Alleviating Overcrowding at Mariano Castro Elementary:

An Analysis of Policy Alternatives

Prepared for Mountain View Whisman School District

Masters in Public Policy Program and Ford Dorsey International Policy Studies

Stanford University

Prepared By:

Erin Cumberworth
Kenisha Dilliard
Ify Emelife
Joel Mehler
Nori Sasaki

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Executive Summary

The goal of our analysis is to offer a long-term solution to the overcrowding problem at Mariano Castro Elementary School (Castro), one of six K-5 elementary schools in the Mountain View Whisman School District (MVWSD or District). In our analysis, we present seven alternatives that could solve the overcrowding problem, and systematically analyze the advantages and disadvantages of each alternative according to a common set of criteria. Based on this analysis, we recommend that the District alleviate Castro’s overcrowding problem by either expanding capacity at the current site or opening a seventh K-5 elementary school at a new site. However, we also present the full analysis for five other alternatives: maintaining the status quo, increasing class sizes, moving the Dual Immersion program to Landels Elementary, implementing a multitrack year-round calendar, and redefining enrollment boundaries. While our analysis is specific to Castro, the District will likely find our framework applicable to future decision-making regarding school capacity.

Policy Issue

Since Castro Elementary is located in a dense, high-growth area, the school does not have enough space to serve all of the students in the surrounding neighborhood. With 654 students enrolled at the school, classes and community programs fill every corner of the school, even the teacher’s lounge. In addition, traffic is a significant problem. Every morning the surrounding streets clog as school buses and parents descend upon the school to drop off children for the school day. The District has already taken action to reduce the school’s overcrowding problem in the short term. It will do so by moving the Parent-Child-Teacher (PACT) program, a magnet program emphasizing parental involvement, from Castro to its own campus. PACT’s move will free up nine of Castro’s 33 classrooms—a 37.5% increase in space. Enrollment will fall from 654 students to about 500 students, which brings Castro’s enrollment in line with the other K-5 schools in the district, all of which have around 500 students.

However, there are several reasons why PACT’s departure from Castro may not constitute a long-term solution to the overcrowding problem at the school. First, student enrollment is on the rise at Castro and throughout MVWSD. In the 2007-08 academic year, MVWSD’s total enrollment was 4,406 students – this represented a 2.5% increase in enrollment from the previous year, and was three to four years ahead of projected enrollment. The most
recent enrollment projections indicate that district enrollment will increase to at least 4,879 students by 2018-19, and possibly as many as 5,361. The district-wide growth will almost certainly include some growth within Castro’s neighborhood. Second, in addition to overcrowding within the school, about 300 students who live in the Castro neighborhood are unable to enroll in the school due to limits already placed on enrollment. Many students from these areas now walk to Castro in the morning to board the school bus that takes them to a school in a different neighborhood. Even after PACT’s move, there will not be sufficient space at Castro to re-absorb the 300 bused students back into their neighborhood school. Third, the administrators of the two remaining programs at the schools – Dual Immersion (DI) and the traditional English-Only (EO) classes – have expressed desire to expand their programs in the future. DI is currently using 15 (nearly half) of Castro’s classrooms, and would like to expand further. The school also wants to offer two EO classes at each grade level, which would require expanding from the seven classrooms currently used for EO instruction to twelve.

**Our Method of Analysis**

For our analysis, we consider Castro to be overcrowded if its enrollment exceeds what we term the “effective capacity” of the school. The effective capacity is the maximum number of students that can be enrolled at the school without exceeding the District’s standards for classroom size, and while maintaining all of the basic facilities that are standard throughout the district (e.g., one library, one dedicated room for art, at least one computer lab, and at least one room for intervention programming). With Castro’s current amount of classroom space, the effective capacity of the school is 600 students.

Based on this definition of overcrowding, we perform our analysis through four major steps: Problem Definition, Alternative Generation, Criteria Selection, and In-depth Analysis of Alternatives. The first step in our methodology is to define the problem at Castro. Step two is to develop a list of criteria for use in evaluating the potential alternatives. Step three is to develop a list of potential alternatives for mitigating overcrowding. The final step of our methodology is an in-depth analysis of the alternatives, which leads to our policy recommendations to help solve the problem of overcrowding at Castro.

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For the in-depth analysis, we assess how well each policy alternative meets each criterion. In order for us to be able to systematically compare the attractiveness of the alternatives, we gave each alternative a rating on a scale of 0 to 10, for each of six criteria. We then assigned each criterion a weight representing its importance in the overall score. Based on these numbers, we computed an overall score for each alternative to capture its attractiveness as a policy option.

The seven alternatives we considered are Maintain the Status Quo, Expand Capacity at the Current Site, Open a Seventh K-5 Elementary School at a New Site, Move Dual Immersion to Landels, Implement Multitrack Year-Round Calendar, Redefine Enrollment Boundaries, and Increase Class Size. Our criteria and their weights are Alleviating Overcrowding (20%), Student Achievement (20%), Equity (20%), Financial Cost (15%), Parent Choice (15%), and Ease of Implementation (10%). Alleviating Overcrowding was given a high weight because it is the focus of our analysis, and Student Achievement and Equity were given high weights because they are the District’s top priorities.

Policy Recommendations

The results of our analysis indicate that two alternatives, Expand Capacity at the Current Site and Open a Seventh K-5 Elementary School at a New Site, are the strongest long-term alternatives for addressing future overcrowding at Castro. While both alternatives score very low with regard to Financial Cost and Ease of Implementation, their overall scores for Alleviating Overcrowding, Student Achievement, Equity and Parent Choice are higher than the other alternatives. Meanwhile, the five other alternatives—Maintain the Status Quo, Increase Class Size, Move DI to Landels, Implement Multitrack Year-Round Calendar, and Redefine Enrollment Boundaries—are easier to implement with lower financial cost than the two most promising alternatives. However, positive impacts of these five alternatives on Alleviating Overcrowding, Equity, Student Achievement, and Parent Choice are limited.
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Introduction

In this report, we address the overcrowding problem at Mariano Castro Elementary School, one of six K-5 elementary schools in the Mountain View Whisman School District (MVWSD). The goal of our analysis is to offer a long-term solution to the overcrowding problem at Castro. We present a range of alternatives that could solve the overcrowding problem, and systematically analyze the advantages and disadvantages of each alternative according to a common set of six criteria. As part of our analysis, we develop and use an evaluation tool for determining the advantages and disadvantages of the alternatives and the relative importance of the decision criteria. We explain the evaluation tool and recommend it to the District for further use. While our analysis is specific to Castro, the framework we present will likely be applicable to similar capacity questions the District faces in the future.

Based on our analysis, we recommend that the District alleviate Castro’s overcrowding problem by either expanding capacity at the current site or opening a seventh K-5 elementary school at a new site. We also present the full analysis for five other alternatives, including maintaining the status quo. Among these five alternatives, we find that two are more preferable and two are less preferable than maintaining the status quo.

Our report is organized as follows: In Section 1, we discuss the context and policy issue of overcrowding at Castro. In Section 2, we describe our methodology. In Section 3, we present an in-depth analysis of our alternatives. Finally, in Section 4, we conclude by summarizing our main findings.
1. **POLICY ISSUE**

1.1. **Overview**

Since Castro Elementary is located in a dense, high-growth area, the school does not have enough space to serve all of the students in the surrounding neighborhood. With 654 students enrolled, classes and community programs fill every corner of the school, even the teacher’s lounge. Castro has the smallest computer lab in the district and the least amount of grassy area on its campus. In addition, traffic is a significant problem. Every morning the surrounding streets clog as school buses and parents descend upon the school to drop off children for the school day. Administrators have tried various schemes to try to reduce traffic jams, but they can do little more than make small improvements. If it were at a different location, Castro might be able to accommodate more students simply by expanding onto adjacent property and widening roads. However, since the school is land-locked by surrounding apartments and homes, this type of expansion is not feasible.

The Mountain View Whisman School District (MVWSD) is concerned that overcrowding at Castro might impair the educational experience of students at the school. Castro’s enrollment area has the lowest socio-economic status (SES) of any elementary school enrollment area in MVWSD. Sixty four percent of its students are English Language Learners compared to 45% for the district overall, and 62% are eligible for free or reduced-price lunch compared to 48% for the district overall. Until 2007, the school had “program improvement” status on the national No Child Left Behind Act list, an indication of academic struggles. Since then, the school has made significant gains in standardized test scores, but an overcrowded learning environment could begin to chip away at those gains. The District has already taken action to reduce the school’s overcrowding problem in the short term. It will do so by moving the Parent-Child-Teacher (PACT) program, a magnet program emphasizing parental involvement, from Castro to its own campus. PACT is one of two district-wide magnet programs that are currently at Castro alongside the traditional English-only (EO) classes. The other magnet program is Dual Immersion (DI), a dual English-Spanish instruction program. All three programs are presently under the administration of Castro’s principal. PACT’s move will free up nine of Castro’s 33

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3 Tables 1 and 2 in Appendix A provide detailed demographic and academic performance information for Castro compared to the district.
classrooms—a 37.5% increase in space. Enrollment will fall from 654 students to about 500 students, which brings Castro’s enrollment in line with the other K-5 schools in the district, all of which have enrollments of around 500 students.

However, there are several reasons why PACT’s departure from Castro may not constitute a long-term solution to the overcrowding problem at the school. First, student enrollment is on the rise at Castro and throughout MVWSD. In the 2007-08 academic year, MVWSD’s total enrollment was 4,406 students – this represented a 2.5% increase in enrollment from the previous year, and was three to four years ahead of projected enrollment. The most recent enrollment projections suggest that growth will continue. The district is expected to have an enrollment of at least 4,879 students by 2018-19, and possibly as many 5,361 students. Even if growth slows and kindergarten enrollment plateaus at its current level, the recent larger cohorts will push Castro’s total enrollment back up to 600 students by the 2011-12 school year. If population growth continues as projected, the school may soon find itself in yet another difficult overcrowding situation.

Second, even if a significant population increase does not occur in Castro’s enrollment area, there are other potential problems with the current arrangements. In addition to overcrowding within the school, about 300 students who live in the Castro neighborhood are unable to enroll in the school due to limits already placed on enrollment. In previous attempts to alleviate overcrowding at Castro, MVWSD altered enrollment boundaries so that students living in the northeast corner and along the southern edge of the Castro neighborhood were re-assigned to other schools in the district. Many students from these areas now walk to Castro in the morning to board the school bus that will take them to a school outside of the neighborhood. This arrangement increases the District’s transportation costs and is disliked by many neighborhood families who want their children to attend the neighborhood school. There are many other potential disadvantages of busing students to relieve overcrowding: it impedes parental involvement in the school, limits access to after-school enrichment and extracurricular activities, discourages kindergarten enrollment, and may have a direct negative effect on

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6 The majority of these bused children are currently attending Bubb Elementary. Craig Goldman (Chief Financial Officer, MVWSD), in meeting at MVWSD office, October 3, 2008.
7 Craig Goldman and Judy Crates, Castro’s principal, both indicate that Castro neighborhood parents show a clear preference for sending their children to school within the Castro neighborhood.
student achievement.\textsuperscript{8} Even after PACT’s move, there will not be sufficient space to re-absorb the 300 bused students back into Castro.

Finally, the administrators of the two remaining programs at the schools – Dual Immersion (DI) and the standard English-Only (EO) program – have expressed desire to expand their programs in the future. DI is currently using 15 (nearly half) of Castro’s classrooms, and would like to expand further. The school also wants to offer two EO classes at each grade level, which would require expanding from the seven classrooms currently used for EO instruction to twelve. Such expansions are impossible given current arrangements at Castro.

In this report, we analyze seven different ways that MVWSD could deal with overcrowding at Castro. One of those options is to maintain the status quo. Based on the most recent information available, we make the following assumptions about what will happen if the District maintains the status quo: 1) after PACT moves from Castro at the beginning of 2009-10, the student population at Castro will decrease to around 500 students; 2) the student population at Castro will likely surpass 600 students within the next ten years,\textsuperscript{9} and 3) students currently being bused from the Castro neighborhood will continue to be bused to other schools.

1.2. Defining Overcrowding

In order to identify the best solution for the problem at Castro, we first had to decide how to define the overcrowding problem at Castro. There is a high degree of uncertainty among MVWSD administrators about how many students should be at Castro and at what point the school should be considered overcrowded. For the purposes of clarity, we distinguish between three different ways to think about the capacity of a school, which will be discussed in greater detail below. The physical capacity of the school is the maximum number of bodies that can fit into the facilities without violating fire codes or other legal regulations. The effective capacity of the school is the maximum number of students that can be accommodated without violating the District’s minimum standards for facilities. The equalizing capacity of the school is the maximum


\textsuperscript{9} If kindergarten enrollment continues at its current level, student roll-up will put Castro at about 600 students by 2011-12. Craig Goldman, “Castro Capacity Issues,” (presentation to the MVWSD School Board), January 8, 2008. Recent district-wide enrollment projections indicate that enrollment will continue to grow past its current levels, which is likely to increase enrollment at Castro beyond 600 students.
number of students that can be accommodated if MVWSD wants to keep conditions at Castro similar to the conditions of the other K-5 schools in the district. In this report, we will consider Castro to be overcrowded if its enrollment exceeds the effective capacity of the school’s facilities. However, we also take the school’s equalizing capacity into account as an important equity issue. It will not be used to define overcrowding, but it is one of our criteria for evaluating alternatives.

