California Green Schoolyards

A Cost-benefit Study

TRUST FOR PUBLIC LAND™ THINK MK

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ABOUT MKTHINK

MKThink is a strategic design consultancy based out of San Francisco dedicated to the ethos Build Less, Solve More. Working at the intersection of architecture, the environment and human factors, MKThink uses data-driven insights to create innovative solutions for the built environment.

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Melrose Leadership Academy | OUSD

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1 OVERVIEW

This study examines the costs and benefits of building and managing green schoolyards with the goal of fostering broader adoption across the state of California.

Introduction

This study has a simple goal: to facilitate a common understanding of the scope, costs and benefits of renovating existing asphalt schoolyards into Green Schoolyards on urban public elementary school campuses in California. By sharing information about the costs and benefits of building and managing Green Scholyards in California, the hope is to remove some of the barriers that are inhibiting wider adoption of these practices across the state, particularly in the low-income communities in most need of the benefits Green Schoolyards yield.

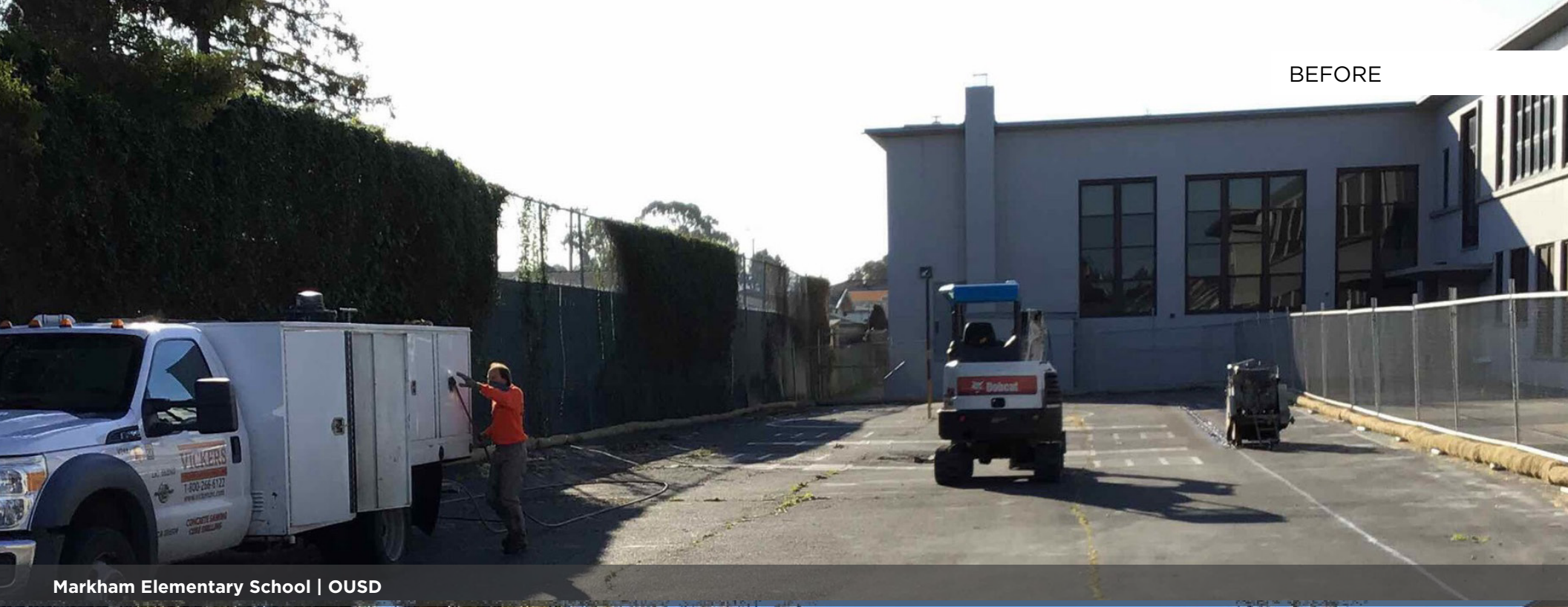
The perception persists that 'greening' schoolyards (i.e., introducing natural landscape features and multiple uses into asphalt schoolyard areas) is a compelling but expensive endeavor that simply can't be rationalized at scale given the high costs of implementation and maintenance.

There is a growing body of research linking postive correlations between Green Schoolyards and better student, teacher, and environmental outcomes. However, the lack of comparative cost data across California's K-12 schools, compounded by a lack of easily acessible information about their direct benefits, has left district administrators without a clear blueprint for evaluating or planning the true costs or benefits of Green Schoolyards.

