Freshmen[b]		851		996	
Total College Enrollment[c]		2,978		3,486	

[a] See footnote, Appendix C, Table 11.

[b] See footnote, Appendix C, Table 11.

[c] See footnote, Appendix C, Table 11.

Appendix C

Table 15

ESTIMATED COLLEGE ENROLLMENT OF A PROPOSED STATE COLLEGE AT NAPA Y, BASED UPON PROJECTED HIGH SCHOOL GRADUATES WITHIN COMMUTING ZONES (1965 AND 1970)

High School District	Mileage	1964-65 High School Graduates	1965 New Regular Freshmen	1969-70 High School Graduates	1970 New Regular Freshmen
PRIMARY ZONE (0-15 Miles)					
Napa	6	780		1,064	
Vallejo	10	783		658	
Armijo (Fairfield)	13	210		221	
		1,773	355	1,943	389
SECONDARY ZONE (16-35 Miles)					
Benicia	17	130		133	
Sonoma Valley	20	181		215	
Vacaville	20	194		202	
St. Helena	24	64		65	
Petaluma	30	382		437	
Dixon	31	92		97	
Calistoga	33	56		71	
Rio Vista	34	92		88	
San Rafael	34	558		713	
		1,749	140	2,021	162
Total New Regular Freshmen[a]			495		551
Total Regular Freshmen[b]			728		810
Total College Enrollment[c]			2,548		2,835

[a] See footnote, Appendix C, Table 11.

[b] See footnote, Appendix C, Table 11.

[c] See footnote, Appendix C, Table 11.

Appendix D

Appendix D indicates the estimated college enrollments of potential state colleges at Novato and at Vallejo, assuming that two colleges are necessary to serve the North Bay area. These tables show in detail the potential enrollments from districts included within certain commuting zones in respect to each college.

Appendix D

Table 16

ESTIMATED COLLEGE ENROLLMENT OF A PROPOSED STATE COLLEGE AT NOVATO, WITH ANOTHER COLLEGE AT VALLEJO, AS DEVELOPED IN A TWO-COLLEGE PLAN TO SERVE THE NORTH BAY AREA, BASED UPON PROJECTED HIGH SCHOOL GRADUATES WITHIN COMMUTING ZONES (1965 AND 1970)

High School District	Mileage	1964-65 High School Graduates	1965 New Regular Freshmen	1969-70 High School Graduates	1970 New Regular Freshmen
PRIMARY ZONE (0-15 Miles)					
San Rafael	10.5	558		713	
Petaluma	11	382		437	
Tamalpais	15	1,408		1,968	
		2,348	470	3,118	624
SECONDARY ZONE (16-35 Miles)					
Sonoma Valley ($\frac{1}{2}$)	22	91		108	
Santa Rosa	27	874		1,070	
Analy (Sebastopol)	28	294		325	
Tomales	30	34		19	
		1,293	103	1,522	122
Total New Regular Freshmen[a]			573		746
Total Regular Freshmen[b]			796		1,036
Total College Enrollment[c]			2,786		3,626

[a] Rates of new regular freshmen per 1,000 public high school graduates vary by commuting distance as follows:
Primary Zone: 0-15 miles, approximately; rate of 200.
Secondary Zone: 16-35 miles, approximately; rate of 80.

[b] New regular freshmen from the commuting zones are converted to total freshmen as follows:
New freshmen are expanded from 80% to include continuing and returning freshmen. This result is then expanded from 90% to include freshmen from outside the two commuting zones.

[c] Total freshmen are multiplied by a factor of 3.5 to estimate full-time equivalent enrollment including all class levels.

Appendix D

Table 17

ESTIMATED COLLEGE ENROLLMENT OF A PROPOSED STATE COLLEGE AT VALLEJO, WITH ANOTHER COLLEGE AT NOVATO, AS DEVELOPED IN A TWO-COLLEGE PLAN TO SERVE THE NORTH BAY AREA, BASED UPON PROJECTED HIGH SCHOOL GRADUATES WITHIN COMMUTING ZONES (1965 AND 1970)

High School District	Mileage	1964-65 High School Graduates	1965 New Regular Freshmen	1969-70 High School Graduates	1970 New Regular Freshmen
PRIMARY ZONE (0-15 Miles)					
Vallejo	0	783		658	
Benicia	7	130		133	
Napa	13	780		1,064	
		1,693	339	1,855	371
SECONDARY ZONE (16-35 Miles)					
Armijo (Fairfield)	16.5	210		221	
Sonoma Valley ($\frac{1}{2}$)	24	90		107	
Vacaville	24.5	194		202	
St. Helena	32	64		65	
		558	45	595	48
Total New Regular Freshmen[a]			384		419
Total Regular Freshmen[b]		533		582	
Total College Enrollment[c]		1,866		2,037	

[a] See footnote, Appendix D, Table 16.