Overcrowding based on physical capacity

The most basic way to define overcrowding is to base it on the physical capacity of the school. This would be the number of people that could physically fit into the school without breaking fire and building codes and other legal regulations. The National Center for Education Statistics (NCES) bases its definition of overcrowding on a school’s physical capacity. It considers any school over 106% of its physical capacity to be overcrowded. 10 This is also the definition of overcrowding used by most academic studies of the impacts of overcrowding on student achievement. 11

For Castro, the physical capacity of the school is probably over 1,000 students. 12 This number of students would place an incredible burden on the school and the surrounding community, and at this time, MVWSD is not so tight on space that they would need to consider pushing one of its schools to its maximum physical capacity. Previous academic studies have focused on overcrowding in extreme situations, often looking at urban high schools facing huge over-enrollment and severe budget constraints. MVWSD is not in this desperate of a situation, so it is more useful to the District to focus on a more conservative measure of overcrowding.

Overcrowding based on effective capacity

The second way to define overcrowding is to base it on the effective capacity of a school. This is the definition of overcrowding that we use in this analysis. The effective capacity of a school is much lower than its physical capacity because it takes into consideration minimum

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12 There are 30 full-size classrooms (including the current computer lab) at Castro that can hold 30 students each, plus 7 smaller classrooms that can hold 20 students each (including the current YMCA and pre-school rooms). These rooms could legally accommodate 1,040 students.
standards for what the District determines to be an acceptable learning environment for students. For instance, MVWSD limits the average size of its K-3 classes to 20 students, despite the fact that the physical classrooms could accommodate many more children than that. Castro’s effective capacity should also reflect the district-wide standard that all schools should have at minimum one dedicated room for art, one library, and one dedicated room for intervention programming. The effective capacity of a school depends on the school’s physical layout and space constraints, and thus effective capacity varies between schools.

At Castro, the current effective capacity of the school is 600 students.\textsuperscript{13} This means that 600 students could be enrolled at the school without violating any of the District’s minimum standards for class size or facilities. With its current structure, enrolling more than 600 students at Castro would overburden the school’s facilities. If Castro increased its effective capacity by adding new classrooms or lifting district-wide restrictions on classroom size, then the school could enroll more than 600 students without being considered overcrowded. Increasing the number of students attending the school might cause other problems, such as exacerbating the existing parking and traffic problems or overburdening school administrators. However, the school would not be considered overcrowded so long as the student enrollment can be accommodated in the school’s facilities without violating the District’s minimum standards for what should be at the school (e.g., art room, computer lab).

**Overcrowding based on equalizing capacity**

The third way to define overcrowding is to base it on a school’s *equalizing capacity* relative to the other schools in the district. If the maximum enrollment is set equal to equalizing capacity, then the school would be considered overcrowded if its student density is higher than student density at other schools in the district. In this report, we do not use equalizing capacity to define overcrowding at Castro. We made this decision because the equity concerns from differences in student density should be weighed against equity concerns from other factors, such as the concerns of students being bused out of the neighborhood. There are important reasons why the District should consider keeping Castro’s enrollment below the effective capacity of the school and closer to an equalizing capacity, but this is a matter of equity. We discuss why MVWSD should aim for an equalizing capacity in our later discussion of our Equity criterion.

Conclusion

In our analysis, we define overcrowding as exceeding the *effective capacity* of the school. Unless the effective capacity is increased by adding new classrooms or increasing class sizes, Castro should be considered overcrowded if its enrollment exceeds 600 students. Our analysis of overcrowding under each alternative entails consideration of traffic and parking constraints at Castro. However, traffic and parking considerations are not part of our definition of capacity.
2. METHODOLOGY

This section consists of four major parts. Section 2.1, Analysis Overview, presents the rationale for the overall design of our methodology and analysis performed prior to the in-depth analysis performed within this report. Section 2.2, Evaluation Tool Design, presents the analytical framework we created to perform the analysis in this report. Section 2.3, describes the criteria that we use to evaluate alternatives. Finally, Section 2.4 describes our process for assigning weights to the criteria and ratings to the alternatives.

2.1. Analysis Overview

The first step in our methodology was to define the problem at Castro, as discussed in the previous section. Steps two and three, selecting the criteria and generating alternatives, were performed simultaneously. For these steps, we compiled a list of potential alternatives for mitigating overcrowding and a list of criteria for use in evaluating those alternatives. We compiled these lists through conversations with MVWSD administrators, a review of academic literature, and group discussion. We then refined each of those lists based on additional research and feedback from our client, Craig Goldman, Chief Financial Officer at MVWSD, and our faculty advisor, Dr. Michael Kirst, an expert in education policy.

Our review of the alternatives consisted of applying our criteria to the alternatives twice. The initial application of the criteria was designed to indicate which alternatives required additional information before in-depth analysis. During this process, we discovered that some alternatives, such as moving the YMCA preschool program, did not merit further review because they had only a negligible impact on the overcrowding at Castro. Moreover, some alternatives required specific information that was crucial to the implementation of the alternative. In the

<table>
<thead>
<tr>
<th>Analysis Overview</th>
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<tr>
<td>Step 1: Problem definition</td>
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<td>Step 2: Criteria Selection</td>
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<td>Step 3: Alternative Generation</td>
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<td>Step 4: In-depth Analysis</td>
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<tr>
<td>- Individual qualitative analysis of application criteria to alternatives</td>
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<tr>
<td>- Creation of Evaluation tool</td>
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<tr>
<td>- Application of Evaluation tool</td>
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<tr>
<td>Step 5: Recommendation of Alternatives</td>
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case of some of these alternatives, such as redefining enrollment boundaries, the information was so variable that our analysis of the alternative remains highly theoretical. This means that the ratings of some alternatives might change based on the specific implementation. Accordingly, the analysis of those alternatives is premised on certain assumptions that, if changed, would likely change our assessment of the alternative's fulfillment of our criteria.\footnote{14}

The final step of our methodology is the in-depth analysis of the alternatives presented in Section 3.3 and the selection of recommended alternatives to solve the problem of overcrowding at Castro. This step consisted of three parts. First, we analyzed the alternatives through the application of our criteria. This process gave us a clearer sense of the reasons for the strengths and weaknesses of each alternative. Second, we created the evaluation tool presented in Section 2.2. Finally, we systematically evaluated the alternatives using the evaluation tool design.

2.2. Evaluation Tool Design

This section describes the evaluation tool we use to rate and rank the alternatives. To use the tool, we first give each alternative a rating from 0 – 10 for each criterion, with zero indicating very poor performance on that criterion and 10 representing excellent performance on that criterion. We begin by rating the alternative Maintain the Status Quo, and then we assess the remaining alternatives based on their impact (negative or positive) relative to that alternative. Our ratings of the remaining alternatives can be compared with the status quo alternative to determine the degree of difference that they achieve in satisfying a given criterion.

For instance, Maintain the Status Quo is excellent in terms of the Ease of Implementation criterion (to be described below), so it receives a 10 for that criterion. All other alternatives will be rated equal or lower than the status quo in terms of this criterion. For the Equity criterion, maintaining the status quo has both negative and positive aspects, so it receives a rating of 4. Some alternatives will make the situation at Castro more equitable. Thus they would receive a rating higher than 4. Other alternatives would make the situation less equitable, so they receive a rating lower than 4.

\footnote{14 For example, the alternative of redistricting would vary greatly based on where the new lines were drawn and whether or not the addition of an additional school were part of the alternative.}
In order to ensure that the same factors were taken into consideration for each alternative when assigning scores, we identified two to six indicators for each criterion. These indicators are specific pieces of information that were collected for every alternative. Many of our indicators were used by the District in their assessment of whether to move PACT. We also included a number of additional indicators that emerged as important from our literature review and from conversations with our faculty advisor and MVWSD administrators.

Next, we give each criterion a weight reflecting its importance in the overall score—the weights for all six criteria must sum to 100. The rating for each criterion is then divided by 10 and multiplied by the weight for that criterion. This creates a weighted score for each criterion. The six weighted scores are added together to generate the overall score. A perfect score is 100, which would indicate that an alternative is excellent on all six criteria.

To calculate the overall score for an alternative, we use the following formula:

\[
\text{Overall Score} = \frac{\text{rating}(A)}{10} \times \text{weight}(A) + \ldots + \frac{\text{rating}(F)}{10} \times \text{weight}(F)
\]

In Table 1, we show an example of how the overall score is calculated, using one of our alternatives, Open a Seventh K-5 Elementary School.

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Rating</th>
<th>x</th>
<th>Criterion Weight</th>
<th>=</th>
<th>Weighted Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alleviating Overcrowding</td>
<td>10 / 10</td>
<td>20</td>
<td></td>
<td></td>
<td>20</td>
</tr>
<tr>
<td>Equity</td>
<td>9 / 10</td>
<td>20</td>
<td></td>
<td></td>
<td>18</td>
</tr>
<tr>
<td>Student Achievement</td>
<td>6 / 10</td>
<td>20</td>
<td></td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>Financial Cost</td>
<td>0 / 10</td>
<td>15</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Parent Choice</td>
<td>8 / 10</td>
<td>15</td>
<td></td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>Ease of Implementation</td>
<td>0 / 10</td>
<td>10</td>
<td></td>
<td></td>
<td>0</td>
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</tbody>
</table>

Overall Score: 62
The recommendations we offer in this report are based on our own assessments of how the criteria should be weighted relative to one another and how well each alternative meets each criterion, but the flexibility of our evaluation tool will allow the District to apply the same analytic framework to other similar problems in the future. The weights in this metric can be easily adjusted to account for variations in the relative importance an actor places on each criterion. In addition, an actor can also change the ratings that indicate how well an alternative meets a criterion. It is important to note that changing the weights can change what policy options are most attractive. In Appendix E, we show how the rankings of the policy options vary based on three different sets of weights.

2.3. Description of Criteria

We use six criteria to evaluate our seven policy alternatives: Alleviating Overcrowding, Equity, Student Achievement, Financial Cost, Parent Choice, and Ease of Implementation. The following page presents Table 2, which lists the key indicators used to assess alternatives under each criterion.

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15 The rating of the alternative's fulfillment of a criterion can be adjusted as well.
<table>
<thead>
<tr>
<th>Criterion</th>
<th>Indicators</th>
</tr>
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| Alleviating Overcrowding  | • Alleviating overcrowding at Castro  
                          | • Alleviating traffic/parking problems  
                          | • Safety  
                          | • Increasing district-wide capacity |
| Equity                    | • Keeps the student density at Castro about the same as other schools in the district in terms of square feet per student  
                          | • Potential for neighborhood kids to be reassigned to Castro  
                          | • Narrows the gap in average SES between schools in the district  
                          | • Increases outdoor space per student at Castro  
                          | • Keeps Castro about the same size as other schools in the district |
| Student Achievement       | • Academic achievement - Castro  
                          | • Academic achievement - district  
                          | • Teacher retention |
| Financial Cost            | • Low capital costs  
                          | • Low personnel costs  
                          | • Low operational costs  
                          | • Maintain lease revenue  
                          | • Minimizes transportation costs  
                          | • Low total ongoing financial impact (annual) |
| Parent Choice             | • Allows DI and/or EO programs to expand  
                          | • Allows more students to attend neighborhood school |
| Ease of Implementation    | • Time to implement  
                          | • Community acceptance and support |
Alleviating Overcrowding

This criterion assesses how well an alternative alleviates overcrowding. We use four indicators to assess this criterion: alleviating overcrowding at Castro, alleviating traffic/parking problems at Castro, safety, and increasing district-wide student capacity.

As discussed earlier, Castro is considered overcrowded if it exceeds its effective capacity. The effective capacity is the maximum number of students that can be enrolled at the school while adhering to district-wide standards for class size and facilities. The current effective capacity of Castro is 600 students. The District could increase this threshold by adding new classrooms to Castro’s campus or by lifting district-wide class size standards. Alternatively, the District could also alleviate overcrowding at Castro by reducing the number of students who are assigned to attend the school.

We also consider how well an alternative resolves the current problems with traffic and parking and how well it ensures student safety. There are a number of potential safety concerns stemming from overcrowding at the school: for instance, insufficient adult supervision per student, or too high student density in lunchrooms, playgrounds, and other shared spaces.

Since our analysis is focused on Castro specifically, these first three indicators are by far the most important in determining the overall score for this criterion. However, the district as a whole is on the verge of an overcrowding problem, so we give a slightly higher score to those alternatives that increase capacity district-wide in addition to alleviating overcrowding at Castro.