Trust for Public Land engaged the strategic consulting team MKThink ('the Team') to help compile and analyze the scope, cost, and benefits of Green Schoolyards projects in California. The Team collected qualitative and quantitative data from a variety of sources, including school districts, parks departments, landscape architects, engineers, and general contractors who have implemented similar projects in both northern and southern California.
Data was collected primarily from urban school districts where student and community access to parks and public greenspace amenities is limited and therefore most needed.

To quantify and monetize the beneficial impacts of Green Schoolyards, and evaluate those impacts more specifically in monetary terms, MKThink isolated four benefits that the research supports as directly affecting school operating budgets. Those benefits include 1) school attendance; 2) student performance; 3) teacher retention; and 4) and building energy savings. To isolate variables even further, the Team created two prototypical schoolyard projects: 1) an upgrade of a traditional asphalt or 'Gray Schoolyard' and 2) a renovation of a traditional Gray Schoolyard into a 'Green Schoolyard.' These scenarios assume the upgrades or improvement occur once the existing asphalt has met its useful life and is in need of repair.

The hope is that a shared understanding of the economic, social and community value of Green Schoolyard projects will help state, district, community, and professional stakeholders to effectively define, advocate, and integrate Green Schoolyard programs into their capital planning and budgeting processes.



Markham Elementary School | OUSD

Markham Elementary School | OUSD

Photos courtesy of Trust for Public Land

2 WHY GREEN SCHOOLYARDS?

Of the 130,000 acres of public-school land in California, less than 1% is designed with the natural features and programmed uses that support student, environmental, and community health.[1]

What Are Green Schoolyards?

Most California Schoolyards are merely seas of empty asphalt baking in the hot sun and blocked off from public access after school hours. While meeting outdated requirements for outdoor recreation and physical education, their dark, impervious surfaces offer no environmental benefit, burdening the natural ecosystem and making the pavement and surrounding area hotter and more susceptible to flooding.[2]

Green Schoolyards restore that imbalance by transforming asphalt school grounds into well-used parks that are co-designed with schools and community stakeholders so that they support both schools and their communities with a diverse array of play, recreation, and educational activities within a natural environment.

While there is no one standard design for Green Schoolyards in California, there are some features that are common to all. Green Schoolyards typically blend the play features of traditional schoolyards but add natural elements to provide increased access to nature while offering opportunities for exploration, hands-on learning, and improving environmental performance. Creating a Green Schoolyard means implementing comprehensive changes into a traditional playground. It isn't just about adding a few trees or a single vegetable garden, but rather creating spaces that promote student health, well-being and their ability to both learn and thrive in school.

Natural elements include planting areas, vegetable gardens, shade trees, nature play areas, outdoor classrooms, and pervious surfaces with natural features for stormwater capture. Each feature is integrated according to the curricular, health, and environmental needs and objectives of the host school and community.

California Department of Education oversees public schools located in every community accross the state. Of the 130,000 acres of public school land in California, less than 1% is designated with natural features and programmed uses that support student, environmental and community health.[3]

A growing body of research suggests Green Schoolyards are a relatively low-cost way for schools to bolster student, community, and environmental achievement and narrow academic gaps. The Legislative Analyst's Office, the California Legislature's nonpartisan fiscal and policy advisor, noted that, "as climate changes, school and child care facilities will need to be able to withstand more extreme events and conditions than those for which they were designed."[4] Green Schoolyards are purposefully designed to boost mental health, enhance physical activity, and increase academic engagement -- all while mitigating the physical and economic impacts of climate change by reducing urban heat and flooding.[5]

Moreover, with the State Department of Education's renewed focus on achieving equity of learning outcomes for disadvantaged students, schools are keen to understand what tools they can implement in their own districts that will yield results across race, ethnicity, gender, and income levels.

Tree-shaded Instruction Space

Vegetable Garden

Planted Area

Natural Landscaping

Photos courtesy of Trust for Public Land

Overall Benefits of Green Schoolyards

The Team analyzed the academic research that correlates Green Schoolyards with a host of positive benefits including: Learning; Community & Stewardship; Health & Wellness; and Environmental Health. The Team evaluated each benefit and quantified those that could be translated into monetary terms and were therefore capable of offsetting investment costs. The most direct monetary benefits were incorporated into the cost/benefit model summarized in Section 3. However, the benefits that clearly hold value for school districts but that research cannot directly link to monetary value, were excluded from consideration in the cost/benefit model. The following is a brief summary of some overarching benefits that link Green Schoolyards to positive outcomes for students, community and the environment.