[b] See footnote, Appendix D, Table 16.

[c] See footnote, Appendix D, Table 16.

Appendix E

As indicated on page 37, an estimate of the costs involved in establishing and operating two future North Bay colleges, as compared with one, provide a convenient illustration of relative, rather than actual, differences in this situation. Because these estimates are based upon data supported by past experiences, future unforeseen changes in economic conditions or educational operations may prove these estimates to be completely out of line. They are reproduced here only as illustrative of certain financial involvements in appraising two plans of collegiate services for the North Bay area. The estimated cost differences in capital outlay and operating expenses appear in Table 18.

Capital Outlay

A standard of approximately $4,000 per F.T.E. for capital outlay provides the basis for the estimates given in Table 18. This sum represents the average cost in developing campuses at Los Angeles, Long Beach, and Sacramento. However, as explained in The Additional Centers Study, it would cost a minimum of 12 million dollars in capital outlay for any campus, regardless of enrollment, to acquire the facilities necessary to perform the usual range of educational functions. Thus, the minimum cost for two campuses in the North Bay area would be 24 million dollars, as indicated in the 1965 capital outlay estimates. Table 18 shows that it would cost approximately 9 million dollars more to provide two campuses rather than one, to serve this region in 1965. In 1970, the difference in capital outlay is reduced to about 7½ million dollars. It would be anticipated that the difference in capital outlay will grow proportionately less significant to the total cost of education as the student population

Appendix E

Table 18

DIFFERENCES IN ESTIMATED ENROLLMENTS AND COSTS RESULTING FROM A TWO-COLLEGE AS COMPARED WITH A ONE-COLLEGE SERVICE TO THE NORTH BAY AREA

In 1965	One College (Novato)	Two Colleges (Novato--N; Vallejo--V)	Difference
Enrollments	3,773	4,652 (N = 2,786) (V = 1,866)	879
Capital Outlay[a]	$15,092,000	$24,000,000 (N = $12,000,000) (V = $12,000,000)	$8,908,000
Operating Costs[b]	$ 3,301,375	$ 4,070,500 (N = $ 2,437,750) (V = $ 1,632,750)	$ 769,125
In 1970			
Enrollments	4,735	5,663 (N = 3,626) (V = 2,037)	928
Capital Outlay[a]	$18,940,000	$26,504,000 (N = $14,504,000 (V = $12,000,000)	$7,564,000
Operating Costs[b]	$ 4,143,125	$ 4,955,125 (N = $ 3,172,750) (V = $ 1,782,375)	$ 812,000

[a] Capital Outlay is computed on the basis of $4,000 per student, with a minimum of $12,000,000 for each campus.

[b] Operating Costs are computed on the basis of $875 per F.T.E.

increases after 1970.

Operating Costs

It is generally assumed that the cost per student decreases as the enrollment of an institution increases, until a maximum level of efficiency is attained. The exact relationship of cost with enrollment in the state colleges has not been demonstrated. Thus, for this report, an average cost is used for enrollment projections, based upon the 1958-59 estimates of average cost per F.T.E. at five state colleges in which enrollments range from 1,800 to 5,000 F.T.E. This average cost is approximately $875 per F.T.E. Since these factors could not be measured accurately, it was felt that a flat projection of $875 per student would convey a base figure, allowing the reader to extrapolate his own data in any direction he chooses.

Table 18 shows that these conditions would yield a cost difference of approximately $800,000 per year in operating two college campuses as compared with a single larger campus. Undoubtedly these data are conservative because the cost per F.T.E. would tend to be larger due to (1) inflation, (2) commencing a new college, and (3) operating two small colleges should be less economical than a single larger institution.