Equity

We evaluate Equity using five different indicators: 1) achieving a student density at Castro that is about the same as other schools in the district, 2) potential for neighborhood kids to be re-assigned to Castro, 3) narrowing the gap in average socio-economic status (SES) between schools in the district, 4) increasing outdoor space per student at Castro, and 5) keeping Castro’s student enrollment about the same size as other schools in the district.

Our first indicator of Equity is whether an alternative achieves a similar student density at Castro compared to other schools in the district. While Castro can “get by” with 600 students, this puts it on the verge of being overcrowded and makes the school considerably more crowded than most of the other K-5 schools in the district in terms of student density. As shown in Table 3, Castro has the smallest campus (in acres) of any school in the district. With an enrollment of 500 students, the school has more students per acre and fewer square feet of
space per student than any other K-5 school except for Bubb Elementary.\textsuperscript{16} If enrollment increases to 600, this would only exacerbate the disparity between schools.

### Table 3. Comparison of Estimated Student Density of K-5 Schools in MVWSD

<table>
<thead>
<tr>
<th>School</th>
<th>Estimated Acres</th>
<th>Projected Enrollment 2009-2010*</th>
<th>Student Density</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Students per acre</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Square feet per student</td>
</tr>
<tr>
<td>Theuerkauf</td>
<td>18.1</td>
<td>478</td>
<td>26.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1659</td>
</tr>
<tr>
<td>Landels</td>
<td>11.9</td>
<td>508</td>
<td>42.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1020</td>
</tr>
<tr>
<td>Huff</td>
<td>11.0</td>
<td>495</td>
<td>45.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>968</td>
</tr>
<tr>
<td>Monta Loma</td>
<td>10.5</td>
<td>501</td>
<td>47.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>913</td>
</tr>
<tr>
<td>Bubb</td>
<td>9.6</td>
<td>540</td>
<td>56.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>774</td>
</tr>
<tr>
<td>Castro</td>
<td>9.5</td>
<td>500</td>
<td>52.6</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>828</td>
</tr>
</tbody>
</table>


There is very little research that tests whether student density has a direct effect on academic achievement. However, one study found that third-graders in elementary schools with less than 100 architectural square feet per student performed significantly worse on standardized tests than third-graders in less crowded schools, even after controlling for potential confounding factors like minority enrollment, average socioeconomic status, teacher experience, and teacher education.\textsuperscript{17}

The California Department of Education (CDE) calculates student density using the number of students per acre. The CDE suggests that the ideal school size is 57 students per

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\textsuperscript{16} According to the official numbers, Bubb has fewer acres of space than Castro and a higher student density. However, these numbers do not include Bubb Park, which is a large park adjacent to Bubb Elementary. If Bubb Park is considered part of the campus, then Castro is by far the most crowded school in the district, even after PACT leaves.

\textsuperscript{17} Diane O’Rourke Swift, “Effects of Student Population Density on Academic Achievement in Georgia Elementary Schools,” (Doctoral Dissertation, University of Georgia, 2000).
acre; however, a school may have up to 100 students per acre.\textsuperscript{18} These are simply recommendations, and if a school can demonstrate that it is adequately serving students despite having higher than suggested density, it will be allowed to continue to operate the school.\textsuperscript{19} Because the students-per-acre metric does not distinguish between schools with one story and schools with multiple stories of classrooms, we think it is less useful than the square-feet-per student metric. However, it is relevant to note that using California’s recommended metric, the optimal size of Castro would be about 540 students.\textsuperscript{20}

Our second indicator is whether the alternative would create the potential for some of the 300 students in the Castro neighborhood who have been assigned to other schools to be re-assigned to Castro. As noted in the Policy Issue section, there are a number of reasons why it is good to minimize busing out of Castro neighborhood. The current arrangement results in high transportation costs to the district, dissatisfaction among parents who would prefer their children to attend the neighborhood school, and a number of negative effects on students’ education. Busing students longer distances impedes parental involvement in the school, limits access to after-school enrichment and extracurricular activities, discourages kindergarten enrollment, and may even have a direct negative effect on student achievement.\textsuperscript{21}

Our third indicator for this criterion is whether an alternative decreases the gap in average SES between schools in the district. This SES gap is an equity concern because high-SES schools offer a higher quality of schooling than low-SES schools. Previous studies have shown that a student will perform better if he attends a high-SES school than he will perform if he attends a low-SES school, regardless of his own SES.\textsuperscript{22}

The fourth indicator is whether the alternative increases the amount of outdoor space per student at Castro. This is an equity concern because currently Castro has the smallest absolute amount of outdoor space of all the schools in the district.

\begin{flushright}
\textsuperscript{19} California Department of Education. http://www.cde.ca.gov/ls/fa/co/overcrowdedschools.asp
\textsuperscript{20} This is calculated by multiplying the size of Castro’s campus, 9.5 acres (Facilities needs Assessment Report, Mountain View School District, November 1997), times the optimal recommended of 57 students per acre.
\end{flushright}
The fifth indicator for the Equity criterion is whether it makes Castro’s student enrollment about the same size as other schools in the district. The findings from studies of the impact of school size on student achievement have been mixed. Some studies have found a negative relationship between school size and achievement, but others have found no relationship.\textsuperscript{23} Some researchers have concluded that the optimal size for an elementary school is somewhere between 300 and 500 students, but this conclusion is variable based on factors such as the average SES of the students.\textsuperscript{24} When researchers have found positive effects of smaller schools, those effects have been greater for low SES students.\textsuperscript{25} This would suggest that a school like Castro that serves many low-SES students would be particularly sensitive to the impacts of a larger school.

There are several reasons to discount the potential negative effect on achievement from school size itself. For one thing, some studies have found no effects of school size at all. However, there are other reasons more specific to MVWSD. Administrators have noted that in their experience, school size has not had any noticeable impact on achievement. In addition, Castro also has two distinct programs within the school, so some of the potential negative effects of school size might be mitigated. For instance, researchers have hypothesized that one reason small schools do better is because teachers and administrators are more likely to know every student’s name.\textsuperscript{26} Splitting the students into two distinct groups within the school, as they are at Castro (i.e. EO and DI), ensures that children are in this type of “personalized” environment, even though the overall size of the school is much larger. For these reasons, we give greater emphasis in our analysis to equality in terms of student density rather than absolute school size. However, because there is some evidence that in some cases smaller schools have been better, we include this indicator in our analysis because if all else is equal, preference should be given to an alternative that equalizes school size across schools.

Student Achievement

This criterion evaluates the impact of an alternative on academic achievement at Castro and throughout the district. Student achievement is considered mainly in terms of test scores. We will also consider the alternative’s likely effect on teacher retention. One consequence of the current overcrowding situation at Castro is its effect on teacher turnover. The crowded, stressful environment is too much for many teachers to handle, and thus Castro has struggled to retain high-quality teachers and maintain stability in its faculty. Administrators feel this is an important concern for student achievement.27

Financial Cost

This criterion evaluates the financial cost to MVWSD of implementing a particular alternative. We estimate the expected impact on capital costs, personnel costs, operational costs, lost lease revenue, transportation costs, and the total ongoing annual financial cost.

Parent Choice

This criterion assesses whether an alternative increases parents’ ability to make choices about their children’s education. The school board aims to maintain as much parent choice as possible in the district, both in terms of the school a child attends and what program the child enrolls in. We will look at two main indicators of Parent Choice. First, we will assess whether the option would allow the Dual Immersion and Castro’s English Only programs to expand. Currently both programs have higher demand than they are able to accommodate, so expanding the programs would allow more parents to enroll their child in their top choice program. We will also look at whether the alternative allows more students in the district to attend their neighborhood school.

Ease of Implementation

This criterion will evaluate how easily an alternative can be implemented. We will consider how long the alternative will take to implement and the expected level of support and acceptance from the community.

2.4.  Evaluation Tool Application

In order to assign ratings and weights in the most objective way possible, each author
began by individually assigning ratings and weights based on the qualitative analysis performed
in part one. Then we combined our individual rankings through a two-step process. The first
step consisted of reaching a consensus on the correct ordering of each of the alternatives in
terms of fulfillment of a criterion. The second step consisted of reaching a consensus on the
score of each alternative using the same zero to ten scale used in the original individual scoring,
based on the rankings created in part one of this in-depth analysis. This process was repeated
for each criterion. Third, we combined feedback from the client with our own assessments of the
relative importance of the criteria by reaching a consensus on the appropriate weight of each
criterion. This gave us weights to apply to the criteria, which enabled us to order the alternatives
based on overall attractiveness.
3. ANALYSIS

In this section, we present the results of our analysis. First, we present the weights we assigned to the six criteria, and discuss the reasons for this weighting scheme. Then, we present the analysis of seven policy alternatives.

3.1. Criterion Weights

Table 4 shows the weights that we assigned to the six criteria. We gave the greatest weight to Alleviating Overcrowding, Equity and Student Achievement, with a weight of 20 (out of 100) each. We weighted Alleviating Overcrowding highly because it is the central focus of our paper, and we weighted Equity and Student Achievement highly because they are District's two highest priorities. Financial Cost and Parent Choice receive weights of 15 each. Ease of Implementation receives a weight of 10. These weights are informed by the fact that the District is currently considering long-term options for addressing overcrowding at Castro. It is currently developing a ten-year Master Plan, which will likely culminate in a bond initiative. Because of the long-term nature of its considerations, the District is likely willing in its considerations to emphasize overall District objectives, such as enhancing its students' overall educational opportunities, over more logistic issues, such as Ease of Implementation.

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alleviating Overcrowding</td>
<td>20</td>
</tr>
<tr>
<td>Equity</td>
<td>20</td>
</tr>
<tr>
<td>Student Achievement</td>
<td>20</td>
</tr>
<tr>
<td>Financial Cost</td>
<td>15</td>
</tr>
<tr>
<td>Parent Choice</td>
<td>15</td>
</tr>
<tr>
<td>Ease of Implementation</td>
<td>10</td>
</tr>
</tbody>
</table>
3.2. Analysis of the Alternatives

In this section, we analyze seven policy alternatives using the six criteria discussed in the previous section. Our findings are summarized in Table 5. The first alternative presented, Maintain the Status Quo, which serves as our baseline and the rest of the alternatives are presented in rank order. More detailed tables showing the findings for all of the indicators are provided in Appendix B.

Table 5. Summary of Alternative Ratings

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Overall Score**</th>
<th>Weight</th>
<th>Alleviating Overcrowding</th>
<th>Student Achievement</th>
<th>Equity</th>
<th>Financial Cost</th>
<th>Parent Choice</th>
<th>Ease of Implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintain the Status Quo (baseline)</td>
<td>50.5</td>
<td>62</td>
<td>62</td>
<td>56.5</td>
<td>54</td>
<td>49</td>
<td>49</td>
<td>32</td>
</tr>
<tr>
<td>Expand at New Site</td>
<td>62</td>
<td>10</td>
<td>9</td>
<td>4</td>
<td>3</td>
<td>5</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Expand at Current Site</td>
<td>62</td>
<td>5</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Move DI to Landels</td>
<td>56.5</td>
<td>4</td>
<td>9</td>
<td>8</td>
<td>5</td>
<td>6</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Redefine Enrollment Boundaries</td>
<td>54</td>
<td>5</td>
<td>4</td>
<td>9</td>
<td>6</td>
<td>3</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Implement Multitrack Year-round calendar</td>
<td>49</td>
<td>5</td>
<td>3</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Eliminate Class Size Reduction</td>
<td>32</td>
<td>3</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>6</td>
<td>3</td>
<td>8</td>
</tr>
</tbody>
</table>

**Overall scores are calculated based on the following equation: Overall Score = \sum \text{weight[A] x rating[A] / 10} + \ldots + \text{weight[F] x rating[F] / 10}.

As shown in Table 5, based on our analysis, the best alternatives are Open a Seventh K-5 Elementary School and Expand at the Current Site. The options Move Dual Immersion and Redefine Enrollment Boundaries are also ranked higher than maintaining the status quo. Two alternatives are worse than maintaining the status quo: Implement Multitrack Year-Round Calendar and Increase Class Size. In the analysis below, we first discuss the alternative
Maintain the Status Quo, since it is the baseline for assessing all of the other alternatives. Then, we discuss the remaining six alternatives in order of attractiveness.

A. Maintain the Status Quo

Castro’s student population will be 500 students starting in 2009-10, after PACT relocates. District estimates indicate that if current kindergarten enrollment levels continue, total enrollment at Castro will increase until leveling out at 600 students in 2011-12. However, a recent demographic analysis predicts that district-wide enrollment will increase by 5 to 10% over the next ten years. This growth is likely to cause student enrollment at Castro to rise above 600. Moreover, the 600 number does not include the number of bused children from the Castro neighborhood, which currently includes 300 students. Maintain the Status Quo does nothing to alleviate overcrowding and very little in addressing equity concerns or student achievement. It is however easy to implement and has no financial cost associated with it.