Learning

Green Schoolyards help school districts with environmental literacy requirements.

Several studies map daily exposure to natural environments like Green Schoolyards to improved learning outcomes, increased mental health, and cognitive function in elementary school students. One recent study found that a combination of tree canopy coverage and topographical diversity in schoolyards results in a higher percentage of students with proficient or advanced scores in Math and Reading.[6] Nature exposure in high schools also increases standardized test scores, graduation rates, and the number of students planning to attend a four-year college.[7]

Health & Wellness

Green Schoolyards directly link to healthier brain development.[8]

Green Schoolyards create and promote more diverse ways for all students to increase their physical activity, which often relates to educational opportunities for underserved students more specifically. Activities such as outdoor instruction and exploratory exposure to nature, both conducted in Green Schoolyards, have direct relationships with brain development and academic performance.[9]

The addition of vegetation and other natural elements to a traditional Gray Schoolyard presents diverse ecological elements to school grounds, translating directly into student health outcomes from access to improved air quality.[10]

Community & Stewardship

Green Schoolyards encourage communities to invest in their local school district.[11]

Green Schoolyards offer a unique template for community engagement, hands-on learning and other valuable educational experiences, as well as increased climate resiliency and environmental services.

The creation of a Green Schoolyard program can encourage local communities and stakeholders, not just parents, to collaborate and invest time and resources into their local schools, taking some of the burden off school employees to manage and steward the asset.[12]

Environmental Health

Children's relationship with nature is strengthened via Green Schoolyards, promoting early environmental literacy and stewardship.[13]

Green Schoolyards also help the mitigate impacts of climate change and provide positive impacts on both local and regional ecology. Vegetated permeable landscaping helps recharge local acquifers, while lowering polluted runoff into nearby bodies of water. Tree canopies help lower the urban heat island effect while increasing carbon retention.[14]

A schoolyard's vegetation can also serves as a wildlife habitat, promoting biodiversity and a healthy, functioning ecosystem. Children's relationship with nature is strengthened via Green Schoolyards, promoting early environmental literacy and stewardship.[15]

Direct Monetary Benefits of Green Schoolyards ($)

School Attendance

Green Schoolyards have been found to increase Average Daily Attendance (ADA) and decrease chronic absenteeism by 2.6%.[16]

Public school funding in California is based on daily student attendance. As a result, a typical California elementary school loses approximately $85 for every student that is absent each day.[17]

For a mid-sized, urban elementary school with an Average Daily Attendance Rate of 95% (lower than the state average), that means about 25 kids are absent on any given day, losing the school $2,125 in potential funding each day. Raising attendance rates by even a small fraction can reduce profound gaps in learning while translating directly into funding for schools.

There is evidence that Green Schoolyards provide the type of social-emotional and physical health benefits that reduce chronic absenteeism. In a study of over 1,770 schools in Massachusetts, Green Schoolyards were found to reduce absenteeism by as much as 2.6% simply by increasing a school's "greenness," expressed in terms of its Normalized Difference Vegetation Index (NDVI), by 0.15.[18] Applying this attendance improvement to a single urban elementary school, raising the ADA from 95% to 97.6% would yield $201,200 in additional income over thet twenty year period. At a district level, this same increase would result in over $3 million in annual revenue.

School Performance

Green Schoolyards have been shown to increase student's computerized cognitive test scores by up to 10% compared to students occupying traditional Gray Schoolyards.[19]

Research on the difference in student academic performance at a school with a traditional schoolyard versus student performance at a school with a Green Schoolyard yielded significant performance increases across several areas:

- The integration of gardening activities into school curriculums has shown to increase science achievement and performance of 3rd, 4th, and 5th graders.[20]
- Green Schoolyards have shown to increase student's computerized cognitive test scores by approximately 10% compared to students occupying traditional Gray Schoolyards.[21]
- Increased mental health and cognitive function derived from access to Green Schoolyards is also supported by research indicating that a combination of tree canopy coverage and topographical diversity in schoolyards results in a higher percentage of students with proficient or advanced scores in Math and Reading.[22]

So how do we translate the 10% increase in student performance into direct monetary terms? The Team applied the investment costs from a comparable 2013 study of schools at the Riverside Unified School District (RUSD) that saw the same 10% increase in cognitive test scores when RUSD schools implemented a 1 to 1 laptop program.[23] The Team applied the same per pupil costs spent on laptops in the 2013 study and derived that it would cost about $911,000 over 20 years to yield the same performance outcome as acheived by adopting a Green Schoolyard (see pg. 13 for context on asssumed school prototype).

Direct Monetary Benefits of Green Schoolyards ($)

Staff Retention

Studies suggest that Green Schoolyards positively impact staff retention, which equates to a potential annual cost savings of $10,000 [24]

Several studies point to Green Schoolyards positively impacting staff retention. A 2016 study found that daily outdoor learning and exposure to the kind of nature found in a Green Schoolyard supports the physical health and emotional well-being of educators.[25] Just the opportunity to take students outside decreases the probability of burnout and turnover, a rate that is five times the average in high-poverty urban school districts.[26] We know also that improving teacher retention and the quality of teachers that are attracted to the profession, can have profound impacts on student success, and vice versa.[27]

Another study found that facilities improvements proved to be a more effective staff retention investment than increasing teacher pay as they offer an improved teaching environment which is experienced daily in both procedural benefits and learning outcomes. While they have higher upfront costs, facility improvements like Green Schoolyard typically benefit from additional sources of state or federal funding.[28]

In 2017 the Learning Policy Institute (LPI) found that 16.5% of schoolteachers in California leave their schools each year. At a student to teacher ratio of 20:1 in a prototypical elementary school of 506 students, that would mean about 4 teachers would leave each year requiring that credentialed replacements are found. LPI found that urban school districts spend an average of $21,000 on each new hire for a total of $84,000 of annual hiring costs of hiring annually for the prototypical school (see pg. 13). By reducing that annual turnover by just 4.5%, down to 12%, Green Schoolyards could yield over $10,000 in yearly savings at each school simply by avoiding the costs of turnover.[29]

Reduced Heating and Cooling Costs

Green Schoolyards introduce new trees to school campuses that help provide shade and wind buffer, resulting in a potential 28% reduction in annual energy costs to schools.[30]

The Green Schoolyard prototype (see pg. 13) assumes an additional 50 planted trees within the fence line of the site. Increasing the number of trees around a school site can reduce cooling and heating costs by increasing shading and reducing wind speed.[31] A 2002 study investigated the impact of trees on the savings in energy enjoyed by small office buildings across eight cities.[32] The study found that a small office building can achieve an average of 56% of direct annual energy savings by planting just three trees. Given the similarities in layout between this small office and our prototypical school site's buildings, the Team assumed that schools could reach at least 50% of the energy savings that a small office would achieve from just adding trees.

For this cost analysis, the Team assumed a scenario that acheived a 28% reduction in heating and cooling costs due to the introduction of 50 new trees on the site.[33] The Team choose a reduction rate of 28% instead of 56% due to the inherent differences in office and school buildings, leading to a lower potential for energy saving in our prototype. This saving could be increased even further depending on geo-location, tree type selection, and tree distribution schemes accross the site.

Student Design Workshop Castellanos Elementary School | LAUSD
Courtesy of Trust for Public Land

3 COST-BENEFIT MODELS

To create a basis for comparing construction, maintenance and operating costs across a diverse set of conditions, the Team created two prototypical urban schoolyard models -- one 'Green', one 'Gray.'

Context

Given the variability in size, scope, program, and context of Green Schoolyard projects across schools in California, making 'apples-to-apples' cost comparisons between Green Schoolyard projects has often proven challenging. Comparing Green Schoolyard projects to Gray Schoolyard projects has proven even more challenging. To control for this variability, the Team created Green and Gray Schoolyard prototypes that represent the most common site conditions, layout, programming, and operating conditions for urban elementary schools throughout the state.

To control for the variable of time, it was assumed that both projects are triggered at the point of failure, meaning the district has determined that its aging schoolyard requires some type of major intervention to keep the asset viable and safe for kids over the next 20 years. The school district is thus faced with the decision to either:

1) fully replace the existing schoolyard's asphalt, as in the Gray Schoolyard prototype 1, or

2) renovate the same area according to Green Schoolyard design and programming principles, as seen in the Green Schoolyard prototype 2.

The representative prototypes were developed with input from over 15 interviews with district and municipal staff, design and construction professionals, and community partners to get a full picture of the scope and costs related to managing traditional schoolyards, as well as the cost of renovating existing ones into Green Schoolyards in California. This feedback gave the Team insight into the issues, opportunities, and gaps in existing data and helped model the prototypical projects.