Alleviating Overcrowding (Rating: 0)

Maintaining the status quo will do nothing to alleviate overcrowding either at Castro or for the district as a whole. Students will continue to be bused from Castro to other schools, potentially creating burdens at those sites. For instance, Bubb Elementary currently receives most of Castro’s bused students and presently has student numbers slightly above 500. The number of students bused from Castro may increase if Castro’s neighborhood population continues to grow. Meanwhile, the parking and traffic issues at Castro would continue to be problematic.

Equity (Rating: 4)

Maintaining the status quo leaves Castro worse off than other schools in the district. Having significantly lower student populations at other schools while Castro increases to 600 or more students heightens concerns about inequity. Under the status quo, Castro would continue

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28 Estimates based on rolling up current Kindergarten enrollment at Castro.
to have the least amount of green space of all the schools in the District and would not be able to accommodate more neighborhood kids who would like to attend the school.

**Student Achievement (Rating: 5)**

Test scores for Castro will probably decline after PACT moves to its own campus. For the 2007-08 school year, the academic performance of PACT students was significantly higher than the academic performance of the other students at Castro. Fifty nine percent of the students in the PACT program received California Standardized Testing scores that were considered by the State to be either Proficient or Advanced, and only 16% of the students in PACT received scores that were Below Basic or Far Below Basic. In contrast, only 35% of the students in the English-Only program received scores that were Proficient or Advanced, and 36% were Below Basic or Far Below Basic. More detailed information about the academic performance by program at Castro is presented in Appendix C.

A likely explanation is that, on average, higher SES students exhibit higher academic performance than lower-SES students. Castro has a greater number of high SES students in the DI and PACT programs than in the EO program. When PACT leaves, many of Castro’s high-SES students will leave with it, which will likely lead to a decrease in the school’s overall scores. However, with more space for intervention programs, such as one-on-one tutoring for underperforming students, library space and computer labs, we assume that DI and EO will both make academic gains.

**Financial Cost (Rating: 10)**

There would be no lost lease revenue or capital cost associated with maintaining the status quo. The expected impact on transportation costs would remain the same.

**Parent Choice (Rating: 5)**

The EO and DI programs offered at Castro would not be able to expand, since enrollment will increase to 600 by 2011-12. Furthermore, this alternative leaves many families unable to attend their neighborhood school.

**Ease of Implementation (Rating: 10)**

Maintaining the status quo is the easiest to implement in terms of time. There are no significant changes to be made that would warrant extreme measures by the District.
B. Open a Seventh K-5 School at a New Site

If school enrollment continues to increase at its current pace, opening a new K-5 school at a new site may be the most promising long-term solution to alleviate the overcrowding problem. This option would be very effective at alleviating overcrowding as well as enhancing student achievement, equity and parent choice. However, this alternative would involve high financial costs and would potentially encounter resistance from the Mountain View community.

There are several options for where the new school would be located. The District has three properties that it is currently leasing to other organizations: Slater School, which was closed in 2006 and leased to Google; Whisman School, which has been leased to the German School of Silicon Valley since 1999; and Cooper School, which is leased to a day-care facility. Unfortunately, none of these schools are located within or near the Castro neighborhood, but opening a seventh school anywhere in the district could allow students to be moved around to ease the strain on Castro.

Another option would be for the District to acquire new land and build a brand new school. This would be more expensive, but could allow the school to be much closer to the Castro neighborhood and could alleviate overcrowding more effectively at Castro specifically. The District could buy new land outright, or it could perform a land-swap, trading land that it already owns for new land elsewhere in the area.

With any of these options, the addition of a new school would almost certainly involve redistribution of the students in the district through redefining enrollment boundaries.

Alleviating Overcrowding (Rating: 10)

In addition to allowing Castro to decrease its number of students, this alternative would increase district-wide student capacity more than any other alternative. In addition, building a new school would decrease commuter traffic around the Castro school, which could increase safety for students at Castro.

30 Slater School is approximately 2.9 miles east of Castro; Whisman School is approximately 2.7 miles northeast of Castro, and Cooper School is 3.2 miles southeast of Castro.
Equity (Rating: 9)

Building an additional school in or near the Castro neighborhood would enhance equity. It would create substantially more space per student for the district as a whole, allowing the District to equalize the number of square feet per student, the amount of outdoor space per student, and the overall size of the K-5 schools. If the school is not located in or near the Castro neighborhood, then it might not allow the 300 students currently bused out of Castro to attend their neighborhood school. However, opening a school at a seventh site may allow more students throughout the district to attend their neighborhood school.

Student Achievement (Rating: 6)

If the District builds a new school, it might affect student achievement positively in two ways. First, for neighborhood students currently bused to other schools, the distance between students and their school could be decreased. Since mobility is negatively correlated with student achievement, this could increase student achievement.\(^{31}\) Second, if the new school received new technology, teachers could teach students more effectively. Meanwhile, impacts on teacher retention are likely to be positive, because their classrooms and shared spaces will be less crowded and congested. Opening a new school would make all of the district’s schools less crowded, improving the educational environment at all of the schools in the district.

Financial Cost (Rating: 0)

The financial cost associated with this option is by far the highest of all of our alternatives. Specifically, we estimate that total cost (capital cost + personnel cost + indirect cost) for this option would be around $31.1 million. With respect to capital cost, according to American School and University Education Construction Report 2008, new school construction cost for an elementary school is $21,176 per student.\(^{32}\) Hence, the construction cost for a 500-student school is $10.6 million. Assuming the school would have 73 square feet per student, which is the median square feet per student of elementary schools that received funding from the California’s School Facility Program in 2006; the district would need more than 36,500 square feet of land for a 500-student school.\(^{33}\) Trulia, a real estate website, shows that average


price in Mountain View in Oct-Dec 2008 is $514 per square feet.\textsuperscript{34} Thus, we estimate a cost of around $18.7 million ($514 \times 36,500 \text{ square feet}) to buy land for a new school. Total capital cost is estimated to be $29.3 million ($10.6 million+$18.7 million). Assuming that a new school needs 10 full-time teachers, 3 other certified employees and 10 classified staff, labor costs would be approximately $1.5 million.\textsuperscript{35} Regarding indirect costs (including general administration costs, centralized data processing, plant maintenance and operations), assuming a new school accommodates 500 students, indirect costs would amount to about $289,500 (500 students \times \text{ indirect costs per student: $579}).\textsuperscript{36} Thus, the total cost to the district is estimated to be $29.3 million + $1.5 million + $0.3 million = $31.1 million.

**Parent Choice** (Rating: 8)

If a new school is built, it is highly likely that both EO and DI would subsequently be reassigned between the schools so that both programs would have more space to expand, thereby increasing parent choice. Also, building a new school in or near the Castro neighborhood would allow a large portion of the students currently being bused out of Castro’s neighborhood to attend a neighborhood school. The rating of this alternative on this criterion is high because it would allow EO and DI to expand, thus increasing parents’ choice with respect to educational program and site.

**Ease of Implementation** (Rating: 0)

Given the time likely required to find appropriate property and construct a new building, this option would take the longest time to implement among all the alternatives. With respect to financial costs, it is possible for the district to finance a new school by selling property and issuing bonds. However, purchasing new land to accomplish this option would be likely to face strong opposition from parents because the District has several school sites currently leased to other parties.


\textsuperscript{35} Calculated by authors, using information in Mountain View Whisman School District Annual Report March 20, 2008 and Unaudited Acutuals Financial Reports2007-08 Unaudited Actuals School District Certification:

- Teachers: $15,141,229 (Total Certified Teachers Salaries 07-08)/230 teachers=$65,831
- Other Certificated Staff: $2,850,004 (Total Certified Salaries excluding teachers)/34=$83,823
- Classified Staff: $ 5,483,817 (Total Classified Salaries 07-08)/151=$36,316
- Average health and welfare benefits per full-time employment: $ 10,440

C. **Expand at the Current Site**

This alternative would involve a full redesign of the Castro campus with the intention of accommodating a larger population of students. Simply adding an additional building would be insufficient to ensure that the site could adequately serve an increased number of students. One possible concept of a redesign at Castro is analyzed here. This concept increases the overall number of students at Castro, but maintains the small school feeling by basing the redesign on creating a more obvious physical distinction between EO and DI. This redesign would involve multi-story buildings in order to increase effective capacity. In this redesign, the functions of the programs would remain the same, but there would be dramatic changes to the facilities based on the site.

**Alleviating Overcrowding (Rating: 9)**

This alternative could significantly mitigate the issues of traffic congestion and strain on the lunchroom and playground areas at the school. For example, this alternative could be structured to include additional construction, such as the creation of a below ground parking structure, which would mitigate traffic congestion, provide more room for student drop-off and pick-up and increase playground space. For example, Stanford University recently built a 1000 parking space below ground garage with a full athletic field on top in order to provide much needed parking while retaining green space.

**Equity (Ranking: 8)**

Assuming that there are not major negative effects of increasing student density, or that these effects are mitigated by breaking the campus into two units, this alternative could bring positive effects to Castro. Increasing capacity through physical renovations would dramatically increase Castro's capabilities in several ways. First, it would be able to offer intervention programs in appropriate spaces. Second, it would be able to allow students greater access to other enrichment services such as in-school tutoring. Finally, it would allow the Castro neighborhood school the capacity to serve more of the students in its neighborhood. This alternative would aid in alleviating district-wide overcrowding by giving the district more capacity as a whole.

Assuming the District wishes to maximize the amount of outdoor play space available, the most likely type of construction would involve some two-story buildings.
a plan, it would be crucial for the District to avoid problems such as excessive noise that plague some of its other two story buildings.\textsuperscript{37}

**Student Achievement** (Rating: 6)

Little research has been done to determine the specific impact of different overall school size on student achievement. Findings have indicated that 300-500 students per school may be optimal. Research also indicates that extremely large schools of 1000+ students are not ideal, but it does not tackle the issue of 600 students versus 400, especially when class sizes themselves are equal.\textsuperscript{38} Much of the research on the benefits of small schools indicates that it is due to a greater sense of community and accountability among all of the various stakeholders in the school because there are fewer actors involved. This alternative accounts for this potential uncertainty by maintaining the small school feel of 300-500 students by the dividing the overall larger Castro into two parts.

One way to achieve that sense of community would be through building the new construction in such a way that there are two separate schools on the site. Given that DI and EO already operate as separate schools on the Castro campus, this would not be a major change for the students. Indeed, the programs currently cooperatively co-exist on the site, and creating a formal division between the schools has the potential to be divisive. However, a redesign of the current Castro site would also present an opportunity for community building because the district could involve the populations served by the buildings in the design process. It would also give teachers, other educators, and support staff a chance to weigh in on the physical facilities needed to allow students to learn.

The success of this alternative would depend on the community's acceptance, especially from the teachers and staff who educate and take care of the students on the site. Allowing the teachers and staff to play a substantial and meaningful role in the redesign is likely to increase their connection with school, ensure that they have the appropriate physical facilities to succeed, and increase the probability that they would remain at Castro.

\textsuperscript{37} Authors' conversation with district administration regarding feasibility of two story buildings. (December 2008). The second level of Crittenden Middle school is not used due to lack of soundproofing between the first and second floor classrooms and safety concerns.

Financial Cost (Ranking: 1)

Any version of this alternative is almost certainly the second most expensive considered alternative in terms of capital costs. Opening a new school would be more expensive, because although the construction costs would be similar, that alternative would involve a land cost. A new physical structure at Castro is likely to have lower ongoing operating costs than the current facilities at the site given advances in school design and construction practices. For example, Cesar Chavez Elementary School in Long Beach, California has capacity for over 800 students on a 2.6-acre site with 90 square feet per student. The 65,000 square foot building is notable due to its construction based on sustainable building practices, such as maximization of natural light and recycled building materials.

Parent Choice (Ranking: 9)

Constructing at Castro rates extremely high on the criterion of Parent Choice because it would allow more Castro neighborhood parents to select Castro as their child's elementary school. Moreover, increasing the capacity of Castro would allow both DI and EO to expand, which is highly desirable to many parents.

Ease of Implementation (Ranking: 1)

This alternative would obviously take a significant amount of time. Depending on the specific nature of the redesign, the majority, if not the entirety, of the site may need to be leveled to make way for the new design. The duration of the construction is likely to have a significant impact on the level of community support for the project. A primary implementation question will be what to do with Castro's students. One possibility would be to move the students to one of the district's unused or leased facilities while the construction is occurring. The second issue of implementation would be the impact of the construction on the neighborhood. Nearby residents may be resistant to the noise, traffic, and general inconvenience of a longer-term construction project. However, the construction benefits the residents of the Castro neighborhood because a new school is likely to increase property values. In addition, most of the community is likely to perceive the benefits of Castro's ability to serve more of the neighborhood students as outweighing the costs of the inconvenience of the construction.