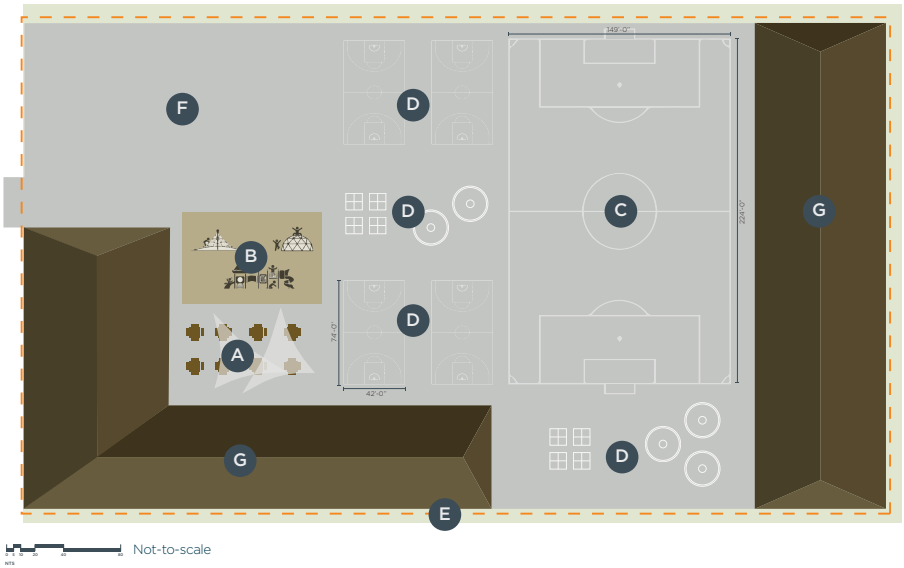
To supplement input from interviews, the Team also reviewed reports and cost data provided from academic, district, and municipal partners. These included academic papers, district plans, construction, operational, and labor cost data, design documents, shared use policies, education and environmental codes, existing and upcoming environmental regulations.

Costs assigned to each prototype include Design & Permitting, Construction, and Maintenance & Operations over a twenty-year period. Costs are analyzed over the same twenty-year period according to direct benefits or value accrued to the school district over that same 20-year period.

Each prototype hosts a conceptual 2-acre schoolyard (98,000 square feet), serving 506 students representing the average enrollment size of urban public elementary schools in California. The conceptual site area is inclusive of all school property grounds but excludes parking lots, mechanical areas, space outside the fence line, and building footprints.

The acreage was derived by taking the mean area of elementary school yards located in the City and County of Los Angeles, Alameda County and the City and County of San Francisco. While 2 acres may be larger than schoolyards found in San Francisco, the size is consistent with many schoolyard sites in the Los Angeles area.

Prototype 1: Renovated Gray Schoolyard



Zones

- A Gathering areas
- B Traditional playground
- C Soccer field
- D Traditional sport courts
- E Buffer
- F Other asphalt areas
- G School building
- Fenceline

A

D

F

Photos courtesy of Trust for Public Land

Prototype 1 Description

The Gray Schoolyard Prototype is composed of asphalt sports courts, asphalt circulation & gathering areas, and an existing traditional play structure on resilient surfacing. This prototype assumes design, construction, and maintenance costs related to the asphalt replacement and periodic sealing to keep up the asset over a twenty-year period:

- Costs are based on general scope for a prototypical Gray Schoolyard located in the Bay Area of California.
- This scenario includes the cost of removing and replacing the majority of the schoolyard's surface with new asphalt and then resealing it at recommended five-year increments.
- The resulting cost is presented as a 'Cumulative Net Cost'* over a twenty-year period, i.e. the annualized dollar value that the initial investment yields over the 20-year life of the investment.

** Cumulative Net Cost equals the cash flow of a project over time compared to the initial investment.*

Prototype 2: Renovated Green Schoolyard

Zones

- A Gathering areas
- B Traditional playground
- C Soccer field
- D Traditional sport courts
- E Buffer
- F Nature play outdoor classroom
- G Vegetable garden
- H Planted areas and bioswales
- I School building

New trees

Fenceline

F

H

G

Prototype 2 Description

In addition to many of the traditional elements found in the Gray Schoolyard Prototype, the Green Schoolyard Prototype includes 50 new shade trees within the schoolyard's fence line, new planting areas and bioswales, a vegetable garden, a nature play area, and an outdoor learning area with permeable natural surfaces. The cost/benefit model for Prototype 2 compares the costs associated with converting an existing Gray Schoolyard into a Green Schoolyard. This includes the new costs of design, construction, operational & educational programming, maintenance changes, and after-hour use required to support a Green Schoolyard over twenty years These costs are presented in the model as a 'Cumulative Net Cost.'

The benefits to schools and districts that mitigate these costs over time include income from increased Average Daily Attendance, increased staff retention, school performance and reduced operational costs from passive building cooling. While many schools enter into joint use agreements with community organizations to upkeep and maintain Green Schoolyards; we did not not assume this as a prerequisite to present the most conservative estimate. Consequently, the cost/benefit model assumes that the school or school district is bearing the full burden of operational costs.

Prototype 1: Renovated Gray Schoolyard

Analysis Overview

This scenario investigates the maintenance and associated costs and benefits of renovating an existing schoolyard using traditional materials and surfacing, and standard maintenance over a twenty-year period. The resulting cost is presented as a *Cumulative Net Cost.**

- Costs are based on standard scope for a prototypical gray schoolyard located in the Bay Area of California. (Location Adjustment Factors are found in the appendix)
- This scenario includes the cost of removing and replacing the majority of the schoolyard's asphalt with new asphalt and then resealing it at recommended five-year increments.

**Cumulative Net Cost equals the cash flow of a project over time compared to the initial investment.*

Key Takeaways

- The Gray Schoolyard requires a significant initial investment at Year 0 but yields no dollar benefits over the 20-year period other than a reduction in deferred maintenance costs.

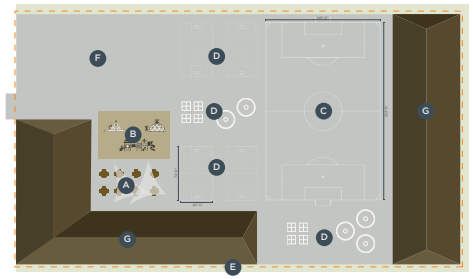
INITIAL RENOVATION COSTS (YEAR 0)

Zones	*Dollar Cost*	*Square Feet*
A Gathering Area	$179,000	11,000
B Traditional Playground	$335,000	4,500
C Soccer field	$193,000	35,000
D Sports Court	$199,000	30,000
Demolition	$275,000	-98,000
Furnishing allowance	$25,000	N/A
Contractor Costs	$332,000	N/A
Soft Costs	$663,000	N/A
Other Ashpalt Areas	$120,000	19,070

TOTAL INITIAL COST **$2,321,000**

PROTOTYPE 1 DIAGRAM

Gray Schoolyard



Not-to-scale

		YEAR			
ONGOING COSTS	**0**	**1-5**	**6-10**	**11-15**	**16-20**
Category					
Maintenance & Operating		$50,000	$52,000	$54,000	$57,000
Educational Programming		$0	$0	$0	$0
BENEFITS		**1-5**	**6-10**	**11-15**	**16-20**
Category					
Savings in Cooling/ Heating		$0	$0	$0	$0
Increased Average Daily Attendance (ADA)		$0	$0	$0	$0
Increased Staff Retention		$0	$0	$0	$0
Increased School Performance		$0	$0	$0	$0
CUMULATIVE NET COST	**$2,321,000**	**$50,000**	**$52,000**	**$54,000**	**$57,000**

INITIAL COST

$2.32M

NET COST FOR 20-YEAR PERIOD

$213K

Prototype 2: Renovated Green Schoolyard

Analysis Overview

The cost/benefit model for Prototype 2 assesses the costs associated with converting an existing Gray Schoolyard into a Green Schoolyard, including design, construction, operational & educational programming costs, and a change in maintenance over a twenty-year period. The costs are presented as a Cumulative Net Cost.

- Costs are based on standard scope for a prototypical gray schoolyard located in the Bay Area of California (Location Adjustment Factors are in the appendix).
- Asphalt resealing is considered a component of maintenance. The model assumes that the reduction in asphalt square footage for permeable surfacing will require less asphalt area to reseal every five years.

Key Takeaways

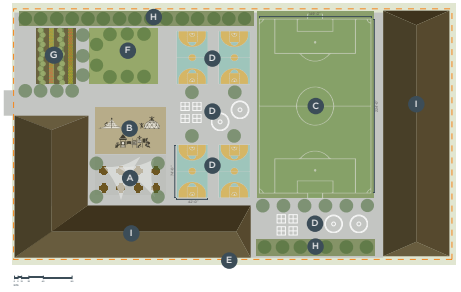
- The Renovated Green Schoolyard significantly reduces ongoing costs compared to a Gray one after Year 1.
- Higher initial schoolyard conversion costs are offset by lower annual recurring costs and monetary benefits resulting from direct Green Schoolyard benefits.
- **Breakeven is achieved by Year 9.**

INITIAL RENOVATION COSTS (YEAR 0)