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39 Learning by Design, "Award Winning Early Childhood and Elementary Schools," www.learningbydesign.biz, (last accessed, Jan. 29, 2009). Another example is Florence Griffith Joyner Elementary School in San Diego, CA, which has a capacity of 700 students on a 6.5 acre lot with 78.1 sq. ft per student.
D. Move Dual Immersion to Landels

Another alternative for dealing with overcrowding at Castro involves moving the school’s Dual Immersion program to an alternate location. DI has indicated its desire to expand its program to accommodate more students and more grade levels. It has voiced its opposition to proposals that would split the DI program between schools. The District has informed us that if DI were to move from Castro its most likely destination would be Landels Elementary, since that is the only other school with a large enough enrollment of Spanish-speaking students to support the program. We therefore consider the alternative of moving DI to Landels. For the purposes of the analysis below, we assume that such a move would result in Castro accommodating approximately 150 students who are currently bused out of the neighborhood, and could be accomplished at relatively low cost. However, it would have only neutral impacts on alleviating overcrowding, student achievement, and equity concerns at Castro.

Alleviating Overcrowding (Rating: 5)

DI’s current enrollment at Castro is 300 students. Of these, roughly 50% are native English speakers and 50% are native Spanish speakers. Most of the English speaking students in DI travel to Castro from outside the Castro enrollment area to attend the program. Conversely, most of DI’s Spanish speaking students come from within the school’s enrollment area. The District believes that if DI moves from Castro to Landels, most English speaking students in DI will move with the program, since they are already commuting to Castro. Meanwhile, the district senses that many Spanish speaking students in DI will choose to remain at Castro, rather than move with DI if it moves to Landels. Thus, in our analysis of moving DI, we use the conservative estimate that moving DI will result in a 150-student population reduction at Castro.

Moving DI would also remove the daily traffic demands of many English-speaking DI participants who commute to Castro each day. If DI were to move from Castro, DI participants from outside the Castro neighborhood would likely continue to participate in the DI program at its new location since they are already driving to Mountain View for school. Meanwhile, many

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families from the Castro neighborhood whose children currently attend DI walk, rather than drive, their children to school each day. If the commuting DI students are replaced by students from Castro’s neighborhood who tend to walk to school, then traffic demands at the school will decrease for the foreseeable future. Decreased commuter traffic could also improve safety at the school. While moving DI would alleviate overcrowding at Castro, it would not increase district-wide capacity.

**Equity** (Rating: 5)

Moving DI to Landels could in some ways create a more equitable situation at Castro. Approximately 300 students from the Castro neighborhood are currently bused to other schools in the district. If DI were to move to Landels, Castro’s EO program could add more classrooms at each grade level to accommodate up to half of these bused students. Research suggests that students may perform better academically when they attend neighborhood schools.

However, moving DI would also have downsides in terms of equity. Currently, 311 students participate in DI at Castro – almost 48% of Castro’s current student body. Roughly 50% of DI’s students are native English-speaking, higher-SES students, and most of these students live outside Castro’s enrollment boundaries. Conversely, the Spanish-speaking students in DI come almost entirely from within the Castro enrollment boundaries and are generally of lower-SES than their inter-district counterparts.

As described above, moving DI to Landels would essentially remove around 150 English-speaking students from Castro. This would lead to a higher concentration of low-SES students at Castro, exacerbating the school’s low-SES segregation.

There is another potential equity concern associated with moving DI students out and expanding the EO classes. This is because Castro currently functions as essentially two different 300 student schools, but the expansion of EO would create one 600 student school. As noted in our Criteria section, some of the possible negative effects of large schools may be mitigated by Castro having two distinct programs within its school. If DI is moved out and EO increased to 600 students, Castro might be more likely to experience negative effects from a

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43 Judy Crates and Craig Goldman, conversation with authors, Nov. 14, 2008.
large school size. Accordingly, it is unclear whether this alternative would be helpful or harmful in terms of equity.

**Student Achievement (Rating: 4)**

Despite its low English scores among low-SES students, DI as a whole outperforms Castro’s EO program (see Figures 1 and 2 in Appendix C). If DI were to move to Landels in the immediate future, Castro’s measured academic performance in the short term would likely decline. Castro would lose a significant number of its higher performing students, and would retain a disproportionate number of low performing students. Castro’s recent achievement gains as a school may be halted or reversed if DI moves before EO is able to achieve greater academic success as a program.

Moving DI could also have a slightly negative impact for the district as a whole. Previous nationwide studies of Dual Immersion programs have consistently shown that the programs have a positive impact on the achievement of participants. One study of five different DI programs found that the positive effects were higher for low-SES students. If it is true that DI programs are effective at cancelling the negative effects of SES on student achievement, then the best site for DI (in terms of student achievement) is at Castro. In MVWSD, the English-speaking participants in the DI program come from mostly outside of the host school’s enrollment area, while the Spanish-speaking students come primarily from within the host school’s enrollment area. Since the Latino population in the Castro neighborhood has lower family earnings and a higher poverty rate than the Latino population in the Landels neighborhood, moving the program would hurt the achievement of Castro students more than it would benefit students at Landels (see Table 6). The result would be a net achievement loss for the district.

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<table>
<thead>
<tr>
<th></th>
<th>Median Family Earnings</th>
<th>Poverty Rate</th>
<th>Latinos who speak English only</th>
<th>Latinos who speak English not at well or Not all</th>
</tr>
</thead>
<tbody>
<tr>
<td>Castro</td>
<td>43,752</td>
<td>22%</td>
<td>10%</td>
<td>37%</td>
</tr>
<tr>
<td>Landels</td>
<td>54,815</td>
<td>11%</td>
<td>23%</td>
<td>23%</td>
</tr>
</tbody>
</table>

Source: U.S. Census 2000
Note: the census tracts do not line up exactly with the school enrollment boundaries, so these are approximations only. Castro = Census Tracts 5094.03, 5094.04, 5095. Landels = Census Tracts 5091.05, 5091.08, 5091.09, 5096, 5097.

However, discussions with administrators suggest that the literature results may not apply in MVWSD. They claim that Latino students at Castro perform equally poorly, regardless of which program they are enrolled in.⁴⁷ Data from the 2007-08 school year provide some support for these claims (see Figures 3 and 4 in Appendix C). Socioeconomically-disadvantaged students in the DI program at Castro have lower scores than socioeconomically-disadvantaged students in the EO program in Language Arts. On the other hand, in mathematics, DI students outperform the EI students. One year of achievement data does not allow us to make decisive statements about the effect of DI on socioeconomically-disadvantaged students. However, if Castro’s administrators are correct in their observation that DI has not significantly affected the effect of low SES on student achievement, then moving the program may not affect student achievement within the district.

Moving DI to Landels could have a range of effects on teacher retention within DI. If the program moves, some teachers may become disgruntled with the burden of moving to a new location. Some may object to being relocated away from the most heavily Hispanic population base in MVWSD. These difficulties may lead to increased teacher attrition. However, if moving DI to Landels provides the program with increased resources and with the ability to expand its programming, then more DI teachers may remain with the program. Attention would need to be given to teacher interests in DI near the time of a proposed move to concretely determine the expected level of teacher retention in the program.

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⁴⁷ Judy Crates, conversation with authors, Nov 14, 2008.
Financial Cost (Rating: 8)

Moving DI from Castro to Landels would involve an estimated $100,000 in capital costs to MVWSD in the first year, including the construction of new restroom facilities at Landels to accommodate DI students. The move would cost an additional $220,000/year in personnel expenses for a part-time vice principal, library secretary, and custodian, and for an additional full-time secretary. Operational costs are not expected to change at Landels or Castro. No lease revenue will be lost if DI moves to Landels. The total ongoing financial cost to MVWSD of moving DI to Landels is anticipated to be $320,000 in the first year, and $220,000/year thereafter.\(^\text{48}\)

Parent Choice (Rating: 7)

DI has periodically expressed a desire to expand its program in the future. Expansion of DI at Castro may be difficult, particularly if Castro’s EO program seeks to expand as well. As mentioned above, enrollment at Castro is expected to increase to approximately 600 students by 2011-12. If MVWSD seeks to maintain an enrollment threshold of 600 students at Castro, then neither DI nor EO will be able to significantly expand in the long term. However, if DI moves to Landels and MVWSD maintains an enrollment threshold of 600 students at Castro, then EO will be able to expand by approximately 150 students in the long term. In addition to opening space at Castro, the District has indicated that moving DI to Landels would enable DI to expand.\(^\text{49}\) Such a move would thus enable greater parent choice between programs, since both DI and EO would be able to maintain shorter wait lists for families wishing to enter each program.

Ease of Implementation (Rating: 6)

While it may take a significant amount of time for the district to arrive at a decision about moving DI to Landels, the actual amount of time required to perform this move would likely be minimal. Some facilities improvements, including the construction of a modular restroom, would be required before the move could occur.

Moving DI from Castro to Landels could result in significant resistance from DI administrators and members of the public. Both parties might raise concerns about the fairness

\(^\text{49}\) Craig Goldman, conversation with authors, Oct 24, 2008.
of relocating the program from the Castro enrollment area, given that the program has the
potential to disproportionately increase performance among low-SES students. Controversy
also might arise over the achievement gains actually realized by DI in Castro.

E. **Redefine Enrollment Boundaries**

Another way to alleviate overcrowding at Castro would be to redefine the enrollment boundaries for K-5 schools in the district. This is the method that MVWSD has used in the past to control the size of Castro, and it has resulted in reassignment of students in the Castro neighborhood to other schools. Castro is already the school with by far the smallest enrollment area of all the schools in the district. In fact, its enrollment area is already about half the size of the next smallest enrollment area (Theuerkauf). The District could continue to chip away at the edges of Castro’s boundaries to manage the size of Castro’s enrollment. However, this would increase the number of students who live within walking distance of the school but have to be bused elsewhere in the district. While this alternative does well in terms of financial cost and ease of implementation, it is one of the least effective at alleviating overcrowding.

**Alleviating Overcrowding (Rating: 3)**

This alternative receives a low rating for this criterion. Redefining enrollment boundaries would alleviate overcrowding at Castro relative to maintaining the status quo, but it does not increase district-wide capacity.

**Equity (Rating: 6)**

When the District changed enrollment boundaries in the past, they have increased SES differences between schools. However, this is not a necessary result, and the boundaries could even be altered to decrease SES-segregation.

This alternative would decrease differences in the learning environment between Castro and the other schools in the district (by increasing space for programming and decreasing student density). However, it would also increase inequality by requiring even more students to attend schools located farther from their homes than are required to do so under the status quo.
**Student Achievement** (Rating: 5)

Adjusting enrollment boundaries would have a minimal impact on student achievement. If the District manages enrollment pressures by adjusting enrollment boundaries every few years, there might be a negative impact on student achievement. A study by David Kerbow showed that students who experience high mobility among schools tend to exhibit lower academic performance. One move should not have a noticeable impact on scores, but if the District continues to deal with overcrowding by moving students around from school to school every couple of years, this could be disruptive to some students’ education and result in a slight decrease in their academic performance.

**Financial Cost** (Rating: 9)

Redefining enrollment boundaries would have a smaller financial cost than many of the other alternatives. Other than small costs associated with the process of redrawing the lines and informing the community of the boundary changes, the only increased costs would come from possible busing increases.

**Parent Choice** (Rating: 3)

This alternative receives a low rating for the Parent Choice criterion. Parents in the Castro neighborhood prefer to send their children to the neighborhood school, and redefining enrollment boundaries would allow fewer of them to do so. It would also prevent either the EO or DI programs from expanding as they wish.

**Ease of Implementation** (Rating: 8)

Redefining enrollment boundaries would be easier to implement than most of the other alternatives. It could be accomplished over the course of two or three board meetings, and it is unlikely to face much resistance from the community. Administrators have noted that parents in the Castro neighborhood have not voiced much protest in the past when the District has altered enrollment boundaries. Of course, the more significant the changes to boundaries throughout the district, the more resistance the changes would probably encounter. However, compared to all of other alternatives except for Maintain the Status Quo, this alternative could be implemented with a fair amount of ease.

51 Craig Goldman, conversation with authors, Oct 24, 2008.
F. Implement Multitrack Year-Round Calendar

One way for schools to deal with overcrowding is to switch to a multitrack year-round calendar. With a multitrack calendar, students are split into three or more tracks, and one track is on vacation at any given time. Multitrack calendars are generally considered a short-term solution to overcrowding. Most districts would prefer to use a traditional calendar, but for schools faced with space constraints they are often better than solutions like holding classes in the cafeteria or installing portable classrooms.52

Multitrack calendars became very popular in California and throughout the United States within the past twenty years, but in recent years their popularity has waned. During the 2003-04 school year, there were 809 elementary schools in 91 different school districts using multitrack year-round calendars.53 By 2007-08, this number had dwindled to 446 schools in 63 districts.54 In recent years, the state has provided money to schools implementing multitrack calendars, but most of the schools receiving this funding are expected to return to traditional calendars by 2012-13.55 The decline is probably because many schools have been able to increase capacity in the past several years. In 2000, California passed a ballot measure making it easier for districts to get bonds. As a result, many districts that had switched to a year-round calendar were able to expand or build new schools, allowing them to revert back to more traditional calendars.56

The effectiveness of a multitrack calendar depends on how it is implemented. In California, the calendar that was adopted by many of the most severely overcrowded schools was the Concept 6 calendar, which increased capacity by decreasing the number of days each student attends school from 180 to about 160 and lengthening the school day to make up for lost instructional minutes. These calendars became popular among the most overcrowded school districts, because they increase the capacity of a school by 50%. However, calendars that decrease the number of school days in a year have been shown to have significantly

negative impacts on student achievement, and in 2004, a California court ruled that all schools should phase out the Concept 6 calendar by 2012.57

There are many alternatives to the Concept 6 calendar that do not reduce the school year below 180 days, and have not been shown to have the same negative impacts on student achievement. In California today, the most popular type of multitrack calendar is the 60/20 plan, meaning that students attend school for three periods of 60 days (12 weeks) interspersed with vacations of 20 days (4 weeks).58 The 180-day multitrack calendars do not increase capacity by as much as Concept 6, but they still increase it by 25 to 33%. Appendix D provides a table comparing the characteristics of the four plans most commonly used by elementary schools in California.