Zones	*Dollar Cost*	*Square Feet*
A Gathering Area	$219,000	11,000
B Traditional Play	$335,000	4,500
C Soccer Field	$119,000	33,600
D Sports Court	$199,000	30,000
F Natural Play	$70,000	5,500
G Vegetable Garden	$146,000	3,570
H Planted areas/bioswales	$129,000	10,000
Demolition	$275,000	-98,000
Furnishing allowance	$25,000	N/A
Contractor Costs	$379,000	N/A
Soft Costs	$759,000	N/A
TOTAL INITIAL COST	**$2,655,000**	

PROTOTYPE 2 DIAGRAM

Green Schoolyard



Not-to-scale

	YEAR				
ONGOING COSTS	**0**	**0-5**	**6-10**	**11-15**	**16-20**
Category					
Maintenance & Operating		$115,000	$123,000	$131,000	$140,000
Educational Programming		$63,000	$68,000	$73,000	$78,000
BENEFITS		**0-5**	**6-10**	**11-15**	**16-20**
Category					
Savings in Cooling/ Heating		- $14,000	- $15,000	- $16,000	- $17,000
Increased Average Daily Attendance (ADA)		- $53,000	- $57,000	- $61,000	- $65,000
Increased Staff Retention		- $41,000	- $44,000	- $47,000	- $51,000
Increased School Performance		- $227,700	- $227,700	- $227,700	- $227,700
CUMULATIVE NET COST	**$2,655,000**	**- $157,000**	**- $152,000**	**- $147,000**	**- $142,000**

INITIAL COST

$2.66M

NET COST FOR 20-YEAR PERIOD

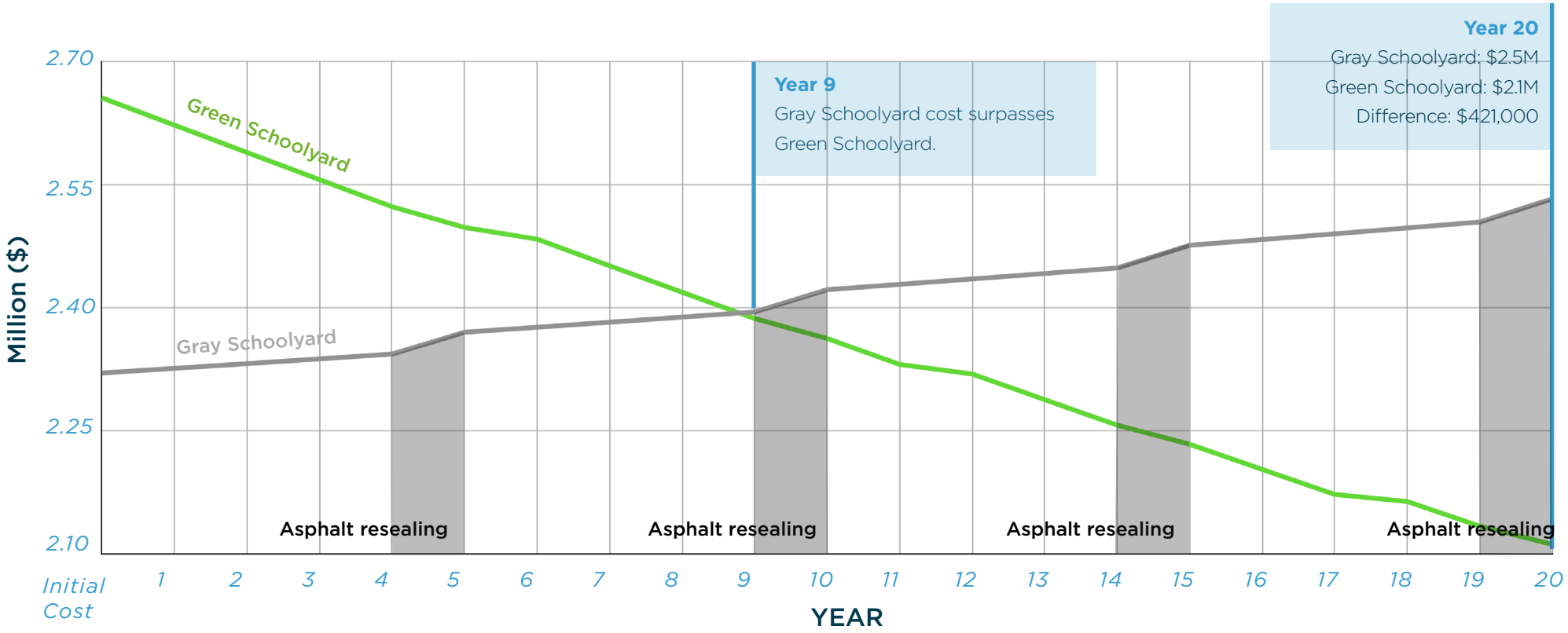
- $598K

Prototype 1 & 2: Cumulative Net Cost (CNC)

CNC = (Initial Cost) + (Ongoing Costs) - (Benefit Returns)

Maintenance & Operations
Educational Programming

Savings in cooling/heating,
Increased Average Daily Attendance,
Increased School Performance



4 CONCLUSION

Over a twenty-year period, the Green Schoolyard yields significantly more direct benefits and cost savings than its Gray Schoolyard counterpart.