The analysis in this section assumes that Castro would adopt a multitrack year-round calendar that does not reduce the number of school days below 180. It would be possible for MVWSD to implement a multitrack calendar district-wide. This would increase district-wide capacity significantly, and it would reduce the equity concerns that would arise from imposing an unpopular calendar on the students and teachers of only one school. However, since our analysis is focused on Castro specifically, we only assume that it would be implemented at Castro. In researching this alternative, we found that it was not unusual for school districts to use multitrack calendars at some schools and not others.

The analysis draws mainly from the academic literature and past policy research on multitrack calendars, but we also attempted to contact administrators from school districts that currently use multitrack calendars, or that have used them in the past. We received feedback from two school districts that have switched back to traditional calendars—the Frances Howell School District in St. Charles, Missouri, and the Orange County Public School District in Orange County, Florida.59 Both districts reported that a more traditional calendar is preferable to a multitrack calendar, presumably because multitrack calendars are unpopular among teachers

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59 Frances Howell School District has more than 8,000 K-5 students. Ninety percent of the student body is white, and 5.7% is black. Eleven percent of students qualify for free or reduced-price lunch (Missouri Department of Elementary and Secondary Education 2008). Orange County Public Schools is one of the largest school districts in the country, with 121 K-5 schools serving over 80,000 students. Its student body is 34% white, 31% Hispanic/Latino, and 27% black. Eleven percent of students are English-Language learners, and 47% qualify for free or reduced lunch (Florida Department of Education, 2007-08).
and some parents. However, they found multitrack calendars to be an effective and relatively pain-free way to deal with overcrowding.

Alleviating Overcrowding (Rating: 5)

A 180-day multitrack calendar would alleviate overcrowding at Castro by increasing the capacity of the school. The exact amount of the increase would be either 25 or 33%, depending on the plan chosen. In other words, the school could enroll 625 (or 666) students without going over 500 students at a time, and could enroll 750 (or 800) students without going over 600 students at a time.

A multitrack calendar would also alleviate overcrowding for the district as a whole. While this analysis only assumes that it would be implemented at Castro only, using the same calendar at other schools would increase district-wide capacity substantially with relatively small financial cost. Because the number of students in the school at any given time is minimized, this alternative would alleviate the traffic and parking problems at the school, and it would be good for student safety.

This alternative does not receive a rating higher than 5 because relative to alternatives such as opening a new school or expanding the current school, its ability to accommodate more students is lower.

Equity (Rating: 3)

The multitrack calendar receives a low rating according to our equity criterion. Because the multitrack calendar is generally seen as inferior to a traditional calendar, it would be unfair to impose it on only one school in the district.

Furthermore, although a multitrack calendar would not exacerbate SES segregation between schools, past studies of the calendars have pointed to SES segregation between tracks as a potential problem. The majority of parents have shown a preference for the track that corresponds most closely to a traditional school calendar, and it tends to be higher-SES parents who are most successful at getting their children into that track. SES segregation between tracks can also happen if classes or programs within the school differ in terms of average SES. At Castro, it is likely that DI class would be assigned to some tracks, and that EO classes would be assigned to the other tracks, which would result in increased SES segregation.

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because nearly all of the highest-SES students at Castro after PACT leaves will be in the DI program.

**Student Achievement (Rating: 5)**

There is mixed evidence about the impact of multitrack year-round calendars on student achievement. Some academic studies have found slightly positive effects on student achievement, and others have found negative effects. Overall, it seems best to conclude that there would be no major impact on student achievement either way.

A number of early academic studies reported that multitrack calendars with at least 180 school days had slightly positive impacts on student achievement. For instance, one study synthesized findings from 39 different schools, and found that overall student achievement increased by a statistically insignificant margin after multitrack year-round calendars were implemented. Gains were much larger and statistically significant for economically disadvantaged students. The most likely mechanism for increased test scores would be the shortened summer vacation. Studies have consistently found that shorter vacations increase student achievement, especially for low-income students.

On the other hand, two recent studies have found that use of multitrack calendars is associated with lower academic performance. Unlike previous research, which looked at changes in test scores before and after a switch to a multitrack calendar, these studies compared across districts, and found that schools with traditional calendars had the highest API scores, schools using the Concept 6 multitrack calendar had the lowest scores, and schools using 180-day multitrack calendars were somewhere in between. Since schools serving the most disadvantaged populations are most likely to have multitrack calendars, both studies attempted to control for school characteristics such as average SES and ethnic composition. However, since the results of these studies are in opposition to studies using before-and-after comparisons of the same school, it is unclear how successfully they were able to control for the

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many other school and demographic characteristics that both increase the likelihood of having a multitrack calendar and have direct effects on student achievement.

Neither school district we spoke with felt that the calendar had any noticeable impact on student achievement in their districts. The representative from Orange County, Florida, noted that test scores “did not improve measurably” in that district. The academic literature had led them to expect sizable gains in student achievement, but those gains did not materialize.

In terms of teacher retention, this alternative fares poorly. Previous research has identified a number of potential concerns that teachers have about multitrack calendars, and while we have not surveyed teachers at Castro, it is likely that some of these same concerns would arise. For instance, teachers worry that the multitrack calendar would increase teacher burnout because of the lack of a long summer vacation. Another potential concern for teachers is that the multitrack calendar requires that at least some teachers switch classrooms several times during the school year. The calendars increase capacity by using all classrooms at all times, so when a teacher goes on vacation, she must clear out her classroom so that another class can move in. Furthermore, when she returns from vacation, she will have to move into a new classroom, because the old one is still occupied. In some schools, some teachers are given permanent classrooms, and others become “floaters,” meaning that they keep their classroom supplies in a cart and move to a new classroom every period. Putting these additional stresses onto Castro’s teachers could harm teacher retention and thus have a negative impact on student achievement.

Financial Cost (Rating: 9)

Like the impact on academic achievement, there is mixed evidence regarding the financial impact of multitrack year-round schools. For Castro, we would expect a very small impact on overall financial costs to the district.

One way that a multitrack calendar could increase costs is through increased maintenance and personnel costs from keeping the school open year-round. However, the Orange County Public School District found that while costs increased in the first year after implementing the multitrack calendar, they decreased significantly in the four subsequent

64 Patricia Villane, Orange County Public Schools, personal correspondence, Feb. 4, 2009; Pam Sloan, Frances Howell School District, personal correspondence, Feb. 3, 2009.
A representative from the district concluded that: “Ultimately, we found that operating single-track schedules turned out to be more expensive to run.”66 The Orange County district has more than 100 elementary schools, and only a handful of these ever used multitrack schedules, so the decreased costs were not dependent on the whole district switching to a year-round calendar. This suggests that switching only Castro to a multitrack calendar could lead to similar decreases.

A multitrack calendar can also increase the district’s financial burden by increasing transportation costs from busing students year-round. The representative from the Frances Howell School District in Missouri reported that the only financial impact the multitrack calendar had on her district was increased costs due to busing.67 However, we would not expect the calendar to increase overall transportation costs for Castro. The school currently has high costs from busing students out of the Castro neighborhood to other schools. Since the multitrack calendar would allow at least some of these kids to be re-assigned to Castro, an increase in the number of days children have to be bused would be offset by cost savings from absorbing more kids into their neighborhood school.

**Parent Choice** (Rating: 3)

We give the multitrack calendar a low rating for the Parent Choice criterion. The multitrack calendar increases parent choice by allowing the DI and EO programs to expand, and by allowing more kids to attend their neighborhood school. However, schools consistently report that some tracks are more preferred by parents than others, and there is often competition to get one’s child into the preferred track. Requiring some students to attend school on a non-traditional calendar that is not their first-choice track would decrease parent choice.

**Ease of Implementation** (Rating: 5)

If the school board decides to implement a multitrack calendar, it would be required to publish a notice in a local newspaper by November 1 of the previous year announcing its intention to begin year-round schooling for the upcoming school year. If opponents of the change are able to get 25% of the voters in the district to sign a petition against it, the calendar

66 Patricia Villane (Orange County Public Schools), personal correspondence, Feb. 4, 2009.
change would have to be approved by an official ballot proposition. It is not clear how likely it would be for opponents to get this many signatures.

G. Increase Class Size at Castro

Increasing class size at Castro is another alternative for alleviating overcrowding at the school. Currently, Castro uses a student/teacher ratio of 20:1 in grades K-3 and 25-30:1 in grades 4-5. Instead of having 20 children per class in K-3, the enrollment limit could be increased to accommodate more students. An increase from 20 to 25 students in K-3 would accommodate an extra 15-20% children in the English only and Dual Immersion programs. Likewise, an increase could be made in grades 4-5 above the current numbers, since the state has no size requirements and funding for grades 4-5. In California, after the Class Size Reduction Bill (SB 1777) was passed in 1996, a maximum of 20:1 was allowed for children in K-3 for the school to receive Class Size Reduction funding. Recently, these numbers have been given some flexibility due to political dynamics in California. A ratio of 22:1 in K-3 is now permissible as long as the average class sizes in the school is 20:1. Also, the state is urging districts to reduce class sizes in grades 4-12 to an average of 25:1 per school. If Castro decides to increase class sizes to 25:1 in K-3, the District would lose Class Size Reduction funding from the state. However, increasing class size to 22:1 would not cause significant changes in increasing capacity at Castro, especially given an effective capacity of 600 and a requirement that the average class size at the school should still be 20:1. Therefore, in our analysis, we focus on the effects of increasing class size to 25:1 in K-3 at Castro.

Alleviating Overcrowding (Rating: 3)

Increasing class size would be one of the least effective alternatives at alleviating overcrowding at Castro. Adding five more children per class would have a relatively small impact on the current situation relative to some of the other alternatives. Another downside is that the current traffic problems and safety concerns may worsen with an increased number of

students at Castro. Finally, this alternative would do nothing to address district-wide overcrowding.

**Equity** (Rating: 2)

A positive effect of increasing class sizes involves the issue of busing from Castro. Increasing class sizes could decrease the number of children who need to be bused. For instance, if the student/teacher ratio is increased from 20:1 to 25:1, there is the possibility of accommodating some of the students currently being bused out. However, the negative effects of this option are likely to outweigh this positive effect. Increasing class size at Castro could potentially increase the disparity gap in academics when compared to other schools within the district. Also, increasing class sizes would increase the number of children in the school, leading to a strain on outdoor facilities/space and less space per child. This is an equity concern since Castro already has less outdoor space when compared to other schools in the district.

**Student Achievement** (Rating: 2)

Literature has shown that class size increases to numbers above 15:1 would decrease student performance. Various studies on class size reduction show that class sizes of 15:1 are an ideal size in order to achieve an increase in student achievement. However, class numbers between 13 to 17 students per class would still record positive increases in student performance.

The successful Tennessee STAR program, emulated by California in formulating its class size reduction program, places class sizes at 15:1. California adopted a range of 20:1 in K-3 and 25:1 in 4-5, which is still considered small. The Tennessee program showed significant increases in student’s performance in its smaller classes. Two other studies have also shown significant gains with class sizes of 15:1.

However, there are also instances in which class size increases have not yielded positive results. A study conducted in Austin, Texas had 15 schools reduce class sizes to evaluate the effect of small classes on student achievement. After four years, the result showed

that only two out of the fifteen schools performed better than before.\(^{73}\) The higher performance at two schools was a result of a change in curricula, instructional setting and learning behavior. It is unclear whether other studies on class size effects on achievement took into account teaching styles and learning behavior that involves parent involvement, children’s motivation, and teacher’s expectations. Professor Michael Kirst at Stanford maintains that research does not indicate which is better between “a bad teacher with 20 students and a good teacher with 30 students.”\(^{74}\) The statement does not contradict the idea of positive effects of small class sizes but says there is more to an increase in student performance than just small classes.

Class size increases are best when used as a short-term measure to solve unexpected overcrowding, as it does not increase student performance. For instance, a study of 33 public elementary schools in Australia, found that in larger classes, teachers had higher noise levels and larger classes that required more management than smaller classes; the time spent this way did not assist student learning. Also, in larger classes, students were less inclined to ask questions and homework productivity was lower.\(^{75}\) These classroom conditions could also lead to more problems with teacher retention.