Conclusions

When comparing 'apples-to-apples' costs across the Green and Gray prototypical projects outlined on pages 14 and 15, the Green Schoolyard was found to be 14% more costly to start-up by an equivalent of $334,000. However, over a 20-year analysis period, the Green Schoolyard prototype's Cumulative Net Cost was 381% *less* than that of the prototypical Gray Schoolyard, and yielded *more* direct benefits and cost savings to the host school. By analyzing multiple cost variables and benefits related to construction and operations, the study helps dispel the myth that Green Schoolyards are prohibitively more expensive to build and operate than Gray Schoolyard projects.

Break-even by Year 9

The start-up cost of the study's prototypical Green Schoolyard project is moderately higher than its gray counterpart --$2.66 million vs. $2.32 million, a difference of $334,000. However, the Green Schoolyard prototype's Cumulative Net Cost becomes lower than the gray prototype starting in Year 9 and costs significantly less than a Gray Schoolyard project with net cost savings of $598,000 by year twenty. By contrast, the Gray Schoolyard renovation project yields no financial payback or ancillary benefits and ends up costing the school $213,000 in operational costs over twenty years.

Direct benefits result in real income and savings for schools

Student test scores can increase by as much as 10% with Green Schoolyards, resulting in about $45,000 in General Fund savings annually for a prototypical school site.[34]

Student attendance rates can increase by as much as 2.6%. If a mid-sized elementary school were to convert its site to include a Green Schoolyard, it could yield $9,800 in additional annual income due to higher attendance.[35]

Several studies show that Green Schoolyards contribute to higher staff retention; decreasing staff turnover from 16.5% to 12% in a school with 25 full-time teachers will result in an average of $10,000 annual savings.[36]

Introducing 50 new trees to the prototypical school campus results in new shade cover and a natural wind buffer that can contribute up to 28% in reduced annual energy costs to the school.[37]

The benefits increase with scale

Packaging multiple Green Schoolyard projects can reduce project costs and maximize the monetary benefits to school districts even further. The startup costs of converting a traditional schoolyard into a Green Schoolyard can be reduced significantly by either combining several Green Schoolyard projects into a single program and/or by combining the improvements with other major capital projects as part of a district's facilities bond program.

State funding programs can defray costs of Green Schoolyards projects and bridge the gap in startup costs

The difference in start-up costs between Gray and Green Schoolyards can be mitigated by pursuing state funding via programs designed to incentivize school investments in air quality, sustainable site practices, and energy-efficient building design and construction.

4 CONCLUSION *(continued)*

Next Steps

By dispelling misperceptions about the costs of Green Schoolyards and by offering some simple planning tools for school administrators, the hope is to remove the perceptive barriers that prevent districts from adopting Green Schoolyard projects in their communities.

As with any new planning effort, school leaders need to be proactive to ensure that Green Schoolyards initiatives are placed on par with more traditional capital and operational expenditures in their district. This means crafting and adopting Green Schoolyard policies into district Board Resolutions, Education Specifications, Facilities Master Plans, Spending Plans, and bond campaigns. Green Schoolyard initiatives can also be integrated into Local Control Accountability Plan (LCAPs) processes to sustain allocation of annual General Funds for program-related instruction and coordination, new maintenance practices, partnership programs, and staff training.

To ensure that Green Schoolyard benefits are sustained and experienced by the broader school community, districts need to coordinate their planning efforts with state, neighborhood and municipal planning, and advocacy organizations who can provide guidance, stewardship, and access to funding resources that target Green Schoolyards more directly.

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6 APPENDIX

Location Adjustment Factors*

San Francisco	**0%**
Oakland	**+2%**
Sacramento	**-2%**
Stockton	**+15%**
Los Angeles	**-12%**
San Diego	**-18%**
Fresno	**-9%**
Bakersfield	**-5%**

*Total cost can be adjusted using these location adjustments based on RSMeans data.