**Financial Cost** (Rating: 6)

School districts in California receive funding for class size reductions in K-3. Prior to 2004, schools with an average class size above 20.44 in any enrollment year would lose its class size reduction funding. In 2004, California reduced the penalty on schools that go above the 20.44 rule. A school with a 21.95 student average is the new maximum that will trigger a full penalty, with interim deductions of 20%, 40%, and 80% for each one-half student above the 20.44 class average.\(^{76}\) Using data from MVWSD, the district received $2,230,433 in funding for class size reductions in K-3 in 2007-2008 and $2,099,190 in 2008-2009.\(^{77}\) Thus, a class size increase to 25 in K-3 would result in the loss of all funding.


\(^{77}\) Unaudited Acutuals Financial Reports 2007-08 Unaudited Actuals School District Certification:
There will be no lost lease revenue or any capital cost (assuming no structures are built) associated with an increase in class sizes. Also, transportation cost to the District would decrease significantly if more students were accommodated into Castro.

**Parent Choice** (Rating: 6)

Increasing class sizes would allow more students to enroll in their first-choice program. The total number of students in EO and DI could increase by about 15%. This alternative would also create the potential for more students to attend their neighborhood school.

**Ease of Implementation** (Rating: 8)

The District would not face significant delays in increasing class sizes to a 22:1 ratio or even a 25:1 ratio. However, it would likely face political opposition. The District would need to notify parents, teachers and board members of the decision before changes were made. The District would face obstacles with state funding if it decided to go above the specified ratio of 22:1.

### 3.3. **Synthesis**

Two alternatives—Expand Capacity at the Current Site and Open a Seventh K-5 Elementary School at a New Site—score highest among our considered alternatives. While both of these alternatives scored very low with regard to the Financial Cost and Ease of Implementation criteria, their overall scores on Alleviating Overcrowding, Student Achievement, Equity and Parent Choice are higher than the other five alternatives. We believe that these two options hold the most promise for satisfying our criteria and addressing long-term overcrowding issues at Castro. Meanwhile, the five other options—Maintain the Status Quo, Increase Class Size, Move DI, Multitrack Year Round Calendar, and Redefine Enrollment Boundaries—are easier to implement with lower financial cost than the two most promising alternatives. However, positive impacts of these five options on Alleviating Overcrowding, Equity, Student Achievement, and Parent Choice are limited.

While Expand Capacity at the Current Site and Open a Seventh K-5 Elementary School at a New Site are equally promising in our analysis, in reality the former seems more feasible than the latter for two reasons. The first reason is the larger financial cost associated with building a new school at new site. It is not impossible for the district to finance a new school by selling property and issuing bonds. However, given that short-term overcrowding at Castro has
been resolved by PACT’s move, and given that the district is facing economic uncertainty amid
the current financial crisis as well as California’s budget crisis, the district may not find it
appropriate to invest in both land and materials for the construction of a new school at a new
site. Second, the district is currently leasing two schools whose contracts will expire 2011. In
2005, the District decided to close one of these leased schools, Slater Elementary School,
despite strong oppositions from some parents. Hence, building a new school is highly likely to
be opposed by the community. Considering these elements, we find that Expand capacity at the
current site would be the most promising and feasible option for the District.

We recognize that our two primary recommendations are the most expensive among all
the alternatives we considered. One reason why Expand Capacity at the Current Site and Open
a Seventh K-5 Elementary School at a New Site scored well is because of the weights we
assigned to the criteria. Appendix E provides an illustration of how the rankings of the
alternatives change under different weighting schemes. If the District adopts a decision-making
perspective that concentrates a significantly greater amount of weight on one criterion, then the
rankings that results will likely differ significantly from the rankings given in this report. However,
if weightings are only marginally changed, and if Alleviating Overcrowding, Student
Achievement and Equity are together weighted more than Financial Cost, Parent Choice and
Ease of Implementation, then the rankings that result should be fairly similar to those given in
this report.

We believe that our evaluation tool can be useful to the District as a means of
demonstrating the relative effects of various priorities on long-term decisions regarding
overcrowding at Castro.
4. CONCLUSION

Our recommendations to MVWSD are based on our analysis of seven alternatives for alleviating overcrowding at Castro Elementary. We developed a set of six criteria for assessing each alternative, and we weighted each criterion in terms of how we judged its importance to the District’s decision making. We then evaluated each alternative in terms of its effectiveness at alleviating overcrowding at Castro.

Based on our analysis, Expand Capacity at the Current Site and Open a Seventh K-5 Elementary School at a New Site are the most promising alternatives for addressing overcrowding at Castro in the long term. We present an evaluation tool that makes our weighting and evaluation schemes transparent and allows other actors to adjust weights and scores for each alternative.

This report reflects our team’s assessment of the situation at Castro, based on six months of study and interactions with representatives of the District. Of course, conditions and circumstances can quickly change in any school district, and situations described or assumed in this analysis may change more rapidly than anticipated. Moreover, decision makers in MVWSD may wish to rate specific alternatives in different ways, and varying priorities or external constrains may cause the District to prioritize the decision criteria differently than in this report. The tool we developed and used for our analysis allows decision makers to experiment with different rankings and weighting schemes for the criteria in order to assess the strengths and drawbacks of the alternatives presented in this analysis. We hope that this evaluation framework, together with our analysis, provides some helpful perspectives to the District as it makes long-term decisions to ensure the successful education of students at Castro.
Appendix A. Demographic and Academic Performance Information for Castro Compared to the District

Table 0-1. Demographics of Castro Elementary Compared to District

<table>
<thead>
<tr>
<th></th>
<th>Percent White (Non-Hispanic)</th>
<th>Percent Hispanic/Latino</th>
<th>Percent Eligible for Free/Reduced-Price Lunch</th>
<th>Percent English Language Learners</th>
<th>Percent Parents with College Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Castro Elementary</td>
<td>27%</td>
<td>64%</td>
<td>62%</td>
<td>64%</td>
<td>31%</td>
</tr>
<tr>
<td>Mountain View Whisman School District</td>
<td>31%</td>
<td>44%</td>
<td>48%</td>
<td>45%</td>
<td>41%</td>
</tr>
</tbody>
</table>

Source: California Department of Education, 2007-08.

Table 0-2. Academic Performance Indicators (API) for Castro Elementary Compared to District

<table>
<thead>
<tr>
<th></th>
<th>All Students</th>
<th>White (Non-Hispanic) Students</th>
<th>Hispanic/Latino Students</th>
<th>Socioeconomically-Disadvantaged Students</th>
<th>English Language Learners</th>
</tr>
</thead>
<tbody>
<tr>
<td>Castro Elementary</td>
<td>791</td>
<td>917</td>
<td>711</td>
<td>711</td>
<td>721</td>
</tr>
<tr>
<td>Mountain View Whisman School District</td>
<td>785</td>
<td>902</td>
<td>670</td>
<td>675</td>
<td>694</td>
</tr>
</tbody>
</table>

Source: California Department of Education, Accountability Progress Reporting, 2007-08.
Appendix B. Matrices Showing Key Indicators for Each Criterion

**Table 0-1. Full matrix for alleviating overcrowding criterion**

<table>
<thead>
<tr>
<th>ALLEVIATING OVERCROWDING</th>
<th>Maintain the Status Quo</th>
<th>Move DI to Landels</th>
<th>Redefine Enrollment Boundaries</th>
<th>Expand at New Site</th>
<th>Expand at Current Site</th>
<th>Implement Multitrack Year-Round Calendar</th>
<th>Eliminate Class Size Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score:</td>
<td>0</td>
<td>5</td>
<td>3</td>
<td>10</td>
<td>9</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Alleviating overcrowding at Castro</td>
<td>baseline</td>
<td>Decreases number of students assigned to Castro by about 150</td>
<td>Depends. Probably minimal decrease in students assigned to Castro</td>
<td>Depends. Potentially significantly decreases number of students assigned to Castro</td>
<td>Increases effective capacity of Castro significantly</td>
<td>Increases capacity by either 25% or 33%, depending on the plan chosen.</td>
<td>Depends. If K-3 classes are increased to 25 students, capacity goes up by 80 to 100 students, an increase of somewhere around 15-20%.</td>
</tr>
<tr>
<td>Alleviating traffic/parking problems</td>
<td>baseline</td>
<td>will lead to decrease in traffic and increase in parking spaces</td>
<td>unable to analyze, depends on how boundaries are drawn, could go either way</td>
<td>depends on new site, but would probably decrease congestion and increase parking space</td>
<td>exacerbates current situation unless construction includes underground parking</td>
<td>decrease in traffic congestion and increase in parking space</td>
<td>exacerbates current situation</td>
</tr>
<tr>
<td>Safety</td>
<td>baseline</td>
<td>improves situation</td>
<td>minor improvement</td>
<td>improves situation drastically</td>
<td>minor improvement</td>
<td>Good. Decreases student density.</td>
<td>Bad. Less supervision per student.</td>
</tr>
<tr>
<td>Alleviating district-wide overcrowding</td>
<td>baseline</td>
<td>no impact</td>
<td>no impact</td>
<td>creates a lot of new space for district-wide growth</td>
<td>increases district capacity</td>
<td>increases district capacity</td>
<td>increases district's capacity a little bit</td>
</tr>
</tbody>
</table>
Table 0-2. Full Matrix for Student Achievement Criterion

<table>
<thead>
<tr>
<th></th>
<th>Maintain the Status Quo</th>
<th>Move DI to Landels</th>
<th>Redefine Enrollment Boundaries</th>
<th>Expand at New Site</th>
<th>Expand at Current Site</th>
<th>Implement Multitrack Year-Round Calendar</th>
<th>Eliminate Class Size Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>STUDENT ACHIEVEMENT</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>WEIGHT: 20%</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Score:</strong></td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>6</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td><strong>Academic achievement</strong></td>
<td><strong>Castro</strong></td>
<td>baseline</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Average test scores for Castro will decrease substantially,</td>
<td>Depends. Could increase scores by bringing higher-SES students into school. But possible negative effects if average-SES of the school decreases</td>
<td>impact on achievement relies on data pertaining to overcrowded schools</td>
<td>impact on achievement relies on data pertaining to overcrowded schools</td>
<td>Probably no change</td>
<td>Possibly negative.</td>
</tr>
<tr>
<td><strong>Academic achievement</strong></td>
<td><strong>district</strong></td>
<td>baseline</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unclear. Discrepancy between literature and principal's observations. Literature suggests that loss at Castro would be bigger than gains elsewhere.</td>
<td>Possible negative effects from student mobility between schools</td>
<td></td>
<td></td>
<td>Increase, due to the increase at Castro</td>
<td>Decrease, due to the decrease at Castro</td>
</tr>
<tr>
<td><strong>Teacher retention</strong></td>
<td>baseline</td>
<td>possible disgruntlement from DI teachers?</td>
<td>probably none</td>
<td>might help retain teachers, with a new building and less overcrowding</td>
<td>Bad for teacher retention, b/c of classroom changes and burnout</td>
<td>Bad for teacher retention. Teachers prefer small classes</td>
<td></td>
</tr>
<tr>
<td>EQUITY WEIGHT: 20%</td>
<td>Maintain the Status Quo</td>
<td>Move DI to Landels</td>
<td>Redefine Enrollment Boundaries</td>
<td>Expand at New Site</td>
<td>Expand at Current Site</td>
<td>Implement Multitrack Year-Round Calendar</td>
<td>Eliminate Class Size Reduction</td>
</tr>
<tr>
<td>------------------</td>
<td>------------------------</td>
<td>-------------------</td>
<td>-----------------------------</td>
<td>------------------</td>
<td>----------------------</td>
<td>-------------------------------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>Score:</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>9</td>
<td>8</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Keeping student density at Castro about the same as other schools in the district Baseline</td>
<td>Improves equity in student density</td>
<td>Improves equity in student density by a small amount</td>
<td>Improves equity in student density by a lot</td>
<td>Improves equity in student density by a lot</td>
<td>Improves equity in student density</td>
<td>Improves equity in student density</td>
<td>Increases student density at Castro</td>
</tr>
<tr>
<td>Potential for neighborhood kids to be re-assigned to Castro No</td>
<td>Yes, some of the students</td>
<td>Depends, but probably not</td>
<td>Depends, but probably not</td>
<td>Yes, potentially all of the students</td>
<td>Yes, some of the students</td>
<td>Yes, some of the students</td>
<td>Yes, some of the students</td>
</tr>
<tr>
<td>Narrows the gap in average SES between schoolsbaseline</td>
<td>Increases the gap</td>
<td>Minimal change</td>
<td>Depends</td>
<td>Minimal change</td>
<td>Minimal change</td>
<td>Minimal change</td>
<td>Minimal change</td>
</tr>
<tr>
<td>Increases outdoor space per student at Castro Baseline</td>
<td>Increases outdoor space per student</td>
<td>Increases outdoor space per student a little bit</td>
<td>Increases outdoor space per student</td>
<td>Decreases outdoor space per student at Castro</td>
<td>Increases outdoor space per student</td>
<td>Increases outdoor space per student at Castro</td>
<td></td>
</tr>
<tr>
<td>Keeps Castro about the same size as other schools in the district No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Table 0-4. Full Matrix for Financial Cost Criterion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>FINANCIAL COST</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>WEIGHT: 15%</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintain the Status Quo</td>
<td>Move DI to Landels</td>
<td>Redefine Enrollment Boundaries</td>
<td>Expand at New Site</td>
<td>Expand at Current Site</td>
<td>Implement Multitrack Year-Round Calendar</td>
<td>Eliminate Class Size Reduction</td>
<td></td>
</tr>
<tr>
<td>Score:</td>
<td>10</td>
<td>8</td>
<td>9</td>
<td>0</td>
<td>1</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>Low capital costs</td>
<td>none</td>
<td>$100K (requires installation of modular restrooms at Landels)</td>
<td>depends. Relatively small increase, if any.</td>
<td>$29,349K (construction cost: $10,588K, Property Cost: $18,761)</td>
<td>$16,940 (Only construction cost. No property cost)</td>
<td>none</td>
<td>none</td>
</tr>
<tr>
<td>Low personnel costs</td>
<td>$129K (0.5 VP, 0.375 Clerical Assistant, 0.25 Library Secretary, 0.25 Custodian)</td>
<td>$220K (0.5 VP, 1 Secretary, 0.875 Library Secretary, 1 or 0.875 Custodian)</td>
<td>depends. Relatively small increase, if any.</td>
<td>$1,513K (10 full time teachers, 3 other certified staff, 10 classified staff)</td>
<td>$1,939K (10 full time teachers, 2 other certified staff, 5 classified staff)</td>
<td>moderate increase</td>
<td>would reduce the number of teachers required</td>
</tr>
<tr>
<td>Low operational costs</td>
<td>est.$12K</td>
<td>none</td>
<td>depends. Relatively small increase, if any.</td>
<td>$289K (500 students x indirect costs per student: $579)</td>
<td>$463K (800 students x indirect costs per student: $579)</td>
<td>moderate increase</td>
<td>none</td>
</tr>
<tr>
<td>Maintains lease revenue</td>
<td>none</td>
<td>if move to Landels, none</td>
<td>none</td>
<td>If sell or land swap Cooper Park to build a new school, $400K</td>
<td>none</td>
<td>none</td>
<td>none</td>
</tr>
<tr>
<td>Minimize transportation costs</td>
<td>neutral impact</td>
<td>moderate increase</td>
<td>moderate increase</td>
<td>moderate decrease if fewer students bused out of Castro</td>
<td>small decrease, b/c need busing year-round</td>
<td>small decrease if fewer students bused out of Castro</td>
<td></td>
</tr>
<tr>
<td>Low total ongoing annual financial cost</td>
<td>$137K</td>
<td>$320k</td>
<td>Depends. Less cost than other alternatives</td>
<td>$31,151K</td>
<td>$19,342K</td>
<td>moderate increase</td>
<td>lost CSR funding</td>
</tr>
</tbody>
</table>
Table 0-5. Full Matrix for Parent Choice Criterion

<table>
<thead>
<tr>
<th>PARENT CHOICE WEIGHT: 15%</th>
<th>Maintain the Status Quo</th>
<th>Move DI to Landels</th>
<th>Redefine Enrollment Boundaries</th>
<th>Expand at New Site</th>
<th>Expand at Current Site</th>
<th>Implement Multitrack Year-Round Calendar</th>
<th>Eliminate Class Size Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score:</td>
<td>5</td>
<td>7</td>
<td>3</td>
<td>8</td>
<td>9</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Allows DI and/or EO programs to expand</td>
<td>programs are not able to grow</td>
<td>if DI moves, it might be able to grow EO can also grow</td>
<td>programs are not able to grow</td>
<td>both EO and DI can expand as much as they want</td>
<td>both EO and DI can expand</td>
<td>EO and DI can probably grow</td>
<td>Minor expansion</td>
</tr>
<tr>
<td>Allows more students to attend a neighborhood school</td>
<td>unable to accommodate more neighborhood kids</td>
<td>will accommodate more neighborhood kids</td>
<td>depends, but in the past has not been able to get more neighborhood kids into Castro</td>
<td>probably increases the overall ability of kids to attend a neighborhood school</td>
<td>will accommodate more neighborhood kids</td>
<td>will accommodate more neighborhood kids</td>
<td>will accommodate more neighborhood kids</td>
</tr>
<tr>
<td>Parent choice - other</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>parents might not be able to get into their first-choice track</td>
<td>n/a</td>
</tr>
<tr>
<td>Maintain the Status Quo</td>
<td>Move DI to Landels</td>
<td>Redefine Enrollment Boundaries</td>
<td>Expand at New Site</td>
<td>Expand at Current Site</td>
<td>Implement Multitrack Year-Round Calendar</td>
<td>Eliminate Class Size Reduction</td>
<td></td>
</tr>
<tr>
<td>------------------------</td>
<td>--------------------</td>
<td>-------------------------------</td>
<td>------------------</td>
<td>-------------------</td>
<td>----------------------------------------</td>
<td>----------------------------------</td>
<td></td>
</tr>
<tr>
<td><strong>Score:</strong></td>
<td>10</td>
<td>6</td>
<td>8</td>
<td>0</td>
<td>1</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td><strong>Time to implement</strong></td>
<td>n/a</td>
<td>minimal time (a few months)</td>
<td>minimal time (a few months)</td>
<td>would take years, but probably not as long as building at a new site</td>
<td>takes some time to implement, due to public notification requirements</td>
<td>no time</td>
<td></td>
</tr>
<tr>
<td><strong>Community acceptance and support</strong></td>
<td>n/a</td>
<td>Would possibly face resistance from DI administrators</td>
<td>Would probably be accepted</td>
<td>Will likely encounter resistance, because of Slater school being shut down</td>
<td>Could encounter resistance if surrounding neighborhood is opposed to a larger school or construction</td>
<td>Will be hard to sell, but would be more discreet than some other alternatives</td>
<td></td>
</tr>
</tbody>
</table>
Appendix C. Academic Performance by Program at Castro

In this appendix, we present data on the academic performance of students at Castro by program. The data in the figures below is based on the scores received on the California Standardized Test, which is required for all public elementary school students in California. The State categorizes scores into five categories: Advanced, Proficient, Basic, Below Basic, and Far Below Basic. The figures below show the percentage of students in each program with test scores within each of those five categories. The first two figures show performance for all students at Castro, and the second two figures show performance for only socioeconomically disadvantaged students.

Table 0-1. Student Academic Performance by Program at Castro
Table 0-2. Student Performance by Program in Mathematics (All Students)

<table>
<thead>
<tr>
<th>CST Performance Level</th>
<th>English Only</th>
<th>Dual Immersion</th>
<th>PACT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Far Below Basic</td>
<td>5</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>Below Basic</td>
<td>20</td>
<td>25</td>
<td>30</td>
</tr>
<tr>
<td>Basic</td>
<td>25</td>
<td>20</td>
<td>30</td>
</tr>
<tr>
<td>Proficient</td>
<td>30</td>
<td>35</td>
<td>40</td>
</tr>
<tr>
<td>Advanced</td>
<td>40</td>
<td>45</td>
<td>50</td>
</tr>
</tbody>
</table>

Table 0-3. Student Performance by Program - English Language Arts (Socioeconomically Disadvantaged Students)

<table>
<thead>
<tr>
<th>CST Performance Level</th>
<th>English Only</th>
<th>Dual Immersion</th>
<th>PACT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Far Below Basic</td>
<td>10</td>
<td>20</td>
<td>30</td>
</tr>
<tr>
<td>Below Basic</td>
<td>20</td>
<td>30</td>
<td>40</td>
</tr>
<tr>
<td>Basic</td>
<td>30</td>
<td>40</td>
<td>50</td>
</tr>
<tr>
<td>Proficient</td>
<td>40</td>
<td>50</td>
<td>60</td>
</tr>
<tr>
<td>Advanced</td>
<td>50</td>
<td>60</td>
<td>70</td>
</tr>
</tbody>
</table>
Table 0-4. Student Performance by Program - Mathematics (Socioeconomically Disadvantaged Students)

<table>
<thead>
<tr>
<th></th>
<th>English Only</th>
<th>Dual Immersion</th>
<th>PACT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Far Below Basic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below Basic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proficient</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advanced</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix D. Characteristics of Common Multitrack Calendars

<table>
<thead>
<tr>
<th></th>
<th>45/15 Plan</th>
<th>60/20 Plan</th>
<th>90/30 Plan</th>
<th>60/15 Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of schools in California using calendar for 2007-08</td>
<td>150 schools</td>
<td>291 schools</td>
<td>134 schools</td>
<td>3 schools</td>
</tr>
<tr>
<td>Number of tracks of students</td>
<td>4 tracks</td>
<td>4 tracks</td>
<td>4 tracks</td>
<td>5 tracks</td>
</tr>
<tr>
<td>Number and length of instructional periods</td>
<td>4 periods</td>
<td>3 periods</td>
<td>2 periods</td>
<td>3 periods</td>
</tr>
<tr>
<td></td>
<td>9 weeks each</td>
<td>12 weeks each</td>
<td>18 weeks each</td>
<td>12 weeks each</td>
</tr>
<tr>
<td>Number and length of vacations</td>
<td>4 vacations</td>
<td>3 vacations</td>
<td>2 vacations</td>
<td>3 vacations</td>
</tr>
<tr>
<td></td>
<td>3 weeks</td>
<td>4 weeks each</td>
<td>6 weeks each</td>
<td>4-8 weeks</td>
</tr>
<tr>
<td>Percent increase in capacity</td>
<td>33%</td>
<td>33%</td>
<td>33%</td>
<td>25%</td>
</tr>
<tr>
<td>Notable features</td>
<td>Frequent classroom changes</td>
<td>Requires fewer classroom changes</td>
<td>Entire school has one common 4-week vacation</td>
<td></td>
</tr>
</tbody>
</table>
Appendix E. Impact of various weighting schemes

Our rankings of the alternatives depend on the weights we assign to the various criteria. Since the rankings are calculated as a weighted sum, significantly adjusting the weights of the criteria will significantly affect the rank order of the alternatives.

As an example, we provide two contrasting weighting schemes to compare with the weighting scheme used in our analysis. The first alternative scheme represents a fiscally conservative viewpoint. In this scheme, the Financial Cost criterion is given a weight of 50, disproportionately greater than all other criteria. By contrast, in the achievement centric scheme, the criteria weights remain similar to those presented in our analysis, with slight increases for Student Achievement and Parent Choice.

Table 0-1. Alternative Weighting Schemes for Criteria

<table>
<thead>
<tr>
<th></th>
<th>Our Analysis</th>
<th>Fiscal Conservative</th>
<th>Achievement Centric</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Alleviating Overcrowding</strong></td>
<td>20</td>
<td>15</td>
<td>20</td>
</tr>
<tr>
<td><strong>Student Achievement</strong></td>
<td>20</td>
<td>15</td>
<td>25</td>
</tr>
<tr>
<td><strong>Equity</strong></td>
<td>20</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td><strong>Financial Cost</strong></td>
<td>15</td>
<td>50</td>
<td>10</td>
</tr>
<tr>
<td><strong>Parent Choice</strong></td>
<td>15</td>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td><strong>Ease of Implementation</strong></td>
<td>10</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td><strong>SUM:</strong></td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>
The results of each scheme are given in the following table. The fiscal conservative position, which concentrates a disproportionate amount of weight on one criterion, leads to a dramatically different rank ordering than given in our analysis. By contrast, an achievement centric position, which only slightly adjusts the weightings compared to our analysis, produces only slight changes in the final rank ordering.

Table 0-2. Results of Analysis for Alternative Weighting Schemes

<table>
<thead>
<tr>
<th></th>
<th>Our Analysis</th>
<th>Fiscal Conservative</th>
<th>Achievement Centric</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status Quo</td>
<td>5</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Expand at Current Site</td>
<td>1</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Expand at New Site</td>
<td>1</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>Move DI</td>
<td>3</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Redefine Enrollment Boundaries</td>
<td>4</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Year Round Calendar</td>
<td>6</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Increase Class Size</td>
<td>7</td>
<td>5</td>
<td>7</td>
</tr>
</tbody>
</table>

In general, weighting schemes that make only marginal changes to the weightings used in our analysis will result in similar rank orderings to the rank ordering presented in this report. Also, in our analysis, Alleviating Overcrowding, Student Achievement and Equity together account for 60% of the criteria weight. Weighting schemes that preserve similarly high weighting of these three criteria together will also lead to similar rank orderings. By contrast, weighting schemes that place greater weight on some combination of Financial Cost, Parent Choice and Ease of Implementation will generally lead to significantly different rank orderings.